LAMPARD INQUIRY

PROFESSOR JASMEET SOAR

Part 1 Expert Report

20 October 2026

PUBLICATION NOTE

For the purposes of publication, the Inquiry has applied gists to certain passages of this report containing detail considered potentially overly graphic or instructional if published.

The gists are intended to convey the substance and evidential value of the underlying material while avoiding publication of detail that is unnecessary for that purpose and could risk harm. They have been applied by the Inquiry with Professor Soar's agreement.

The gists are clearly identified in the published report and do not form part of Professor Soar's original report, which has not otherwise been amended for this purpose.

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PART 1 – EXPERT REPORT FOR THE LAMPARD INQUIRY

14 SEPTEMBER 2026

PROFESSOR JASMEET SOAR

EXPERT IN RESUSCITATION, INTENSIVE CARE MEDICINE & ANAESTHETICS

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1 BACKGROUND AND MY INSTRUCTIONS

1.1 My medical degree is from Emmanuel College, Cambridge University, and the University of Cambridge School of Clinical Medicine (1990). My bachelor's degree is in Medical Sciences and Pharmacology (1988). I am registered with a licence to practise, and on the Specialist Register of the General Medical Council (number 3467499). I am a Fellow of the Royal College of Anaesthetists, the College of Intensive Care Medicine and the Royal College of Physicians. I have been a Consultant at Southmead Hospital, Bristol NHS Foundation Trust since 1999 and work full time providing anaesthesia and caring for critically ill or injured adults. Southmead Hospital has a 48-bedded intensive care unit and is one of the busiest in the UK. I am a national and international expert in cardiac arrest treatments, guidelines and outcomes.

1.2 I am not a psychiatrist so have not commented on specific psychiatric diagnoses and mental health issues as these fall outside my expertise – the focus of my opinion relates to resuscitation and physical health issues.

1.3 I note that the inquiry has already had a written statement and oral evidence from the Resuscitation Council UK (RCUK)[1]. I am a former President of the RCUK (2009-2012), and am currently a member of the Executive Committee. RCUK is a charity and all my RCUK roles have been in a voluntary capacity. I am providing this report in a personal capacity and the opinions expressed are my own. I have provided expert reports as an independent expert for solicitors and Inquests concerning deaths in mental health inpatient settings.

[1] https://www.resus.org.uk/ [accessed 20 August 2026].

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1.4 I have been instructed by the Lampard Inquiry to assist with regards its investigation into emergency response and resuscitation on mental health wards. In Part 1 of this report, I have been asked to provide an expert opinion and 'Clinical information about cardiac arrest and cardiopulmonary resuscitation (CPR) in special circumstances that are relevant to mental health wards'. More specifically, 'the clinical mechanism(s) of cardiac arrest; timescales of deterioration; survival rates and likely outcomes; the cardiopulmonary resuscitation and/or emergency response steps that would be required to prevent death and the necessary timelines for those interventions, including the necessary equipment and drugs and summoning of advanced support; the training that would be required for the first person on scene to be in a position to provide the lifesaving interventions identified; and/or any other clinical issues relating to each of the following special circumstances that may lead to cardiac arrest on a mental health inpatient ward:

a. Hanging and/or asphyxiation by ligature;
b. Choking and/or airway obstruction;
c. Overdose;
d. Medication errors as may occur in rapid tranquilisation;
e. Administration of electro-convulsive therapy;
f. Serious self-harm by cutting;
g. Burns;
h. Falls from height;
i. Drowning;
j. Headbanging;
k. Physical restraint;
l. Electrolyte abnormalities resulting from eating disorders and / or malnutrition;
m. Sepsis;
n. Seizures;
o. Diabetes.'

1.5 In addition, I have been asked to include:

a. 'information on any differences in treatment or survival rates/outcomes that relate to race and explain any such differences, including the relevance and/or reliability or otherwise of pallor and petechial marking to the recognition of deterioration and/or cardiac arrest particularly in those with darker skin tones;

b. information on any differences in treatment or survival rates/outcomes that relate to gender, age, pregnancy or disability;
c. information on any differences in treatment or survival rates/outcomes between such a cardiac arrest occurring on an acute hospital ward and a mental health inpatient ward;
d. information on any differences that may arise from different practices/systems for monitoring signs of physical health;
e. information on any specific challenges in providing treatment that arise on a mental health inpatient ward, including those that arise from geographical location and remoteness from acute hospitals / accident and emergency departments and what steps can or should be taken to mitigating against any such challenges.'

1.6 In my report I will make clear which issues fall within my usual expertise, and areas which fall outside my expertise, and will make clear the level of certainty of evidence for specific issues, and provide key supporting references.

1.7 I note the Terms of Reference of the Inquiry include 'To investigate the circumstances surrounding the deaths of mental health inpatients under the care of NHS trusts in Essex ('the trusts') between 1 January 2000 and 31 December 2023.' For most issues there has been little change in key clinical interventions since this time window – I will make clear what information is new since this time.

1.8 I have first provided an overview of cardiac arrest, resuscitation, outcomes, and factors affecting outcomes as many issues that are common to all cardiac arrests. I will then address the specific possible causes of cardiac arrest listed.

2 OVERVIEW OF CARDIAC ARREST

Primary versus Secondary cardiac arrest

2.1 Cardiac arrest refers to when the heart stops beating and the person collapses – without early treatments death will be certain, and even with treatments death is common. The cardiac arrest can be:

a. Primary cardiac arrest – when the heart stops beating first due to a primary heart problem such as a blockage to the blood supply of the heart (myocardial infarction). Specifically:

    i. Cardiac arrest is often sudden and unexpected – if treated early this group will often have what is called a 'shockable rhythm' when the electrical activity of the heart is monitored. Shockable rhythms (called ventricular fibrillation or pulseless ventricular tachycardia [VF/pVT]) can respond to treatment with an electric shock (defibrillation), which can restore a normal electrical heart rhythm and an accompanying heartbeat, especially when the shock is given early.

    ii. The best example of this is known as the US casino study[2]. Close monitoring by casino security staff meant any collapse was rapidly recognised and attended to by security staff. When the collapse was witnessed and caused by cardiac arrest with a shockable rhythm, and a defibrillator shock was given by security staff, survival to hospital discharge was 74% (26 of 35) for those who received their first defibrillation within 3 minutes of collapse and 49% (27 of 55) for those who received their first defibrillation more than 3 minutes after collapse. This study helped set the benchmark aim for recognising cardiac arrest, starting cardiopulmonary resuscitation (CPR) which consists of chest compressions (heart massage) to pump blood around the body and ventilation of the lungs ('rescue breaths'), and using a defibrillator as early as possible to deliver a shock.

    iii. The most recent high-quality data is from a study in the Netherlands[3]. In 3723 patients with a witnessed out-of-hospital cardiac arrest and ventricular fibrillation as the initial rhythm, 70% survived to hospital discharge when the first shock was delivered within 6 minutes of the emergency call, compared with 33% when the delay was 10 minutes or more. Each additional minute of delay was associated with a 6% relative reduction in the probability of survival.

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[2] Valenzuela TD, et al. Outcomes of rapid defibrillation by security officers after cardiac arrest in casinos. N Engl J Med. 2000 Oct 26;343(17):1206-9.

[3] Stieglis R, et al. Association Between Delay to First Shock and Successful First-Shock Ventricular Fibrillation Termination in Patients With Witnessed Out-of-Hospital Cardiac Arrest. Circulation. 2025 Jan 21;151(3):235-244. doi: 10.1161/CIRCULATIONAHA.124.069834.

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iv. Resuscitation guidelines have prioritised this group of 'primary cardiac arrests' as they often occur in public places, have the best chance of a good outcome if witnessed, and can be treated by a wide range of non-clinical responders with minimal training using an automated external defibrillator (AED). An AED provides audio-visual prompts on how to give a shock. The current expectation, as for lay people in public places, is that even those with no training should be able to use an AED – the ability to switch it on and follow the audio-visual prompts is the level of skill required. Training will make AED use quicker and easier, however.

v. Even for these primary cardiac arrests, when there is delay in recognising cardiac arrest and starting resuscitation – the most common reason being the collapse arrest was not witnessed, often occurring in the home – a shockable initial rhythm will change to a non-shockable cardiac arrest rhythm (see below) and the chances of survival will rapidly diminish further.

b. Secondary cardiac arrest – this is when the heart stops beating secondary to causes which lead to a process of physiological changes in the body. The heart stops beating at the end of the process.

i. 'Cardiac arrests in these circumstances represent an increasing proportion of all treated cardiac arrests, often have a preventable cause, and require additional interventions to correct a reversible cause during resuscitation. The evidence for treating [cardiac arrest in] these conditions is mostly of low or very low certainty and further studies are needed. Irrespective of the cause, treatments for cardiac arrest are time sensitive and most effective when given early – every minute counts'[4].

ii. These causes are often called special circumstances and include many of the issues listed in my instruction and make up a larger proportion of the cardiac arrests seen in mental health inpatient settings.

iii. Secondary cardiac arrest will occur because the conditions for the heart to pump blood effectively and meet the body's demands have not been met. Examples include a lack of oxygen in the blood (hypoxia) because

[4] Soar J, Becker LB, Berg KM, Einav S, Ma Q, Olasveengen TM, Paal P, Parr MJA. Cardiopulmonary resuscitation in special circumstances. Lancet. 2021 Oct 2;398(10307):1257-1268.

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the person has stopped breathing, or the blood is too acidic such as after restraint and a struggle against the restraint (metabolic acidosis due to lactic acid released by the muscles).

iv. If the blood oxygen levels are too low, or the blood becomes too acidic, and often more than one factor is at play at the same time, the heartbeat will weaken, slow and eventually stop (cardiac arrest). Survival is often poor as the brain and other organ systems (lungs, kidneys, liver, gut, clotting) that are also vulnerable to a lack of oxygen will become irreversibly damaged even if a heartbeat is restored with CPR. The brain is the most vulnerable organ and the severity of brain damage often determines survival if a heartbeat is restored.

v. Importantly, a secondary cardiac arrest will usually have a non-shockable initial rhythm – these rhythms are either: 1. Electrical complexes that can be compatible with a pulse but when there is no pulse the rhythm is pulseless electrical activity (PEA) or 2. A flat or slowly undulating line, known as asystole ('flat-line').

vi. PEA and asystole will not respond to a defibrillator shock and the treatment is CPR (chest compressions, rescue breaths) and when feasible supplemental oxygen, adrenaline, and rapid correction of the underlying cause. Patients with PEA will sometimes appear to be in cardiac arrest with no palpable pulse and have CPR, but the heart will continue to beat weakly and there will be a very low blood pressure – this is called 'pseudo-PEA'. This group will have a relatively good outcome if treated early and probably accounts for some of the survivors after CPR. Pulse checks are unreliable and have not been in guidelines for lay people and de-emphasised for clinical staff since 2000 (see below – Identifying cardiac arrest).

vii. Cardiac arrest with a non-shockable rhythm tends to have a very poor outcome especially if the initial monitored rhythm is asystole – this is because if there are delays in starting CPR or CPR is not working, both shockable (VF/pVT) and PEA cardiac arrest rhythms will progress to asystole ('flat-line'). Survival after out-of-hospital cardiac arrest treated

by ambulance services for non-shockable rhythm cardiac arrest is about 5% for PEA cardiac arrest and 1-2% for asystole[5].

viii. Prevention of cardiac arrest is the key intervention for secondary cardiac arrests – there is usually a window of opportunity prior to cardiac arrest of varying duration where interventions can prevent progression to cardiac arrest.

ix. Preventative interventions can range from system based interventions such as removing ligature points, to clinical interventions during a period of deterioration before cardiac arrest using an ABCDE (Airway, Breathing, Circulation, Disability, Exposure) approach to identify and treat life-threatening problems early. I will address this further below on the section on prevention and treatment of cardiac arrest.

Cardiac arrest guidelines

2.2 The UK guidelines for treatment of cardiac arrest come from the Resuscitation Council UK (RCUK), a charity established in 1983. Specifically:

a. RCUK guidelines are updated every 5 years – the relevant guideline years for the Inquiry are 2000, 2005, 2010, 2015 and 2021 (the guidelines launch was put back a year by the pandemic). The most recent guidelines are from 2025 and are the guidelines currently available on the RCUK website[6]. I have been involved in writing RCUK guidelines since 2005.

b. RCUK guidelines follow the European Resuscitation Council (ERC)[7] guidelines that are launched on the same 5-year cycle and are followed in most European countries and some outside Europe. There are some local UK modifications, but these are relatively small and have got fewer over time. The scientific basis for the guidelines comes from the International Liaison Committee on Resuscitation (ILCOR)[8], a global organisation that generates Consensus on Science and Treatment Recommendations (CoSTRs) using internationally recognised evidence evaluation and guideline writing processes. ILCOR CoSTRs are used by the ERC and other organisations, e.g., American Heart Association, and resuscitation guidelines are similar globally on core issues such as how to recognise cardiac arrest, start CPR, use

[5] https://warwick.ac.uk/fac/sci/med/research/ctu/trials/ohcao/ [accessed 21 August 2026].
[6] https://www.resus.org.uk/professional-library/2025-resuscitation-guidelines [accessed 16 August 2026].
[7] https://www.erc.edu/ [accessed 10 September 2026].
[8] https://www.ilcor.org/ [accessed 16 August 2026].

an AED, and give oxygen. I have had lead roles in the ERC and ILCOR outputs for adult resuscitation starting with the 2005 guidelines.

c. The guidelines aim to cover all types of potential rescuer and settings – lay people, those with a duty to respond in non-clinical roles (e.g., first aiders, life-guards), and those in clinical roles, which includes non-registered staff such as healthcare assistants (HCAs).

2.3 The relevant Resuscitation Council UK guidelines[9] for the Inquiry cover:

a. Basic Life Support (BLS) for adults and children (paediatric), and include use of an AED (automated external defibrillator).

b. Advanced Life Support (ALS) for adults and children – the ALS guidelines for children have a much greater focus on secondary cardiac arrest as these are much more common in children and have a greater focus on the treatment of the seriously ill or injured child. Advanced guidelines for children also have guidance on estimating age or weight, normal vital sign (pulse, blood pressure) values for different age groups, and drug doses based on weight, whereas the adult ALS guidelines have a 'one-size fits all' approach for most CPR interventions.

c. Cardiac arrest in special circumstances – these are primarily about adults although many of the key interventions apply to both adults and children. A separate section for children has been added in 2026.

d. Post resuscitation care for adults and children – these are for the care of patients who have had a heartbeat restored (ROSC – restoration of spontaneous circulation)

2.4 The differences between guidelines for adults and children are largely based on cause of cardiac arrest, with primary cardiac arrest being more common in adults whereas children usually have a secondary cardiac arrest. The person's age may not be known at the start of resuscitation – if the rescuer believes the person is a child they should use the paediatric guidelines. Before 2021 the RCUK guidelines also mentioned using the onset of puberty as the transition to adult guidelines but added that it was inappropriate and unnecessary to check for puberty formally.

[9] https://www.resus.org.uk/professional-library/2025-resuscitation-guidelines [accessed 10 September 2026].

2.5 The ERC and RCUK guidelines do not differ based on biological sex or gender, or physical disabilities. There are specific guidelines for pregnant patients[10] that are primarily aimed at advanced resuscitation responders. The main modification for patients who are visibly pregnant is to push the uterus to the left (manual displacement of the uterus). Further interventions include delivery of the fetus if initial resuscitation efforts are failing.

