NHS
The Princess Alexandra Hospital
NHS Trust

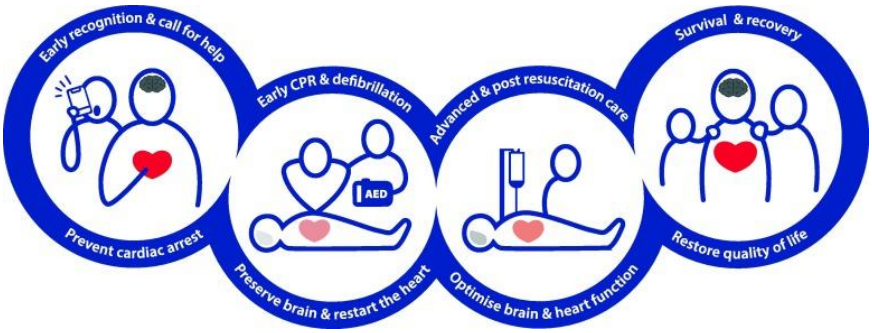
Adult Level 2 Resuscitation Training Supporting Material

Resuscitation Services
The Princess Alexandra Hospital NHS Trust

Cardiac arrest in adults is often preceded by a period of physiological deterioration (Resuscitation Council (UK) 2010). Many in-hospital cardiac arrests are predicative events not caused by a primary cardiac pathology, however the deterioration in a patient's physiological condition is often poorly recognised and treated (NCEPOD 2012). This marked deterioration is evident in approximately 73% of patients who suffer a cardiac arrest (NCEPOD 2012). It is known that survival from an adult in-hospital cardiac arrest is poor. It has been shown that fewer than 25% of patients who suffer an in-hospital cardiac arrest with survive to hospital discharge (RCUK, 2025).

Recent data collected regarding in-hospital cardiac arrests suggests that in the majority, approximately 85%, the primary rhythm was non-shockable and therefore would not benefit from defibrillation (NCEPOD 2012). Non-shockable rhythms are associated with a poorer prognosis (Resuscitation Council (UK) 2010). The above data clearly suggests that healthcare institutions must have systems in place to facilitate earlier recognition of patients who are deteriorating and must have health professionals who are trained to respond to these situations and offer appropriate interventions to prevent further deterioration.

Chain of Survival



Resuscitation Council (UK) 2025

ABCDE Approach

Assessment of the unwell adult patient is based on a structured systematic assessment incorporating airway, breathing, circulation, disability and exposure, the ABCDE approach.

Airway:

Assessment of the airway should include:

- Airway patency- is the airway clear, is it obstructed or is it at risk of obstruction

Interventions to optimise a patient's airway may include:

- Airway opening manoeuvres e.g. head tilt chin lift and/or the jaw thrust
- Insertion of an airway adjunct e.g. Oro-pharyngeal airway, nasopharyngeal airway or Laryngeal Mask Airway
- Patients who have an obstructed airway should receive high flow oxygen therapy via either a non-rebreathe mask, bag-valve-mask or any other appropriate oxygen delivery system to reduce the risk of hypoxia associated with an airway obstruction

The immediacy of the situation should always be assessed and health care professionals of all grades and experience are advised to have a low threshold for asking for additional help with a critically ill patient. In the context of an airway obstruction this may be an Anaesthetist or the cardiac arrest team.

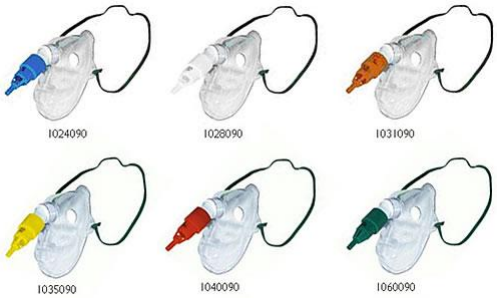
Breathing:

Assessment of a patients breathing may include the following:

- Inspection - looking for the patient's respiratory rate, evidence of symmetrical chest wall movement, use of accessory muscles, peripheral or central cyanosis, and obvious chest wall deformity/injuries. Oxygen saturation monitoring may be helpful, however health care professionals should remember that oxygen saturation do not provide information on ventilation but may be used as a guide to assist with oxygen therapy.
- Palpation - assessing for equal and adequate chest wall movement, chest wall tenderness, insuring the trachea is central.
- Percussion - noting resonance or other sounds.
- Auscultation - ensuring the patient has equal air entry bilaterally, noting any additional sounds and or the absence of sound

Interventions to help with breathing may include:

