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Feasibility and evaluation of an emergency department-based general practitioner streaming and treatment service

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Abstract

Rationale: Offering a primary care service that can provide good quality primary care at emergency departments may reduce pressure on usual emergency department (ED) services.

Aims and Objectives: To evaluate the acceptability, satisfaction, and potential impacts of a co-located primary care service at an emergency department.

Methods: This is a prospective feasibility study and service evaluation comprising a narrative summary of activity, satisfaction, well-being, and safety, and comparisons of wait times for ED services by patient category ('minor', 'majors', 'paediatric' or 'resus') before and during the service operation. Patients and staff were asked using semistructured interview topic guides about service perception, well-being, representation within 48 h, safety concerns, and/or satisfaction. Wait times for patient categories in usual ED care service were in secondary care electronic records. Pathway changes were captured under primary care electronic records.

Results: Approximately 96% of general practitioner streaming and treatment (GPST) patients were seen within 1 h. There was a statistically significant reduction in ED patients with minor injuries or illnesses waiting >4 h for admission or discharge 'breaches' during the 3 months that GPST was operating compared with the previous 3 months ($p \leq 0.005$). Wait times for other ED services did not significantly improve. A total of 769 walk-in patients received GPST consultation and 661 (86%) needed no further ED intervention. Fast discharge was a major determinant of patient satisfaction. No staff expressed dissatisfaction, but some suggested possible improvements in eligibility criteria and built environment design features.

Conclusion: Provision of GPST correlated with shorter waits for discharge from ED. Patient and staff experiences of GPST were positive.

KEYWORDS
feasibility studies, hospitals, patient satisfaction, program evaluation, waiting lists

1 | INTRODUCTION

Emergency Department (ED) services are under increasing pressure. In 2018–2019 there were 24.8 million attendances in EDs in England,[1] an area of the United Kingdom with a resident population = of approximately 47 million. This rise was an increase of 4% over 2017–2018 attendance counts and 21% since 2009–2010.[1]

To address concerns surrounding prolonged ED waiting times a 4-h standard was introduced in the mid-2000s. The standard stipulated that 95% of patients arriving at an ED should be admitted to the hospital, transferred to a more appropriate care setting, or discharged home within 4 h. Most large (Type 1) EDs in England have not met the 4-h target since July 2013.[2]

The problem of breaching disposition targets is particularly acute at the Norwich and Norfolk University Hospital (NNUH) ED in eastern England, UK. The NNUH supports the oldest population in England, including the North Norfolk district which has the oldest median age, at 53.8 years, of any local authority area in England and Wales.[3] The median resident age across Norfolk is about 45 years compared with a median of 40.2 years for the United Kingdom.[3] Increasing attendance and older median patient age have meant that the NNUH ED has particularly struggled to meet the 4-h target.[4]

Estimates of how many patients attending EDs in high-income countries are equally suitable for treatment in primary care, range from 35% to 89%.[5–7] Availability of routine primary care in England became highly constrained from 2020 onwards for many reasons. Patient anxiety during the Covid pandemic era linked to fewer presentations to primary care[8] was followed by a subsequent surge in demand.[9,10] Rapid expansion in primary care capacity to meet the demand surge was not feasible due to the long staff training periods involved,[11,12] and the context of chronic staff recruitment crises in primary care.[13] Covid isolation requirements also created staff shortages in all health service provision.[14]

Streaming patients who could be managed elsewhere, away from or out of highly pressurized EDs to co-located general practitioner (GP)-led primary care services, may support patients to receive the care they need whilst relieving pressure on ED services and improving ED performance against the 4-h standard. Making it easier for patients to obtain primary health care may be important to achieve resilience and adequate capacity in emergency health services.[15–18] The UK National Health Service (NHS) currently offers a range of rapid access services to support EDs including walk-in centres, urgent care centres, minor injury units, and urgent treatment centres.[19]

A 'feasibility study' is a preliminary study.[20] Feasibility studies inform the design and acceptability of an intervention (service). This report describes a feasibility study of a general practitioner streaming and treatment service (GPST). The study was conducted at the NNUH ED in the period 16 December 2019 to 28 February 2020 (inclusive). GPST aimed to improve patient experience; support access to appropriate care and resources; reduce the number of walk-in patients' seen in ED; improve staff well-being; provide a safe service and change unplanned care to planned care where possible.

