

# HDIG report 2. Why is A&E so busy? Analysis using public data.

Health Data Interpretation Group 29 November 2023

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The Health Data Interpretation Group (HDIG) at the University of East Anglia (UEA) has been commissioned by Norfolk County Council (NCC) to address several questions in 2023. The first question ('question 1a') is: *'What is the impact of COVID-19 on health services activity and health outcomes? Specifically: Why is A&E so busy?'* This question was addressed in two work packages, and this report 1 presents the findings from work package 1:

- 1) Report 1 (this report), which consists of a literature review and descriptive analyses using publicly available data, report title: 'HDIG report 1. Why is A&E so busy? Analysis using public data'.
- 2) Report 2 (separately available), which consists of statistical analyses using anonymised individual patient record level data, report title: 'HDIG report 2. Why is A&E so busy? Analysis using individual patient data'.

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## 1. Key findings

The challenges faced by the NHS before the COVID-19 pandemic have continued post-pandemic and are particularly apparent in emergency care (UEC), with increasingly long waiting times for A&E and ambulances in Norfolk and Waveney (N&W). We used publicly available data to identify changes in UEC and the broader health and social care system from a period pre-COVID-19 (generally for the financial years between 2018-20) to a comparable period post-COVID-19 (for financial years between 2021-23 where available) in N&W.

- **UEC waiting times** have increased substantially. Comparing April 2018 - March 2020 and April 2021 - March 2023, the percentage of 111 calls abandoned increased from 4% to 15% and mean ambulance response times for serious conditions such as stroke or chest pain doubled. The number of A&E attendees waiting over 4 hours to be seen, discharged, or admitted increased by 93%, and by 130% for admission to hospital after the decision to admit had been made.
- The decline in performance is not entirely explainable by **changes in the population**. The percentage of the population aged over 65 has increased slightly, but the population has similar prevalence of relevant health conditions and deprivation levels, and there has not been an overall increase in A&E attendances by those aged over 80.
- **Demand for urgent and emergency care has increased**. While attendances at major hospital A&E departments increased by only 5%; attendances at walk-in centres increased by 18% and the number of calls received by NHS 111 increased by 6%.
- **Staff numbers in A&E** increased by 41% overall between 2018-19 and 2020-21.
- There were 7,559 bed days lost to **delayed discharge** in December 2022.
- Satisfaction with **general practice** dropped from a stable 86% in previous years to 76% in 2022.
- Referrals to **mental health services** (Norfolk and Suffolk NHS Foundation Trust) increased by 18%.
- The availability of **care and nursing home beds** decreased slightly between 2018 and 2022, as did occupancy levels, suggesting wider difficulties with making placements. The use of intermediate care, which aims to reduce avoidable admissions and facilitate early discharge, has increased.

Given that an increase in A&E staffing does not seem to have reduced waiting times, future plans should involve the whole health and social care system, including improving discharge from hospital. Building capacity in primary care, mental health services, intermediate care and social care over the short and longer term and capturing better data for the analysis of patient flows across the health and social care system is likely to be part of the solution locally and nationally.

## 2. Definitions

The UEC system covers non-routine health care. Emergency care involves life-threatening illnesses or accidents which require immediate treatment from an accident and emergency department (A&E), often via an ambulance service (using 999). Urgent care involves any non-life-threatening illness or injury needing urgent attention which might be dealt with by phone consultation through the NHS 111 Clinical Assessment Service, pharmacy advice, out-of-hours GP appointments, or at a minor injury clinic or walk-in centre.

Type 1 emergency care departments are consultant-led 24-hour services with full resuscitation facilities. N&W has Type 1 departments at the Norfolk and Norwich University Hospital (NNUH) in Norwich, the James Paget University Hospital (JPUH) in Great Yarmouth, and the Queen Elizabeth Hospital (QEH) in King’s Lynn. Type 2 are single specialty services, of which N&W does not have any. Type 3 is provision for treating minor injuries and illnesses and can be routinely accessed without an appointment. In N&W this includes minor injuries units and the Norwich walk-in centre, as well as for new ‘GP streaming’ or ‘Front Door’ services treating patients on A&E premises (1). Figure 1 shows how patients flow through the A&E system, to provide context for this report.

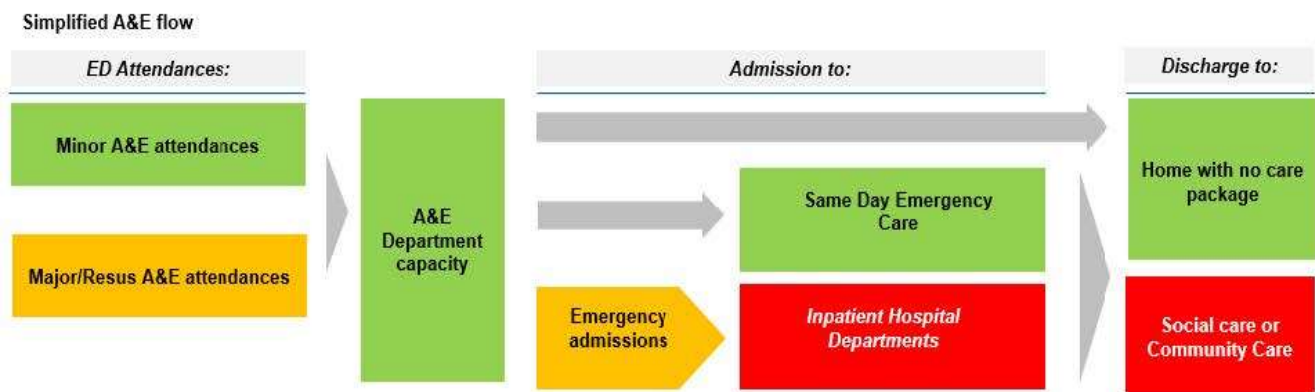


Figure 1: A&E flow. Source: NHS England, [Delivery plan for recovering urgent and emergency care services – January 2023](#)

## 3. Introduction

The health and social care system is facing challenges in recovering from the COVID-19 pandemic. A&E crowding is associated with increased mortality (2), and nationally, UEC performance has declined, with long waits for ambulances and in A&E. Locally, the situation is no different in N&W, where ambulance waiting times have increased since 2018-19 and are now substantially above target response times, and where the number of A&E attendees waiting over 4 hours for admission, transfer or discharge, and the number of people waiting over 4 hours to be admitted into hospital (after the

decision to admit has been made) have also increased substantially.

These increases in waiting times for ambulances and for A&E care are the context for this report which examines activity not only in the UEC system, but also the broader health and social care system. This is because A&E operates within a network of provision, and waiting times are not caused by, and will not be relieved by, A&E in isolation.

## 4. Methods

We conducted a literature review followed by descriptive analyses of routinely available data. The literature review was a rapid, focused (not systematic or comprehensive) review of the drivers of use of, and the impact of COVID-19 on, UEC in England. We searched PubMed, Embase and Medline databases from 2018 to present for academic literature, Google Scholar and Google for grey literature on key organisational websites (see Appendix 1) and consulted with specialists. The results of the literature review informed the choice of publicly available data to be analysed. Microsoft Excel was used for data analysis, and we compared a period pre-COVID to a period post-pandemic. Where possible this was between April 2018 - March 2020 and April 2021 - March 2023.

## 5. Literature review findings

- **Reasons for attending A&E** included anxiety over symptoms, availability of other services, access to radiography, A&E being viewed as the most appropriate service, and recommendation by others, particularly health professionals (3, 4).
- **More frequent A&E attendance** is associated with multimorbidity (which increases with age) (5), deprivation, young age (0-4), ethnicity, obesity, depression, being a smoker, increased distance from hospital (6-8), being housebound, living alone if 65+, frailty (9, 10) and factors which indicate lack of access to a GP such as increased distance from a practice/practice list size (7, 11, 12).
- **Increased admission rates** are associated with older age, Black/Black British ethnicity, social deprivation, lower social support, greater distance from hospital, night time, lack of senior staff in A&E, organisational culture (a propensity to admit), and closer proximity to the 4-hour wait target (13-15). Conditions and behaviours associated with emergency admission include diabetes, atrial fibrillation, cardiovascular disease, manic depression or schizophrenia, heavy smoking, heavy drinking, and previous emergency admission (16).
- **Longer waiting times** at A&E are associated with greater case-complexity, higher emergency admissions, higher bed occupancy, a low number of day beds, longer hospital stays, more investigations, physical capacity and staffing of A&E, older patients, patients not self-referred, and

certain arrival times (winter, night, Mondays) (17-19).

- **COVID-19 led to delays in help-seeking and treatment.** Patients may have avoided making GP appointments due to concerns over burdening the NHS, catching COVID-19, or finding the process of making an appointment difficult (20). Such changes in help-seeking behaviour went beyond GP appointments to other aspects of healthcare (21). NHS health checks fell by almost 85% between 2019 and 2021 (22) which may have led to conditions being under-detected. For example, prescribing rates of new antidiabetic medicines and antihypertensives reduced by 19% and 22% respectively between March and December 2020 (23). In 2020, an estimated 400,000 planned elective cases were not performed each month, which may have led to patients seeking UEC for health problems associated with delayed treatment (24).
- **COVID-19 had negative impacts on staff.** Pre-pandemic, low staffing levels/high vacancies left trusts less adaptable to staff absence during the pandemic (25). Staff burnout increased during the pandemic (26), and remained high afterwards (27).

