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# BMJ Open

## Exploring variation in how ambulance services address non-conveyance: a qualitative interview study

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Complete List of Authors:	Knowles, Emma; University of Sheffield, School of Health and Related Research Bishop-Edwards, Lindsey; University of Sheffield, School of Health and Related Research O'Cathain, Alicia; The University of Sheffield, School of Health and Related Research (SchARR)
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3 **Exploring variation in how ambulance services address non-conveyance: a qualitative interview**  
4 **study**  
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9 Emma Knowles (PhD), Senior Research Fellow

10 Lindsey Bishop-Edwards (MSc), Research Associate

11 Alicia O’Cathain (PhD), Professor  
12  
13

14  
15 School of Health and Related Research

16 University of Sheffield

17 United Kingdom  
18

19 S1 4DA  
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23 Corresponding author: e.l.knowles@sheffield.ac.uk  
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## Abstract

**Objectives:** There is considerable variation in non-conveyance rates between ambulance services in England. The aim was to explore how each ambulance service addressed non-conveyance specifically for calls ending in telephone advice and discharge at scene.

**Design:** A qualitative interview study.

**Setting:** Ten large regional ambulance services covering 99% of the population in England.

**Participants:** Between 4 and 7 interviewees from each ambulance service including managers, paramedics and healthcare commissioners, totalling 49 interviews.

**Methods:** Telephone semi-structured interviews.

**Results:** The way interviewees in each ambulance service discussed non-conveyance within their organisation varied for three broad themes. First, ambulance service senior management appeared to set the culture around non-conveyance within an organisation, viewing it either as an opportunity or as a risky endeavour. Although motivation levels to undertake non-conveyance did not appear to be directly affected by the stability of an ambulance service in terms of continuity of leadership and externally assessed quality, this stability could affect the ability of the organisation to innovate to increase non-conveyance rates. Second, descriptions of workforce configuration differed between ambulance services, as well as how this workforce was used, trained and valued. Third, interviewees in each ambulance service described health and social care in the wider emergency and urgent care system differently in terms of availability of services that could facilitate non-conveyance, the amount of collaborative working between health and social care services and the ambulance service, and complexity related to the numbers of services and healthcare commissioners with whom they had to work.

**Conclusions:** This study suggests that factors within and outside the control of ambulance services may contribute to variation in non-conveyance rates. These findings will be tested in a quantitative analysis of factors affecting variation in non-conveyance rates between ambulance services in England.

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#### **Strengths and limitations of this study**

- This was a national study of ambulance services covering 99% of the population in England.
- It is the first study of organisational factors potentially affecting non-conveyance rates.
- A breadth of perspectives was captured from paramedics through to senior managers within each ambulance service.
- The small number of interviews in each service may not have offered a representative picture of each service.
- Paramedic interviewees were selected by managers and may have been selected because they concurred with the managerial view of non-conveyance.

## **Background**

Emergency ambulance services, known as Emergency Medical Services in some countries, deal with significant numbers of calls each year. In England in 2016/17 ambulance services responded to 7 million calls for a population of around 55 million. [1] When a call is received by an ambulance service in England it can be dealt with in a number of ways: some patients receive clinical assessment over the telephone without the need for an ambulance, some patients are sent an ambulance and then discharged at scene, and some patients are sent an ambulance and conveyed to an emergency department or other health care service such as a walk-in centre. Non-conveyance rates, where patients are not transported to a hospital, are high in England compared with other countries. The rate in England in 2016/17 of patients not conveyed to a hospital with an emergency department was 47% [1] compared with rates of 42% in Finland [2] and 18% in Canada. [3] This international variation in non-conveyance rates for ambulance services has existed for decades. [4]

Although some non-conveyance is caused by patient refusal to travel, health policy in England promotes the use of non-conveyance by ambulance services as a way of offering care closer to home. [5] As well as offering the most appropriate response to patients' needs, non-conveyance can help the efficiency of the emergency and urgent care system in which ambulance services operate. For example, high rates of non-conveyance by ambulance services have been associated with lower rates of avoidable emergency admissions. [6]

The importance of non-conveyance for English ambulance services is evident in the use of four national quality indicators measuring rates of different types of non-conveyance as part of the publically available Ambulance Quality Indicators. [1] These indicators show considerable variation in non-conveyance rates between the regional ambulance services in England. In February 2018, for the ten regional ambulance services covering 99% of the population of England, rates of calls telephone advice rates varied between 4% and 8% and variation in discharge at scene rates varied between 23% and 37%.

Patient characteristics can determine the response offered by an ambulance service. For example, a recent systematic review concluded that patients who are sent an ambulance and discharged at scene are more likely to be older and more likely to have fallen. [7] However, little is known about ambulance service characteristics that may affect non-conveyance rates in terms of both the characteristics of the organisations and the emergency and urgent care systems in which they

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3 operate. As part of a wider mixed methods study on explaining Variation in Ambulance Non-  
4 conveyance rates (the VAN project), a qualitative interview study was undertaken with staff within  
5 ambulance services and healthcare commissioners of each ambulance service. The aim of the  
6 qualitative study was to explore how non-conveyance was addressed within each ambulance to  
7 identify potential factors affecting variation between ambulance services.  
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## 10 11 12 **Methods** 13

### 14 15 Setting and context 16

17 In England, UK Emergency Medical Services are provided by 11 ambulance services within the  
18 National Health Service (NHS). Ten of these ambulance services deal with over 99% of emergency  
19 ambulance calls from the population of England. Most calls are from patients calling 999 to request  
20 an ambulance – approximately four in five calls – with the remaining calls being passed through from  
21 patients calling a telephone helpline for urgent care called ‘NHS 111’, or through direct referral from  
22 a health professional requesting an emergency ambulance. Calls are taken by non-clinical staff who  
23 use software to identify the priority of each call. The 11 ambulance services use two different  
24 priority dispatch systems: Medical Priority Dispatch System and NHS Pathways. A small percentage  
25 of calls that are categorised as low priority are passed to clinicians in Emergency Operating Centres  
26 or Clinical Hubs within each ambulance service for secondary triage. The clinicians in these  
27 Emergency Operating Centres or Hubs use a decision support software to determine whether the  
28 patient needs an ambulance or can be offered telephone advice only. This advice includes self-care  
29 advice or referral to a service such as primary care; an ambulance is not dispatched. For calls not  
30 sent for secondary triage, an ambulance is dispatched and patients may be attended by paramedics,  
31 paramedics with extended skills, or emergency care technicians with basic emergency training. The  
32 ambulance crew assesses and treats patients at scene and can discharge people at scene, transport  
33 them to a hospital-based emergency department, or transport them to another health facility such  
34 as a walk-in centre. Decisions are made by paramedics in conjunction with patients and their  
35 families. Protocols exist for making decisions relating to transport of patients with some health  
36 conditions. Sometimes non-transport occurs due to patient refusal to travel. Health services within  
37 the NHS in England are commissioned by around 200 Clinical Commissioning Groups [8] that hold  
38 the budget for ensuring services are available for their geographically-based populations. Each  
39 regional ambulance service has a lead commissioner from the set of Clinical Commissioning Groups  
40 commissioning services for the populations served by that ambulance service.  
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### The wider mixed methods study

The VAN project included a sequential mixed methods study aiming to explain variation in non-conveyance rates between ambulance services in England. The first phase was a qualitative interview study to identify potential factors affecting non-conveyance rates. The second phase was a statistical regression to determine the amount of variation these factors explained in non-conveyance rates between the 10 large regional ambulance services. The first phase only is reported in this article.

### The qualitative interview study

A telephone interview study was undertaken with three groups within each of the 10 ambulance services: ambulance service managers, paramedics and health care commissioners of the ambulance service. The aim was to understand their perceptions of influences on non-conveyance rates within their regional ambulance service. These three groups were selected because: ambulance service managers can shape strategic decisions that affect non-conveyance rates at an organisational level, such as workforce configuration or investment in staff training; paramedics make daily decisions about whether to convey patients to hospital or not and can offer views of patient characteristics, workforce practices and organisational factors affecting non-conveyance; and health care commissioners can encourage ambulance services to undertake non-conveyance through setting targets for non-conveyance rates within contracts and offering additional investment for non-conveyance initiatives. The plan was to undertake a one off interview with two managers (one at director level and one in operational management), two paramedics (a paramedic with extended skills and one without), and the lead health care commissioner for each of the ten large regional ambulance services in England.

