

NHS review of winter 2017/18

September 2018

We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.

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1. Summary

Last winter was very challenging

Winter periods¹ challenge the NHS and urgent and emergency care services (UEC) particularly. Poor weather and increased outbreaks of flu, respiratory and gastrointestinal illnesses placed increased pressures on hard-working staff and impacted on performance.

Last winter proved to be longer and more severe than recent years. All aspects of urgent and emergency care were affected, including 400,000 more people calling NHS 111, 290,000 more people attending accident and emergency departments (A&E) and 100,000 more being admitted to hospital as an emergency compared to last year. The flu outbreak proved to be the most severe since 2010/11.

Thanks to the efforts and dedication of hard-working frontline staff, over 55,000 people were seen in A&E and admitted or discharged within four hours every day during winter. 68,000 more patients were seen within 4 hours over the winter period than the year before.

We planned more capacity, prevented admissions and moved patients from higher acuity settings

The NHS undertook a combination of activities across the urgent and emergency care pathway to reduce pressure. We reduced pressure on the front door into A&E by extending access to primary care, encouraging patients to use pharmacies and directing patients towards the most appropriate care online, over the phone and on their arrival in A&E. We opened thousands of beds during winter, and alongside local authorities and social care partners, NHS providers invested in reducing delayed transfers, freeing 1,700 beds.

The NHS is integrating the way patients access care. Thousands more people used NHS 111 last winter, with 50% clinical input in triaged calls. Currently being piloted, NHS 111 Online reached a third of the country. Patient streaming into primary care on arrival in A&E was in place across 98.5% of the service and is now 100%. These

¹ December to March, unless otherwise stated.

services ensure patients are cared for in the most appropriate services and potentially prevent thousands of attendances, admissions and ambulance arrivals in A&E departments. Extended access to primary care created 100,000 new GP appointments between 8am and 8pm, while 83 designated urgent treatment centres have established a standardised model for urgent care. Ambulance services have made big strides in finding new ways of helping patients in the most urgent need.

Funding for winter, though immensely helpful, arrived in late November making it harder for trusts to plan the most cost-effective staffing models.

Building resilience across urgent and emergency care systems

Improvement interventions were focused on developing leadership and workforce capacity and capability through intensive coaching and individualised trust plans. We targeted support across the patient pathway and the whole UEC system, lifting performance in those systems by two percentage points. We established a single co-ordinated delivery chain, including the National Emergency Pressures Panel (NEPP) national and regional winter operations rooms and local A&E delivery boards, which helped us to co-ordinate clinical recommendations nationally, communicate with partners and react to emerging risks and issues, particularly patient safety concerns.

The priority for NHS staff, as always, is to protect patient safety, and frontline staff made extraordinary efforts to ensure that patients continued to receive safe care through the busiest periods. Staff vaccination rates were the highest ever at 68.7% and many trusts implemented new safety protocols to prevent crowded emergency departments becoming unsafe.

	Key elements of 2017/18 winter plan	Observed impact during winter
1	Stronger national co-ordination and single NHS England and NHS Improvement delivery chain	Ensured clarity of focus and minimised duplication. However, further refinement needed.
2	Early planning and tailoring help	Service had stronger plans than in previous years. Insufficient operational turnaround capacity to make performance shifts everywhere.
3	National Emergency Pressures Panel	Best ever engagement of professional bodies.
4	Better-matched ambulance response to clinical needs by implementing ambulance response programme	Enabled resources to be prioritised: essential as acuity has risen with 30,000 increased ambulance A&E arrivals per month compared to last year. Further improvements were identified.
5	Reduced A&E demand growth via NHS 111	NHS 111 dealt with 100,000 extra calls per month and increased proportion of calls getting clinical input from about 25% to about 50%, potentially avoiding 2.3 million additional A&E visits last year.
6	Introduced primary care streaming in all A&Es	Good coverage achieved, supported by £100 million of capital provided in March Budget, but services were variable with regards to opening and closing times.
7	Freed beds by reducing NHS and social care delayed transfers of care	1,700 beds freed so far, all of which were reused due to very high flu levels. Overall bed occupancy was up on previous years.
8	Additional winter funding announced in October Budget	Funding was essential to service but arrived in late November. Significant staffing pressures in acute, primary, community and social care services.

2. Performance

Too many people waited too long to be seen in A&E

Last winter 6,701,045 people – 85% of all A&E attendances – were seen and either admitted or discharged within the four-hour target. However, at times of peak demand, some patients faced unacceptably long waits. There was also considerable variation between trusts.

In the run up to last winter, NHS A&E performance had been better than the year before. However, performance declined through the early part of winter as increasing demand put more pressure on services. The most challenging days for A&E departments were immediately after Christmas and New Year and after the intense cold snap in late February and early March. These caused reductions in demand, when a brief improvement in performance can be observed, followed by sudden increases in demand, leading to worse performance.

Too many delays occurred in other parts of the patient journey through UEC

Ambulance handover delays and delays in transfers to a ward once a decision to admit was made (known as DTA waits) rose.

On average 13,418 patients were transported by ambulance to A&E every day. Of these, 1,383 or 10% of patients arriving by ambulance faced a handover delay of 30 minutes or more. Of these, 416 or 3% of patients waited more than an hour for handover. There was significant variation between trusts for handover delays.

Each day, an average of 2,235 people or 18% of patients who were admitted waited more than four hours to move to a ward. Of this group, 15 people per day, less than 1% of admissions, waited more than 12 hours to be admitted. This group includes a small number of patients with clinical complications and some patients with mental health conditions, as services sought acute mental health beds.

3. Demand, supply and flow

Performance is driven by complex interactions of demand, supply and patient flow

Operational performance is a complex interaction of demand, supply and patient flow factors. We identified drivers of A&E performance and, using econometric modelling, identified and isolated a wide range of operational factors and the effects on A&E performance. Despite not being able to isolate some of these, we identified robust and operationally useful findings:

- above a bed occupancy threshold at 92% bed occupancy, the deterioration in A&E performance begins to accelerate
- higher proportions of patients in hospital for 21 days or more reduce performance
- A&E departments with a higher proportion of senior doctors improve performance
- the gap between discharges and admissions improves performance when discharges are greater than admissions; it worsens performance when admissions exceed discharges.

We faced unprecedented patient demand

Last winter, on average 65,155 people attended A&E and 12,426 emergency patients were admitted via A&E each day. Compared with last winter, 2,417 or 3.9% more patients attended A&E and 760 or 6% more patients were admitted as emergencies via type 1 A&E each day.

However, throughout this winter, the numbers of attendances and emergency admissions have been stable with relatively little variation between months. The cycle of demand in both attendances and admissions is higher during the week and lower at the weekend and following holidays and periods of extreme cold weather.

