Bwrdd Iechyd Addysgu Powys
Powys Teaching Health Board

Bronllys Hospital, Bronllys, Brecon, Powys, LD3 0LU

This Patient Group Direction (PGD) must only be used by registered healthcare professionals who have been named and authorised by their organisation to practice under it. The most recent and in date final signed version of the PGD should be used. Healthcare professionals should always access the PGD via the PTHB internet to ensure that they are always working to the most up to date version

Patient Group Direction

for the administration of

Adrenaline (Epinephrine) Injection 1 in 1000 (1:1000)(1mg/mL)

by registered healthcare professionals (and possession by community staff)

for

the treatment of anaphylactic reactions

in Powys Teaching Health Board or Powys GP practices or Powys Out of Hours Services

This PGD is in place as a framework to guide local practice and training needs.

The Resuscitation Council UK states that a PGD is not required for anyone (whether they are a healthcare professional or not) to give intramuscular adrenaline for the purpose of saving a life in an emergency

Version number: PGD 00017H

Reference Number: PGD0017H
Valid from: 03/02/2025
Review Date: 03/02/2027
Expiry Date: 02/02/2028

Change history

Version number	Change details	Date
PGD0017	Initial issue	
PGD0017-A	Review issue	16/08/2006
PGD0017-B	Review issue – changes to Resuscitation Council Guidelines 2008	17/10/2009
PGD0017-C	Review issue	01/03/2012
PGD0017-D	Review issue – title changed to Registered Healthcare Professionals	01/11/2014
PGD0017-E	Review issue – changes to resuscitation guidelines	01/12/2016
PGD0017-F	Format changes as put in new PTHB PGD template Added statement on front to clarify PGD not always needed in the case of an emergency. Updated information around ABCDE approach in line with management of anaphylaxis procedure. Minor amendments include: • Title reworded to include for the treatment of anaphylactic reactions • Needle length of 40mm now recommended for obese patients as per Powys anaphylaxis policy • Added 500micrograms strength to auto-injectors patients may have	11/02/2019
PGD0017-G	Review issue including: • Following update of Resuscitation Guidelines 2021 (dose for children under 6 months of age, treatment of refractory anaphylaxis) • Modification to include management of anaphylaxis in vaccination settings; • Addition of glass prefilled syringe product • minor wording changes, change in advice for patient, updated safeguarding contacts.	17/02/2022

Change history (continued)

Version number	Change details	Date
PGD0017H	Review in line with current reference sources (text in the PGD updated according to the reference sources). Title amended to match description of adrenaline in BNF. Addition of pharmacy technicians. Minor changes to format and requirements listed in the **training and competency** section to promote consistency with other PTHB PGDs. Safeguarding information updated. Addition of links throughout the text, including the Resuscitation Council UK Emergency treatment of anaphylaxis Guidelines for healthcare providers and PTHB / CDP 007 Management of anaphylaxis procedure. Patient information section updated. Appendix B updated to include Resuscitation Council UK 'refractory anaphylaxis' algorithm.	03/02/2025

PGD authorisation

Name	Job title and organisation	Signature	Date
Senior doctor **Dr Kate Wright**	Lead doctor for PTHB	DocuSigned by: Kate Wright 1F267952823F473...	1/28/2025
Chief Pharmacist **Jacqui Seaton**	Chief Pharmacist for PTHB	Signed by: Jacqueline Seaton 71E8089DE3634C4...	1/28/2025
Senior representative of professional group using the PGD **Claire Roche**	Executive Director of Nursing and Midwifery for PTHB	DocuSigned by: Claire Roche F07413E114E04B1...	2/4/2025
Clinical Governance Lead **Amanda Edwards**	Clinical Governance Lead for PTHB – Assistant Director for Innovation and Improvement	DocuSigned by: Amanda Edwards 74A4E51A42E9473...	2/6/2025

Appendix A provides a staff accreditation sheet. Individual practitioners must be authorised by name to work to this PGD.