- Ensuring the airway is open and patent
- Oxygen therapy-in the critically unwell patient should be initiated at high flow. When appropriate the patient's oxygen therapy should be titrated to achieve target saturations as outlined by the British Thoracic Society.
- Appropriate positioning to facilitate better chest wall movement
- Treatment of the underlying cause of the respiratory insufficiency



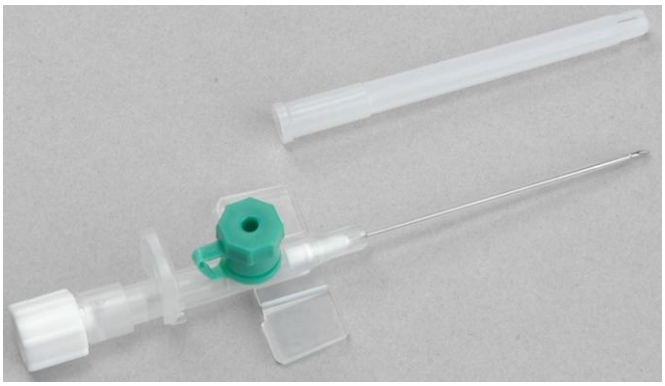
Circulation:

Assessment of the patient's circulatory system may include the following:

- Palpation of the patients pulse and assessing their heart rate - the absence of distal pulses may imply distal hypo perfusion
- Assessment of the patient's blood pressure - this should ideally be undertaken manually.
- Capillary refill time.
- Urine output.
- 12 lead or 3 lead ECG-dependant on clinical presentation.
- Assessment for any obvious internal bleeding into cavities e.g. abdominal distension or abdominal pain on palpation.
- JVP

Interventions to assist with circulation may include:

- Ensuring the patients airway and breathing has been optimised.
- Obtain or verify the presence of vascular access - either intravenous or Intraosseous. Heath Care professionals should have a low threshold for consideration of intraosseous needle placement in the critically unwell patient where obtaining intravenous access is either difficult or impossible.
- Consider intravenous or intraosseous fluid therapy - crystalloids would be a suitable fluid to use initially.
- Specific end goal therapy based on clinical presentation e.g. revascularisation for Acute Coronary Syndromes, surgical opinion for surgical presentation.



Disability:

Disability assessment includes:

- Assessment of the patient's level of consciousness - using either the GCS or the AVPU systems
- Assessing the patient's pupillary reaction to a light stimulus - equal and consensual
- Assessment of the patient's capillary blood sugar level
- Gross assessment of the patient's neurological function - power and tone of limbs and facial symmetry.

Interventions for disability may include:

- Reviewing what medications the patient has received or has taken-these may have an adverse effect on their level of consciousness
- Restoration of a normal blood sugar level.

Exposure:

Exposure assessment includes:

- Full top-toe, front and back, assessment of the patient's body looking for rashes, signs of internal or external haemorrhage, limb deformities, bruising, degradation of skin integrity

Sepsis:

