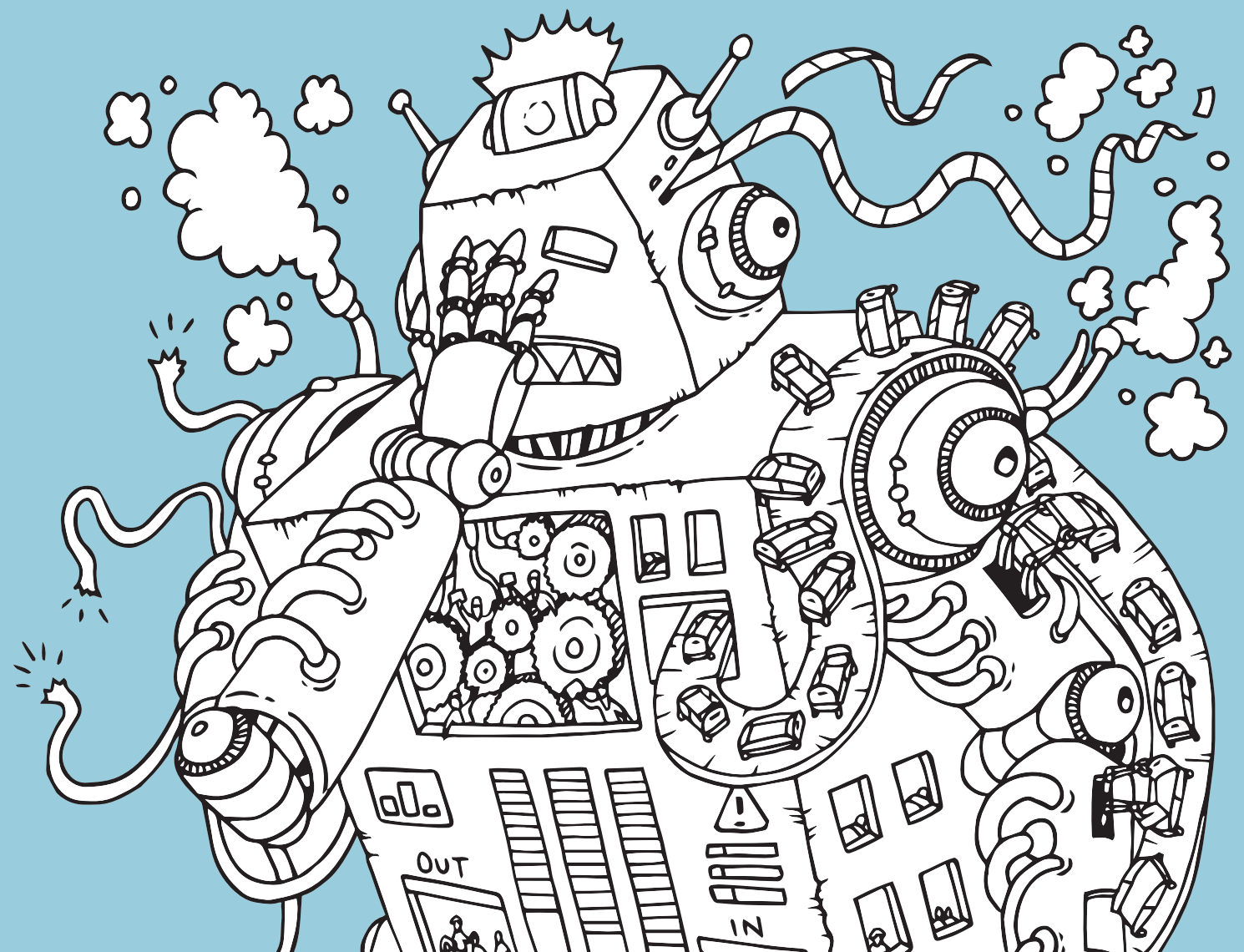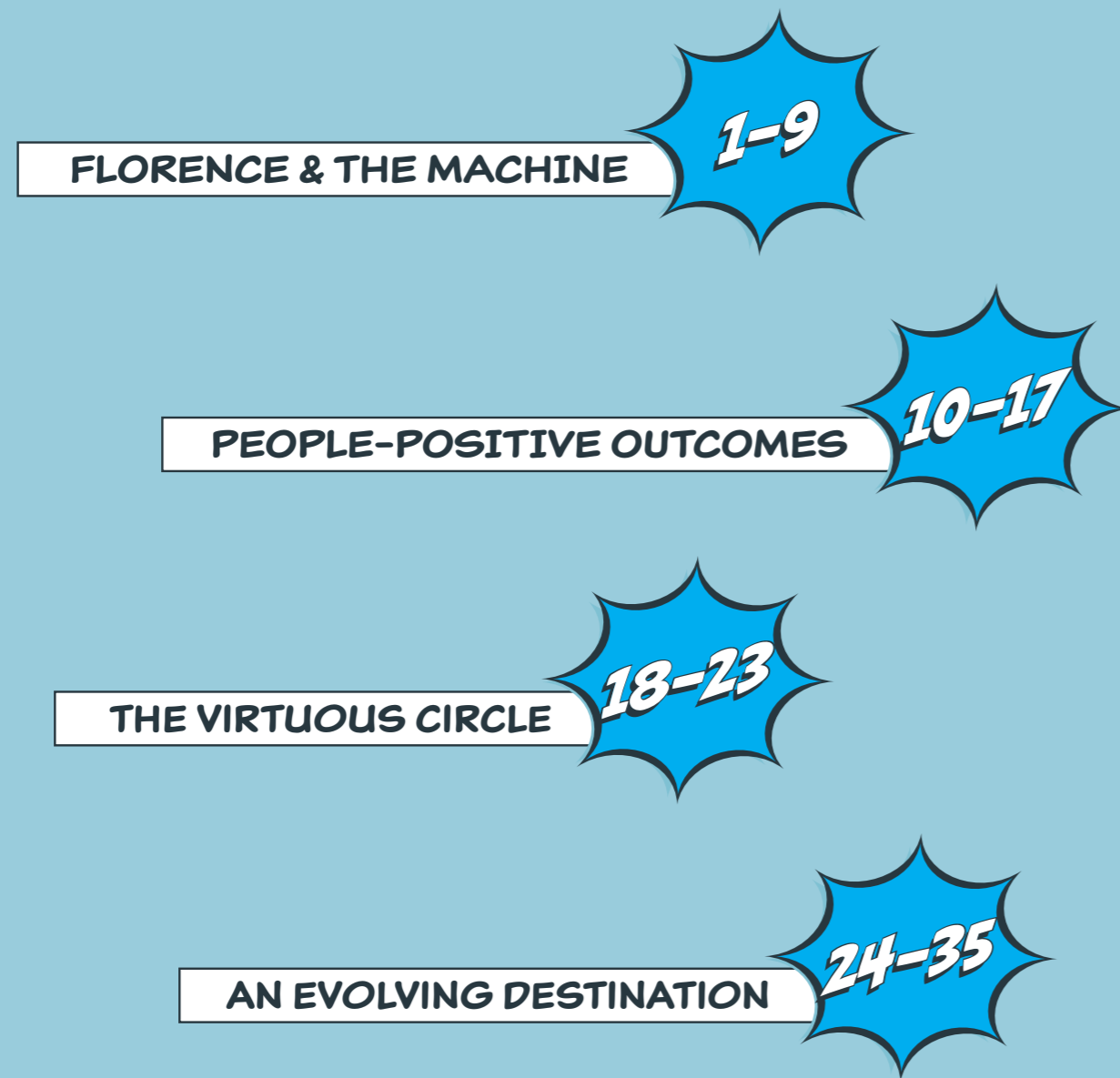# REHABILITATING THE HEALTHCARE MACHINE

Exploring the power & potential of people-first design

Is healthcare design fit for purpose? How does the design of our facilities impact wellbeing? Are we seeing a lasting shift towards human-centred design?