2 | METHODS

2.1 | Design of the GPST service

The GPST pathway is illustrated in Figure 1. Briefly, trained clinicians screened and streamed patients who arrived at the NNUH ED using nonurgent modes of transport (i.e., not conveyed via ambulance) as soon as possible after their arrival (ideally within 15 min). Streaming typically involved assessing eligibility via a brief history. Eligibility criteria were based on patient history, presentation, and whether the attendee was registered at an eligible GP surgery (see Figure 1 for details). Eligible patients were offered the opportunity to book a same-day appointment within NNUH ED and follow concurrent NHS GP Improved Access Service Protocols.[21] Invited patients had to consent to GPST accessing their medical records. The services available were the same as what could be obtained as standard from any general practice surgery in England. Composite patient histories are presented in Box 1 to illustrate typical pathway experiences.

If an eligible patient subsequently deteriorated, they would be moved, via an agreed escalation route, to ED pathways. Patients not eligible for inclusion in the GPST feasibility study were directed to usual ED streaming and care. GPST was designed to operate between 8.30 AM and 6 PM.

2.2 | Aims of this service evaluation

Evaluation objectives were based on a protocol described elsewhere[23] that focused on feasibility and informing future evaluation. Objectives were to:

1. Describe the activity undertaken by GPST.
2. Assess whether patients and/or staff were satisfied with their experience of GPST.
3. Assess the well-being of GPST staff.
4. Assess potential reduction in burden on ED.
5. Assess ability of the service to change care from unplanned to planned.
6. Assess safety.

2.3 | Evaluation domains

The GPST feasibility study design was based on a Context, Mechanism, and Outcomes framework to understand under which circumstances (context), how (mechanism) and for whom (outcomes) the service worked.[24–27]