2.6 The most recent RCUK guidelines and course manuals which are from 2025 have addressed issues related to skin colour and changes in skin colour that occur with illness, and how these differ in patients with black or brown skin tones compared with white skin tones. Specific issues addressed include:

a. Clinical assessment:
    i. Cyanosis – this occurs when oxygen levels fall and can be identified by the mucous membranes, lips, tongue, skin, ears and under the nails, which may appear blue or grey. In black or brown skin, this may be easier to see on the lips, tongue, mucous membranes, palms of hands and soles of the feet.
    ii. Pallor – is reduced colour to the skin – the term pale is no longer used. In individuals with black or brown skin, the reduced colour may be observed more easily in the palmar creases.
    iii. Urticaria – is an itchy rash that can be localised or widespread, and raised under the skin (nettle rash or hives). The rash can appear red or pink, but may be difficult to see on black or brown skin, and only the raised areas of skin that are noticeable.
b. Petechial haemorrhage is not mentioned in the RCUK guidelines 2025 or the ERC guidelines from which they are derived – these are pinpoint bleeds that are often seen on the facial skin or the whites of eye after ligature strangulation. Although they can be more difficult to identify in people with darker skin tones, they are not mentioned in resuscitation guidelines as the presence or absence of petechial haemorrhages do not impact initial emergency treatments.
c. Pulse oximetry – pulse oximeters are used to measure the blood oxygen level with a finger probe. Pulse oximeters overestimate blood oxygen levels in individuals with

[10] Lott C, Karageorgos V, Abelairas-Gomez C, et al. European Resuscitation Council Guidelines 2025: Special Circumstances in Resuscitation. Resuscitation 2025;215:110753

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darker skin tones. This risks missing low oxygen levels and delay treatments in those with darker skin tones.

2.7 Most settings will follow the RCUK guidelines directly. Ambulance services use guidance from the Joint Royal Colleges Ambulance Liaison Committee (JRCALC) – these guidelines cover the full range of issues treated by ambulance services including cardiac arrest. The JRCALC guidelines for cardiac arrest follow the RCUK guidelines. RCUK has representation on JRCALC and any differences are minor.

Cardiac arrest training

2.8 There are a large number of providers of resuscitation training in the UK ranging from first aid trainers who train first aiders in non-clinical settings (usually in basic life support/AED), to Advanced Life Support courses run by the RCUK that have trained instructors from a variety of clinical backgrounds teaching clinical staff advanced resuscitation interventions. Trainers will teach the RCUK guidelines, but different organisations running training will have their own teaching materials, e.g., St John Ambulance.

2.9 For individuals in roles where the individual may have to respond to cardiac arrest, most training undertaken is usually based on the requirements of the role and the employer. Others just as medical, nursing and paramedic students, and resident ('junior') doctors will undertake resuscitation training as part of their training and career progression. For clinical staff, the training will be delivered by an in-house resuscitation officer, or an external training provider.

2.10 The levels of training required for staff are discussed in the standards section below – I will briefly outline here the courses provided by the RCUK – the RCUK statement covers the training provided in more detail:

a. RCUK does not provide basic life support training courses. RCUK courses are aimed primarily at clinical staff working in healthcare settings for the resuscitation of the newborn, children and adults – this describes the primary intended audience rather than a restriction on who may undertake the training. Basic life support training is provided at a local level and covers chest compressions, basic airway and rescue breathing, and use of an AED.

b. RCUK courses for adults, children and newborn include the preventative measures required to prevent progression to cardiac arrest, and how to treat cardiac arrest when it occurs.
c. The courses include pre-learning, face-face training, and assessments to pass the courses and become a provider, i.e., passing the Adult Advanced Life (ALS) Support course leads to an ALS provider certificate that lasts 4 years with 1 year grace period for recertification. The best performing candidates according to preset criteria on courses are invited to train to undertake training to become instructors.
d. ALS level courses are primarily aimed at individuals who are leading resuscitation teams, or are involved in treating acutely-ill patients and/or cardiac arrest on a frequent basis.
e. This gap between basic and advanced level training is filled by the Immediate Life Support (ILS) that was piloted from 2000 and launched in 2002[11]. This course was designed for clinical staff to recognise and treat acutely ill patients before cardiac arrest using an ABCDE approach, and start treatments if cardiac arrest occurred including chest compressions, airway interventions and defibrillation, and depending on the setting and staff, giving adrenaline and fluids and other specific treatments. These interventions, when delivered early give the best chance of survival and a good recovery. Relatively few people do the ALS course, and before the ILS course was developed, most of the training for clinicians was basic life support training with any locally determined modifications. The ILS course filled the gap between the basic life support training that was at the time very similar to that taught to lay people (chest compressions and rescue breaths) and the ALS course that was and is still primarily for those in roles where they are regularly involved in caring for sick patients including patients with cardiac arrest.
f. In mental health inpatient settings, the first staff to reach a deteriorating or collapsed patient require the broadest practical skill set as they must recognise an emergency, call for help and start the ABCDE approach or CPR depending on the patient's condition, until further help arrives. Those who arrive first are often healthcare assistants, whose resuscitation training may only be at a basic life support level. In my opinion, training healthcare assistants in ILS could help address this.

[11] Soar J, Perkins GD, Harris S, Nolan J. The immediate life support course. Resuscitation. 2003 Apr;57(1):21-6.

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g. The RCUK ILS provider certificate lasts 1 year and has a 1 year period of grace. The duration is pragmatic and what is actually feasible – evidence shows that for those not regularly using their resuscitation skills, the decay in knowledge and learning is much earlier.

h. Finally, and importantly, resuscitation training competes with a large and growing list of training clinical staff have to do and repeat as part of their daily work (e.g., fire, cybersecurity, information governance, manual handling, infection control, safeguarding, health and safety, Oliver McGowan training, mental health and capacity, conflict resolution) with little time set aside and until recently training was often not portable between NHS organisations[12]. Mandatory training for most NHS staff will consist of a short (less than 30 minutes) online module in basic life support and use of an AED with an annual update. In my opinion this training is the minimal level for all staff, and staff should do additional resuscitation training including hands-on training to a level that is based on their roles.

Resuscitation Council UK Quality Standards

2.11 The issues regarding the RCUK quality standards for resuscitation in mental health settings[13] have been addressed by the RCUK statement and oral evidence to the Inquiry. In addition, I note that during the Inquiry's public hearing in July, Counsel to the Inquiry set out the key issues emerging in practice based on illustrative case evidence – including failure to identify and understand the true nature of the emergency and act accordingly; insufficient knowledge, familiarity with procedures and equipment, inadequacy of training; problems with availability and accessibility of vital equipment on wards; and delay at every stage.

2.12 The original 'standards' were primarily for acute hospital settings set out in a report from the Royal College of Physicians in 1987[14]. The introduction included 'The aim of the working party was to identify the groups who should be instructed in resuscitation to various levels, and to determine how the skills required should be taught and retained. The Report sets down guidelines for the organisation of and the training in resuscitation

[12] https://www.england.nhs.uk/long-read/action-needed-to-save-up-to-200000-days-of-staff-time-following-changes-to-statutory-and-mandatory-training/ [accessed 20 August 2026].
[13] Resuscitation Council UK Quality Standards: Mental health inpatient care (Published May 2014; last updated May 2020). Available at https://www.resus.org.uk/library/quality-standards-cpr/mental-health-inpatient-care [accessed 10 September 2026].
[14] Royal College of Physicians. Resuscitation from cardiopulmonary arrest: training and organisation. A report of the Royal College of Physicians. J R Coll Physicians Lond 1987; 21: 175–82.

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procedures, with particular reference to District Health Authorities.' In addition to hospitals, this document included short sections on CPR in the community, general practice, dental practice, for ambulance personnel, the general public, and some special circumstances (pregnancy, infants and children, neonatal and paediatric settings). The first RCUK standards were:

a. Cardiopulmonary Resuscitation – Guidelines for Clinical Practice and Training in Hospitals. Resuscitation Council (UK); 2000. With updates in 2004 and 2008.
b. Cardiopulmonary Resuscitation – Guidelines for Clinical Practice and Training in Primary Care. Resuscitation Council (UK); 2002.
c. Medical Emergencies and Resuscitation - Standards for clinical practice and training for dental practitioners and dental care professionals in general dental practice. Resuscitation Council UK July 2006. Updated February 2012.

2.13 The current style of 'quality standards' process started in about 2012. I chaired the process – writing these standards is challenging due to the large number of stakeholders, the complexities of types of settings, staff and patients, and knowing that the standards and any additional costs to implement them can be stretching for many – one of the important drivers was to help support staff who oversee training in NHS settings, given the competing priorities for training and resources for healthcare organisations. Another important issue was to ensure the standards could be adopted and adapted based on local expertise and circumstances.

2.14 Mental health settings were added based on feedback from stakeholders that this was a significant gap – most training in clinical settings is undertaken by Resuscitation Officers (Resuscitation Practitioners) and many were already teaching or overseeing resuscitation practice in mental health inpatient settings and this group as well as the Royal College of Psychiatrists were the two main driving groups for these standards – the template used for other settings was adapted to mental health inpatient settings and sent for feedback to stakeholder groups that included mental health settings before being released in 2014.

2.15 I have set out what I consider to be the key features of the RCUK mental health quality standards[15] – these are my independent opinions (I have not commented on every single section or standard):

a. Introduction and scope:

i. 'staff are trained and updated regularly to a level of proficiency appropriate to each person's expected role'. This allows some local determination regarding what level of training specific staff need. The standards do not differentiate between registered and non-registered clinical staff. This is important in my opinion as in the past several years there has been increasing use of non-registered staff in clinical roles in all healthcare settings. The Kings Fund report, Mental health 360: workforce[16], published in 2024 stated that for adult mental health services in 2012/13, the skill mix of adult acute wards comprised 60% registered nursing staff and 40% support (i.e., non-registered) staff and this had reversed by 2022/23. In addition this report stated that there were 13,300 nursing vacancies in NHS mental health services in September 2023, and for mental health inpatient settings there was increasing reliance on bank and agency staff – these issues had made it increasingly difficult to recruit and retain staff.

ii. 'Resuscitation Council UK recognises that the standards in this document may provide challenges for some mental health services and the organisations that are responsible for providing them. Intentionally, these standards are aspirational in certain areas.'

iii. The guideline defines terms as: '1. 'MUST' has been used when the consensus is that the standard promotes normal practice and is obligatory. '2. 'SHOULD' has been used when the consensus is that the standard promotes normal practice.' '3. 'RECOMMENDS' is used when the consensus is that the standard promotes best practice.' In document 'must' has been used 105 times, 'should' has been used 36 times, and 'recommends' only 6 times, i.e., most of the standards are considered as normal practice and obligatory.

[15] Resuscitation Council UK Quality Standards: Mental health inpatient care (Published May 2014; last updated May 2020). Available at https://www.resus.org.uk/library/quality-standards-cpr/mental-health-inpatient-care [accessed 10 September 2026].

[16] https://www.kingsfund.org.uk/insight-and-analysis/long-reads/mental-health-360-workforce [accessed 11 September 2026].

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iv. 'Resuscitation Council UK recommends that each mental healthcare organisation considers the implications of these standards and makes suitable arrangements to develop the capabilities that are required. Organisations should consider training some staff selected from within the organisation to a higher standard than is required generally so that they can undertake the actions that are necessary and/or cascade training within their facilities. Additionally, organisations could establish a suitable service level agreement with acute healthcare services that are sufficiently close geographically; ambulance services; or external training organisations. Mental healthcare organisations may require a combination of arrangements.' This recognises that some mental health inpatient units are on an acute hospital site with a hospital resuscitation team that responds to the universal 2222 call number used by acute hospitals, and gets an immediate predetermined response usually within about 5 minutes of a team with several members with the skill set to provide advanced life support – these resuscitation ('crash') teams will usually respond to any life threatening emergency including cardiac arrest. Response times in mental health inpatient units may be longer than on acute wards as the unit will often be in remote and unfamiliar buildings separate to where resuscitation team members are usually working, and security arrangements can make entry difficult. Many units however are not on an acute hospital site and call an ambulance with a 999 call – calls are handled and triaged based on the information provided by the caller and the call response determined by the category – this requires a discussion and triage process – cardiac arrest is a category 1 response with an average expected response time target of 7 minutes, and 90% of calls to be responded within 15 minutes. Some mental-health settings on acute hospital sites will also call an ambulance as the sites are large and the mental health unit is remote from the hospital. In many settings, and in particular those relying on an ambulance service response, the expert help will arrive too late to change the outcome – this is because most resuscitation measures work best when used early, i.e., within minutes.

b. Section 1: Resuscitation Committee / service structure: this section of the Standards sets out the need for a resuscitation service structure with a resuscitation lead and potential stakeholders, and terms of reference, and the need for financial support to maintain the service. The standard states 'Every organisation must have an identified board member who is responsible for resuscitation services'. This was required in England by Health Services Circular 2000/028[17], which stated that Chief Executives must ensure that 'a non-executive Director of the Trust is given designated responsibility on behalf of the Trust Board to ensure that a resuscitation policy is agreed, implemented, and regularly reviewed within the clinical governance framework'. This was changed in 2021 by NHS England in 'Enhancing board oversight: a new approach to non-executive director champion roles'[18] to a 'new approach' – this states in Annexe 2 (section 3) that resuscitation issues to be 'overseen through committee structures. Trusts should use their discretion to determine the relevance of each issue to their trust. It should be noted that there will be many other important issues not included in this guidance that trusts should also have oversight of' and ' The Quality Committee may wish to discharge this role, rather than an individual NED, and include this on the committee workplan, ensuring sign-off from the board.'

c. Section 2: Resuscitation Officers: this sets out the need for at least one person to have a lead role in implementing the standards including training, equipment, and incident review, and the requirements for the role.

d. Section 3: Training staff:

    i. 'All healthcare staff must undergo resuscitation training at induction and at regular intervals thereafter to maintain knowledge and skills.' Most settings will aim for annual updates with a period of grace (e.g., 6 months).

    ii. 'Training must be to a level appropriate for the staff members' expected clinical responsibilities.' This means individual units can decide who to train to which level of training. Staff should be trained according to what they are expected to do as part of their clinical role as opposed to their specific clinical role, or whether they are registered or non-registered. Therefore, in my opinion, there is no reason why a non-

[17] NHS Executive. Health Services Circular 2000/028 - Resuscitation Policy.
[18] https://www.england.nhs.uk/publication/enhancing-board-oversight-a-new-approach-to-non-executive-director-champion-roles/ [accessed 21 August 2026].