Some of the sector's top thinkers share their thoughts...

HOARE LEA (H.)

The designer will see you now...

How making human-centric design a cornerstone of healthcare supports better outcomes for all

> "Hospitals aren't, currently, great places for quality of human experience because they've been built like machines. They aren't designed for steady-state wellness or gradually improving quality of life."

Christopher Shaw, founder of Medical Architecture, and former Chair of Architects for Health

People priority?

Healthcare is fundamentally about people – families, friends, teams – so, in principle, design decisions should be shaped by one paramount priority: the people who use them.

That's easy enough to agree with, but complex and challenging to deliver. Large, multidisciplinary teams collaborate on new healthcare infrastructure, balancing a bewildering range of priorities, from building quicker and cheaper, to being digitally advanced and highly sustainable.

Each year, another layer of demand is put on design services, resulting in 'value engineering' that often strips out the care-based features that put people first. This leads to a 'production line' model, oversimplifying the bespoke needs of patients and staff.

Many of the patient population require rehabilitation; in contrast, many aren't going to get better and have needs centred around quality of life.

Then, there are building users who aren't experiencing ill health – staff whose welfare is crucial to the quality of the work they deliver, which in turn drives positive patient outcomes.

Post-pandemic, all this has never been more plain to see, and healthcare facilities designed for different times are creaking under the strain of evolving demands.

ALERT!!

AGILE ENVIRONMENTS REQUIRED

> "We need to move away from hospitals being built to 'warehouse' every element of healthcare under one roof. Specific needs should be addressed within tailored environments that support specific types of care."
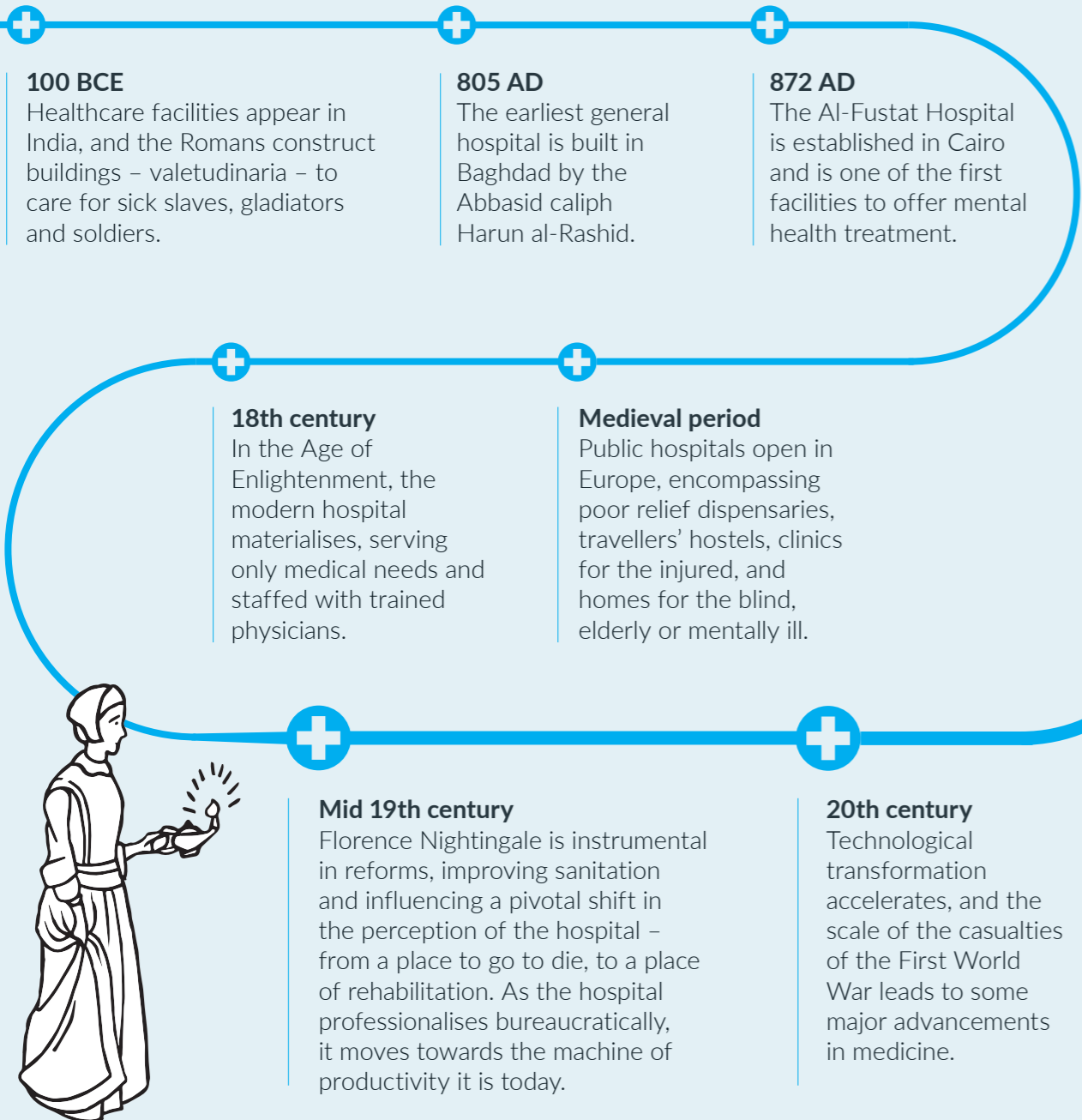
Richard Darch, CEO, Archus

Florence & the machine.

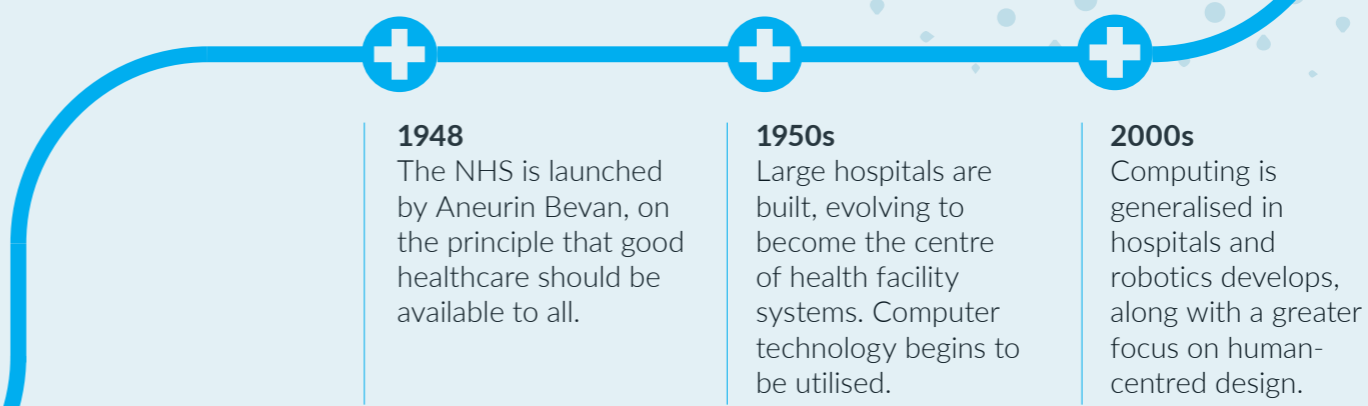**How did we get here? The making of medicine's behemoth**

The word 'hospital' comes from the Latin 'hospes', signifying a stranger, foreigner or guest. Derived from this, 'hospitium' came to mean hospitality: a friendly reception, and the relationship between guest and host. Here are a few key milestones from the healthcare facility's journey so far...

