



# Emergency medicine response to the COVID-19 pandemic in England: a phenomenological study

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## ABSTRACT

**Background** The COVID-19 pandemic has stretched EDs globally, with many regions in England challenged by the number of COVID-19 presentations. In order to rapidly share learning to inform future practice, we undertook a thematic review of ED operational experience within England during the pandemic thus far.

**Methods** A rapid phenomenological approach using semistructured telephone interviews with ED clinical leads from across England was undertaken between 16 and 22 April 2020. Participants were recruited through purposeful sampling with sample size determined by data saturation. Departments from a wide range of geographic distribution and COVID-19 experience were included. Themes were identified and included if they met one of three criteria: demonstrating a consistency of experience between EDs, demonstrating a conflict of approach between emergency departments or encapsulating a unique solution to a common barrier.

**Results** Seven clinical leads from type 1 EDs were interviewed. Thematic redundancy was achieved by the sixth interview, and one further interview was performed to confirm. Themes emerged in five categories: departmental reconfiguration, clinical pathways, governance and communication, workforce and personal protective equipment.

**Conclusion** This paper summarises learning and innovation from a cross-section of EDs during the first UK wave of the COVID-19 pandemic. Common themes centred around the importance of flexibility when reacting to an ever-changing clinical challenge, clear leadership and robust methods of communication. Additionally, experience in managing winter pressures helped inform operational decisions, and ED staff demonstrated incredible resilience in demanding working conditions. Subsequent surges of COVID-19 infections may occur within a more challenging context with no guarantee that there will be an associated reduction in A&E attendance or cessation of elective activity. Future operational planning must therefore take this into consideration.

## INTRODUCTION

The COVID-19 pandemic has stretched EDs globally.<sup>1–3</sup> In England, the timing and intensity of surges have varied regionally, with some departments significantly challenged by the volume of COVID-19 presentations. Although on a national scale, the number of ED attendances has decreased, EDs have still faced major logistical and operational challenges as a result of COVID-19 surges.<sup>4</sup>

## Key messages

### What is already known on this subject

Academic literature on COVID-19 is rapidly evolving but largely focuses on aspects such as clinical pathology, epidemiology, experience from critical care departments and experience from China and Italy.

### What this study adds

This study outlines EDs' operational experience within England during the COVID-19 pandemic thus far, highlighting innovative solutions employed to overcome this unprecedented challenge.

In this qualitative study, we explored ED experience of the COVID-19 pandemic within England thus far, in order to capture a record of these logistical and operational challenges, and rapidly share this learning, with a view to informing future practice. This article encapsulates the information collated from EDs across England, highlighting the innovative solutions employed to overcome this unprecedented challenge.

## METHODS

We undertook a rapid phenomenological approach to obtain information using semistructured telephone interviews from seven ED clinical leads across England between 16 and 22 April 2020. Participants were recruited through purposeful sampling. Emergency medicine clinical leads were contacted via a regional clinical advisor network, requesting participation in the study.

Due to the rapid nature of this review, availability for participation was prioritised. The sample size was determined by data saturation. In order to capture a representative cross-section of EDs, we sought to include departments from a wide range of geographic distribution, COVID-19 experience as well as both teaching hospitals and district general hospitals (DGHs).

Interviews were performed at a time convenient for participants. They followed a set format that explored the key operational areas identified as being most likely to impact on an ED's ability to respond to COVID-19 (online supplemental appendix 1). The interview format was developed using emerging academic literature on the experience of EDs during the pandemic and was informed by preceding similar work in critical care units undertaken by AVN, VG



**Table 1** Hospital demographics

Location	Type	Monthly attendance January 2020 * <sup>15</sup>	Monthly attendance March 2020 * <sup>15</sup>	Exceeded critical care capacity
East England	Teaching hospital	11 000–12 000	8000–9000	Yes
East England	Teaching hospital	9000–10 000	7000–8000	No
London	DGH	12 000–13 000	9000–10 000	Yes
London	DGH	7000–8000	6000–7000	Yes
London	Teaching hospital	13 000–14 000	9000–10 000	Yes
North West England	DGH	5000–6000	4000–5000	Yes
South West England	Teaching hospital	8000–9000	6000–7000	No

\*These figures are trust wide; we interviewed site-based clinical leads. Ranges given to preserve anonymity. DGH, district general hospital.

and MO.<sup>5–7</sup> The questions acted as a guide to inform the interview rather than being didactic. All interviews were conducted on a one-to-one basis and performed by the authors (MO, VG, AVN and HJW); all interviewers are clinicians holding active UK professional registrations with secondary care experience. Interview summaries were obtained in real time, in a structured table (online supplemental appendix 1). Member checking was undertaken verbally during and at the end of the interview.