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registered member of clinical staff should not undertake Immediate Life Support training. ILS-level training is already completed by people in non-clinical roles outside healthcare, including some police officers and members of the Armed Forces, who have no clinical registration and, unlike a healthcare assistant, have no day-to-day exposure to patients.

iii. 'This training must include use of an 'early warning scoring' system to identify deteriorating patients, including use of an escalation protocol to ensure early and effective treatment of patients in order to prevent cardiac arrest. The scoring and escalation system must be the same as that used in actual clinical care. Use of the National Early Warning Score (NEWS) is recommended for these purposes. Use of paediatric early warning scoring systems is recommended for practice with children.' NEWS was launched by the Royal College of Physicians in 2012, and NEWS2 in 2017. Each measured vital sign (pulse, blood pressure, respiratory rate, oxygen saturation level, need for oxygen, consciousness, temperature) is given a score from 0 to 3 based on how far it is from the normal range, and these numbers are added together for a total score. The total score determines the escalation in care required (e.g., increased frequency of vital sign measurement, review by a doctor, calling an ambulance or resuscitation team).

iv. 'Resuscitation Council UK's Immediate Life Support (ILS) course is recommended as a minimum standard for staff who deliver or are involved in rapid tranquilisation, physical restraint and seclusion. This guidance recommends that clinical staff in each mental health inpatient facility should receive regular update training in physical health skills in addition to ILS in response to an assessment of need undertaken by each organisation.' This follows NICE (National Institute for Health and Care Excellence) Guideline NG10, Violence and aggression: short-term management in mental health, health and community settings (Published 28 May 2015)[19]. This replaced NICE CG25, Violence, The short-term management of disturbed/violent behaviour in in-patient psychiatric settings and emergency departments (February 2005). Of

[19] NICE Guideline NG10 – Violence and aggression: short-term management in mental health, health and community settings, 28 May 2015. https://www.nice.org.uk/guidance/ng10 [accessed 11 September 2026].

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note the 2005 guidance specifically stated the RCUK ILS course, whereas the 2015 NICE guidance used the generic term 'immediate life support' such that the training required in this document can in effect be determined locally.

v. 'According to Resuscitation Council UK guidelines, training must be in place to ensure that clinical staff can undertake cardiopulmonary resuscitation. Training and facilities must ensure that, when cardiorespiratory arrest occurs, all clinical staff can, as a minimum:

- recognise cardiorespiratory arrest;
- summon help;
- start CPR;
- attempt defibrillation, if appropriate, within 3 minutes of collapse using an automated external defibrillator or manual defibrillator.'

This guidance is in line with the core guidance for all clinical settings. This 'within 3 minutes' target is specific for a shock to be delivered.

vi. 'All staff must know how to summon help and be aware of the protocol for the settings in which they work. This could be dialling 999 or a standard telephone number within the organisation. We recommend that this should be a common national number, 2222, as recommended by the National Patient Safety Agency.' This needs to be determined locally – the RCUK quality standards document does not cover the issue of staff in standalone units having to know the location of the unit, and how to get into the unit via locked doors. This is a problem owing to a number of factors. Firstly, staffing often relies on agency staff who are not familiar with the unit. Secondly, for 999 calls staff have to know the precise address, the closest access and parking for an ambulance and the entrance for ambulance staff. In addition the caller may be in an office away from the patient and will not always be able to answer all the triage questions asked by the 999 ambulance call-handler/dispatcher such as; age, and whether they are breathing normally. This has been an issue for cases I have reviewed for inquests – solutions include having action cards that include location details and having cordless internal office phones that enable the caller to walk to the patient's location. Finally, mental health inpatient settings may have

a number of locked doors between the entrance and the patient. A unit specific system needs to be in place for resuscitation teams/ambulance crews to rapidly access the patient, and ensuring all staff, permanent and temporary, are aware of it.

vii. 'A variety of methods to acquire, maintain and assess resuscitation skills and knowledge can be used for annual updates of all staff, (e.g. life support courses, simulation training, in-house training, mock-drills, 'rolling refreshers', e-learning, video-based training/self-instruction). The appropriate methods must be determined locally. Training materials such as Lifesaver (www.life-saver.org.uk), developed by Resuscitation Council UK, or very brief videos aimed at members of the public may be appropriate for non-clinical staff. 'Hands-on' simulation training and assessment is recommended for clinical staff.' 'A system must be in place for identifying resuscitation equipment for which staff require special training, such as defibrillators and emergency suction equipment.' Ideally training should take place with colleagues from the same clinical teams using the same equipment that exists in the workplace – this is not commonly done, such that often the first time a group of individuals works together in an emergency is an actual resuscitation attempt. This is an issue for all clinical settings as they require a large number of both permanent and temporary staff to provide a 24/7, 365 days a year clinical service. There are a large number of staff permutations and not all can attend training at the same time. Mock drills or actual patient events are the few times staff will work together during a resuscitation attempt. This makes the need for standardised guidelines, training courses, and equipment more important as everyone irrespective of if they have trained together should be working to the same plan.

viii. 'Specific training for cardiorespiratory arrests in special circumstances (e.g. for children of all ages who have collapsed, patients who are secluded or subject to restraint, and patients who have suffered blood loss) must be provided for medical, nursing and other clinical staff in the relevant specialties.' This acknowledges some of the potential medical emergencies that might occur.

ix. 'Members of mental health resuscitation teams that have specific involvement in resuscitation, particularly team leaders, require a level of training beyond that provided by local ROs [resuscitation officers]. These people should be encouraged and supported to attend nationally recognised courses, such as the Advanced Life Support (ALS) course.' I am uncertain if this actually happens – mental health inpatient units have varying levels of doctor cover over a 24-hour period and some doctors may have done an ALS course during their training, such that those who are relatively new to psychiatric training have the most up to date experience in resuscitation.

e. Section 4: Preventing cardiac arrest: this section outlines the Chain of prevention which refers to staff education, monitoring of patients (NEWS), recognition of the need for escalation of care, calling for help, and the response to the call for help. These quality standards emphasise the need to escalate care when there are concerns and ensuring an appropriate senior response occurs.

f. Section 5: Resuscitation teams and/or responding personnel.

i. This section covers some of the issues I have already addressed including how to call for help. It sets out the skills that staff should be able to deploy prior to ambulance arrival.

ii. 'The staff who respond immediately must have the following minimum skills:

- competent delivery of CPR;
- defibrillation (automated external defibrillation);
- basic airway interventions, including bag-mask ventilation and/or supraglottic airway;
- skills required for immediate post-resuscitation care.

The following skills are strongly recommended:

- intravenous cannulation (as determined by local policy and clinical need);
- intraosseous access (as determined by local policy and clinical need);
- drug administration (as determined by local policy and clinical need).'

These issues are mostly covered on the RCUK ILS course. Staff would not be able to learn intravenous access on the ILS course as it is a skill

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that takes time to acquire, such that only those who are inserting intravenous cannulae and giving intravenous drugs on a frequent basis for other clinical reasons would be able to insert an intravenous cannula in an emergency and give drugs and fluids. The main drug for cardiac arrest is adrenaline. This is why these are left to be determined locally as they may not be feasible in many settings. This does mean that settings need to ensure that those staff who are most likely to provide the immediate response have RCUK ILS training as this teaches the skills that are immediately required to help prevent cardiac arrest or treat cardiac arrest when it occurs.

iii. 'Ideally, the role of team leader in a resuscitation team should be undertaken by a person who is a current Advanced Life Support (ALS) provider or has equivalent training. Immediate Life Support (ILS) providers (or those with equivalent training) can also lead the team while waiting for more skilled help to arrive.' The standards list the skills required to lead the team which include documenting events. An area of improvement for settings would be to have a scribe to document what is happening in real time and if necessary, using a checklist to prompt actions during the resuscitation.

g. Section 6: Resuscitating children in mental health inpatient units. These focus on the need for expertise in caring for children, and having the correct sizes of equipment. The standard includes 'The designated responding staff must have knowledge about the equipment and doses of drugs (the availability of which should be determined by local policy) that children require. They must understand the differences in causes of, and treatment required by cardiorespiratory arrest in children as compared with adults'. This is because nearly all cardiac arrests will be secondary arrests in children. This is not too dissimilar to adults for mental health settings although adults are also prone to primary cardiac arrest.

h. Section 7: Resuscitation in special circumstances. This section states ' Organisations must have policies and procedures in place for resuscitation in special circumstances (e.g. blood loss due to trauma, suffocation, application of a ligature to the neck and hanging, self-harm, seclusion, rapid tranquillisation, etc.)'.

i. Section 10: Resuscitation Equipment. These lists are based on the equipment required to deliver the interventions required that the staff are capable of

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undertaking and will if needed lead to improved outcomes. There are specific adult and paediatric lists equipment and drug lists:

i. There is further information for calling for help ' All settings must have a means of calling for help (e.g. landline telephone [internal or external], mobile telephone with reliable signal, or alarm bell).'

ii. The lists require a local risk assessment including considering 'patient group (e.g. adults, children), incidence of cardiac arrest, training of staff, and access to expert help'.

iii. The need for equipment lists and checks to ensure availability when needed – the frequency of checks is determined locally as in many settings the equipment and drugs are in sealed bags/boxes and the checks only need to be done if the seal is broken to use the equipment or drugs, or the equipment expires, batteries need changing, or drugs expire. In settings where there are a relatively few cardiac arrests equipment will changed as items expire and this determines the frequency of checks.

iv. 'The precise availability of equipment and drugs should be determined locally. The lists include a suggestion on the immediacy with which equipment and drugs should be available:

Immediate - available for use within the first minutes of cardiorespiratory arrest (i.e. at the start of the resuscitation)

Accessible - available for prompt use when the need is determined by the resuscitation team.'

v. The standard also states consulting local experts to ensure appropriate equipment is available as the lists are non-exhaustive. Many items will depend on local policy and staff training based on a risk assessment.

vi. Finally, I note that RCUK has already given evidence on the issues of disparity between the adult and paediatric lists.

2.16 Based on the recent cases of deaths in mental health settings (about 10 in the last 3 years) I have reviewed as an expert and which have often included extensive video footage, there are further themes that I have not mentioned:

a. Non-technical and human factors – in an emergency there is often some randomness to who attends in response to the emergency call (e.g., staff in the

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vicinity, others carrying emergency pagers, ambulance crews) and the order they attend in. This means that those who attend may not have worked together before in an emergency, or know what skills they each have. They need to be able to get organised and communicate effectively, and identify the person with oversight – a team leader who organises staff and ensures tasks are being done in a coordinated manner. This organisation often does not materialise until an ambulance crew or resuscitation team arrives.

b. It is common to see a large group of responders arrive at an emergency but poor care is provided owing to disorganisation, crowding, and a failure to take simple measures such as moving the patient to create more space and 360 degree access to enable treatments and access.

c. Settings often do not include their own doctor on the initial emergency call out/request for help, such that the doctor often arrives relatively late in the process. The skill sets and training of the on-site doctors to deal with these scenarios vary widely, as some may not have worked in acute medical settings for a long time. These doctors may not be permanent staff and may not have knowledge of local systems.

d. I have already mentioned the challenges faced by agency staff in emergencies as they are not familiar with the local setting and do not always know where emergency equipment is kept, or indeed how to get help. This does mean that in settings with large numbers of agency staff, initial inductions and shift briefings, and the need for action cards for staff become more important.

e. Familiarity with equipment – many items such as AED, bag-mask devices, airway equipment, oxygen cylinders, suction equipment are relatively rarely used and staff are not familiar with the contents of the emergency bag or how items work, such as switching on an oxygen cylinder, turning on the suction, or attaching a mask to a bag-mask device. These are often noted as missing equipment or equipment failures rather than user errors. The staff usually most familiar with the equipment, where it is and how it works are the staff whose role is to do the regular equipment checks – this is often healthcare assistants on the permanent staff. This familiarity with the equipment and local systems also supports my earlier opinion that this group would be suitable for ILS training.

Cardiac arrest outcome data in the UK

2.17 There is no formal data collection for cardiac arrest in mental health inpatient settings in the UK. There are two national audits of cardiac arrest both of which display summary reports on their websites:

a. National Cardiac Arrest Audit (NCAA)[20] which started in 2009 collects data on in-hospital cardiac arrests attended by a hospital-based resuscitation team in response to a 2222 call. It is a joint project between the RCUK and Intensive Care National Audit & Research Centre (ICNARC). Hospitals pay a subscription to take part and receive individual reports that benchmark their data against other hospitals and providing data is voluntary. About 200 acute hospitals take part mainly from England, with some from Wales Scotland, and Northern Ireland.

b. Out-of-Hospital Cardiac Arrest Outcomes (OHCAO)[21] registry set up in 2013, and hosted by the University of Warwick, and jointly funded by the RCUK and British Heart Foundation. This collects data on patients who are treated for cardiac arrest by English, Welsh, and Northern Ireland ambulance services in response to a 999 call. Again, data sharing is voluntary by the ambulance services and individual services get individual reports. NHS England also collects some of the data and reports this in its Ambulance Quality Indicators data[22].

2.18 NCAA and OHCAO will therefore include cases of cardiac arrest in mental health inpatient settings if they led to a 2222 or 999 call and response. These cases are not identified separately in these databases, and they will make up a relatively small proportion of all cardiac arrest events in the database. It is feasible with funding and data linkage expertise to identify mental health inpatient events and create a report. This requires linking NCAA and OHCAO data with existing mental health inpatient data, and using patient identifiers such as the NHS number[23], and specialist data analysis. Although I have been involved in and led a number of big data studies[24] [25], the 'nuts and

[20] https://www.icnarc.org/audit/ncaa/ [accessed 21 August 2026].
[21] https://warwick.ac.uk/fac/sci/med/research/ctu/trials/ohcao/ [accessed 21 August 2026].
[22] https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/ [accessed 21 August 2026].
[23] https://www.gov.uk/government/publications/rapid-review-into-data-on-mental-health-inpatient-settings-final-report-and-recommendations/rapid-review-into-data-on-mental-health-inpatient-settings-final-report-and-recommendations [accessed 21 August 2026].
[24] Ferrando-Vivas P, Shankar-Hari M, Thomas K, Doidge JC, Caskey FJ, Forni L, Harris S, Ostermann M, Gornik I, Holman N, Lone N, Young B, Jenkins D, Webb S, Nolan JP, Soar J, Rowan KM, Harrison DA. Improving risk prediction model quality in the critically ill: data linkage study. Southampton (UK): National Institute for Health and Care Research; 2022 Dec.
[25] Martin S, Beecham E, Kursumovic E, Armstrong RA, Cook TM, Déom N, Kane AD, Moniz S, Soar J, Vindrola-Padros C; Collaborators. Comparing human vs. machine-assisted analysis to develop a new approach for Big Qualitative Data Analysis. PLOS Digit Health. 2026 Feb 25;5(2):e0000576.

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bolts' of securing data flows and the analysis requires permissions, an expert team and an organisation such as ICNARC or the University of Warwick.

2.19 Whether there is a good outcome following cardiac arrest depends on patient factors, the cause and treatment of cardiac arrest:

a. A witnessed primary cardiac arrest in a person with few co-existing health problems with early bystander CPR from a trained person, and a shockable initial rhythm with early defibrillation has the best chance of survival. The US casino study is the best example of this.

b. An unwitnessed secondary cardiac arrest, with a non-shockable initial rhythm, and without early bystander CPR and treatment has the worse outcome.

c. The only settings where secondary cardiac arrest has relatively good outcomes is highly-monitored settings (operating theatres, critical care units) where patients are having continuous close monitoring, including beat-to-beat heart monitoring, in the presence of an expert team such that most deterioration is recognised and treated and cardiac arrest prevented. If cardiac arrest does occur and the cause is reversible it is usually rapidly treated and a heartbeat restored.

d. The chances of survival are poorer in patients with co-existing physical health problems such as heart and lung disorders, and severe obesity. This is because it is much harder to restart a heartbeat, and even when a heartbeat is restarted patients will not survive the subsequent treatments required to leave hospital alive. Patients in mental health inpatient settings are a group with an increased risk of chronic physical medical problems, with poorer access to treatments and tend to have a short lifespan[26].

e. Even if a heartbeat is restored, and this is relatively common in younger patients with a secondary cardiac arrest, the duration of low oxygen levels and cardiac arrest will cause a severe brain injury in survivors such that they do not regain consciousness, and require ongoing 24/7 treatments for survival. In this group the most common mode of death is withdrawal of life-sustaining treatments, and end of life care based on clinical decisions made after discussions with families and the known values and preferences of the patient. A severe irreversible brain injury is the mode of death in about two-thirds of patients who are initially resuscitated

[26] A Picture of Health? A review of the quality of physical healthcare provided to adult patients admitted to a mental health inpatient setting. National Confidential Enquiry into Patient Outcome and Death (2022). Available at https://www.ncepod.org.uk/2022phmh.html [accessed 21 August 2026].

following a cardiac arrest outside an acute hospital setting and then subsequently die in the intensive care unit[27] [28].

