Workplace Re-Engineering
in Hospital

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Introduction

The emphasis of recent research into Healthcare architecture has been mainly on the design of hospitals in terms of Patient areas. The hypothesis of this paper is that whilst appropriate Patient environments have been investigated, not enough thought has been given to the design of the Hospital as a Workplace – as a workplace for clinical staff who provide the care for which Patients come to hospitals.

The Hospital is a 'people building', in the same realm as Airports and Offices. Since 1980, when IBM introduced the personal computer, the nature of 'work' changed forever. The new technology, coupled with changes in the nature of corporatisation and societal values, forced a serious re-consideration of the design of the office workplace, heralded by organisations such as DEGW and individuals such as Franklin Becker. The results of these studies have forced organisations to re-think the design of the workplace, a process known loosely as "Workplace Reengineering". Airports, too, have undergone a total transformation in the past fifty years, brought about by advances in communication, aircraft technology and globalisation. Both these types of buildings have adapted themselves dynamically to changing work practices, the advent and march of new technologies, employee and customer expectations and financial imperatives of the market place.

The discoveries of the 'New Workplace' have not been translated into, or adapted for, the Hospital environment, which is rather perplexing, given that the human resource that is the workforce is the most essential ingredient in health care delivery.

What are the reasons why similar thinking has not been applied to workplaces in the Hospital? Perhaps it is so because the Hospital has developed under the burden of being regarded as a quasi-sacred beast, its status guarded by clinicians, its internal goings on understood by the very few. Non-clinical professionals have been intimidated by this mysticism and therefore have not delved into its workings to offer un-

biased objective advice on optimum organisational patterns for its workforce.

The importance of investigating the optimum environment for staff will perhaps be better understood if one realises a few basic facts:

There is a minimum of 3 staff to every 1 patient in a hospital organisation.

Patient well-being depends to a large extent on the capability and efficiency of staff.

Whereas patients are in hospital for a limited period, hospital staff has to deal with an unending, continuous cycle of patient care.

The hospital is, in the end, a business entity that needs to use its most valuable resource – its staff – in the most efficient and productive way possible.

In the current climate of skilled clinical staff shortages and patient expectations this becomes even more critical.

The Intelligent Hospital will be one that has a direct link between functionality and building form. It will resolve two environments in parallel – the hospital as a patient care area, and the hospital as a workplace for its clinical staff.

I have identified 3 key ideas that should be understood and explored in the creation of an appropriate Workplace for health professionals in the 21st century:
1. Changing clinical practices and integrated care patterns
2. Ecology of the collaborative workplace
3. Socio-technical system: Interconnections
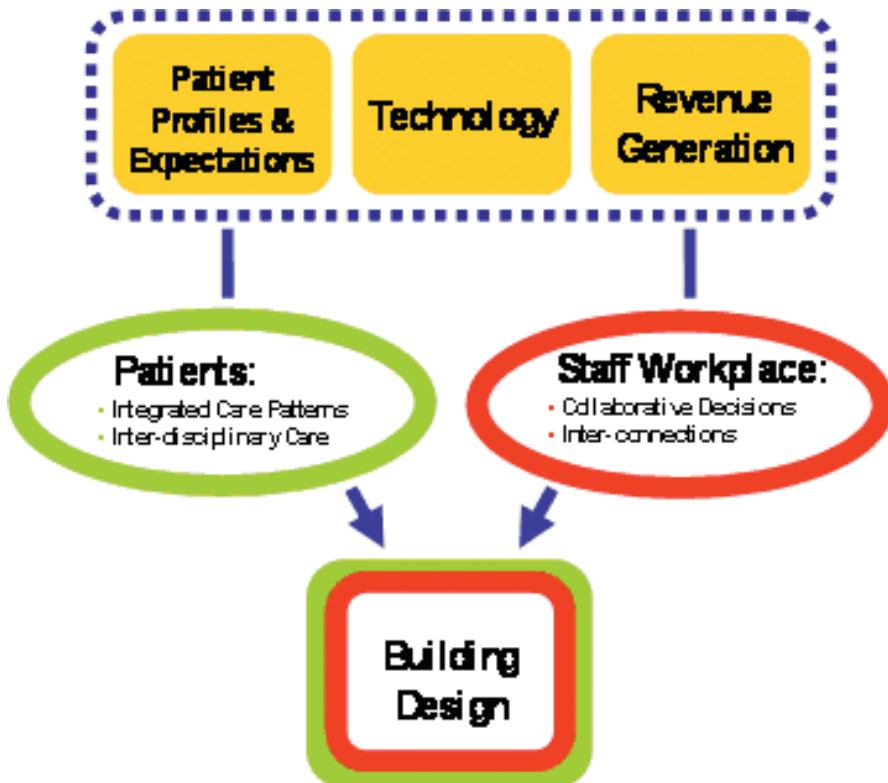
Changing Clinical Practices and Integrated Care Patterns