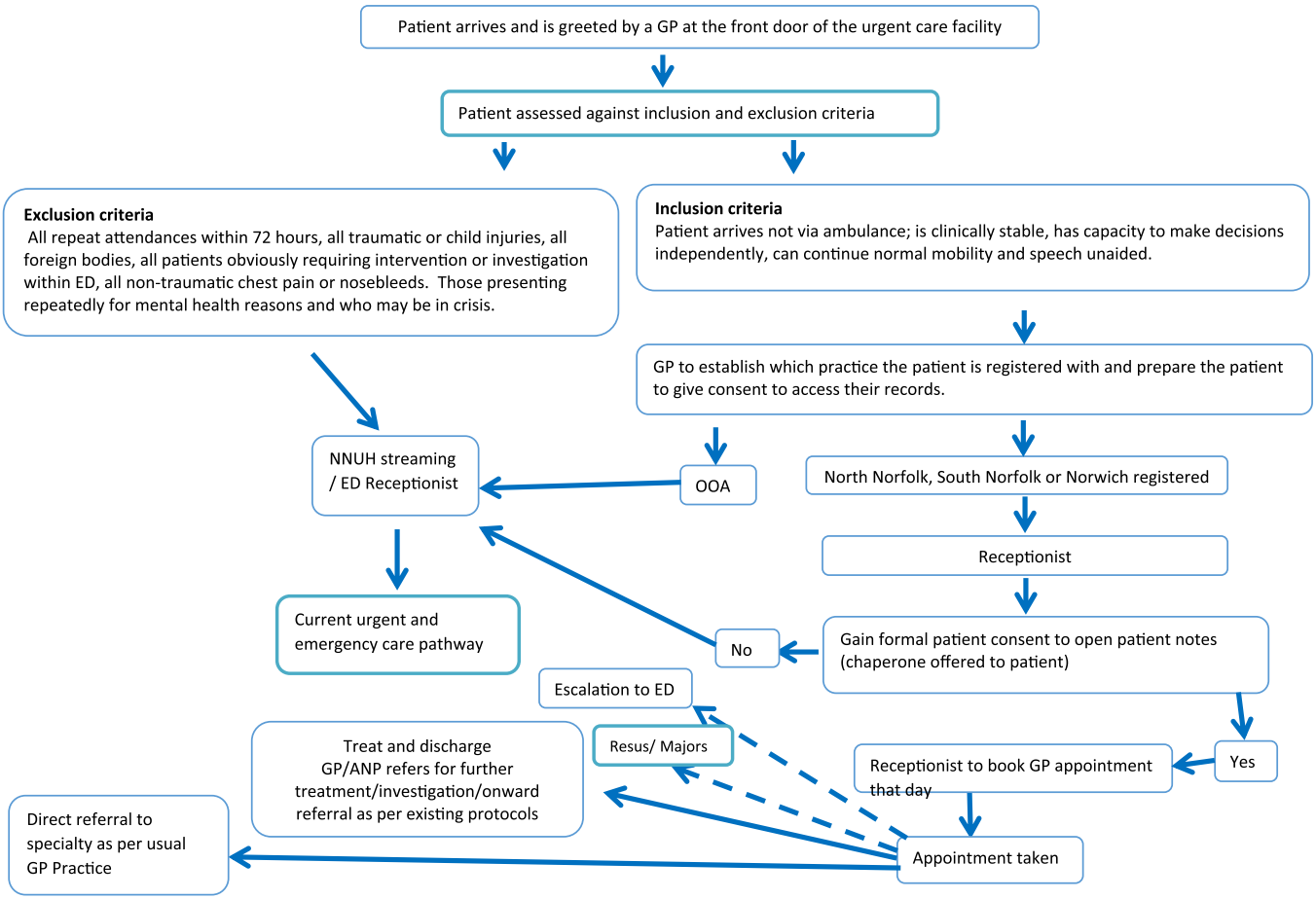

FIGURE 1 Patient pathway. ED, directorate of enforcement; GP, general practitioner; NNUH, Norwich and Norfolk University Hospital; OOA, object-oriented analysis.

2.3.1 | GPST activity

The number of patients seen by GPST and the proportion of GPST appointments filled, not attended, or canceled was determined from routinely captured primary care electronic medical records SystmOne,[28] and staffing records.

2.3.2 | Patient and staff perceptions of GPST

Qualitative interviews were conducted amongst a sample of staff and patients using prespecified topic guides for respective groups and service aspects.[23]

2.4 | Patient interviews

Patients who agreed to be contacted were invited to take part in a semistructured telephone interview led by a researcher. The interviews were conducted at least 1 week after attendance at GPST; results were thematically analysed.

Patient participants were asked briefly about why they chose to use the GPST service; whether the service met their needs and expectations; health outcomes; whether they would use the service again; or recommend it to friends, and recommendations to improve the service.

2.5 | Staff interviews

Semistructured staff interviews were conducted by a member of the GPST team. Staff participants were asked about their experience of streaming patients; the prescribed eligibility criteria; consultations with patients; repatriation of a patient to their usual GP; their perceptions of the purpose of GPST; any other positive and negative experiences and how the service or their experience may be improved.

2.5.1 | Patient satisfaction with GPST

Patients were asked to complete a brief questionnaire addressing: patient experience, what could be improved, what they plan to do next (about the reason for attendance), and any other comments.

BOX 1 Composite patient case studies

Case 1

Richard, a 29-year-old man, presents at the front door of ED at 12.26 PM with pains in his head. He is met by Dr Smith who takes a brief history. Richard has had intermittent headaches for approximately 12 months but getting more frequent. He often notices flashing lights before his headache starts.

Dr Smith books him into a slot in the GP Front door clinic to be seen at 1 PM by Amy, nurse practitioner. Richard calls his wife and gets a coffee at the hospital cafeteria before returning to the waiting area at 1:15 PM; he is called in at 1:19 PM. A full history is taken which is textbook for migraine. Neurological examination is normal. He has been taking increasing amounts of painkillers (paracetamol and codeine) with little effect. Full access to his clinic GP records reveals no past history, no repeat medication and nothing else of concern. More serious causes were unlikely so no scan was considered at this point. Amy gives him a course of triptans and suggests he see his own GP before the medication is finished to discuss next steps. Richard departs at 1:38 PM. Amy completes primary care notes and generates a discharge note for Richard's registered GP at 2 PM.

Case 2

Tilly, 15 months old, presents at 9:00 AM with her parents, having a history of waking with a fever. A short history is taken by Gill, nurse practitioner at the ED entrance. Tilly was well the night before but woke with fever, runny nose and lack of appetite. She is drinking well, has no rash, and has not vomited. Parents gave no antipyretic medication before presentation.

Tilly is booked in to see Dr. Jones at 9:20 AM and is called in from the waiting room to be seen at 9:16 AM. Dr Jones does a full assessment, which includes a 'NICE traffic light assessment'[22] of her symptoms. This highlighted no red or amber indicators. Thus, her symptoms indicate a self-limiting viral illness.

Whilst reviewing Tilly's GP records, Dr Jones notices that Tilly previously attended ED with a short history of a fever. Dr Jones gives the parents information on worrying signs and symptoms to watch for and advises them what to do in response. Tilly and her parents depart at 9:37 AM. To alert the registered GP and the health visiting team of Tilly's presentation to GPST, Dr Jones completes an update of Tilly's primary care records at 9:38 AM.