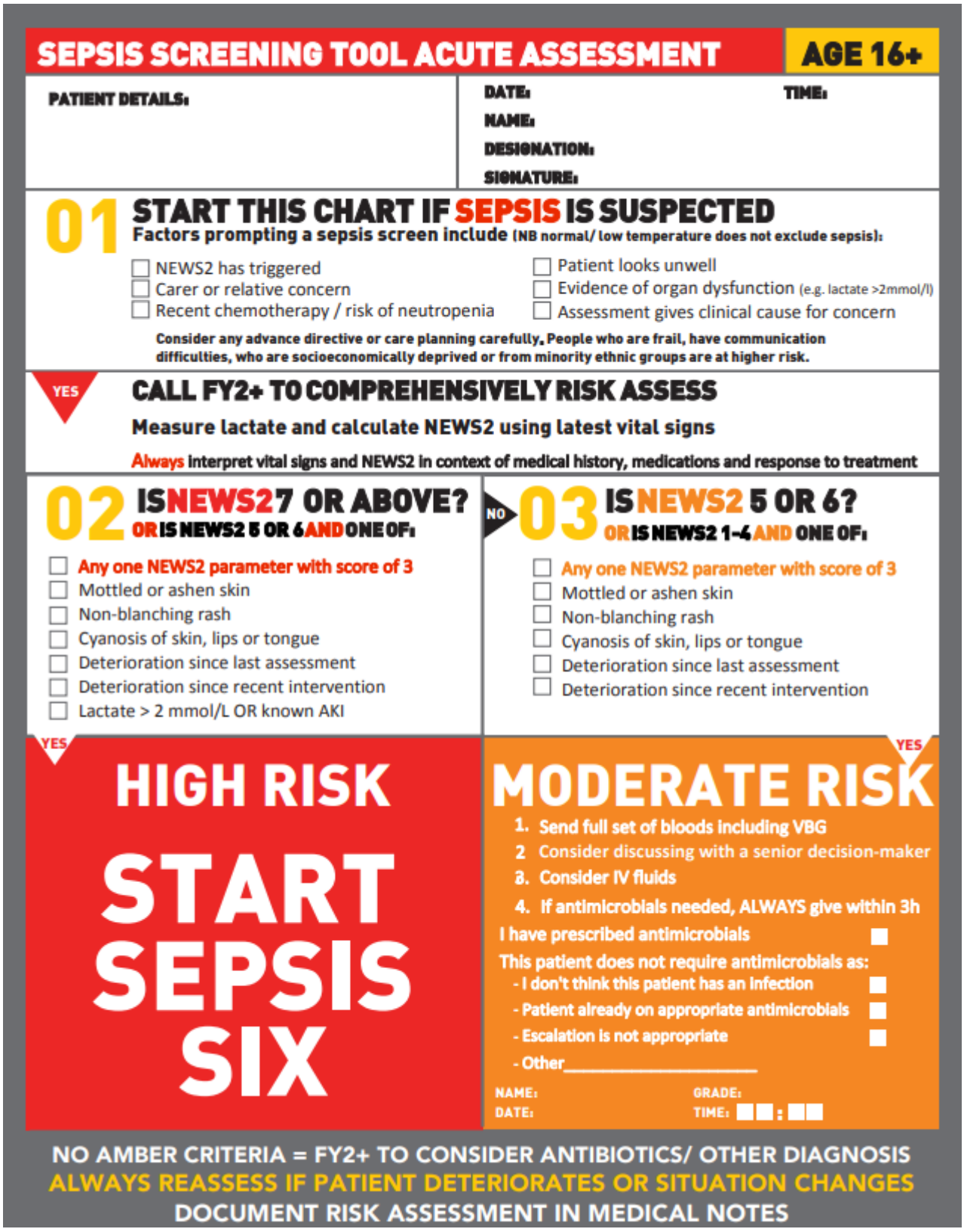
'Sepsis is a life threatening condition that arises when the body's response to an infection injures its own tissues and organs. Sepsis can lead to shock, multiple organ failure and death especially if not recognised early and treated promptly.'
(Merinoff, 2010).

"Sepsis Six First Hour care duties"

- **Oxygen-** via high concentration mask with reservoir bag to maintain target oxygen saturation
- **Blood Cultures** – prior to antibiotics where possible to identify causative organism
- **Antibiotics** – administer within one hour of recognition of sepsis. Do not delay antibiotics.
- **Fluid Resuscitation**- maintain MAP ≥65mmHg or systolic Bp ≥ 90 mmHg
- **Lactate/Hb/Bloods**- continued monitoring for organ dysfunction and failure to respond to treatment
- **Urinary monitoring** – monitor end organ perfusion. Consider catheter

Ensure you escalate this to the Nurse in Charge and ensure you have a conversation with Critical Care Outreach on bleep 901

ADULT SEPSIS SCREENING PROTOCOL



SEPSIS SCREENING TOOL ACUTE ASSESSMENT — AGE 16+

PATIENT DETAILS:

DATE: **TIME:**
NAME:
DESIGNATION:
SIGNATURE:

01 START THIS CHART IF SEPSIS IS SUSPECTED

Factors prompting a sepsis screen include (NB normal/ low temperature does not exclude sepsis):

- ☐ NEWS2 has triggered
- ☐ Carer or relative concern
- ☐ Recent chemotherapy / risk of neutropenia
- ☐ Patient looks unwell
- ☐ Evidence of organ dysfunction (e.g. lactate >2mmol/l)
- ☐ Assessment gives clinical cause for concern

Consider any advance directive or care planning carefully. People who are frail, have communication difficulties, who are socioeconomically deprived or from minority ethnic groups are at higher risk.