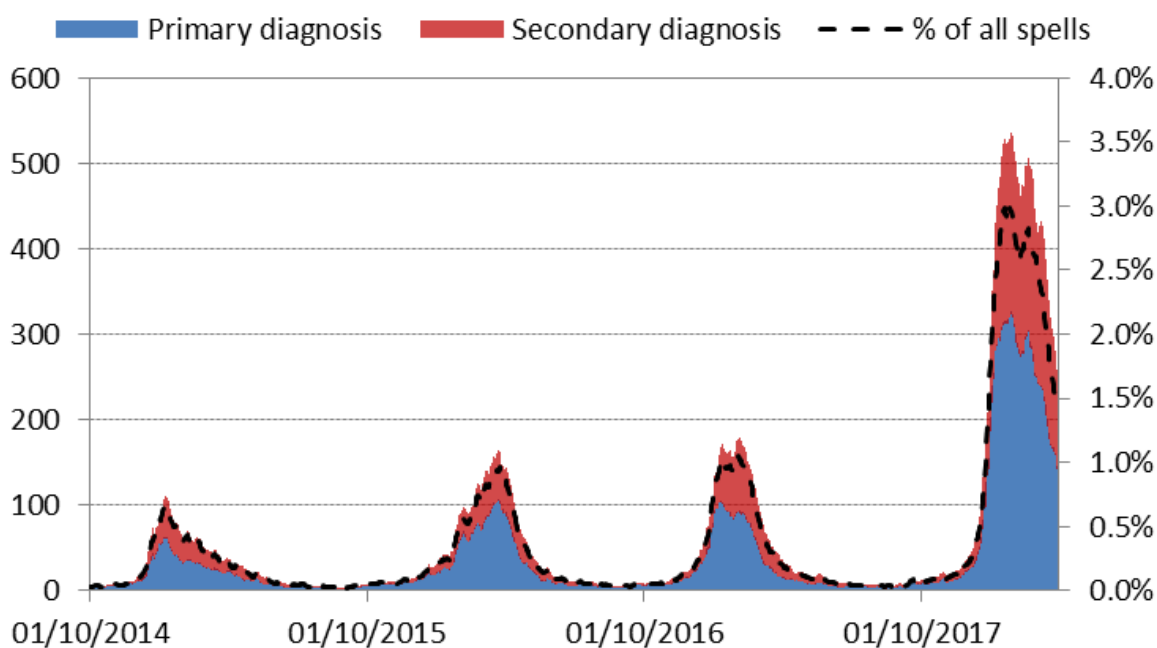
Trusts have introduced ambulatory emergency care for acutely unwell patients who can be treated and discharged within 24 hours. This relatively new patient pathway helped prevent overnight admissions and allowed people to get home without flowing through the hospital. It reduced length of stay for these patients. As a result, we saw an increase in zero length of stay patients.

Most severe flu outbreak for seven years

Increased patient acuity, flu and other respiratory illness during winter can lead to increasing length of stay and higher demand for ambulances. Patients with flu also have longer lengths of stay. Last winter was the most significant flu season since the last pandemic year of 2010/11.

Public Health England (PHE) confirmed a peak hospitalisation rate of 8.2 patients per 100,000 with flu. We estimate this could have meant up to 4,000 beds each day had confirmed flu patients and 500 patients per week, or 3.5% of admissions, were admitted with flu at the peak of the season. This is several times more than previous winter flu seasons.

Figure 1: Flu admissions



The ambulance service faced significant pressure with record demand

A combination of factors including poor weather had a significant impact on the ambulance service. On average every day 13,418 patients were transported to hospital by ambulance, 1,059 or 8% more patients than winter 2016/17. As with other services, including A&E, in the early part of winter, the ambulance service saw steadily increasing demand. This trend peaked on 1 January with 15,431 conveyances to A&E – 2,000 above average. After the new year, demand for ambulance conveyancing reduced and remained stable for the remainder of winter and was also relatively unaffected by the later cold weather.

NHS 111 saw increased demand

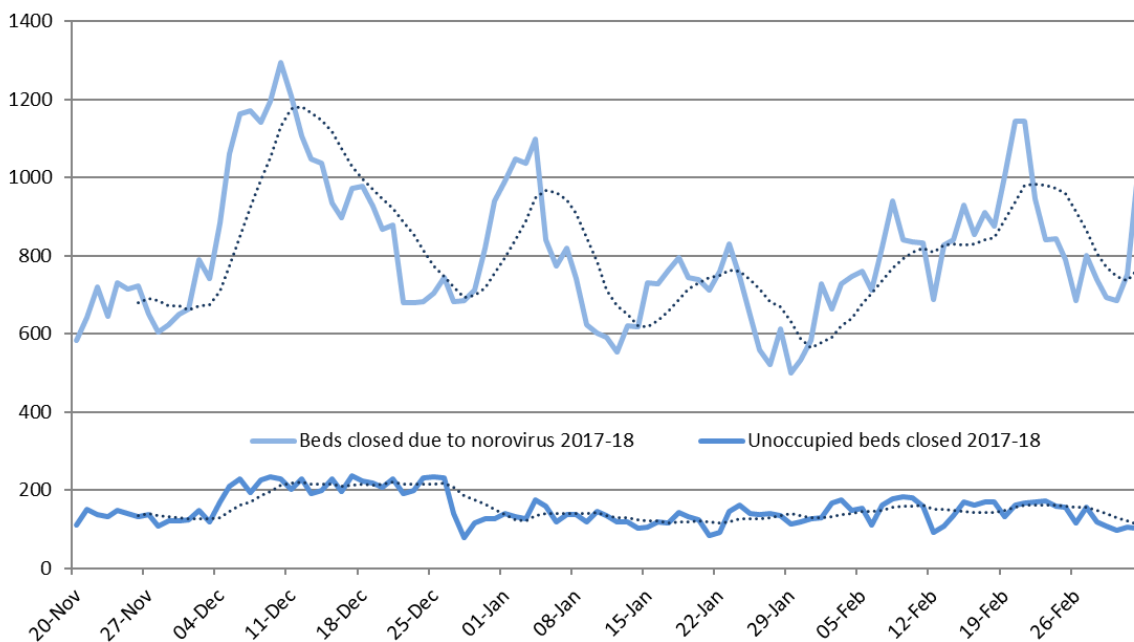
NHS 111 became the principal entry point for many patients accessing integrated urgent care services. On average, 44,751 calls to NHS 111 were made every day. This is 12,928 per day or 41% more compared to the 31,823 calls made on average every day last winter. Call-handlers direct patients towards the most appropriate care. Of all calls to NHS 111:

- 61% were directed towards primary care
- 14% were not recommended to a follow-on service
- 13% had an ambulance dispatched
- 8% recommended attending A&E
- 5% recommended another service.

Norovirus reduced bed supply in some trusts

Data from PHE shows about 3,500 laboratory-confirmed cases of norovirus, which is close to the average for the last few years. However, norovirus outbreaks are often localised and can have a significant impact on affected trusts. As the response to a confirmed infection is to quarantine infected areas, norovirus infections can sharply reduce the supply of beds within the system. During an outbreak, an affected trust may need to close as many as one in five acute beds.

Figure 2: Beds closed due to Norovirus/D&V



More appointments in primary care

Over the Christmas and new year bank holiday we asked local commissioners to ensure sufficient access to GP appointments to match assessed demand on each day, commissioning additional capacity where necessary. In aggregate additional GP activity provided over this period consistently exceeded planned capacity.

This additional activity is attributed to the ability of GP practices to 'switch' capacity to urgent rather than routine appointments and the early impact of additional investment in GP appointments. Demand for GP out-of-hours services was much higher than expected but this reflects the increase in calls to NHS 111.

Table 1: Additional GP activity

	Additional GP and nurse appointments	Additional home visits	Additional extended GP access patient contacts	Additional out-of-hours patient contacts
Activity commissioned	946,561	12,705	121,665	205,271
Activity provided	1,291,912	14,770	104,207	256,029

Supply of beds increased during winter

Hospitals increased bed capacity gradually through the early weeks of winter. However, in the first week of January the number of beds open increased sharply, relieving pressure on crowded emergency departments facing sudden increases in demand after the holiday. This may have helped A&E performance to recover more quickly in January compared to winter 2016/17. The number of open beds remained high through the rest of the winter, starting to reduce again in March.

