



## How will Covid-19 change the design of health facilities?

28 May, 2020 By [Richard Waite](#), Greg Pitcher

The AJ looks at the longer-term impacts of the coronavirus crisis on the design of healthcare facilities, from doctors' surgeries to testing centres and hospitals

Chief scientific adviser to the government Chris Whitty has regularly reminded us, during the daily coronavirus briefings, that there are four strands of negative impact on the nation's health from the current pandemic.

The most obvious and largest threat was of people dying of Covid-19 despite their being admitted into healthcare. Linked to this was the risk of the health service becoming overwhelmed by the virus and being unable to help some of its victims who could have been saved.

Then there is the likelihood of deaths from unrelated illnesses because people can't or don't want to enter the health system during this time of crisis. Finally, others could suffer as a result of the lockdown measures put in place to tackle the virus.

Perhaps Whitty could also have added that a fifth category appears to have emerged – healthcare professionals who have lost their lives while tackling the virus.

For designers of the healthcare estate, all of these outcomes have to be taken into account when planning how hospitals, surgeries and other facilities will look in the wake of the biggest challenge the NHS has faced in its 72-year history.

Architects have told the AJ they predict a slew of changes, including fewer large hospitals, more small specialist centres, greater use of automation and a bigger role for robotics.

Speaking about the short-term implications, most of which have already happened, Christopher Shaw, senior director at Clerkenwell-based healthcare specialists Medical Architecture, said: 'As the pandemic has moved across the world, the impact on health systems has been profound.

There will be more small specialist centres, greater use of automation and a bigger role for robotics

'The UK has a lot of legacy health estate – old wards and so on – despite underinvestment. During the pandemic, adaptation and dense use of these facilities and the local workforce has been the unsung element that has kept treatment under control.

'At the same time, hospitals dramatically cut back elective care, and moved non-urgent patients out to free up bed space. GPs reduced referral rates and the public stopped going to the Emergency Department. Hospitals became quite different places.

He added: 'There [have been] certain operational changes that are likely to be beneficial to the system in the long term.'

Shaw said that technology was likely to replace a significant proportion of outpatient services even when the threat of the virus recedes, while more care services could be delivered in homes and on 'virtual wards'.

On the other hand, there will be a backlog of non-urgent treatments to cope with at hospitals and mental health capacity may need to grow rapidly in the wake of the prolonged social distancing measures being enforced.

'We are helping write some of the new NHS building guidance,' said Shaw. 'Much will change.'

Community hospitals could be replaced with facilities more closely resembling 'air traffic control' centres, he said, with technology aiding diagnosis and management of patients.

'There will be a new class of smaller, integrated care centres, bringing together primary, community health and social care.'

Acute hospitals will be 'consolidated' he predicted. 'The existing infrastructure is not a good fit and is in poor condition. A typical district general hospital in the UK provides for a population of 250,000. New tertiary hospitals will service a population of nearer 1.5 million.'

AJ100 big-hitter BDP played a key role in the rapid creation of the Nightingale Hospitals around the country, including at the ExCeL Exhibition Centre in London's Docklands towards the start of the Covid-19 crisis.

Andrew Smith, head of healthcare at the practice, said many older hospitals will have to be reworked to cater for victims of the virus alongside other patients.

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'This will require careful re-design of emergency departments and other patient admission points,' he said. 'Patients will need to be triaged into clearly streamed flows, with differentiated management regimes to address clinical need as well as perception, to give the public confidence that it is safe to use emergency services again.'

Smith added that some of the processes learned on the highly focused creation of the Nightingale field hospitals could be taken forward by the architecture profession for future jobs.

'The army's influence was significant,' he said. 'At their insistence, throughout the briefing and design journey, all the stakeholders were tasked to concentrate on the big issues and the strategic decisions quickly and in the right order. This approach stripped the consultation process down to its bare essentials to get things done quickly.'

Use of manufacturing-style offsite construction techniques could increase in the wake of the pandemic, after their speed and efficiency were demonstrated on the Nightingale projects.