YES

CALL FY2+ TO COMPREHENSIVELY RISK ASSESS

Measure lactate and calculate NEWS2 using latest vital signs

Always interpret vital signs and NEWS2 in context of medical history, medications and response to treatment

02 IS NEWS2 7 OR ABOVE?

OR IS NEWS2 5 OR 6 AND ONE OF:

- ☐ Any one NEWS2 parameter with score of 3
- ☐ Mottled or ashen skin
- ☐ Non-blanching rash
- ☐ Cyanosis of skin, lips or tongue
- ☐ Deterioration since last assessment
- ☐ Deterioration since recent intervention
- ☐ Lactate > 2 mmol/L OR known AKI

NO

03 IS NEWS2 5 OR 6?

OR IS NEWS2 1-4 AND ONE OF:

- ☐ Any one NEWS2 parameter with score of 3
- ☐ Mottled or ashen skin
- ☐ Non-blanching rash
- ☐ Cyanosis of skin, lips or tongue
- ☐ Deterioration since last assessment
- ☐ Deterioration since recent intervention

YES

HIGH RISK

START SEPSIS SIX

YES

MODERATE RISK

1. Send full set of bloods including VBG
2. Consider discussing with a senior decision-maker
3. Consider IV fluids
4. If antimicrobials needed, ALWAYS give within 3h

I have prescribed antimicrobials ☐

This patient does not require antimicrobials as:

- I don't think this patient has an infection ☐
- Patient already on appropriate antimicrobials ☐
- Escalation is not appropriate ☐
- Other_____

NAME: **GRADE:**
DATE: **TIME:** ☐☐:☐☐

NO AMBER CRITERIA = FY2+ TO CONSIDER ANTIBIOTICS/ OTHER DIAGNOSIS
ALWAYS REASSESS IF PATIENT DETERIORATES OR SITUATION CHANGES
DOCUMENT RISK ASSESSMENT IN MEDICAL NOTES

SEPSIS SCREENING TOOL - THE SEPSIS SIX

AGE 16+

PATIENT DETAILS:	DATE: TIME: NAME: DESIGNATION: SIGNATURE:

COMPLETE ALL ACTIONS WITHIN ONE HOUR

01 INFORM SENIOR CLINICIAN

NOT ALL PATIENTS WITH RED FLAGS WILL NEED THE 'SEPSIS 6' URGENTLY. A SENIOR DECISION MAKER (ST3+ or equivalent) MAY SEEK ALTERNATIVE DIAGNOSES/ DE-ESCALATE CARE.

TIME ☐☐:☐☐

02 GIVE OXYGEN IF REQUIRED

START IF O_2 SATURATIONS LESS THAN 92% - AIM FOR O_2 SATURATIONS OF 94-98%
IF AT RISK OF HYPERCARBIA AIM FOR SATURATIONS OF 88-92%

TIME ☐☐:☐☐

03 SEND BLOODS INCLUDING CULTURES

BLOOD CULTURES, VBG, BLOOD GLUCOSE, LACTATE, FBC, U&Es, LFTs, CRP AND CLOTTING. LUMBAR PUNCTURE IF INDICATED. CONSIDER RAPID PATHOGEN ID

TIME ☐☐:☐☐

04 GIVE IV ANTIBIOTICS, THINK SOURCE CONTROL

ACCORDING TO LOCAL GUIDELINES, CONSIDER ESCALATION IF ALREADY ON ANTIBIOTICS

CONSIDER ALLERGY STATUS AND POSSIBLE NEED FOR ANTIVIRALS/ ANTIFUNGALS

EVALUATE NEED FOR IMAGING/ SPECIALIST REVIEW TO HELP IDENTIFY SOURCE

IF SOURCE AMENABLE TO DRAINAGE ENSURE ACHIEVED AS SOON AS POSSIBLE BUT ALWAYS WITHIN 12H

TIME ☐☐:☐☐

05 GIVE IV FLUIDS, CONSIDER VASOPRESSORS

GIVE BOLUS OF 250mL HARTMANNS/ SALINE OVER 10-15 MINS. REPEAT IF NO IMPROVEMENT, GIVE UP TO 1000mL. IF NO IMPROVEMENT AFTER 1000 mL CALL SENIOR (ST3+) TO ATTEND.
SENIOR DECISION MAKER TO CONSIDER PERIPHERAL/ CENTRAL VASOPRESSORS, DISCUSS WITH ITU

TIME ☐☐:☐☐

06 MONITOR

USE NEWS2. MEASURE URINARY OUTPUT: THIS MAY REQUIRE A URINARY CATHETER
REPEAT LACTATE AT LEAST HOURLY IF INITIAL LACTATE ELEVATED OR IF CLINICAL CONDITION CHANGES

TIME ☐☐:☐☐

IF WORSENING/ NOT IMPROVING AFTER ONE HOUR – ESCALATE TO CONSULTANT
REASSESS NEWS2 AT LEAST EVERY 30 MINS

* in oliguric AKI or dialysis patients, clinical assessment of fluid status is essential for estimating volume of fluid resuscitation