Table 2: Supply of beds (general and acute only)

	General and acute beds open each day	Monthly change
December	96,135	+0.8%
January	98,621	+2.6%
February	98,419	-0.2%
March	98,238	-0.2%

Bed occupancy was very high throughout winter

The national average for bed occupancy was above the 92% threshold on 113 of the 121 days between the start of December and the end of March. Bed occupancy affects our ability to maintain patient flow, limiting access to patients moving through A&E and into hospital beds. This was particularly acute in later weeks.

Demand and capacity planning across systems and pathways

Despite vigorous planning and extensive co-operation between acute providers and other parts of the health and care system, particularly to reduce delayed transfers of care (DTOCs), discharges did not keep up with admissions, meaning elective procedures were deferred and length of stay increased.

DTOCs reduced in early winter, but increased later

After an episode of acute care, we aim to help patients return to their home or usual place of residence as quickly as possible. Improving patient flow out of the acute setting creates capacity and relieves pressure on emergency departments. We focused on reducing the unnecessary time patients spend in hospital beds by reducing DTOCs, reducing the number of stranded and long-stay patients of admitted for 21 days or more.

At its peak in February 2017, there were 4,449 acute beds occupied by patients whose transfer was delayed. Good progress was made through the year and particularly the start of winter, with reductions every month from July to December when the largest improvements were made and there were 3,021 DTOCs affecting acute beds. DTOCs sharply increased again in January, as did bed occupancy and stranded and long-stay patients.

In the non-acute sector, significant progress was also made, as DTOCs declined from a peak of 2,212 in February to 1,658 in December. While the number of DTOCs also increased in the new year, the increase was much less than for acute beds.

Patient flow deteriorated in the new year, with more stranded and long-stay patients

In the new year, available bed capacity increased sharply as hospitals opened new beds. However, bed occupancy increased at the same time, indicating a sharp increase in length of stay, including the number of stranded patients, those in hospital for seven or more days and long-stay patients – that is, those in hospital for 21 days or more.

4. Winter operating model

Targeted support for trusts most at risk built resilience and improved performance

We supported several trusts, whose performance was poor, with intensive training to coach frontline colleagues to improve patient flow. Support was also extended into the wider system. Hospitals in the programme particularly valued the specialist input from clinicians and social care experts. We helped many health and social care communities build stronger, more constructive relationships despite the pressures and challenges of the winter.

This initiative streamlined processes, reduced paperwork and increased early discharges. Our flagship flow improvement tool, Red2Green, was also brought to mental health trusts and community services as a means of improving flow from acute hospitals. Therapists worked to introduce early functional assessment at the front of the pathway, tackling risk-averse behaviours and promoting discharge to assess. From the new year, the cohort started to consistently outperform its peer group by two percentage points as well as demonstrating greater resilience compared to better-performing trusts.

We communicated better with our partners and established operational grip

We established national and regional 'winter rooms' to increase operational grip last winter. The winter rooms were a focal point for communicating between trusts, primary care commissioners, regions and national partners, providing a single operational voice for the NHS. Our partners valued this strengthened communication and analytical capability. This enabled a more developed understanding of the issues and risks ahead and more confidence in the actions taken.

The analytical and communication cycles were intensive, with continuous monitoring, oversight and escalation. This was an effective way to maintain operational grip over winter and contributed significantly to maintaining patient safety. At times of peak pressure, frontline staff sometimes reported they felt that

the intensity of this cycle took focus away from the operational and clinical response.

We focused on preparing for the task ahead, including modelling and patient safety

We used new ways to understand the pressure points on the system. Operational meetings in the South East region brought together partners from across the sector and used predictive modelling to plan for the week ahead, such as setting targets for numbers of discharges.

We thank our frontline staff for their dedication to patient safety at all times last winter. Their professionalism and caring mean that even when under the greatest pressure our patients can rely on us to be safe.

We focused our attention on identifying emerging risks to patient safety and improved oversight of systems where there were emerging safety concerns, such as care in corridors.

Ensuring patient safety when emergency departments are crowded

The emergency department (ED) patient safety checklist is a simple framework to ensure assessments and tests happen in a timely way and reduce risks in crowded emergency departments. Developed by clinicians at Bristol Royal Infirmary and successfully trialled in all six trusts in the West of England Academic Health Science Network, last winter the NHS rolled out the checklist to the rest of the country. In November 2017, with endorsement from the Care Quality Commission, the Royal College of Emergency Medicine and the Royal College of Nursing, we wrote to all medical and nursing directors of acute trusts asking them to implement the ED patient safety checklist, or something similar, in advance of winter pressure. We had excellent feedback from trusts that implemented it and the checklist continues to spread to new A&E departments across the country. We are monitoring implementation via the Getting It Right First Time (GIRFT) programme.

When first implemented, staff commented that it was ‘simply another piece of paper’, that it could be ‘prescriptive’ or ‘take too long’, or even that it was simply a ‘tick-box’ exercise. However, by engaging clinical leaders, documenting evidence

and incorporating it into everyday practice, safety improved. The checklist is proven to improve clinical processes and reduce serious incidents arising from unrecognised patient deterioration.

Healthcare workers' uptake of flu vaccination was the highest ever

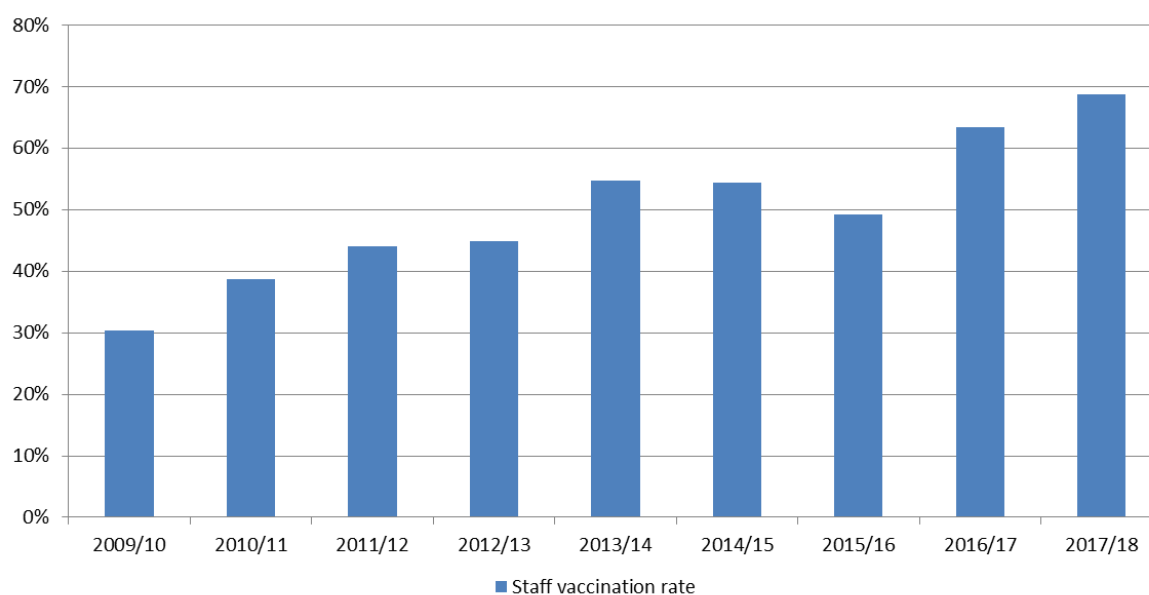
Last winter saw the worst flu season since 2010/11. Many people with flu display no symptoms and unvaccinated staff are at risk of passing the virus on to more vulnerable patients, even where they themselves continue to feel well. Published guidelines from the National Institute for Health and Clinical Excellence (NICE) include studies that show a direct link between staff vaccination rates and patient mortality rates.² Flu-related staff sickness absence also affects trusts' ability to deliver services safely. The Royal College of Physicians published evidence in December showing that a 10% increase in staff vaccination is associated with a 10% fall in sickness absence rate.³

NHS staff flu vaccination rates have been rising since 2008/09, when the uptake rate was 15%. It increased to 68.7% last winter, a 5.3 percentage point increase over the previous season. A range of policy initiatives has been implemented in recent years, specifically CQUIN payments, introduced in 2016, based on the level of uptake and a flu fighter marketing campaign, introduced in 2011. However, there was considerable variation in uptake between trusts. The best three trusts achieved over 90% uptake and the worst just 38.9%.