2.5.2 | Staff well-being

Staff satisfaction and well-being were based on the Short Warwick-Edinburgh Mental Well-being Scale.[29] Dimensions included feeling optimistic about the future, feeling useful, feeling relaxed, dealing with problems well, thinking clearly, feeling close to other people, and being able to make up your own mind. Each item scored from 1 to 5 therefore sum scores ranged from 7 to 35.

2.5.3 | GPST impact

The impact of GPST was assessed in terms of the time to being seen by a doctor and the number of breaches. Data used were routinely captured under electronic records held by primary care (SystmOne) or held by NNUH ED (Symphony). Data were used to assess whether the presence of GPST reduced the burden on ED based on the number of walk-in patients seen in NNUH ED per day, the time to being seen by a doctor, and the number of breaches. Descriptive statistics and Student's *t*-test (independent samples, two-tailed assuming unequal variance) at a 95% level of significance were used to describe and compare breaches in the 3 months before GPST deployment and during GPST implementation, including a breakdown by patient category as 'minors', 'majors', 'paediatric' or 'resus'.

2.5.4 | Ability to change care from unplanned to planned

The number of NNUH ED walk-in patients was estimated from Symphony records; the count of patients offered GPST appointments was determined from routinely captured SystmOne electronic medical records.

2.5.5 | GPST safety

Patients who agreed to be interviewed were asked about unplanned representation to healthcare services within 48 h and if repatriated back to their home practice for investigations whether they requested a GP appointment or the required investigation was undertaken. GPST primary care staff were asked to feedback if they came across any safety issues in relation to the use of GPST.

3 | RESULTS

3.1 | GPST activity

GPST ran on 46-weekday dates across the 11-week period from 16 December 2019 to 28 February 2020 inclusive, excluding

9 days when insufficient staff were available: 19 and 23–27 December, 1–2 and 27 January. GPST was effective in seeing 87% of patients within 30 min. Approximately 96% of patients were seen by a doctor within 1 h and all within 87 min. Capacity was available for ~82% of all NNUH walk-in patients with GPST appointments (3584 GPST appointment slots for approximately 4370 expected ED walk-in patients). Approximately 21% of the potential appointment slots were allocated to around 18% of the daytime ED walk-in patients. The streaming protocol may have been too cautious in selecting appropriate patients.

Staff typically comprised a clinical GP, a streaming GP, and an advanced nurse practitioner (ANP) across an 08:30–18:00 h shift. Across the 46 dates, 39 (85%) dates were covered by a clinician GP, 43 (93%) by an ANP; and 32 (70%) by a streaming GP.

Typical patterns of attendance for patients seen in GPST are shown in Figure 2 by hour of attendance for all patients who were given a GPST consultation appointment.

There were 3584 appointments available, 2415 with GPs and 1169 with ANPs. Overall, 768 (21.4%) of 3584 allocated slots were booked and 752 (21.0%) used.

Across all patients booked for GPST appointments ($n = 769$) mean waiting times were 13.9 min (range 0–87, SD: 15.65; 95% CI: 12.82–15.04). Of 769 patients given GPST appointments, 325 (42.2%) were seen within 5 min, 449 (58.4%) within 10 min and 666 (87%) within 30 min. Approximately 98% of patients were seen within 1 h and all within 88 min. More information about the distribution of elapsed times between patients arriving at ED (GPST screening) and their GPST consultation was provided elsewhere.[23]

3.2 | Patient and staff perceptions of GPST

3.2.1 | Patient interviews

Five patients were available for interviews that were conducted from 23–30 March 2020. Respondents were entirely positive about the service. Two main reasons for positivity emerged.

First, the speed with which they were seen.

> I visited the hospital because I had been to the GP when I thought I had pneumonia and with all the coughing my ribs were very painful. I wanted an Xray and expected to wait a long time but it only took five minutes. It was much better than I expected, I thought it would be four hours so really it exceeded my expectation. (Female Resp #5)

> I went to a pharmacist who said I had a dry eye and to see my GP but as it takes so long to see my doctor I decided to go to the hospital. It was great I was in and out in an hour and a half. (Male Resp #4)

> It was brilliant—it was better than waiting. (Female Resp #2)

Second, the perception that an appropriate level of care was provided.

