

'The incident triage area': a response to the COVID-19 pandemic in the Bristol Royal Infirmary

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ABSTRACT

With the onset of the COVID-19 pandemic, hospitals nationwide have been presented with a number of potential challenges, including possible increased volume of patient attendances, acuity of illness and potential for patients to present with an infection that requires isolation. At the Bristol Royal Infirmary, an innercity teaching hospital that manages patients aged 16 and over, we present our response to these projected changes in ED attendances, with the initiation of the incident triage area (ITA). The ITA is a triage station situated outside the ED and staffed by a senior clinician, healthcare assistant and patient flow coordinator. It receives patients presenting as walk-in or via ambulance, and on their arrival aims to establish their risk of COVID-19 and their acuity of illness. This allows for triage of the patient to one of the four zones of the hospital, as well as providing clinical guidance on any initial interventions that patients may require. The benefits of the ITA are that it enables an early senior review of patients to establish their acuity of illness and initiate time-critical medical intervention as required. In addition, patients are immediately cohorted to zones within the hospital based on their infection risk, thereby reducing patient footfall throughout the hospital. Its aim is to reduce the spread of infection, by efficiently triaging and streaming patients who present to the hospital prior to them entering clinical areas, while maintaining patient safety and flow through the ED and initiating rapid management of acutely unwell patients.

INTRODUCTION

The Bristol Royal Infirmary (BRI) is an innercity University Teaching Hospital, whose ED treats 200–250 patients aged 16 years and over in every 24-hour period. The BRI ED consists of 6 resus and 11 majors beds, a minors/ambulatory assessment area, and an 8-bed observation

ward. It is attached by one corridor to the acute medical unit (AMU).

In response to the COVID-19 pandemic, with the possibility of increased patient volume and infection risk, the BRI responded with several hospital-wide adaptations. One such adaptation was the reconfiguration of the ED and AMU, with the aim to rapidly isolate suspected infective patients to reduce their footfall through the hospital, and the potential spread of infection.

This reconfiguration took place in stages, resulting in a number of geographical changes across the hospital. Resus was converted to 'COVID-19 resus' and two majors beds to 'non-COVID resus', with the rest of majors functioning for patients without suspected infection. AMU became 'COVID-19 majors', and the observation ward became 'COVID-19 assessment area': an assessment area for patients suspected to be with COVID-19 who have the potential to be discharged.

With this extent of change and many potential zones to which a patient can be assessed, it was recognised that the process could be complex, and therefore required an efficient method of early patient streaming to promote flow while maintaining patient safety. The solution was conceived by the ED consultant lead for COVID-19, based on evidence of rapid patient cohorting from the SARS¹ and other infectious disease outbreaks,² and their own experience of implementing systems of triage in disease outbreaks overseas. The final result was the introduction of the incident triage area (ITA).

PROCESS OF THE ITA

The ITA is an area stationed in the ambulance bay in which clinicians triage patients arriving at the hospital, risk stratify their likelihood of COVID-19 infection and their acuity of illness, and identify their ongoing destination within the hospital. It is staffed by one senior clinician, a healthcare assistant (HCA), and a patient flow coordinator from 08:00 to 22:00.

The process of the ITA is as follows and is summarised in figures 1 and 2.

Patients will arrive at the ED via one of the two routes (figure 1):

1. Walk-in. Their brief presentation and risk of COVID-19 (criteria in figure 2) is assessed by a streaming emergency nurse practitioner (ENP) stationed in reception.
2. By ambulance.

Their ongoing destination within the hospital is then determined:

1. Those who walk-in and the streaming ENP find no risk of COVID-19 book into the ED as per standard practice.
2. All patients arriving via ambulance and those who walk-in, in whom the streaming ENP finds potential risk of COVID-19, are directed to the ITA.

At the ITA, the patient is booked in, has their observations performed and a senior clinician briefly assesses their presenting complaint, COVID-19 risk (criteria in figure 2) and acuity of illness. Based on this, patients can then be directed to one of the four zones for assessment (figures 1 and 2):

3. COVID-19 resus*: for the severely unwell presenting with acute symptoms suspicious of COVID-19 infection, who need immediate intervention or resuscitation.
4. AMU ('COVID-19 majors')*: for those with acute illness who do not require immediate resuscitation.
5. COVID-19 assessment area: for the assessment of patients suspected to be COVID-19 positive with potential to be discharged after assessment, or who present with other issues that need ED input (such as injuries, mental health or surgical problems).
6. Non-COVID majors/resus: for patients with no identified COVID-19 risk.

*The decision between AMU (COVID-19 majors) and COVID-19 resus for patients with suspected infection is based on their acuity of illness, presence of hypoxia despite high-flow oxygen and whether they may be a candidate for intubation and ventilation.³ If they require immediate medical intervention or imminent intubation, they are streamed to COVID-19 resus. Non-invasive ventilation is being avoided in COVID-19 resus to reduce the number of aerosol-generating procedures (AGPs) in an open bay. However, it is available as a time-critical intervention or bridging of a patient to oxygenate for intubation.

