

Editorial

Developments in adult critical care transfer in England: a positive legacy of the COVID-19 pandemic

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Across the globe, critically ill and injured patients frequently require transfer between healthcare establishments. While many countries have highly developed systems to support such transfer and retrieval [1], provision within the UK's National Health Service (NHS) is more variable. The transfer of critically ill and injured patients occurs for three reasons: escalation of care, where patients need to access specialist treatment not available in the referring hospital; repatriation, the transfer of patients back to their local hospital when they have completed specialist care or become unwell distant from home; and capacity, where patients require transfer due to a lack of access to staffed critical care beds. This may also occur due to an acute shortage of specialist equipment such as renal replacement therapy machines during a period of surge in critical care demand.

For the past two decades, commissioned dedicated neonatal and paediatric critical care transfer services have developed and become integral to the delivery of care to these patients across the UK [2, 3]. In adults, the provision has been less organised. Before the COVID-19 pandemic, dedicated services were operational, or in development, in the devolved nations of Northern Ireland, Scotland and Wales, but no provision had been made in England outside extracorporeal membrane oxygenation retrieval services. While some had recognised this should change [4], and

national guidelines and safety reports had recommended improvements [5–7], funding and resources were lacking. This landscape was the situation within which Huq et al. [8] found themselves at the beginning of the COVID-19 pandemic.

Critical care transfers for capacity

Capacity transfers, previously termed 'non-clinical', have long been presumed to be associated with risk and harm [9] as well as being used as a metric of an underperforming critical care unit or system [10]. The reasons for this are multiple, but it was accepted they would only occur when a critical care unit was under extreme pressure or unable to cope with the case-load it faced.

Early in the COVID-19 pandemic, it became clear there would likely be a requirement for such transfers to be undertaken routinely to balance critical care capacity within healthcare systems [11]. While many have come to accept the necessity for these transfers, the safety and effects upon those patients transferred are frequent topics of conversation. Critical care transfer for capacity has seemingly proven crucial in the continued access to, and delivery of, critical care to adults in England during the pandemic. However, given the short duration of the transfer in the context of a critical care stay lasting days to weeks, the complexities of data collection and the variable and ad-hoc

systems that existed to support transfer, it has been challenging to produce robust evidence to support or refute its use. Within the NHS in England, the requirement to deliver these transfers led to the rapid development of temporary transfer services, including those described by Huq et al. [8]. Subsequent work has driven a dramatic and permanent change to the provision of adult critical care in England.

Investigating the effects of transfer

There is limited recent evidence on the effects of critical care transfer on patient outcomes. Several authors have examined the rates of clinical or critical incidents occurring during transfer [1, 12–15] as a surrogate of transfer quality, but few have linked this to overall critical care survival or hospital survival.

Huq et al. [8] investigated the transfer of COVID-19 critical care patients between different hospital sites within a large NHS Trust in their region of London over a 12-month period that covered the first two major pandemic waves in the UK. They compared intubated and ventilated patients with confirmed SARS-CoV-2 infection requiring inter-hospital transfer for capacity reasons with those requiring intra-hospital transfer between different critical care units within the same hospital and examined the physiological status pre- and post-transfer as well as outcome. They found no significant deterioration in physiological parameters between the two groups when comparing baseline with 24 h after transfer and no difference in mortality.

While presenting a positive addition to the current paucity of evidence in this area of critical care, the authors faced significant challenges in conducting their research. Although retrospective in nature, selection bias towards those patients more suitable for inter-hospital transfer, as well as the ever-changing treatment options available for SARS-CoV-2 infection, potentially confound the evidence. It should be acknowledged that SARS-CoV-2 patients are a specific group and, as such, there is limited evidence as to the extent that these observations can be translated to the wider population of critical care patients requiring transfer. As a network of urban hospitals in London, transfer distances and times were short but many regions in the UK require transfers that are many multiples of these, therefore caution should be taken in extrapolating these data.

Critical care transfer represents a very short time-period compared with a typical SARS-CoV-2 critical care length of stay. The physiological parameters chosen for comparison are easily recorded and analysed using a clinical information system and, while they provide a picture of respiratory and cardiovascular stability, there may be others

that are significantly impacted by transfer and thus of more relevance.

Huq et al. must be commended for their efforts to add to the evidence base on critical care transfer in the midst of a global pandemic. The pattern of transfer in an urban environment that they describe has been seen across many global healthcare systems during pandemic waves and is translatable to similar situations.

What is the current evidence base?

The paper by Huq et al. [8] is one of a series from around the world [9–11] which have variably assessed the efficacy, physiological effects and outcomes of patients requiring critical care transfer during the pandemic. Evidence published before 2020 has long suggested that critical care transfer can be carried out safely by dedicated transfer and retrieval teams [1], with the best evidence from countries with well-developed systems such as Australia.

Clinical or critical incident rates have often been used as a surrogate for quality, with published rates varying significantly from 12.5% to 62% and lower rates being reported within dedicated, highly trained and well-governed transfer and retrieval services [1, 15–18]. However, there has been a paucity of information concerning both the frequency and safety of UK critical care transfers of adults. With the exception of the FICM/ICS Guidelines 2019 [6] and Grier et al. [4], critical care transfer activity in England is poorly understood, with the safety and efficacy of these transfers even less so.

Despite the new publications and the pre-pandemic evidence, there remain many ‘unknown unknowns’ in critical care transfer and it is encouraging that there is enthusiasm to address these and develop more robust evidence.

Adult Critical Care Transfer Services in England

The impact of COVID-19 on adult critical care during 2020 and 2021, particularly the requirement to move patients for capacity within and between NHS regions in England, has driven a rapid and permanent change in the provision of adult critical care transfer.

Before the pandemic, the number of adults requiring critical care transfer in the UK was estimated to be 11,000 per annum [6], while more recent unpublished work to support NHS England commissioning work has revised this upwards to closer to 20,000–25,000 per annum. The scale of the requirement, robust evidence regarding the safety and effectiveness of neonatal and paediatric services [19, 20] and the experiences of the pandemic (including that of the Huq et al. [8]) led NHS England to commission dedicated Adult Critical Care Transfer Services (ACCTS) [21] in 2021.

Similar commissioning already exists in Northern Ireland and Wales.

At the time of publication (early 2022), all seven NHS England regions either have, or have in development, commissioned dedicated ACCTS. While these services currently operate during the daytime, there is commitment to work towards 24/7 provision. The development, implementation and evolution timeline remain best measured in years and must be driven by high quality data, the likes of which has never previously been available. During 2022, a mandatory minimum dataset for each and every adult critical care transfer in England will be agreed and established. This, combined with nationally-agreed quality indicators, will for the first time provide an accurate picture of transfer activity and enable outcomes measures to be assessed.

While there has been much published about the safety and efficacy [1, 15–18] of critical care transfer, along with cohort publications such as Huq et al. [8], there remain many unanswered questions about the physiological effects of transfer and the various transfer techniques on our patients and their long-term outcomes. The COVID-19 pandemic has forever changed the focus on adult critical care transfer, not just in England but globally. England is now working towards delivering equitable services and, learning from devolved nations, neonatal and paediatric services; this will be a permanent improvement to the way this important area of critical care is delivered.

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