100 BCE
Healthcare facilities appear in India, and the Romans construct buildings – valetudinaria – to care for sick slaves, gladiators and soldiers.

805 AD
The earliest general hospital is built in Baghdad by the Abbasid caliph Harun al-Rashid.

872 AD
The Al-Fustat Hospital is established in Cairo and is one of the first facilities to offer mental health treatment.

18th century
In the Age of Enlightenment, the modern hospital materialises, serving only medical needs and staffed with trained physicians.

Medieval period
Public hospitals open in Europe, encompassing poor relief dispensaries, travellers' hostels, clinics for the injured, and homes for the blind, elderly or mentally ill.

Mid 19th century
Florence Nightingale is instrumental in reforms, improving sanitation and influencing a pivotal shift in the perception of the hospital – from a place to go to die, to a place of rehabilitation. As the hospital professionalises bureaucratically, it moves towards the machine of productivity it is today.

20th century
Technological transformation accelerates, and the scale of the casualties of the First World War leads to some major advancements in medicine.

FUTURE

HUMAN-CENTRIC DESIGN

2021
The NHS constitution is updated to reference that the NHS belongs to the people:

"It touches our lives at times of basic human need, when care and compassion are what matter most."

1948
The NHS is launched by Aneurin Bevan, on the principle that good healthcare should be available to all.

1950s
Large hospitals are built, evolving to become the centre of health facility systems. Computer technology begins to be utilised.

2000s
Computing is generalised in hospitals and robotics develops, along with a greater focus on human-centred design.

Thank you... Next!

We should not lose sight of the accomplishments of the current healthcare landscape. Hospitals are among the most complex, expensive facilities to create, with detailed infrastructure and technology requirements, plus regulations and safety laws to adhere to. In more recent history, the focus has been on creating sterile environments, which has helped save millions of lives. It is understandable that, in achieving this, there has not been much room for deeper thought on how to include design elements such as warmth, colour and natural light. However, we are now in a position to do so without sacrificing clinical standards, to produce diverse, powerful, long-lasting benefits for all who use these spaces.

Taking the pulse of the sector

In Newsweek and Statista's World's Best Hospitals rankings, consistency in excellence is the key characteristic of the institutions dominating the list. This includes leadership constancy and boardroom-frontline alignment.

The US tops the major players (Germany, Italy, France and South Korea) with 33 hospitals standing out for first-rate physicians and nursing care, with state-of-the-art technology. Its Mayo Clinic in Rochester was, again, deemed the best hospital in the world, via patient survey results and recommendations collected through a survey of more than 80,000 healthcare professionals internationally, plus patient safety, hygiene and quality-of-care metrics.

TARGET
WORLD-CLASS PROVISION

Here and now: a picture of health.

Hitting peak fitness

The 2022 rankings diversified slightly, with Colombia, Saudi Arabia and the United Arab Emirates added to the list. The results also demonstrate distinction the world over, with 21 countries making it to the global top 150.

Maintaining planet-leading status through the chaos of a pandemic is no mean feat, and many of the featured facilities put their long-term success down to attracting and retaining the best professional talent. It's crucial to continuing to drive innovation, and piloting and developing new approaches to care.

As well as a keen focus on patient outcomes, many also have in common an academic culture and inspiring environment for incoming talent that takes an institution forward.

The elastic band effect

Building design is essential in terms of facilitating these success factors. Some folk in healthcare feel that pandemic-prompted design innovations changed industry practice to a degree.

In contrast, others are of the mind that although the crisis stretched us to do things differently during a time of emergency (introducing employee rest spaces, for example), the status quo, along with its learned behaviours, has snapped us right back to where we were before.

World's Best Hospitals 2022
Source: *NewsWeek*

Rank	Economy	Hospital
1	UNITED STATES	**Mayo Clinic – Rochester**
2	UNITED STATES	**Cleveland Clinic**
3	UNITED STATES	**Massachusetts General Hospital**
4	CANADA	**Toronto General – University Health Network**
5	GERMANY	**Charité – Universitätsmedizin Berlin**
6	UNITED STATES	**The Johns Hopkins Hospital**
7	FRANCE	**AP-HP – Hôpital Universitaire Pitié Salpêtrière**
8	SWEDEN	**Karolinska Universitetssjukhuset**
9	UNITED STATES	**UCLA Health – Ronald Reagan Medical Center**
10	ISRAEL	**Sheba Medical Center**
41	UNITED KINGDOM	**St Thomas' Hospital**

A crash cart of considerations.

With such a dizzying set of design demands and criteria, how do we define a successful blueprint for a new hospital, clinic, specialist unit, or any element of our healthcare infrastructure, in the 21st century?

What we mean by human-centred healthcare design today

There are many existing measures of healthcare design, covering efficiency, digitalisation, sustainability, outcomes and dozens of other areas. We know one priority should come above all others: people-positive experiences.

The primary focus of human-centered healthcare should be to enhance the quality of experience delivered to patients, staff, families and communities. It's relevant to numerous aspects of healthcare's main structuring, and its details, from furniture and fixtures to lighting and gardens, with aesthetics as important as accessibility and functionality.

More and more, healthcare's decision makers must also consider supporting infrastructure: connecting services, community integration, local residential options and available leisure facilities.

The big question

How do we make sure the core purpose of care and compassion stays central through the design process?

The starting point

The WELL standard is increasingly adopted to help guide designers in the prioritisation of wellbeing across a variety of dimensions. But there is far more we can learn, in addition, from healthcare users and workers. Listening is essential to creating human-centric healthcare designs, and it's where we need to start.