Interviewees were recruited by working with a local collaborator based in each ambulance service. Typically, these were a Research and Development manager or an operational manager with responsibility for non-conveyance. Health care commissioners leading on commissioning ambulance services in each region were identified by approaching the ambulance service or Clinical Commissioning Groups. One researcher (LBE) undertook all the interviews by telephone. Interviews took place at an individual, rather than group, level. The researcher was blind to the non-conveyance rates of the interviewees' organisations. The interviews were semi-structured. A topic guide was used, covering perceptions of factors that affected non-conveyance within that service. The topic guide was informed by the evidence base as well as the study research questions. For example, paramedics with extended skills are known to undertake more non-conveyance than other



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3 paramedics [9] so workforce was included as a prompt within the topic guide. The topic guide was  
4 piloted within the first few interviews and only minor changes were required. Interviews were  
5 digitally audio recorded and lasted between 40 and 90 minutes.  
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### 8 9 Analysis

10 The digital recordings of interviews were transcribed verbatim. Transcripts were checked, alongside  
11 recordings, for accuracy prior to uploading to the qualitative software package Nvivo version 10 for  
12 analysis. [10] Transcripts were not returned to participants for comment. Data were analysed using  
13 the framework approach. [11] A small number of transcripts from a variety of types of interviewee  
14 were read by EK, LBE and AOC for familiarisation. A thematic framework was constructed based on  
15 the topic guide and emergent themes from reading the transcripts. The initial framework was  
16 developed by EK and revised following discussions with AOC and LBE. The thematic framework  
17 included: views of non-conveyance rates, calculation of rates, national drivers, organisational  
18 drivers, collaborative working within the emergency and urgent care system, workforce issues (skill-  
19 mix, culture, working patterns), triage software, patient characteristics, defining and measuring  
20 appropriate non-conveyance, and commissioning non-conveyance. Discussions specifically relating  
21 to telephone advice only or discharge at scene were coded in addition to discussion of non-  
22 conveyance generally. Each transcript was coded to the themes and sub-themes, by three coders  
23 (LBE, FF, NA). Factors operating at the ambulance service-level – the organisation and the  
24 emergency and urgent care system in which it operated - were analysed by EK and LBE.  
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36 EK read extracts of transcripts within a theme for each ambulance service separately. She analysed  
37 the theme, noting any variation in perceptions within each ambulance service, and discussing  
38 findings with LBE and AOC. This was repeated for further themes, considering the connections  
39 between themes and refining the thematic framework by collapsing some themes. For example,  
40 themes around 'collaborative working' and 'the emergency and urgent care system' were merged  
41 because they were highly related. Each ambulance service was treated as a case and views of  
42 interviewees within each ambulance service were analysed together for each theme and sub-theme.  
43 This part of the analysis focused on variation in how interviewees discussed non-conveyance related  
44 to their own ambulance service. This variation was explored qualitatively and is reported here. It  
45 also 'quantitized' for each ambulance service [12] by coding themes as operating in different ways  
46 within each ambulance service in preparation for the quantitative analysis in the wider mixed  
47 methods study.  
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### Ethical approval and consent

All interviewees gave written informed consent. Approval was obtained from the National Research Ethics Service Committee North West – Greater Manchester West (REC reference 14/NW/1388).

Direct quotes are used and labelled by ambulance service A-J to maintain anonymity. Job descriptions are not included in quote descriptors because of the small number of senior managers and commissioners interviewed for each ambulance service.

### Patient and Public Involvement

The School of Health & Related Research (SchARR) at the University of Sheffield has a large portfolio of emergency and urgent care research projects. In order to support patient and public involvement (PPI) activities across these projects a PPI group, the Sheffield Emergency Care Forum (SECF), has been established. This group provides direct support to research teams within SchARR and also provides wider links to related PPI groups within the South Yorkshire CLRN and Healthwatch.

Members of the SECF contributed to the study: Maggie Marsh attended the management meetings during the project, and Enid Hirst provided input at the Project Advisory Group meetings.

In addition to having PPI members as part of the project team and Project Advisory Group, patients and members of the public working with three ambulance services or research teams engaged with emergency and urgent care came together to form a VAN project PPI group.

During the study, the PPI representatives were available to influence decisions being made about how to operationalise the research proposal and interpret findings. The PPI group took a lead in writing the plain English summaries for the study, and assisted in the construction of a wide reaching dissemination strategy.

## **Results**

### Recruitment

All 50 planned interviews were completed. Between four and seven interviews were undertaken in each ambulance service. We formally invited 80 individuals to interview. Most of those approached consented, with the exception of paramedics where 44 were approached but only 18 agreed to be interviewed. The digital recording of one interview (a paramedic) was of poor quality and could not be transcribed and therefore 49 of the interviews undertaken were analysed.

### Overview of themes

There were three broad themes related to how each ambulance service addressed non-conveyance: senior management within the ambulance service, the ambulance workforce, and relationships with

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3 services within the wider emergency and urgent care system. Approaches to discharge at scene,  
4 which accounts for most non-conveyance, and approaches to ending calls with telephone advice  
5 only could differ within ambulance services and are discussed separately below.  
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### 8 9 **Senior management commitment to non-conveyance**

#### 10 11 *Motivation for non-conveyance: opportunity or risk*

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13 Senior management in some ambulance services described non-conveyance as an opportunity to  
14 offer the most appropriate care to patients and as embedded practice within their organisations. In  
15 one organisation, non-conveyance was described as an historically important activity and there was  
16 an ongoing goal to improve or sustain high non-conveyance rates. Interviewees in both managerial  
17 and paramedic roles in this organisation described how they took a 'whole organisation' approach to  
18 non-conveyance and increasing rates of non-conveyance:  
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25 *"I think we've had that culture a lot longer [than other ambulance services. Staff [here]*  
26 *almost a decade ago were leaving people at home. Whereas in some services their non-*  
27 *conveyance rates are awful and I think their staff have still got to get their head around*  
28 *that's what their job is"* [Service C, interviewee 4]  
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33 In contrast, interviewees in some ambulance services described non-conveyance as an activity that  
34 had been prioritised in recent times or was not seen as a priority. At an extreme, senior  
35 management in one service was described as risk averse to non-conveyance. Senior management  
36 interviewees did not want to increase discharge at scene rates because of the risks involved to  
37 ambulance crews if something went wrong. The health care commissioner also viewed non-  
38 conveyance as a low priority within this ambulance service and a paramedic described this activity as  
39 a "new concept".  
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44 *"the [health care commissioners] and the GPs, and everybody else hate us, because, we, I*  
45 *won't release the crews to just leave people at home and make a call to a GP receptionist to*  
46 *say I've left this person at home because that crew member themselves doesn't realise what*  
47 *he's doing there, he's putting himself in the coroner's court in a non-defendable position,*  
48 *unless it's a safe structured handover recorded, and shared, I won't let it happen. The fact*  
49 *that it does happen all over the place is another matter and when I go round other*  
50 *ambulance services, I do think that this point is sometimes missed"* [Service F, Interviewee  
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4 In two services (Service C and H) there appeared to be high levels of motivation to undertake clinical  
5 telephone assessment to manage demand for ambulances. In both services there was a perception  
6 that services had a strategic vision for telephone assessment and provided workforce investment to  
7 support this. This contrasted with other services (Service A, D, E, G) where interviewees perceived  
8 risk linked to the non-visual aspect of assessment, the use of paramedics rather than nurses  
9 (experienced in telephone triage) to undertake this role, and a potential risk to the organisation in  
10 not meeting patient expectations:  
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17 *“Invested heavily [in the clinical hub] high level of expertise...invested a lot of time in that*  
18 *group of staff... we’ve put quite a large amount of investment into the structure. For us it’s*  
19 *not just pulling paramedics off the road and sticking them in the control and getting them to*  
20 *[take] calls. We’ve got a whole [telephone advice] strategy here... we really thought through*  
21 *the whole thing” [Service H, Interviewee 49]*  
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26 *“with [clinical telephone advice] ... what’s your appetite for dealing with a high level of*  
27 *complaints... very simply, the more non-conveyance you do the [more] dissatisfaction you will*  
28 *have. People didn’t phone 999 for a chat, they phoned 999 with an expectation that an*  
29 *ambulance was going to appear” [Service E, Interviewee 32]*  
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### 36 *Structural stability*

37 The stability of the organisation was described differently for each ambulance service at the time of  
38 the interviews. Some ambulance services appeared to be stable, with no significant restructuring  
39 within their senior management. However, interviewees in four services (Services A, H, I, J) reported  
40 current or recent challenges in terms of loss of key senior personnel, or poor outcomes in a national  
41 quality assessment, which created challenges for senior management within the organisation.  
42 Interviewees did not expand explicitly on how this might impact on non-conveyance rates but it was  
43 clear from their discussions that their focus was on their key priority of meeting response time  
44 targets in the context of this instability rather than the innovation necessary for increasing non-  
45 conveyance rates:  
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51 *“it’s been a difficult year because we were in such a difficult situation. We were very much*  
52 *around meeting [response time targets] and all of our focus was around increasing [staff]*  
53 *numbers and getting the response target right in the first instance, we were not necessarily*  
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3 *entertaining anything that took paramedics away from core frontline business” [Service A,*  
4 *interviewee 5]*  
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## 7 **Workforce**