Those using this PGD must ensure that it is organisationally authorised and signed by an appropriate authorising person, relating to the class of person by whom the product is to be supplied, in accordance with Human Medicines Regulations 2012 (HMR2012)[1]. **The PGD is not legal or valid without signed authorisation in accordance with HMR2012 Schedule 16 Part 2**.

The final authorised copy of this PGD should be kept by PTHB for 25 years after the PGD expires.

[1] This includes any relevant amendments to legislation.

PGD adoption by the provider

Name	Job title and organisation	Signature	Date

Training and competency of registered health professionals

Qualifications and professional registration	Practitioners must only work under this PGD where they are competent to do so. Practitioners working under this PGD must also be a registered professional with one of the following bodies: • nurses and midwives currently registered with the Nursing and Midwifery Council (NMC) • pharmacy professionals (pharmacists and pharmacy technicians) currently registered with the General Pharmaceutical Council (GPhC) **Note:** This PGD is not relevant to privately provided community pharmacy services • chiropodists/podiatrists, dietitians, occupational therapists, orthoptists, orthotists/prosthetists, paramedics, physiotherapists, radiographers and speech and language therapists currently registered with the Health and Care Professions Council (HCPC) • dental hygienists and dental therapists registered with the General Dental Council (GDC) • optometrists registered with the General Optical Council (GOC) Practitioners must also fulfil the Additional requirements listed below. Check Appendix A – Staff Accredited to use this Patient Group Direction to confirm whether all the registered practitioners listed above have organisational authorisation to work under this PGD.
Initial training and knowledge requirements	• The administration of adrenaline injection 1 in 1000 (1:1000) and knowledge of its uses, contraindications, and adverse effects. • Competency to use **A**irway, **B**reathing, **C**irculation, **D**isability, **E**xposure **(ABCDE)** approach to recognise and treat problems – refer to the Resuscitation Council UK Emergency treatment of anaphylaxis Guidelines for healthcare providers for further information. • Relevant training which enables the practitioner to make a clinical assessment to establish the need for the medication covered by this PGD.

	Additionally, practitioners: • must be authorised by name as an approved practitioner under the current terms of this PGD before working to it. • must have undertaken appropriate training for working under PGDs for supply/administration of medicines. Recommended training eLfH PGD eLearning programme. PTHB staff to access via ESR. • must be competent in the use of PGDs (see NICE Competency framework for health professionals using patient group directions). • must be familiar with the product(s) and alert to changes in the BNF and Summary of Product Characteristics. • must have undertaken training appropriate to this PGD as required by local policy. Must be familiar with the contents of the PTHB / CDP 007 Management of anaphylaxis procedure. • must have undertaken and completed locally required training (including updates) in Safeguarding of Children, Young People and Vulnerable Adults or the equivalent, at level applicable to the role. • must have received training and be competent in the recognition, management of, and reporting of recognised adverse reactions, including anaphylaxis. Must be competent in the administration of adrenaline and have up to date Basic Life Support (BLS)/Paediatric BLS as appropriate to setting. • must have access to the Patient Group Direction and associated online resources. **THE PRACTITIONER MUST BE AUTHORISED BY NAME, UNDER THE CURRENT VERSION OF THIS PGD BEFORE WORKING ACCORDING TO IT.** **THE DECISION TO ADMINISTER ANY MEDICATION RESTS WITH THE INDIVIDUAL REGISTERED PRACTITIONER WHO MUST ABIDE BY THE PGD AND ANY ASSOCIATED ORGANISATION POLICIES.**

