

Future-proofing Buildings for Healthcare

a report by

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The pace of clinical innovation, plurality of provision, contestability in Department of Health policy and the rapidly developing opportunities to work differently offered by information technology and process redesign will result in significant changes in the next five years.

New infrastructure is being designed and built with a 30–60 year life, and this will need to be flexible to accommodate these service changes. Even those currently in development will need to be refreshed as they come into use.

Planning for Uncertainty, Designing for Change

Where and how services can be delivered is constantly evolving. There is certainly no steady state to be found and planned for. From home to hospital, the boundaries between settings are on the move. We need to be able to plan in a dynamic way that can accommodate change and recognises the essential dependencies across networks of care. We need to be able to change the use of our buildings as we take advantage of information technology, process redesign and new ways of working.

It is likely that more care will be delivered outside hospitals by taking advantage of advances in technology to create links and networks, rather than relying on physical adjacencies. Demographic changes will mean that there will be fewer people to deliver care to an increasingly older population. Patients and carers will become more empowered to take responsibility for keeping healthy and managing long-term conditions. Our need for new buildings should derive from an understanding of the wider health and social care system and the likely activity demands for the period ahead, with flexibility beyond that.

We know that the capital costs of health buildings are minimal compared with revenue costs and that there is an opportunity to improve productivity through design. In this context, we need design that can accommodate change, and may need more capital to do so.

Change is Inevitable

If we accept that change is inevitable, is it possible to determine the extent and rate of change and how this can be suitably accommodated? How can we ensure that what we are building now will be fit for the future? It will mean shifting away from the notion that service configuration and models of care are static and that space is a fixed commodity. This implies not only a different framework at the planning stage, but also a shift in the way we think about the management of space over time.

It is impossible to predict changes to care delivery with absolute certainty but there are techniques that can help us to imagine the possibilities. From this we can extrapolate some principles and trends to inform and clarify the planning process. For example, using scenario planning we can formulate mental maps of the consequences of certain planning approaches.

The scope and intentions of the scenarios can be wide-ranging to test seemingly unlikely or extreme possibilities – though unrealistic in themselves, they may at least help to clarify and distinguish key activities that are more likely to remain constant from those that are susceptible to greater change.

Just as these techniques help to formulate degrees of uncertainty in the planning vision over time, so they can be used to help to recognise that different parts of the building will need to change at different rates over their lifetime. In this way, we begin to develop a more sophisticated understanding of the building requirements – one that is also dynamic and changeable – in which we can drive greater efficiency of the utilisation of space through more effective management.

Activities and Services can be Grouped Into Three Broad Categories:

- core activities – those that are essential to the service and likely to remain at this location for long time. They will always require space;



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- movable activities – those that are likely to change over time and could move to another location in future; and
- non-essential activities – these could be provided space with different tenure, for instance, those that could rent from other sectors or be provided with space that could be rented to other organisations in due course.

Assessing activities and space requirements in this way gives some idea about what kind of space is needed, how much it might change and how it will be used and managed over time.

Flexible Buildings for Health – Not a New Idea

Flexible ideas were propounded as early as the 1960s and prototype projects developed and tested, including:

- developing horizontal buildings to make expansion easier;
- linking departments via a hospital street rather than making routes through departments;
- allowing each department to expand or contract independently, at different rates and times as required by clinical need;
- generating structural grids for open spaces and planning grids to allow dimensional co-ordination of activities and materials;
- creating networks of spaces and courtyards with standard templates rather than linear plans;
- banding of clinical spaces on the perimeter to enable flexible management of rooms;
- aligning engineering services with the main circulation routes;
- bringing together spaces with similar requirements;
- mixing soft spaces (for example, offices and storage) with hard spaces (for example, those with equipment and engineering services) to create buffers and allow for relatively easy expansion over time; and
- reducing the overall number of room types and sizes.

Many of these ideas still have currency today. Although many horizontal hospitals – with courtyards, streets and

hard and soft spaces – have endured the test of time, all require the intelligent management of space. It is perhaps salutary to note that two major hospital research and development projects built in the 1960s, at Greenwich and Northwick Park, to test some of these theories are both likely to be demolished or considerably altered in the near future. This calls into question what the useful life of a hospital is.

What Issues are Relevant Today?

How can we assemble a useful checklist of issues that will inform how we plan and design for this current building programme? What can we draw on from the past that is still useful? What ideas are transferable from other sectors that will help us to plan intelligently and robustly for the future?