ATTENTION! DECISION MAKERS
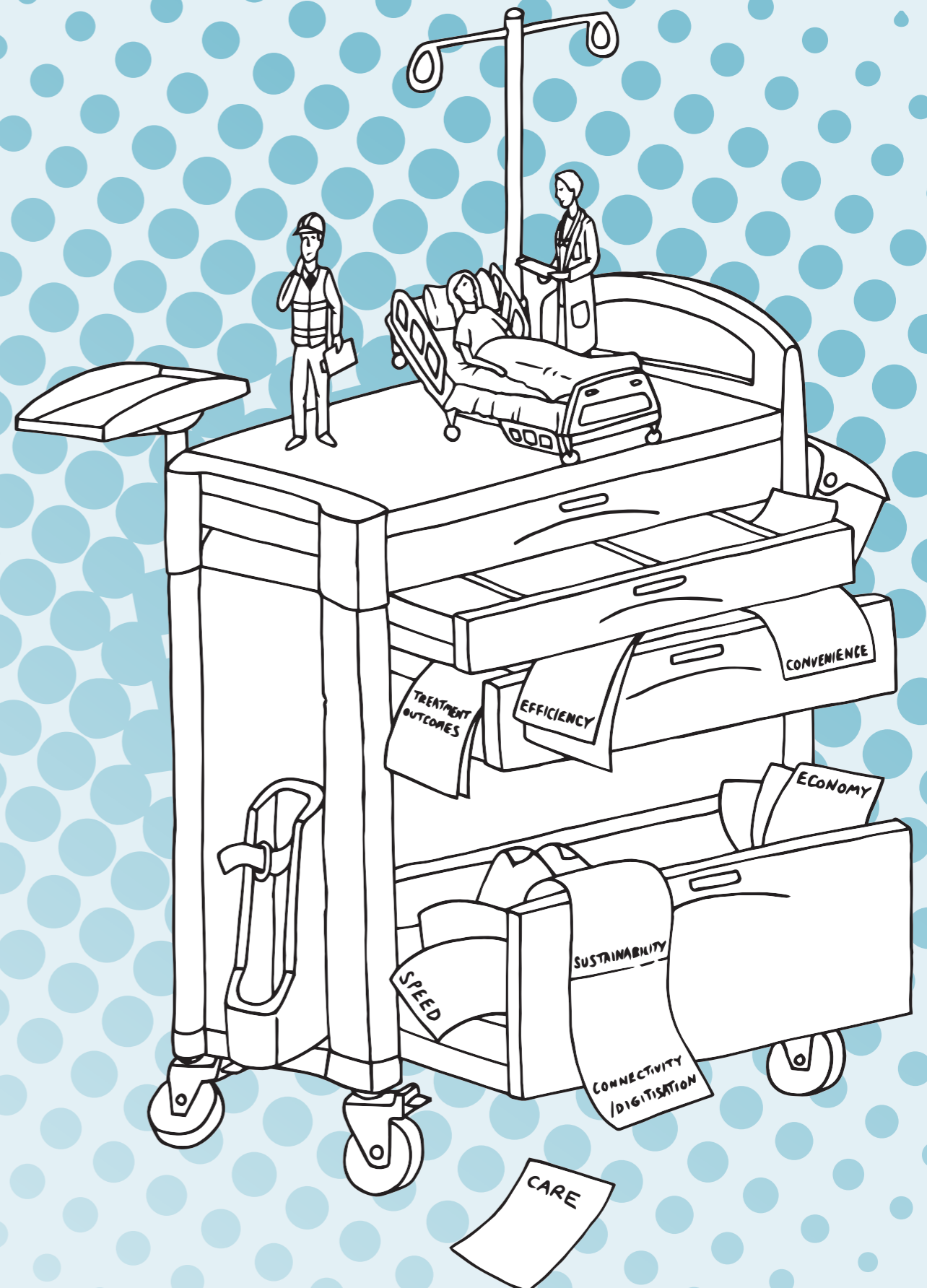
The power of positive patient experiences.

Humans have a complex relationship with the spaces around them, and these have significant impact on behaviour, mental health and, to some extent, physiology. Affecting patients, carers, processes and treatments, the environment has a multivalent role in supporting better results.

"There is much we can do to improve the patient experience in hospitals," says Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte, "particularly as it is now accepted to be inextricably linked to patient outcomes."

Psychological insights are useful in providing new understandings of healthcare settings and shifting perceptions so that the thought of them does not bring up negative emotions. These can hinder people in terms of presenting to services, or their experience (if we dread a place, we will likely focus on its negative elements when we experience it). Equipped with such insights, we can rethink facilities (e.g. Alder Hey's 'children's health park').

£1,000,000,000

IS WASTED ANNUALLY BY PATIENTS MISSING APPOINTMENTS

Source: *NHS Benchmarking Network, 2019*

The impact of human-centred design

Human-centred healthcare leads to more seamless patient experiences and smoother interactions with healthcare systems. "We should see information flowing more effectively, simpler scheduling and reduced delays," says Courtney Sherman.

"Patients will feel more confident in their care decisions, better supported, and more in control."

Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte

KAPOW!!

IN SYNERGY: HUMAN & HOSPITAL

The proof is in the discharge summary

Stephanie Williamson, Co-Chair of Architects for Health, agrees: "If you look after the patient as a human being – create a good environment for recovery – you improve system efficiency. They are happier, need fewer medications, get home faster, and are less likely to face complications or pick up a hospital-acquired infection."

"Get patient experience and quality of care right, and people make quicker recoveries."

Stephanie Williamson, Co-Chair, Architects For Health

> "Connections to nature aid recovery, yet patients and physicians often find themselves cooped up in dimly lit rooms and hallways with little access to natural light and the outside world."

Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte

The nature of care.

For years, design researchers have been advocating for human-centric healthcare.

In 1991, Roger Ulrich published his theory of supportive design. This captured the idea that healthcare settings have the power to exacerbate stress, or reduce it if they foster perceptions of personal control, social support and positive distraction. It led to the development of a variety of human-centred features that we often see in healthcare facilities today:

– Mapping and wayfinding in the planning phase of hospital design, which helps patients to navigate the hospital independently.

– Access to private, quiet spaces, with furniture arranged to achieve acoustic and visual privacy. This means patients can discuss personal information or express needs to family and hospital staff.

– Televisions, reading materials, plants, natural views and art. Using these can support a positive state of mind and provide visual distraction.

Thriving together: people & planet

Over the past few decades, a range of studies has demonstrated the compelling benefits of access to nature – even if purely visual – in terms of concentration, recovery from mental fatigue or a stressful experience, and anti-depressant use.

In 2021, environmental psychologist Dr Melissa Marselle conducted research into how psychological wellbeing intersects with contact to nature, and the principles of biophilic design and biodiversity promotion in supporting positive mental health.

Using a health data set from the University of Leipzig that included barcoded medication, she found that a high number of street trees close to the home was related to lower numbers of prescriptions for antidepressants in residents living nearby.

Outside in

People report being more happy, calm and relaxed when they are in nature. This simple truism is increasingly useful in healthcare design.

"Natural materials can support more positive experiences for patients and staff, especially compared with traditional white walls, steel railings, and vinyl flooring," says Jonathan Murphy, CEO of Assura. "Wood finishes can make spaces feel much more comfortable."

Michael Meredith (Director of Strategy and Estates, PAHT) agrees that in non-clinical spaces, they should be commonplace. "We don't traditionally use wood because it is perceived to be more difficult to manage infection control. But in those shared spaces where people gather and move about, we can easily use them to make the place feel more 'human'."

Simply covering hospital walls with realistic biophilic images could trigger internal biological and energetic mechanisms and improve recovery times. Studies show that incorporation of simulated nature, in the form of ceiling-mounted photographic sky compositions, has a positive impact on blood pressure (D. Pati, P. Freier, M. O'Boyle, C. Amor & S. Valipoor, 2016). Virtual views of nature, in the absence of real views in hospital patient rooms, can also significantly lower sensory pain responses (E. Vincent, D. Battisto, L. Grimes & J. McCubbin, 2010).

FLOURISH IN AN ENVIRONMENT THAT NURTURES RECOVERY

> "The objection to natural materials is often to do with cleaning and sterilisation issues. But there are technical ways of solving those problems – the resistance is, in part, because it's not been done before."

Michael Meredith, Director of Strategy and Estates, The Princess Alexandra Hospital NHS Trust (PAHT)

> "We should incorporate outdoor spaces much more. Integration of gardens and courtyards makes a big difference to how people experience their visit to the doctor. Even the sight of a garden can help."

Jonathan Murphy, CEO of Assura

Sight & Sound Centre success spotlight.

Before the Great Ormond Street Hospital's Sight and Sound Centre was created, hundreds of children had to visit the main hospital to manage their sight and hearing impairments. Many had to attend every three months throughout their childhood and teen years, due to conditions that require frequent adjustments to visual and/or hearing aids.

Listening and learning

Stephanie Williamson, Co-Chair of Architects for Health, led the design of the new Sight and Sound Centre, and began by talking to its future users.

"We sat down with 12 families of children with hearing or visual impairment and co-designed. We learned how onerous these visits were on families and the children themselves."

The kids explained how one of the most arduous aspects of going to Great Ormond Street Hospital was related to the fact that they were not sick. They had a hearing or visual impairment, but they did not feel like they belonged in a hospital environment.

"These children were being cared for alongside kids with cancer, kids having heart transplants, seriously ill children. We were a team of architects and healthcare planners; we had totally missed this. The children were not sick – of course they didn't want to come to a hospital environment."

