

The technology that can help British hospitals work better

How IT is helping to ease strains in A&E departments in Kent



Stuart Thomas/Maidstone and Tunbridge Wells NHS Trust

Five years ago Maidstone and Tunbridge Wells nhs Trust in Kent performed averagely among 137 trusts with major accident & emergency (a&e) departments, when measured by wait times. Recently, even as other trusts have been buckling, it has rarely left the top ten.

Two things in particular have helped to turn things around, says Miles Scott, the trust's chief executive. One is its "same-day

emergency-care centres”, places where patients who have had things like chest pains or falls can be assessed, diagnosed and treated without being admitted. The other is its “mission control”, the base from which the flow of patients is tracked through the trust’s two hospitals.

Managing this patient flow well is essential. Every day the National Health Service makes over 16,000 emergency admissions to its hospitals. Each patient must be slotted into a limited number of beds in a limited amount of time. That makes a&e, a hospital’s main entry point, “a bit like Tetris”, says Nick Bagley, a consultant and clinical director of operations of the Maidstone Emergency Department. But in this life-and-death arcade game, when the patients start arriving quicker, things can quickly spin out of control.

Until the covid-19 pandemic struck, Maidstone’s managers conducted this operation using “pencils and rubbers”, says Sam Roberts, one of their number. Nurses determined which of the trust’s more than 700 beds were available by running up and down several flights of stairs to check on them for themselves.

Now they use TeleTracking, a tracking system made by an American firm of the same name. Electronic wristbands are fitted as patients enter hospital, providing real-time data on where they are and on how long they have been waiting for admission or discharge. At mission control (actually a back room in the hospital, with jaunty pop music playing in the background) operators then match ailing patients to available beds. Aggregated data flash up on eight giant dashboards, turning red if the metrics do not meet predefined targets. By historical comparisons, at least, they are flying: the wait times for those admitted from a&e onto a ward are almost three times shorter than they were before the pandemic.

Such efficiencies have also sped up discharge, freeing up beds—and their occupants. In 2022 Maidstone expanded the system to include 80 beds in a local community trust, enabling speedier transfers from hospital into “step-down” care. Pharmacists are informed of patients with complex needs, giving them more time to prepare their prescriptions before they are discharged. When a patient is ready to be moved, porters and cleaners are automatically alerted on a hand-held device, with all of their response times tracked. The average bed turnaround

time—the time between one patient leaving and another being admitted—has fallen from two hours and 40 minutes to under an hour, a saving equivalent to 130 extra bed days per month.

Implementing such a system sounds like a no-brainer for trusts that offer acute care. Maidstone says the efficiency savings meant it paid for itself, and more, in the first year of operation. Data-driven learning, such as the relocation of porters to where their services are most needed, promise even greater returns. Yet for all the obvious benefits, most trusts have not yet adopted such technology; one in eight do not even use electronic patient records. It is often hard to get the buy-in of clinicians, who can be (not unreasonably) sceptical that innovations will work or too busy to invest time learning something new.

Nor is the system a silver bullet. For all the improvements at Maidstone, performance is constrained by huge patient demand, which was rising even before the pandemic. Bed-occupancy rates remain high, at 91%. Staff shortages and social-care bottlenecks still contribute to delays in discharge. In a&e, the proportion of patients admitted, transferred or discharged within four hours stood at 77% in December, well below the nhs target

of 95%. Tracking software will not solve everything, then. But it is nonetheless a very useful building-block. ■

能够帮助英国医院更好地工作的技术

信息技术如何帮助缓解肯特郡急诊科的紧张状况

五年前，肯特郡的梅德斯通和坦布里奇韦尔斯国民健康信托基金在 137 家拥有主要事故和紧急（a&e）部门的信托基金中表现一般，如果以等待时间来衡量。最近，即使是在其他信托机构出现问题的时候，它也很少离开前十名。

该信托基金的首席执行官 Miles Scott 说，有两件事特别有助于扭转局面。一个是它的 "当日紧急护理中心"，在这里，出现胸痛或摔倒等情况的病人可以得到评估、诊断和治疗，而无需住院。另一个是它的 "任务控制"，即通过信托基金的两家医院跟踪病人的流动情况。

管理好这种病人流是至关重要的。每天，国家卫生服务机构有超过 16,000 人紧急入院。每个病人都必须在有限的时间内被安排到有限的床位。这使得医院的主要入口处--A&E，"有点像俄罗斯方块"，梅德斯通急诊科的顾问和临床运营总监尼克-巴格利说。但在这个生死攸关的街机游戏中，当病人开始快速抵达时，事情会迅速失去控制。

在 covid-19 大流行病来袭之前，梅德斯通的管理人员使用 "铅笔和橡皮" 进行这种操作，他们中的一员山姆-罗伯茨说。护士们通过跑上跑下几层楼来确定信托基金的 700 多张床位中哪些是可用的，并亲自检查。

现在他们使用 TeleTracking，这是一个由美国同名公司制造的追踪系统。在病人进入医院时安装电子腕带，提供关于他们在哪里以及等待入院或出院的时间的实时数据。在任务控制中心（实际上是医院的一个密室，背景是欢快的流行音乐），操作员将生病的病人与可用的床位相匹配。八个巨大的仪表盘上闪烁着汇总的数据，如果指标没有达到预定的目标，就会变成红色。至少从历史比较来看，他们正在飞速发展：从急诊室进入病房的病人的等待时间比大流行前几乎缩短了三倍。

这样的效率也加快了出院速度，腾出了床位和床位上的人。2022 年，梅德斯通（Maidstone）将该系统扩大到包括当地社区信托基金的 80 张床位，从而能够更快地从医院转移到 "下级" 护理。药剂师被告知有复杂需求的病人，让他们在出院前有更多时间准备处方。当病人准备好被转移时，搬运工和清洁工会在手持设备上自动发出警报，并跟踪他们所有的反应时间。平均床位周转时间--从一个病人离开到另一个病人入院的时间--已经从 2 小时 40 分钟下降到 1 小时以下，相当于每月多节省 130 个床位日。

对于提供急症护理的信托机构来说，实施这样一个系统听起来似乎不费吹灰之力。梅德斯通说，效率的节省意味着它在运行的第一年就收回了成本，甚至更多。数据驱动的学习，如将搬运工人转移到最需要他们服务的地方，有望获得更大的回报。然而，尽管有这么多明显的好处，大多数信托机构还没有采用这种技术；八分之一的人甚至没有使用电子病历。往往很难得到临床医生的支持，他们可能对

创新是否有效持怀疑态度（不是没有道理），或者太忙而无法投入时间学习新事物。

该系统也不是银弹。尽管梅德斯通医院取得了很大的进步，但病人的需求量还是很大，甚至在大流行之前就已经在增加。病床占用率仍然很高，达到 **91%**。工作人员的短缺和社会护理的瓶颈仍然导致了出院时间的延误。在 **A&E**，12 月入院、转院或出院的病人比例为 **77%**，远远低于 **NHS 95%** 的目标。追踪软件并不能解决所有问题。但是，它仍然是一个非常有用的构件。■