

Urgent and emergency care and the threat to ambulance services

Will Fryer and India Triay Palazuelo
May 2023



Urgent and emergency care and the threat to ambulance services

Urgent and Emergency Care (UEC) services have faced a year of serious pressure. The winter, in particular, has been difficult; in December, 35% of patients waited more than the 4-hour target in Accident and Emergency (A&E) departments, whilst 54,532 people waited longer than 12 hours, triple the operational standard, up 44% compared to November. As identified in NHS England’s recent recovery plan, UEC services have faced problems on several fronts, including waves of flu and Covid-19, a resumption of health-seeking activity post-Covid, rising occupancy rates in hospitals and full A&E departments.

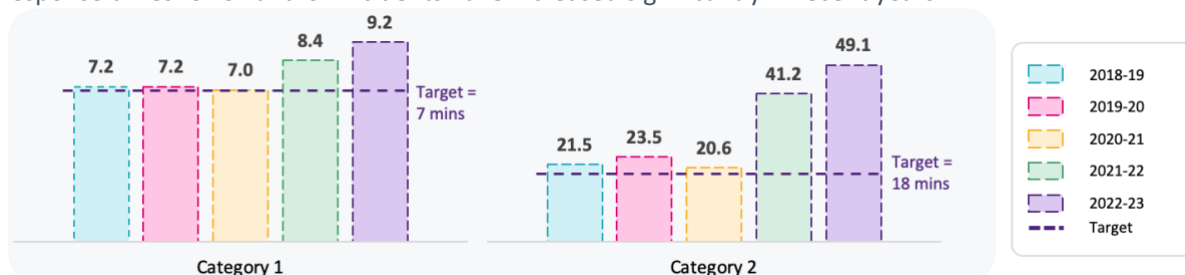
However, the threat has been clearest for ambulance services, where response times have reached record highs and workforce gaps make meeting demand difficult. In this piece we set out an analysis of the situation to try to understand what is going on. In summary, we conclude response times have worsened across the board for reasons extending beyond winter pressures and suggest three opportunities to improve service delivery in the face of ongoing pressures.

Ambulance response times have reached record highs

Ambulance responses are taking longer than ever before, with potentially serious implications for patients waiting for time-sensitive care. Response times are exceeding target levels across all four categories, as shown in Figures 1 and 2. In 2021/22, response times were already above target, with average Category One (C1) response times of 8.4 minutes, as opposed to a targeted 7 minutes, whilst average response times for emergency, or Category 2 (C2), calls were more than double the target of 18 minutes. This performance has only worsened in 2022/23, with average response times of 9.1 and 49.1 minutes for C1 and C2 incidents, respectively.

Figure 1 – Mean arrival times for ambulances by category, by year (in minutes)

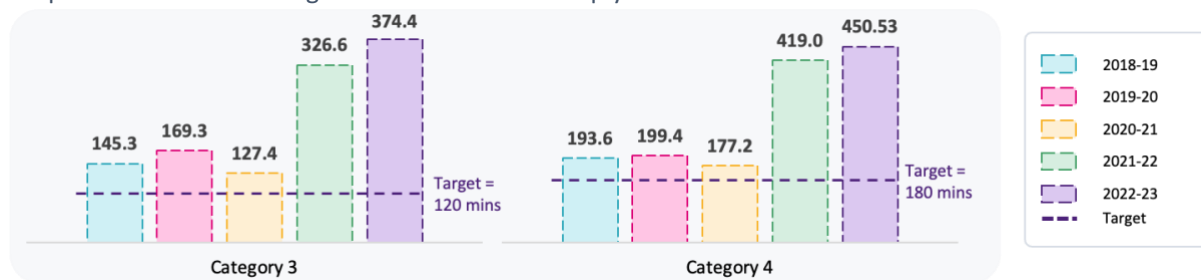
Response times for C1 and C2 incidents have increased significantly in recent years



Worryingly, response times have deteriorated by even more for less urgent Category 3 and 4 incidents, as seen in Figure 2. Whilst 90% of Category 3 (C3) incidents should be responded to within two hours, in 2022/23 the 90th percentile figure was on average more than six hours. Similarly, 90% of Category 4 (C4) incidents should be responded to within three hours, but in 2022/23 the 90th percentile waiting time has averaged over seven and a half hours. Concerningly, even average response times for C3 and 4 incidents have exceeded the NHS 90th percentile target.