The team had the chance to repurpose a building across the square from the hospital, creating a separate site to serve children and young people with sight and hearing loss. Working with Sonnemann Toon Architects LLP, the team created an award-winning healthcare space. The Sight and Sound Centre has dozens of elements designed to make it feel as far from a hospital as possible; it's warm and inviting for patients and staff, featuring natural light, bright colours, a fireplace, gardens, artworks and fun characters on the walls to guide visitors.

Images courtesy of Dave Parker Photography

"The project went through all the normal value engineering processes, but the design team fiercely protected the guiding principles of the project, written by the kids themselves," says Williamson. "The kids love it and the staff love it. Staff say that the children are more relaxed. They look forward to coming back."

"The productivity of the building is above expectations because staff are engaged, their wellbeing has improved, and the kids are happier and easier to work with."

Stephanie Williamson, Co-Chair, Architects for Health

WARNING!!

CHANCE OF MALFUNCTION

# More than cogs in the machine.

Thousands of nurses responded to the Royal College of Nursing's 2022 survey.

Nearly six in 10 (59%) said they felt upset or sad that they couldn't provide the level of care that they wanted to while at work.

On a 12-hour shift, the average nurse only spends about four hours on direct patient contact. That's eight hours doing something else – often finding and fetching equipment and supplies.

4,500 HOURS
OF STAFF TIME PER YEAR
IS LOST, SUPPORTING WAYFINDING

Source: *2004 US study: C. Zimring, A. Joseph & R. Choudhary.*

83%
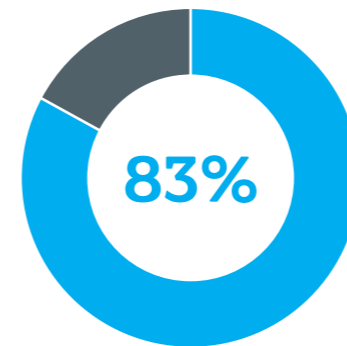
83% said there weren't enough nursing staff to meet patient needs safely on their last shift

51%
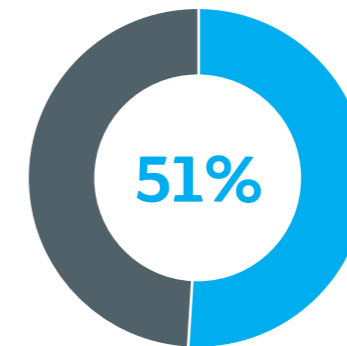
Over half said they felt demoralised on their last shift

18%
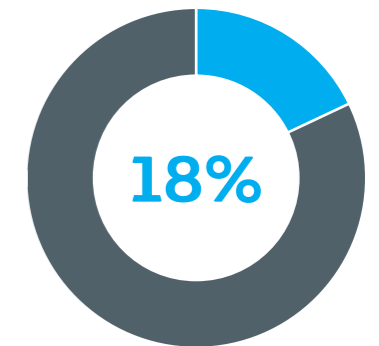
Less than one in five said they had enough time to provide the level of care they'd like to

"If we use tracking technology effectively, we can follow the location of every piece of equipment or set of supplies, helping to minimise the amount of time staff spend hunting for what they need."

Michael Meredith, Director of Strategy and Estates, The Princess Alexandra Hospital NHS Trust (PAHT)

Weighing up staff and patient preferences

There will always be some degree of balance to be struck in terms of optimisation. For example, single-patient room models are fast becoming the norm in new hospital designs, over wards with multiple patients. This prioritises patient privacy and dignity but increases the challenge for nurses visiting multiple patients, which can be anxiety-inducing in a short-staffed team when patients are out of sight.

These designs produce different debates, and not all swing in favour of patient preferences. While patients may prefer to be close to the window, this results in bathrooms on the corridor side of rooms, making it difficult for nurses to efficiently monitor and move equipment between rooms. The new Princess Alexandra Trust Hospital in Harlow has prioritised staff concerns in this case. "We favoured having the patient in-board because clinical care has to come first," says PAHT's Michael Meredith.

Whichever way the balance falls, it is foolish to assume an old process will be effective in a new environment. Ultimately, designing spaces that support staff makes sense in every conceivable way, mitigating increasing burn-out levels, spiking staff shortages and high turnover.

"We should understand the job and its demands – from a physical, emotional and social perspective – and have enough staff, trained in the right way, to make the model work."

Dr Adrian Neal, Consultant Clinical Psychologist, Head of Employee Wellbeing Service, Aneurin Bevan University Health Board

RECHARGED
Sleeper cabs have a fridge, table, TV, microwave and comfy bed.

BODY RESPONSIVE
Seat with spine-matching contouring, ride suspension, micro-adjustable damping, & climate control.

WELLBEING
System designed to enforce rest.

ALERTNESS
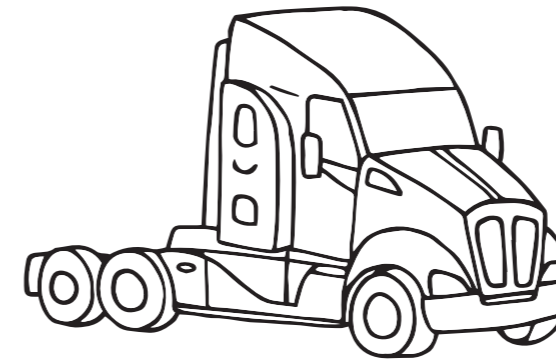Regular breaks promote focus and concentration.

MONITORING
'Performance assistant' scores driving techniques, encouraging behaviours that support economy and brake life.

RECHARGE
REST & RECOVERY

Driving seat model.

What can a truck teach healthcare design?
The Kenworth T680 is one of the best-selling long-haul trucks in North America. Everything in the cab is designed to help drivers maximise performance, efficiency and safety.

Designers have achieved this by ensuring the environment keeps the driver comfortable, engaged and well-rested. The seat has spine-matching contouring, ride suspension, micro-adjustable damping, and personal climate control. A 'driver performance assistant' monitors and scores driving techniques in real-time – encouraging behaviours that support better fuel economy and longer brake life.

Diversion: avoiding the road to ruin
In trucking, regulations have a direct impact on designs, particularly those around driver breaks and rest. Under European law, long-haul truck drivers must take a 45-minute break for every 4.5 hours of driving.

They must rest for 11 consecutive hours every day, and 45 consecutive hours each week. As rules like these have evolved, so, too, have trucks. For example, the Kenworth's sleeper cab aims to be "a home-away-from-home living experience for the driver", and has a fridge, table, TV, microwave and comfy bed.

How could we design healthcare facilities in this same spirit, ensuring staff are enveloped in an environment that keeps them comfortable, engaged, well-rested? "Think about the truck driver model," says Dr Adrian Neal, Consultant Clinical Psychologist and Head of Employee Wellbeing Service, Aneurin Bevan University Health Board. "Their driving is being monitored, there are regulations around how long they can work for, boundaries around what is permissible and what is not, and consequences…"

"…The whole system is forcing them to rest, and manufacturers put in decent space for them to do so. That's a recipe for recovery from the physical and cognitive load of the work. Healthcare's got nothing related to that; no structure around rest and recovery for staff."