RECORD ADDITIONAL NOTES HERE:

e.g. allergy status, arrival of specialist teams, de-escalation of care, delayed antimicrobial decision making, variance from Sepsis Six

THE UK SEPSIS TRUST

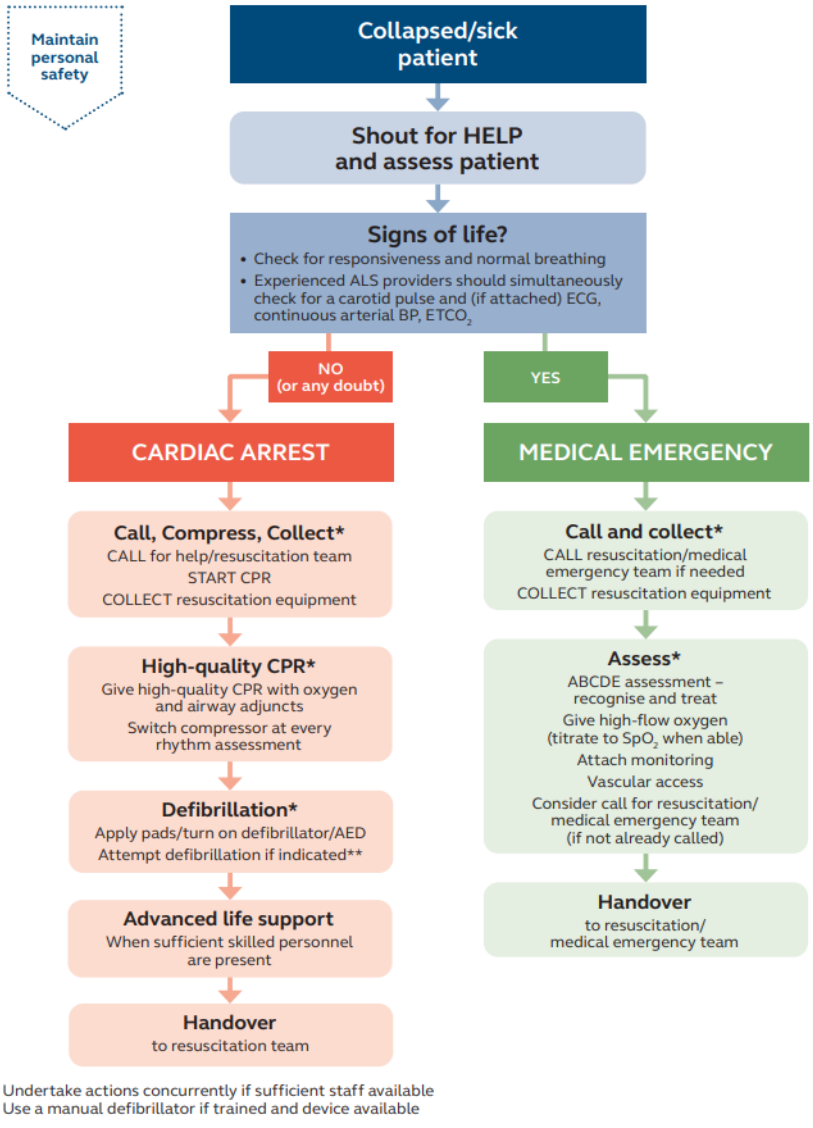
Adult in-hospital Basic Life Support:

- **Safety** - ensure safety of rescuer and patient - take any reasonably practicable steps to ensure safety and/or reduce danger.
- **Response** - check for responsiveness of patient using a shake and shout/appropriate painful stimuli.
- **Ask for help** - either shout and/or use local systems in place to obtain help from staff within immediate vicinity.
- **Airway** - ensure the airway in clear and open -head tilt and chin lift manoeuvre.
- **Breathing** - look, listen and feel for up to 10 seconds for signs of breathing +/- signs of **circulation** (dependant on competency and confidence of the health care professional this may involve palpation of a central pulse). Ignore odd occasional agonal gasps.
- **Ensure the cardiac arrest team has been activated** by asking someone to dial **2222** and stating "adult cardiac arrest team" the accurate location to include site, floor and ward.
- **Commence chest compressions** - hands to be in the centre of the patient's chest-aiming for a depth of 5-6cm and a rate of 100-120 per minute.
- When help arrives with a Bag-Valve-Mask attach this to high flow oxygen and commence 30:2 Compressions: Ventilations CPR until either the cardiac arrest team arrives and takes over from you or the patient shows overt signs of life.
- Ensure that the person delivering chest compressions is rotated every two minutes to avoid fatigue.