2.20 I have summarised the headline UK outcome estimates for adults in the Table below:

	OHCA	WARD	ICU	OPERATING THEATRE
Incidence[v]	**1 in 2000**	**1 in 1000**	**1 in 71**	**1 in 3,300**
Cases/year[x]	**30,000**	**20,000**	**3,000**	**1,000**
ROSC[y]	**27%**	**52%**	**71%**	**78%**
Survival to Discharge/ 30 days[z]	**9.5%**	**26%**	**30%**	**62%**

a. [v]My estimated incidence, based on the size of the population in the audit or study.

b. [x]My estimate of cases/year is based on the reported figures in the study and scaling up to the UK population.

c. [y]ROSC is restoration of spontaneous circulation, i.e., when a heartbeat is restored. This usually indicates a sustained ROSC as even when a CPR attempt is unsuccessful, there are sometimes short periods of ROSC.

d. [z]Some audits report survival to hospital discharge, and others up to 30 days – the numbers tend to be similar. The studies do not address functional survival, as many of these survivors will have ongoing problems with cognition and disability[29] [30].

e. OHCA – out of hospital cardiac arrest from OHCAO 999 call data in 2024[31]. This includes 96,057 calls for possible cardiac arrest, 29,241 actually received CPR from the ambulance service. Only 617 were children. 22% had shockable rhythms overall. There is no detailed recent data in these reports for survival by cardiac arrest rhythm – this data is available in the 2018 OHCAO report. The overall survival was

[27] Laver S, Farrow C, Turner D, Nolan J. Mode of death after admission to an intensive care unit following cardiac arrest. Intensive Care Med. 2004 Nov;30(11):2126-8.
[28] Lemiale V, et al. Intensive care unit mortality after cardiac arrest: the relative contribution of shock and brain injury in a large cohort. Intensive Care Med. 2013 Nov;39(11):1972-80.
[29] Pound GM, et al. Long-term functional outcomes and health-related quality of life following in-hospital cardiac arrest (IHCA): A systematic review. Resuscitation. 2025 Sep;214:110673.
[30] Sawyer KN, et al; American Heart Association Emergency Cardiovascular Care Committee; Council on Cardiovascular and Stroke Nursing; Council on Genomic and Precision Medicine; Council on Quality of Care and Outcomes Research; and Stroke Council. Sudden Cardiac Arrest Survivorship: A Scientific Statement From the American Heart Association. Circulation. 2020 Mar 24;141(12):e654-e685.
[31] https://warwick.ac.uk/fac/sci/med/research/ctu/trials/ohcao/publications/epidemiologyreports/ [accessed 21 August 2026].

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9.4% for adults, with about 30% survival for shockable rhythms, 5.3% for PEA, and 1.6% for asystole cases – when reviewing cases in more detail survivors from non-shockable cardiac arrests will usually have favourable circumstances such as a witnessed arrest and very early interventions and rapid restoration of a pulse. The PEA cardiac arrest survivors will also include some patients who had 'pseudo-PEA' and were not in cardiac arrest when they received CPR. In children, survival was 12.1% – the majority (over 95%) of these patients had a non-shockable rhythm.

f. Ward – cardiac arrests occurring in hospital wards and attended by a resuscitation team in response to a 2222 call, from NCAA data in 2024-25[32]. There were 13,085 adult, and 1,028 paediatric patients. About 20% of adult and 5% of paediatric arrests were shockable. Survival[Z] by rhythm in adults was 55% for shockable, 17% for PEA, 11% for asystole. In children this was 61% for shockable, 73% for non-shockable bradycardia (PEA), 37.9% for other non-shockable.

g. ICU arrest data estimates from a UK study of cardiac arrest in intensive care patients[33] between 2020 and 2021. There were 726 patients who arrested out of 53,620 adult patients. These are very sick patients with life-threatening conditions but the close monitoring, and witnessed arrests in the presence of an expert team means the heart is usually restarted, and those who do not survive, usually die from the condition that led to intensive care admission.

h. Operating theatre data from a UK study of cardiac arrests in patients having procedures whilst cared for by an anaesthetist – this study led by me looked at 881 cardiac arrests that occurred during about 2.72 million anaesthetics[34] during 2021-22. This is the most closely monitored group with an expert team with the patient in the operating theatre. Cardiac arrests most commonly occurred in very sick adults and children, having emergency surgery. Most were secondary cardiac arrests with major haemorrhage the most common cause and about 85% of cases had a non-shockable rhythm. An important observation was that about 1 in 18 of the 2.72 million cases had a complication event that could lead to cardiac arrest but was prevented due to close monitoring and rapid treatment.

[32] https://www.icnarc.org/impact/reports/ncaa-public-report-2024-25/ [accessed 21 August 2026].
[33] Darnell R, et al. Critical Illness Related Cardiac Arrest (CIRCA): a prospective investigation of the incidence and outcome of cardiac arrest within intensive care units in the United Kingdom. Resuscitation. 2026 Feb;219:110933.
[34] At the Heart of the Matter. Report and findings of the 7th National Audit Project of the Royal College of Anaesthetists examining Perioperative Cardiac Arrest. Soar J, Cook TM editors. Royal College of Anaesthetists: 2023. https://www.rcoa.ac.uk/research/research-projects/national-audit-projects-naps/nap7-report [accessed 21 August 2026]

2.21 The above data does provide some insight into cardiac arrest outcomes in mental health inpatient settings. I have reviewed mental health inpatient deaths for inquests, and I have worked in hospitals and attended cardiac arrests, including until relatively recently in my current post, occurring in a mental health inpatient unit on an acute hospital site. The following are features of incidents taking place in a mental health inpatient unit:

a. Cardiac arrest is often unwitnessed and there is often a delay in finding the patient, identifying cardiac arrest, and starting CPR, and then correcting potentially reversible causes such as low oxygen levels.

b. The presenting cardiac arrest rhythm is usually non-shockable and staff will often struggle to correct a potentially reversible cause.

c. Even if staff provide reasonable or good CPR, the delay in starting CPR will result in a poor outcome.

d. When there is a good outcome, based on the cases and reviews I have been involved in, it is because treatments including CPR are started before cardiac arrest actually occurs.

e. The expert help following a 2222 call, or 999 call usually arrives too late to have an effect on outcome. Advanced life support with supplemental oxygen and adrenaline will sometimes restore a heartbeat, especially in younger patients with a normal heart, but the duration of cardiac arrest will mean that the patient's brain has been severely and irreversibly damaged at this stage – this group of patients will often die after intensive care admission.

f. Finally, this outcome data does not highlight the probably large number of cases where earlier interventions and treatments by staff, such as preventing the tying of a ligature, removing a ligature, or putting an unconscious and breathing patient in the recovery position (on their side) and giving oxygen have been successful in preventing cardiac arrest. The time window for prevention will depend on the cause of cardiac arrest, and I will address causes later in my report.

g. In my experience, most patients have died owing to failures to prevent cardiac arrest – any failures in the delivery of CPR after cardiac arrest occurs will usually have a minimal impact on outcome as CPR often starts at a stage when the chances of survival are already minimal – unwitnessed cardiac arrest with an initial rhythm of asystole.

2.22 There is some data relevant to my instruction from the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH) annual report published in 2026[35]. This report includes people aged 10 and above who died by suicide in 2013-2023 across all UK countries and includes patients in inpatient settings. The report does not track cardiac arrests and deaths where there was no suicide, it will not identify successful resuscitation attempts, and will include deaths where no resuscitation was attempted. The report findings include:

a. 'There were 953 in-patient deaths by suicide in 2013-2023, representing 5% of patient suicides overall during this time period. This percentage has decreased since 2016, dropping to 4% in 2023. 22 (2%) were aged under 18, representing 2% of all in-patients or 8% of all patients aged under 18; and 91 were aged 18-24, representing 10% of all in-patients or 7% of all patients aged 18-24. The average rate of in-patient deaths over the report period was 5.7 per 10,000 admissions.'

b. 'The proportion of in-patients who died on the ward has increased from 36% in 2013-2016 to 47% in 2020-2023, in part driven by deaths in patients aged under 25 and by an increase in strangulation as suicide method.' Strangulation refers to the use of ligature.

c. '343 (41%) died on the ward; half (413, 49%) had left the ward with staff agreement; and 79 (9%) had left the ward without staff agreement or left with agreement but failed to return.'

3 PREVENTION AND TREATMENT OF CARDIAC ARREST

3.1 Prevention is the best method for preventing death – this applies to all settings including mental health inpatient settings. When a patient becomes unwell with a condition that could progress to cardiac arrest, the best prospect of survival depends on identifying deterioration and intervening to prevent cardiac arrest.

ABCDE approach

3.2 Many of the circumstances causing cardiac arrest have a common physiological process that leads to a stepwise deterioration.

[35] https://sites.manchester.ac.uk/ncish/ [accessed 23 August 2026].

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3.3 The **ABCDE approach** refers to the order for identifying and treating the problems most likely to cause cardiac arrest and death. The order is not arbitrary: it is the sequence by which oxygen gets from the air into the cells that make up the body's vital organ systems (brain, heart, lungs) failure of which can lead to rapid death. Each step depends on the one before it: oxygen in air travels → airway → lungs → blood → heart and circulation → cells that make up the body's organs. A failure at any point stops oxygen reaching the cells and causes organ failures as all cells require oxygen to generate energy in order to function. More specifically:

a. **A – Airway.** The airway comprises the mouth and nose, the throat, and the voice box (larynx), through which air must pass on its way to the lungs. If this passage is blocked nothing further down the chain matters, because no oxygen can get into the body. This is checked and corrected first because airway obstruction is the fastest cause of death. The commonest reason for airway obstruction is loss of consciousness causing the airway to close and the muscles in the throat to relax. Foreign bodies (including those deliberately swallowed), or vomit can also block the airway. When the airway is obstructed, airway opening interventions include changing the position of the head and neck and jaw, suctioning or using forceps to remove vomit or foreign bodies, and inserting airway devices (oral airways, supraglottic airways such as the i-gel, or a tube in the windpipe called a tracheal tube). The insertion of oral airways can be taught as a basic life support skill for clinical staff, and is also taught on the RCUK ILS course. I-gel insertion is also taught on the RCUK ILS course. Inserting a tracheal tube is an expert skill that takes years to acquire to achieve high insertion success rates and is not taught on RCUK courses.

b. **B – Breathing.** About 21% of air is oxygen – with an intact airway normal breathing moves air in and out of the lungs. Oxygen crosses from the lungs into the blood, and carbon dioxide crosses out. If there is no effective breathing effort, or breathing is shallow or obstructed, the blood remains unoxygenated even if the airway is open. Breathing is controlled by the brain. The commonest reasons for the breathing stopping are loss of consciousness and/or airway obstruction. Breathing also stops with a primary cardiac arrest as a lack of blood flow to the brain will make the brain stop working, and the breathing to stop. Once the airway has been opened, if there is no breathing or abnormal breathing, the patient requires interventions to support breathing, called rescue breaths or ventilation. These include using a bag-mask device (a face mask held to the face with a good seal and connected to a bag), or a

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bag connected to a supraglottic airway or tracheal tube. The bag is squeezed by hand (manual ventilation) to cause a chest rise as the lungs are inflated. The bag can be connected to an oxygen cylinder to increase the amount of oxygen given from the 21% in room air and depending on the oxygen flow closer to 100% inspired oxygen – this will help correct low blood and organ oxygen levels (hypoxia) more rapidly. If breathing stops first, consciousness will be lost when the oxygen level in the arterial blood reaches about 60% (normal values are approximately 96 – 99%). The time taken to reach this concentration is very difficult to predict but is likely to be of the order 1-2 minutes[36].

c. **C – Circulation.** There needs to be an effective pump (the heart) and enough blood volume in the system, and enough stiffness (resistance) in the blood vessels to ensure an adequate blood flow to deliver the blood oxygenated in the lungs to the cells that make up the body's organs. If the heart is not beating effectively, or there is insufficient blood volume (e.g., due to bleeding), oxygen will not reach the organs that need it. The brain is very vulnerable to a lack of blood flow – for example compression of the blood vessels at the front neck (carotid arteries) such as after suspension hanging or a chokehold can lead to loss of consciousness in about 10-20 seconds. Apart from in sudden cardiac arrest with a shockable rhythm where chest compressions and early defibrillation are the key interventions, or in major bleeding where stopping the bleeding and restoring blood volume with blood is essential, in all other circumstances, the key interventions are ensuring A (airway) and B (breathing) problems, if they exist, are corrected first or in parallel to restore a heartbeat and circulation. If the blood flow to the cells is poor after A and B have been corrected, C problems are treated with interventions that correct the underlying problem:

    i. Common problems with the heart (pump) include a blockage in the blood supply to the heart (myocardial infarction), a problem with the heart muscle (heart failure), an abnormal heart rhythm (arrhythmia). In a deteriorating patient, all require specific treatments and transfer to an acute hospital.

    ii. The most common reason for a decrease in blood volume is major bleeding (haemorrhage) – the treatment is stopping the bleeding, most

[36] Farmery AD, Roe PG. A model to describe the rate of oxyhaemoglobin desaturation during apnoea. Br J Anaesth 1996;76:284-91.

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simply by applying pressure on the bleeding site or by applying a tourniquet on a limb, followed by correcting the blood volume by giving blood and other fluids.

iii. A further reason may be a decrease in stiffness (resistance) of the blood vessels (vasodilation) – this occurs in conditions like sepsis (severe infection) or anaphylaxis (a severe allergic reaction), and is treated by giving drugs (vasopressors) and fluids.

d. **D – Disability.** This refers to neurological (brain) problems and the commonest issue is a decrease in conscious level – in addition to ABC problems numerous other issues can cause a decrease in conscious level and coma such as seizures, sedative drugs, metabolic issues such as a low blood sugar, a low blood salt (sodium) level, strokes, and head injuries. The treatment is to assess and treat any A, B or C problems and to identify and treat the underlying cause such as a low blood sugar.

e. **E – Exposure.** This is a full examination to identify anything that would otherwise be missed such as injuries, bleeding, rashes, burns, a high or low temperature and identifying and treating these.

f. **ABCDE is physiologically necessary** as each stage is dependent on the one preceding it. Correcting a circulatory problem is of no benefit if the airway remains obstructed, because there is no oxygen in the blood to circulate. Correcting a breathing problem is of no benefit if the heart has stopped, because oxygenated blood cannot be pumped to the organs. The interdependence, however, is not only one-way. A primary C problem – for example, a cardiac arrhythmia or severe blood loss – can cause the brain to be starved of oxygen, resulting in loss of consciousness, which then goes on to cause A and B problems (the airway is no longer protected and may become obstructed, and effective spontaneous breathing may be lost). Equally, a primary D problem – for example, a seizure, or a significant head injury – can itself cause loss of consciousness which then leads to A, B and C problems.

g. **Failure to treat serious life threatening ABCDE problems will lead to ongoing deterioration and cardiac arrest** – the ABCDE approach provides a memorable and logical order with which to identify and treat immediately life threatening problems.

