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Evidence-Based Design - A Key to Collaborative Innovation of Business Models in European Healthcare

How the built environment in healthcare influences output in terms of patient safety, efficiency, quality of care, staff turnover, total economy etc, is often overlooked. Perhaps this is because hospitals are different to "normal" companies; the building and the operation in public owned institutions in complex welfare models is often organised in separate political, managerial and budget systems. But in the present state of massive resource scarcity added to increased globalisation, we need to rethink and redesign the concept of healthcare and hospitals as extremely complex and dynamic systems.

It is pivotal to learn how to catalyse all available determinants if we want the future state of healthcare in Europe to be signified by cutting edge business models of maximum quality and efficiency. This need might explain the increasing interest in evidence-based design (EBD). The purpose of this article is to explain and discuss how EBD can contribute developing a European language and shared methods to innovate healthcare.

The European attitude towards EBD can be described as ambiguous at least. I am concerned that this ambiguity towards EBD – as we experience in Scandinavia - is consuming focus and energy that instead could be used for more structured and open-minded debates leading to a development of a European concept of EBD. Such a concept could be a tool to benchmark various governmental models and systems of healthcare aiming towards innovative and sustainable solutions for modern healthcare. The discussion on EBD seems to be more focused on terminology than on substance. One risk related to such a discussion is that while we discuss whether we believe in EBD or not patients die, staff get injured and money spent on healthcare does not offer optimum payoff in terms of quality and efficiency. Another risk is that the trend towards generic global standards will threaten a dynamic development of national, contextbased and innovative solutions necessary to cope with the ever-changing environment of healthcare.

The Pros and Cons

The topic of EBD is an inviting battlefield for hospital managers, architects and consultants with their often, strong opinions. Some say "old wine in new bottles" – we have always done it the EBD-way although we do not write research reports, guidelines or manuals. Others refuse to use evidence that is still young and to some extent scientifically premature. And then there are those who – using strict logic – claim, that design and architecture is tied to the context and culture that it is embedded in and therefore it is impossible to use what is considered to be proven evidence from another country like the US. The latter argument is often stated in the local European debate on hospital innovation due to the undisputed large diversity between national models of healthcare.

Those who claim to embrace and perform EBD often fail when the magnifier of methodology and scientific investigation is set to assess the strength of the conclusions and the possibility for generalisations. Many perform EBD as if it is only a matter of healing gardens that can be seen from the bedside of the patient, single patient- rooms and famous artwork in the lobby. Most often pre- and post-occupancy data are completely missing, making it impossible to compute the actual result of the change in design. Finally, many EBD processes have a total lack of coherent, multidisciplinary and transparently described method design making it difficult to navigate and impossible to assess universal perspectives.

Stop the Battle – it Kills Patients and the Business

I say: stop the theoretical discussion and jump to a higher level of debate. The fact is many patients are hurt and killed by safety issues in the built environment due to the negligence of relations between the physical environment and what goes on between the walls. Many patients and relatives have bad experiences of the buildings and rooms. However, they choose to accept and silently adjust to the circumstances as if "a hospital stay is something that must be endured and survived – and not to be enjoyed in a healing, meaningful and comfortable way" (Frandsen et al). And staff often struggle with stress and back pain while delivering high-performance quality of care and treatment despite bad design and bad décor – often in addition to extreme bustle in a chaotic organisation.

Common to all of the above scenarios is that neglecting the consequences is damaging on several levels. First: irrespective of your position in healthcare – as owner, manager or staff – you are in a business that can either heal or hurt others in your custody. Herein lies a responsibility to contribute with whatever works from a combination of available resources and methods for the individual patient – this is the ethical part of the game. Second: it's pivotal that money – often in EU countries the tax payer's money – spent on healthcare is invested in a way attributing most value in terms of health and healing patients. The balance between efficiency and quality must not be "either/or", but work as twins in a coherent sustainable system.