Summarised interview transcripts were reviewed to gain an understanding of the experiences conveyed. Themes were identified, organised into clusters and further developed into a full description of the themes. These identified themes were reviewed by all authors to gain consensus on inclusion. Themes were chosen for inclusion in this paper if they met one of three criteria: (1) demonstrating a consistency of experience between EDs; (2) demonstrating a conflict of approach between EDs; or (3) encapsulating a unique solution to a common barrier. As per NHS Health Research Authority guidelines, this work constitutes service evaluation and does not require ethics approval.

### Patient and public involvement

This work was done without patient involvement as there were no funds to support patient involvement, and genuine patient engagement was unachievable within the rapid timeframe needed to deliver this work.

### RESULTS

In total, seven ED clinical leads were interviewed. **Table 1** shows an anonymised summary of participating sites. All departments included were type 1 EDs, defined as a consultant-led 24-hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients. Three are based in London, two within East of England, one in North West England and one in South West England. Four self-identified as teaching hospitals (including two major trauma centres), and three self-identified as DGHs. Five departments had exceeded their usual critical care capacity due to COVID-19 presentations and two had not.

Thematic redundancy was achieved by sixth interview, and one further interview was performed to confirm thematic redundancy. Interviews lasted between 60 and 90 min. Themes emerged in five categories: departmental reconfiguration, clinical pathways, governance and communication, workforce and personal protective equipment (PPE) with a summary of these key themes provided in **table 2**.

### THEMES IDENTIFIED

#### Departmental reconfiguration

All EDs split their departments into 'COVID-19 suspected' and 'COVID-19 not-suspected' zones to try to minimise nosocomial

**Table 2** Summary of key themes

Theme	Challenges	Solutions
Departmental reconfiguration	Limitations created by the physical estates when 'zoning' the ED.	Use of Perspex screens. Temporarily using fire exits as ambulance entrances. Performing AGP delivery outside the ED where feasible. Relocating services away from ED.
	Unpredictable number of ED attendances affecting departmental 'zoning'. Patients with 'incidental COVID-19' being triaged to non-COVID-19 zones.	Phased zoning informed by daily operational meetings. Mobile equipment trolleys. Screening chest radiographs. Increased use of CT chest.
Clinical pathways	Developing clinical pathways for a novel condition.	Cohort patients into five groups according to observations and investigations. Early escalation of care decisions to facilitate patient cohorting. Mobile emergency rapid intubation teams to facilitate specialist airway management.
Workforce	Staffing an additional zone in ED, including ensuring appropriate senior cover. Maintaining staff well-being and managing staff expectations.	Augment ED workforce with staff redeployed from other clinical areas. Review of rotas to extend senior cover. Well-being hubs. Access to psychological support. Introduction of 'NOVID' and 'wobble' rooms. Rotating staff between zones.
Governance and communication	Communicating frequently changing information.	Use of social media, messaging services and daily team briefings. Timing team briefings after daily operational meeting.
PPE	Staff anxiety around effectiveness of PPE.	Single source of information on PPE to aid communication.

AGP, aerosol-generating procedure; PPE, personal protective equipment.

spread. A common barrier to achieving this departmental segregation was the limitations posed by EDs physical estates (department layout and infrastructure) including: insufficient space in waiting rooms to enable social distancing; lack of available cubicles/side rooms for COVID-19 suspected patients; lack of negative pressure rooms to perform aerosol-generating procedures (AGPs); and an inability to provide separate ambulance entrances for each zone. Clinical leads described a variety of approaches to mitigate these challenges including using perspex screens to rapidly and flexibly separate areas such as waiting rooms, repurposing fire exits as ambulance entrances and designing clinical pathways to facilitate AGP delivery outside of the ED where feasible. In addition, a rapid expansion of the ED was commonly achieved by relocating services such as paediatric ED, minors or GP services to other sites, including fracture clinics or outpatient departments.

Another common barrier that clinical leads identified was the unpredictable and rapidly changing numbers of attendances within each zone. This made optimising the limited available physical space challenging. A clinical lead in one ED described having to 'flip their zones', including resus cubicles, during a surge in patients with COVID-19 so that they could be safely accommodated. Several other departments discussed using a 'phased zoning' approach, with multiple departmental reconfigurations as patient numbers rapidly changed within each zone. These departments reported that decisions around reconfigurations were guided by daily operational reviews of patient attendances. A notable innovation was the development of mobile equipment trolleys that enabled resus cubicles to be created quickly in different locations, facilitating phased zoning.

