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Why do NHS hospitals struggle to handle heatwaves?

With potentially record breaking temperatures imminent, NHS hospitals are battling to keep cool. **Chris Stokel-Walker** explores why NHS estates have such a problem with heat regulation—and the impact it has on doctors and patients

Chris Stokel-Walker,

After Catherine Flick gave birth to her baby in Leicester's Royal Infirmary on 2 July 2019, she was sent to one of the hospital's three maternity wards to recuperate. "It was absolutely sweltering," the university academic says. "I'm an Australian: I can deal with some heat. But I remember lying there bathed in sweat."

The summer of 2019 saw a UK temperature record of 38.7°C recorded, in Cambridge, the same month as Flick's child arrived. In Leicester, Flick and the other women on her ward asked staff if they could plug in a fan to keep cool. They were told they couldn't for safety reasons. "We were at our wit's end," she says. "I was sitting there, worried about my baby overheating."

How hot is too hot?

Anyone who's ever been in a UK hospital, whether as a staff member, patient, or visitor, will know that the NHS has a problem with heat regulation. "Hospitals are not well equipped to deal with very warm temperatures," says Sophie Bracke, a foundation year 2 doctor working in the NHS (who asked *The BMJ* not to publish the name of the trust in which she works).

NHS trusts across England reported 4131 incidents¹ between April 2020 and March 2021 when ward or other clinical area temperatures rose above 26°C—the point at which, according to NHS England's heatwave plan,² a risk assessment needs to be conducted and vulnerable patients protected. Almost one quarter of those "overheating occurrences," 1000 in all, occurred in the Wrightington, Wigan, and Leigh NHS Foundation Trust.

David Evans, director of estates and facilities for the trust, emphasises to *The BMJ* that "incidents are recorded by area," meaning two wards exceeding 26°C on the same day counts as two incidents. Evans says the trust is "working hard to tackle the current weather conditions" and avoid a repeat of past troubles. But it's not a problem with one trust alone: almost half, 104, of the 216 NHS trusts in England reported at least one overheating occurrence in 2020-21.

And as temperatures are soon expected to hit record highs across the country, incidents of dangerous temperatures could get worse.

What is the NHS's heatwave plan?

NHS England's heatwave plan outlines four levels that hospitals and other health and social care services should observe. It was drawn up following

the 2003 heatwave that resulted in 2139 excess deaths³ in England and Wales—including many people over the age of 75.

The levels increase in severity, with level 2 triggered when there is a 60% or higher risk of a heatwave in the next two or three days. It mandates regular recording of temperatures in hospitals; ensuring cool areas remain below 26°C; taking extra care of vulnerable and high risk patients; and providing sufficient cold water and ice to keep staff and patients cool.

It also suggests hospitals and care homes consider weighing patients regularly to check for dehydration. Level 2 is triggered before a heatwave occurs because many deaths from overheating happen within the first two days, according to the heatwave plan.

Level 3 begins when high temperatures are recorded in at least one region by the Met Office. Trusts in regions where temperatures are exceeded are instructed, once this happens, to expect increased demand on services and to take more action to try to reduce temperatures, including shading patients and turning off unnecessary lights and equipment that may cause temperatures to rise.

Level 4 is a nationwide emergency, and can only be declared by central government; it is triggered because of a risk of illness and death among the fit and healthy. The UK Health Security Agency (UKHSA) declared the first ever level 4 alert on the morning of 15 July. The alert is, the Met Office says, in parallel with its own first ever red extreme heat warning, for parts of central, northern, eastern, and south eastern England on 17 and 18 July.

UKHSA declined *The BMJ's* request to speak to Agostinho Sousa, the agency's head of extreme events and health protection.

How are doctors and patients affected?

Despite the plans, excess deaths still occur. The three heatwaves the UK experienced in the summer of 2020 resulted in 2556 excess deaths²—more than the 2003 heatwave that triggered the plan to be drawn up, although the impact of covid-19 circulation on mortality that year has not been measured. In 2021, the eight days that a level 3 heatwave alert was active caused 915 excess deaths.⁴

Those affected by the heat include the extremely old and extremely young, but other comorbidities can also have an impact on how keenly people feel changes in temperature. Patients taking courses of beta blockers, tricyclic antidepressants, aspirin, and

diuretics used for blood pressure⁵ are more exposed to heat disorders, alongside those with heart disease and other chronic illnesses. Antihistamines can also cause the body to produce less sweat⁶—meaning it's more difficult to regulate temperature.