Figure 2 – 90th percentile arrival times for ambulances by category, by year (in minutes)

Response times for less urgent calls have risen sharply



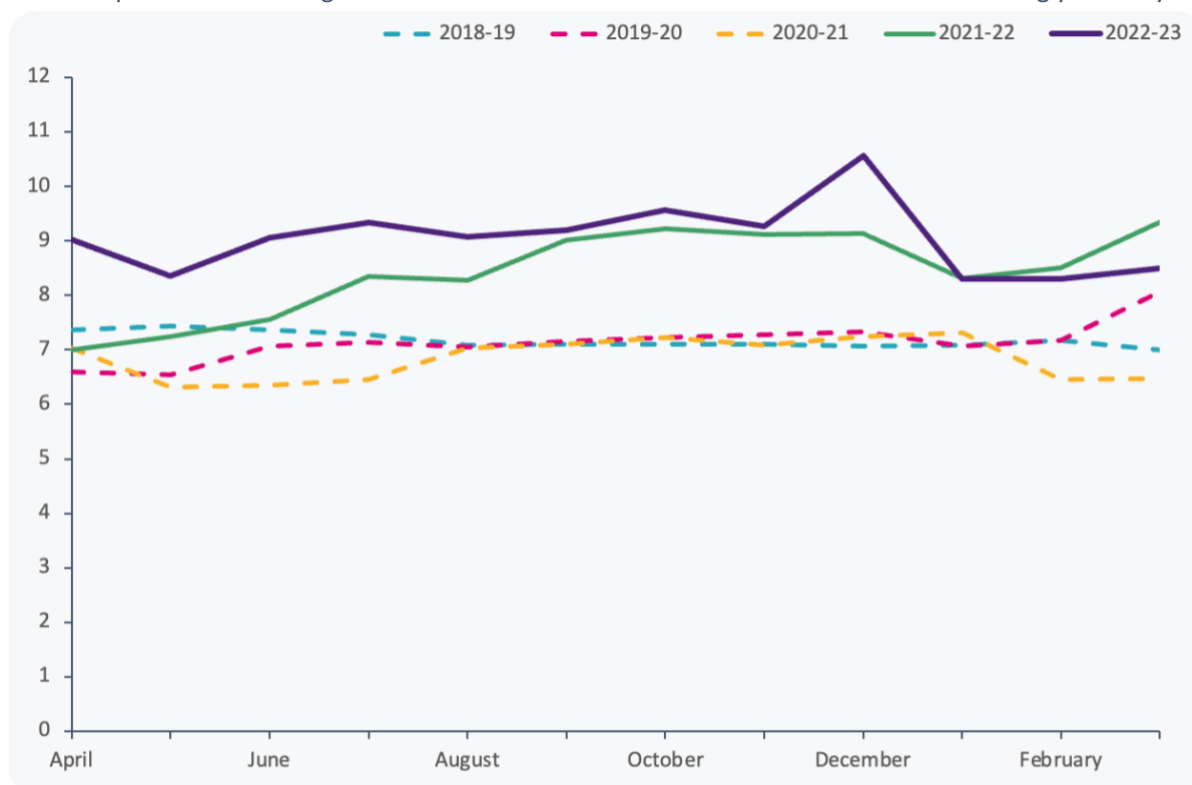
The challenges extend beyond winter pressures

The NHS, and UEC more specifically, tend to see a drop in performance over winter, as seasonal diseases increase in prevalence. The extent of seasonal variation is becoming worse each year. As illustrated in Figure 3, in all years since 2019/20, December response times for C1 incidents have been above those for April; however, the highest increases from April to December have both been in the last two financial years.

This increase in winter response times above spring levels reflects the strain that the UEC system is under. As systems become more stretched, their ability to absorb winter pressures is reduced. Not only are December response times at a peak in the last two years, but response times are considerably higher than previous years through the rest of the financial year. Given this magnification of winter pressures in recent years, it is clear ambulance response times face a longer-term crisis, rather than an annual cycle of winter pressures.