² <https://www.nice.org.uk/guidance/ng103>

³ <http://www.clinmed.rcpjournals.org/content/17/6/484.full>

Figure 3: Healthcare worker vaccination rates



NEPP recommended deferring some elective procedures

The National Emergency Pressures Panel (NEPP) was a new initiative last winter, tasked with clinical oversight. On 20 December 2017, NEPP suggested that a planned postponement of some elective procedures should apply to inpatient work – except cancer, urgent and time-critical care – to ease pressure on the system during the first two weeks of the year. This was extended to cover the whole of January at a meeting on 2 January. In total, there were 22,800 fewer elective admissions in January releasing about 1,400 beds. However, many trusts had already planned to reduce elective activity over winter and the reduction in admissions was only about 3% of the total admissions.

We campaigned for the public to stay healthy

The 2017/18 winter campaigns strategy was developed to continue to help the NHS manage pressures on the urgent and emergency care system through a range of behaviour change interventions. The campaigns the NHS delivered were:

- **Stay Well This Winter** – get a flu vaccination and seek advice from a pharmacist at the first sign of a winter illness

- **GP Access** – access GP appointments over the Christmas holidays instead of attending A&E
- **NHS 111** – call 111 to access urgent care services
- **Stay Well Pharmacy** – seek advice from a local pharmacist instead of making a GP appointment.

Welcome extra funding came too late for maximum impact

The autumn Budget provided £337 million extra funding, including £150 million to help trusts cover existing winter costs and £20 million to support access to more GP appointments. This was welcome, but it was only announced in November and therefore the full potential impact was harder to achieve in time for January and February.

Visible leadership was crucial

We know that strong leadership is critical to delivering UEC through winter. On-site senior clinical and operational leadership ensures that the right decisions are made at the right level and at the right time. Staff value a senior presence visible on the front line in A&E, ambulance control rooms and all parts of the sector under pressure.

5. Transformation

Patient streaming reduced pressure on type 1 A&E services

In 2017, the NHS was allocated £100 million of capital to improve patient streaming. After a bidding process, the funding was awarded to 111 trusts, with allocations ranging from £20,000 to £1.5 million. Capital was awarded in five waves between April 2017 and March 2018. Front-door streaming is now in place in 98.5% of the service.

Trusts invested in a variety of capital projects, such as estate modernisation and reconfiguration. Patients are streamed between 'majors' and 'minors' and treated in an appropriate setting, which all trusts reported enabled them to ensure good patient flow. Co-locating the most acute type of A&E (type 1) with less acute minor injury A&E departments (type 3) releases pressure on patient flow. Growth in type 1 A&E departments this year was much less than in previous years, and growth in the other types has increased in support.

While most trusts implemented changes in advance of winter, for some there were delays. As operational imperatives took over from preparations ahead of winter, trusts reported that investment in capital was no longer practical and would have limited benefit. Throughout winter, there was significant variation between trusts in the number of patients streamed.

The number of patients streamed increased from about 3,000 per day before winter to 7,000 per day at the height of winter. Patients seen via streaming are more likely to be seen within four hours. The average performance for streamed patients seen and admitted or discharged within four hours last winter was 96%.

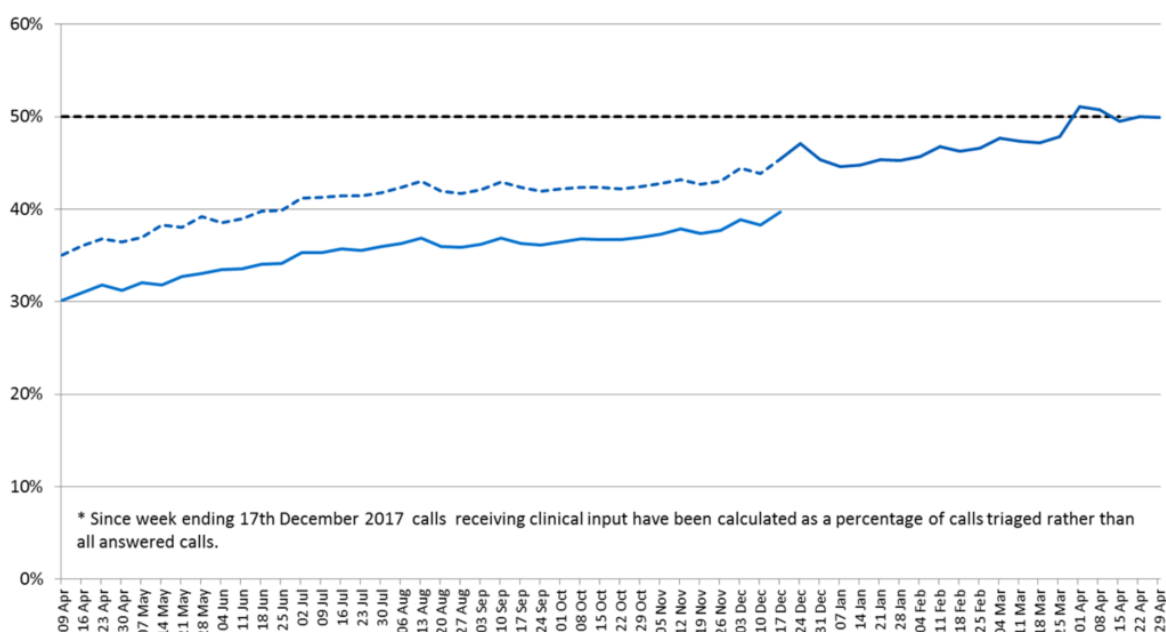
Table 3: Attendances at A&E by type of department

	2014/15 actual growth	2015/16 actual growth	2016/17 actual growth	2017/18 actual growth
Attendances – all types	5.4%	4.7%	2.0%	2.4%
Attendances – type 1	2.4%	3.6%	2.3%	0.8%
Attendances – types 2, 3, 4	16.2%	8.2%	1.0%	3.9%

We increased clinical input into NHS 111 calls

Healthcare organisations throughout England collaborate to deliver NHS 111, an all-hours clinical advice, assessment and treatment service. We increased clinical input into triaged calls, which reached 50% for the first time in March 2018, despite record demand. Increased clinical input enabled NHS 111 to move from an ‘assess and refer’ to a ‘consult and complete’ system, offering a more comprehensive service to patients.