Competency assessment	• Evidence of ongoing PGD training to be submitted to Line Manager annually- this should include an annual completion certificate of PGD e-learning or a dated screenshot of the PGD e-learning assessment results as proof of completion. • Practitioners must be competent, recognise their own limitations and personal accountability and act accordingly. • Staff operating under this PGD are encouraged to review their competency using the NICE Competency Framework for health professionals using patient group directions. • Individuals operating under this PGD must be assessed as competent (see Appendix A) and complete a self-declaration of competency in their Personal Appraisal and Development Review (PADR), if relevant. The **personal development plan** (yellow) section of the PADR booklet (where relevant) should be used to record completion of Statutory and Mandatory training, including annual PGD e-learning. • Evidence of training in BLS, anaphylaxis and safeguarding.
Ongoing training and competency	• Individuals operating under this PGD are personally responsible for ensuring they remain up to date with the use of all medicines included in the PGD - if any training needs are identified these should be discussed with the senior individual responsible for authorising individuals to act under the PGD and further training provided as required. • Update at least every 2 years, or earlier in response to new local/national guidance, on the use of PGDs and adrenaline injections. • Practitioners must ensure they are up to date with relevant issues and clinical skills and management of anaphylaxis, BLS, with evidence of appropriate Continued Professional Development (CPD). • Evidence of appropriate CPD must be retained and made available on request. • Compliance with all mandatory NHS training (if relevant) including safeguarding at the level relevant to the role. • Evidence of ongoing / refresher training to be submitted to line manager annually. **It is the responsibility of the healthcare professional to maintain their own competency to practice within this PGD.**

Clinical condition

Clinical condition or situation to which this PGD applies	**Anaphylaxis:** a severe, life threatening, generalised, or systemic hypersensitivity reaction characterised by rapidly developing airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes. The time of onset of an anaphylactic reaction depends on the type of trigger. Use the **ABCDE (A**irway, **B**reathing, **C**irculation, **D**isability and **E**xposure) approach to recognise and treat anaphylaxis. Adrenaline is the first-line treatment for anaphylaxis. Administer IM adrenaline 1 in 1000 (1:1000) for **A**irway and/or **B**reathing and/or **C**irculation problems. **Anaphylaxis is a medical emergency-** Dial 999 for an ambulance and request urgent paramedic attendance; also ask for help from colleagues. **See: Appendix B** - Resuscitation Council UK Guidelines - 'anaphylaxis' and 'refractory anaphylaxis' algorithms **Appendix C** – Resuscitation Council UK Guideline 'Management of anaphylaxis in vaccination settings'. Where skills and equipment are available give oxygen at the highest concentration possible as soon as available using a mask with an oxygen reservoir. Refer to PTHB MMP405 Oxygen protocol. **NB.** This PGD is in place as a framework to guide local practice and training needs. A PGD is not legally required for anyone to give up to 1mg of intramuscular adrenaline injection 1 in 1000 (1:1000)(1mg/1mL) for the emergency treatment of anaphylaxis. **It is the responsibility of the administering healthcare professional to ensure that the patient is within the inclusion criteria, and that there are no reasons for exclusion before proceeding with the treatment.** **If there is any reason for concern, seek medical advice.**
Inclusion criteria	**Life threatening anaphylaxis**, characterised by: ○ Sudden onset and rapid progression of symptoms ○ **A**irway and/or **B**reathing and/or **C**irculation problems ○ Usually, skin and/or mucosal changes (flushing, urticaria, angioedema)- NB these may be absent in up to 20% of cases

A-Airway problems:
- Airway swelling (throat and tongue swelling causing difficulty in breathing/swallowing; patients may feel their throat is closing)
- Hoarse voice
- Stridor (a high-pitched inspiratory noise caused by upper airway obstruction)

B-Breathing problems:
- Increase work of breathing
- Bronchospasm (wheeze) and/or persistent cough
- Patient becoming tired with the effort of breathing (fatigue)
- Hypoxaemia (SpO_2<94%) which may cause confusion and/or central cyanosis
- Respiratory arrest

C-Circulation problems:
- Signs of shock:
  - pale, clammy
  - significant tachycardia (increased heart rate)
  - hypotension (low blood pressure)
- Dizziness, decreased conscious level or loss of consciousness
- Arrhythmia
- Cardiac arrest

Provide treatment in line with PTHB / CDP 007 Management of anaphylaxis procedure) and the Resuscitation Council (UK) Emergency Treatment of anaphylaxis – Guidelines for healthcare providers. **IM adrenaline should be given as early as possible to alleviate symptoms.** Initial treatment should not be delayed by a lack of a complete history or definite diagnosis. If in doubt, give IM adrenaline and seek expert help.