Finally, several teams reported that some patients triaged to 'COVID-19 not-suspected' zones with non-respiratory presentations, such as trauma, were unexpectedly demonstrating incidental COVID-19 related changes on CT, despite being asymptomatic. One clinical lead reported undertaking screening chest radiographs and increasing the use of CT chest to aid identification of these asymptomatic COVID-19 positive patients with a view to facilitating appropriate patient cohorting when admitted onto wards.

### Clinical pathways

EDs described employing a wide variety of clinical pathways to manage patients with COVID-19, with regular updates being necessary as new evidence emerged. During our interviews, we identified the following commonalities in EDs COVID-19 clinical pathways:

- ▶ EDs generally split patients into five cohorts based on clinical observations and investigations such as: oxygen saturations, respiratory rate, oxygen requirement, plain chest radiograph findings and biochemical markers (troponin, C reactive protein and D-dimer).
  1. Suitable for discharge or redirection to 111 at rapid assessment and triage.
  2. Suitable for discharge after ED assessment ( $\pm$  community follow-up).
  3. Admit to medical ward.
  4. Admit to critical care.
  5. Commence end of life care.
- ▶ Escalation of care decisions were increasingly performed by emergency physicians early in the patient journey to facilitate safe and prompt cohorting of patients.
- ▶ Plans to deploy mobile emergency rapid intubation teams were developed with a view to enabling specialist airway

care in high-risk patients and facilitating safe intubation and transfer from ED resus.

A notable area of divergence between ED clinical pathways were the indications and timing for commencing non-invasive ventilation (NIV) in patients with COVID-19. Some departments reported commencing NIV early, within the ED. One department reported not using NIV for patients with COVID-19 and opting for early intubation instead. Other departments reported avoiding AGPs in EDs and instead commencing them on the patient's admission ward, avoiding patient transfer with ongoing AGP to reduce nosocomial spread.

### Workforce

A consistent theme identified was the challenge of staffing two distinct zones within the department and the need for ensuring senior medical and nursing presence within both zones. This prompted departments to review their senior skill mix to enhance this component of the rota, for instance a department extended consultant presence within the department from midnight to 03:00 overnight. In addition, most departments augmented their usual ED workforce with redeployed staff from other clinical areas, bank and agency staff.

An area of divergence between participating EDs was whether there was a need to redesign the junior doctor rotas. One department described having 'in-built resilience' in their rota due to winter-surge planning, negating a need for revision; however, another department reported that redesigning the rota around consistent teams created a 'support structure and increased familiarity in working', which facilitated staff well-being. Medical staffing was not cited as a rate-limiting factor in ED COVID-19 response, although sickness rates within their nursing staff pool did impact on care delivery in some EDs at certain times during the pandemic.

All clinical leads report that specific strategies were employed to protect staff well-being during the pandemic, with many reporting the introduction of measures such as well-being hubs, free or discounted food and access to psychological support. The approaches varied greatly between organisations and included: access to in-person counsellors, access to clinical psychologists, trained mental health first aiders, the introduction of 'NOVID' rooms where no discussion of COVID-19 is allowed and the introduction of 'wobble rooms' where staff members feeling anxious, stressed or needing additional support could go to discuss this. One department also reported a structured rotation of clinicians between the 'COVID-19 suspected' and 'not-suspected' zones to avoid 'physical and emotional exhaustion' from working with patients with COVID-19 during the surge period.

A consistent challenge reported by EDs, especially those that had not seen a large surge in COVID-19 cases, was managing staff expectations, with many staff members feeling guilty or underused during the pandemic. One department expressed staff guilt that they were 'coping compared to the experience of London units... (and the) ... portrayal in press of the frontline'. This was compounded by the reduction in ED attendances, media coverage of surge sites and the public outpouring of goodwill towards the NHS.

### Governance & communication

Departmental clinical leads cited communication with employees as a key challenge with many clinicians feeling overwhelmed by a constant stream of ever changing local and national guidance. Solutions to mitigate this included using social media, messaging

services or daily team briefings. One organisation reported timing their team briefing after the daily operational meeting to ensure dissemination of up-to-date, accurate information.

Participants reported the importance of these daily operational meetings, enabling them to review ED attendance data, recently raised clinical issues and availability of workforce and estates. This facilitated decision making around departmental design as well as contingency planning.

### Personal protective equipment

EDs reported a high level of staff anxiety regarding PPE, especially when there were deviations from published guidance or advice. One organisation reported having commenced the pandemic initially recommending more extensive PPE than Public Health England (PHE) recommendations. When this departmental guidance was later changed to reflect the PHE recommendations, staff members reported feeling more at risk, which impacted negatively on workforce morale. This department reflected that a single source of information around PPE may have better enabled effective and consistent communication with staff.