Dr Adrian Neal, Consultant Clinical Psychologist

INCREASED QUALITY OF CARE

BETTER PATIENT OUTCOMES

INCREASED STAFF RETENTION

OPTIMISED HOSPITAL PERFORMANCE

GROWTH OF STAFF SATISFACTION

INVESTMENT IN STAFF WELLBEING
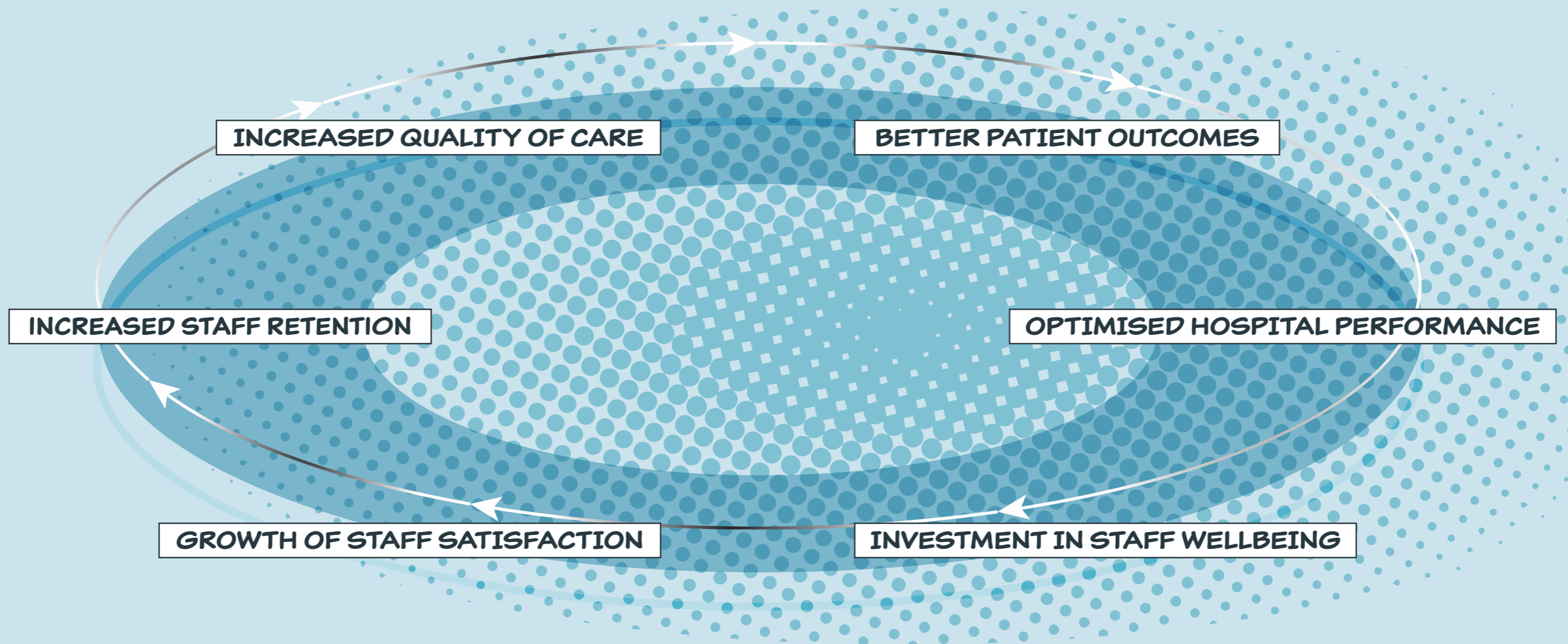
The virtuous circle.

Evidence shows a positive correlation between staff wellbeing and patient experience. One National Nursing Research Unit study (King's College London) suggested staff could not provide high-quality care when they had significant demands on their time and little control over how best to meet them, and when there was low investment in the team, a culture of bullying or inconsistent leadership due to staff turnover.

Caring for caregivers
Particularly since Covid-19, wellbeing has become one of the greatest challenges for the modern healthcare workforce.

Architects for Health's Stephanie Williamson worked at Great Ormond Street during the first wave, moving to Guy's and St. Thomas' for the second. "We were suddenly being asked to turn spaces into staff rest areas. We had been asking for spaces like this for years – somewhere for a nurse to take half an hour

"Most people in healthcare want to do the best job they can and doing a good job is important to their wellbeing."

Dr Adrian Neal, Consultant Clinical Psychologist

to get off her feet, have a cup of soup, read the paper, recharge. It took a pandemic to do it, but now decision makers are thinking about creating wellbeing hubs for staff in healthcare facilities. The conversations have shifted, and we will increasingly see these areas built into new designs."

This could be one of the more positive outcomes of the pandemic, if the priority on staff wellbeing persists. "Improving employee experience creates a virtuous circle," says Dr Adrian Neal. "And we know that there's robust evidence indicating that employee experience, including wellbeing in the psychosocial sense, is a major determinant of patient outcomes, safety and quality of care."

Another side to this is the competition between hospitals to recruit and retain staff. Facilities with better spaces for employees, to rest and find support, are more attractive.

"A lot of the more recent input we have had around hospital design and the needs of the medical workforce has been a re-emphasis of the importance of social spaces," says Ian Bullock, CEO at the Royal College of Physicians. "We've seen hospital spaces squeezed, resulting in reduced spaces dedicated to nurses or doctors. This has impacted the social support staff have available, because the physical spaces where staff could be together and build relationships are often absent."

Reaching our design destination: driving success.

To achieve truly human-centered healthcare design we need to embrace joined-up thinking and holistic decision-making, canvass multiple perspectives and look at the chain of command.

Design thinking for human-centric spaces

"You're starting by asking people what they need, what's working, what's not working," says Suzy Engwall, Healthcare Innovation Leader at RedCrow. "You need to get those real voices included before you start trying to solve any problems; ask questions early on about the challenges that all kinds of people have."

"Healthcare providers are realising that they need to learn directly from patients and employees, adds Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte. "They are starting to use the qualitative and quantitative insight they gain from this to inform the design of future healthcare services and experiences. They are also starting to use co-creation techniques to bring patients and employees into the heart of the design process. This is leading to better healthcare facilities, improved health outcomes, lower costs and increased efficiencies."

This is where the right leaders can be critical. For human-centric designs to succeed, quite often you need a design guardian. This person is passionate about the project and is tasked with keeping it from straying from core design commitments established at the outset in response to research and inputs from all parties.

"Often, budgetary decisions are made quickly without a full understanding of the reasons for specific elements. There is a disconnect between what administrative leaders think is needed and what physicians and clinicians think. We need to bridge that gap."

Suzy Engwall, Healthcare Innovation Leader, RedCrow

EMBRACE
JOINED-UP THINKING
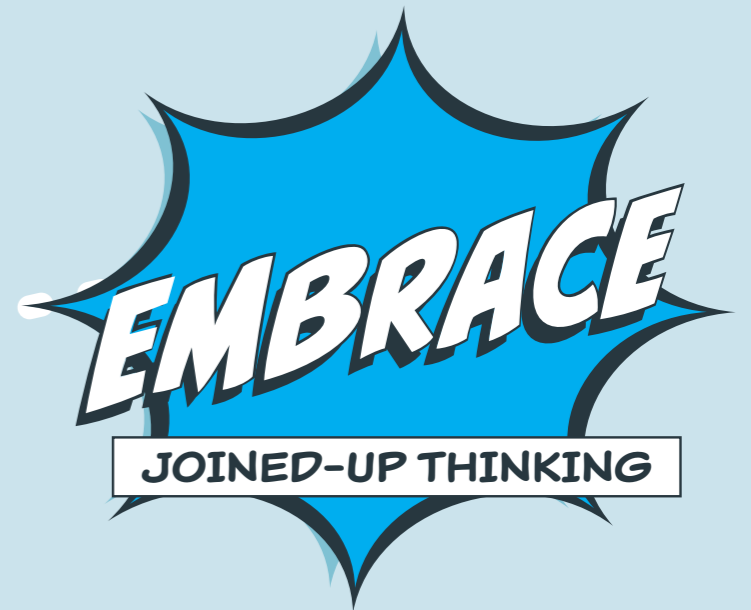
PLENTY OF VIEWPOINTS

DESTINATION: HUMAN-CENTRIC DESIGN

Great design must be guarded from the erosion of cost cuts, complexity, committees, and compromises.