Resuscitation Council UK

GUIDELINES 2025

Adult in-hospital resuscitation

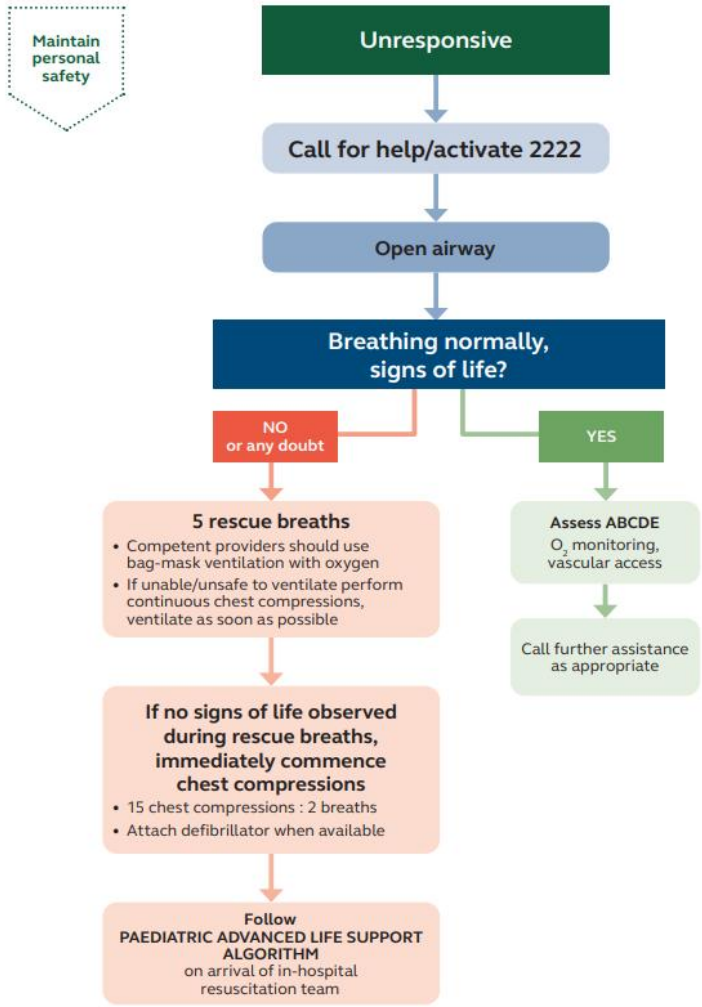


* Undertake actions concurrently if sufficient staff available
** Use a manual defibrillator if trained and device available

Resuscitation Council UK

GUIDELINES 2025

Paediatric basic life support



Resuscitation Council UK

GUIDELINES 2021

Anaphylaxis

Anaphylaxis?

A = Airway B = Breathing C = Circulation D = Disability E = Exposure

Diagnosis – look for:
- Sudden onset of Airway and/or Breathing and/or Circulation problems[1]
- And usually skin changes (e.g. itchy rash)

Call for HELP
Call resuscitation team or ambulance

- Remove trigger if possible (e.g. stop any infusion)
- Lie patient flat (with or without legs elevated)
  - A sitting position may make breathing easier
  - If pregnant, lie on left side

Give intramuscular (IM) adrenaline[2]

Inject at **anterolateral aspect** – middle third of the thigh

- Establish airway
- Give high flow oxygen
- Apply monitoring: pulse oximetry, ECG, blood pressure

If no response:
- Repeat IM adrenaline after 5 minutes
- IV fluid bolus[3]

If no improvement in Breathing or Circulation problems[1] despite TWO doses of IM adrenaline:
- Confirm resuscitation team or ambulance has been called
- Follow REFRACTORY ANAPHYLAXIS ALGORITHM

1. Life-threatening problems

Airway
Hoarse voice, stridor

Breathing
↑work of breathing, wheeze, fatigue, cyanosis, SpO_2 <94%

Circulation
Low blood pressure, signs of shock, confusion, reduced consciousness

2. Intramuscular (IM) adrenaline
Use adrenaline at 1 mg/mL (1:1000) concentration

Adult and child >12 years:	500 micrograms IM (0.5 mL)
Child 6–12 years:	300 micrograms IM (0.3 mL)
Child 6 months to 6 years:	150 micrograms IM (0.15 mL)
Child <6 months:	100–150 micrograms IM (0.1–0.15 mL)

The above doses are for IM injection **only**.
Intravenous adrenaline for anaphylaxis to be given **only by experienced specialists** in an appropriate setting.