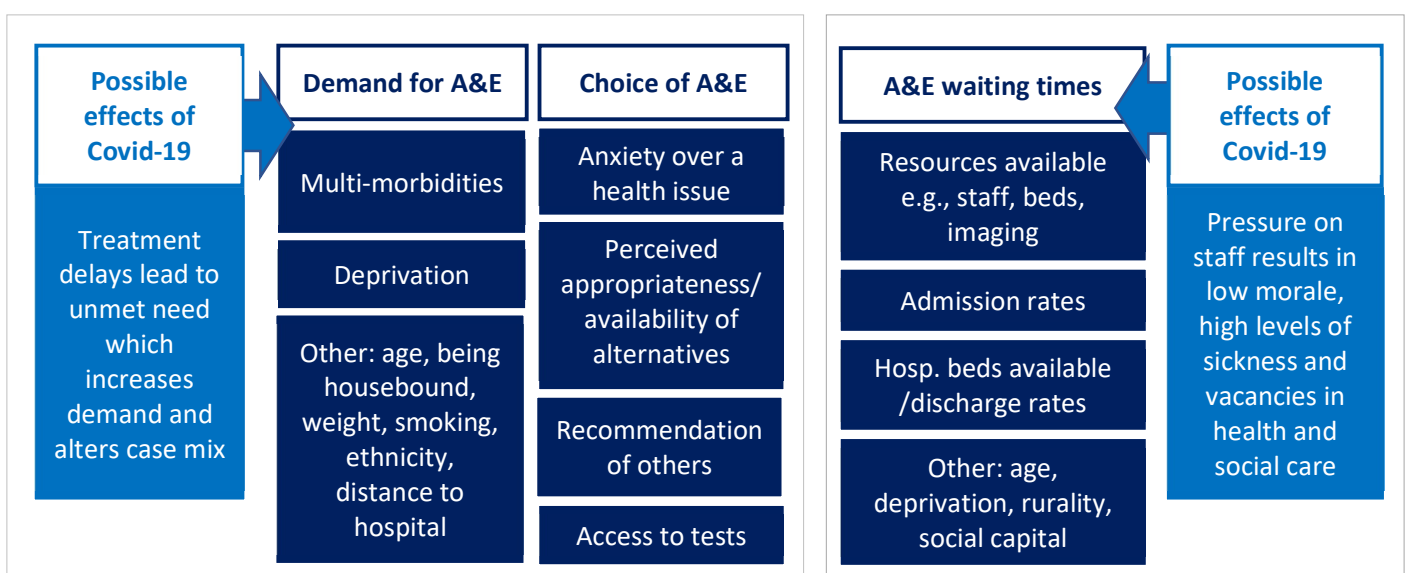


Figure 2: Factors affecting NHS urgent and emergency care: summary of findings of literature review

**Summary of literature review (Figure 2):** Demand for A&E is associated with factors such as multi-morbidity and deprivation. An individual's decision to use A&E is influenced by factors such as levels of anxiety over a health condition and recommendation of others, including health professionals. Waiting times in A&E are affected by demand and available resources in A&E and in the hospital more generally, and by flow through hospital, including levels of admissions and discharge. The decision to admit to hospital is clinically determined but affected by factors such as the availability of senior staff. COVID-19 may have impacted on demand for A&E through increasing unmet need and may have affected service provision through reduced staff morale, increased sickness levels and vacancies.

## 6. Descriptive analyses findings

These descriptive analyses of publicly available data are presented in three main areas: patient characteristics, UEC and hospital capacity, and access to other services. The findings in this section are summarised in an infographic in Section 7 of this report.

### Patient characteristics

#### Population changes in N&W

The estimated number of people aged over 65 in Norfolk increased by 2.7% between 2018-19 and 2021-22 (compared to 2.8% in England); the number aged over 80 increased by 2.3% (compared to 1.7% in England) (28). Census data indicates that the number of older people living alone in Norfolk increased from 53,297 in 2011 (65 and older) to 70,525 in 2021 (66 and older) (29, 30).

The prevalence of some conditions associated with A&E attendance or emergency admission increased, including the prevalence of depression in those aged 18 and over (2.2%), cancer at all ages (0.4%), diabetes for those aged 17 and over (0.3%), and atrial fibrillation at all ages (0.2%) (30). There was no change in the prevalence of severe mental illness (at all ages). Adult obesity prevalence increased by 1.9% and smoking by 1.5% (30).

The Index of Multiple Deprivation score for Norfolk remained at 21.2 between 2015 and 2019; the 2019 score for England was 21.7. The proportion of those aged 60 or over experiencing income deprivation was 12.1% in 2019 compared to 14.2% for England (30).

#### Age of A&E attendees

There was no overall increase in attendances for those aged 80 and older from 2018-19 to 2021-22 (Figure 3).

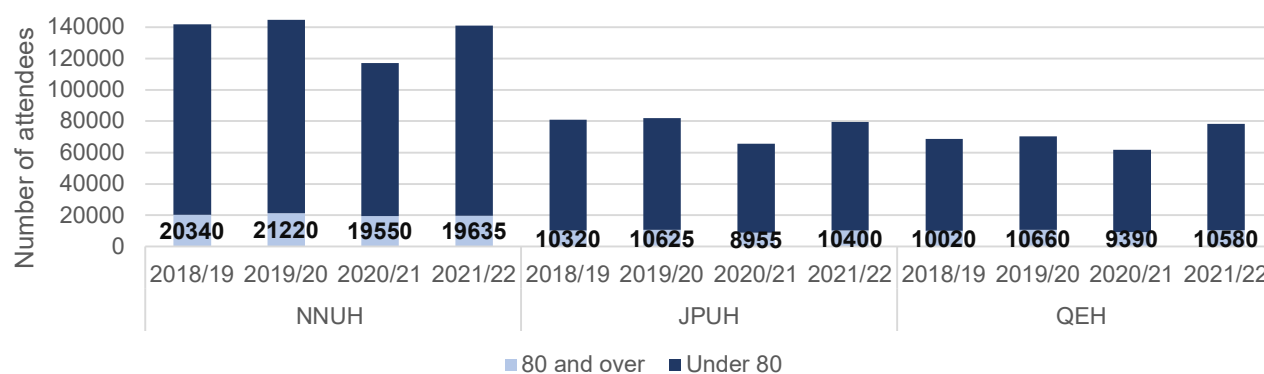


Figure 3: Number of A&E attendees aged over/under 80; N&W trusts; 2018/19 -2021/22. Source: NHS England,

## Hospital Accident and Emergency Activity

### **Urgent and emergency care**

#### **Attendances at A&E**

Comparing April 2018 - March 2020 and April 2021 - March 2023, non-booked attendances at major A&E departments ('Type 1' attendances) in N&W increased by 5.2%, compared with 0.1% in England (Figure 4). The number of attendees waiting over 4 hours for admission, transfer or discharge increased by 92.5%, with a smaller increase in England (68.8%).

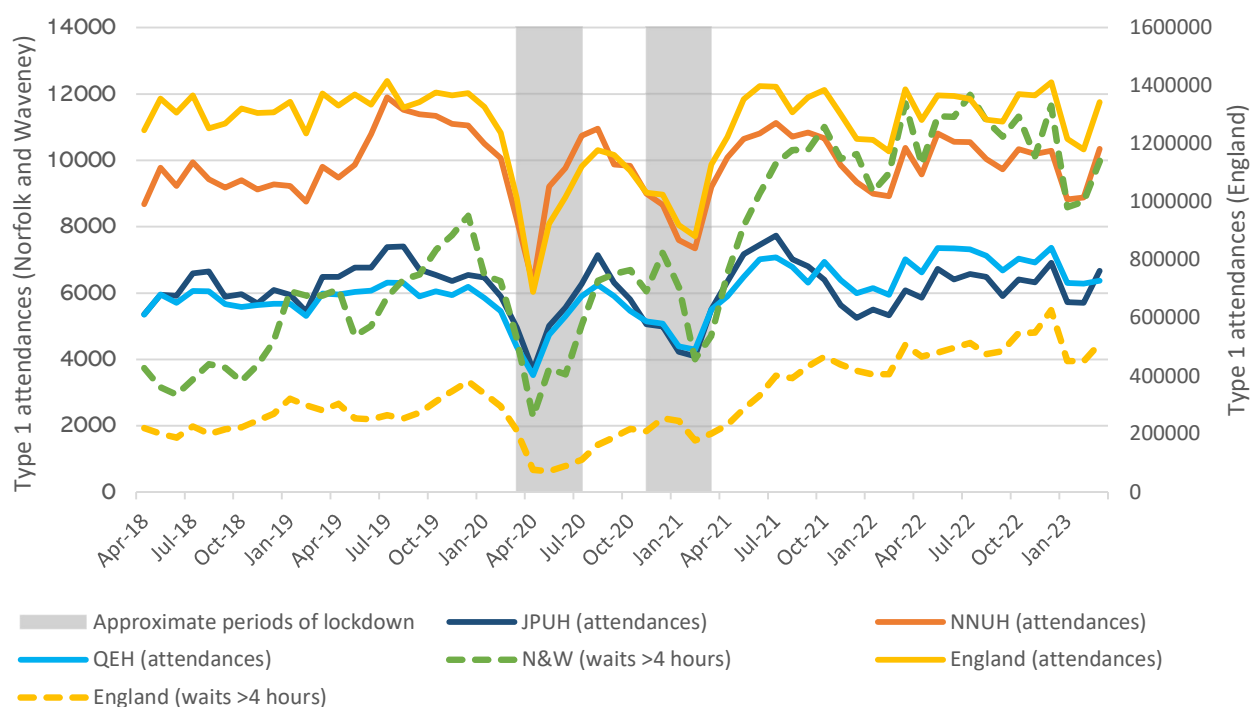


Figure 4: Attendances and waits > 4 hours for admission, transfer, or discharge at Type 1 A&E departments; non-booked attendances only. Source: NHS England, [A&E Attendances and Emergency Admissions](#)

Comparing April 2018 - March 2020 and April 2021 - March 2023 in N&W, emergency admissions reduced by 11%, compared to 5.2% in England (Figure 5). The number of people waiting over 4 hours to be admitted (after the decision to admit had been made) increased by 130.1%, compared to 92.0% in England.