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### 10 *Skill-mix configuration*

11 Interviewees described how the configuration of their ambulance crews could affect discharge at  
12 scene rates. Paramedics with extended skills were viewed as having more confidence to discharge  
13 patients at scene than paramedics with standard training, and paramedics were described as having  
14 more confidence than crews without paramedics. This highlighted the potential for the skill-mix  
15 configuration within an ambulance service to affect its discharge at scene rate:  
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20 *“we’ve been particularly challenged by a shortage of senior clinicians, that is, paramedics.*  
21 *Paramedic numbers have been very low, and that will affect the decision-making of the*  
22 *clinicians and their confidence level. The more senior clinician you get on [discharge at scene]*  
23 *the more confidence they’ll have to make a decision not to convey, whereas if you’re running*  
24 *a number of non-paramedic based ambulances, so emergency medical technicians, or*  
25 *student ambulance paramedics, or emergency care assistants, generally the lower the grade*  
26 *the more likely the conveyance rates will be affected” (Service A, interviewee 5)*  
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33 A similar variation in views was apparent for the provision of telephone assessment within the  
34 ambulance services. Interviewees in some services perceived telephone assessment to be a  
35 specialism, beyond the basic training of paramedics. They described a clinical hub supported by  
36 specially trained paramedics and other clinicians such as mental health specialists. In contrast, in  
37 other services interviewees described their clinical hub as a place where paramedics who could were  
38 no longer able to go out in ambulances due to ill health worked:  
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44 *“staff that for whatever reason were unable to continue within a frontline clinical*  
45 *role...usually ended up working in the [telephone assessment] team, so as oppose to [being]*  
46 *selected to be in that specialist role, they tend to be the people that were physically*  
47 *incapable of doing the other [frontline], which isn’t necessarily the most robust process... and*  
48 *it is a very specialist role, it takes a definite skill set” [Service B, Interviewee 5]*  
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### 54 *Perceived value of higher skill-mix*

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3 The perceived value of paramedics with extended skills, for example Emergency Care Practitioners,  
4 was described differently by interviewees in each ambulance service. In some ambulance services  
5 there was consensus amongst the interviewees that paramedics with extended skills were  
6 established within the service and were perceived to be a valued resource for reducing conveyance  
7 to hospital (Service C, D, G). In these ambulance services, paramedics discussed being able to access  
8 their senior colleagues - paramedics with extended skills - and refer patients to them, also describing  
9 them as a support mechanism for seeking advice to facilitate their own decision-making regarding  
10 non-conveyance. Interviewees in these ambulance services wanted to expand this part of the  
11 workforce because of its perceived value to non-conveyance. In contrast, interviewees in other  
12 ambulance services described limited implementation of paramedics with extended skills, or a  
13 recent renewed interest in them, which implied that they had possibly been neglected within the  
14 organisation in the past (Service A, E, H, J). Reasons given for limited implementation of paramedics  
15 with extended skills included a need to focus resources elsewhere in the workforce or a lack of  
16 interest at a senior management level:  
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25 *"It's a bit of a 'dying on the vine' situation. Yes we have [paramedics with extended skills], a*  
26 *small number that were from the prerequisite arrangements. I'll never get rid of them, but*  
27 *we haven't trained [them] here [for a number of years]" [Service E, interviewee 32]*  
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### 31 *Organisational support for the workforce*

32 While many interviewees described how ambulance crews followed protocols and policies when  
33 making non-conveyance decisions, they also highlighted the importance of the confidence of crew  
34 members when deciding to discharge at scene. Indeed, one interviewee identified paramedic  
35 confidence as the most important factor affecting the decision to discharge patients at scene.  
36 Interviewees described how confidence could be improved through experience in the role, training  
37 to extend skills, mentoring in non-conveyance, the ability to discuss potential cases for non-  
38 conveyance with clinicians in the clinical hub, and being part of an organisation that was supportive  
39 of their workforce. Senior managers described the importance of supporting their workforce and  
40 understanding that a decision not to convey could be the right decision at the time even if it  
41 appeared not to be at a later stage. In contrast with the views of these senior managers, paramedics  
42 in some services openly described a fear of retribution if things went wrong (Services B, D, E, G, H, J).  
43 Indeed, in some ambulance services the managers described how supportive they were of the  
44 workforce when things go wrong but the paramedics interviewed expressed the opposite view  
45 (Services E, G, H, J).  
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3 *“probably the most important one is the support for staff. If we’re encouraging the staff to*  
4 *non-convey it’s making sure we’re supporting them in that decision and if it does go wrong,*  
5 *making sure again that we understand the reason why it’s gone wrong, but again continue*  
6 *to support the staff because they’ve probably made the right decision in the first place”*  
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8 [Service G, interviewee 30]  
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12 *“sadly, if something goes wrong out on the road, then obviously knowledge might get back*  
13 *to the station and it’s talked about. And you’re sadly in this job, you are known for being bad*  
14 *rather than being a good clinician”* [Service G, interviewee 29]  
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## 19 **The wider emergency and urgent care system**

### 20 *Provision of alternative services to hospital*

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22 A consistent issue raised by interviewees from all ambulance services was the importance of having  
23 health and social care services available in the wider emergency and urgent care system to facilitate  
24 non-conveyance. Ambulance crews could work with these services to obtain information about  
25 patients to help them make a decision about non-conveyance or refer patients to those services to  
26 allow non-conveyance:  
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32 *“there’s lots of expectation on ambulance services to single-handedly reduce conveyance to*  
33 *[an emergency department] but a lot of that, the success, is down to the buy-in from the*  
34 *local health community in terms, if they’ve not got the alternative pathway we can’t use it”*  
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36 [Service C, interviewee 4]  
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40 There was variability in how interviewees described the provision of services that could enable non-  
41 conveyance. In one service [Service C], interviewees spoke positively about provision, and the range  
42 of pathways available to the ambulance service. In contrast, interviewees in two services [Service A,  
43 I] spoke about a significant lack of pathways. Most other services [Service B, D, E, F, G, H, J]  
44 described variation in provision across their region:  
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48

49 *“It’s fair to say, very few options available to us as referral pathways”* (Service A, interviewee  
50 15)  
51  
52  
53

54 *“Some areas have got really good pathways, so where you’ve got direct access to GPs, minor*  
55 *injuries units, walk in [centres], admission to certain [hospital] wards for certain clinicians.*  
56  
57  
58

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2  
3 *But then in other areas, actually the only place you've got is the emergency department, so*  
4 *the GPs won't take a referral from the paramedics [...] you'll get a minor injuries unit, often*  
5 *called a walk-in centre, and often the reason why we call it a walk-in centre is they don't take*  
6 *stretcher patients. So they have a perception that if you're an ambulance, the patient must*  
7 *be on a stretcher, therefore, they won't accept you."* (Service D, interviewee 20)  
9

### 12 *Connectivity with the wider system*

13  
14 Whilst ambulance services had no control over the availability of health and social care provision in  
15 their region, they are able to exert some influence over their engagement with these services.  
16 Interviewees in one service [Service C] shared consistently positive views about the connections  
17 between their ambulance service and services in the wider emergency and urgent care system. They  
18 described an initiative that linked ambulance crews with other services necessary for non-  
19 conveyance rather than the crews having to locate and contact these services themselves. This  
20 initiative was perceived as successful and to operate differently from other models across the  
21 country because it took some of the responsibility for discharge at scene off the ambulance crew. In  
22 contrast, another service described a similar initiative as a barrier to non-conveyance because it was  
23 not consistently provided across their region and thus caused more, rather than less, work for  
24 ambulance crews because they travelled across different localities with different processes and  
25 considerable efforts were required to identify the appropriate processes when wanting to non-  
26 convey.  
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34 *"some [models in other ambulance services] don't clinically take on the patient. They just say*  
35 *'oh you need to phone such and such and refer them there'. With our [model] you basically*  
36 *hand [the patient] over and one of their clinicians [will] take responsibility for the patient [...]*  
37 *and they sort everything else out behind the scenes"* [Service C, interviewee 4]  
40

41  
42 *"each one of the [Clinical Commissioning Groups] puts in what they call an SPA, a single point*  
43 *of access. Some of them put in several single points of access, which in itself is a bit of an*  
44 *oxymoron because it's not single point, it's several points of access, and so what we've done*  
45 *is then created another obstacle that a crew has to navigate before they can pass this job*  
46 *on"* [Service B, interviewee 43]  
49

50  
51 In other services (Service A, B, D, E, F, I) interviewees perceived that relationships with key services  
52 in the wider system were poor because they could not access some services that might support non-  
53 conveyance, could not access services reliably when needed in the short time frame of needing to  
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3 make non-conveyance decisions, or were not confident in the quality of the service they needed to  
4 refer patients to. These services included primary care - both in or out of hours- community services,  
5 falls services, minor injury units and urgent care centres.  
6  
7