> It is a good idea, this triage service and good for minor cuts, abrasions, minor falls—not major issues. It is good

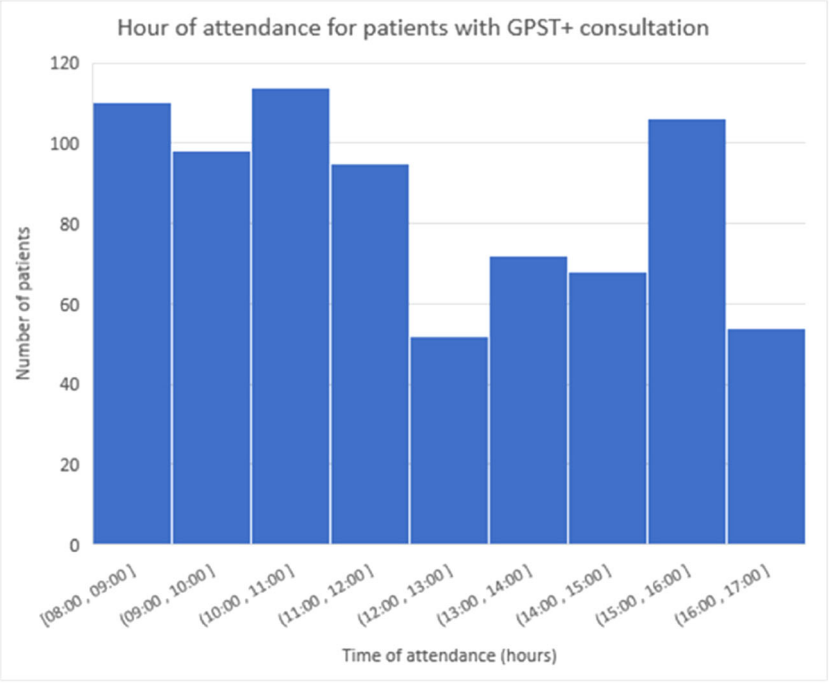

FIGURE 2 Distribution of attendance by hour for patients with GPST consultation. GPST, general practitioner streaming and treatment.

to separate out the cut thumb from something more serious. So it good for that.... (Female Resp #3)

3.2.3 | Staff interviews

Six GPST clinicians were interviewed on 22 February 2020.

3.3 | Positive experiences

Clinician experience of streaming was generally positive. Streaming was described as easy, interesting, and working well. All respondents felt strongly that they could deliver good clinical care and establish a good rapport with patients. All respondents were positive about their experience of repatriation to GPs or escalation to routine ED care. GPST staff perceived the purpose of GPST was to reduce waiting time for patients ($n = 6$), reduce pressure on ED ($n = 5$), improve patient experience ($n = 4$), improve patient care ($n = 2$), save cost ($n = 2$) or provide a safe service ($n = 1$).

3.4 | Negative experiences

Negative experiences encompassed onward referral generation, the physical environment, and clarity of roles. The physical environment limited confidentiality and privacy. There was frustration with the refusal of surgical units to accept referrals for patients, and slow responses from some specialists via telephone queries. Negatively perceived aspects of the physical environment were lack of sinks, room or water temperature, and lack of privacy at streaming.

3.5 | Improvements

Suggestions for improvement included more privacy, better facilities (such as working sinks), and equipment, for example, a paediatric oxygen saturation monitor. One person suggested increased staffing and opening hours shift to slightly later in the day and another that patients and GPs more broadly should be educated on the purpose of ED.

Staff suggested improvements to eligibility criteria, such as clinical judgment being allowed to assess whether trauma cases could be managed by GPST. It was also unclear how dental problems should be managed.

3.6 | Patient satisfaction with GPST

Of 769 patients booked for GPST appointments, only 4 patient satisfaction questionnaires were returned. All four patients indicated high satisfaction. There were no comments on improvements to the GPST service.

3.7 | Staff well-being

The Short Warwick–Edinburgh Mental Well-being Scale was completed at least once by eight GPST staff with a mean score of 28.8 (range 28–35) for the first completion indicating good mental well-being for GPST staff.

3.8 | GPST impact

Table 1 lists outcomes for patients who were booked to attend GPST consultations ($n = 769$). Outcomes were broadly dichotomized into 'managed in primary care' (discharged from hospital services) or 'managed in secondary care' (referred onward to secondary care services) as presented in Figure 2. The 421 (55%) patients managed in primary care were either discharged 'fully resolved' ($n = 271$, 64.4%) or referred back to their own GP ($n = 150$, 35.6%). The 300 patients managed in secondary care were either referred for further tests ($n = 61$, 20.3%), or to non-ED hospital departments ($n = 131$, 43.7%), or ED ($n = 108$, 36%).