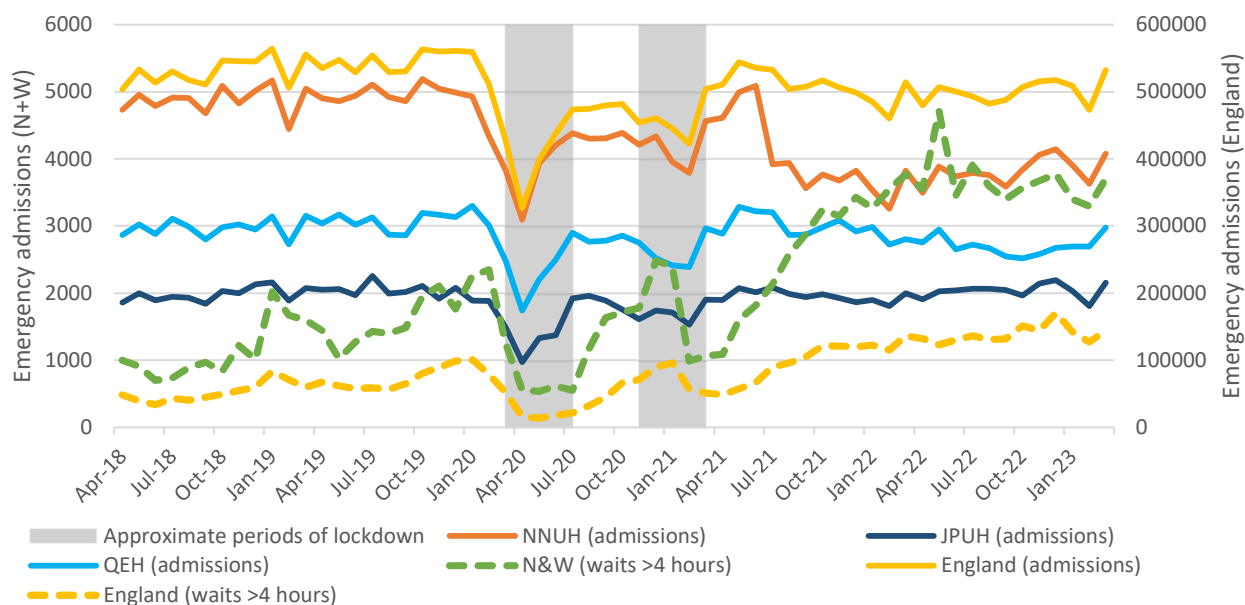


Figure 5: Emergency admissions and waits > 4 hours to be admitted after decision made to admit; April 2018 - March 2020 and April 2021 - March 2023. Source: NHS England, [A&E Attendances and Emergency Admissions](#)

#### Attendances at walk-in and minor injury facilities

Non-booked attendances at walk-in and minor injury facilities ('Type 3' attendances) in N&W increased by 18.3% between April 2018 - March 2020 and April 2021 - March 2023 (Figure 6), compared to a 10.5% drop in England. However, data for new GP streaming, or 'Front Door' services is included in these figures and may be responsible for the increase.

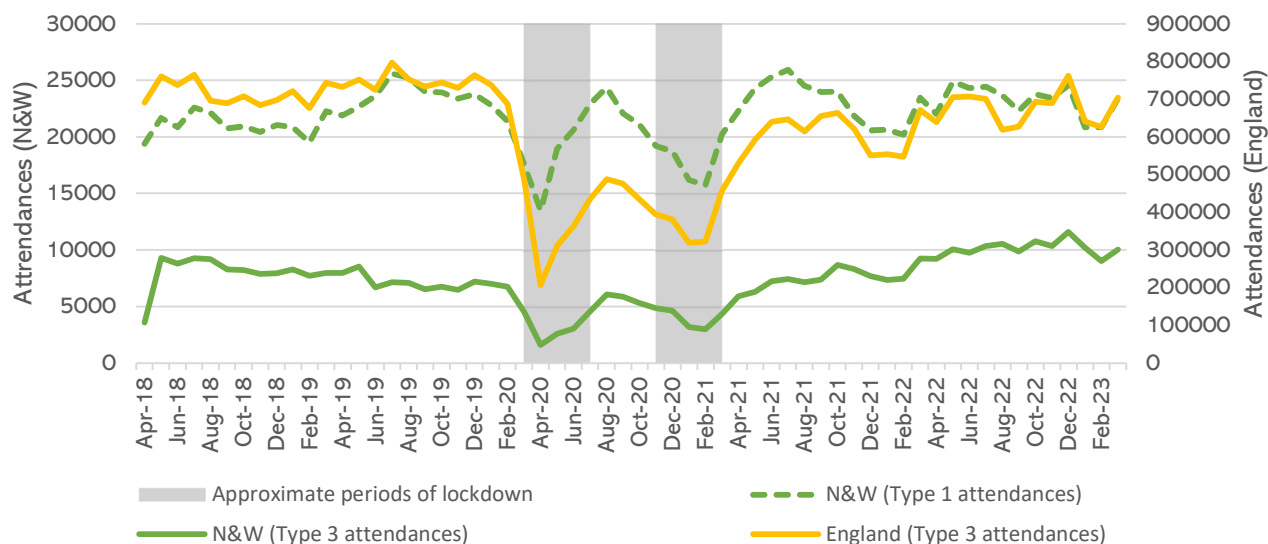


Figure 6: Monthly attendances at Type 3 urgent treatment centres in N&W and England, and at Type 1 A&E departments in N&W for comparison; April 2018 - March 2020 and April 2021 - March 2023. Source: NHS England, [A&E Attendances and Emergency Admissions](#)



## Calls to the 111 service

Comparing April 2018 - March 2020 and April 2021 - March 2023, the number of 111 calls received in N&W increased by 5.5%, but the number of calls answered reduced by 13.1%. The percentage of calls abandoned (the caller hanging up before the phone is answered) after 30 seconds increased from 3.6% to 15.2% (31, 32).

## Ambulance response times and arrivals

In N&W, ambulance waiting times have increased since 2018-19 and are now substantially above target response times, particularly for Category 2 and 3 incidents (Table 1 and Figure 7).

Table 1: Ambulance response time targets. Source: Nuffield Trust, [Ambulance response times](#)

Category	Response	Response time to 90% of all incidents
1	An immediate response to a life-threatening condition, such as cardiac or respiratory arrest	15 minutes
2	A serious condition, such as stroke or chest pain, which may require rapid assessment and/or urgent transport	40 minutes
3	An urgent problem, such as an uncomplicated diabetic issue, which requires treatment and transport to an acute setting	2 hours
4	A non-urgent problem, such as stable clinical cases, which requires transportation to a hospital ward or clinic	3 hours

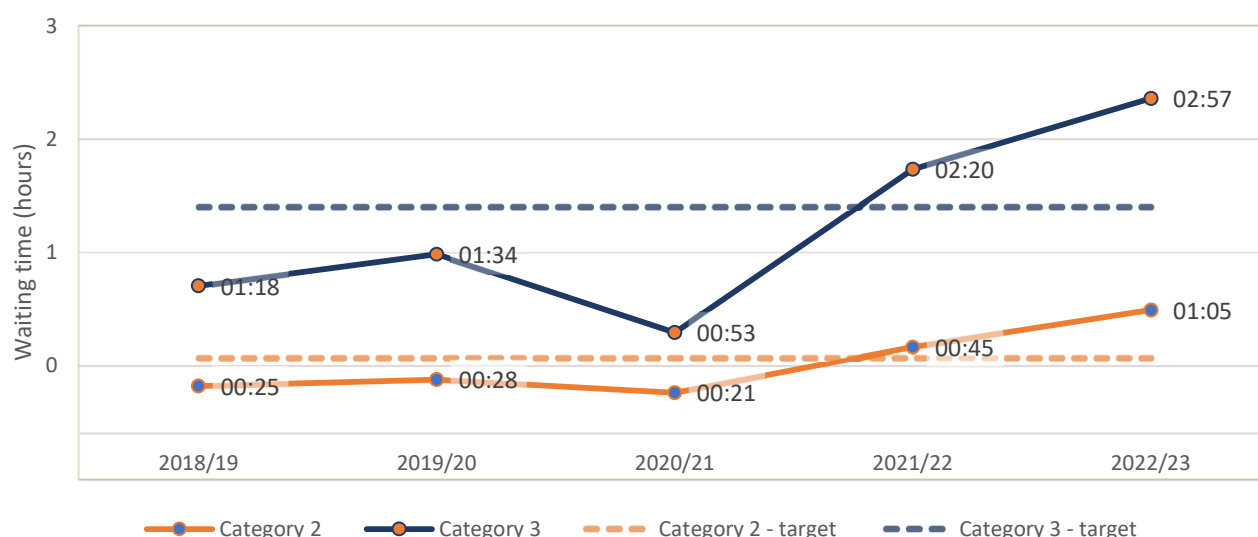


Figure 7: East of England Ambulance Service mean response times, Category 2 and 3 incidents, 2018/19 – 2022/23. Source: NHS England, Ambulance Quality Indicators

The number of patients arriving by ambulance waiting to be handed over to A&E in N&W also

increased. For the weeks commencing 3<sup>rd</sup> December 2018 – 25<sup>th</sup> February 2019, 3.5% of patients arriving by ambulance were delayed by 60 minutes or more, compared to 37.5% over the same period in 2022-23; weekly percentages are displayed in Figure 8.