### 8 9 *Complexity of the system*

10 Interviewees described some ambulance services as situated within more complex emergency and  
11 urgent care systems than others. Clinical Commissioning Groups commission services for the  
12 population in their geographical locality. One ambulance service had 12 of these localities within  
13 their region whereas another had 33. Ambulance service managers described how each locality  
14 could have different priorities in terms of commissioning non-conveyance, creating complexity in  
15 terms of a single ambulance service having to deal with multiple commissioners' needs. Further  
16 complexity was highlighted by managers and paramedics who described how each Clinical  
17 Commissioning Group locality had different services operating in different ways. Understanding this  
18 variation between geographical areas within their region, or within the same service over time,  
19 created a burden for crew members who would decide to convey to an emergency department  
20 because this was the easiest option.  
21  
22  
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28  
29  
30 *"[the crew] go to a [patient who has had a] fall in [PLACE A], and [the crew] might be very*  
31 *familiar with the falls service that's back in [PLACE B], but now they're in [PLACE A] it's all*  
32 *completely different, the criteria's different, they haven't a clue, so they're left with the*  
33 *decision 'well, I haven't a clue what's going on here so do you know what, I'm just going to*  
34 *take them to the [emergency department]" [Service B, interviewee 43]*  
35  
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38

## 39 **Discussion**

### 40 *Main findings*

41  
42 There were some clear differences in interviewees' perceptions of how non-conveyance was  
43 addressed in different ambulance services. First, ambulance service senior management appeared to  
44 set the culture around non-conveyance within an organisation, viewing it either as an opportunity or  
45 as a risky endeavour. Although motivation levels to undertake non-conveyance did not appear to be  
46 directly affected by the stability of an ambulance service in terms of continuity of leadership and  
47 externally assessed quality, this stability could affect the ability of the organisation to innovate to  
48 increase non-conveyance rates. Second, descriptions of workforce configuration differed between  
49 ambulances services, as well as how this workforce was used, trained and valued. Third,  
50 interviewees in each ambulance service described health and social care in the wider emergency and  
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3 urgent care system differently in terms of availability, amount of collaborative working with the  
4 ambulance service, and complexity related to the numbers of services and healthcare commissioners  
5 with whom they had to work.  
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7

### 8 9 *Strengths and limitations*

10 The study took a national focus and is one of the first studies of organisational perspectives of non-  
11 conveyance. Perspectives were gained from a breadth of stakeholders ranging from paramedics to  
12 senior management and from a stakeholder external to each organisation – the healthcare  
13 commissioner. The study had two limitations. First, we recruited a small number of interviewees  
14 from each ambulance service, who may not share the same perceptions as their colleagues. We  
15 were mindful not to be swayed by the views of one individual within a service during the analysis  
16 and considered differing views expressed within an ambulance service. Second, the identification of  
17 paramedic participants was undertaken by managers in each ambulance service. This could have  
18 resulted in bias, with managers selecting paramedics who they perceived to have favourable views  
19 about their organisation. On reflection, we felt that interviewees gave open responses, expressing  
20 both positive and negative views about non-conveyance within their organisations.  
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### 28 29 30 *How does this fit with existing evidence?*

31 There has been little study of organisational perspectives of non-conveyance. Our findings are  
32 similar to those identified in a national audit of ambulance non-conveyance in England which  
33 included analysis of quantitative data on processes and outcomes, and discussions with managers  
34 with each ambulance service. [13]  
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38  
39 Ambulance non-conveyance is not only important from a service perspective but is also valued by  
40 service users. Patients can obtain the reassurance they look for, [14] and value their responsiveness  
41 and accessibility [15] whether the outcome is conveyance or non-conveyance. Non-conveyance in  
42 terms of discharge at scene [16] and telephone triage, [17] has been shown to be acceptable to  
43 service users. In addition, evidence shows that ambulance non-conveyance practices may reduce  
44 pressure in other parts of the emergency care system by reducing emergency department  
45 attendances,[16] and hospital admission rates.[18] However, our work has shown that the  
46 relationships between the ambulance service and other parts of the emergency and urgent care  
47 system, required to facilitate non-conveyance, can be complicated often due to the size of  
48 ambulance service regions, and a lack of consistency in service provision across each region. This fits  
49 with recent evidence of the challenges faced by ambulance services which need to collaborate with  
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3 large numbers of stakeholders across the geographical area they serve. [13] Interviewees in our  
4 study felt that the skill mix of the workforce, and the associated confidence perceived in more highly  
5 skilled staff was important in optimising non-conveyance. This is supported by other evidence  
6 showing that advanced paramedics can be more effective than paramedics patients in achieving this.  
7  
8 [9]  
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10

### 11 *Implications*

12  
13 Healthcare policy supports the use of clinically appropriate non-conveyance, providing care closer to  
14 home for patients. Increasing ambulance non-conveyance rates is also perceived as a way to further  
15 alleviate pressure within emergency departments and the wider emergency care system.  
16  
17 To some extent, ambulance services have the autonomy to increase non-conveyance in terms of the  
18 workforce they employ, and how they utilise them within the service. Importantly, however, there is  
19 a degree of reliance on other providers within the emergency and urgent care system to facilitate  
20 some forms of ambulance non-conveyance. This requires collaborative working to create, and  
21 maintain, safe and appropriate referral pathways which support non-conveyance.  
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### 28 **Conclusion**

29  
30 Health policy in England encourages use of initiatives to provide care closer to home, one of which is  
31 clinically appropriate non-conveyance following a 999 ambulance call. There is considerable  
32 variation in non-conveyance rates across the 10 regional ambulance services in England. This study  
33 suggests that factors within and outside the control of ambulance services may contribute to  
34 variation in non-conveyance rates. Aspects within the control of ambulance services include  
35 motivation of senior management, workforce configuration and value placed on senior clinical skill-  
36 mix. Aspects outside the control of ambulance services include the complexity of the emergency and  
37 urgent care systems they operate within, although to some extent, the collaborations they build  
38 with services with these systems is within their control.  
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14  
15

### 16 **Competing interests**

17  
18 The authors have no competing interests to declare.  
19  
20  
21

### 22 **Contributions of authors**

23  
24 AOC and EK designed the study. LBE collected the data. EK led, and along with LBE undertook the  
25 analysis of the data with advice from AOC. EK and AOC wrote the first draft of the paper. All authors  
26 commented on drafts and agreed the final version.  
27  
28  
29

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35  
36  
37  
38

### 39 **Reporting statement**

40  
41 The COREQ reporting statement was completed.  
42  
43

### 44 **Data sharing statement**

45  
46 The risk of breaking anonymity is too high to share this data.  
47  
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## Exploring variation in how ambulance services address non-conveyance: a qualitative interview study

### Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

No. Item	Guide questions/description	Reported on Page #
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	6
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1
3. Occupation	What was their occupation at the time of the study?	1
4. Gender	Was the researcher male or female?	NA
5. Experience and training	What experience or training did the researcher have?	NA
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	NA
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	NA
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	NA
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	7
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	6
12. Sample size	How many participants were in the study?	8
13. Non-participation	How many people refused to participate or dropped out? Reasons?	8

<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	6
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	6
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	8
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	6-7
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	6
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	7
20. Field notes	Were field notes made during and/or after the inter view or focus group?	NA
21. Duration	What was the duration of the inter views or focus group?	7
22. Data saturation	Was data saturation discussed?	No
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	7
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	7
25. Description of the coding tree	Did authors provide a description of the coding tree?	No
26. Derivation of themes	Were themes identified in advance or derived from the data?	7
27. Software	What software, if applicable, was used to manage the data?	7
28. Participant checking	Did participants provide feedback on the findings?	NA
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Yes
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes

# BMJ Open

## Exploring variation in how ambulance services address non-conveyance: a qualitative interview study

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3 **Exploring variation in how ambulance services address non-conveyance: a qualitative interview**  
4 **study**  
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9 Emma Knowles (PhD), Senior Research Fellow

10 Lindsey Bishop-Edwards (MSc), Research Associate

11 Alicia O’Cathain (PhD), Professor  
12  
13

14  
15 School of Health and Related Research

16 University of Sheffield

17 United Kingdom  
18

19 S1 4DA  
20  
21  
22

23 Corresponding author: e.l.knowles@sheffield.ac.uk  
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## Abstract

**Objectives:** There is considerable variation in non-conveyance rates between ambulance services in England. The aim was to explore variation in how each ambulance service addressed non-conveyance for calls ending in telephone advice and discharge at scene.

**Design:** A qualitative interview study.

**Setting:** Ten large regional ambulance services covering 99% of the population in England.

**Participants:** Between 4 and 7 interviewees from each ambulance service including managers, paramedics and healthcare commissioners, totalling 49 interviews.