Figure 4: Clinical input into NHS 111 triage



Integrating urgent care helped patients get the right service

Integrating care through NHS 111 helps patients receive more joined-up care and potentially reduces pressure on other parts of the system. In a recent survey of callers, 16% reported that had they not called NHS 111, they would have called for an ambulance, and 28% said they would have attended A&E. Most patients who call NHS 111 are referred to another service. For the 4,643,936 calls made over winter, 61% were directed to primary care, 13% had ambulances dispatched, 8% were recommended to attend A&E, 5% were recommended another service and 14% were not recommend to attend another service.

Extending access to general practice

Over winter, the NHS aimed to provide GP appointments, or a local alternative, between 8am and 8pm. We funded additional capacity in existing GP practices, in temporary extended access hubs and other alternative local providers. In total through winter, 104,207 extended access appointments were delivered.

New ways to access healthcare and advice

We launched pilots of NHS 111 Online, which covered 34% of the country. Integrating services is complex: challenges were mostly to do with engaging stakeholders and technological capability. Of those using NHS 111, 70% reported a positive experience.

A new way of working in the ambulance service is improving responses

Following the largest clinical ambulance trial in the world, the ambulance response programme, (ARP) we implemented new operational standards across England. They are designed to improve call triage and response times, as well as lead to more people being treated on the phone and at the scene. We supported the most challenged services with implementation and rectification plans, focusing on the 39 worst-performing acute sites for hospital handover delays and strengthening the operating models with significant changes. Workstreams include:

- operational productivity

- improving the fleet
- updating the commissioning framework
- paramedic roles and training
- scoping an ambulance digital dataset.

Introducing UTCs as the standard service for urgent care

We created a standardised, consistent offer for patients, designated as urgent treatment centres (UTCs): 83 UTCs were open last winter, ending the confusing array of urgent care provision outside A&E.

More improvements in technical capacity and information

Technical and digital capability has been an important and complex aspect of transforming urgent and emergency care. Challenges include implementing direct booking for primary care appointments, developing information standards and aligning technical capability to standardise hundreds of local variants.

For emergency departments, the electronic care dataset (ECDS) was implemented in 90% of type 1 and 2 A&Es last winter. This records patient flow and details of case-mix and acuity, so we can better map demand. Hospitals have traditionally had limited data about what is wrong with patients when they turn up to hospital, particularly for low acuity case-mix.

Working together to reduce DTOCs

Patients whose transfers of care were delayed used, at their peak in February 2017, 6,660 beds. Since then, we have aimed to free 2,000 to 3,000 beds each day, equivalent to our target of reducing beds occupied by patients with DTOC by 3.5%. So far, we have reduced the number of patients with DTOC by 62.9% of our target, releasing up to 1,673 hospital beds every day.

DTOC reduction was a major initiative to free bed capacity and improve patient flow last winter. While considerable progress was made, the number of beds freed was

exceeded by the demand for beds because of flu, which we estimate peaked at 4,000 beds per day. Although these beds did not provide enough new capacity to meet demand last winter, without them, we would have faced a much worse situation.

Better working across systems to prevent emergency admissions

Enhancing care in care homes helped to reduce hospital admissions for patients from care homes in six vanguard sites across the country. These sites implemented the initiative across several elements of care, which are already recognised good practice. Undertaken together, they join up services in a sustainable way, improving care for the patient as well as being cost-effective and helping to reduce pressure in the UEC pathway:

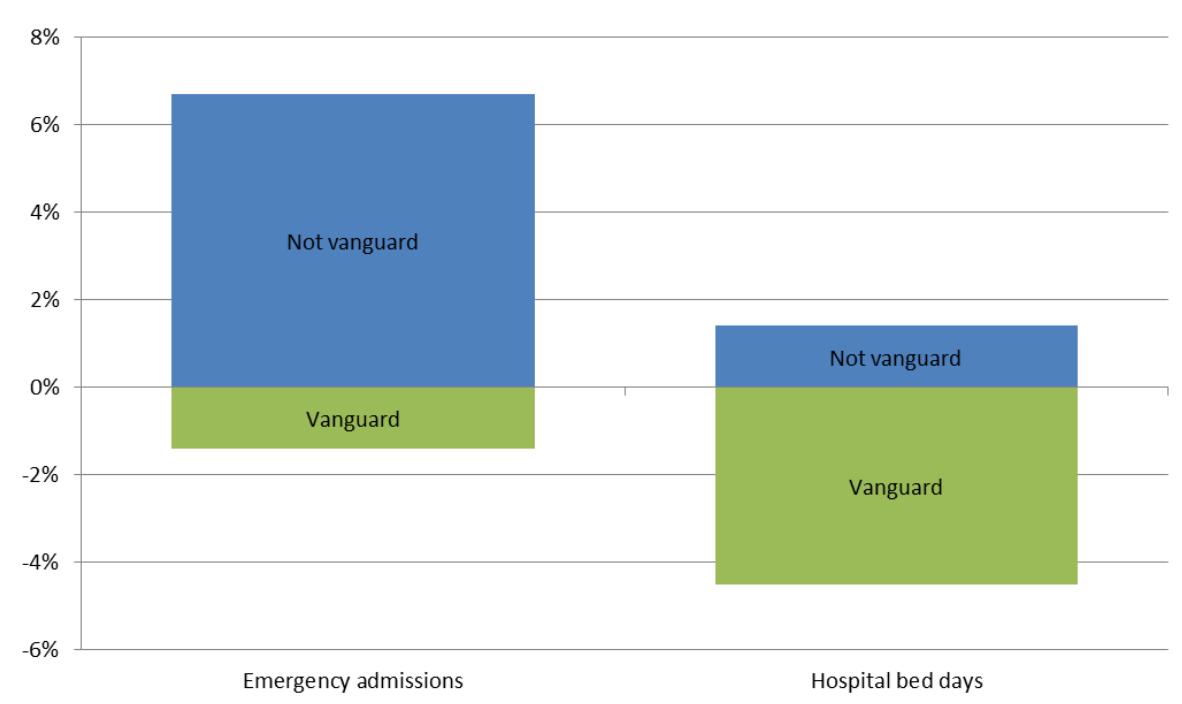
- enhanced primary care support
- multidisciplinary team support including co-ordinated health and social care
- reablement and rehabilitation
- high quality end-of-life care and dementia care
- joined-up commissioning and collaboration between health and social care
- workforce development
- data, IT and technology.

Those sites have reduced emergency admissions by 1.4% and hospital bed days by 4.5% compared to non-vanguard areas, for which admissions have increased 6.7% and bed days by 1.4%. Preventing these admissions will free bed capacity and reduce length of stay.

Close engagement with the rest of the sector drives change and provides both support and challenge. Clinicians in other parts of the system are in a prime position to maximise opportunities to safely divert patients from type 1 A&E departments. We are trialling an intensive community support programme, which

will include two-day intermediate care and two-hour crisis response to increase capability in care homes.

Figure 5: Avoiding admissions and reducing length of stay for vanguard hospital to home sites



New pathways that help reduce admissions

Ambulatory emergency care (AEC) services help to avoid admissions by providing same-day emergency care when A&E treatment within four hours is not sufficient, but neither is a stay overnight necessary. There has been inconsistent application of AEC, but we are working to roll this out across the country.

As the demographics of patients and the public change, we must plan for changes in demand, particularly from frail and elderly patients for whom a hospital admission and delayed transfers can lead to a longer length of stay and reduce the quality of outcomes. We must continue to build the capacity and capability of whole systems to deliver the best possible urgent and emergency care.