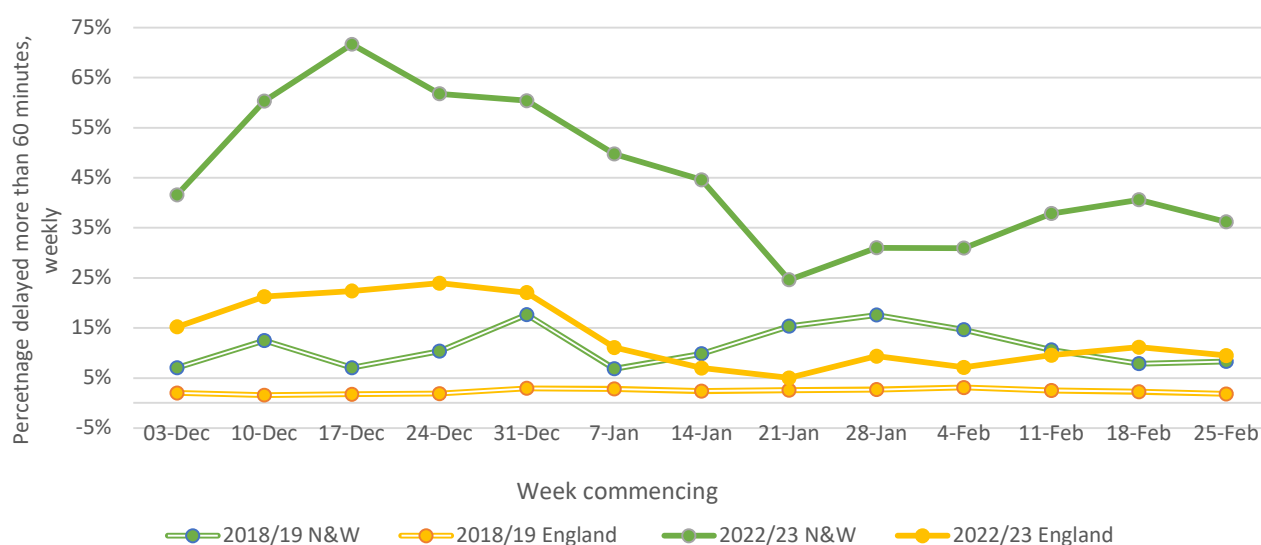


Figure 8: Percentage of patients arriving by ambulance whose handover to A&E was delayed over 60 minutes, weekly, N&W trusts and England, Winters 2018/19 and 2022/23. Source: NHS England Winter Daily Sitrep 2018-19 Data; [Winter SitRep Acute Time Series](#); NHS England, Urgent and Emergency Care Daily Situation Reports 2022-23; [Ambulance Collection – Web File Timeseries](#)

As a proportion of all arrivals, conveyances to A&E by ambulance (as opposed to walk-ins) has declined slightly from 32.6% in 2018/19 to 30.2% in 2021/22 (33).

### Ambulance staff numbers

The number of ambulance staff working at the East of England Ambulance Service decreased from 2,259 in February 2018 to 1,970 in February 2023. However, overall staff numbers increased because of higher numbers of support staff (34).

### A&E staff numbers

The number of A&E staff at all trusts in N&W increased by 41.2% overall between 2018-19 and 2020-22 (Figure 9); doctors by 64.2%, consultants by 13.1% and nurses by 38.6% (33).

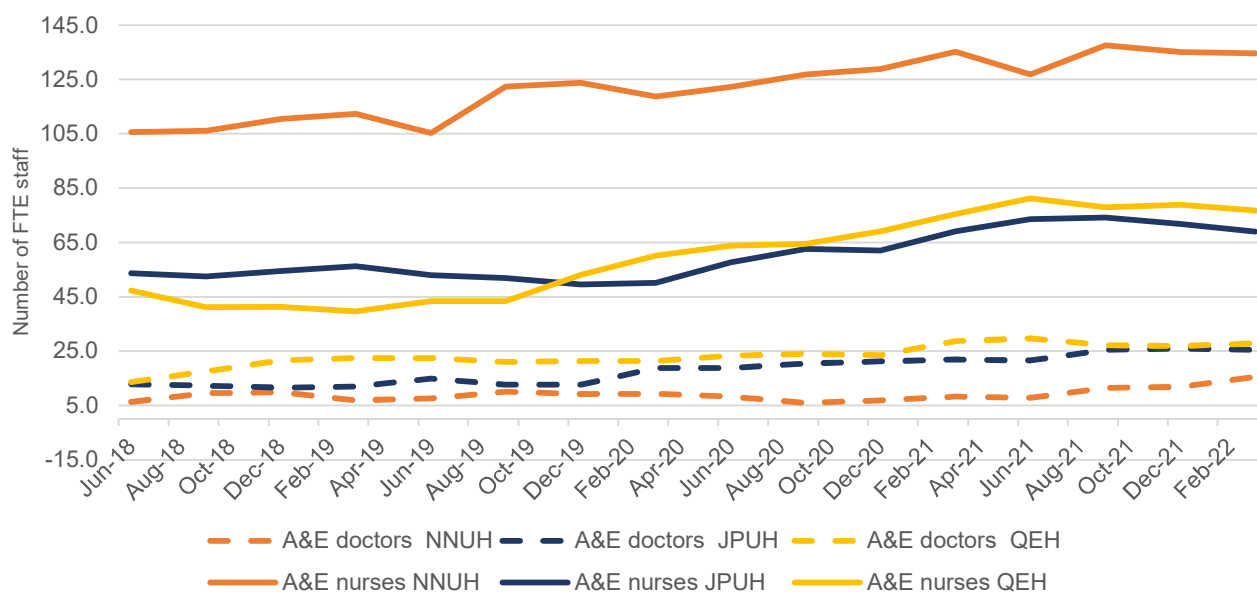


Figure 9: FTE A&E doctors and nurses by trust; **consultants** (not shown as numbers are small) are not reported for the NNUH, but remained fairly consistent at the QEH (between 5-7) and JPUH (between 6-9), [Hospital Accident and Emergency Activity](#)

### Delayed discharges from hospital

Delayed transfers of care (DTOC) data publication were paused in March 2020. However, we can visualise data on beds unavailable due to delayed discharge at each trust using 2018 and 2019 (DTOC data) along with data on the daily number of individuals remaining in hospital at midnight who were judged to be fit for discharge (referred to as “no longer meeting criteria to reside”<sup>1</sup>). The latter data were included in Situation Reporting data from November 2021. While these data use different reporting criteria, Figure 10 enables trends to be shown within data types. While there is an upward trend for England in recent months, the situation is more mixed across the three N&W. Using the latest data, the highest proportion of beds occupied in N&W was in the QEH in April 2022; there were 123 patients remaining, representing 23.7% of overnight beds.

<sup>1</sup> Definition of ‘criteria to reside’ is based on a clinical decision during ward rounds – full criteria available [here](#).