**Methods:** Telephone semi-structured interviews.

**Results:** The way interviewees in each ambulance service discussed non-conveyance within their organisation varied for three broad themes. First, ambulance service senior management appeared to set the culture around non-conveyance within an organisation, viewing it either as an opportunity or as a risky endeavour. Although motivation levels to undertake non-conveyance did not appear to be directly affected by the stability of an ambulance service in terms of continuity of leadership and externally assessed quality, this stability could affect the ability of the organisation to innovate to increase non-conveyance rates. Second, descriptions of workforce configuration differed between ambulance services, as well as how this workforce was used, trained and valued. Third, interviewees in each ambulance service described health and social care in the wider emergency and urgent care system differently in terms of availability of services that could facilitate non-conveyance, the amount of collaborative working between health and social care services and the ambulance service, and complexity related to the numbers of services and healthcare commissioners with whom they had to work.

**Conclusions:** This study suggests that factors within and outside the control of ambulance services may contribute to variation in non-conveyance rates. These findings can be tested in a quantitative analysis of factors affecting variation in non-conveyance rates between ambulance services in England.

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3  
4 **Strengths and limitations of this study**  
5

- 6 • This was a national study of ambulance services covering 99% of the population in England.
- 7 • It is the first study of organisational factors potentially affecting variation in non-conveyance  
8 rates.  
9
- 10 • A breadth of perspectives was captured from paramedics through to senior managers within  
11 each ambulance service.  
12
- 13 • The small number of interviews in each service may not captured the diversity of views  
14 within each service.  
15
- 16 • Paramedic interviewees were selected by managers and may have been selected because  
17 they concurred with the managerial view of non-conveyance.  
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## **Background**

Emergency ambulance services, known as Emergency Medical Services in some countries, deal with significant numbers of calls each year. In England in 2016/17 ambulance services responded to 7 million calls for a population of around 55 million. [1] When a call is received by an ambulance service in England it can be dealt with in a number of ways: some patients receive clinical assessment over the telephone without the need for an ambulance, some patients are sent an ambulance and then discharged at scene, and some patients are sent an ambulance and conveyed to an emergency department or other health care service such as a walk-in centre. Non-conveyance rates, where patients are not transported to a hospital, are high in England compared with other countries. The rate in England in 2016/17 of patients not conveyed to a hospital with an emergency department was 47% [1] compared with rates of 42% in Finland [2] and 18% in Canada. [3] This international variation in non-conveyance rates for ambulance services has existed for decades. [4]

Although some non-conveyance is caused by patient refusal to travel, health policy in England promotes the use of non-conveyance by ambulance services as a way of offering care closer to home. [5] As well as offering the most appropriate response to patients' needs, non-conveyance can help the efficiency of the emergency and urgent care system in which ambulance services operate. For example, high rates of non-conveyance by ambulance services have been associated with lower rates of avoidable emergency admissions. [6]

The importance of non-conveyance for English ambulance services is evident in the use of four national quality indicators measuring rates of different types of non-conveyance as part of the publically available Ambulance Quality Indicators. [1] These indicators show considerable variation in non-conveyance rates between the regional ambulance services in England. In February 2018, for the ten regional ambulance services covering 99% of the population of England, there were 633,772 incidents. Across the services, rates of incidents ending in telephone advice varied between 4% and 8% and variation in discharge at scene rates varied between 23% and 37%.

Patient characteristics can determine the response offered by an ambulance service. For example, a recent systematic review concluded that patients who are sent an ambulance and discharged at scene are more likely to be older and more likely to have fallen. [7] However, little is known about ambulance service characteristics that may affect non-conveyance rates in terms of both the characteristics of the organisations and the emergency and urgent care systems in which they

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3 operate. As part of a wider mixed methods study on explaining Variation in Ambulance Non-  
4 conveyance rates (the VAN project), a qualitative interview study was undertaken with staff within  
5 ambulance services and healthcare commissioners of each ambulance service. [8] The aim of the  
6 qualitative study was to explore how each ambulance service addressed non-conveyance, with  
7 regards to telephone advice and discharge at scene, in order to identify potential factors affecting  
8 variation between ambulance services.  
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## 13 **Methods**

### 14 Setting and context

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17 In England, UK Emergency Medical Services are provided by 11 ambulance services within the  
18 National Health Service (NHS). Ten of these ambulance services deal with over 99% of emergency  
19 ambulance calls from the population of England. Most calls are from patients calling 999 to request  
20 an ambulance – approximately four in five calls – with the remaining calls being passed through from  
21 patients calling a telephone helpline for urgent care called ‘NHS 111’, or through direct referral from  
22 a health professional requesting an emergency ambulance. Calls are taken by non-clinical staff who  
23 use software to identify the priority of each call. The 11 ambulance services use two different  
24 priority dispatch systems: Medical Priority Dispatch System and NHS Pathways. A small percentage  
25 of calls that are categorised as low priority are passed to clinicians in Emergency Operating Centres  
26 or Clinical Hubs within each ambulance service for secondary triage. The clinicians in these  
27 Emergency Operating Centres or Hubs use a decision support software to determine whether the  
28 patient needs an ambulance or can be offered telephone advice only. This advice includes self-care  
29 advice or referral to a service such as primary care; an ambulance is not dispatched. For calls not  
30 sent for secondary triage, an ambulance is dispatched and patients may be attended by paramedics,  
31 paramedics with extended skills, or emergency care technicians with basic emergency training. The  
32 ambulance crew assesses and treats patients at scene and can discharge people at scene, transport  
33 them to a hospital-based emergency department, or transport them to another health facility such  
34 as a walk-in centre. Decisions are made by paramedics in conjunction with patients and their  
35 families. Protocols exist for making decisions relating to transport of patients with some health  
36 conditions. Sometimes non-transport occurs due to patient refusal to travel. Health services within  
37 the NHS in England are commissioned by around 200 Clinical Commissioning Groups [9] that hold  
38 the budget for ensuring services are available for their geographically-based populations. Each  
39 regional ambulance service has a lead commissioner from the set of Clinical Commissioning Groups  
40 commissioning services for the populations served by that ambulance service.  
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### The wider mixed methods study

The VAN project included a sequential mixed methods study aiming to explain variation in non-conveyance rates between ambulance services in England. [8] The ten larger ambulance services in England were included in the study. The eleventh service was excluded because of its relatively small size. The first phase was a qualitative interview study to identify potential factors which may contribute to variation in non-conveyance rates. The second phase was a statistical regression to determine the amount of variation these factors explained in non-conveyance rates between the 10 large regional ambulance services. The first phase only is reported in this article.

### The qualitative interview study

A telephone interview study was undertaken with three groups within each of the 10 ambulance services: ambulance service managers, paramedics and health care commissioners of the ambulance service. The aim was to understand their perceptions of influences on non-conveyance rates within their regional ambulance service. These three groups were selected because: ambulance service managers can shape strategic decisions that affect non-conveyance rates at an organisational level, such as workforce configuration or investment in staff training; paramedics make daily decisions about whether to convey patients to hospital or not and can offer views of patient characteristics, workforce practices and organisational factors affecting non-conveyance; and health care commissioners can encourage ambulance services to undertake non-conveyance through setting targets for non-conveyance rates within contracts and offering additional investment for non-conveyance initiatives. The plan was to undertake approximately 50 interviews: interviews with two managers (one at director level and one in operational management), two paramedics (a paramedic with extended skills and one without), and the lead health care commissioner for each of the ten large regional ambulance services in England.

Interviewees were recruited by working with a local collaborator based in each ambulance service. Typically, these were a Research and Development manager or an operational manager with responsibility for non-conveyance. Health care commissioners leading on commissioning ambulance services in each region were identified by approaching the ambulance service or Clinical Commissioning Groups. One researcher (LBE) undertook all the interviews by telephone. The researcher had no specialist knowledge of, or prior relationship with, the ambulance service. Interviews took place at an individual, rather than group, level. The researcher was blind to the non-conveyance rates of the interviewees' organisations. The interviews were semi-structured. A topic

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3 guide was used, covering perceptions of factors that affected non-conveyance within that service.  
4 The topic guide was informed by the evidence base as well as the study research questions. For  
5 example, paramedics with extended skills are known to undertake more non-conveyance than other  
6 paramedics [10] so workforce was included as a prompt within the topic guide. The topic guide was  
7 piloted within the first few interviews (included in the analysis) and only minor changes were  
8 required. Interviews were digitally audio recorded and lasted between 40 and 90 minutes. The  
9 majority of interviews were conducted in 2015, with a small number taking place early in 2016.  
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### 14 15 Analysis