3.4 The ABCDE approach is taught on resuscitation courses including the RCUK ILS and ALS courses – staff can do the interventions and tools that are within their day-to-day clinical skill sets, i.e., you cannot learn interventions such as listening to a person's chest

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with a stethoscope, or inserting an intravenous cannula, or a tube in the windpipe on a 1 or 2 day resuscitation course. You need to know these tasks as part of your usual role so you can then also use them in emergencies. Some ABCDE interventions are relatively easier to learn however such as calling for help, 'shake and shout' to assess consciousness, adjusting head position (head tilt, chin lift) or a jaw thrust to open the airway, giving oxygen by a face mask in a person who is breathing but has low oxygen levels, applying monitors to check pulse, oxygen levels and a blood pressure, and checking blood sugars and correcting low sugars.

Patient states and ABCDE and CPR treatment pathways

3.5 When there is an emergency, patients can be found in different states – although these are along a continuum they can be broken down into the following common states that I have arbitrarily called States 1, 2, 3 and 4 to assist the Inquiry:

a. State 1 – Awake, conscious, breathing, with a heartbeat:
b. State 2 – Unconscious, breathing, with a heartbeat:
c. State 3 – Unconscious, not breathing, with a heartbeat (respiratory arrest):
d. State 4 – Unconscious, not breathing, with no heartbeat (cardiac arrest).

3.6 In States 1, 2 and 3 the patient is alive and can be treated with an ABCDE approach. Those in State 1 are easiest to treat and depending on the cause will have the best outcome, but are at risk of deteriorating through States 2,3 and 4 if not treated, e.g., a ligature can cause loss of consciousness, the breathing to stop and cardiac arrest.

3.7 A sequential deterioration between states is common in secondary cardiac arrest, whereas in primary cardiac arrest a sudden change occurs in a relatively well person from State 1 straight to State 4 as when the heart stops beating there is loss of consciousness and the breathing stops.

3.8 State 3 is when the breathing stops and will certainly lead to cardiac arrest unless breathing and low oxygen levels are restored.

3.9 State 4 is cardiac arrest and is treated with cardiopulmonary resuscitation (CPR) – the person has in effect died at this stage, and death is certain without CPR. Even with CPR, survival is only possible with favourable circumstances as set out earlier in my report.

3.10 The transitions between States 2 to 3 (respiratory arrest) and 3 to 4 (cardiac arrest) are often hard to diagnose for non-experts – I will address this below.

Identifying cardiac arrest and starting CPR

3.11 Identifying the moment cardiac arrest occurs can be difficult not just for lay people but also for healthcare staff. Abnormal breathing (also called agonal breathing) occurs at the time of cardiac arrest in about a third of cases and this is frequently mistaken for normal breathing – it is usually short-lived (less than a minute) but can last for a few minutes and can be sustained by CPR if sufficient blood is being pumped to the brain[37]. Eye opening, abnormal twitching movements, or even convulsions (fitting) can also occur at the onset of cardiac arrest and again these apparent 'signs of life' can also return if early high-quality chest compressions circulate sufficient blood to the brain.

3.12 Unless an individual is experienced in feeling for a pulse, pulse checks are highly unreliable as a means of confirming cardiac arrest, i.e., the presence of a heartbeat – inexperienced individuals (both lay people and many healthcare staff) are unable to feel a pulse even when it is normal, and some think they can feel a pulse when it is absent[38]. The recommendation for lay people to perform a pulse check to confirm cardiac arrest before starting CPR was removed from the guidelines in 2000. The role of pulse checks in deciding if a patient needs CPR was also de-emphasised in training for healthcare staff such that only those skilled in pulse checks should use them, and if there is any doubt in whether a pulse is present or absent, CPR should be started. If a pulse is checked, it has to be a check for a neck (carotid) or groin (femoral) pulse – checking for wrist (radial) pulses is a common mistake.

3.13 As mentioned already, assessment of breathing by lay people and inexperienced healthcare staff is also unreliable and very slow or shallow breathing can easily be missed[39].

[37] Bobrow BJ, Zuercher M, Ewy GA, et al. Gasping during cardiac arrest in humans is frequent and associated with improved survival. Circulation 2008;118:2550-4.
[38] Eberle B, et al. Checking the carotid pulse check: diagnostic accuracy of first responders in patients with and without a pulse. Resuscitation 1996;33:107-16.
[39] Perkins GD, Stephenson B, Hulme J, Monsieurs KG. Birmingham assessment of breathing study (BABS). Resuscitation 2005;64:109-13.

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3.14 Unless they are experienced in resuscitation, i.e., they regularly take part in the care of unconscious individuals, critically ill patients, or individuals with cardiac arrest, it is likely that rescuers will find it difficult to distinguish between those individuals who have stopped breathing and have a pulse (State 3 – respiratory arrest), and those who have stopped breathing and have no pulse (State 4 – cardiac arrest). Starting CPR is therefore the appropriate course of action in both circumstances.

3.15 This means that CPR (chest compressions/rescue breathing with oxygen/ attaching an AED and following prompts/ treating any obvious causes) should be started in any patient who is unconscious, unresponsive and not breathing, or not breathing normally, and pulse checks should not be relied upon in non-expert settings – even in expert settings it is often hard to detect pulses in an emergency. CPR should continue until expert help arrives or the patient shows clear signs of successful resuscitation.

Treating cardiac arrest

3.16 Treatments should follow the guidelines from the Resuscitation Council UK[40]. I do not repeat the guidelines verbatim below, and only include some important features.

3.17 Importantly, in clinical practice only very highly drilled teams of individuals who have practised and rehearsed together manage to provide all the steps in the guidelines without delay, such that in most emergencies there will be initial chaos and omissions – the periods of chaos and uncertainty become shorter, and omissions become less common and less obvious with increasing skill and training.

3.18 Basic life support (BLS), use of an AED, and Advanced Life Support (ALS) interventions are along a continuum of interventions, and staff should do those interventions they are capable of undertaking. The RCUK ILS course teaches basic and some advanced life support interventions and as mentioned earlier fills the gap between basic and advanced training. The RCUK Advanced Life Support (ALS) course teaches both a wider range of advanced intervention and more complex interventions.

[40] https://www.resus.org.uk/professional-library/2025-resuscitation-guidelines [accessed 23 August 2026].

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3.19 Basic life support training for healthcare staff includes chest compressions, airway interventions including a two-person bag mask technique, and use of oral airways, suction, oxygen, and an AED.

3.20 Immediate life support level training includes the basic skills above and use of advanced airways devices called supraglottic airways (the i-gel is the commonest airway), and depending on the rescuer group giving adrenaline and starting to apply the ALS algorithm – this includes organising and leading team members and starting to look for reversible causes whilst awaiting the arrival of a resuscitation team or ambulance crew.

3.21 In mental health inpatient settings, and according to current RCUK guidelines, the interventions for a patient who is in not breathing (respiratory arrest) and progressing to cardiac arrest are:

a. Ensuring personal safety – this is a key step in all resuscitation situations.
b. An initial rapid assessment, and as soon as there is concern summoning help. This may be before an initial shake and shout to assess responsiveness, e.g., when it is clear the person is hanging or has applied a ligature.
c. The guidelines say take up to 10 seconds for an initial assessment – for most rescuers this will often take a little longer, and the aim of the 10 second guidance is to minimise delays.
d. Removing ligatures or unsuspending an individual who is hanging – ligatures should be cut off using a ligature cutter if necessary.
e. The initial call for help should trigger a response that includes additional staff and equipment arriving such that in about the first minute the process of putting the person on the floor on their back, removing a ligature and starting CPR, and ensuring someone is making a 999 or 2222 call should have at least started and ideally been completed.
f. Several actions can be done in parallel when there is more than one rescuer, i.e., some staff are treating the patient, someone is bringing equipment and someone is making the phone call.
g. Specific interventions can be done depending on the training and skills of the rescuers:
    i. CPR can start – the default is 30 compressions followed by 2 rescue breaths. CPR in adults starts with compressions as these can be started

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without any equipment, whereas rescue breaths start when equipment arrives – mouth-to-mouth breaths are rarely used in adult clinical settings as airway and ventilation equipment should arrive when needed. Staff should follow this 30:2 sequence unless they have specifically been trained in resuscitation for children where they have been trained to give 5 rescue breaths followed by a compression to ventilation ratio of 15:2.

ii. Ventilation is more difficult to do – a two person bag-mask technique is recommended – one rescuer holds the mask on the face with a good seal, and the second squeezes the bag. This can be the person doing compressions – they stop every 30 compressions and squeeze the bag to inflate the chest so there is a visible chest rise and once the chest falls they squeeze the bag again to give the second breath. This can be made easier by inserting an oral airway that stops the tongue falling back and obstructing the airway. In many cases the ventilation attempts are unsuccessful even in expert settings and patients get few effective breaths. Some staff, especially those who have done an ILS course may be able to insert an i-gel airway into the back of the throat that can be then connected to the bag. This may make giving rescue breaths and oxygen easier. Resuscitation teams/Critical care paramedics may be able to insert a tube into the windpipe (tracheal intubation) and this may also make ventilation easier – this requires specialist skills and if done poorly may make matters worse by causing interruption in chest compressions, or misplacement of the tube into the food pipe (oesophagus).

iii. An AED can be switched on and will give prompts on what to do including placing pads on the chest and pauses to check the cardiac arrest rhythm and will also guide the rate of chest compression with a metronome. Most cardiac arrest will not require a defibrillator shock such that delays in its use do not usually impact outcome unless rescuers fail to give chest compressions at the appropriate rates and depths – in addition to a metronome, some AEDs will monitor depth of compression and give prompts to the person doing compressions on pushing deeper or faster. In my opinion, an AED should still be used

early. If the patient does have a shockable cardiac arrest rhythm, a shock can be given within 3 minutes. The AED will also guide CPR and do rhythm checks every 2 minutes during the resuscitation attempt. Finally the AED will store time stamped event and heart rhythm data that can be later used for learning and feedback to staff.

iv. An adult AED can be used in children but settings that care for children should have smaller pads for children under 8 years old or under 25 kg so they can deliver a smaller shock energy if a shock is required.

v. When a resuscitation team or ambulance crew arrives they will usually use a manual defibrillator that enables them to look at the cardiac arrest heart rhythm on a monitor screen (shockable rhythms, PEA, asystole) to guide decisions – including stopping resuscitation if there has been prolonged resuscitation. Survival is very rare after about 30-45 minutes of resuscitation with appropriate ALS interventions and treatable reversible causes have been ruled out.

vi. For PEA and asystole, early intravenous access and intravenous adrenaline will improve the chances of restoring a heartbeat – this requires insertion of an intravenous cannula which is not feasible in many mental health settings, or is difficult in some patients (e.g., obese patients, children). An alternative is drilling a needle into a bone in the shoulder (humeral head) or shin (tibia) and injecting drugs into the bone marrow. This (intraosseous) route for giving drugs is less effective than giving drugs intravenously, requires training in inserting the intraosseous needle and again is not commonly available in mental health inpatient settings.

vii. During advanced life support in cardiac arrest, reversible causes are identified using the '4 Hs and 4 Ts' approach:

Hypoxia

Hypovolaemia

Hyper-/hypokalaemia, metabolic causes including a low blood sugar

Hypo-/hyperthermia

Thrombosis (coronary/pulmonary)

Tension pneumothorax

Toxins

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Tamponade (cardiac)

viii. Hypoxia can be treated with oxygen and ventilation (rescue breaths) and this is feasible for ILS-trained rescuers.

ix. Hypovolaemia is treated with fluids including blood and stopping any bleeding – fluids and blood products are not available outside acute hospitals unless the patient is attended by a pre-hospital critical care team. Most of these are charity based helicopter based teams that include doctors and advanced/critical care paramedics support and work with ambulance services such that there are large disparities in access to these services in the UK.

x. A blood sugar measurement can be made by mental health staff and if the sugar level is low and intravenous access and glucose infusion is not feasible, glucose gels can be given into the mouth between the gums and cheek with care to raise the sugar level. This method is less effective and if cardiac arrest is caused by a very low blood sugar, outcome is poor as cardiac arrest occurs at a late stage in the deterioration process.

xi. Temperature can be measured and warming or cooling started by staff.

xii. The other reversible causes require specialist skills to diagnose and treat so will be outside the scope of mental health staff.

3.22 A common issue in patients who become unconscious or have a cardiac arrest is regurgitation of stomach contents ('vomit') into the mouth – this is because valves at the back of the throat (upper oesophageal sphincter) and where the food pipe/gullet meets the stomach (lower oesophageal sphincter) relax such that stomach contents can passively pass up into the mouth – this occurs in about a third of cases of cardiac arrest and commonly before CPR starts[41]. The significance is that chest compressions will force the stomach contents out of the mouth – 'vomiting' is often described by witnesses during CPR. In addition some will get into the windpipe and lungs and block the airways. This makes giving rescue breaths and effective ventilation to correct low oxygen levels very difficult. Depending on the volume and consistency of the stomach contents

[41] Simons RW, Rea TD, Becker LJ, Eisenberg MS. The incidence and significance of emesis associated with out-of-hospital cardiac arrest. Resuscitation 2007;74:427-31.

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portable suction devices will not be very effective, and this will decrease the chances of successful resuscitation.

When not to start CPR and when to stop CPR?

3.23 Deaths can occur in clinical settings when patients are found in cardiac arrest and a decision has been made not to start CPR. The possible reasons include:

a. The patient has a documented and valid do-not attempt CPR (DNACPR) recommendation – there is guidance on decisions related to CPR from the Resuscitation Council UK, British Medical Association and Royal College of Nursing most recently published in 2016[42]. This guidance is currently in the process of being updated. In these circumstances death is often expected as part of a chronic illness, or old age with severe frailty.

b. The patient has cardiac arrest with clear signs of irreversible death such as:

   i. Severe trauma causing unequivocal unsurvivable injuries such as decapitation or destruction of the head.

   ii. Severe total body burns.

   iii. Prolonged submersion – mouth and nose under water for over 90 minutes.

   iv. Severe post mortem changes such as pooling of blood into dependent areas or rigor mortis.

3.24 When there is any doubt, a lack of information or uncertainty such as when the person was last seen alive, or whether they still feel warm, CPR should be started and information gathered whilst awaiting the arrival of the resuscitation team/ambulance service.

3.25 If a patient has CPR including advanced interventions from a resuscitation team/ambulance service, and does not respond, there will come a point where further resuscitation will become futile.

3.26 Ambulance services have specific termination of resuscitation rules that take into account that for many cardiac arrests the precise history is unknown, and the patient's

[42] https://www.resus.org.uk/publications/publication-decisions-relating-cardiopulmonary-resuscitation-3rd [accessed 23 August 2026].