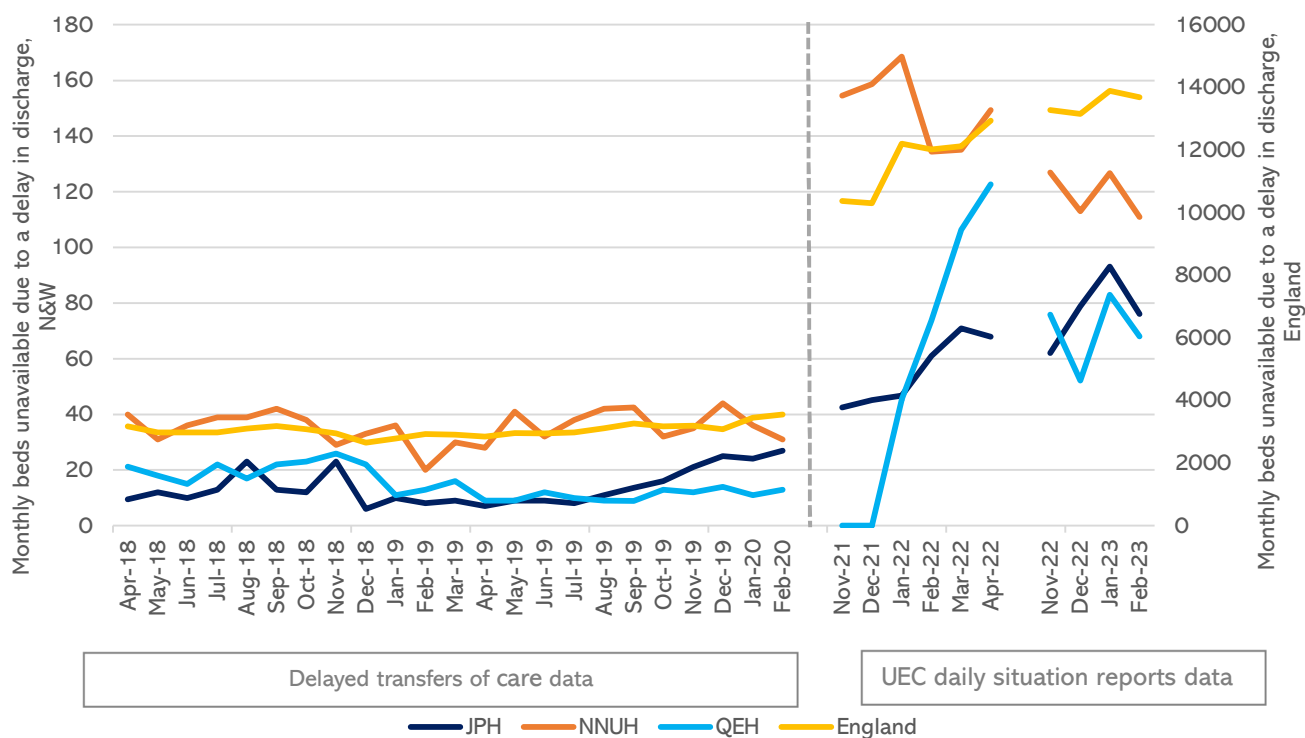


Figure 10: Numbers of hospital beds unavailable due to delayed transfers of care ('DTOC') and numbers of inpatients not meeting 'Criteria to Reside' but remaining after midnight (after data change). Source: NHS England: [DTOC data 2018/19](#) and [2019/20](#); [Urgent and Emergency Care Daily Situation Reports 2021-22](#); [Acute Daily Discharge Situation Reports](#) (downloaded November 2022, no longer available online); [Urgent and Emergency Care Daily Situation Reports 2022-23](#) (data only available for winter months).

Also available from both DTOC and more recent Situation Reporting data is information on 'delayed days' (a day in which a bed is occupied by someone who could be discharged from hospital)<sup>2</sup>. Again, these two datasets are not comparable as the criteria for being ready for discharge are stricter for DTOC data, but give us an idea of scale, as well as change within the datasets themselves:

- In December 2018 there were a total of 1,883 delayed discharge days across the three trusts in N&W in December 2019 this figure had increased to 2,583 delayed discharge days.
- Over all the days in December 2021, there were 6,315 occurrences when a bed was, at midnight, being occupied by someone who no longer met the 'criteria to reside'. In December 2022 this had increased to 7,559 occurrences (35).

<sup>2</sup> [Definition](#) of a 'delayed day': ""For each patient, the delayed days figure should reflect the number of midnights for which they are ready to go home yet remain in hospital from the day after their proposed date of discharge and each day thereafter".

## Access to other services

### Primary care

The number of GPs per 100,000 GP-registered population has increased (from 70.2 in December 2018 to 74.3 in December 2022) along with the overall number of appointments made (by 10.4% between 2019-20 and 2022-23) (36). The number of face-to-face appointments reduced slightly from 5,211,508 in 2019-20 to 5,173,022 in 2022-23 (-0.74%) (37). There has been a reduction in satisfaction levels with GP services since 2021, including with access to appointments (Figure 11).

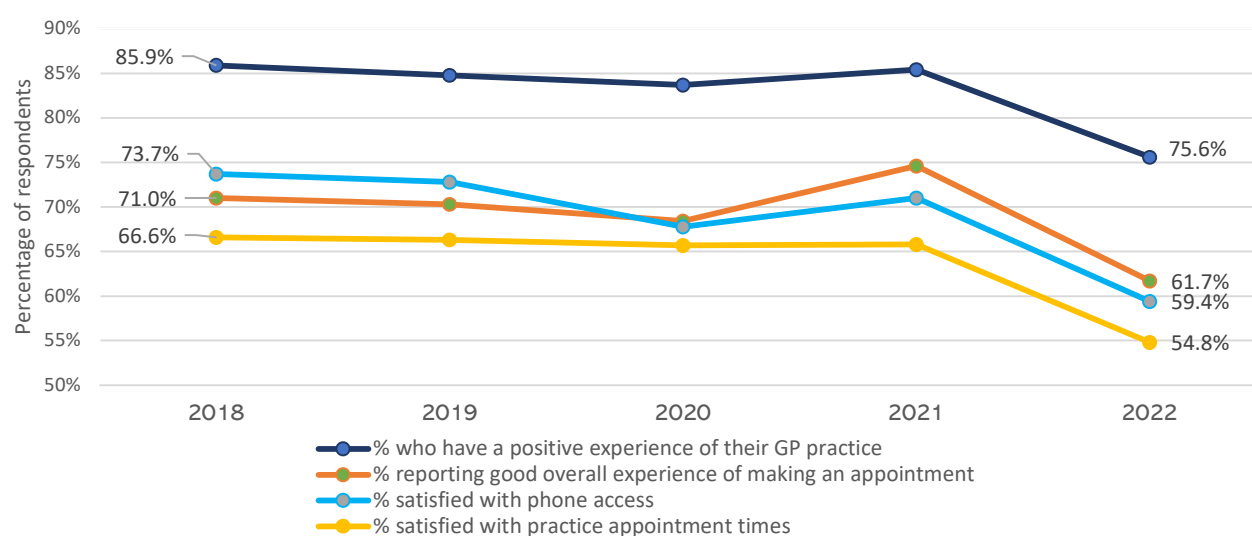


Figure 11: GP Appointment Survey Data 2018-22. Source: OHID National General Practice Profiles, GP Patient Survey

### Mental health provision

Norfolk and Suffolk Foundation Trust (NSFT) is the main provider of mental health services in N&W and provides the Increasing Access to Psychological Therapies (IAPT) service which delivers talking therapies for common mental health problems such as depression. The IAPT service has a target that 75% of those referred should start treatment within 6 weeks of referral, and 95% should start treatment within 18 weeks (38). The IAPT service at NSFT has improved since April 2018, is outperforming England and performs consistently above the 75% target (Figure 12). The percentage of those starting treatment seen within 18 weeks of referral has consistently been 100%.

For all services provided by NSFT for those with mental health conditions, need for support with mental wellbeing, learning disabilities, autism or other neurodevelopmental conditions, numbers of those in contact with the trust and referrals have increased. Comparing April 2018 - March 2020 and April 2021 - March 2023, there was a 5.3% increase in contacts, and an 18.0% increase in referrals;

however, these are less than England increases (7.3% and 25.2%) (39).

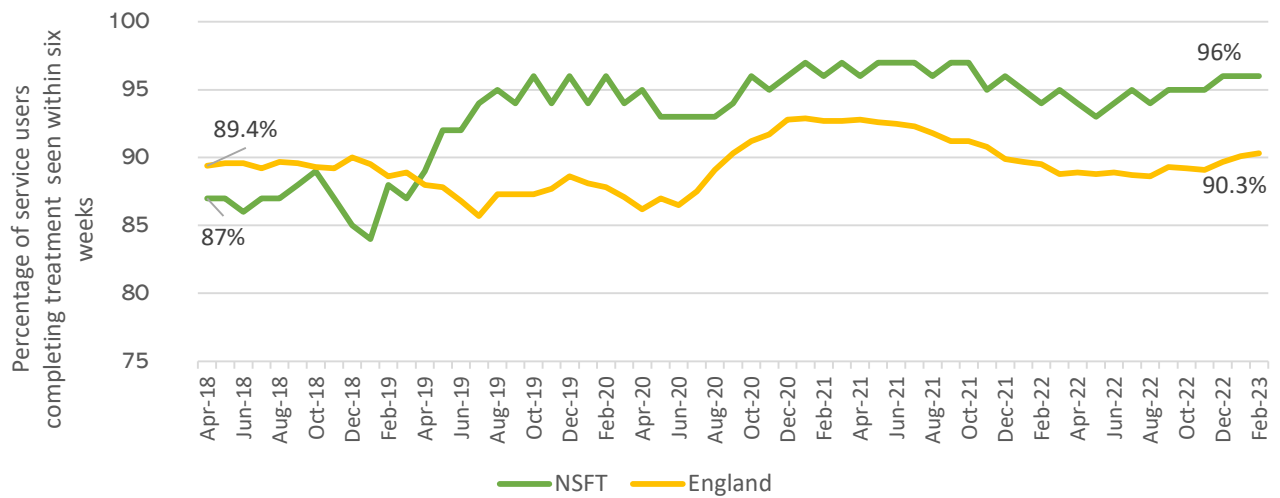


Figure 12: Percentage of those finishing IAPT treatment seen within six weeks; N&W and England; April 2018 - February 2023. Source: NHS Digital, Psychological Therapies, [reports on the use of the IAPT service](#)

### Intermediate care provision

Intermediate care is short term multidisciplinary care provided to patients who leave hospital or are at risk of being sent to hospital. This is with the aim of preventing avoidable A&E attendances and hospital admissions, facilitating timely discharges from hospital and avoiding premature admissions to long-term social care (40). Both Norfolk County Council and Norfolk Community Health and Care NHS Trust (NCHCT) work together to deliver these services locally. Use of all types of intermediate care increased between July 2020 and January 2023, particularly short-term home-based care at NCHCT (Figure 13).