16 The digital recordings of interviews were transcribed verbatim. Transcripts were checked, alongside  
17 recordings, for accuracy prior to uploading to the qualitative software package Nvivo version 10 for  
18 analysis. [11] Transcripts were not returned to participants for comment. Data were analysed using  
19 the framework approach. [12] A small number of transcripts from a variety of types of interviewee  
20 were read by EK, LBE and AOC for familiarisation. A thematic framework was constructed based on  
21 the topic guide and emergent themes from reading the transcripts. The initial framework was  
22 developed by EK and revised following discussions with AOC and LBE. The thematic framework  
23 included: views of non-conveyance rates, calculation of rates, national drivers, organisational  
24 drivers, collaborative working within the emergency and urgent care system, workforce issues (skill-  
25 mix, culture, working patterns), triage software, patient characteristics, defining and measuring  
26 appropriate non-conveyance, and commissioning non-conveyance. Discussions specifically relating  
27 to telephone advice only or discharge at scene were coded in addition to discussion of non-  
28 conveyance generally. Each transcript was coded to the themes and sub-themes, by three coders  
29 (LBE, FF, NA). Factors operating at the ambulance service-level – the organisation and the  
30 emergency and urgent care system in which it operated - were analysed by EK and LBE.  
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42 EK read extracts of transcripts within a theme for each ambulance service separately. She analysed  
43 the theme, noting any variation in perceptions within each ambulance service, and discussing  
44 findings with LBE and AOC. This was repeated for further themes, considering the connections  
45 between themes and refining the thematic framework by collapsing some themes. For example,  
46 themes around 'collaborative working' and 'the emergency and urgent care system' were merged  
47 because they were highly related. Each ambulance service was treated as a case and views of  
48 interviewees within each ambulance service were analysed together for each theme and sub-theme.  
49 This part of the analysis focused on variation in how interviewees discussed non-conveyance related  
50 to their own ambulance service. This variation was explored qualitatively and is reported here.  
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### Ethical approval and consent

All interviewees gave written informed consent (sent by email or fax prior to the interview). Approval was obtained from the National Research Ethics Service Committee North West – Greater Manchester West (REC reference 14/NW/1388). Direct quotes are used and labelled by ambulance service A-J to maintain anonymity. Job descriptions are not included in quote descriptors because of the small number of senior managers and commissioners interviewed for each ambulance service.

### Patient and Public Involvement

The School of Health & Related Research (SchARR) at the University of Sheffield has a large portfolio of emergency and urgent care research projects. In order to support patient and public involvement (PPI) activities across these projects a PPI group, the Sheffield Emergency Care Forum (SECF), has been established. This group provides direct support to research teams within SchARR and also provides wider links to related PPI groups within the Yorkshire and Humber Clinical Research Network and Healthwatch.

Members of the SECF contributed to the study: Maggie Marsh attended the management meetings during the project, and Enid Hirst provided input at the Project Advisory Group meetings.

In addition to having PPI members as part of the project team and Project Advisory Group, patients and members of the public working with three ambulance services or research teams engaged with emergency and urgent care came together to form a VAN project PPI group.

During the study, the PPI representatives were available to influence decisions being made about how to operationalise the research proposal and interpret findings. The PPI group took a lead in writing the plain English summary for the study, and assisted in the construction of a wide reaching dissemination strategy.

## **Results**

### Recruitment

We formally invited 80 individuals to interview. Most of those approached consented, with the exception of paramedics where 44 were approached but only 18 agreed to be interviewed. All 50 planned interviews were completed. Between four and seven interviews were undertaken in each ambulance service. The digital recording of one interview (a paramedic) was of poor quality and could not be transcribed and therefore 49 of the interviews undertaken were analysed.

### Overview of themes



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3 There were three broad themes related to how each ambulance service addressed non-conveyance:  
4 senior management commitment to non-conveyance, the ambulance workforce, and the wider  
5 emergency and urgent care system in which the ambulance service was geographically located.  
6 Approaches to discharge at scene, which accounts for most non-conveyance, and approaches to  
7 ending calls with telephone advice only could differ within ambulance services and are discussed  
8 separately below.  
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### 13 **Senior management commitment to non-conveyance**

#### 14 *Motivation for non-conveyance: opportunity or risk*

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17 Senior management in some ambulance services described non-conveyance as an opportunity to  
18 offer the most appropriate care to patients and as embedded practice within their organisations. In  
19 one organisation (Service C), non-conveyance was described as an historically important activity and  
20 there was an ongoing goal to improve or sustain high non-conveyance rates. Interviewees in both  
21 managerial and paramedic roles in this organisation described how they took a 'whole organisation'  
22 approach to non-conveyance and increasing rates of non-conveyance:  
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30 *"I think we've had that culture a lot longer [than other ambulance services. Staff [here]*  
31 *almost a decade ago were leaving people at home. Whereas in some services their non-*  
32 *conveyance rates are awful and I think their staff have still got to get their head around*  
33 *that's what their job is"* [Service C, interviewee 4]  
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38 In contrast, interviewees in some ambulance services described non-conveyance as an activity that  
39 had been prioritised in recent times (Service I) or was seen as less of a priority (Services B, E, F H). At  
40 an extreme, senior management in one service was described as risk averse to non-conveyance.  
41 Senior management interviewees did not want to increase discharge at scene rates because of the  
42 risks involved to ambulance crews if something went wrong. The health care commissioner also  
43 viewed non-conveyance as a low priority within this ambulance service and a paramedic described  
44 this activity as a "new concept".  
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49 *"the [health care commissioners] and the GPs, and everybody else hate us, because, we, I*  
50 *won't release the crews to just leave people at home and make a call to a GP receptionist to*  
51 *say I've left this person at home because that crew member themselves doesn't realise what*  
52 *he's doing there, he's putting himself in the coroner's court in a non-defendable position,*  
53 *unless it's a safe structured handover recorded, and shared, I won't let it happen. The fact*  
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3 *that it does happen all over the place is another matter and when I go round other*  
4 *ambulance services, I do think that this point is sometimes missed” [Service F, Interviewee*  
5 *39]*  
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9 In two services (Service C and H) there appeared to be high levels of motivation to undertake clinical  
10 telephone assessment to manage demand for ambulances. In both services there was a perception  
11 that services had a strategic vision for telephone assessment and provided workforce investment to  
12 support this:  
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17 *“Invested heavily [in the clinical hub] high level of expertise...invested a lot of time in that*  
18 *group of staff... we’ve put quite a large amount of investment into the structure. For us it’s*  
19 *not just pulling paramedics off the road and sticking them in the control and getting them to*  
20 *[take] calls. We’ve got a whole [telephone advice] strategy here... we really thought through*  
21 *the whole thing” [Service H, Interviewee 49]*  
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26 This contrasted with other services (Service A, D, E, G) where interviewees perceived risk linked to  
27 the non-visual aspect of assessment, the use of paramedics rather than nurses (experienced in  
28 telephone triage) to undertake this role, and a potential risk to the organisation in not meeting  
29 patient expectations:  
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36 *“with [clinical telephone advice] ... what’s your appetite for dealing with a high level of*  
37 *complaints... very simply, the more non-conveyance you do the [more] dissatisfaction you will*  
38 *have. People didn’t phone 999 for a chat, they phoned 999 with an expectation that an*  
39 *ambulance was going to appear” [Service E, Interviewee 32]*  
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#### 45 *Structural stability*

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47 The stability of the organisation was described differently for each ambulance service at the time of  
48 the interviews. Most ambulance services appeared to be stable, with no discussion of significant  
49 restructuring within their senior management. However, interviewees in four services (Services A, H,  
50 I, J) reported current or recent challenges in terms of loss of key senior personnel, or poor outcomes  
51 in a national quality assessment, which created challenges for senior management within the  
52 organisation. Interviewees did not expand explicitly on how this might impact on non-conveyance  
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3 rates but it was clear from their discussions that their focus was on their key priority of meeting  
4 response time targets in the context of this instability rather than the innovation necessary for  
5 increasing non-conveyance rates:  
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7 *“it’s been a difficult year because we were in such a difficult situation. We were very much*  
8 *around meeting [response time targets] and all of our focus was around increasing [staff]*  
9 *numbers and getting the response target right in the first instance, we were not necessarily*  
10 *entertaining anything that took paramedics away from core frontline business” [Service A,*  
11 *interviewee 5]*  
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## 16 **Ambulance workforce**