BENEFITS OF THE ITA

The ITA was implemented to overcome potential challenges faced by

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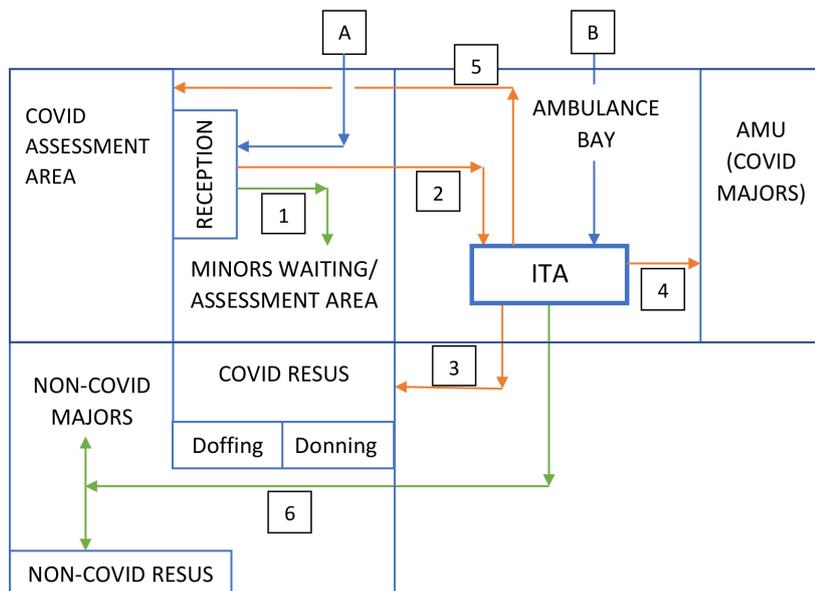


Figure 1 The process of the incident triage area (A+B potential routes of patient presentations; 1–6 possible routes of patient flow within the department). AMU, acute medical unit; ITA, incident triage area.

the department due to the COVID-19 pandemic, as summarised in table 1.

To further qualify the success of these solutions offered by the ITA, a departmental audit is ongoing. This is measuring the efficacy of the process in identifying potential infectious patients and their acuity of illness and in providing timely streaming of patients to appropriate hospital destinations.

LIMITATIONS

As expected, when initiating any large departmental change, we have faced challenges when introducing the ITA. First, cross-departmental collaboration with AMU to become ‘COVID-19 majors’ means medical doctors and nurses taking on the role of emergency clinicians and thus may require training to prepare for this. Additionally, by staffing the ITA, a senior clinician and HCA are removed from the shop floor, which may pose challenges if staff numbers fall due to sickness.

A further issue is that of triaging a patient based on their likelihood of infection with a novel illness for which limited evidence-based triage data are available.⁴ We recognise that despite rigorous assessment and weekly data review, the Streaming ENP or ITA may not identify COVID-19 positive patients, particularly as emerging evidence shows that a large proportion of positive cases are asymptomatic.⁵ The ITA was instigated early in the pandemic, and so the process had to be adapted over time to remain up to date with current evidence on

COVID-19. To limit the potential transmission of infection between anyone, all patients are assessed by staff wearing basic PPE, and AGPs are performed with staff in full PPE regardless of patients’

identified COVID-19 risk.⁶ Within the department, patients are isolated, social distancing maintained, visiting restricted, and patients and staff must wear face coverings at all times. All patients who require hospital admission are now tested for COVID-19, regardless of their presentation.

Finally, there is potential for walk-in patients who are COVID-19 to be in the waiting room with non-COVID-19 patients before being screened by the streaming ENP. A possible future step to mitigate this would be to station the streaming ENP outside the waiting room, so patients are directed to the ITA before entering the hospital.

CONCLUSION

In response to the COVID-19 pandemic, the ITA has allowed early patient triage, instigation of time-critical medical intervention, and recognition and early isolation of potential infectious illness. While its geographical design is specific to the BRI, its process can be adapted for use in other hospitals and future pandemics, with key points being to perform initial assessments outdoors, reduce footfall in the hospital, reduce staff contact with