Figure 3 describes daytime walk-in ED attendances in 2018–2020. There were 85–102 average daily walk-in attendances between 8 AM and 4 PM on weekdays in January–February each year. Typically, 17 patients (769 patients across 46 dates) had GPST appointments each day. If an average of 95 walk-in patients attend NNUH each day, it is estimated that 18% of daily walk-in patients were seen by GPST. Of these, 55% were managed entirely within primary care services.

Routinely collected ED data indicate that 'round the clock' for 3 months before implementation of GPST (1 September to 13 December 2019 excluding weekends) 29.4% of all patients were

TABLE 1 Outcomes for GPST-eligible patients as recorded by GPST

Patient outcome	*n* (%)
Referred to ED	108 (14.0)
No follow-up required	271 (41.0)
Referred to own GP	150 (22.7)
Referred for further investigation	61 (9.2)
Referred to hospital	131 (19.8)
Other outcome	45 (6.8)
Other	3 (0.1)
Total	769 (100)

Abbreviations: ED, directorate of enforcement; GP, general practitioner; GPST, general practitioner streaming and treatment.

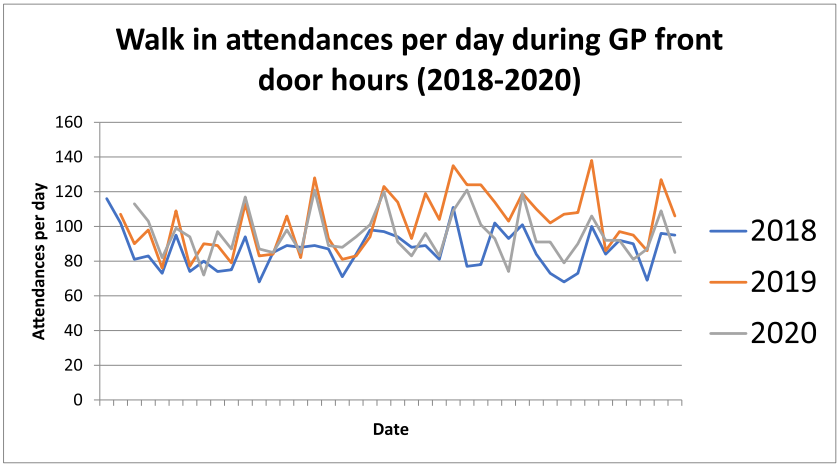

FIGURE 3 NNUH ED Walk in attendances 08:00–16:00 h on weekdays from 1 January to 28 February 2020. ED, directorate of enforcement; GP, general practitioner; NNUH, Norwich and Norfolk University Hospital.

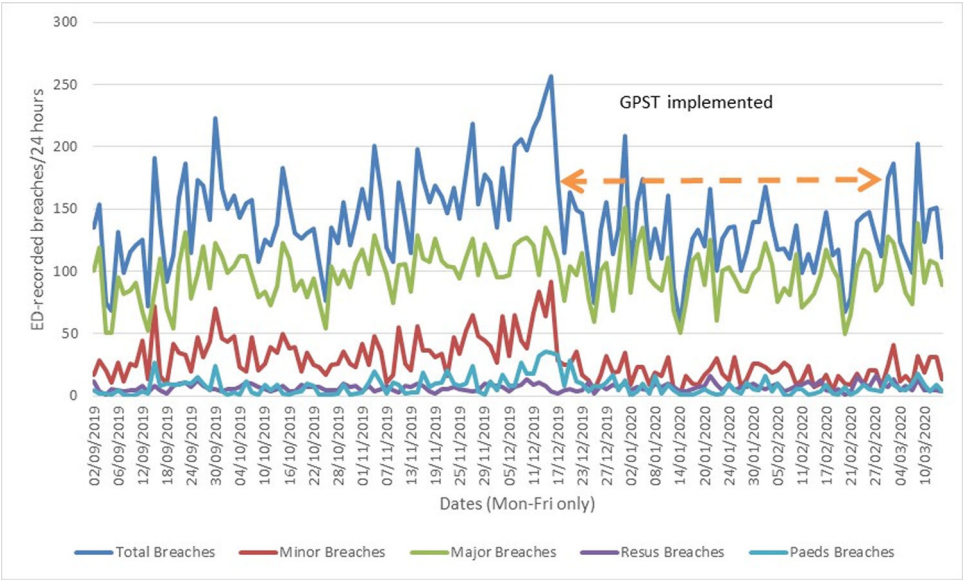

FIGURE 4 Round the clock weekday breaches by ED triage category pre-, during- and postimplementation of GPST (GPST implementation period is indicated by arrow). ED, directorate of enforcement; GPST, general practitioner streaming, and treatment service.

seen within 60 min compared with 37.8% during GPST (16 December 2019 to 28 February 2020 excluding weekends).