6. Priorities for 2018/19

We will ensure that extended access to GPs is available during peak times of demand and can flex to meet local needs and demands across 100% of the service. These services will be clearly advertised to patients, who will be connected with local urgent care services to ensure they receive the right care from the right professional.

We plan to roll out NHS 111 Online to the rest of the country this year and to continue to develop its technical capacity and interoperability, moving from beta testing to live.

Part of this year's ambition was to open UTCs offering appointments bookable through NHS 111 as well as GP referrals by summer (30 June). Despite having more work to do, regional plans indicate that 125 UTCs will be open by December 2019.

Our technology and data strategy is a crucial part of the integration agenda. NHS 111, NHS 111 Online, UTCs and ambulance services are all developing new technical systems to integrate further and increase standards. We are working with NHS Digital to support digital deployment. We are also working with the remaining 10% of trusts that do not yet have ECDS in A&E departments to ensure universal coverage this year.

Improving flow within hospitals will improve patient outcomes, maintain independence and increase the number of patients able to return to their own home or usual place of residence. We decided to broaden our focus beyond DTOC patients to all patients in hospital for 21 days or more. There is considerable cross-over between these groups, and we are working closely with the 14 most challenged systems for delayed transfers.

Key elements of 2018/19 winter plan		Key deliverables in 2018/19
1	Robust capacity and demand planning in every system that covers emergency and elective care	Getting credible plans for the whole of 2018/19, instead of a 'winter capacity plan', which are based on realistic assumptions, with resulting 'gaps' driving operational change: eg length-of-stay reductions and creating capacity.
2	Operational improvement – a major focus on reducing bed occupancy	25% reduction in the number of long-stay patients in hospital (21 days or more) to release 4,000 beds, with sectoral ambitions including local authorities and care homes. Campaign to reduce patient harm modelled on the healthcare-associated infection programme. Supporting staffing solutions via retention programme, use of carers, and potentially medically fit units.
3	System and trust performance management	Tailored support for individual systems and operational and clinical characteristics. High intensity support for the most challenged systems. Improved system working to highlight the entire patient pathway.
4	Standardised operating approach – basic processes and operational grip expected in the system	Increasing healthcare worker vaccination levels – aim over time for 100% ambition with opt out. Minimising minors breaches – programme across the summer to embed best practice behaviours as norms.
5	Continue with strong national and regional leadership	Regional director and full-time operations lead in each of the seven new regions, directing own Emergency Care Improvement Programme resources.
6	Transformation – continue to transform UEC services and deliver Five Year Forward View vision	Rolling out NHS 111 Online nationwide. Continuing development of NHS 111 as first contact urgent care service. Standardising UTCs. Fully implementing the ambulance response programme.

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NHS review of winter 2017/18: annex

September 2018

We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.

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What drives A&E performance

The problem

Many trusts did not meet the A&E four-hour maximum waiting time standard in winter 2017/18. To help improve next winter, we wanted to understand what was behind this.

Our analysis

We have undertaken detailed analysis of what drives A&E performance using daily data from winters 2016/17-17/18. We have used econometric analysis which allows us bring together all the factors and isolate the effect of each on A&E performance. We grouped the factors into the A&E department and patient flow.

The A&E department

The capacity of A&E departments to respond to higher numbers of patients in winter affects performance.



Patient flow

Maintaining good patient flow ensures hospitals have capacity to admit new patients from the emergency department, avoiding bottlenecks.



Key factors

Workforce

Senior doctors make quicker decisions so patients wait for less time

Resilience to pressures

How well providers respond to and recover from pressure affects performance

Admissions

High daily and uneven hourly admissions decrease performance

Bed occupancy

Rising occupancy reduces performance, with accelerating effects above 92%

Flu

1/3rd of the growth in emergency admissions came from flu in winter 17/18

Long-stay patients

Long-stay patients can decrease performance by reducing bed flexibility

Discharges

Discharges on the day and previous days improve performance

Introduction

The delivery of urgent and emergency care is highly complex, influenced by a range of factors that can be volatile and interconnected, especially during high pressure periods. The specific effects of each factor may not always be clear when looking at headline metrics. To overcome this, we have applied econometric analysis to isolate and identify those factors that had the most effect on winter accident and emergency (A&E) performance in England in 2016/17 and 2017/18. We've set out these findings, and the approach we used, in this report. This helps us understand which actions will be most effective in improving A&E performance in future.

We focus on understanding the drivers of performance at type 1 A&E departments¹ as they account for most breaches of the four-hour standard. Type 1 A&E departments have constant interaction with other hospital departments (eg to request diagnostic tests or admit patients) and the wider social and community care system (eg through A&E attendances). This means their performance is influenced by factors both inside and outside the A&E department. We have therefore focused our analysis on how patients flow through the entire emergency care pathway.

The complex nature of the emergency care system, combined with the large range of often volatile data available to observe it, makes it extremely difficult to determine what is driving performance. There are large differences in A&E performance between providers, driven substantially by often quite static, local factors that are difficult to quantify (eg culture or leadership) – which makes analysis of aggregated, sector level data misleading. The econometric approach we have used ensures these complexities are properly considered.

This work builds on the existing literature, including our 2015 report *A&E delays: why did patients wait longer last winter?*² which established the importance of admissions and bed occupancy in influencing A&E performance. The King's Fund analysed hospital capacity in more detail (*NHS hospital bed numbers: past, present, future*³), and focused on increasing bed shortages. Our analysis adds to

¹ Consultant-led, 24/7 A&E departments with full resuscitation facilities.

² <https://www.gov.uk/government/publications/ae-delays-why-did-patients-wait-longer-last-winter>

³ <https://www.kingsfund.org.uk/publications/nhs-hospital-bed-numbers>

this evidence base by looking at daily bed occupancy, in particular to identify tipping points past which A&E performance deteriorates rapidly, and the types of patients in the beds, especially long-stay patients.

Findings

Each factor which influenced A&E performance is outlined below, grouped into two key parts of the emergency care pathway: patient flow and the A&E department.

Patient flow

Maintaining good patient flow right through the emergency pathway ensures hospitals have capacity to admit new patients, avoiding bottlenecks in the A&E department that are often the cause of long patient waits. Flow and A&E performance can be disrupted by high bed occupancy, long-stay patients and low discharges.

Bed occupancy

When bed occupancy is high, A&E departments can spend a lot of time looking for available beds for patients who need to be admitted. These patients then wait longer in A&E and are more likely to breach the four-hour target.

Bed occupancy is strongly associated with A&E performance across both winters.⁴ We find a tipping point above 92% bed occupancy, using daily Sitrep figures, where the effect on A&E performance accelerates. Some trusts can operate well with high bed occupancy while maintaining good performance, by compensating with the other factors we've identified below (eg higher resilience, more senior workforce) or others we have not analysed (eg by narrowing the gap between beds becoming available and being filled).

Our analysis finds a significant A&E performance tipping point at 92% bed occupancy. A study in 1999 found that beyond a daily bed occupancy level of 85%, lack of bed availability starts causing problems – in terms of quality and operational performance. This study used a simulation analysis, calibrated on data from two hospitals in England.

⁴ Bed occupancy was included in the analysis as discrete intervals to allow us to identify tipping points. We use general and acute beds only.

Long-stay patients

Hospitals with more long-stay patients – those who have been in hospital for 21 days or more – have additional bed pressures. Long-stay patients have two effects: on bed occupancy and bed flexibility. The effect on bed occupancy is already captured in the results reported in the section above. Long-stay patients affect bed flexibility by reducing the proportion of beds that providers can quickly free up to urgently accommodate new patients who need admitting for treatment.