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background history may be uncertain. The current guidance for when to stop CPR includes:

a. If an adult patient is in a non-shockable rhythm at 45 minutes after confirmation of cardiac arrest by the first dispatched ambulance responder, and potential reversible causes have been addressed.
b. In children resuscitation is continued and the child is usually transferred to hospital where senior clinical-decision makers (usually senior doctors) can be involved in the decision to stop CPR.

3.27 Hospital resuscitation teams will usually follow similar decision-making to the ambulance service. The main difference is that resuscitation teams usually arrive at the patient much earlier than ambulance crews and most survivors will have early restoration of a heartbeat (e.g., within about 10-15 minutes). In addition there is often more ready access to senior doctors, rapid blood tests during CPR, and the history and background medical issues of the patient. This does mean that once reversible causes have been addressed, there is a non-shockable rhythm and there are no further feasible treatments for the patient, CPR will be stopped if there is consensus amongst team members – this will usually be at an earlier stage than the 45 minutes in the ambulance service guidance. This would only be relevant for mental health inpatient settings co-located on an acute hospital site and served by a hospital resuscitation team.

3.28 This means in nearly all mental health inpatient cardiac arrest scenarios, the decision to stop CPR will be made by an ambulance crew responding to the 999 call or a hospital resuscitation team responding to a 2222 call.

3.29 In the UK death is diagnosed according to 'A Code of Practice for the diagnosis and confirmation of death, 2025 Update' from the Academy of Medical Royal Colleges[43]. This code states that employing organisations decide who can diagnose death but 'must ensure that all individuals that they employ, who may be expected in the course of their usual duties to diagnose and confirm death, are trained and competent to do so.' Furthermore 'The diagnosis and confirmation of death is distinct from medical certification of cause of death where there is a legal requirement that this is the sole

[43] https://www.aomrc.org.uk/2025-code-of-practice-for-the-diagnosis-and-confirmation-of-death/ [accessed 23 August 2026].

responsibility of doctors.' Violent, unnatural, sudden and unexplained deaths, and deaths of a person in custody or state detention should be referred to the local Coroner.

4 SPECIFIC SPECIAL CIRCUMSTANCES

4.1 I have been asked to address specific 'special circumstances' which have caused deaths in mental health inpatient settings. I will group the circumstances according to the cause and mechanism as far as possible.

4.2 In these types of scenarios, prevention or early recognition of signs and symptoms and effective treatment of the underlying cause will usually prevent cardiac arrest, as cardiac arrest is often secondary and follows a period of deterioration. These special circumstances account for a large proportion of cardiac arrests in previously healthy younger patients in mental health settings. Many of these scenarios occur in predictable circumstances, and this should enable systems and preparations to already be in place to prevent or avoid cardiac arrest. Overnight and unobserved periods carry a particular risk of deterioration and cardiac arrest and death going unnoticed.

4.3 Emergency response in these special circumstances requires training and experience amongst staff in caring for patients with physical health conditions, and relies on systems in place to reliably escalate treatments and get urgent (hours) or emergency (immediate) assistance – these are often lacking in mental health inpatient units especially those that are remote from acute settings.

4.4 In an emergency, staff should use the ABCDE approach to slow deterioration and prevent cardiac arrest, and if cardiac arrest occurs, the delivery of early high-quality chest compressions, effective ventilation, and early defibrillation remains a priority, in addition to identifying and treating the underlying cause.

4.5 A key step for all these scenarios is getting immediate help from colleagues and in parallel getting more expert help via a local acute hospital resuscitation team or the ambulance service – I have already mentioned the need to ensure systems are in place to ensure help is called for and help and equipment arrives without avoidable delay.

Hanging and/or asphyxiation by ligature

4.6 [**GIST:** Hanging involves suspension by a ligature, whereas asphyxiation by ligature occurs without suspension. Ligature is the most common cause of death by self-harm in mental health inpatient settings.]

4.7 The latest evidence from NCISH[44] suggests that the number of deaths from suspension hanging is decreasing as ligature points for suspension have been removed from mental health inpatient settings, and this has been replaced by an increase in ligature strangulation without suspension, especially in younger patients.

4.8 For mental health inpatient wards the NCISH 2024 report for the years 2011-2021[45] includes:

a. Of the 342 patients who died on the ward, 272 (80%) were by hanging or ligature; 207 (92% excluding unknowns) appear to have used a low-lying ligature point and in 18 (8%) there was no ligature point.

[**GIST:** The report found that most deaths involved a low-lying ligature point or items available within the ward environment or to the patient.]

4.9 [**GIST:** Compression of the neck can impair blood flow to the brain and breathing, leading to rapid loss of consciousness and, if not interrupted cardiac arrest. The precise mechanism and timing varies according to the circumstances.]

[44] https://sites.manchester.ac.uk/ncish/reports/annual-report-2026-summary/ [accessed 23 August 2026].
[45] https://sites.manchester.ac.uk/ncish/reports/annual-report-2024/ [accessed 23 August 2026].

4.10 [**GIST:** Following hanging or ligature, impaired blood flow and oxygenation to the brain can lead to impaired or absent breathing and, ultimately, cardiac arrest. Abnormal breathing efforts may persist for a short period even after cardiac arrest has occurred.
Cardiac arrest in these circumstances is not sudden, but occurs after a process.]

4.11 The best evidence for the timing of events following ligature and hanging in humans comes from a series of 14 hanging/ligature events that were filmed. In these 14 cases[46]:

[**GIST:** The filmed cases indicate that loss of consciousness, cessation of breathing and cessation of movement can occur rapidly following hanging or ligature.]

4.12

[**GIST:** The expert considers that cardiac arrest can follow cessation of breathing after a matter of just a few minutes. In hanging or ligature, the progression may be particularly rapid because oxygen levels may already be reduced before breathing stops.][47] [48]

4.13 [**GIST:** Based on the available science, the expert considers that cardiac arrest can occur within a matter of minutes but a variable period following hanging or ligature strangulation, and that greater precision would be speculative.]

[46] Sauvageau A, Laharpe R, King D, et al. Agonal sequences in 14 filmed hangings with comments on the role of the type of suspension, ischemic habituation, and ethanol intoxication on the timing of agonal responses. The American journal of forensic medicine and pathology 2011;32:104-7.
[47] DeBehnke DJ, Hilander SJ, Dobler DW, Wickman LL, Swart GL. The hemodynamic and arterial blood gas response to asphyxiation: a canine model of pulseless electrical activity. Resuscitation 1995;30:169-75.
[48] Safar P, Paradis NA, Weil MH. Asphyxial cardiac arrest. In: Paradis NA, Halperin HR, Kern KB, Wenzel V, Chamberlain DA, eds. Cardiac Arrest - The Science and Practice of Resuscitation Medicine. 2nd ed. Cambridge: Cambridge University Press; 2007:969-93.

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4.14 [**GIST:** The expert considers that serious deterioration can occur between routine observations, underscoring the importance of appropriate observation arrangements and early detection.]

4.15 [**GIST:** The timing of deterioration is difficult to predict. The expert's clinical review indicates that loss of consciousness may be followed very quickly by respiratory deterioration and cardiac arrest if the ligature is not removed and treatments started.]

4.16 Following hanging, loss of consciousness and the breathing stopping, the heartbeat weakens and slows in response to severe hypoxia (low oxygen levels) and the commonest initial heart rhythm is pulseless electrical activity (PEA) followed by asystole ('flat line').

4.17 After ligature/hanging, once cardiac arrest has occurred, the chances of survival are very poor. I have recently led a scoping review of cardiac arrest after hanging[49]. This review identified 45 observational studies with a total of 40,171 cases. In pre-hospital studies, where the denominator was all patients receiving CPR from ambulance crews after hanging, overall rates of survival after CPR ranged from 0.8% (3/399) to 6.6% (80/1209). Most of those who survived had very severe brain damage and disability. The studies with the highest survival rates come from South Korea where unlike the UK, withdrawal of life support in intensive care patients with severe brain injury is uncommon.

[49] Fisher T, Beattie C, Otto Q, Hooper J, Nolan JP, Soar J. Cardiac arrest after hanging: A scoping review. Resuscitation. 2025 Feb;207:110510.

4.18 Conversely, survival in patients after ligature/hanging without cardiac arrest was common, with 12 of 22 studies reporting 100% survival in 307 patients. The remaining 10 studies reported survival rates of between 80.8% (21/26) and 98.7% (157/159) in patients without cardiac arrest. Survival with a return to normal brain function was common in patients who did not have a cardiac arrest after hanging – rates reported in two studies were 81.8% (18/22) to 100% (96/96). This is why some patients will have had previous ligature attempts without cardiac arrest and survived. For example, they may be found conscious and breathing when the ligature is removed, or unconscious and still breathing and improve when the ligature is removed.

4.19 The contrast between the very good outcomes in hanging/ligature patients who do not have a cardiac arrest and the very poor outcomes in those who do have a cardiac arrest is a strong argument for intervening early to prevent cardiac arrest.

4.20 [**GIST:** Early discovery and removal of the ligature are important factors in outcome. The expert considers that delay before discovery increases the risk of cardiac arrest.]

4.21 The key first intervention is removal of the ligature. After cardiac arrest, if CPR is started, oxygen levels corrected and adrenaline given, the heartbeat will often be restored after a resuscitation team/ambulance crew arrives, especially in younger patients. The heart is much more resistant to low oxygen levels in the blood and it is possible to restart the heart after asphyxial cardiac arrest but at a stage when the brain is already damaged

irreversibly. Once this brain damage has occurred, there are currently no specific treatments to reverse it[50].

Choking and/or airway obstruction

4.22 Choking and airway obstruction can occur in mental health inpatient settings due to deliberate swallowing of foreign objects or accidental choking whilst eating.

4.23 There is no UK specific data for choking-related events in mental health inpatient settings that I am aware of; risk factors include rapid and unsafe eating (sometimes linked to medication side-effects or sedation), reduced airway protective reflexes from sedation, and swallowing difficulties in older patients on antipsychotics. This is a recognised cause of potentially preventable death on mental health wards and has featured in individual coronial Prevention of Future Deaths reports that include the need for supervised feeding in higher risk patients.

4.24 [**GIST:** Complete airway obstruction preventing breathing can lead to asphyxial cardiac arrest within a very short period.]

4.25 Staff in mental health settings should be familiar with interventions to treat choking based on the RCUK choking algorithms as follows[51]:

a. Immediately recognise choking (patient unable to speak/cough, clutching throat) – encourage coughing first if still effective and call for help.
b. Within the first minute if coughing is ineffective, up to 5 back blows, then up to 5 abdominal thrusts, alternating, without delay. In infants and smaller children, 5 chest thrusts are given instead of abdominal thrusts, and the child can be laid head down on the rescuer's knees.

[50] McGuigan PJ, Pauley E, Eastwood G, Hays LMC, Jakobsen JC, Moseby-Knappe M, Nichol AD, Nielsen N, Skrifvars MB, Blackwood B, McAuley DF. Drug therapy versus placebo or usual care for comatose survivors of cardiac arrest; a systematic review with meta-analysis. Resuscitation. 2024 Dec;205:110431.
[51] https://www.resus.org.uk/additional-guidance/guidance-choking [accessed 23 August 2026].

c. If the patient becomes unconscious: lower to the floor and start CPR immediately even if cardiac arrest has not occurred – this is because chest compressions may themselves dislodge the obstruction.

d. After each 30:2 cycle, check the mouth briefly for a visible object before giving rescue breaths; rescuers should not perform blind finger sweeps.

e. A laryngoscope and Magill forceps should be available for trained staff to use if the obstruction is not cleared and the patient is unconscious. This involves looking in the back of the throat with a laryngoscope and using forceps to remove the foreign body – this will not be straightforward if the foreign body has passed through the voice box into the windpipe or is lodged in the voice box – using a laryngoscope is technically difficult to learn and do such that only those foreign bodies that can be easily seen in the back of the mouth can be removed with the Magill forceps. Using a laryngoscope may require waiting for a paramedic ambulance crew or hospital resuscitation team, and this may be too late if cardiac arrest has already occurred.

f. There are some newer devices that are a combination of a face mask and plunger that are designed to be held over the mouth and nose and suck out the foreign body – these are widely marketed and available in some settings – they are not currently part of guidelines as the certainty of evidence to support their effectiveness over current interventions is limited. The RCUK has a position statement on these devices and makes no recommendation for or against their use and emphasises that established choking treatments should be prioritised[52].

g. As stated already, the skills required for using a laryngoscope and forceps removal require specific training which is often beyond the ward nursing scope and this is a capability gap on standalone mental health units without an onsite acute hospital with airway expertise.

4.26 If the foreign body cannot be removed and breathing and blood oxygen levels restored the patient will progress to cardiac arrest and survival will be very poor even if the foreign body is removed and a heartbeat restored.

[52] https://www.resus.org.uk/about-us/news-and-events/rcuks-position-use-suction-based-airway-clearance-devices-choking-individuals [accessed 23 August 2026].

Overdose

4.27 Overdose on a mental health inpatient ward is usually of prescribed or hoarded medications. Patients may have also used illicit substances or alcohol alongside prescribed medication and this can make treatments more difficult.

4.28 [**GIST:** The clinical effects and emergency management of an overdose depend on the substance involved. Some overdoses can cause respiratory or cardiac deterioration leading to cardiac arrest. Early recognition, appropriate monitoring and timely treatment, including with appropriate antidotes are important to prevent progression to cardiac arrest.][53]

4.29 There is a risk on mental health wards that an overdose may not be suspected or recognised if observation levels are not sufficiently frequent. If cardiac arrest has already occurred, the standard resuscitation guidelines apply, with drug-specific treatment added for the drugs taken or strongly suspected. Unfortunately, the antidotes that may work effectively to prevent cardiac arrest are usually ineffective once cardiac arrest has occurred. For example, for opioid poisoning the evidence to support giving Naloxone as part of the resuscitation attempt itself is not sufficient to recommend it during cardiac arrest[54] – the benefit of Naloxone is in preventing cardiac arrest, not in treating it once it has occurred.

[53] Soar J, Becker LB, Berg KM, Einav S, Ma Q, Olasveengen TM, Paal P, Parr MJA. Cardiopulmonary resuscitation in special circumstances. Lancet. 2021 Oct 2;398(10307):1257-1268.
[54] Lott C, Karageorgos V, Abelairas-Gomez C, et al. European Resuscitation Council Guidelines 2025: Special Circumstances in Resuscitation. Resuscitation 2025;215:110753

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4.30 Naloxone should be immediately available on any ward caring for patients prescribed opioids or at high risk of opioid misuse. Standalone mental health units will not routinely hold the specific antidotes needed for other overdoses, so the key intervention for these drugs is early recognition and rapid escalation and transfer to an acute hospital, in parallel with local medical care and resuscitation. Telephone advice can be accessed from TOXBASE[55], the National Poisons Information Service for unfamiliar overdoses.