Hassan Ali Beg, a cardiology registrar across the Northumbria Healthcare NHS Foundation Trust, says, “We have to promote drinking adequate amounts to patients.” It's a concern Bracke has, too. “I'm most worried about the patients,” she says. “The staff are all young and get through the day with a fan and cold drinks, but I'm worried about patients' increased risk of dehydration.”

But because the summer has been busier, staff are less inclined to take their breaks—and to grab a drink. “It really needs to be encouraged,” Beg says, “because when you're chronically dehydrated, you can get kidney stones.” He says he's seen colleagues with no other risk factors for getting kidney stones affected by them, which he assumes is down to dehydration.

Ruth May, chief nursing officer for England, has recently tweeted her concern that some staff have been told not to drink at their nurses' stations.⁷ May's worries were backed up by multiple nurses confirming that was the case.^{8,9} NHS England declined to comment to *The BMJ*.

Why are NHS hospitals so hot?

Hospitals' heat problems stem in part from the age of the infrastructure. A third of the NHS estate was built before 1965,¹⁰ and 14% before the foundation of the NHS in 1948, according to a 2020 National Audit Office report.

With age comes problems. “High risk backlog maintenance”—issues that require urgent fixes to prevent catastrophic failure and disruption to clinical services—rose 139% between 2014-15 and 2018-19.

“I do a lot of work in the Middle East and Australia, and those countries have no problem with the heat,” says Andy Ward, managing director of WHi Consulting, a hospital infrastructure consultancy. “They have newer builds than we've generally got in the NHS, and they specify them to need air conditioning.”

Installing air conditioning would be ideal, says Lynette Nusbacher, a non-executive member of NHS Surrey Heartlands Integrated Care Board, and a former government horizon scanning strategist. Although it needs to happen, it would be difficult at the moment. “We're just going, in the health world, from two years of unlimited cash—spend whatever you need to keep people alive—to going back to budget discipline. This is not the year for people to be putting cooling systems on their capital expenditure plans.”

How are trusts and doctors trying to beat the heat?

Despite what some claim, there is no legal maximum or minimum temperature in a workplace.¹¹ “In most NHS hospitals, the heating seems to be on a fixed timer,” says Beg. “Whether it's warm outside or cold, the radiators are always on.”

He has previously worked in hospitals where staff have asked to turn down the heat, but have been told it's not possible. “It's particularly bad these days with the pandemic, because if you've got a procedure, you have to wear a gown or additional things that make it even hotter.” While mask mandates have been relaxed in many parts of the NHS, Beg still wears a mask and finds it makes the heat worse.

Faced with rising temperatures, some trusts are taking things into their own hands. *The BMJ* has seen an email sent on 13 July informing staff in Mid and South Essex NHS Foundation Trust of

the availability of extra bottled water supplies and the relaxation of the staff uniform policy. “People do not have to wear tights, and can wear shorts as long as they are tailored, knee length, and blue or black,” says the email from Andrew Pike, chief operating officer at the trust.

Dress codes have been informally relaxed at other hospitals, too; Beg decided to don shorts on 11 July to tackle the heatwave.

Ward spoke to staff at four or five NHS trusts this week about their heatwave contingency plans. Measures being taken include fans, ice lollies, and water bottles ready to use when people get hot. “It's the low tech solutions,” he says. Bracke has been supplied with ice lollies and cold drinks, as well as fans on wards—though she says “it's kind of putting out small fires.”

Ward, who has worked with the Department of Health on covid-19 contingency planning, says that hospitals he's spoken to have worried less this year about infection risks from fans circulating covid-19 than they did last year—in part because of the prevalence of vaccines and the comparative mildness of the current variants.

Overhaul needed

Something needs to change—including an overhaul of hospital buildings to handle hotter temperatures. “Looking forward, we are going to have entire summers of what we would today call ‘heatwaves’,” says Nusbacher.

Flick, who gave birth at the height of the heatwave three years ago, faces a conundrum: she's due to give birth again in late July. She investigated booking a private room—because she could potentially be able to open a window—to no avail. “I'm really hoping it cools down because it adds another level of discomfort that you don't need at that key point in your life,” she says. (The University Hospitals of Leicester NHS Trust did not respond to *The BMJ*'s request for comment.)

One thing has changed at her hospital since she last gave birth, however—an indication, perhaps, of hospitals' “small fires” approach to beating the heat. The list of recommendations for what to bring that was provided by the hospital now includes a rechargeable fan or water spray to keep cool. “I don't remember seeing that last time,” says Flick.

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