Figure 3 – Mean response time (minutes) for ambulances called for life-threatening injuries and illnesses, by month

Mean response times are significant worse in winter but this seasonal variation is becoming year-on-year



Response times are driven up by increased demand, handover delays and staff absences

Ambulance service performance and acute care have long been trapped in a cycle of deterioration. Busy Emergency Departments result in handover delays, which in turn worsen response times and lead to patients deteriorating. More patients then need to be conveyed to hospital, contributing further to the burden on Emergency Departments. Further, the extra demands on crews and the scale of handover delays impact morale and increase staff sickness, which further impacts response times.

Ambulance handover delays

Ambulance handover delays at acute hospitals play a significant role in worsening ambulance performance. Handover delays cause ambulances to lose time queuing outside Emergency Departments instead of being ready to respond to new calls in a timely manner.

The NHS targets all ambulance handovers to happen within 15 minutes, with none taking longer than 30 minutes. Despite this, 24% of ambulances were delayed by at least 30 minutes in 2022-23. The Association of Ambulance Chief Executives (AACE) estimated that in July 2022 the time lost to delays longer than the 15-minute standard amounted to 4,000 ambulance job cycles. According to the AACE's managing director, in December approximately 57,000 patients in England experience a handover delay of at least an hour, with 6,000 of those exposed to "severe harm" due to these delays. AACE's December data also showed that delays meant that ambulance crews were not able to respond to 999 calls on 181,000 occasions.

As noted in the UEC recovery plan, handover delays are being driven by high bed occupancy in acute hospitals, which mean that sick patients cannot be admitted. This high occupancy is chiefly caused by increased length of stay, which is largely due to a greater complexity of disease and difficulties discharging patients. Hospitals are struggling to discharge patients promptly: in the week commencing 9th January, more than 14,000 beds were occupied by patients who were medically fit for discharge, 12% more than the same period last year.

Not only can this high bed occupancy hinder the recovery of those spending long periods of time in hospital, but it prevents new patients from being admitted swiftly, increasing the risks of deterioration,

Increased complexity of demand

NHSE has identified increased complexity and discharge difficulties as the key drivers of the current pressures, in the recent UEC recovery plan. Whilst there are many factors at play, a key driver of worsening response times is an increase in the complexity of ambulance incidents. Although the total number of incidents have remained broadly stable over time, the number of the most urgent C1 incidents has increased by approximately 30% since 2019/20, whilst C2 incidents have actually slightly decreased (as seen in Figure 4).

Because almost all C1 incidents require on-site attendance and conveyance to A&E, they are the most time-intensive incident type for ambulance crews. An increase in C1 incidents means more crews spend time waiting at A&E to hand over patients. This has the downstream effect of reducing the ability of ambulance services to respond in a timely manner to the less urgent incidents, as illustrated by response times for C2 incidents more than doubling. Any increase in C1 incidents has a disproportionate impact on performance across the service.