BDP's NHS Nightingale Hospital at ExCel

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Shahriar Nasser, head of Belsize Architects, said it was 'almost inconceivable' that hospitals, clinics or GPs' surgeries would remain unchanged by the pandemic.

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'We have already seen hospitals divide themselves into Covid and non-Covid sections. There has been much innovative repurposing but, as we have seen, it is severely constrained by a physical infrastructure that fails to match newly-identified needs.

'When there is a chance to take a breath, there will be a major rethink of hospital design.'

He believes there will also be similar, significant impacts at the local level. Nasser added: 'The same will go for GP surgeries and care in the community. With the system of total triage now in place, where remote initial assessment by phone or on-line becomes the rule, the specifications for premises will need to change.'

Nasser said the requirement for rooms to carry out face-to-face consultation would shrink now the long-mooted process of moving this process on to voice and video calls had been accelerated by the coronavirus.

'There will be fewer patients in surgeries and outpatient waiting rooms, so reception areas will need to meet quite different, safer requirements, with perhaps less space overall but certainly much more generous distancing – quarantining even,' he said.

'The crisis also creates the opportunity to move rapidly to fresh premises designed to match fresh clinical requirements. The medical profession will need to specify quickly what the new needs are. Architects will need to create a new language in which to give these medical requirements substance and at the same time incorporate all the latest thinking about design for wellbeing.'

Laura Carrara-Cagni, director at Edward Williams Architects, which designed the Midland Metropolitan University Hospital in Birmingham, said automated delivery and collection of materials and drugs would be a key workstream for the future.

This could mean 'larger decentralised storage of materials to increase resilience', alongside a requirement for greater stocks of personal protective equipment.

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Architects should also focus on materials that don't allow viruses to live on them for long periods, she said. 'New material science is required to push this along faster and allow quick implementation.' Automatic doors and other systems to reduce hand contact will also be in demand.

Other possible trends could include use of flexible spaces that can be easily adapted during a crisis; greater use of air filtration systems; and a reduction in multi-bed wards.

Facilities for crisis-simulation training could be in demand, while administrative space is likely to be reduced as more people work from home across this part of the health service, according to Carrara-Cagni.

She said architects had a key role to play in adapting the healthcare estate post-pandemic: 'Architects are uniquely trained and able to see the big picture and help hospitals take a balanced view of the multiple competing issues that confront them.'

Flexibility of space will be the key to a positive change, she added. 'For years we have been advocating for the design of flexible space generally, and especially in healthcare, as this area is an ever-evolving field as the last year has demonstrated and accelerated. Flexibility is key not only in case of a pandemic emergency but also more generally, functionally and commercially.

'It creates the best use of space at all times and from a sustainability point of view, and allows spaces to be used and repurposed over time.'

Architects have already been busy drawing up innovative ideas about how they can help – and more than just by altering layouts. One quick-fix example is Grimshaw's proposed upcycling of shipping containers to create 'on-site immediate' Covid-19 testing.



Grimshaw's D-Tec suite of prefabricated healthcare facilities, created in partnership with SG Blocks and Osang Healthcare for on-site immediate Covid-19 testing.

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Yet, despite the strong will for change, there are concerns the opportunities for a design-led shift could be missed by those in power.

Mark Rowe, principal at Penoyre & Prasad, which designed the [New QEII hospital in Hertfordshire](#), warned that there was a risk the government could overlook the need for radical thinking in its rush to kickstart the economy and open new NHS capacity. Ministers set out a five-year spending programme for health facilities in 2019.

'It's clear from the flurry of architectural tenders right now that the government is accelerating the Health Infrastructure Plan,' said Rowe. 'Obviously, it is one of the national infrastructure levers that [ministers] have at their disposal to drive recovery from recession.

'I'm conscious that super-hospitals are a tempting way to make that investment rapidly, and deliver in time for the next election, but we need to be making sure we're balancing that investment towards community and primary care facilities, which can often deliver services and improved outcomes at a lower ongoing cost and closer to people's homes.'

It was important not to churn out health buildings to a template from 20 years ago just because that was the easiest way, said Rowe.

He added that, whatever their future, hospitals should be designed in a way that 'reflects the high esteem in which society demonstrably holds the NHS'.



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