

Critical Care Outreach Teams and COVID-19.

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Abstract

Critical Care Outreach Teams (CCOT) have seen unprecedented capacity challenges throughout the COVID-19 pandemic. Traditionally, difficulty in characterising and measuring CCOT's complex interventions has led to sub-optimal research in assessing this group's clinical efficacy and cost-effectiveness. Here, we argue that the COVID-19 pandemic has shone a spotlight on the activities of CCOT and has provided excellent opportunities for valuable research.

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Introduction

Critical Care Outreach Teams (CCOT) were conceived from Department of Health recommendations in 2000 and had three main aims; 1) avert ICU admissions, 2) enable discharges from ICU and 3) to share critical care skills outside of the ICU (Department of Health, 2000). 20 years on, CCOT's have grown in popularity throughout the UK with roles changing to meet the needs of their hospital trusts and the populations they serve, both patients and staff (National Institute for Health and Care Excellence, 2018). However, role variation and difficulty in defining and measuring global outcomes has meant that, while trusts anecdotally report the benefit of CCOT's, confirmation of their clinical efficacy and cost-effectiveness in the form of robust studies is lacking (Bohlin, 2020; Garry, Rohan, O'Connor, Patton, & Moore, 2019; Marsh & Pittard, 2012). A National Institute of Health and Clinical Excellence (NICE) (2018) committee reviewed the available literature on CCOT's clinical efficacy and economic value to help review whether NHS CCOT services should be established 24 hours, 7 days a week. A Cochrane review and 3 randomised control trials (comprised of 4 papers) were reviewed, and 7 outcomes identified. These were; in-hospital mortality, length of stay, cardiac arrest, cardiopulmonary resuscitation, unplanned ICU admission, ICU admission and DNAR orders issued. The quality of the evidence evaluating all outcomes varied from 'very low' to 'moderate' due to 'risk of bias, 'imprecision' and 'inconsistency' (National Institute for Health and Care Excellence, 2018). The NICE (2018, p. 16) committee highlight that CCOT offer "complex interventions which are poorly characterised in the research literature". Confounding factors such as lack of role standardisation, and contextual and social factors make CCOT's clinical efficacy and economic value difficult to measure. These aspects force the hand of institutions to make recommendations based on pragmatism rather than evidence.

Globally, the COVID-19 pandemic has shone a spotlight on intensive care units and the activities of their staff, including CCOT. Finite resources have led to increased acuity outside of the ICU and placed non-ICU clinicians in an ambiguous role. Staff without a critical care background require support and guidance in their decision-making and delivery of hands-on care.

Here, we make the case that the large and growing data sets accrued throughout the COVID-19 pandemic provide opportunities for high-quality research into the efficacy and cost-effectiveness of CCOT.

Averting ICU Admissions

Track-and-triggers systems for the early identification of sick or deteriorating patients have been recommended for use in NHS trusts since 2007. These tools aim to facilitate not only the identification of the sick patient but also ensure a senior review and evaluation of appropriateness for ICU admission thereafter (Armitage, Eddleston, & Stokes, 2007). CCOT prevent ICU admission with early patient assessment and by performing interventions usually limited to ICU in non-ICU areas.

Studies on the efficacy and cost-effectiveness of CCOT's role in these processes is limited by current research and inadequate sample sizes. Although some robust work is available examining CCOT, track-and-trigger systems and in-hospital mortality (Hogan et al., 2019), other outcomes such as CCOT impact on ICU admission, organ protection, severity of illness, hospital costs, patient recovery and perseveration of independent function are less well understood (Credland, Dyson, & Johnson, 2021; Gao et al., 2007).

In-patients with COVID-19 who exhibit symptoms such as breathlessness, hypoxaemia and fever are identified on current track-and-trigger systems, such as NEWS 2, and escalated to CCOT routinely.

Increased demand for services and stretched capacity means some patients do not receive a timely CCOT review. It is feasible that this would provide a large sample for the exploration of CCOT's impact on various patient outcomes, e.g., by way of a retrospective cohort study exploring the outcomes of those who received CCOT care and through who, through circumstance, did not.

This approach would potentially yield high-quality results without the ethical implication of intentionally withholding care from a cohort.

Enable Discharges from ICU

CCOT's use a variety of strategies to facilitate the safe discharge of ICU patients to ward areas. They may; provide ward staff with recommendations regarding patient care, review vital signs and diagnostic tests, and provide patients with psychological support.

Unlike other CCOT activities, the outcomes of ICU patient follow-up by CCOT are well documented with positive results. Reliable measurements are available on; survival to discharge, ICU re-admission (with associated in-hospital mortality) and patient experience (Ball, Kirkby, & Williams, 2003; Jónasdóttir & Jónsdóttir, 2016; Niven, Bastos, & Stelfox, 2014).

Early studies demonstrate a longer ICU stay for patients with COVID-19 than the ICU patient without COVID-19, therefore increasing the complication of a longer-term ICU stay as a baseline (Gorna et al., 2020). It is reasonable to hypothesise that the demand for CCOT follow-up is and will continue to be high.

CCOT follow-up services are not routinely carried out once the patient has been discharged, however, several centres are utilising CCOT telephone follow-ups with COVID cohorts once discharged home. Qualitative research methods may be particularly helpful in this group.

Sharing skills outside of the ICU

Perhaps most importantly, when ICU resources are under unprecedented pressure amid a pandemic, are the skills of CCOT to support ward staff with level 2 and level 3 patients. CCOT are well placed to support and educate on; advanced airway skills, oxygen delivery (oxygen escalation, humidification, non-invasive ventilation initiation, management and withdrawal), patient proning, sepsis management and holistic patient assessment of non-COVID needs.

Many ward-based and redeployed nurses are caring for patients with a higher level of acuity and an unfamiliar disease process at a time when educational provisions are stretched, postponed or cancelled. CCOT can provide practical training and answer questions about key COVID-19 and general nursing considerations.

Qualitative studies suggest that ward staff, particularly junior doctors and nurses, view CCOT positively (Athifa et al., 2011; Hyde-Wyatt & Garside, 2020). The COVID-19 pandemic has required staff to learn knowledge and skills quickly and use these to care for patients. We would argue that the impact of CCOT in education, support and staff assessment and rigorous evaluation of such can be enhanced, not diminished by the pandemic.

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