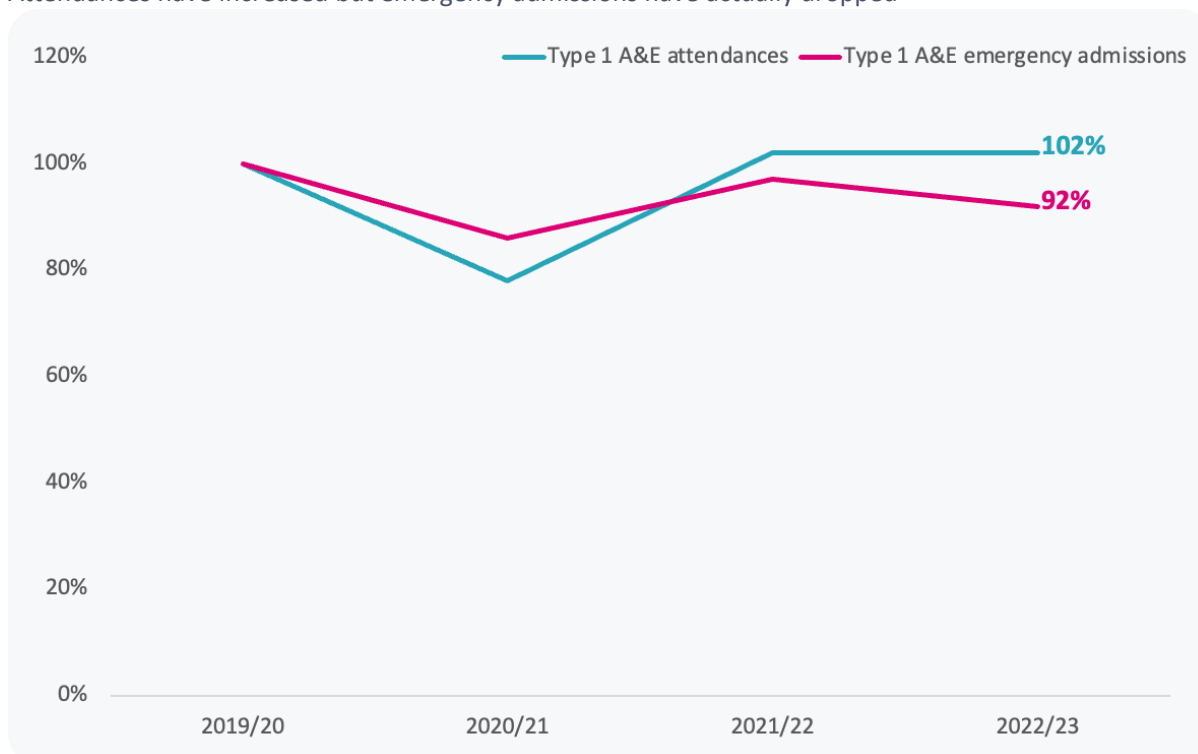
In fact, increases in the numbers of C1 incidents trigger deteriorating response times across the board by causing an increase in the number of ambulances which need to handover patients to A&E departments increases handover delays. For example, in the week ending 26th March, 21,617 hours were lost to handover delays. These patients often experience deterioration whilst waiting and spend longer in hospital as a result. This worsens the demand and capacity mismatch which causes ambulance handover delays. Meanwhile, because patients wait longer for ambulances to arrive, they deteriorate at the scene, increasing the likelihood of conveyance to hospital and worsening waits at A&E.

Figure 4 – Change in C1 (left) and C2 (right) response times and incidents since 2019/20, indexed to 2019/20
Response times have increased for both C1 and C2, but C2 incidents have dropped



However, whilst the most serious ambulance incidents have increased in frequency, this demand increase has not been seen for the most serious A&E attendances. Type 1 Major A&E attendances have increased only 2% since 2019/20, whilst Type 1 A&E admissions have dropped 8% (as illustrated in Figure 5). It seems that those who require urgent A&E care are relying on ambulance services more than previously, increasing the burden.

Figure 5 – Change in Type 1 A&E attendances and emergency admissions since 2019/20, indexed to 2019/20
Attendances have increased but emergency admissions have actually dropped