The following list of principles is a starting point – it does not purport to be comprehensive but rather draws together current thinking from strategic planning and design in health alongside ideas from other sectors that are undergoing significant change.

Plan for the Long-term:

- integrate services across sectors: hospital, community, primary and home;
- identify the right location for services based on improved patient pathways and models of care; and
- consider which services are likely to remain in coherent clusters for the foreseeable future; distinguish those that would be better provided in other locations.

Optimise Investment:

- make the best use of resources – both people and infrastructure;
- consider how to plan to make efficient and effective use of staff; and
- generate a development control plan that is dynamic and regularly updated to keep pace with the changes in service delivery.

Invest in Quality Real Estate Rather than Bespoke Health Facilities:

- distinguish between uses that are core, movable and non-health-specific;
- think about whether making use of generic rented accommodation for certain uses would be more appropriate;

- consider whether some services may be managed by other organisations in future and how these can be accommodated; and
- build for health that which has a more certain life and is core to the delivery of care and mark out those functions that need not necessarily be part of the health estate.

Master-plan the site:

- take account of the surroundings in terms of potential developments, links to transport, commercial activities and regeneration opportunities;
- consider how to make best use of the land;
- make strategic decisions about infrastructure (roads, engineering services underground, access, etc.) that minimise restrictions for future developments;
- at the same time, make best use of the site topography, sun paths, boundaries, views and landscape to enhance the quality of the patient and staff experience – this will affect how the site can be developed over a long timespan;
- think about how the site could be developed in another phase or when the current buildings have reached the end of their useful life; and
- try to avoid sterilising parts of the site now that could be used in future.

Maximise the Potential to Expand and Contract the Buildings:

- recognise that different building components have different lifespans;
- separate structure, services and internal partitions so they can be changed at different times according to their lifespan – for instance, whilst the structure may have a 30–60 year life, engineering services may have a 10–15 year life and internal spaces may need to change in one to two years; and
- design and build ‘shell space’ that can be fitted out later when requirements are more clearly defined.

Distinguish Between Parts of the Building:

- group functions with similar technical requirements;
- distinguish between the parts of the building that require highly technical engineering specification,

e.g. theatres and treatment rooms, and bring them together;

- avoid mixing uses either horizontally or vertically;
- be able to bring all lower specification activities together, e.g. place offices in space that is cheaper to build than theatres and consider a separate administration block;
- specify the structural grids, engineering services, ceiling heights, etc., to suit the particular activity rather than having the same throughout the building – this will also allow for the most suitable structural grid to be used for the different zones; and
- design theatres and other highly engineered spaces so that equipment can be changed every five years or so. It may be worth considering modular construction for these so that high quality finishes can be achieved with minimal disruption to hospital services when the upgrading takes place.

Create Clear and Unobstructed Communication Routes – Horizontal, Vertical and Open-ended:

- ensure communication routes are open-ended to enable future expansion;
- avoid giving all major circulation routes closed-off ends;
- allow the building parts to retract so that spaces can come under different tenures if required over time;
- position the main horizontal and vertical circulation routes such as streets, lifts, stairs, with great care and consideration – it is imperative to get these right as they are expensive and difficult to change later; and
- develop an understanding about the hierarchy of circulation routes from the most public and heavily used to the more minor in order to ensure that the building is legible throughout.

Design Shape and Form to Maximise Change over Time:

- use networks with shallow plans rather than deep-plan spaces;
- create buffers of soft space between hard spaces to allow for likely change in the future;
- where necessary build shell space and detail the

design later if the briefing lacks sufficient clarity; and

- make networks and clusters of spaces rather than linear or deep plans, to help with the management of spaces. For example, a block built around a courtyard can be easier to manage flexibly, as well as providing good natural light and views.

Reduce the Number of Standard Room Sizes:

- reduce the number of different types to allow interchangeable use on daily basis and also over time as requirements change; and
- think about how to design for service in

transition, for example, build bed bays that can be converted in future to single rooms if the model of care requires it.

Use Space as a Resource, not as Territory:

- consider the potential for generic working spaces rather than bespoke offices;
- pool resources to maximise efficient use of administrative space; and
- be able to use consulting, examination and interview rooms interchangeably.

In summary, go for 'long life, loose fit' solutions, and think about what will not change. ■