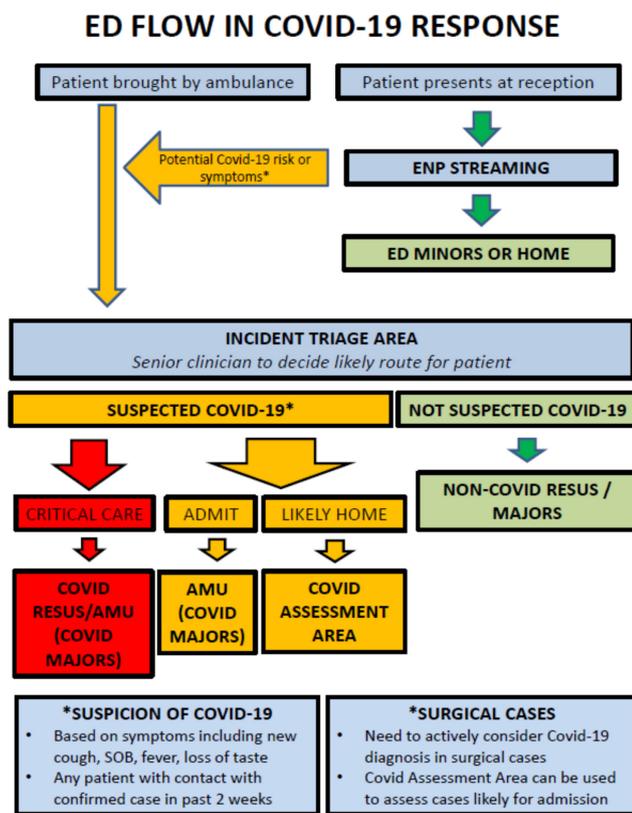


Figure 2 Flow through the Bristol Royal Infirmary ED. AMU, acute medical unit; ENP, emergency nurse practitioner; SOB, shortness of breath. *indicates link to the list of symptoms for suspected infection.

Table 1 Challenges faced by the COVID-19 pandemic and the solutions offered by the ITA

Challenge	Solution offered by the ITA and departmental change
Possible high patient volumes	Increase ED capacity to include adjacent AMU as an area to assess patients.
Need for COVID-19 and non-COVID-19 streams with varying levels of care	Effective triage by the ITA into defined COVID-19 and non-COVID-19 areas for both critical and routine care.
Potential to spread infection when transferring a patient with suspected COVID-19 infection	The ITA is situated in the ambulance bay, therefore decision making about patients' potential of infection occurs before they enter the hospital. Patients are streamed to appropriate inpatient COVID-19 areas if suspected they will need inpatient stay. Transfer to the wards from resus/COVID-19 assessment area is possible directly through ITA, therefore avoiding non-COVID-19 zones. Patient handover is via telephone, reducing risk to teams entering new clinical areas.
Risk of exposure to potential infection for triage staff	Triage situated outdoors in the ambulance bay, using assessment in and around ambulances while using basic personal protective equipment (PPE).
Risk of delays in treatment of unwell COVID-19 patients	The assessing clinician in the ITA immediately establishes the risk of severe illness in patients, and so can initiate early interventions in patients suspected to be with COVID-19 on arrival. This is done in a 'rapid assessment and triage' approach ⁷ by a senior clinician, as evidence has shown that early investigation and treatment of the unwell patient can improve patient outcome and flow. ^{8,9}
Staff moving between clinical areas leading to potential spread or contamination	There are specific donning/doffing areas separated by doors between COVID-19 resus and non-COVID-19 majors through which staff must pass to move between each clinical area (see figure 1). This means these two areas remain isolated from each other. COVID-19 resus, COVID-19 assessment area and COVID-19 majors are all isolated with closed doors between them and the other clinical areas. Staff must don appropriate PPE before entering any of these areas and doff on leaving. Full PPE is worn in COVID-19 resus with basic PPE worn in all other zones. ⁸
Patients with COVID-19 potentially presenting with atypical or subtle features	Small groups of experienced staff triage high volumes of patients and use an audit feedback system to inform decisions. Prehospital and triage observations are used in decision making.

AMU, acute medical unit ; ITA, incident triage area .

potential infection and instigate an early RAT approach to treating patients. To further qualify the success of the ITA, departmental audit data collection is ongoing.

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REFERENCES

- 1 Esswein EJ, Kiefer M, Wallingford K, *et al*. Environmental and occupational health response to SARS, Taiwan, 2003. *Emerg Infect Dis* 2004;10:1187–94.
- 2 Rothman RE, Irvin CB, Moran GJ, *et al*. Respiratory hygiene in the emergency department. *J Emerg Nurs* 2007;33:119–34.

- 3 National Institute of Health and Care Excellence (NICE). COVID-19 rapid guideline: critical care in adults, 2020. Available: <https://www.nice.org.uk/guidance/ng159> [Accessed 14 Jul 2020].
- 4 British Medical Association. COVID-19 - Ethical Issues. A guidance note, 2020. Available: <https://www.bma.org.uk/media/2226/bma-covid-19-ethics-guidance.pdf> [Accessed 14 Jul 2020].
- 5 Buitrago-Garcia D, Egli-Gany D, Counotte MJ, *et al*. Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: a living systematic review and meta-analysis. *PLoS Med* 2020;17:e1003346.
- 6 UK Government. Guidance: COVID-19 personal protective equipment, 2020. Available: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe> [Accessed 14 Jul 2020].
- 7 NHS England. Rapid assessment and treatment models in emergency departments, 2012. Available: <https://www.england.nhs.uk/wp-content/uploads/2013/08/rapid-assess-treat.pdf> [Accessed 14 Jul 2020].
- 8 Abdulwahid MA, Booth A, Kuczawski M, *et al*. The impact of senior doctor assessment at triage on emergency department performance measures: systematic review and meta-analysis of comparative studies. *Emerg Med J* 2016;33:504–13.
- 9 Burström L, Nordberg M, Örnung G, *et al*. Physician-led team triage based on lean principles may be superior for efficiency and quality? A comparison of three emergency departments with different triage models. *Scand J Trauma Resusc Emerg Med* 2012;20:57.