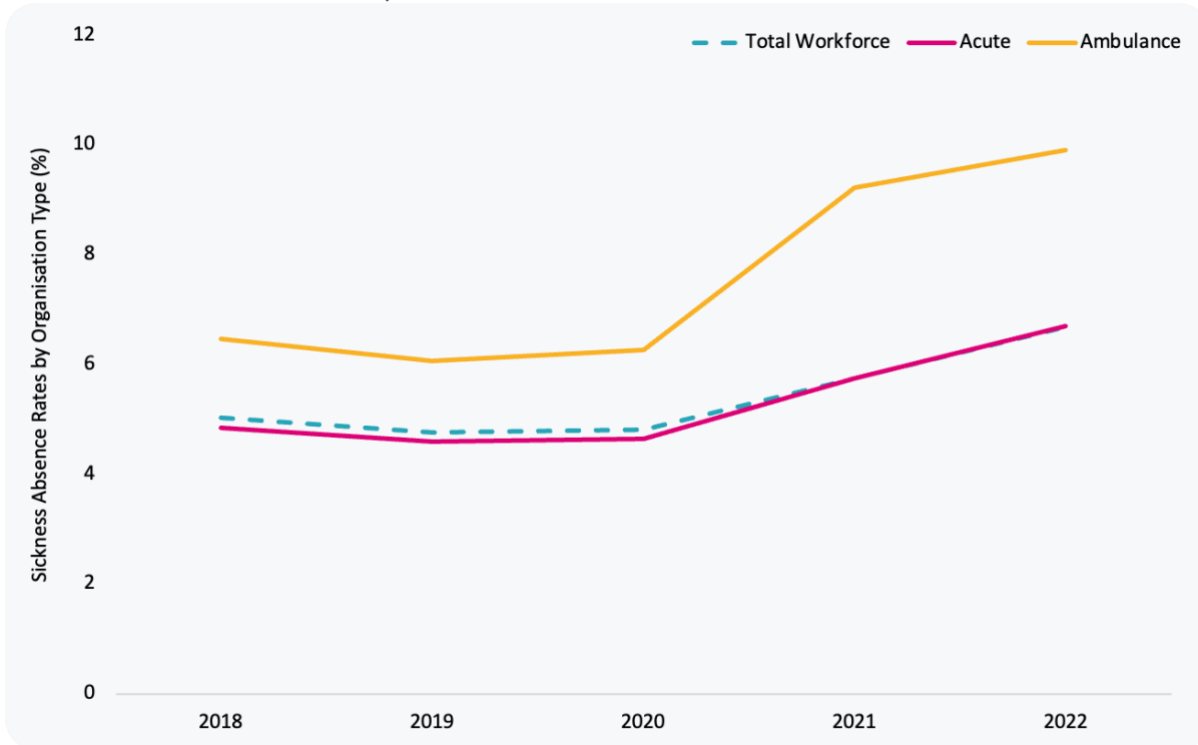


Increases in sickness absence rates

Much public debate focuses on workforce shortages in the ambulance service, but the number of paramedics has increased by 13% since March 2018. However, as shown in Figure 6, ambulance staff sickness absence, often due to poor mental health, has increased from 5% in March 2019 to 9% in March 2022, the highest staff group within the NHS. This increase in sickness absence reduces the capacity of ambulance services to respond effectively and quickly to incidents.

Figure 6 – Sickness absence rates by organisation type since 2018

Sickness absence has increased by more in ambulance Trusts than other services



Improving conditions for ambulance workers, whether by reducing demands placed on workers through increased ‘hear and treat’ usage or reducing vacancy rates, could reduce sickness absence rates to pre-pandemic levels. This would help to mitigate the capacity constraints ambulance services are experiencing.

There are significant opportunities for improvement

Our recommendations to address these challenges take a 3-lens approach, considering data and digitalisation, workforce, and clinical model aspects of the problems and potential solutions. These three opportunities are essential to breaking out of the cycle of decline in ambulance services and UEC and create a step change improvement in care.

Maximising the use of data and digital

Ambulance Trusts now have more digital tools at their fingertips than ever before. This enables predictive modelling, as well as action logging and evaluation. Adopting these into the ways of working for each ICS and ambulance Trust would allow operational leads to take more proactive approaches to managing patient flow and therefore avoid the accumulation of pressure that we are seeing today. For example, being notified of spikes in pressure before a peak is reached would facilitate decision-making about intelligent conveyancing

and diversions ahead of time. Smart rostering systems can help ambulance Trusts flex capacity to meet constantly evolving challenges.

There is also potential to apply digital solutions at every stage of the pathway, with some Trusts already implementing this type of initiative. For example, London Ambulance Service uses artificial intelligence and voice recognition to pinpoint the location of a caller and manage appropriate responses and resourcing. Similarly, where appropriate, video technology can be used to assist with triage and hear-and-treat responses, through applications such as GoodSam. With this in mind, South Central, West Midlands and North East NHS Ambulance Trusts were selected to join the ambulance version of the Global Digital Exemplar programme (from 2018 to 2023), focusing on areas including the use of remote diagnostics such as video consultations and ensuring vehicles have Wi-Fi access. In addition to using technology at the patient-clinician interface, London Ambulance Service have simply improved communication with acute sites to notify of when ambulances are coming in and enable them to better prepare, mitigating handover delays.

Ambulance services offer many different options to enhance service through the use of data and digital tools; taking advantage of these opportunities will enable ambulance Trusts to enhance capacity, despite persistent workforce challenges.