We know that length of stay is influenced by case-mix and population demographic differences, so some providers will justifiably have more patients who stay for longer. To account for this, we focused on the proportion of stranded patients (seven days in hospital) who are long-stay patients. Long-stay patients may have a particularly large effect because they account for a disproportionately large amount of bed capacity – despite making up just 4% of patients they account for around 40% of total bed days.⁵

Our analysis finds a 10-percentage point increase in the proportion of stranded patients who are long-stay patients is associated with a 2 to 3 percentage points decline in A&E performance. This effect assumes bed occupancy remains steady.

While we identified a strong relationship with long-stay patients, our model did not find a significant link for delayed transfers of care (DTOCs) or stranded patients. Given that DTOCs and stranded patients mainly affect performance through bed availability and flexibility, it is likely that the bed occupancy and long-stay patient metrics will have captured most of this effect.

Nearly 350,000 patients spend more than three weeks in an acute hospital each year. This year, we are asking trusts to reduce the number of long-stay patients (and long-stay bed days) in acute hospitals by 25%. In doing so, we aim to free up 4,000 beds in acute trusts.

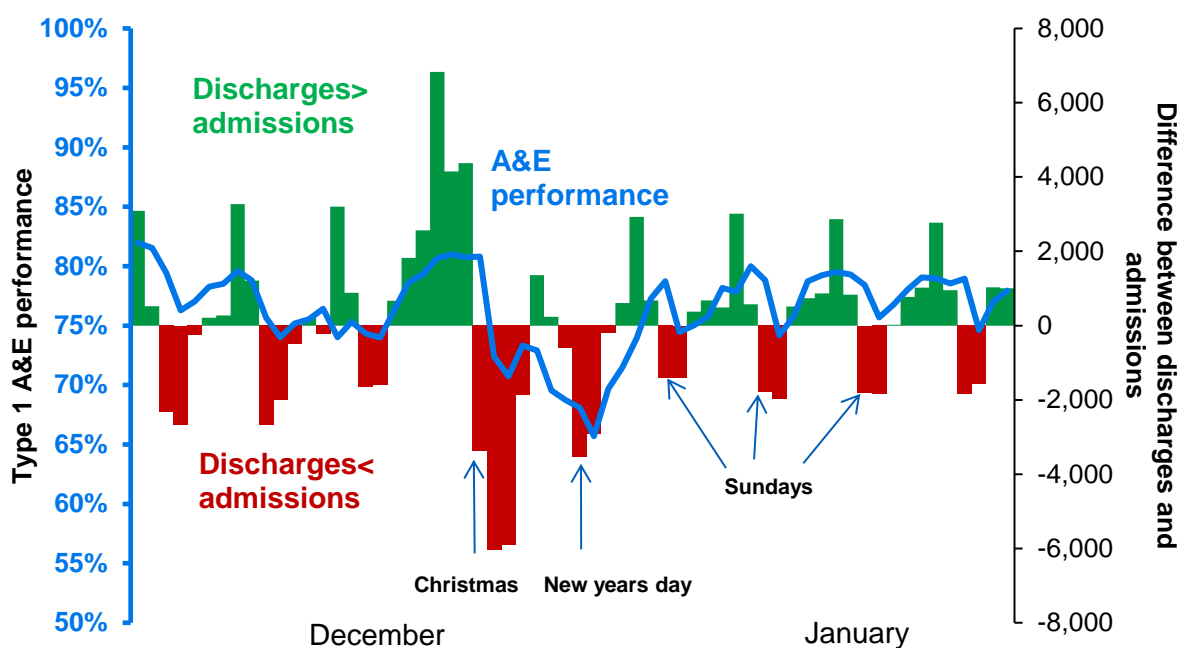
Discharges

Discharges play a key role in maintaining patient flow. We find that lower levels of discharges (relative to the number of non-elective admissions) leads to poorer A&E performance (see Figure 2). This not only affects A&E performance on the same

⁵ HES data FY 2016/17. Patients admitted to an acute trust, excluding mental health specialties and patients with a length of stay more than 365 days.

day, but also in the two subsequent days – the effect of pressure, the difference between admissions and discharges, accumulates over time. If a hospital has a 10% pressure increase on Saturday and Sunday, when Monday arrives it is already under strain of having extra patients in beds, which means its performance would on average be between 0.7% to 0.8% points worse. If it is not able to increase discharges on the Monday and has another 10% pressure increase, this would reduce performance by a further 0.4% points.

Figure 1: National winter 2017/18 pressure in the system⁶

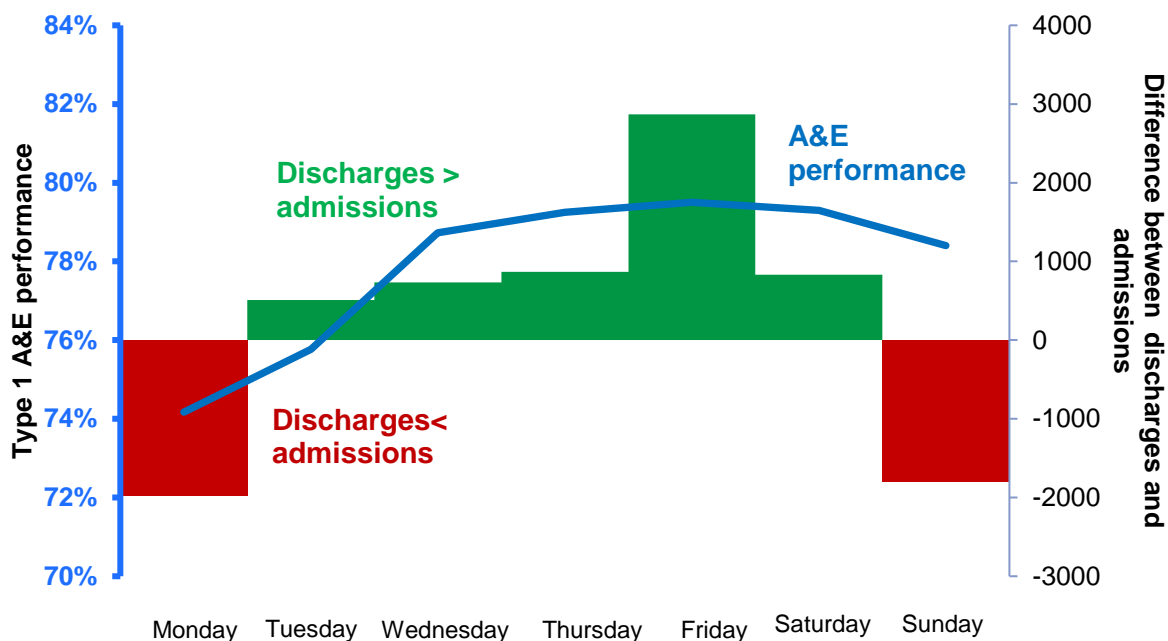


Source: Hospital Episode Statistics (HES) data

Figure 1 shows how the differences between discharges and admissions build pressure over time during winter 2017/18, which is strongly related to A&E performance. Pressure decreased in the run up to Christmas then experienced the largest increase following Christmas. For the rest of winter, there is a clear weekly pattern of pressure increasing on Sunday and Monday then reducing from Wednesday to Friday.

⁶ This chart only covers December and January because there is a delay before we can access HES data.