Figure 4 presents weekday breach data by ED triage category pre- and during the implementation of GPST. It is important to note that the results are for breaches in 24-h periods, but GPST only worked 08:30–18:00 h. Furthermore, GPST was not operational at weekends or on 9 weekdays. The GPST operational period still coincides with an apparent reduction in the absolute number of breaches at the NNUH.

Table 2 describes the mean number and percentage change in the number of breaches by triage category for the 3-month pre-GPST period (1 September to 13 December 2019) and the GPST implementation period (16 December to 28 February). It indicates a reduction in the mean number of breaches overall (16.3%); for patients categorized as 'minor' (51.2%) paediatric (27%) and a small reduction for 'majors' (5%).

Comparing ED breaches pre- and concurrent with GPST indicates a statistically significant reduction in the mean number of breaches overall ($p = 0.003$), a highly significant reduction for minor breaches ($p = \ll 0.005$), and no significant change in breaches between groups for 'majors' ($p = 0.519$); 'resus' ($p = 0.252$) or 'paeds' ($p = 0.430$) for the concurrent GPST group compared to the pre-GPST group.

3.9 | Ability to change care from unplanned to planned

Of an estimated 4370 NNUH ED weekday daytime walk-in patients (average of 95 patients per day across 46 dates) 769 (17.6%) attended GPST: that is, they changed from unplanned to planned care. The total number of patients streamed by GPST (including those

TABLE 2 Mean number and percentage change in the number of breaches by triage category for the period before and during GPST

	Total breaches (mean/range)	Minor breaches (mean/range)	Major breaches (mean/range)	Resus breaches (mean/range)	Paediatrics breaches (mean/range)
pre-GPST	149.7 (69–243)	35.8 (10–84)	98.7 (51–135)	6.7 (1–14)	8.5 (0–36)
GPST	125.4 (58-209)	17.5 (2–36)	94.2 (50–151)	7.5 (1–16)	6.2 (0–29)
Overall change (%)	−16.3	−51.2	−4.6	+11.9	−27.1

Abbreviation: GPST, general practitioner streaming and treatment service.

who did not enter GPST) was not recorded so the rate of conversion from unplanned to planned care is unclear.

3.10 | GPST safety

No GPST staff reported any patient safety issues in relation to the use of GPST. However, a lack of handwashing facilities, presenting a potential safety issue, was reported. No patients were escalated from GPST to ED pathways, due to patient deterioration, as potentially anticipated in the service plans.

4 | DISCUSSION

Incorporating primary care professionals into the care pathway for ED attenders is not a new idea. However, the optimal delivery format of such programmes and the level of care they should offer remain unclear. Jeyaraman et al.[30] systematically reviewed programs that consisted of primary health care professionals operating in a triage capacity at EDs. Their focus was on outcomes that could indicate reduced demand within EDs such as overcrowding and shorter length of stay. They found 40 studies for synthesis, of which the largest group ($n = 14$) were in the United States. Jeyaraman and colleagues concluded that evidence quality was mostly low with regard to confidently identifying service delivery benefits. It is important to consider the effectiveness of any interventions within the healthcare provision environment specific to individual settings. For instance, Vogel et al.[31] found that economic factors (no need for immediate co-pay) were very important reasons why some people sought treatment for primary-care problems at EDs in the United States. Co-pay considerations should not affect presentations in England, where no monetary charge is made to most health service users at the time of use. Narrative review by Ramlakhan et al.[32] systematically cataloged criteria applied to evaluate co-located primary services in EDs which provided free-at-point-of-access primary care, concluding that such services can be diverse in implementation and posited benefits but are unlikely to achieve net cost savings because of capital costs to initiate them. This finding supports establishing such services for longer periods of time such that capital costs are more likely to be recouped. A chronic commonality among the patients who used the GPST and persons who present to the ED for primary health care services in the United States and other high income countries seems to be service users encountering multifaceted and complex barriers to accessing primary care by other means.[33–35]