Workforce

Workforce is a challenging space for ambulance services but also offers a number of opportunities to enhance care. Primarily, Trusts must focus not on increasing total workforce (though this is certainly important) but instead on hiring and best-positioning the appropriate skill-mix. More experienced paramedics, such as Advanced Practitioners, offer a high level of skill which, when well-positioned in the service, can greatly improve incident response. For example, Advanced Practitioners are often best placed not in frontline care but in triage, where they are able to use their experience to improve triage decisions and ensure that patients who do not need to go to hospital are not conveyed. In particular, Advanced Practitioners can act as a centralised resource for on-site crews to test responses, ensuring that patients benefit from their experience.

However, getting the right skill-mix in ambulance workforces will require fundamental change. Staff retention is one of the biggest workforce challenges facing the NHS, and this is compounded in the ambulance service by higher-than-average sickness absence. In a stressful job, ambulance crews are at constant risk of burnout, whilst career progression is not always clear. Many ambulance staff feel that their projected career progression 'tops out' quite early, before leaving to find another job. As emphasised by the recent ambulance strikes, ambulance services must find a way to improve experience for staff and offer a clearer career path to ensure that experienced paramedics do not feel forced to leave the service. Once Advanced Practitioners and other experienced paramedics feel they are valued and well-treated, they will be more likely to stay and use their unique experience to improve the experience of those depending on ambulance services.

Clinical model - implementing 'hear and treat'

Ambulance services can respond to incidents in three main ways:

- 'hear and treat' – treating patients over the phone, often involving signposting to more appropriate resources,
- 'see and treat' – treating patients in-person and discharging at the scene,
- 'see, treat and convey' – treating patients at the scene before conveying them to another point of care, often an Emergency Department.

Because ‘hear and treat’ responses do not require an in-person response, increasing their use where feasible reduces the number of ambulances which need to go to scene, improving response times for the most urgent patients by making the best use of available capacity. Conversely, incidents responded to with ‘see, treat and convey’ are the most time-intensive response and increase pressure on A&Es by increasing the number of patients.

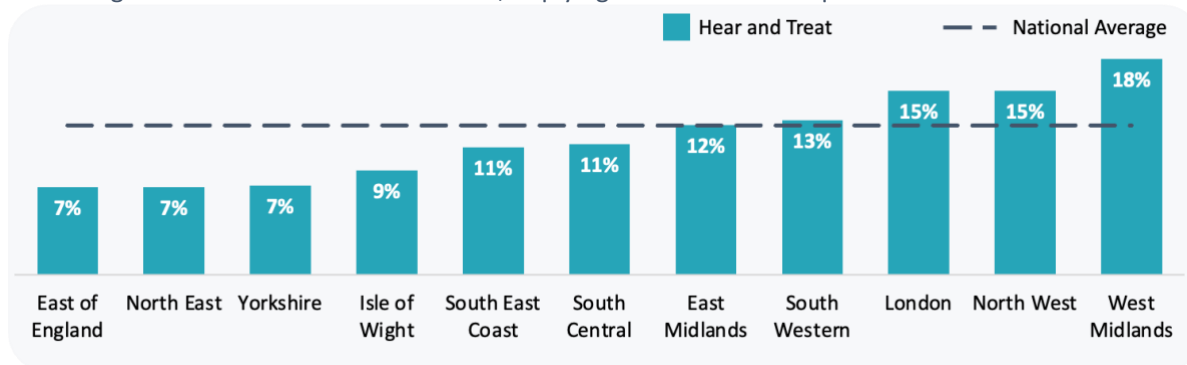
Decreasing the number of conveyances would help shorten job cycle times by making more ambulances available for response, rather than spending time conveying to hospital; for example, if Trusts reduced conveyances by 5% across the board, 225,975 conveyances could have been avoided in 2022/23.

This would ensure that only those patients who need to be in hospital, whilst ambulance crews are freed up to respond to more incidents within target times. Avoiding the time spent in ambulance queues for patient handover at A&E would likely improve morale for paramedics currently forced to wait whilst patients deteriorate outside of hospital.

There is clear variation in the percentage of incidents responded to in-person. For instance, while the average proportion of incidents with face-to-face responses in England in March was around 88%, the equivalent figure for both the North East and Yorkshire Ambulance services was approximately 93%.