As diseases of old continue to be controlled - by preventive measures, powerful drugs and bold new therapies such as genetic manipulation - patients presenting to acute hospitals are those with chronic disease problems spread over multiple organs. Obvious examples of major chronic diseases are cancer, cardiovascular diseases, neurodegenerative diseases, diabetes, asthma, and musculoskeletal disorders. These account for the greatest burden of human suffering and the greatest expenditure of health resources.

This changing face of patients is demanding healthcare to be delivered in integrated care patterns spreading across several clinical disciplines. Any look into the future points clearly towards an integrated approach to the dispensing of health services, from a micro-level (in hospitals) to a macro-level (across health and community agencies, across state and federal governments).

"Surgery has been revolutionised in the last century and a half. The heroic excision techniques of a century ago have given way to the age of restoration and replacement. The more systemic approach to treatment required by replacement therapy is nowadays challenging, perhaps dissolving, the ancient professional boundary between surgery and other medical disciplines, and illustrating medicine's increasingly interdisciplinary character." - *Roy Porter (Blood and Guts, A Short History of Medicine)*

The medical professional has realised that unless a continuum of care is designed for patients, they will return to the already over-burdened health system at some point or the other. To minimise this risk, managed clinical pathways are now being defined, such as cancer and cardiac pathways. These multi-disciplinary care plans acknowledge the inter-dependence of body organs, and therefore spread across several clinical disciplines and levels of healthcare. Overwhelming evidence points to them saving money and improve patients' outcomes. Teamwork will be maximised in the managed clinical pathways system, with care being delivered by groups cutting across departmental boundaries.
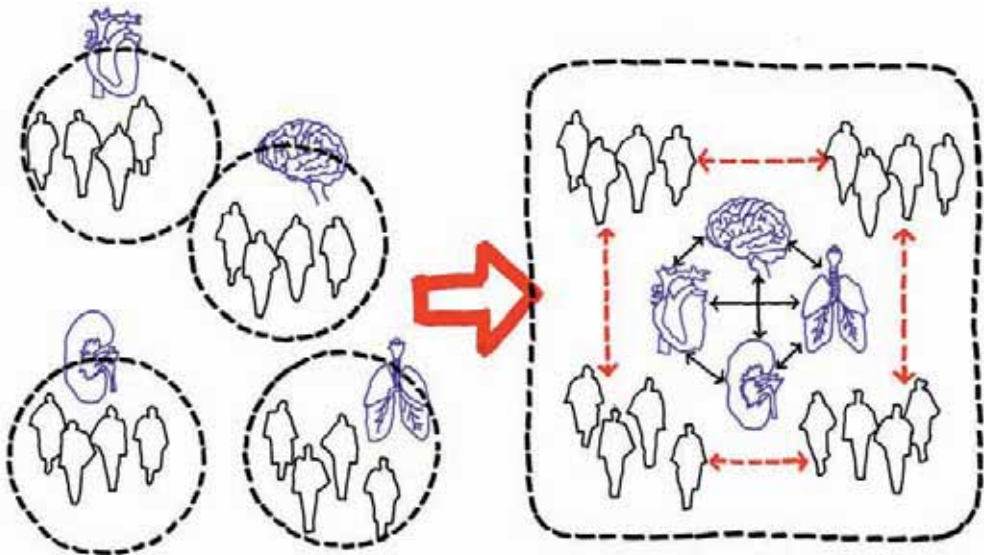

Figure 2 *Organisation by organ to organisation by inter-clinical pathways*

Future care will be considered from a whole systems approach with appropriate inter-agency working to ensure seamless care. Networks will be integrated across organisations and institutions, and staff will need to work more flexibly to meet patients' needs. Swift movement through the pathways will require a rapid flow of information to support the care. This flow will be dealt with by clever IT and intelligent communication mechanisms no doubt, but critical to its success will be close personal interaction between caregivers.