The New Paradigm

The new paradigm of healthcare innovation and hospital business models is that hospitals consist of five main components: building, equipment, human activity, infrastructure and logistics – understood as handles on the machine or keys on the keyboard. These are the components, which

must be constantly kept in optimum synergy in an ever-changing context of scarce resources, shifting demands and technological developments (Fig. 1). This new paradigm will catalyse the potential for optimum health and efficiency; the methods of evidence-based design can serve as tools.

But a theoretical paradigm is not enough. What we need to address, from my Scandinavian position, is the structure and sense of ownership that works as a secondary foundation of incentives and systems for strategic and managerial decision-making. In a matrix way of categorising the various types of ownerships simplified by figure 2 where the bank or trust controlled hospitals as the very simple and visually significant "one owner" that can be directly addressed. That may explain the early start of the USA in the research fields of EBD – the significant focus on output-responsibility in the market is obvious. At the other end of the continuum we find the publicly owned hospitals, where the owners are "you and I" in the shape of a bulky bureaucracy and diffuse groups and sectors. That is often the model in many EU countries making it challenging to responsibly lead and manage hospitals as coherent and sustainable businesses. Fig. 2 is supposed to provoke national self-critical assessment and debate.

The Theory of Evidence-Based Design

Many mix up the concepts of EBD and healing architecture. The simple differentiation is that evidence-based design is a method to obtain healing architecture. But EBD can do more than provide healing architecture. The focus of EBD is optimising the value of the desired outputs. These can be healing architecture, but can also be low energy, high ambulatory efficiency, low staff turnover or lean processes. It depends on the specific strategy plan of the business model and the measures chosen to assess the success or performance.

Because of the high level of complexity in healthcare and design we need to move the discussion from rigid theoretical discussions often focused on the battle between qualitative and quantitative research paradigms and accept EBD with a more multidisciplinary approach, first and foremost as a tool developing a common language. This will enable us to benchmark the mechanisms in different complex systems that can explain for different outputs. Performed in the framework and relations between EU countries and with an open, collaborative attitude to global trends and communities, the door to real healthcare innovation is open.

The Methods

The discourse of EBD is still signified by its novelty as a research paradigm although the vocabularies in terms of definitions and tools are increasing. Again the "first movers" from overseas are trying to lead the way. Since 2009 the certification and accreditation of EBD as a process or method – EDAC (Evidence- Based Design Accreditation Certification) has been a possible "school" of practice. Yet we are only 385 people worldwide who are certified and US candidates are dominant and unfortunately the distribution shows a majority of architects and designers (Fig. 3). Healthcare executives and hospital managers are missing. They are key professionals initiating the demand and the design of sufficient projects, processes, assessments and incentives towards optimum interaction between the physical environment and operations. EDAC offers a methodology and hereby a framework for mutual understanding and a platform for co-creation of both a common language and future solid evidence.

EDAC is not a rigid system, but a place to start the journey and is open for meaningful change of methods as long as EBD can be improved. Fig. 4 is one of the key models on how to develop a hospital based on the principles of evidence-based design.

Yes, EDAC was born in the US and with close inspection of the current methodology we could dismiss its relevance to European healthcare systems. But that is too easy. EDAC is thought as an international set of methods and the invitation from EDAC is clear: jump on board and join the co-creation of both language and tools towards global innovation from local and contextualised best-practices.

Conclusion

Healthcare and hospitals all over Europe are challenged by scarcity of resources – the hunt for the best business model is on. We need to activate and cultivate the interrelationships between the built environment and operations. EBD can be our shared tool. By a collaborative approach and by the use of EBD as a common language and set of methods for mutual understanding, EU countries can succeed by developing – from combining the best of all different healthcare models – cutting edge and totally sustainable concepts for institutions, buildings and processes that are signified by optimum synergy between the built environment, human activity, equipment, infrastructure and logistics. This would be a great contribution to future health in Europe.

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