Viva the design guardian!

"Right at the beginning of the process, you have got to have an aspiration for a human-centric environment. It needs to be written into the opening paragraphs of the brief."

Stephanie Williamson, Co-Chair, Architects for Health

PROGRESS...

...OR COLLAPSE
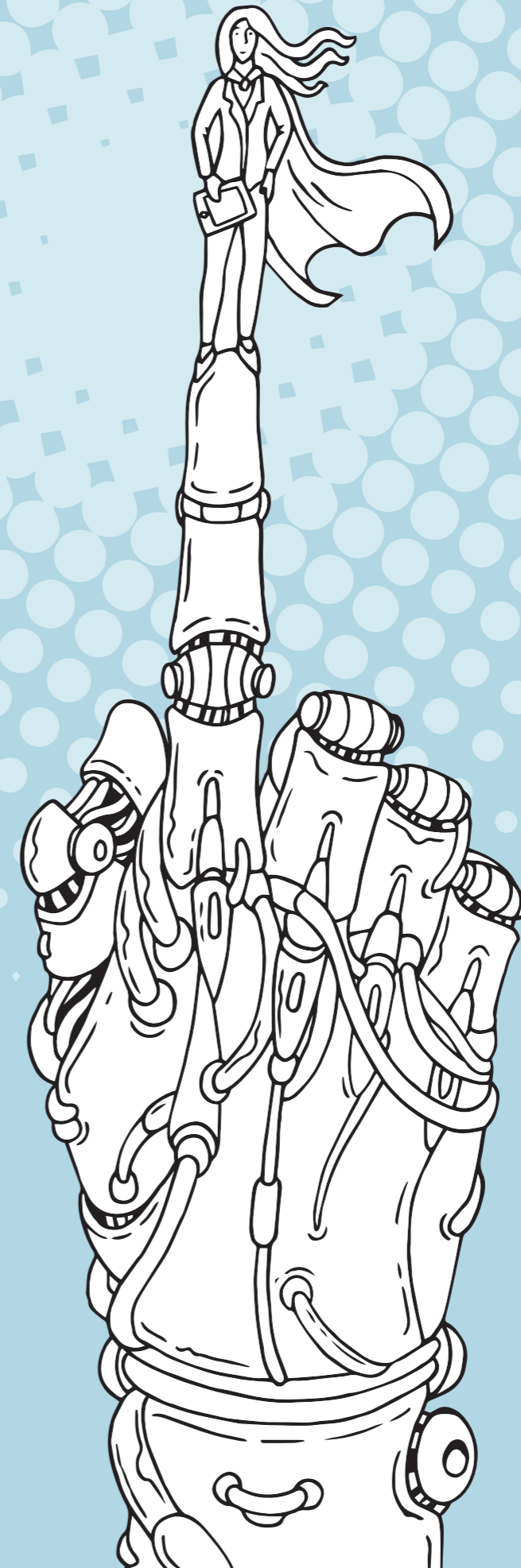
Evolving our infrastructure.

If you have particularly large or small feet, then one-size-fits-all socks don't actually fit too well. Similarly, it's more challenging to create quality human experience in spaces that need to cater for broad sets of patients than narrow, more homogeneous sets.

Beds dominate designs

"We use 'number of beds' to talk about the capacity of hospitals, but patients do not come into a hospital for a bed. They come in to be diagnosed, treated. The bed is somewhere you go when the important stuff isn't happening. In many cases, patients shouldn't be in a bed for parts of their stay. There could be more areas to walk around, to sit, to pass the time in different ways."

Richard Darch, CEO, Archus

"If you keep your clinical areas together, and separate out the administrative spaces, you can reduce the cost significantly. It allows us to get much more overall from our budget."

Michael Meredith, Director of Strategy and Estates, The Princess Alexandra Hospital NHS Trust (PAHT)

By and large, though, longer term thinking shows that we are seeing a trend away from large-scale, single-building warehouse healthcare, in favour of campus-type arrangements.

"You might still have an acute setting with your emergency department and appropriate support around that, but the elective workload is in separate buildings designed to deliver niche services," says Archus CEO Richard Darch. "Aftercare, post-acute care, rehabilitation – all can be delivered in separate buildings that suit those patients and staff."

Designing specialist facilities for specialist needs allows them to better suit specific patient populations – effectively making human-centred design more straightforward. But there are other benefits too, including potential recruitment advantages as specialists can work in teams with similar kinds of specialists, plus some pandemic resilience when compared to grouping all specialist units in one building.

High street healthcare

Campuses can also be distributed across a city or town, in the same way that many universities have expanded beyond their original sites. Thinking in terms of a more modular, distributed healthcare system opens up new design opportunities. For example, shifts in retail industries and workplace models are changing city centres and high streets, potentially opening up spaces for healthcare facilities. There are many benefits to this, including good access to public transport and convenience for those that work nearby or visit for shopping.

Delivering a distributed network of buildings

Arguably, multiple buildings are more expensive than one big building and there are challenges to overcome in terms of operational efficiency and departmental disconnects, but this can be conquered with ingenuity, modern techniques and standardisation.

"Architects and engineers should focus on how to deliver more distributed infrastructure in a cost-effective way," says Richard Darch. "Greater standardisation will be key, as well as modern methods of construction, including offsite manufacturing and onsite assembly."

Standardisation for the build elements alone will not be enough. Standards that focus on human-centred needs will require equitable consideration. Raising standards around ventilation, light and sound cannot be ignored.

Digital design: making more time for care.
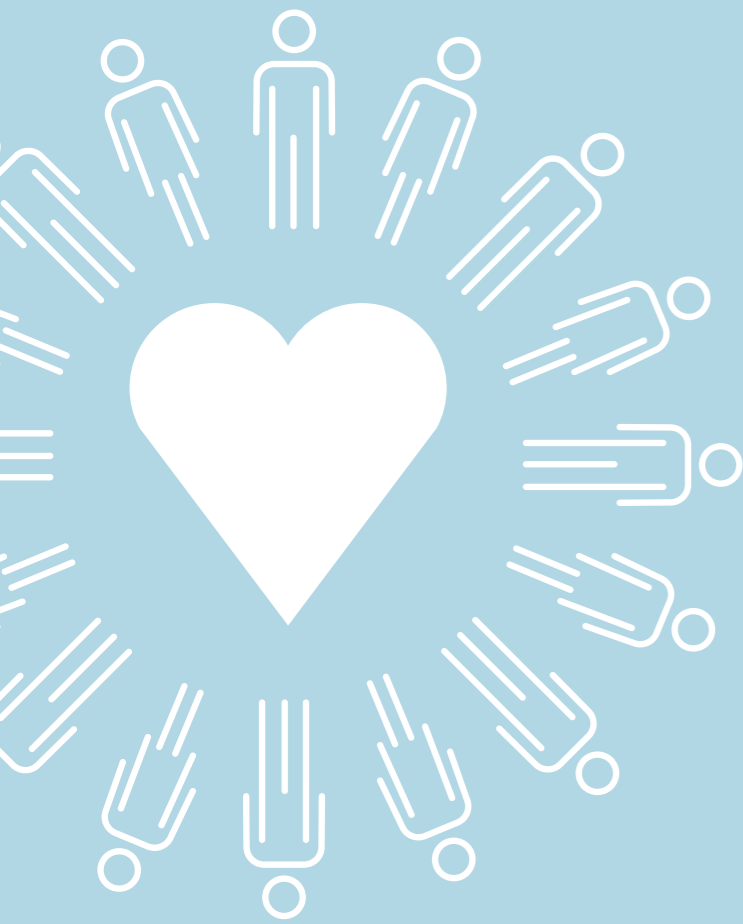
There are around one billion health-related Google searches every day (source: The Telegraph, 2019) and with access to information and the rise of connected devices, apps and other technologies, we have witnessed the rise of the digital patient.