Figure 2: National winter 2017/18 pressure in the system – one week in mid-January



Source: HES data

This variation in discharges helps to explain the differences in A&E performance on each day of the week. For example, lower weekend discharges reduce the available bed base for the hospital’s busiest days (Monday and Tuesday) contributing to poorer performance on these days. Figure 2 illustrates this pattern for a typical week in mid-January.

We are planning to reduce the variation between weekday and weekend non-elective discharge volumes from acute hospitals. Crucially, this will be supported by ensuring staff in hospitals have timely access to social care assessment staff and social care practitioners seven days a week, and that multidisciplinary teams work together to make referrals and support discharge seven days a week.

Admissions variation

Demand is the inflow into the emergency care pathway. Our previous research showed that admissions affect A&E performance more than attendances,⁷ although high numbers of attendances do affect safety and staff workload. More admissions

⁷ A&E delays: why did patients wait longer last winter?

<https://www.gov.uk/government/publications/ae-delays-why-did-patients-wait-longer-last-winter>

stretch the capacity in the A&E department and in other hospital departments that need to find beds to admit patients to. We have extended this evidence by looking at two admission-based measures for demand in our model: daily admissions variation from the 90-day winter average, and hourly admissions variation. These account for both how many admissions there were in a day, and how spread out those admissions were during that day.

In line with previous work on A&E performance, we find higher than average daily admissions have an adverse effect on A&E performance. A 10-percentage point increase in admissions was associated with between a 0.2 to 1 percentage point decrease in A&E performance.

Hourly admissions variation can be hard for hospitals to accommodate if they do not have spare capacity. A smoother stream of admissions can give hospitals more time to free up beds by discharging patients gradually through the day. Providers with the highest hourly variation in emergency admissions had on average 3% points worse A&E performance than the lowest variation providers.

Patients under 10, over 60, and those referred by GPs have higher hourly admissions variation than other patient groups. This is driven by a greater number of admissions from these groups in the evening.

Flu

High rates of flu add to demand pressures, worsen patient flow and can spread infection to staff. In winter 2017/18, flu-related non-elective hospital admissions were over three times higher than the three previous winters⁸. This accounted for about a third of the emergency admissions growth between winter 2016/17 and 2017/18. Patient flow is affected because patients with flu generally stay for longer and are isolated to minimise contagion, which reduces the flexibility of beds.

It is difficult to quantify the precise effect of flu on A&E performance. We have identified flu patients as those with flu as their primary or secondary diagnosis in Hospital Episode Statistics (HES) data. Recording of diagnoses in HES can be variable, but our initial analysis suggests that a one percentage point increase in the proportion of general and acute beds occupied by flu patients decreased A&E

⁸ Data from Hospital Episode Statistics (HES). Patients with flu are identified as those whose primary or secondary diagnosis code is J09-J12.

performance by between 1.0% and 1.2%. This effect assumes bed occupancy and emergency admissions remain stable. Although this is a large effect, only five percentage of days in any trust across the winter exceeded 1.8% beds occupied by patients with flu, so a one percentage point increase represents a large change in flu cases.

A&E department

What happens in the A&E department itself is also crucial for A&E performance. A&E departments need to run efficiently to manage the increased volume of patient flow in winter, and the degree to which they are able to respond affects performance. Our model identifies two particular factors which determine how well A&E departments perform:

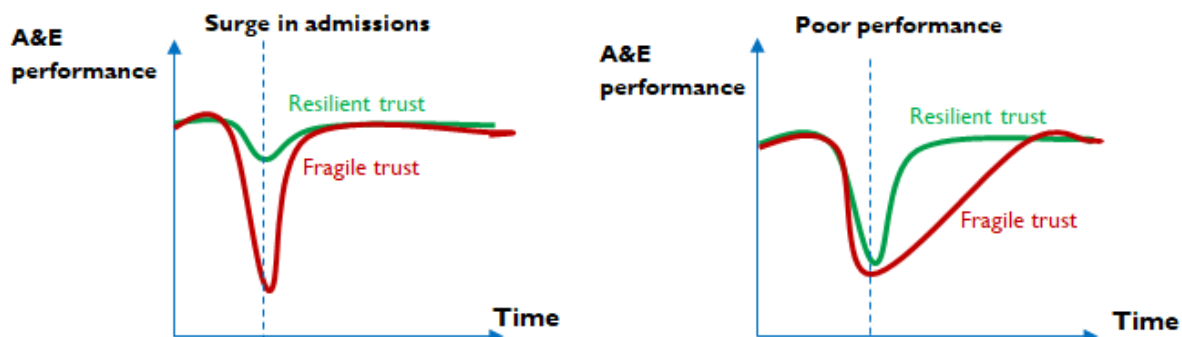
- resilience, driven by medium-term, institutional capacity (leadership, culture, operational processes), which we identify by how well providers respond to surges and deteriorating conditions over the whole winter period
- the type of workforce they have available, which can determine how quickly patients can be seen, treated and admitted or discharged.

Resilience

Measuring resilience helps us identify the differences in performance between providers, which are often driven by static, local factors that are difficult to quantify. We define resilience in two ways.

First, how much an A&E departments' performance falls after a surge in admissions (Figure 3, chart left). We split the 137 providers into five categories based on their resilience, with the most resilient providers experiencing half the dip in A&E performance than the least resilient. This resilience factor does not appear to be related to the other operational factors – more resilient providers do not seem to have lower bed occupancy or more senior workforce for example. This could therefore be picking up factors that we cannot measure, such as managerial capacity, culture or leadership.

Figure 3: Provider resilience from a surge in admissions and bounce back from poor performance



The second resilience factor measures how many days it takes a provider to bounce back from poor A&E performance (Figure 3, chart right). The most resilient providers were able to bounce back from dips in A&E performance by the next day. The least resilient providers took up to three days to recover. Comparing resilient providers with less resilient providers suggests that the ability to bounce back is driven by better operational capacity – eg lower bed occupancy and fewer long-stay patients.

Workforce

We find a 1 percentage point increase in the proportion of A&E staff who are senior doctors⁹ increased A&E performance by 0.1 to 0.2 percentage point. These senior staff are often responsible for making rapid treatment decisions, drawing on their large amount of experience, which improves patient flow.

Our analysis may well be underestimating the effect of workforce on A&E performance. We are limited to monthly workforce data for substantive staff only, from electronic staffing records (ESR) data. This means that we cannot observe how much daily or shift-level fluctuation in staff resources affects performance, or what effect staff vacancies or temporary staff may have.

⁹ Senior doctors are defined as registrars and above.

Method

We have brought together data, covering 137 providers (with a type 1 A&E department) between 1 December and 28 February in both 2016/17 and 2017/18. Then, by applying econometric analysis, we have been able to look at the effects of a large number of factors at the same time and determine which are statistically significant and most influential on performance. We have controlled for quality, size of A&E department and patient characteristics; all our findings above are in addition to the effect of these.

The econometric technique we use is a pooled ordinary least squares (OLS) model. This allows us to identify general characteristics of A&E performance, applicable across all the providers in the sample, to inform national policy and support. We tested the robustness of our approach by comparing it to other techniques – panel fixed effects and fractional response models – and found they yielded very similar results. This suggests that our findings are robust across a range of specifications and assumptions.

Our model was estimated using 2016/17 winter data, and then applied to data from winter 2017/18. We found the results to be very similar across both winters, adding confidence in our approach and findings. This suggests that the factors we identify are reasonably stable over time and will hold for next winter too – allowing us to better direct our support to providers.

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