Another challenge regularly reported by EDs was the changing brands of filtering face piece (FFP3) face masks being provided. ED leads reported having fit-tested their staff during the early stages of the pandemic only to find that they were subsequently provided with an alternative brand of FFP3 mask. To mitigate this, organisations reported moving to a system of 'fit-checking'; this is a process of checking the masks seal and that the respiratory is properly applied, after donning the FFP3 mask.

### DISCUSSION

The asymmetric nature of the COVID-19 pandemic in England has resulted in vastly different experiences for hospitals across the county.<sup>8</sup> Despite this, common themes arose from the interviews that centred around importance of the flexibility to react to an ever-changing clinical challenge, as well as clear leadership and robust methods of communication throughout departments to deliver these changes.<sup>9</sup> Globally, these findings have also been reflected by other hospitals' experiences in countries that have been impacted the most by COVID-19.<sup>10 11</sup>

Continual modifications to departmental configurations needed to be reactive to changes in patient flow. To enable this, clinical leadership within departments often had to enact temporary solutions based on current situations, such as segregation of departments to avoid cross infection, as well as to anticipate potential problems including physical expansion of departments to accommodate increasing numbers of unwell patients with COVID-19. Trialling of these innovations and rapid assessment of their efficacy was crucial in order to identify which processes were successful, and importantly, which changes had to be refined or even stopped. The training and experience of the emergency medicine clinical leadership body from management of winter pressures and surge events such as major trauma incidents helped inform these decisions. However, the intelligence gained from our interviews demonstrated that this process was one of trial and error.

Although the physical structural organisation of EDs often drastically changed during the COVID-19 pandemic, clinical leads reported that there was sufficient availability of medical workforce to staff England's EDs during the pandemic, even in the midst of increased staff absence rates through self-isolation and shielding. The combination of reduced ED presentations, increased senior clinician presence and staff being redeployed from other clinical areas ensured effective delivery of care in

unpredictable circumstances. In all interviews, clinical leads praised staff for their willingness to modify their own practice in response to the novel challenges posed.

Clear communication was reported to be important when transforming EDs and changing long-standing clinical processes. This was particularly important when considering communication around PPE guidelines, PPE has been a sensitive subject with much coverage in the national and international media. Our interviews demonstrated that conflicting local messaging regarding this fuelled a breakdown in trust among staff, which had the potential to affect clinical practice. Consistent information from a single source within the hospital that aligns with national guidance and is supported by clinical leaders could mitigate this.

During the pandemic, ED staff have demonstrated resilience in demanding working conditions and accounts from our interviews demonstrate that well-being of staff has been a focus of attention within hospitals with a variety of mechanisms introduced to support staff. If these measures were continued beyond the time period of the pandemic, there is potential that they may reduce burnout, decrease alienation with the profession and thereby improve staff retention. This is therefore an aspect of the pandemic response that warrants further investigation and evaluation.

This paper captures a record of a cross-section of EDs' experiences during the first UK wave of the COVID-19 pandemic, summarising their learning with a view to informing departmental preparations for a potential second wave of patients with COVID-19. Due to the fast-paced nature of the COVID-19 pandemic, and the need to rapidly disseminate shared learning, the authors consciously prioritised the rapidity of the review. This resulted in the authors using a purposeful sampling approach that focused on interviewing clinical leads from type 1 EDs in geographical areas that were more severely affected by COVID-19. As a result, this paper will likely be affected by reporter bias as clinical leads may wish to present their department in a positive light and will have experienced the pandemic differently to other, more junior colleagues. In addition, this paper does not reflect the experience of specialist EDs and minor injury units that were not included in the sample. This evaluation should therefore be triangulated with the emerging academic literature which, when reviewed in combination, should provide a more complete overview of England's initial ED response to the COVID-19 pandemic.

When considering how the learning identified within this document could be applied to subsequent surges of COVID-19 presentations, it is important to consider that these may occur within a different, more challenging context than the first. The initial wave was accompanied by an unprecedented reduction in non-COVID-19 ED attendances, which positively impacted departments' capacities to respond to surges.<sup>4</sup> There is no guarantee that this behavioural change in ED attendance will repeat during potential subsequent waves. Conversely, we may see an increase in presentations such as mental health crises as part of the post-COVID-19 clinical sequelae.<sup>12</sup> In addition, the recommencement of elective care, which was halted during the first wave, will strain ED patient flow by reducing overall hospital capacity.<sup>13 14</sup> These major shifts in resource allocation and patient presentations must be considered during operational planning for future influx of COVID-19 infections to ensure that high standards of safety, care and well-being are maintained for patients, staff and the public.

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