### 17 *Skill-mix configuration*

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20 Interviewees described how the configuration of their ambulance crews could affect discharge at  
21 scene rates. Paramedics with extended skills were viewed as having more confidence to discharge  
22 patients at scene than paramedics with standard training, and paramedics were described as having  
23 more confidence than crews without paramedics. This highlighted the potential for the skill-mix  
24 configuration within an ambulance service to affect its discharge at scene rate:  
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29 *“we’ve been particularly challenged by a shortage of senior clinicians, that is, paramedics.*  
30 *Paramedic numbers have been very low, and that will affect the decision-making of the*  
31 *clinicians and their confidence level. The more senior clinician you get on [discharge at scene]*  
32 *the more confidence they’ll have to make a decision not to convey, whereas if you’re running*  
33 *a number of non-paramedic based ambulances, so emergency medical technicians, or*  
34 *student ambulance paramedics, or emergency care assistants, generally the lower the grade*  
35 *the more likely the conveyance rates will be affected” (Service A, interviewee 5)*  
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42 A similar variation in views was apparent for the provision of telephone assessment within the  
43 ambulance services. Many interviewees perceived telephone assessment to be a specialism, beyond  
44 the basic training of paramedics. They described the success of their clinical hub being underpinned  
45 by the support of specially trained paramedics and other clinicians such as mental health specialists  
46 (Services B, C, and H). In contrast, in other services (Services A, E, and G) interviewees described  
47 resource challenges within their service which appeared to limit the utilisation of multi-disciplinary  
48 teams or senior paramedics within the clinical hub:  
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3 *“we don’t have the resources to do hear and treat effectively...depleted in staffing, it’s not*  
4 *supported enough to be able to work it effectively, and they’re overwhelmed with work ...so,*  
5 *I would say the setup here is just under resourced, massively under resourced” [Service A, 17]*  
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#### 10 *Perceived value of higher skill-mix*

11 The perceived value of paramedics with extended skills, for example Emergency Care Practitioners,  
12 was described differently by interviewees in each ambulance service. In some ambulance services  
13 there was consensus amongst the interviewees that paramedics with extended skills were  
14 established within the service and were perceived to be a valued resource for reducing conveyance  
15 to hospital (Services C, D, G). In these ambulance services, paramedics discussed being able to access  
16 their senior colleagues - paramedics with extended skills - and refer patients to them, also describing  
17 them as a support mechanism for seeking advice to facilitate their own decision-making regarding  
18 non-conveyance. Interviewees in these ambulance services wanted to expand this part of the  
19 workforce because of its perceived value to non-conveyance. In contrast, interviewees in other  
20 ambulance services described limited implementation of paramedics with extended skills, or a  
21 recent renewed interest in them, which implied that they had possibly been neglected within the  
22 organisation in the past (Services A, E, H, J). Reasons given for limited implementation of paramedics  
23 with extended skills included a need to focus resources elsewhere in the workforce or a lack of  
24 interest at a senior management level:  
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33 *“It’s a bit of a ‘dying on the vine’ situation. Yes we have [paramedics with extended skills], a*  
34 *small number that were from the prerequisite arrangements. I’ll never get rid of them, but*  
35 *we haven’t trained [them] here [for a number of years]” [Service E, interviewee 32]*  
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#### 40 *Organisational support for the workforce*

41 While many interviewees described how ambulance crews followed protocols and policies when  
42 making non-conveyance decisions, they also highlighted the importance of the confidence of crew  
43 members when deciding to discharge at scene. Indeed, one interviewee identified paramedic  
44 confidence as the most important factor affecting the decision to discharge patients at scene.  
45 Interviewees described how confidence could be improved through experience in the role, training  
46 to extend skills, mentoring in non-conveyance, the ability to discuss potential cases for non-  
47 conveyance with clinicians in the clinical hub, and being part of an organisation that was supportive  
48 of their workforce. Senior managers described the importance of supporting their workforce and  
49 understanding that a decision not to convey could be the right decision at the time even if it  
50 appeared not to be at a later stage. In contrast with the views of these senior managers, paramedics  
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3 in some services openly described a fear of retribution if things went wrong (Services B, D, E, G, H, J).  
4 Indeed, in some ambulance services the managers described how supportive they were of the  
5 workforce when things go wrong but the paramedics interviewed expressed the opposite view  
6 (Services E, G, H, J).  
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11 *“probably the most important one is the support for staff. If we’re encouraging the staff to*  
12 *non-convey it’s making sure we’re supporting them in that decision and if it does go wrong,*  
13 *making sure again that we understand the reason why it’s gone wrong, but again continue*  
14 *to support the staff because they’ve probably made the right decision in the first place”*  
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16 [Service G, interviewee 30]  
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20 *“sadly, if something goes wrong out on the road, then obviously knowledge might get back*  
21 *to the station and it’s talked about. And you’re sadly in this job, you are known for being bad*  
22 *rather than being a good clinician”* [Service G, interviewee 29]  
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## 27 **The wider emergency and urgent care system**

### 28 *Provision of alternative services to hospital*

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30 A consistent issue raised by interviewees from all ambulance services was the importance of having  
31 health and social care services available in the wider emergency and urgent care system to facilitate  
32 non-conveyance. Ambulance crews could work with these services to obtain information about  
33 patients to help them make a decision about non-conveyance or refer patients to those services to  
34 allow non-conveyance:  
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40 *“there’s lots of expectation on ambulance services to single-handedly reduce conveyance to*  
41 *[an emergency department] but a lot of that, the success, is down to the buy-in from the*  
42 *local health community in terms, if they’ve not got the alternative pathway we can’t use it”*  
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45 [Service C, interviewee 4]  
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48 There was variability in how interviewees described the provision of services that could enable non-  
49 conveyance. In one service [Service C], interviewees spoke positively about provision, and the range  
50 of pathways available to the ambulance service. In contrast, interviewees in two services [Service A,  
51 I] spoke about a significant lack of pathways. Most other services [Service B, D, E, F, G, H, J]  
52 described variation in provision across their region:  
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3 *“It’s fair to say, very few options available to us as referral pathways”* (Service A, interviewee  
4 15)  
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7 *“Some areas have got really good pathways, so where you’ve got direct access to GPs, minor*  
8 *injuries units, walk in [centres], admission to certain [hospital] wards for certain clinicians.*  
9 *But then in other areas, actually the only place you’ve got is the emergency department, so*  
10 *the GPs won’t take a referral from the paramedics [...] you’ll get a minor injuries unit, often*  
11 *called a walk-in centre, and often the reason why we call it a walk-in centre is they don’t take*  
12 *stretcher patients. So they have a perception that if you’re an ambulance, the patient must*  
13 *be on a stretcher, therefore, they won’t accept you.”* (Service D, interviewee 20)  
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### 20 *Connectivity with the wider system*

21 Whilst ambulance services had no control over the availability of health and social care provision in  
22 their region, they are able to exert some influence over their engagement with these services.  
23 Interviewees in one service [Service C] shared consistently positive views about the connections  
24 between their ambulance service and services in the wider emergency and urgent care system. They  
25 described an initiative that linked ambulance crews with other services necessary for non-  
26 conveyance rather than the crews having to locate and contact these services themselves. This  
27 initiative was perceived as successful and to operate differently from other models across the  
28 country because it took some of the responsibility for discharge at scene off the ambulance crew. In  
29 contrast, another service described a similar initiative as a barrier to non-conveyance because it was  
30 not consistently provided across their region and thus caused more, rather than less, work for  
31 ambulance crews because they travelled across different localities with different processes and  
32 considerable efforts were required to identify the appropriate processes when wanting to non-  
33 convey.  
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42 *“some [models in other ambulance services] don’t clinically take on the patient. They just say*  
43 *‘oh you need to phone such and such and refer them there’. With our [model] you basically*  
44 *hand [the patient] over and one of their clinicians [will] take responsibility for the patient [...]*  
45 *and they sort everything else out behind the scenes”* [Service C, interviewee 4]  
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50 *“each one of the [Clinical Commissioning Groups] puts in what they call an SPA, a single point*  
51 *of access. Some of them put in several single points of access, which in itself is a bit of an*  
52 *oxymoron because it’s not single point, it’s several points of access, and so what we’ve done*  
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3 *is then created another obstacle that a crew has to navigate before they can pass this job*  
4 *on” [Service B, interviewee 43]*  
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7 In other services (Service A, B, D, E, F, I) interviewees perceived that relationships with key services  
8 in the wider system were poor because they could not access some services that might support non-  
9 conveyance, could not access services reliably when needed in the short time frame of needing to  
10 make non-conveyance decisions, or were not confident in the quality of the service they needed to  
11 refer patients to. These services included primary care - both in or out of hours- community services,  
12 falls services, minor injury units and urgent care centres.  
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### 17 18 *Complexity of the system*

19 Interviewees described some ambulance services as situated within more complex emergency and  
20 urgent care systems than others. Clinical Commissioning Groups commission services for the  
21 population in their geographical locality. One ambulance service had 12 of these localities within  
22 their region whereas another had 33. Ambulance service managers described how each locality  
23 could have different priorities in terms of commissioning non-conveyance, creating complexity in  
24 terms of a single ambulance service having to deal with multiple commissioners’ needs. Further  
25 complexity was highlighted by managers and paramedics who described how each Clinical  
26 Commissioning Group locality had different services operating in different ways. Understanding this  
27 variation between geographical areas within their region, or within the same service over time,  
28 created a burden for crew members who would decide to convey to an emergency department  
29 because this was the easiest option.  
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39 *“[the crew] go to a [patient who has had a] fall in [PLACE A], and [the crew] might be very*  
40 *familiar with the falls service that’s back in [PLACE B], but now they’re in [PLACE A] it’s all*  
41 *completely different, the criteria’s different, they haven’t a clue, so they’re left with the*  
42 *decision ‘well, I haven’t a clue what’s going on here so do you know what, I’m just going to*  
43 *take them to the [emergency department]” [Service B, interviewee 43]*  
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## 48 **Discussion**