Together with reducing conveyances, increasing ‘hear and treat’ as a response method in those regions which respond in-person more often than the average will free up ambulance teams to respond to the most urgent cases. In March, ‘hear and treat’ accounted for an average of 12.3% of incidents in England. However, this masks the considerable variation that exists in the percentage of incidents responded to with ‘hear and treat’, as is illustrated in Figure 7. Our analysis shows that increasing the percentage of incidents responded to with ‘hear and treat’ to the national average across the board would have required 10,464 fewer face-to-face responses in March, enabling ambulance crews to respond more quickly to those most seriously ill and Trusts to improve response times by better utilising capacity.

Figure 7 – Mean proportion of total incidents responded to with ‘hear and treat’ by Trust, March 2023
There is significant variation between Trusts, implying some room for improvement



Key to improving ‘hear and treat’ rates will be ensuring that the most expert paramedics are appropriately placed. Advanced practitioners and the most experienced paramedics can often have the greatest impact in triage, where they can quickly and effectively triage incidents, ensuring an appropriate allocation of resources. Category 4 incidents should be a particular area of focus for this initiative, given ‘hear and treat’ is often more appropriate than a face-to-face response.

Ultimately, integrated care is needed to manage patients who attend hospital unnecessarily

The total number of incidents has remained relatively stable over time, but the average complexity of patients has increased as the proportion of C1 incidents (which require the most resources) has increased. In

fact, the proportion of incidents labelled as C1 has increased from 9% in 2019 to 18% this year. As a result, the number of conveyances to Emergency Department has also risen.

Improving paramedics' access to clinical advice to streamline triage and ensuring the right skill-mix across ambulance services to ensure appropriate responses for each patient will help eliminate unnecessary conveyances, especially for the least urgent incidents.

However, this is likely only to mitigate demand at the margins. Embracing primary, community and social care should ensure that patients are 'caught upstream' before their conditions become serious enough to require an ambulance. This will require a system response; whilst patients who require ambulances now must be treated, we must try to reduce this burden in the long run.

Sources

Ambulance Systems Indicators, *NHS Digital*

<https://digital.nhs.uk/data-and-information/data-collections-and-data-sets/data-collections/ambulance-systems-indicators-ambsys>

A&E attendances and emergency admissions, *NHS Digital*

<https://www.england.nhs.uk/statistics/statistical-work-areas/ae-waiting-times-and-activity/>

Ambulance collection data, *NHS Digital*

<https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/>

Ambulance Response Times, *Nuffield Trust*

<https://www.nuffieldtrust.org.uk/resource/ambulance-response-times#background>

Why have ambulance times been getting worse?, *The Health Foundation*

<https://www.health.org.uk/publications/long-reads/why-have-ambulance-waiting-times-been-getting-worse>

Increasing handover delays contributing to growing ambulance waiting times, *The Health Foundation*

<https://www.health.org.uk/news-and-comment/news/increasing-handover-delays-contributing-to-growing-ambulance-waiting-times>

Nurses and ambulance staff to stage co-ordinated strike on 6 February, *Health Services Journal*

<https://www.hsj.co.uk/workforce/nurses-and-ambulance-staff-to-stage-co-ordinated-strike-on-6-february/7034073.article>

Reducing avoidable ambulance conveyance in England: Interventions and associated evidence, *University of Sheffield*

<https://aace.org.uk/wp-content/uploads/2020/08/SchARR-report-SRAC-Final-020320-.pdf>

NHS pressures, *NHS Confederation*

<https://www.nhsconfed.org/system/files/2023-01/NHS%20Confederation%20parliamentary%20briefing%20-%20NHS%20pressures%2009.01.2023.pdf>

NHS cuts waiting lists as A&E departments busier than ever before, *NHS England*

<https://www.england.nhs.uk/2023/01/nhs-cuts-waiting-lists-as-ae-departments-busier-than-ever-before/>

NHS sickness absence rates, April 2022, *NHS Digital*

<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-sickness-absence-rates/april-2022-provisional-statistics>

Ambulance Handover Delays, *Nuffield Trust*

<https://www.nuffieldtrust.org.uk/resource/ambulance-handover-delays#:~:text=A%20clinical%20review%20carried%20out,harm%20because%20of%20the%20delay.>

Ambulance response times improve in England but continue to miss targets, *The Independent*

<https://www.independent.co.uk/news/uk/england-nhs-england-stroke-association-b2012159.html>