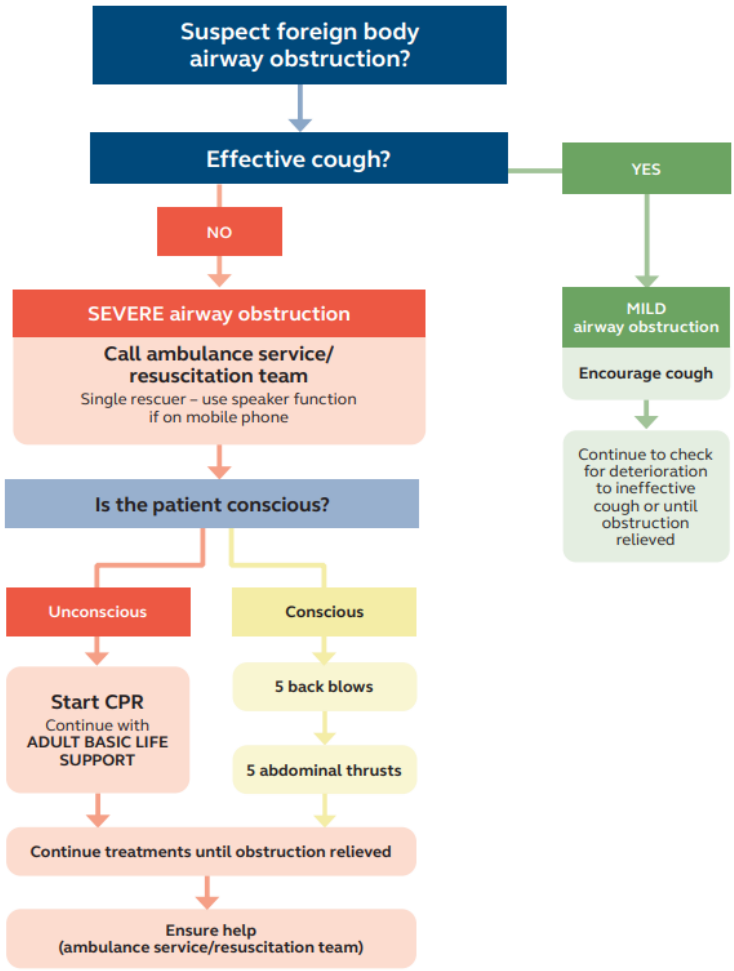
3. IV fluid challenge
Use crystalloid

Adults: 500–1000 mL
Children: 10 mL/kg

Resuscitation Council UK

GUIDELINES 2025

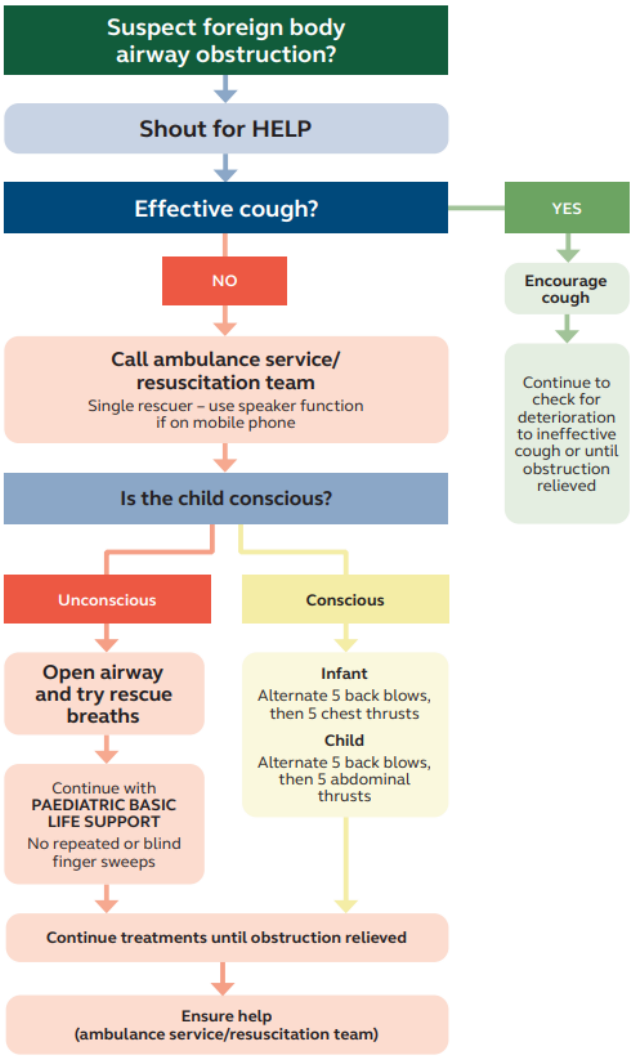
Adult choking



Resuscitation Council UK

GUIDELINES 2025

Paediatric choking



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Your Resuscitation trolley and checklist

Please read carefully

This system has been designed to be easy and quick to check, with the aim of improving Resuscitation trolley compliance and patient safety. Stocking is aimed at incorporating only necessary equipment.