The diagnosis is supported if a patient has been exposed to an allergen known to affect them. However, in up to 30% of cases there may be no obvious trigger.

Please note:
- Skin or mucosal changes alone are not a sign of an anaphylactic reaction
- Skin and mucosal changes can be subtle or absent in 10-20% of reactions (some patients present initially with only bronchospasm or hypotension).
- Breathing problems can vary from mild bronchospasm to life-threatening asthma with no other features to suggest anaphylaxis. Anaphylaxis can present primarily as

	respiratory arrest. Consider anaphylaxis in a person with sudden onset breathing difficulties, especially if known to be allergic to a food or insect sting. ○ The presenting symptoms and signs of severe anaphylaxis and life-threatening asthma can be the same. Individuals presenting with asthma in the context of possible exposure to a known allergen (so that anaphylaxis is a differential diagnosis) should receive treatment with intramuscular adrenaline. Consider inhaled bronchodilator therapy with salbutamol or ipratropium if the person is wheezy (especially in people with known asthma) - refer to PGDs: PGD0162 Inhaled Salbutamol, PGD0046 Salbutamol Nebules, PD0167 Ipratropium nebules). However, bronchodilators should not be used as an alternative to further parenteral treatment with adrenaline in the presence of persisting respiratory problems. For further information regarding Disability and Exposure (of the A,B,C,D,E approach), see the PTHB / CDP 007 Management of anaphylaxis procedure) and the Resuscitation Council (UK) Emergency Treatment of Anaphylactic Reactions – Guidelines for Healthcare Professionals. **Consent to treatment** If the patient is unable to give consent due to a life-threatening situation, or if parent/carer is not present, adrenaline 1 in 1000 (1:1000) injection should be administered where treatment is judged to be in the best interests of the patient. **In the context of the clinical scenario described in this PGD the patient may not be able to make an informed choice nor consent to treatment. Therefore, the clinician should act in the best interests of the patient at all times and within their professional competency and code of conduct.** Refer to PTHB Consent to Treatment and Examination Policy. In case of any doubt, contact medical team or emergency services.
Exclusion criteria (Exclusion under this PGD does not necessarily mean the medication is contraindicated, but it would be	**There are no absolute contraindications to adrenaline in a severe allergic reaction involving the airway or circulatory collapse.** • If cardiac arrest has occurred, absorption of adrenaline given by the intramuscular route will not be reliable and attempts to give it may interrupt or distract from delivery of high-quality CPR.

outside its remit and another form of authorisation will be required)	• Inducible laryngeal obstruction ILO (formerly known as vocal cord dysfunction) can mimic anaphylaxis, but does not respond to adrenaline
	• ACE inhibitor induced angioedema (may be life-threatening but typically does not respond to adrenaline)
	• Non-life-threatening conditions (these usually respond to simple measures), for example:
	  ○ Faint (vasovagal episode) – this can occur in the context of non-anaphylaxis allergic reactions. Diagnostic difficulty may occur with vasovagal attacks following immunisation or other procedures, but the absence of rash, breathing difficulties, and swelling are useful distinguishing features, as is the slow heart rate in a vasovagal attack (whereas anaphylaxis is usually associated with tachycardia). Symptoms should resolve rapidly on lying flat. **If rapid recovery does not happen, consider anaphylaxis as a cause.**
	  ○ Panic attack: Patients with previous anaphylaxis may be prone to panic attacks if they think they have been re-exposed to the allergen that caused a previous reaction. The sense of impending doom and breathlessness leading to hyperventilation are symptoms that can resemble anaphylaxis. Sometimes, there may be flushing, or blotchy skin associated with anxiety adding to the diagnostic difficulty.
	  ○ Breath-holding episode in a child
	  ○ Spontaneous (non-allergic) urticaria or angioedema
	• Conditions outside of the clinical situation criteria
	
	Refer to sections "Action to be taken if patient is excluded or "Action to be taken if patient declines treatment".

