



EDITORIALS

Cardiopulmonary resuscitation after hospital admission with covid-19

The balance of benefits and risks has changed, and practice must change with it

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In normal times, the medical obligation to “first do no harm” applies to the actions of individual doctors on individual patients. During pandemics, the ethical imperatives shift: we must consider the safety of not only the individual patient but also the clinician and the population. Guidelines on attempting cardiopulmonary resuscitation (CPR) in the acute hospital setting for patients with covid-19 have produced conflict and moral discomfort because of differences of opinion about the balance of benefits and risks to both patients and staff.¹

In normal circumstances, the annual incidence of in-hospital cardiac arrests in adults is 1-10 per 1000 admissions.^{2,3} Those with non-cardiac causes of cardiac arrest have worse outcomes.³ In 80% of cardiac arrests the patient has a non-shockable rhythm (pulseless electrical activity or asystole), for which survival to hospital discharge is around 15-20%.² By contrast, the likelihood of survival from an initially shockable rhythm is 2-3 times higher (about 50%).²

However, these figures can be misleading because CPR will not be attempted in patients who are unlikely to survive resuscitation or the period of ventilation on an intensive care unit that often follows. The decision not to attempt CPR is made after a discussion between patient and clinician when an understanding is reached that because of frailty, or because the heart stopping is the final stage of an irreversible dying process, the potential benefits to the patient are outweighed by the risks.

Discussions about CPR are best done within wider conversations about overall goals of care—for example, through the ReSPECT (Recommended Summary Plan for Emergency Care and Treatment) process.^{4,5} If no such conversation has occurred before an arrest the presumption has always been in favour of attempting CPR, with the caveat: “make sure you, the victim, and any bystanders are safe.”⁶

Complex intervention, conflicting advice

CPR is a complex intervention comprising airway management, ventilation, chest compressions, drug therapy, and defibrillation. Little evidence exists on the risks of viral transmission through aerosol and droplet generation from the individual interventions

that form part of a resuscitation attempt.⁷ The effectiveness of these components also varies. Early defibrillation of a shockable rhythm has a high chance of success, whereas chest compressions without ventilation add little benefit to patients in cardiac arrest secondary to hypoxaemia. The ratio of risk of transmission to benefit will be different for cardiac arrest at home, where bystanders are likely to have already been in close contact with the patient and healthcare professionals are not immediately available.

These complexities, combined with varying levels of personal protective equipment (PPE) and capacity to provide post-resuscitation care, have probably contributed to the conflicting advice provided by national and international bodies on the PPE required during specific resuscitation interventions.^{8,9}

The debate about PPE has exposed broader issues around CPR. For decades, doctors have performed CPR even when they expect it to be futile. Reasons are unclear but may include reassurance for doctors that they have “done everything possible”—the removal of uncertainty enables them to move on to their next clinical task without moral discomfort. A resuscitation attempt may also make conversations with bereaved relatives easier, especially if prognosis and treatment have not been discussed before the patient’s death.

Poor survival rates

Patients with covid-19 who require intubation and ventilation have poor survival rates,^{10,11} and survival after an arrest is likely to be substantially lower, although data are not yet available. Exceptions may exist, including patients with myocarditis or other cardiac complications of covid-19, who may benefit from defibrillation.¹²

Given the potential pain and discomfort for patients of a full resuscitation attempt and the risk to staff, a moral imperative exists to identify patients with covid-19 who are deteriorating and either intervene to prevent cardiac arrest (support their breathing with intubation and ventilation) or have honest discussions with the patient and those close to them about prognosis in the event of a cardiac arrest and provide

reassurances that they will be given optimal comfort care in the event of their deterioration. We should aim to have very few unexpected arrests among patients with covid-19.

This pandemic has changed the risk-benefit balance for CPR: from “there is no harm in trying” to “there is little benefit to the patient, and potentially significant harm to staff.” The argument for not attempting CPR on hospital patients with covid-19 without enhanced personal protection is therefore justifiable, even though it feels uncomfortable.

Maintain trust

To maintain trust, we must be honest with the public about CPR's poor chance of success in patients with covid-19, the resulting changes to practice, and why they are necessary to protect everyone. Clinicians, patients, and those close to them need to have early discussions about CPR and the overall goals of care. These should take place across all healthcare settings: in the community, during outpatient calls, and on admission to hospital. Making sure that these conversations are wider than just a CPR decision will make them both emotionally less distressing and practically more helpful. Guidance is available.¹³ Clinicians should establish a shared understanding of the patient's condition, an understanding of what is valued by the patient, and what treatments will realistically help them.

In a pandemic, ways of working and risk assessment must change. “Do no harm” is a necessary but insufficient principle. We must adopt practices that ensure best outcomes and minimise harm for patients with covid-19, for uninfected patients with other illnesses, and for the health professionals who will continue to treat them.

Competing interests: *The BMJ* has judged that there are no disqualifying financial ties to commercial companies. The authors declare the following other interests: ZF is a member of the executive of the Resuscitation Council UK and chairs the ReSPECT subcommittee. She is on the education committee for the Institute of

Medical Ethics and is funded by a Wellcome grant for her research. GP holds volunteer roles with the International Liaison Committee on Resuscitation, European Resuscitation Council, and Resuscitation Council UK. He has received grants related to resuscitation from the National Institute for Health Research, British Heart Foundation, and Resuscitation Council UK.

Provenance and peer review: Commissioned; not externally peer reviewed.

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