The Trolley Top and seal documentation are to be completed **DAILY.** Full trolley check and re-seal is to be performed **WEEKLY**.
The Airway and Circulation drawers contain plastic wrapped trays. **These trays are only to be opened for emergency use.** As long as they remain fully wrapped and in date you can consider the drawer checked**.**

The **Airway** tray is wrapped in **blue**

The **Circulation** tray is wrapped in **red**

The spare stock of trays is kept in the Resuscitation Store and can be swapped if your tray is out of date or has been opened. Return the tray, with its un-used contents, to the store room and we will recycle them.

Do not leave any sharps or used equipment in your trays
Should you have any further queries, please contact the Resuscitation Service on 8562 or paht.resus@nhs.net

DNACPR

"Cardiopulmonary resuscitation (CPR) was introduced in the 1960s as a treatment that for some people may re-start their heart when they suffer a sudden cardiac arrest due to a heart rhythm disturbance, most commonly triggered by acute myocardial infarction ('heart attack') from which they would otherwise have been expected to make a good recovery. The context of sudden cardiac arrest in a person with a heart condition remains the situation in which CPR is most likely to be successful. The probability of success in any individual is influenced by other factors and in many people with advanced chronic disease the likelihood of CPR being successful is relatively low. CPR involves chest compressions, delivery of high-voltage electric shocks across the chest, attempts to ventilate the lungs and injection of drugs".

Adults with capacity may decide to refuse CPR, with or without giving a reason for their decision. Decisions about CPR may be made following consideration of a balance of benefits and burdens. In other cases, the decision not to attempt CPR is a clinical decision, if the clinical team has good reason to believe that a person is dying as an inevitable result of advanced, irreversible disease or a catastrophic event and that CPR will not re-start the heart and breathing for a sustained period. If there is no realistic prospect of a successful outcome, CPR should not be offered or attempted.

Q. If we find an unresponsive patient and we are not sure if they are for resuscitation or not, what should we do?

A. "In these circumstances initiating CPR will usually be appropriate, whilst all possible efforts are made to obtain more information to guide further decision-making. There will be some situations in which CPR is started on this basis, but during the resuscitation attempt further information becomes available that makes CPR inappropriate. That information may include a fully documented DNACPR decision, a valid and applicable advance decision to refuse treatment (ADRT), or clinical information indicating that CPR will not be successful. In such circumstances, continuing attempted resuscitation would be inappropriate".

Q. What if a patient has a valid DNACPR form but suffers an arrest due to a reversible cause e.g. choking or anaphylaxis?

A. "Occasionally, some people for whom a DNACPR decision has been made may develop cardiac or respiratory arrest from a readily reversible cause such as choking, a displaced or blocked tracheal tube, or blocked tracheostomy tube. In such situations CPR would be appropriate, while the reversible cause is treated, unless the person has made a valid refusal of the intervention in these circumstances. To avoid misunderstandings it may be helpful, whenever possible, to make clear to patients and those close to patients that DNACPR decisions usually apply only in the context of an expected death or a sudden cardiorespiratory arrest and not to an unforeseen event such as a blocked airway".

References:

Meaney PA, Nadkarni VM, Kern KB, Indik JH, Halperin HR, Berg RA. Rhythms and outcomes of adult in-hospital cardiac arrest. Crit Care Med 2010;38:101-8

Resuscitation Council (UK) Adult in hospital Guidelines 2025

National Confidential Enquiry Patient Outcome and Deaths (NCEPOD) 'Time to Intervene' - A review of patients undergoing cardiopulmonary resuscitation as a result of an in-hospital cardiorespiratory arrest. 2012

Decisions relating to cardiopulmonary resuscitation – The British Medical Association (BMA), Resuscitation Council UK, and the Royal College of Nursing (RCN) have issued updated guidance regarding anticipatory decisions about whether or not to attempt resuscitation in a person when their heart stops or they stop breathing.