Medication errors as may occur in rapid tranquillisation

4.31 Medication errors are not infrequent in all healthcare settings – the majority of drug errors do not cause any obvious harm, or the harm that occurs is not recognised and under reporting is common. Errors can occur for numerous reasons:

a. These can start with prescribing errors:
    i. Wrong drug, dose, or route.
    ii. Failure to prescribe drugs such as when patients move between settings due to inconsistent information – in my experience for mental health patients drug lists from different sources are often different to what the patient has in their possession on presentation or is actually taking.
    iii. The patient is prescribed a drug that they have had an adverse reaction or allergy to in the past – the documentation of these across different healthcare record systems makes finding a true and accurate drug and allergy list challenging for all clinical settings. Even when there is a list the type of reaction or what happened is not described such that there is both a risk of being given a harmful drug, and a risk of being denied a beneficial drug due to mislabelling in the record.
b. Administration errors:
    i. Lack of drug availability in the ward stock so that drug doses are missed.
    ii. Lack of trained staff to administer drugs so they are not given on time or there are missed doses.
    iii. The wrong drug being given, or given at the wrong dose or route.
c. Some of the drugs used in mental health settings need specific monitoring:

[55] https://www.toxbase.org [accessed 10 September 2026].

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i. Lithium and Clozapine need blood levels monitoring and they have a narrow target range above which they can have toxic side effects.

ii. Many antidepressant and antipsychotic drugs can affect the heart rhythm, specifically prolonging the QT interval on the heart tracing (ECG). The QT interval is a measure of how long it takes for the heart to electrically recharge after each beat. Patients on these drugs require ECG checks to monitor the QT interval. A prolonged QT interval makes the heart vulnerable to abnormal heart rhythms (arrhythmia) and sudden cardiac arrest.

4.32 Medication errors are more common when staffing is short, workload is high, the person giving drugs is interrupted, or there is a need to give drugs in an emergency situation such as rapid tranquillisation.

4.33 Specifically, rapid tranquillisation is used for calming agitated individuals when other de-escalation measures have failed and in accordance with NICE guideline NG10, discussed above – this recommends intramuscular Lorazepam alone, or intramuscular Haloperidol combined with Promethazine, and requires close clinical monitoring of vital signs, hydration and consciousness after administration.

4.34 This requires trained staff to choose the correct drug and dose – this can be done verbally by staff using short checklists, double checking drugs before they are given.

4.35 [**GIST:** The principal risk from medication errors during rapid tranquilisation is excessive sedation, which can lead to serious deterioration or cardiac arrest. The risk is increased where medication is given without appropriate monitoring, particularly where potentially interacting medicines are involved.]

4.36 The risk is greatest early after intramuscular administration and continuous or very frequent observation is needed through this period because respiratory depression or an arrhythmia can occur. Monitoring equipment should be used to help assess the patient and vital signs observations charted on a NEWS chart.

4.37 If the patient is sedated and breathing they should be placed on their side in the recovery position to decrease the risk of regurgitation and aspiration of stomach contents in the lungs, and have vital signs including oxygen levels continuously monitored, and given oxygen if necessary – the patients should be assessed using an ABCDE approach, and treatments escalated as needed. Most patients will recover as the effects of the drugs wear off – depending on the drug and dose this can be over a short period (e.g., 30-60 minutes) or longer.

4.38 Staff administering rapid tranquillisation should have specific training in dose calculation and the risk of cumulative dosing, in addition to ILS training.

Drowning

4.39 On a mental health ward, drowning most often means drowning in a bath rather than open water, and can occur with reduced consciousness from sedating medication, a seizure, or a faint while bathing unsupervised.

4.40 I am not aware of the incidence of drowning events in mental health inpatients.

4.41 The main mechanism of deterioration is asphyxial, as described above for hanging and choking – submersion of the mouth and nose will prevent breathing and there will often be swallowing of water and reflex efforts of the body to prevent water entering the lungs. Cardiac arrest will occur over similarly short time frames, e.g., about 5 minutes.

4.42 Submersion time is therefore the most consistent predictor of outcome.

4.43 The main initial interventions are to call for help and remove the patient from the water or empty the bath. Care should follow a standard ABCDE approach and CPR if there is cardiac arrest – the key intervention is to correct, very low blood oxygen levels.

4.44 Current specific RCUK drowning guidelines recommend five initial rescue breaths before starting the standard cycle of chest compressions and using 100% inspired oxygen when available, then continuing with the standard CPR protocol. A defibrillator should still be attached as soon as one is available, although the initial rhythm is usually non-shockable.

4.45 Prevention and observation policy are the key preventive measures. Staff should also actively look for and treat hypothermia after water immersion, even in a domestic bath, and should consider and treat the underlying cause of the loss of consciousness once the patient is stabilised.

Seizures

4.46 Epilepsy and seizures are common in the mental health inpatient population, both as a pre-existing condition and because many psychiatric medications can lower the threshold for a seizure. Seizures can also occur with drug or alcohol withdrawal.

4.47 The mechanism of cardiac arrest is mixed:

a. Airway obstruction and inhalation of stomach contents after a seizure can cause a low blood oxygen level and an asphyxial arrest.
b. A disturbance of heart rhythm around the time of the seizure can lead to Sudden Unexpected Death in Epilepsy (SUDEP).

4.48 During a seizure, the patient should be protected from injury without being restrained. They should be placed in the recovery position and cared for using an ABCDE approach.

4.49 Most seizures stop within a few minutes. Some patients have consistent patterns of seizures recognised by their carers – if seizures persist this requires emergency rescue medications, especially if they are prolonged (over 5 minutes) or recurrent. Treatment is based on guidance from NICE – Epilepsies in children, young people and adults (Published: 27 April 2022, Last updated: 5 August 2026)[56]. Some patients will have a personal emergency plan.

[56] https://www.nice.org.uk/guidance/ng217/chapter/7-Treating-status-epilepticus-repeated-or-cluster-seizures-and-prolonged-seizures [accessed 23 August 2026].

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4.50 The initial treatment is a benzodiazepine drug given into the mouth or rectally (buccal midazolam, or rectal diazepam) – clinical staff in mental health settings should be able to provide these initial treatments. If appropriate skills are available, intravenous Lorazepam can be given to control seizures. If the first dose of drugs does not work within about 5 minutes, the patient will require expert help (999/2222 call depending on location), and a second dose of medication whilst awaiting help.

4.51 Patients treated with drugs will require close monitoring and care using an ABCDE approach, and vital sign monitoring – those who do not recover full consciousness will need transfer to an acute hospital. Patients may be sleepy after a seizure for a number of hours ('post-ictal state') and this can make assessment difficult. Patients can stop breathing and progress to cardiac arrest and if these occur standard treatments should be followed.

Physical restraint

4.52 Physical restraint can cause physical harm due to injuries but can also cause deterioration and cardiac arrest when the restraint is prolonged and there is a prolonged struggle against the restraint – this causes extreme exhaustion, and a severe metabolic derangement that can cause cardiac arrest and death.

4.53 I am not an expert in the actual physical restraint techniques but have reviewed about 3-4 deaths per year over the past 5 years for Inquests where restraint has had a contributory role.

4.54 Patients with mental health conditions are at increased risk of the effects of restraint as they will often have an altered sense of reality and resist and struggle against the restraint even when they have no realistic chance of overcoming the restraint. When describing the struggle against restraint in my review of cases, the struggle transitions from a voluntary struggle often driven by fear, paranoia and trying to escape the restraint, to an involuntary struggle trying to break free in order to breathe freely and stay alive as the restraint becomes more prolonged and the person becomes exhausted and their physical condition worsens. The person's level of struggle will increase in order to breathe freely and survive and this can lead to staff increasing the intensity of restraint.

4.55 Resistance and struggle against restraint uses a very large amount of energy (much more than if there was no struggle/resistance against restraint). As the body's energy stores wane, this will lead to a build-up of large amounts of acidic metabolites in the blood (e.g., lactic acid) as well as further increasing the levels of adrenaline in the blood as part of the body's natural 'fight, flight or fear' response. Specifically:

a. Initially the body can compensate for this metabolic acidosis by increasing breathing which removes the carbon dioxide from the blood (this is called respiratory compensation), but when an individual becomes exhausted the ability to adequately compensate by increasing breathing diminishes and a vicious cycle ensues leading to a worsening metabolic and respiratory acidosis as the individual fatigues.

b. A worsening severe metabolic acidosis impairs the body's vital functions including consciousness, the heart's ability to effectively pump blood around the body and will also cause changes in blood electrolyte levels (e.g., an increase in potassium) – these can progress to loss of consciousness, the breathing slowing and cardiac arrest. This is because the body's vital organs and processes have an optimal level of acidity (or pH) to function normally (pH of about 7.4) and in the setting of severe exhaustion when the body's pH becomes very acidic, organs including the heart and brain stop working normally. Cardiac arrest occurs at a late stage in this process of metabolic derangement and when it occurs, successful resuscitation is uncommon.

4.56 Although dated and due for review, the National Institute for Health and Care Excellence guidance on managing violence and aggression[57] (2015) includes:

a. Guidance not to 'routinely use restraint for more than 10 minutes'.

b. Consider rapid tranquillisation or seclusion as an alternative to prolonged (over 10 minutes) restraint.

4.57 Staff who use physical restraint should be aware of the risks of restraints and signs of danger such as the patient is sweating, getting hot, breathing rapidly and panting, and getting exhausted as the breathing slows – patients often become quieter, and stop

[57] NICE Guideline NG10 – Violence and aggression: short-term management in mental health, health and community settings, 28 May 2015. https://www.nice.org.uk/guidance/ng10 [accessed 11 September 2026].

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struggling and this is mistaken for the patient calming down as opposed to become critically unwell and at risk of cardiac arrest.

4.58 Some positions like the face down (prone) position can make breathing more difficult during restraint, and this can be worsened if there is pressure on the back of the chest or the arms are held behind the back.

4.59 Continuous monitoring of breathing, colour and responsiveness throughout restraint should be carried out by a designated staff member who is not directly involved in holding the patient – vital signs monitors should be used if feasible. Prone restraint should be avoided by moving the patient to a recovery (on their side) position as soon as it is safe to do so. Any deterioration should be managed with an ABCDE approach.

4.60 Rapid tranquillisation is frequently given during or shortly after restraint – in patients who have a severe metabolic acidosis and relying on a rapid respiratory rate to compensate for this, sedation can be dangerous as it may suppress the breathing and prevent any respiratory compensation and worsen deterioration – sedation therefore requires greater caution and close observation. This is why NICE guidance recommends the need for ILS-trained staff in settings using rapid tranquillisation.

Administration of electro-convulsive therapy (ECT)

4.61 ECT involves passing a small current through the brain to induce a brief seizure and is used for specific psychiatric conditions – the procedure requires a short anaesthetic with a muscle relaxant to prevent discomfort and injuries from the seizure. The number of ECT procedures undertaken has decreased. I have done anaesthetic sessions for ECT in the past during my training and as a consultant.

4.62 In the UK, anaesthesia for ECT must be administered by a consultant anaesthetist, or by a non-consultant career grade doctor or resident under the supervision of a named lead consultant anaesthetist; unsupervised doctors in the most junior anaesthetic training grades (CT1 and CT2) are not permitted to administer anaesthesia alone.

4.63 The biggest risk with ECT is that it is usually done on sites remote from an acute hospital and there is less availability of emergency anaesthetic back up if something goes wrong.

In addition, the patients may have co-existing medical problems that increases the risks of anaesthesia. A trained anaesthetic nurse or Operating Department Practitioner, whose sole responsibility is to assist the anaesthetist, must be present throughout treatment and recovery, alongside an ECT practitioner, at least one registered nurse, and a recovery-trained practitioner.

4.64 There is a voluntary UK Electroconvulsive Therapy Accreditation Service (ECTAS)[58] that is a peer-led network run by the Royal College of Psychiatrists (RCPsych). ECTAS's Quality Standards for ECT Clinics set out the main mitigations to minimise risk, including that all registered clinical staff present during a treatment session hold in-date Immediate Life Support training (or an equivalent standard) – I am not aware of a clinical rationale for restricting the ILS requirement to registered staff.

4.65 In addition the ECTAS standards state that patients assessed by the anaesthetist as having a high-risk of complication are treated in an environment allowing rapid intervention – such as an acute hospital – rather than a standalone ECT clinic. It is not clear to me if all ECT clinics have completed ECTAS accreditation and how closely adherence with the standards is regulated and assessed.

4.66 A large systematic review of 82 studies (106,569 patients and 786,995 ECT treatments) found major adverse cardiac events of any kind occurred in roughly 1 in 50 patients, with an overall death rate of 0.42 per 1,000 patients and 0.06 deaths per 1,000 ECT treatments[59].

4.67 The patient is under continuous monitoring throughout the procedure and cared for by a trained anaesthetic doctor which decreases the risk of harm during the procedure as any adverse events occurring should be treated before cardiac arrest occurs. Abnormal heart rhythms can occur during the seizure but most will resolve without treatment. Other complications are related to managing the airway and breathing in an unconscious patient to prevent low oxygen levels during the period the patient is unconscious and not breathing during anaesthesia.

[58] https://www.rcpsych.ac.uk/improving-care/ccqi/quality-networks-accreditation/ectas [accessed 23 August 2026]
[59] Duma A, et al. Major Adverse Cardiac Events and Mortality Associated with Electroconvulsive Therapy: A Systematic Review and Meta-analysis. Anesthesiology. 2019 Jan;130(1):83-91.

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4.68 As ECT is done in a planned manner, most risks can be mitigated - including ensuring the patient is risk assessed and the ECT is done in an appropriate setting and in accordance with ECTAS standards, ensuring the patient is appropriately starved, and the anaesthetic and recovery team have appropriate skills to manage the common adverse events that may occur.

Serious self-harm by cutting

4.69 Self-harm by cutting is common in mental health settings, but death from blood loss is relatively uncommon as fatal haemorrhage from cutting requires injury to large blood vessel followed by a major bleeding. The mechanism of cardiac arrest is blood loss leading to a critically low circulating blood volume (hypovolaemia) and pulseless electrical activity – a different mechanism from the asphyxial cardiac arrest described above, and requiring a different immediate response.

4.70 For cardiac arrest to occur the person will need to lose about half their circulating blood volume, i.e., about 2.5 litres blood loss in a 70 kg person – for context a blood donation by an adult that causes no harm involves taking about 0.5 litres (about 1 pint) in a short period of time. Fatal blood loss would require injury to a major vessel with deeper penetrating injuries to the neck or groin blood vessels, or a slower period of prolonged bleeding from smaller blood vessels in combination with other causes of self-harm such as drug overdose.

4.71 Immediate direct pressure on the bleeding point is the key intervention to stop bleeding. If direct pressure does not control catastrophic bleeding from a limb, a tourniquet should be applied. If there is a wound this can be packed and pressed upon. If signs of shock or cardiac arrest develop, staff should call for help, start CPR if there are no signs of life, and continue haemorrhage control at the same time – these are parallel, not sequential, actions.

4.72 Restoring the circulating blood volume is a higher priority than chest compression alone once major bleeding is controlled – this requires blood or blood products, which cannot be delivered on a mental health ward. Tourniquets and haemostatic dressings should be part of standard resuscitation equipment on any ward where serious self-harm by cutting is a recognised risk. Clinical staff should be trained to recognise the signs of

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shock and how to stop blood loss by compression or tourniquet to prevent progression to cardiac arrest.

Burns

4.73 Self-harm by burning or fire-setting resulting in significant burns is uncommon but recognised in mental health units. A 2024 review of self-inflicted burns presenting to a UK regional burns centre over an 18-year period (2003–2021) identified 285 cases, predominantly male (63%), with a pre-existing mental health disorder in 75%; flame burns were the most frequent mechanism (82.1%) and median total body surface area burned was about 10%, and 21% of patients died[60] – this data is not specific for mental health inpatient settings, however.