A major game-changer

Digitalisation of healthcare systems and facilities also has a central role to play in the development of more human-centred designs spanning clinical and non-clinical areas. For example, digital technology can help monitor patients effectively, reducing the number of times a nurse has to walk up and down corridors.

On the non-clinical side, data-driven systems can ensure that a uniform is ready, or delivered, as soon as a person scans into a building, saving time and effort.

"Digital technology is a major game-changer for hospital design," says Christopher Shaw, founder of Medical Architecture, and former Chair of Architects for Health, "but there is a long way to go. I don't think we've seen many truly digital data-driven hospitals yet, but we're starting to, and the pandemic has pushed things along."

"Healthcare systems cannot just focus on care delivery and treatment. They need to start treating patients like customers."

Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte

"We have to think holistically about how people use the healthcare system physically, virtually and digitally; connecting these experiences seamlessly."

"I'm encouraged by the shift I am seeing," says Courtney Sherman, Principal and Life Sciences and Healthcare Innovation Lead, Deloitte. ""Healthcare administrations are more accepting, even enthusiastic, about developing patient-centric services, partly due to a recognition of the relationship between evolving consumer trends and expectations patients have of the healthcare system."

JOINED UP

EXPERIENCES WITH TECHNOLOGY

Innovation and easy tonics.

Human-centred healthcare will not always demand huge infrastructure overhauls or lengthy digital change projects. There are many levers that designers can pull to create more human-centric environments in our existing healthcare settings now.

Checklist of rapid remedies.

✓ **Art and landmarks**
Supporting lower stress levels and confidence

✓ **Colours for comfort and wayfinding**
Enhancing positive feelings of place

✓ **Keeping things natural: light, materials**
Connecting with nature for health and wellbeing

✓ **Visual privacy**
A hospital stay that feels personal and dignified

✓ **Acoustic improvements**
Reducing stress and supporting confidentiality

✓ **Textures and fabrics**
Sensory experiences that calm, and support better air/sound quality

✓ **Gardens and landscaping**
Natural places for restoration and relaxation

✓ **Patient-specific lighting (above beds)**
Engendering feelings of control and personal preference

Simple yet powerful ideas, easily overlooked...

The case of crash carts: Suzy Engwall, Healthcare Innovation Leader at RedCrow, was involved in a project that evaluated the design of crash carts in use at a large American hospital. They discovered some obvious flaws in the design, often with straightforward solutions. "For example, if you were shorter than about five-two it was very challenging to administer CPR," Engwall says. "We developed a simple solution: a step stool that folds out from the crash cart. We often fail to include these simple ideas because we don't design with all the uses and contexts in mind, visualising scenarios in detail, and speaking to those on the ground."

Landscape losses: "As ever, one of the biggest obstacles to providing great environments is cost," says Sunand Prasad, Principal at architectural practice Penoyre & Prasad, "or, more accurately, our inability to balance capital expenditure with revenue and long-term value. In the long term, investing in great environments generally pays for itself. Moreover, good design need not to be expensive. Landscaping, for example, and the maintenance of landscapes, is often the first to be cut when there is pressure to save money. But the cost-to-benefit ratio of good landscaping is impressive."

Flexibility: "If in-patient bedrooms are larger, they can be quickly and easily repurposed as high-dependency care," says Archus CEO Richard Darch. "One way to do this is by making en-suite bathrooms as removable modules which can be taken out when converting a room for critical care use."

Human-to-human interactions: Michael Meredith (Director of Strategy and Estates, PAHT) spent a day as a porter when he joined The Princess Alexandra Hospital NHS Trust. "What struck me was how much value there was in the human interaction between porter and patient, particularly when taking a patient to theatre. Porters reassure patients and comfort families. They lighten the mood, they reassure ('It will be fine, we'll look after you, you've got a great team today'), and ask them about what they're doing in the future."

ACT NOW!
FIND QUICK WINS

"In the past, corridors and open spaces in hospitals were just there to join the operating theatres and wards. There was an idea of functional space and non-functional space, which was a mistake. We need to think more about how we move through buildings. It has a big impact on our overall experience."

Christopher Shaw, founder of Medical Architecture, and former Chair of Architects for Health

Where do we go from here?

Reasons to be cheerful.

"There's much to be glad about in terms of the best health environments being designed today," says Sunand Prasad, Principal at Penoyre & Prasad. "I would say that human-centred design is at a much more mature stage than ever before."

With every new and refurbished building comes an opportunity to consider, more than ever before, the enjoyment and quality of life for all its users. Healthcare environments do not need to be a factory of fixes or a warehouse of patients. Of course hospitals, surgeries, treatment centres, mental health units, and clinics must be hygienic and functional, but they must also be a place of contentment, where positive and sympathetic environments aid recovery and make for a rewarding working life. As shown here, our industry's leading lights all agree that it is time to truly put the human experience first in design. By bringing nature into hospitals, using warm natural materials, monitoring and caring for staff in the driving seat, nominating a design guardian who will protect every decision made, and even challenging the very essence of what care needs to be carried out where, compassionate design can show us the way forward.

Healthcare is human care.

Here's just a snippet of the topics that have touched us recently.

Healthcare mines the metaverse

The metaverse might be the coolest topic in tech at the moment, but its potential in the healthcare sector could be transformational. A world that brings together artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and ever-increasing connectivity is a world of online environments more immersive, experiential and interactive than what we have today.

We have the potential to create optimum environments virtually to test them before they are built in the real world. It also breaks down barriers between countries and specialist access: put on a headset and be 'in the same room' as the best person to treat your condition, whether they are halfway across the world or you are in a remote place, unable to access a facility. Can the world share its medical professionals in a way that truly represents a fair healthcare system for all?

Healthcare looks to learn & leads the way

What can healthcare design learn from other sectors, whether that be retail, hospitality, schools, residential or workplace? For instance, the retail sector sets an example for two types of healthcare delivery: factory-like efficiencies for predictable procedures and the customised care coordination for specialised cases. Meanwhile, lessons from hospitality and workplace show that lavish features cannot take away from providers' performance in the most basic elements of care delivery; simple user functions have to be unhindered before people can appreciate the 'extras'.

Common to all these sectors should be the presence of user voices and key insights throughout the design process; for active participation to be evident in design.

Parallel to the opportunity of looking outwards is the fact that healthcare projects have the potential to lead the way in net-zero-carbon and human-first design. If a state-of-the-art hospital can master the balance of these two tricky demands, almost any other industry can follow. Already, this feat of engineering ingenuity is closer than you might think; our six-step process for NHS Estates across the UK will prepare them for a net-zero-carbon future, while supporting people-centric solutions at every stage. It's a responsibility we are able to shoulder, and a learning process for others that we want to share.

...Now what would you like to explore?

Acknowledgements.

About the illustrator: Andy Council is an artist and illustrator who has worked with hospitals to create large murals that staff, patients and visitors can enjoy. Most recently, Andy consulted with patients at Chelsea and Westminster Hospital to create murals made up of buildings and local landmarks that surround the site. He focuses on designing bright, colourful and interesting artworks that uplift the spaces they sit in.

andycouncil.co.uk

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