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### Article

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## **Land - they're not making it any more: logistical challenges of hospital development and redevelopment**

### **Opinion Piece for *British Journal of Health Care Management***

Before the 2019 general election, the Conservatives pledged to build 40 new hospitals (Campbell, 2019). Ostensibly this is good news, but what kind of hospitals were envisaged? The media and politicians often talk about hospitals as if they are all the same, when in reality there is much variation between the size, mix and balance of specialties in different district general hospitals. A new building does not necessarily mean a new hospital; for example, it may instead be built to replace a 19th century hospital that was struggling to accommodate modern medicine. The sign above the front door might say 'Accident and Emergency', but this does not necessarily mean that all the required supportive services are behind it. Any such department needs access to beds in a variety of specialties, including trauma and orthopaedics, general surgery, general medicine, paediatrics and intensive care. Many other key specialities are also needed, such as obstetrics and mental health services.

### **A problem building up**

Clearly, the main specialties supporting a 24/7 accident and emergency department require teams of consultants that are large enough to provide full cover. It follows that each of these consultants will be able to treat a given number of inpatients and outpatients (depending on these individuals' sessional commitments) and will therefore require the associated number of beds and clinics to be available on site. Over the past few decades, there has been an ongoing trend to rationalise and merge hospitals to ensure appropriate staffing levels, integrate specialties, maximise access to key diagnostic facilities (such as magnetic resonance imaging scans), improve efficiency and facilitate financial savings (Imison et al, 2014). Vacated hospital sites are usually sold off to generate capital funds for the new development (Davies, 1983).

These logistics lead to very large hospitals (perhaps over 1000 beds), where the main site being developed will already have substantial hospital services and associated car parks. Merging services means that:

- Increased building is needed for new services
- Support services, clinics and operating theatres will probably need to increase in number and/or size to manage the increased patient load
- The only readily available space for such expansion is usually the car parks, so the size of the car parks decreases
- There are associated increases in the numbers of staff, patients and visitors leading to greater on-site congestion
- There is more demand for car parking!

Such pressures can mean that hospitals need to add storeys to both buildings and car parks, while the amount of traffic around the hospital increases accordingly. This situation can be exacerbated by technological improvements in radiotherapy equipment, as this facilitates increasing decentralisation to general hospitals nearer to where patients live. While this can benefit patients, it exerts pressure on general hospitals to create space for new equipment and related services.

### **Developing and redeveloping**

Depending on its location, the scope for expanding a hospital's land area is likely to be severely restricted, especially as the largest hospitals are generally situated in major cities, linked with universities and surrounded by other organisations' buildings. Radical approaches can be considered, but it can be difficult to gain approval for these. For example, while in the role of Project Manager of the NHS Estate Utilisation Pilot Project: South Sefton in 1988–89, the author was involved in giving (fleeting) consideration to building over a main railway line into a graveyard! Of course, some clinical and support services might relocate to off-site facilities in primary and

community care, but this rarely seems to create sufficient enough space. Similarly, increased use of public transport can only reduce the required car parking space by a limited amount.

Developing a major hospital rebuild can take many years. The Royal Liverpool Hospital opened in 1978 with a projected lifespan of just 25 years. In 2001–2002, the author was Project Manager of the North Mersey Future Healthcare Project, which looked to redevelop the hospital's facilities. The rebuilt Royal Liverpool Hospital was scheduled for completion by March 2017, 16 years after the initial debate, with the collapse of the construction company Carillion pushing the opening back even further to 2022 (BBC News, 2019). Both developing and redeveloping a hospital can therefore take a long time, which can lead to some projects arguably being out of date by the time they are finished. During the planning and building process, there might be a large or sudden step-change in medical practice and technology, while the population served can also change significantly.

### **Future-proofing hospitals**

One important historical issue, arguably affecting hospital capacity across England, concerns Department of Health guidance. For example, the North Mersey Future Healthcare Project's planned strategic activity for when rebuilt hospitals opened was not allowed to increase from contemporary levels, because the local population was decreasing. Liverpool's 2001 Census figure of 439,428 was officially predicted to continually reduce to below 430,000 within the decade. In the circumstances it was decided to plan to maintain existing numbers of inpatient and day cases for each specialty on the basis that the impact of population reduction would be balanced out by the demand from an ageing population, with the number of beds required decreasing because of improved throughput and procedures moving to outpatients (R Gandy, unpublished data, 2002). Liverpool's 2020 population is projected as 502,326 (+14% from 2001). Similarly, England's 2020 population is expected to have increased by 15% from 2001 (Office of National Statistics, 2010, 2020). Therefore, how many hospitals across the country now serve populations markedly different from their plans

around the millennium, both in terms of age-structure and numbers? Of course, improved efficiency has taken place but it is debatable whether it has always fully accommodated increased demand.

The COVID-19 pandemic forced hospitals to make urgent pragmatic decisions to minimise transmission risks. Examples of such changes to the physical space of hospitals include:

- Reduced seating in waiting areas to meet the 2-metre rule
- Staff changing areas spilling over into consulting rooms to ensure greater space and accommodate more personal protective equipment
- Accident and emergency departments being split into 'red' and 'green' zones
- Endoscopy suites being re-purposed to accommodate additional ventilators
- Removing beds from multi-bed bays to maintain distance, reducing bed capacity.

Some support facilities have struggled because quantities of clinical waste and demand for linen have exceeded existing capacities. A critical question is whether the government might require future hospital developments to be 'pandemic-proof' to enable more efficient responses to future pandemics. To address some of the aforementioned issues, this might mean increased floor areas for patient waiting, larger staff changing areas with greater storage and disposal capacity for personal protective equipment, and possibly a greater number of single-bed rooms. Additional wards may also need to be built to create appropriate capacity for any future pandemic. In the meantime, these extra wards could be used to facilitate ward refurbishment programmes, thereby improving the capital stock and quality of accommodation without needing to reduce the hospital's patient capacity.

All hospital trusts will need to determine what they need for any future pandemic, and this should inform all future developments. In all events, this will almost certainly involve a requirement for significantly increased space and facilities.

Planning new hospital facilities over time often involves incremental, expedient solutions. A site ideally needs to be not just pandemic-proof but also 'future-proof' for the next rebuild. It is likely that most hospitals will not be able to expand beyond their existing boundaries on to adjacent land. Consequently, all hospital trusts need to step back and take a considered, long-term view about how they might evolve their site(s) and facilities, and then continually replace them every few decades. With a population that is both increasing and ageing, and the possible requirements for future pandemics, it might be that many hospitals need to expand their capacity, rather than continually running with unsustainably high occupancy rates.

Any short-term developments must not constrain or jeopardise long-term redevelopment options. Perhaps a judgement should be made as to what might be a realistic capacity ceiling, beyond which the complete future replacement/redevelopment of a hospital on its current site would not be feasible, necessitating a complete relocation or similarly radical solution. Of course, there will be logistical challenges as highlighted above, but the size, shape, topography, foundation and location of each hospital site will be unique. As Mark Twain said '[Buy] land, they're not making it any more' (McIntyre, 2009).

1,397 words

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### **Keywords**

Changed planning assumptions; Estate rationalisation; Future-proofing; Hospital capacity; Hospital land; Hospital planning.