Understanding how to best deliver primary care services to patients who present to EDs with nonurgent complaints relies on rigorous service evaluation, including consideration of impacts on core ED activity. Breach of 4 h wait targets, in data routinely collected by NNUH ED, indicate a close correlation between a reduction in overall breaches and 'minors' breaches for the dates that GPST was implemented. These results suggest causation. That the changes in the mean numbers of breaches for 'majors', 'resus' and 'paeds' (none of which were the target of the GPST intervention) were not statistically significant strengthens the case for causation. Note that the breach data reported were for 'round the clock' attendances but if assessed for daytime GPST hours only, might further evidence likely causation.

The Well-being Scale had a mean score of 28.8 (range 28–35) indicating good mental well-being for GPST staff. Most patients (98%) attended their booked appointments, which indicates that GPST was acceptable. Qualitative data indicated that the speed at which patients were managed exceeded their expectations (also identified in staff interviews). This seemed to be a major determinant of satisfaction.

The built environment was criticized by GPST staff. The main problem was a lack of working sinks but equipment and the temperature of the rooms was also mentioned. Related to the built environment a key concern was a lack of privacy during patient screening.

The impact of GPST was primarily determined through exploration of patient pathways. Around 55% of patients ($n = 421$) allocated to GPST appointments were entirely managed within primary care. This is around 10% of the total number of walk-in patients for the study period. A further 39% ($n = 300$) of patients were referred for other tests or to secondary care services including ED. The remainder were categorized as 'other outcomes'. Only 14% of patients allocated to GPST consultation appointments reverted to ED services.

Ethnography and analysis of the condition of patients that were seen by GPST who were subsequently referred to ED could add value to any future study and reduce the burden for patients who, if referred to ED, need to restart their patient journey again.

No patients were escalated from GPST to ED pathways due to deterioration in health (as per protocol) during their GPST

consultation appointment. This may suggest that eligibility criteria are effective with respect to safety. However, comments from staff and the relatively low proportion of patients (18%) streamed to GPST appointments also suggest that eligibility criteria could have been over-cautious. GPST staff thought that eligibility criteria should be loosened and allow more freedom for clinical judgement.

This evaluation of the GPST service was designed to focus on GPST. More robust study designs would be more reliable to determine true net multiservice impact, such as a before-and-after study or by random allocation of a proportion of walk-in ED attendees to one or other service.

4.1 | Strengths and limitations

The GPST service and feasibility study were co-designed by a team from primary care, secondary care, and healthcare commissioning services with *a priori* knowledge of service design. Patient decisions to attend A&E and staff availability may have been affected because the last few weeks of the service coincided with the start of the UK Covid-19 epidemic. The number of patients who returned questionnaires or were interviewed about their experience of GPST was low so these results should be considered tentative. Cost-effectiveness analysis was not undertaken. Information about which clinical conditions were and were not streamed to GPST was not collected: that information could have been used to better inform future eligibility criteria.

5 | CONCLUSION

The findings from this feasibility study suggest that: GPST can successfully identify patients suitable for streaming to primary care; manage patients in a timely fashion; successfully reduce ED burden, and provide a safe service. GPST provided an acceptable alternative to ED care for patients who used it and staff who worked in the service. The period when the GPST was operational coincided with fewer breaches of the 4-h-target than might have been otherwise expected. Such GP-level services at EDs are important because they can support resilience and capacity in EDs for patients with more acute and severe needs, especially at a time when routine access to primary care is under severe pressure.

We recommend that the design of the built environment must be fit for GP-at-door services. Prescribed inclusion and exclusion criteria should be carefully selected. The degree of clinical judgement surrounding eligibility, which is acceptable and beneficial to GPST and ED services could be explored further. Clinical pathways which help to clarify and streamline GPST and ED roles and services should be developed.

AUTHOR CONTRIBUTIONS

Gareth Hughes facilitated work groups and helped design and implement the service. Ian Pope, Annmarie Ruston, and Paul Everden conceived of the study and designed data collection. Annmarie Ruston undertook interviews. Clare Aldus and Annmarie Ruston analysed data. Clare Aldus and Julii Brainard wrote the first draft and all authors revised for content.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ETHICS STATEMENT

Ethical approval for this service evaluation was granted by Norfolk and Norwich University Hospital (3 March 2020) and the University of East Anglia Faculty of Medicine and Health Ethics Committee (Reference: 2019/20-077; 9 March 2020).

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