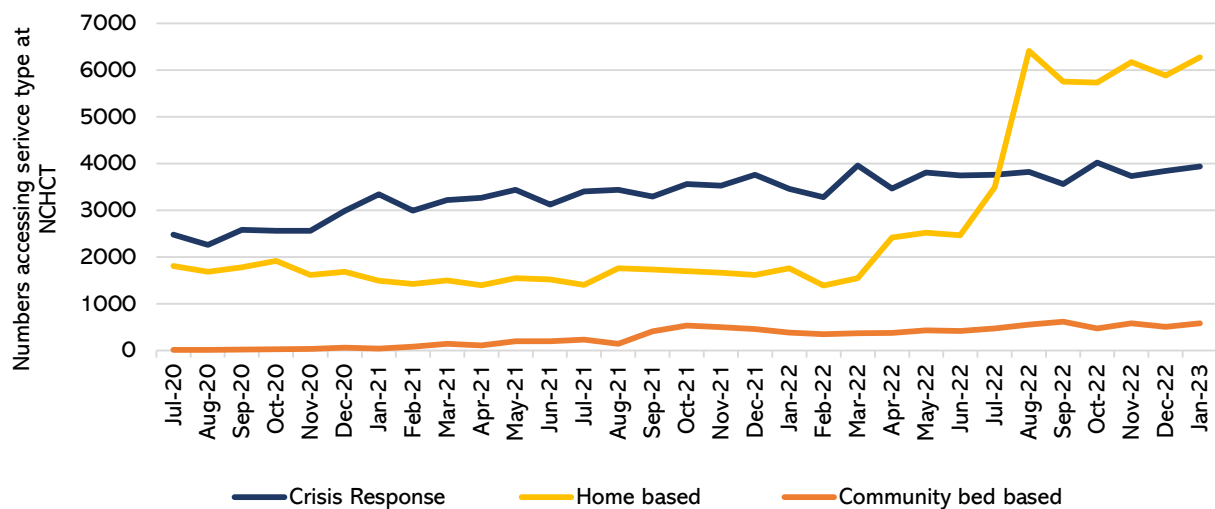


Figure 13: Changes in intermediate care use at NCHCT, 2020-23. Source: [NHS Digital: Community Services Statistics](https://www.cqc.org.uk/about-us/transparency/using-cqc-data)  
<https://www.cqc.org.uk/about-us/transparency/using-cqc-data>

### Long term social care provision

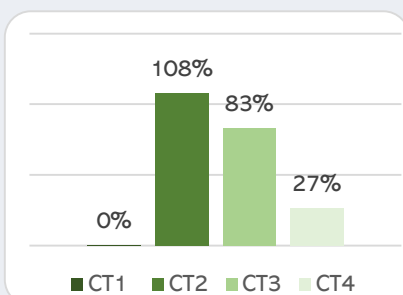
The provision of care and nursing home beds decreased slightly between April 2018 - March 2020 and April 2021 - March 2023 compared to little change in the rest of England (see infographic, Section 7) (41). In 2021, there were 8.8 care home and 2.4 nursing home beds per 100 people aged over 75 in N&W, compared to 9.4 and 4.6 in England respectively (30). The number of organisations providing domiciliary care has remained static in Norfolk but risen in England (note: a lack of growth in the number of organisations does not necessarily indicate a lack of growth in the number of FTE staff). Occupancy for older peoples care homes in Norfolk has decreased from 82.2% in Oct 2018 to 76.6% in Feb 2023, suggesting that difficulties in discharge to social care may be for reasons other than availability of residential beds (42). There are challenges with staffing levels in social care: vacancy rates for nurses working in nursing homes increased from 3.9% to 12.2%, and for care workers from 9.1% to 10.4% between 2017-18 and 2021-22 in N&W (43).

## 7. Infographic

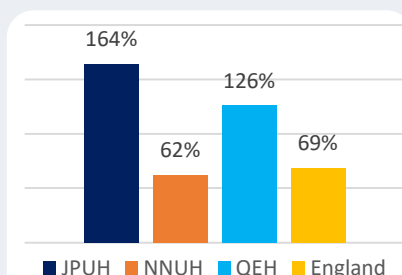
This infographic summarises performance against Urgent and Emergency Care targets, along with demand and capacity for Urgent and Emergency Care and other services. Percentage differences are between April 2018 - March 2020 (pre-Covid) and April 2021 - March 2023 (post-Covid) unless indicated otherwise in the text. Note: A&E data is for 'non-booked' attendances and waits.

### Urgent and Emergency Care: performance

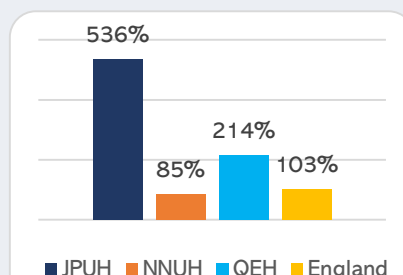
1) % change in mean ambulance response time by category\*



2) % change in numbers waiting >4h to be admitted, transferred, or discharged

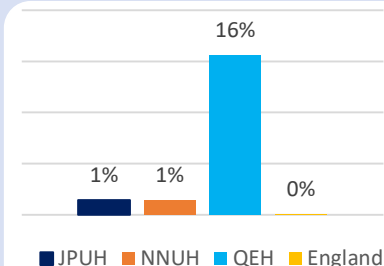


3) % change in numbers waiting >4h for admission (after decision made to admit)

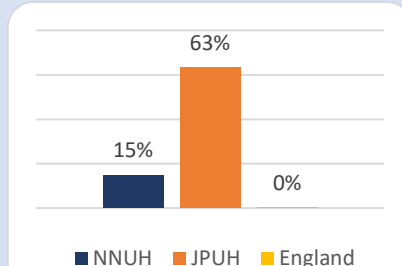


### Urgent and Emergency Care: demand and capacity

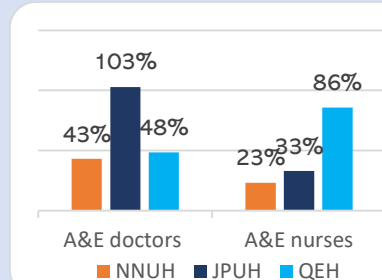
4) % change in Type 1 attendances (major A&E)



5) % change in Type 3 attendances (walk-in/minor injury); no QEH data\*\*

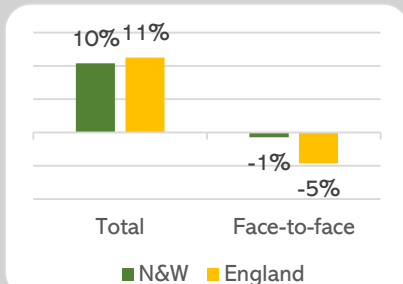


6) % change in N&W A&E staff (2021/22- 2018/19)

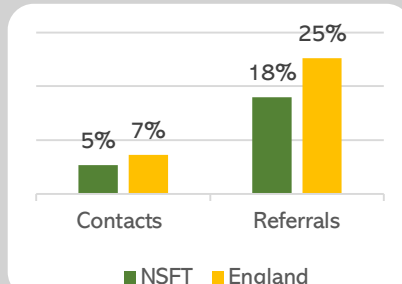


### Other services: demand and capacity

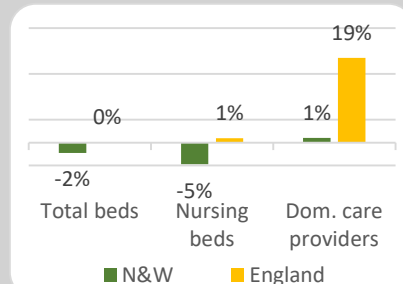
7) % change in GP appointments made (2022/23 - 2018/19)



8) % change in contacts/referrals to NSFT/England



9) % change in social care provision



\*CT = category. CT1 is the most urgent. Target response times: CT1=15 minutes, CT2=40 minutes, CT3=1hour, CT4=3 hours

\*\* Increases may be due to the introduction of GP streaming services that are included in these figures

Sources: 1. NHS England, [Ambulance Quality Indicators](#) 2. NHS England, [A&E Attendances and Emergency Admissions](#) 3. NHS England, [A&E Attendances and Emergency Admissions](#) 4. NHS England, [A&E Attendances and Emergency Admissions](#) 5. NHS England, [A&E Attendances and Emergency Admissions](#) 6. NHS England, [Hospital Accident and Emergency Activity](#) 7. NHS Digital, [Appointments in General Practice](#) 8. NHS Digital, Psychological Therapies, [Reports on the use of the IAPT service](#) 9. [CQC Care Directory Data](#)



## 8. Conclusions and next steps

These analyses of publicly available data from before and after the COVID pandemic identify changes in UEC and the broader health and social care system in N&W that may have contributed to the substantial increases in waiting times for ambulance and A&E care. A&E attendances are at a similar level to before the pandemic, and walk-in centre attendances are higher. The number of A&E doctors has substantially increased. Hospital admissions have fallen, and many hospital beds are occupied by patients who are fit for discharge. The number of social care beds in N&W has declined and is lower than for England per capita, and uptake of intermediate care services and crisis response services appear to have increased. More calls to 111 have gone unanswered and satisfaction with general practice has fallen despite increased staff and appointments. The population of N&W is slightly older, and the prevalence of some conditions has increased slightly.