### 49 *Main findings*

50 There were some clear differences in interviewees’ perceptions of how non-conveyance was  
51 addressed in different ambulance services. First, ambulance service senior management appeared to  
52 set the culture around non-conveyance within an organisation, viewing it either as an opportunity or  
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3 as a risky endeavour. Although motivation levels to undertake non-conveyance did not appear to be  
4 directly affected by the stability of an ambulance service in terms of continuity of leadership and  
5 externally assessed quality, this stability could affect the ability of the organisation to innovate to  
6 increase non-conveyance rates. Second, descriptions of workforce configuration differed between  
7 ambulances services, as well as how this workforce was used, trained and valued. Third,  
8 interviewees in each ambulance service described health and social care in the wider emergency and  
9 urgent care system differently in terms of availability, amount of collaborative working with the  
10 ambulance service, and complexity related to the numbers of services and healthcare commissioners  
11 with whom they had to work.  
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### 18 *Strengths and limitations*

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20 The study took a national focus and is one of the first studies of variation in organisational  
21 perspectives of non-conveyance. Perspectives were gained from a breadth of stakeholders ranging  
22 from paramedics to senior management and from a stakeholder external to each organisation – the  
23 healthcare commissioner. A further strength is the inclusion of PPI representatives, from different  
24 parts of the country, offering insight into a study about *staff and organisations*, rather than patients.  
25 The study had two limitations. First, we recruited a small number of interviewees from each  
26 ambulance service, who may not share the same perceptions as their colleagues. We were mindful  
27 not to be swayed by the views of one individual within a service during the analysis and considered  
28 differing views expressed within an ambulance service. Second, the identification of paramedic  
29 participants was undertaken by managers in each ambulance service. This could have resulted in  
30 bias, with managers selecting paramedics who they perceived to have favourable views about their  
31 organisation. On reflection, we felt that interviewees gave open responses, expressing both positive  
32 and negative views about non-conveyance within their organisations.  
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### 42 *How does this fit with existing evidence?*

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44 There has been little study of organisational perspectives of non-conveyance. Our findings are  
45 similar to those identified in a national audit of ambulance non-conveyance in England which  
46 included analysis of quantitative data on processes and outcomes, and discussions with managers  
47 with each ambulance service. [13] In particular, the audit found that whilst ambulance services have  
48 made advances in delivering non-conveyance, they may be limited by the increasingly complex  
49 health system in which they are operating within. For example, variation in the availability of  
50 alternative services in the wider emergency and urgent care system which the patient could be  
51 directed to, therefore avoiding transport to hospital, and the inevitable challenges of working with a  
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3 large number of stakeholders operating within local health economies. Both of these factors were  
4 evident in the research reported in this article.  
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7 This paper focussed on organisational factors in relation to ambulance non-conveyance. Other  
8 studies have taken a patient or clinician perspective to ambulance non-conveyance. Patients,  
9 accessing the ambulance service, can obtain the reassurance they look for, [14] and value the  
10 responsiveness and accessibility [15] whether the outcome is conveyance or non-conveyance. Non-  
11 conveyance in terms of discharge at scene [16] and telephone triage, [17] has been shown to be  
12 acceptable to service users, and to carers. [18] A number of papers report the complexity of decision  
13 making amongst ambulance crews, balancing patient safety with patient choice [19-21]. The  
14 variation reported in our paper, may add a further layer of complexity for some ambulance crews  
15 making non-conveyance decisions. In addition, evidence shows that ambulance non-conveyance  
16 practices may reduce pressure in other parts of the emergency care system by reducing emergency  
17 department attendances,[16] and hospital admission rates.[6] However, our work has shown that  
18 the relationships between the ambulance service and other parts of the emergency and urgent care  
19 system, required to facilitate non-conveyance, can be complicated often due to the size of  
20 ambulance service regions, and a lack of consistency in service provision across each region. This fits  
21 with recent evidence of the challenges faced by ambulance services which need to collaborate with  
22 large numbers of stakeholders across the geographical area they serve, [13] and that of other  
23 authors who have identified a lack of appropriate alternative services as a barrier to facilitating  
24 ambulance non-conveyance. [19,20,22] Interviewees in our study felt that the skill mix of the  
25 workforce, and the associated confidence perceived in more highly skilled staff was important in  
26 optimising non-conveyance. This is supported by other evidence showing that advanced  
27 paramedics/paramedics with extended skills can achieve higher non-conveyance rates than  
28 paramedics. [10]  
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#### 44 *Implications*

45 Healthcare policy in England supports the use of clinically appropriate non-conveyance, providing  
46 care closer to home for patients, [5] and in doing so reducing pressure within emergency  
47 departments and the wider emergency care system. Standardising practices between ambulance  
48 services is a key focus of this policy. National policy directives will influence regional ambulance  
49 services, particularly those making strategic service level decisions. Whilst national policy drivers  
50 were discussed by our interviewees, there was little variation in views between ambulance services,  
51 and therefore discussion about national policy is not reported here.  
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To some extent, ambulance services have the autonomy to increase non-conveyance in terms of the workforce they employ, and how they utilise them within the service. Importantly, however, there is a degree of reliance on other providers within the emergency and urgent care system to facilitate some forms of ambulance non-conveyance. This requires collaborative working to create, and maintain, safe and appropriate referral pathways which support non-conveyance.

The findings of the study reported here were used in a statistical regression to identify factors explaining variation in rates of discharge at scene and telephone advice between ambulance services in England. [23] Variation in discharge at scene rates was explained by differences in managerial motivation, and workforce configuration and value, but not by the complexity of the wider emergency and urgent care system.

The focus of this paper was to assess NHS workforce views. The variation we found in organisational approaches to non-conveyance may impact on patient and carer experience. Further research into understanding how variation in ambulance non-conveyance impacts on the patient/carers experience is desirable.

### **Conclusion**

Health policy in England encourages use of initiatives to provide care closer to home, one of which is clinically appropriate non-conveyance following a 999 ambulance call. There is considerable variation in non-conveyance rates across the 10 regional ambulance services in England. This study suggests that factors within and outside the control of ambulance services may contribute to variation in non-conveyance rates. Aspects within the control of ambulance services include motivation of senior management, workforce configuration and value placed on senior clinical skill-mix. Aspects outside the control of ambulance services include the complexity of the emergency and urgent care systems they operate within, although to some extent, the collaborations they build with services with these systems is within their control.

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### 34 **Competing interests**

35  
36 The authors have no competing interests to declare.  
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### 40 **Contributions of authors**

41 AOC and EK designed the study. LBE collected the data. EK led, and along with LBE undertook the  
42 analysis of the data with advice from AOC. EK and AOC wrote the first draft of the paper. All authors  
43 commented on drafts and agreed the final version.  
44  
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### 55 **Reporting statement**

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The COREQ reporting statement was completed.

**Data sharing statement**

The risk of breaking anonymity is too high to share this data.

For peer review only

## Exploring variation in how ambulance services address non-conveyance: a qualitative interview study

### Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

No. Item	Guide questions/description	Reported on Page #
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	6
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1
3. Occupation	What was their occupation at the time of the study?	1
4. Gender	Was the researcher male or female?	NA
5. Experience and training	What experience or training did the researcher have?	NA
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	6
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	NA
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	7
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	6
12. Sample size	How many participants were in the study?	8
13. Non-participation	How many people refused to participate or dropped out? Reasons?	8

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4	<b>Setting</b>		
5	14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	6
6	15. Presence of non-participants	Was anyone else present besides the participants and researchers?	6
7	16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	8
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11	<b>Data collection</b>		
12	17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	6-7
13	18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	6
14	19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	7
15	20. Field notes	Were field notes made during and/or after the inter view or focus group?	NA
16	21. Duration	What was the duration of the inter views or focus group?	7
17	22. Data saturation	Was data saturation discussed?	No
18	23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	7
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26	<b>Domain 3: analysis and findings</b>		
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28	<b>Data analysis</b>		
29	24. Number of data coders	How many data coders coded the data?	7
30	25. Description of the coding tree	Did authors provide a description of the coding tree?	No
31	26. Derivation of themes	Were themes identified in advance or derived from the data?	7
32	27. Software	What software, if applicable, was used to manage the data?	7
33	28. Participant checking	Did participants provide feedback on the findings?	NA
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39	<b>Reporting</b>		
40	29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Yes
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44	30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
45	31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes
46	32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes
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