Cautions /reasons for seeking further advice from a prescriber	**NB.** Cautions listed are only for non-life-threatening situations. **Where a caution is present the practitioner should be aware of the possible effects of administration but should continue to administer where the benefit outweighs risk.** Contact the local senior on call clinician for advice on the below if required. For management beyond initial treatment, it can be helpful, if the situation allows, to establish medical and drug history, as there are medications and conditions that can affect the response to adrenaline treatment and therefore subsequent

	management. These should be recorded in the patient records and any transfer documentation. The following cautions are only for non-life-threatening situations: ○ Arteriosclerosis (in adults) ○ Arrythmias ○ Cerebrovascular disease ○ Cor pulmonale ○ Diabetes mellitus- Adrenaline may cause or exacerbate hyperglycaemia ○ Elderly – caution in these patients who may be more susceptible to the cardiovascular side effects of adrenaline. ○ Hypercalcaemia ○ Hyperreflexia ○ Hyperthyroidism ○ Hypokalaemia ○ Ischaemic heart disease ○ Obstructive cardiomyopathy ○ Occlusive vascular disease ○ Organic brain damage ○ Organic heart disease or cardiac dilatation (severe angina pectoris, obstructive cardiomyopathy, hypertension) ○ Patients with Parkinsons disease- adrenaline may be associated with a transient worsening of Parkinson's symptoms such as rigidity and tremor. ○ Patients with long-standing bronchial asthma and emphysema who have developed degenerative heart disease. ○ Phaeochromocytoma ○ Prostate disorders or urination difficulty ○ Psychoneurosis ○ Severe angina ○ Shock (other than anaphylactic shock) ○ Narrow angle glaucoma or susceptibility to angle-closure glaucoma ○ Severe renal impairment ○ Adrenaline 1 in 1000 injection contains sodium metabisulphite which can cause allergic-type reactions, including anaphylaxis and life-threatening or less severe asthmatic episodes, in certain susceptible individuals. NB The presence of sodium metabisulfite in parenteral adrenaline and the possibility of allergic-type reactions should not deter use of the drug when indicated for the treatment of serious allergic reactions or for other emergency situations.

	○ Pregnancy- adrenaline should only be used during pregnancy if benefit outweighs risk. Adrenaline crosses the placenta. There is some evidence of a slightly increased incidence of congenital abnormalities. May reduce placental perfusion and cause tachycardia, cardiac irregularities, and extrasystoles and louder heart sounds in foetus. Can delay second stage of labour and may cause uterine atony with haemorrhage. Manufacturer advises adrenaline should either not be used, or should be used with caution during the second stage of labour. ○ Breastfeeding- adrenaline is present in milk but unlikely to be harmful as poor oral bioavailability. Some manufacturers advise to avoid breastfeeding in mothers receiving adrenaline injection. ○ If possible, check for any other medications that the individual is taking, including topical or inhaled products, food supplements and herbal or homeopathic products. Refer to the Drug Interactions section. Patients with severe anaphylaxis who are taking non-cardioselective beta-blockers may not respond to adrenaline treatment. **NB. Adrenaline (Epinephrine) Injection 1 in 1000 (1:1000)(1mg/ml) is NOT suitable for IV use** Accidental intravascular injection may result in cerebral haemorrhage due to the sudden rise in blood pressure. Repeated injections of Adrenaline can cause necrosis as a result of vascular constriction at the injection site. Tissue necrosis may also occur in the extremities, kidneys and liver. Intramuscular injections of Adrenaline into the buttocks should be avoided because of the risk of tissue necrosis. Adrenaline 1 in 1000 should not be used in fingers, toes, ears, nose or genitalia due to the risk of ischaemic tissue necrosis. Prolonged use of Adrenaline can result in severe metabolic acidosis (because of elevated blood concentrations of lactic acid), renal necrosis and tachyphylaxis. This list is not exhaustive. Practitioners should consult the SPC for further information. There is large inter-individual variability in the response to adrenaline. In clinical practice, it is important to monitor the response to adrenaline (see below) and give further doses if there is no improvement in the patient's condition (as indicated