The workplace strategy of hospitals will have to provide an appropriate environment for the execution of efficient work processes between interdependent disciplines, and the successful hospital will be the one that will allow the physical location of teams to handle the whole process of dispensing integrated, interdisciplinary care.

Our recent experience at the Redevelopment of the Mater Hospitals in Brisbane, Australia, has proved the hypothesis of clinicians wanting to work in an integrated environment as opposed to sitting in their individual 'empires'. When site constraints made it impossible to locate both the Birthing Suite and the Neonatal Intensive Care Unit on the same level, it was unanimously decided by the Directors of both departments that they would rather continue to sit where they are now - in a somewhat grotty 50-year old building - rather than be separated in a new building. Their reasons were identical – they believed it would be hugely beneficial for their patients to have their treatments discussed in a collaborative manner by obstetricians and neonatologists working together – and that this would be most efficiently done if they sat together in their workplace.

As British professor of cardiovascular science, John Martin, recently observed, "a multidisciplinary team is more likely to give rise to non-linear fantasy [or innovation] than a monovalent team."

Ecology of the Collaborative Workplace

The intensification of work space in recent years has been brought about by the necessity of quick resolutions to complex issues, enabled to a large extent by increasingly integrated communications and computer technologies. These changes to work practice have changed many aspects of organizational life, and have manifested themselves in a physically different workplace.

The more non-routine the work, the more likely it is to involve the integration of different forms of expertise, increased networking and more personal meetings. The design of the Workplace of the Future supports and nurtures human activity and contributes to a reduction in impersonal communication, such as emails and internal phone calls, to be replaced by face-to-face contact among staff.

The 'bump' theory pushes the boundaries even further by theorising that the best human interaction occurs in incidental areas such as in corridors and around photocopiers. As well as facilitating 'bump', innovative design aims to break down 'silos' or divisions between departments by providing opportunities for communities to emerge and flourish.

These qualities of a human and efficient Workplace can not be provided in cellular layouts. Neither will they be promoted in a 'barn'. The optimum size of project teams, according to Workplace experts, dictates a project area to accommodate up to 30 staff in flexible seating arrangements, with a range of meeting and project workspaces for ad hoc meetings. Workspaces and teams will be defined by specific projects, and will re-configure and cross-fertilise as new projects demand.

The subject of enclosure and access should not be resolved by suppressing either requirement. The answer lies in bringing about relative degrees of enclosure. We can start with the prem-

ise that we all are vastly more productive with a territorial enclave. However, we must immediately couple this with the need for an opening and access, and most importantly the ability to survey and participate in the organization to which he or she belongs.

The new Workplace should allow for project based teams, with a core team and then temporary specialists who move from one core team to another. It should allow people to come together and collaborate, creating a sense of connectedness. People should be able to make eye contact with up to 70% of their colleagues. There is no doubt that an open environment fosters connectivity among staff.

I will not labour on the design of physical co forts such as natural light, external views, temperature control, and appropriate workstations. Enormous progress has been made in understanding the effects on worker performance of environmental conditions in the office, and learned papers on the Work Environment have been presented at earlier Congresses. The principles espoused in these papers – of Physical, Psychological and Functional Comfort - should equally apply to the Hospital Workplace.

Socio-technical System: interconnections

There is no doubt that future health care will be delivered by a more generic workforce, with fewer demarcations between professional groups and subgroups. No discipline will be an island, and input from several disciplines will make advances in health care possible.

This must lead to a greater level of interdependence between individuals. There are now no 'demi-gods' treating patients in isolation; rather, clinical staff will be required to interact with each other, across all levels. The aim of the design of the New Workplace should be to minimise communication difficulties inherent in demarcation.