4.74 Survival after a burn depends on:

a. Age and pre-existing health of the person.
b. Severity of the burn injury – this is determined by the size and depth of the burn.
c. Severity of inhalational injury.
d. Toxic effects of carbon monoxide, hydrogen cyanide or low oxygen levels.
e. Any delays in rescue and starting treatments.
f. Avoiding complications of burns after initial survival, including infection.

4.75 Again, prevention is a key step in minimising harms and deaths from burns. The mechanism of cardiac arrest is mixed: airway or inhalational burns cause airway swelling and an asphyxial cardiac arrest; burns affecting a large surface area cause fluid loss and hypovolaemia as described above for self-harm by cutting; and fire in an enclosed space can cause carbon monoxide or cyanide poisoning, which stop the body's cells from using oxygen even if the airway and breathing are otherwise normal. Self-immolation (deliberately setting oneself alight) is very uncommon in the UK and is most commonly fatal. Inhalational injuries after burns are caused by:

a. Breathing in hot gases – inhalation causes direct damage to the airways and lungs.
b. Inhalation of smoke particles directly irritates the airways and lungs.
c. Toxic effects of carbon monoxide (CO) and hydrogen cyanide (HCN) generated by the fire.

[60] Amirize E, Kankam HKN, Abdulsalam A, Choudhary R, Walker H, Moiemen N. Self-inflicted Burns: The Experience of a UK Regional Burns Center. J Burn Care Res. 2024 Jan 5;45(1):80-84.

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d. The effects of fire consuming oxygen in the air and decreasing ambient oxygen levels, especially in an enclosed space.

4.76 Once a fire is started, an individual's survival depends on a combination of factors including their proximity to the fire, exposure to smoke and toxic fumes, decreased ambient oxygen levels, the duration of exposure, and the ability to escape or be rescued before becoming incapacitated by unconsciousness or burn injuries. In my opinion, on the balance of probabilities, the chances of survival listed in order of best to worse based on their initial condition are:

a. Conscious with no or minor burns, and/or no or minor breathing problems from inhalational injury (smoke fumes, carbon monoxide or cyanide), that require no or minor treatment (e.g., dressings) – people who escape or are rescued early.
b. Conscious but with breathing problems from inhalational injury (smoke fumes, carbon monoxide or cyanide), that improve with oxygen therapy by face mask, and minor or no burns.
c. Unconscious due to breathing problems due to inhalational injury (smoke fumes, carbon monoxide or cyanide), that require assistance with breathing (oxygen face mask, or ventilator), and minor or no burns.
d. Conscious or unconscious with major burns (high surface area) and any breathing problems such that the combination required high flow oxygen, or sedation and a ventilator and care in a burns centre.
e. Unconscious, not breathing, and no heartbeat (i.e., cardiac arrest) with or without burns – this is nearly always unsurvivable even with advanced resuscitation.

4.77 If a fire does occur – the first steps are to minimise the risk to rescuers, staff and other patients, and then rescue the patient – these can occur in parallel if feasible. Rescue may not be straightforward if the patient is not easily accessible and there is smoke and heat, and this can lead to delays in rescue and treatment.

4.78 The initial management of the burns patient follows an ABCDE approach including managing any burns by cooling them with cold water, removing any clothing and covering them in cling film. Patients should be given oxygen. Severe burns will need an emergency 999 response and transfer to a major trauma centre or burns centre/unit for ongoing specialist treatments for burn and inhalational injury.

4.79 Fire safety and what to do in a fire should be part of mandatory training for all staff including specific measures for clinical areas. Managing burns will be based on basic first aid training, and relying on a 999 response for most settings.

Falls from height

4.80 A fall from height is a relatively uncommon event on mental health wards that can cause serious injuries and death. Sometimes a fall follows a seizure or a sudden loss of consciousness rather than being a deliberate act. Some falls will result in less severe injuries, but even these may pose a risk to the patient and need emergency care.

4.81 Cardiac arrest can occur through several different mechanisms including severe lethal brain and spinal injuries, massive bleeding, lung collapse under pressure and squeezing the heart (tension pneumothorax), blood building up around the heart and stopping it filling properly (cardiac tamponade) – all will lead to different combinations of ABCDE problems and often rapid death. Even with expert critical care treatments and surgery traumatic cardiac arrest has a very poor outcome.

4.82 Staff in mental health units will have little experience and few resources in managing major trauma. The same is true for most acute hospital resuscitation teams as they mainly deal with medical emergencies. These patients usually require an ambulance service and pre-hospital critical care response, provision of which is variable in the UK, life saving measures at the scene followed by transfer to a major trauma centre.

4.83 Whilst awaiting expert help, staff can follow the ABCDE approach and start CPR as appropriate with measures to control any obvious bleeding, and other simple first aid measures. Staff can take precautions against worsening any spinal injuries by holding the head and neck aligned with the body.

4.84 Prevention and environmental risk assessments are key as the level of harm is determined by the severity of the fall.

Headbanging

4.85 Repetitive headbanging is a recognised self-injurious behaviour and the level of harm can be mitigated if feasible with protective equipment such as helmets and

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environmental padding. This is not a condition I treat in my usual clinical work and there is limited literature on this topic and its effects. A recent five-year cohort study across a secure UK mental healthcare institution with 900 beds found 421 patients engaged in headbanging over five years, representing less than 5% of the total patient population, with most classified as low harm and not requiring hospitalisation[61]. There were more cases in females and those under 25 years of age. No deaths were reported.

4.86 Most of the effects of headbanging will lead to brain damage over a period of time as opposed to a sudden loss of consciousness – if a headbanging episode causes reduced consciousness, care should follow an ABCDE approach, and starting CPR if appropriate, and getting expert help.

Electrolyte abnormalities resulting from eating disorders and/or malnutrition

4.87 I do not have expertise in the care of this group of patients. UK eating disorder services now follow the Royal College of Psychiatrists' Medical Emergencies in Eating Disorders (MEED) guidance, CR233 (2022)[62], which formally superseded the original MARSIPAN report (CR189, 2014) and Junior MARSIPAN (CR168) in 2022. MEED extends the same risk framework across the age range and across eating disorder diagnoses rather than anorexia alone.

4.88 These patients should be managed in specialist eating disorder units and sicker patients may need to be in an acute hospital setting jointly under the care of a specialist in eating disorders and medical physician. Patients who are medically unstable have severe electrolyte abnormalities that require frequent measurement, intravenous replacement and heart monitoring due to risk of abnormal heart rhythms (arrhythmia) will require acute hospital admission. The MEED guidelines provides details on how to manage specific electrolyte abnormalities.

4.89 [**GIST:** Electrolyte abnormalities can arise through a range of factors associated with eating disorders and malnutrition, including inadequate intake and changes in eating and fluid intake. These abnormalities can become clinically significant and require careful monitoring and treatment.]

[61] Doyle I, et al (2025). The incidence of headbanging as a form of self-harm among inpatients within a secure mental health setting – the impact of age, gender and diagnosis. The Journal of Forensic Psychiatry & Psychology, 36(5), 697–710.
[62] https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2022-college-reports/cr233 [accessed 23 August 2026].

4.90 [**GIST:** Severe electrolyte abnormalities can cause dangerous cardiac arrhythmias which may progress to cardiac arrest.]

4.91 These risks usually occur over days rather than minutes to hours such that the primary aims are prevention and ensuring the patient is in a setting where these risks can be managed.

4.92 If an arrhythmia is identified or a collapse occurs, the standard ABCDE approach and CPR resuscitation algorithm applies, with urgent correction of potassium, magnesium and phosphate given alongside it, and intravenous magnesium is specifically indicated for torsades de pointes. Specific issues can occur with deciding emergency drug dosing in very low weight adults – currently there are no specific RCUK guidelines for dosing of adrenaline for very low weight adults and standard dosing should be used. In addition these patients will be more prone to injuries from chest compression such as rib fractures but this should not change the need for CPR. Correcting very low electrolyte values in an acute emergency is only really possible in settings with rapid point of care

testing for electrolyte levels with a blood gas analyser, and an on-site biochemistry laboratory.

Sepsis

4.93 Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection – in other words the body has an extreme overactive response to an infection such as a chest infection and this leads to organ failures and possibly death.

4.94 In mental health inpatient settings this requires staff to be able to recognise signs of an infection and when patients are unwell and ensure they are treated. Patients with a reduced capacity to report symptoms are at particular risk of delayed recognition. Most infections respond to standard simple treatments (antibiotics), but some patients with an infection will develop sepsis. Sepsis is more common in patients with pre-existing chronic medical conditions and frailty, but can also occur in healthy individuals.

4.95 Recognition requires suspicion (could this be sepsis?) and rapid clinical assessment including NEWS scoring and treatment according to the sepsis care bundles. These bundles are set out in NICE guidelines on sepsis – these are separate for patients over 16[63] and under 16[64].

4.96 High risk criteria for sepsis are based on clinical signs, suspicion of infection and vital sign measurements and are feasible if staff have appropriate physical health training. The initial treatments include intravenous antibiotics, intravenous fluids and oxygen and measuring blood lactate levels, taking blood cultures and monitoring urine output in the first hours after recognition – these interventions are called the 'Sepsis Six'. Many standalone mental health units will not have intravenous antibiotics and will need rapid ambulance or medical escalation.

4.97 Sepsis causing death usually occurs over several hours and cardiac arrest typically follows a period of physiological deterioration that should be detectable well before cardiac arrest occurs and by using the NEWS score – sepsis-related cardiac arrest is therefore one of the more preventable special circumstances in this report if monitoring

[63] https://www.nice.org.uk/guidance/ng253 [accessed 23 August 2026].
[64] https://www.nice.org.uk/guidance/ng254 [accessed 23 August 2026].

and escalation are working as intended, although once cardiac arrest occurs the initial rhythm is usually non-shockable and outcomes are very poor.

Diabetes

4.98 The incidence of diabetes is increasing, especially type 2 diabetes that is more common in obese and sedentary patients – staff in mental health settings will therefore need to be familiar with caring for patients with diabetes.

4.99 Insulin that is used in the treatment of diabetes (mainly in patients with type 1 diabetes and some with type 2 diabetes) is a high-risk medication, and unsafe insulin management causes preventable harm across all hospital inpatient settings, not only mental health wards. A 2026 investigation by the Health Services Safety Investigations Body (HSSIB) found that inpatients with insulin-dependent diabetes continue to come to harm or die in hospital because their diabetes is not appropriately managed[65]. Complications such as diabetic ketoacidosis in hospital are common because insulin is omitted or under-dosed relative to the clinical need. A recurring theme was inadequate staff training. These general risks are compounded on mental health wards. Nursing staff have less routine exposure to insulin therapy and diabetic emergencies than colleagues on general medical wards.

4.100 The ethos for diabetic care is that patients check and manage their own insulin and diabetic medications – secure storage requirements on a psychiatric ward – designed to reduce the risk of insulin and other drugs being used as a means of self-harm – can work against safe, timely diabetes management: patients who safely self-administer insulin at home are often prevented from doing so in hospital because of local restrictions on access to needles and medication, or staff reluctance linked to accountability concerns, which can itself lead to insulin being omitted, delayed, or given by staff unfamiliar with the patient's usual regimen. Prescribing insulin is difficult as patients will adjust their dose based on what they have eaten and what their blood sugar measurements are and patients will often know more about their management and dosing than the staff caring for them. Insulin availability is a balanced risk as insulin has a risk of misuse for deliberate self-harm and suicide.

[65] https://www.hssib.org.uk/patient-safety-investigations/insulin-supporting-safe-administration-in-inpatient-settings/investigation-report/ [accessed 23 August 2026]

4.101 The Joint British Diabetes Societies (JBDS) for Inpatient Care group has created specific guidance for mental health settings – JBDS 13 The management of diabetes in adults and children with psychiatric disorders in inpatient settings (May 2017)[66]. This includes:

a. 'It is estimated that up to 20% of adult psychiatric inpatients have diabetes' because antipsychotics can cause weight gain and glucose dysregulation.
b. Mental health trusts should 'Implement diabetes-related competencies as part of mandatory training with particular focus on managing and avoiding hypoglycaemia and safe use of insulin'.

4.102 In addition, ward staff should be trained not only to recognise and treat routine hypoglycaemia (low blood sugars) and the red flags of ketoacidosis, but to also to consider intentional insulin overdose as a differential diagnosis in any unexplained, severe or recurrent hypoglycaemic episode, particularly in a patient known to have – or to have had – access to insulin, whether their own or another patient's.

4.103 Most diabetic emergencies, occur with a very low (hypoglycaemia) or high blood glucose (diabetic ketoacidosis – DKA, hyperosmolar hyperglycaemic state – HHS), although they can occur with a blood glucose in the normal range.

4.104 The standard ABCDE approach to all patients includes the need to check a blood glucose at the bedside so ward staff should be capable of measuring a blood sugar.

4.105 A low blood glucose can be managed with giving glucose replacement orally, by an oral gel or by intravenous glucose, or an intramuscular injection of Glucagon. When the glucose remains persistently low and difficult to treat insulin overdose should be suspected and emergency help requested – these patients may need prolonged and high dose glucose infusions.

4.106 Confirmed or suspected diabetic ketoacidosis (DKA) or hyperosmolar hyperglycaemic state (HHS) are treated with an intravenous insulin infusion, hourly glucose/ketone monitoring, and staged electrolyte and fluid replacement under protocol-driven care

[66] https://abcd.care/resource/current/jbds-13-management-diabetes-adults-and-children-psychiatric-disorders-inpatient [accessed 23 August 2026].

that is not deliverable on a mental health ward and these patients will require transfer to an acute hospital.

4.107 The threshold for escalation should be low, and mental health wards should have clear, rehearsed pathways for urgent transfer – including when to call an ambulance versus arranging direct transfer – reflecting the fact that definitive management of these presentations is not usually deliverable on a standalone mental health ward. Progression to cardiac arrest is usually slow over hours such that there is usually time to transfer patients.

5 SUMMARY

5.1 Cardiac arrest in mental health inpatient settings is usually secondary – the end point of a period of deterioration – rather than the sudden primary arrests that most resuscitation training is built around. The clinical interventions most likely to change outcome are therefore early recognition and prevention of the cardiac arrest and not cardiopulmonary resuscitation following the cardiac arrest.

5.2 No dedicated national dataset captures incidents of cardiac arrest specifically on mental health wards. The existing national audits (NCAA, OHCAO) will include some of these cases but do not identify them separately; a linked dataset is feasible with appropriate funding and permissions but does not currently exist.

5.3 The ABCDE approach provides a consistent clinical framework across nearly all the special circumstances addressed in this report. Outcome is often determined by a failure or delay in the process of prevention, or earlier simpler ABCDE interventions rather than by the standard of CPR and resuscitation after cardiac arrest has occurred.

5.4 In my opinion, the level of training required by the staff who are required to provide immediate care should be at the Immediate Life Support (ILS) level, as this training covers both an ABCDE approach to prevent cardiac arrest, as well as both basic and some advanced interventions to treat cardiac arrest.

5.5 The time taken for a local acute hospital emergency response or an ambulance service response will mean that advanced resuscitation interventions are often too late to make any difference to outcome.

6 DECLARATION AND STATEMENT OF TRUTH

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

[I/S]

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14 SEPTEMBER 2026