The marked increases in long waiting times for at A&E described in the introduction do not appear to be primarily due to increased A&E attendances, which have generally been relatively small, but to decreased A&E and hospital capacity to manage A&E attendees quickly, despite increased A&E staffing. Long delays in A&E have the effect of creating delays in ambulances being redeployed, because they are waiting for space in A&E to enable hand-over of patients, which in turn impairs ambulance response times. Increased waiting times in A&E may be due, in part, to delayed inpatient discharges preventing the timely admission of patients from A&E due to a lack of available inpatient beds. The need to speed up discharge of large numbers of patients during the pandemic led to the national implementation of the 'discharge to assess' model, where assessments are undertaken post-discharge (44). The reasons why so many inpatient beds remain occupied by patients that are fit for discharge are complex, but likely to be at least partially due to reduced local capacity in social care, which has fallen further behind the rest of England. The changes do not appear to be solely due to residential care bed availability, and staff recruitment remains a challenge.

These findings are consistent with the National Audit Office (NAO) report on access to unplanned or urgent care (45). The NAO identified a need to reduce discharge delay through improvements in joint discharge processes, scaling up intermediate care (such as reablement) and scaling up social care, particularly domiciliary care. The report also shared identifies concerns about high hospital bed occupancy and variability between services with failure to meet key operational standards despite more NHS staff. The need to reduce waiting times and improve patients' experiences by increasing capacity, improving discharge and joining up care outside of hospitals was recognised by the government and NHSE in the 'Delivery plan for recovering urgent and emergency care services' published in January 2023 (46). Meeting this need will be a major challenge for the NHS in N&W and capturing better data for analysis and interpretation of patient flows across the health and social care

system is likely to be part of the solution locally and nationally.

All publicly available data explored in this report are anonymous and aggregated at population level. The wealth of data collected nationally is a great strength of the NHS and public health system. Limitations include variations with data collection methods, with some data sources considered 'experimental' to reflect uncertainties, and some recent data not yet finalised. All comparisons over time are subject to concerns about changes in reporting. Appendix 2 lists data sources with notes on factors to consider during analysis. HDIG did not explore adult social care provision in depth due to the engagement of Newton Europe as a strategic change partner with Adult Social Services for a contingent fee of up to £6.3m and minimum recurrent savings of £9.3m per year (47).

This report has presented the findings from work package 1, a literature review and descriptive analysis using publicly available data. A subsequent report will present the findings from work package 2, statistical analyses using anonymised individual patient record level data from N&W Integrated Care Board when full data protection arrangements have been met. These individual level data will be analysed to establish whether the type of conditions being diagnosed within accident and emergency (A&E) has changed pre and post pandemic and identify trends in attendance when controlling for the effects of COVID-19.

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## 10. Appendix

### Appendix 1: Grey literature sources

Name of organisation and link	Organisation description
<a href="#">Care Quality Commission (CQC)</a>	The CQC is the independent regulator of health and adult social care in England.
<a href="#">The Kings Fund</a>	The King's Fund is an independent charitable organisation working to improve health and care in England.
<a href="#">Skills For Care</a>	Skills for Care is the strategic workforce development and planning body for adult social care in England.
<a href="#">Nuffield Trust</a>	The Nuffield Trust is an independent health think tank. It aims to improve the quality of health care in the UK by providing evidence-based research and policy analysis and informing and generating debate.
<a href="#">Health Foundation</a>	The Health Foundation is an independent charitable organisation working to build a healthier UK.
<a href="#">The Strategy Unit</a>	The Strategy Unit is a specialist NHS team producing high-quality, multi-disciplinary analytical work and helping people apply the results.

### Appendix 2: Notes on data sources

Used to calculate/display	Publisher	Name of data set and link	Notes on data
Mean response times for ambulances	NHS England	<a href="#">Ambulance Quality Indicators</a>	Monthly ambulance quality indicators data. AmbSYS Time Series to April 2023 used. Data specification available <a href="#">here</a> .
Numbers of attendances and admissions, with waiting times	NHS England	<a href="#">A&amp;E Attendances and Emergency Admissions</a>	<p>The Weekly and Monthly A&amp;E Attendances and Emergency Admissions collection collects the total number of attendances in the specified period for all A&amp;E types, including Minor Injury Units and Walk-in Centres, and of these, the number discharged, admitted, or transferred within four hours of arrival.</p> <p>Also included are the number of Emergency Admissions, and any waits of over four hours for admission following decision to admit.</p> <p>Some relevant caveats for the data are as follows:</p> <ul style="list-style-type: none"><li>• The data includes unplanned but not planned follow-up attendances.</li><li>• If a patient arrives at an A&amp;E department and then is requested to attend a booked appointment later, the original visit should not count as an A&amp;E attendance.</li><li>• If a patient attends an A&amp;E department and is streamlined to same-day emergency care (SDEC) on arrival, then this is not a reportable A&amp;E attendance.</li><li>• Due to a recent cyber-attack, several Type 3 sites have been unable to provide complete data since August 2022. Caution should be exercised when drawing comparisons with Type 3 data from the previous months.</li><li>• Type 3 data may include GP streaming, or 'Front Door' services</li></ul>

Used to calculate/display	Publisher	Name of data set and link	Notes on data
Changes to population age	NOMIS	<a href="#">Population estimates – local authority based by five year age band</a>	The midyear (30 June) estimates of population are based on results from the latest Census of Population with allowance for under-enumeration.
Estimates of numbers of 66+ year olds living alone (2021)	NOMIS	<a href="#">RM057 – Household composition by age</a>	This dataset provides Census 2021 estimates that classify usual residents in households in England and Wales by household composition, and by age. The estimates are as at Census Day, 21 March 2021.
Age of attendees	NHS England	<a href="#">Hospital Accident and Emergency Activity</a>	Annual Hospital Accident and Emergency Activity data. The data sources for this publication are the Emergency Care Data Set (ECDS) for 2020-21 and 2021-22, HES A&E for activity prior to 2020-21 and the A&E Attendances and Emergency Admissions Monthly Situation Reports (MSitAE).
Conveyances to hospital	NHS England	<a href="#">Hospital Accident and Emergency Activity</a>	Annual Hospital Accident and Emergency Activity data. The data sources for this publication are the Emergency Care Data Set (ECDS) for 2020-21 and 2021-22, HES A&E for activity prior to 2020-21 and the A&E Attendances and Emergency Admissions Monthly Situation Reports (MSitAE).
111 service performance	NHS England	<a href="#">111 Minimum Dataset</a>	<p>The NHS 111 Minimum Data Set (MDS) was the official source of IUC data until the end of March 2021. The IUC ADC was published as Experimental Statistics from June 2019 (April 2019 data) until May 2021 (March 2021 data) and was used to monitor the <a href="#">IUC ADC KPIs</a>. There were differences in the definitions of data items in the MDS and IUC ADC so not all data items were directly comparable. Users are advised to refer to the specification guidance for each collection when interpreting figures</p> <ul style="list-style-type: none"> <li>• <b>Definition of calls offered:</b> all calls received by single point of access. A call is received as soon as the call connects to the service's telephony system, that is, hits the providers switch.</li> <li>• <b>Definition of calls answered:</b> Of the calls offered, how many were answered (the call handler given the caller)</li> <li>• <b>Definition of calls abandoned:</b> Of calls offered and reaching 30 seconds following being queued for an advisor, how many did the caller hang up before they were answered?</li> </ul>
		Integrated Urgent Care Aggregate Data Collection	<p>The IUC ADC became the official source of IUC statistics in April 2021, when the NHS 111 Minimum Dataset (NHS 111 MDS) was merged into a revised version of the IUC ADC. Since then, a provisional subset of the IUC ADC data is published in the month after the collection end date (eg, April data published in May), with the complete monthly IUC ADC published as Official Statistics the following month (eg, April data published in June). The IUC ADC specification is reviewed and updated annually which means not all data items will be directly comparable with the same data items collected in the previous year. The IUC ADC is used to monitor the IUC KPIs.</p> <ul style="list-style-type: none"> <li>• <b>Definition of calls received:</b> All calls received by the provider via the designated NHS 111 receiving numbers for the contract service area, or location unknown. This is <b>after any</b></li> </ul>

Used to calculate/display	Publisher	Name of data set and link	Notes on data
			<p><b>nationally mandated pre-recorded messages</b> on the national platform and before any pre-queue welcome and confidentiality messages and call steering IVR (interactive voice response) commissioned locally.</p> <ul style="list-style-type: none"> <li>• <b>Definition of calls answered:</b> Of the number of calls received, how many were answered by each of the staff groups.</li> <li>• <b>Definition of number of calls abandoned:</b> The clock starts at the moment the call is queued to skill set. The clock starts after any call steering IVR.</li> </ul>
Ambulance handover delays	NHS England	Winter Daily Sitrep 2018-19 Data; <a href="#">Winter SitRep Acute Time Series</a> ;	Daily return collected from acute trusts. Management data which has been collected on a rapid turn-round basis from the NHS. The speed of the collection only permits minimal validation to be undertaken but the data is considered 'fit-for-purpose'.
	NHS England	Urgent and Emergency Care Daily Situation Reports 2022-23; <a href="#">Ambulance Collection – Web File Timeseries</a>	<p>This page contains management data which has been collected on a rapid turn-round basis from the NHS. The speed of the collection only permits minimal validation to be undertaken but the data is considered 'fit-for-purpose'. Ambulance arrivals and handover delays previously reported from the UEC daily sitrep are available in the daily ambulance collection time series.</p> <p>Guidance document available <a href="#">here</a>.</p> <p>Indicator: "Total number of handover delays (trust level) over the 60 minute (arrival to handover)"</p>
Ambulance staff numbers	NHS England	<a href="#">NHS Workforce Statistics</a>	<p>This report shows monthly numbers of NHS Hospital and Community Health Services (HCHS) staff working in NHS Trusts and other core organisations in England (excluding primary care staff). Data are available as headcount and full-time equivalents and for all months from 30 September 2009 onwards.</p> <p>These data are a summary of the validated data extracted from the NHS HR and Payroll system.</p>
A&E staff numbers	NHS England	<a href="#">Hospital Accident and Emergency Activity</a>	Workforce data available per quarter. No information on consultant numbers is available for NNUH.
Sickness absence rates	NHS England	<a href="#">NHS Sickness Absence Rates</a>	This report shows monthly sickness absence rates of NHS Hospital and Community Health Services (HCHS) staff working in NHS Trusts and other core organisations and NHS Support Organisations and Central Bodies. Data is presented by NHS England region, ICS area, organisation, organisation type, staff group and reason for sickness absence.
Bed availability and occupancy	NHS England	<a href="#">Bed availability and occupancy data – overnight</a>	The KH03 is a quarterly collection from all NHS organisations that operate beds, open overnight or day only. It collects the total number of available bed days and the total number of occupied bed days by consultant main specialty.