The strategy for the New World, according to futurologist and US guru on work practices Robert Reich, is the building up of 'relationship capital' – a trusted network of people willing to go the extra mile, who understand constraints and who have worked together for some time. Sitting isolated in cellular office areas does not build up this productive model.

The future workforce will be characterised by shifts in traditional boundaries between disciplines, a growth of multi-disciplinary working. The aim is to create a less fragmented workforce that is able to respond quickly to the care process, with less staff time spent on co-ordination and communication. Employees themselves want to work as interconnected members of a team because they want to see their contribution to an overall big picture.

Paraphrasing Frank Becker's (*Cornell University International Workplace Studies Program*) theory of 'Collaborative Work' for modern businesses espoused in 1990, and applying it to a clinical organisation: "The premise is to bring all the players in the process together as a team at the project's inception. The model emphasises teamwork that cuts across disciplines and departmental boundaries, on freeflowing and face-to-face communication, on information

and ideas circulating among all players from the very beginning of the process and not in some preordained sequence". The study showed that each of the three re-organised offices benefited from cross-functional co-location of core team members.

The same sentiment, reiterated by Gail King (*Bank of Boston, systems analyser*): "Move people closer together. Take down the barriers between them, allowing people who are doing the work to communicate directly with each other at the moment of transaction as opposed to in a circuitous fashion."

Though each member of senior clinical staff has a unique role to perform within the program of a clinical pathway, he or she relies heavily on knowledge and inputs of other members of the group in order for the task (diagnosis and treatment) to be complete. The characteristics of and appropriate Workspace will therefore be high physical proximity to allow better interconnections and to facilitate more brainstorming type tasks.

A report on how to improve care at a leading hospital in Australia, commissioned after the discovery of several 'clinical errors,' identified that most of the problems were symptoms of underlying weaknesses in the organisational and professional cultures. These included an inability to communicate effectively and work as a team. The different clinical professions (and especially medicine and nursing) did not know how to work together. Junior doctors could not communicate with senior doctors, partly because of the culture of paternalism within the medical profession.

The different clinical professions often kept their separate notes, and there was seldom a consolidated care plan for each patient. The author of the report had discovered similar issues at hospital reviews in Slovenia and Japan. A study in 1999 by the US National Academy of Sciences claimed that 100,000 inpatients die each year in the US due to clinical errors. Internal investigations clearly discover these errors are largely the consequence of poor communication between clinicians.

Social psychology studies show that many of the fears, antagonisms and forms of negative behaviour stems from not knowing what others are doing. Every office has a climate of social expression that can either be destructive or constructive and, to a large degree, this is affected by the physical expression we give it.

One of the great assets of a more frankly interactive and open office expression is the improved social structure it offers. This structure supports the development of social relations on which the trust is built that characterises high performance teams. The whole team becomes an organic community of individuals working with a tangible sense of belonging and useful contribution.

The new hospital organisation will allow its organisational requirements to generate its own natural order, unlike traditional organisations that impose order. Just as in biology, where ecologies of organisms have complex interdependent relationships, likewise now – there will be a decentralised web of connections, where people assemble for a project and then disperse again.

The creation of inter-agency frameworks for the planning and development of services will be eased by pooled budget mechanisms. It is then a short step to colocate services in shared facilities which can be accessed by all staff. Such cooperation will require culture changes on all sides.

Conclusion

Workplaces must reflect what we do, the tools we use, and the results demanded of us. Though the basic structure of all of these has changed

dramatically over the past fifty years, the Hospital Workplace is still designed as it always has been. It has not responded to changing clinical practices, changing patient presentations, changing communication technology, and importantly, to the imperatives of revenue generation. It stands to reason that the workplace of the future must be re-thought – in terms of social, professional and technical changes.

The intention of this paper is to open wider debate about the 'Hospital as a Workplace', to analyse it and investigate solutions for the future. How this hypothesis is organised into physical strategies needs to be underpinned by further research and analysis.

I hope my basic thoughts will arouse interest and engender a collaborative research project in at least one of the organisations or institutions represented today.

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