Used to calculate/display	Publisher	Name of data set and link	Notes on data
		<a href="#">Bed availability and occupancy data – day only</a>	Note for 2020-21 data: Hospital capacity has had to be organised in new ways as a result of the pandemic to treat Covid and non-Covid patients separately and safely in meeting the enhanced Infection Prevention Control measures. This results in beds and staff being deployed differently from in previous years in both emergency and elective settings within the hospital. As a result, caution should be exercised in comparing overall occupancy rates between this year and previous years. In general hospitals will experience capacity pressures at lower overall occupancy rates than would previously have been the case.
Delayed discharge	NHS England	<a href="#">Delayed Transfers of Care</a>	The Monthly Situation Report collected data on the total delayed days during the month for all patients delayed throughout the month. Guidance document available <a href="#">here</a> . The latest publication of these data was for delays occurring in February 2020 and was published on 9th April 2020.  Definition of Delayed Transfer of Care: A delayed transfer of care (DTOC) from NHS-funded acute or non-acute care occurs when an adult (18+ year) patient is ready to go home and is still occupying a bed. A patient is ready to go home when all of the following three conditions are met: <ul style="list-style-type: none"> <li>• A clinical decision has been made that the patient is ready for transfer home</li> <li>• A multidisciplinary team (MDT) decision has been made that the patient is ready for transfer home</li> <li>• The patient is considered to be safe to discharge/transfer home</li> </ul> <b>Delayed days:</b> “for each patient, the delayed days figure should reflect the number of midnights for which they are ready to go home yet remain in hospital from the day after their proposed date of discharge and each day thereafter”.
	NHS England	<a href="#">Acute Daily Discharge Situation Reports</a> <i>(downloaded November 2022, no longer available)</i>	
	NHS England	<a href="#">Urgent and emergency care daily situation reports</a>	Daily returns are collected from acute trusts and includes data on areas such as A&E closures and diverts, ambulance handover and bed availability. The publication contains management data which has been collected on a rapid turn-round basis from the NHS. The speed of the collection only permits minimal validation to be undertaken but the data is considered ‘fit-for-purpose’.  For 2022/23:

Used to calculate/display	Publisher	Name of data set and link	Notes on data
			<p>The Acute Discharge Weekly Situation Report (SitRep) highlights daily discharge figures across England. This includes all inpatients 18 and over including critical care patients but excluding paediatrics, maternity, and deceased patients. This includes data for acute trusts with a type 1 A&amp;E department. Daily data is published on a weekly basis and data is unvalidated management information.</p> <p>Additional for 2021/22: Data is collected on a daily basis ready for collation by 11:00 hours on the following day. Hospice discharges have been subtracted from trust-level discharge totals to mitigate disclosure risks.</p> <p>Definition of 'criteria to reside': Based on a clinical decision (<a href="#">information here</a>, Annex D)</p>
Reasons for delayed discharge 2018/19	NHS England	<a href="#">Delayed Transfers of Care</a>	The Monthly Situation Report collected data on the total delayed days during the month for all patients delayed throughout the month. Guidance document available <a href="#">here</a> . The latest publication of these data was for delays occurring in February 2020 and was published on 9th April 2020.
Number of GPs per 100,000 patients	NHS England	<a href="#">General Practice Workforce</a>	<p>The General Practice Workforce series of Official Statistics presents a snapshot of the primary care general practice workforce. A snapshot statistic relates to the situation at a specific date, which for these workforce statistics is the last calendar day in the reporting period. Until July 2021, the snapshots have been produced each quarter and were a record as of 31 March, 30 June, 30 September, and 31 December. However, from July 2021, as requested by our stakeholders, we are collecting and publishing data on the general practice workforce on a monthly basis, and the snapshot will therefore relate to the last calendar day of each month, including weekends and public holidays.</p> <p>These statistics present full-time equivalent (FTE) and headcount figures by four staff groups, (GPs, Nurses, <b>Direct Patient Care (DPC)</b> and administrative staff), with breakdowns of individual job roles within these high-level groups.</p>
GP appointments and format	NHS England	<a href="#">Appointments in General Practice</a>	<p>This publication contains data on appointments that have taken place in general practice in England.</p> <p>It contains details on who the appointment was with, mode, appointment status, time between when the appointment was booked and took place, the recorded national category and duration.</p> <p>The aim of the publication is to inform users about activity and usage of GP appointments historically and how primary care is impacted by seasonal pressures, such as winter.</p>

Used to calculate/display	Publisher	Name of data set and link	Notes on data
			<p>NHS England publishes this information to support winter preparedness and provide information about some activity within primary care. The publication covers historic appointments, marked as attended or did not attend, from national to practice level coverage. The aim is to inform users, who range from a healthcare professional to an inquiring citizen, about appointments within primary care.</p> <p>The publication includes data from participating practices using EMIS, TPP, Eva Health formerly known as Microtest (up until February 2021), Informatica, Cegedim (previously Vision) and Babylon (GP at Hand) GP systems.</p> <p>NHS England produce this information monthly, containing information about the most recent month and previous months.</p> <p>The publication includes important information, however it does not show the totality of GP activity/workload. The data presented only contains information which was captured on the GP practice systems. This limits the activity reported on and does not represent all work happening within a primary care setting or assess the complexity of activity.</p> <p>No patient identifiable information has been collected or is included in this release.</p> <p>Between December 2020 and present the data contained in this publication will no longer contain covid-19 vaccination activity collected from GP System Suppliers as part of the General Practice Appointments Data. These appointments have been removed using the methodology outlined in the supporting information. In order to gain a more complete picture of general practice activity we will publish covid-19 vaccination activity carried out by PCN's or GP Practice's from the NIMS (National Immunisation Management Service) vaccination dataset.</p>
GP satisfaction	Office for Health Improvement and Disparities	<a href="#">OHID National General Practice Profiles, GP Patient Survey</a>	Data from the GP Survey accessed via the Fingertips platform.
Access to IAPT services (waiting times)	NHS England	<a href="#">Psychological therapies, Reports on the use of IAPT services</a>	This publication series makes available the most recent IAPT monthly data, including activity, waiting times, and outcomes such as recovery. It also includes experimental statistics from the Employment Advisor in IAPT pilot.

Used to calculate/display	Publisher	Name of data set and link	Notes on data
Pressure on mental health services	NHS England	<a href="#">Mental health services monthly statistics</a>	<p>This publication series provides the timeliest picture available of people using NHS funded secondary mental health, learning disabilities and autism services in England.</p> <p>Impact of Cyber Incident on MHSDS data submissions:  Although the impact on Performance June and July 2022 monthly data was quite limited, the impact from Performance August 2022 onwards is much more substantial. As such, actual national level data has been omitted from all outputs that are part of this Performance March 2023 publication, other than the DQ vodim CSV and ASCOF CSV files. It was not considered appropriate to publish actual national level Performance March 2023 data at present, given that these data are not an accurate reflection of activity for that month.</p> <p>NHS England have, however, produced national level estimates which have been calculated through imputation. The latest available estimates relate to Performance March 2023 and are available from the <a href="#">National Estimates Supplementary Information page</a>.</p> <p>Data at Provider and Local Authority level data are still included within this publication. Comparisons between providers not impacted by the cyber incident are still valid, as are comparisons between Performance March 2023 data and that of previous months for any given non-cyber incident impacted provider.</p>
Changes in intermediate care provision	NHS England	<a href="#">Community Services Statistics</a>	<p>Data measures for intermediate care introduced during pandemic affecting quality and coverage of statistics; reablement and crisis response data from NCC is missing for months of Feb/March 2022 and November 2022 and so only NCHCT data has been used (main provider of intermediate care).</p> <p>Publicly available NHS data on intermediate care is recorded from July 2020. Data is experimental and affected by collection and recording changes taking place during the pandemic.</p>
Changes in long-term social care provision	CQC	<a href="#">CQC Care Directory Data</a>	<p>Counts for beds with and without nursing done collated from monthly sheets in Norfolk and Waveney CCG between 2017 and 2023 – note data used is from 2018-22 for consistency. No filters were applied to limit to beds for older adults exclusively, counts include beds for all adults.</p> <p>Averages were taken over each year to give yearly averages.</p>