	in appendix B). Tachycardia, tremor, pallor with a normal or raised BP, may indicate excessive adrenaline treatment. Pallor can occur following adrenaline administration, due to vasoconstriction. This might be misinterpreted as ongoing cardiovascular compromise or anaphylaxis and thereby can increase the risk of adrenaline overdose. **This is a particular concern in small children, who may remain pale following 2–3 doses of adrenaline**. A significantly raised blood pressure (BP) is a key indicator of adrenaline overdose. **Refractory anaphylaxis:** anaphylaxis requiring ongoing treatment (due to persisting respiratory or cardiovascular symptoms) despite two appropriate doses of IM adrenaline. Refer to appendix B. NB Intravenous adrenaline for anaphylaxis is only to be given by experienced specialists in an appropriate setting- not covered by this PGD. Any vulnerable adult or child protection concerns should be referred to Safeguarding and the PTHB safeguarding policies followed. Consider discussing with GP. Where there are safeguarding concerns (Child Protection or Protection of Vulnerable Adults, POVA) advise from the local Safeguarding team should be sought (see below). Under Section 128 and 130 of the Social Services and Wellbeing (Wales) Act 2014, staff have a duty to inform the Local Authority if they have reasonable cause to suspect that an adult or child is at risk. Any safeguarding concerns need to be directed to Safeguarding Hub: ○ to generic email address: PowysTHB.Safeguarding@wales.nhs.uk and ○ Central Safeguarding number: 01686 252806 ○ Out of hours: 0345 0544847 Advice can also be sought from local Safeguarding leads
Arrangements for referral for medical advice	**Seek medical aid urgently.** • Dial 999 and request urgent paramedic attendance – anaphylactic reaction.

Action to be taken if patient excluded	**Adrenaline can be lifesaving.** • Explain reason to patient/carer, if possible. • Record reason and seek medical advice urgently. • If appropriate refer to paramedic / GP / DGH / out of hours service, offer alternative management, if appropriate.
Action to be taken if patient declines treatment	• Explain consequences of refusing treatment, if possible. • Document refusal and any advice given. Complete a Discharge Against Advice Form, if appropriate. • Inform or refer to GP / follow local procedures as appropriate/ call 999 as appropriate. • If patient has capacity to consent and refuses hospital transfer then follow locally agreed pathway. • In the unlikley situation, if patient's carer/representative refuses treatment for the patient, the decision would be overridden by a *decision to treat* in the individual's best interests in accordance with the Mental Capacity Act 2005.

Details of the medicine

Name, form and strength of medicine	Adrenaline (Epinephrine) 1 in 1000 (1:1000) solution for injection (1mg/mL) sterile injection
Legal category	POM POM restriction does not apply to the intramuscular administration of up to 1 mg of adrenaline injection 1 in 1000 (1:1000)(1mg/mL) for the emergency treatment of anaphylaxis.
Off-label use	With IM use in children, in this PGD adrenaline is used in the doses provided in the BNF for the emergency treatment of acute anaphylaxis in children up to 6 months, but these may differ from those licensed. Where treatment is recommended off-label, consider, as part of the consent process, informing the individual/parent/carer that the treatment is being offered in accordance with national guidance but that this is outside the product licence. Informed consent should be obtained and documented where possible.

	Medicines should be stored according to the conditions detailed in the Storage section in this document. However, in the event of an inadvertent or unavoidable deviation of these conditions the local pharmacy or Medicines Management team must be consulted. Where drugs have been assessed by pharmacy/Medicines Management in accordance with national or specific product recommendations as appropriate for continued use this would constitute off-label administration under this PGD. The responsibility for the decision to release the affected drugs for use lies with pharmacy/Medicines Management.

Route/method of administration	**By Intramuscular injection ONLY**
	Injected preferably into the anterolateral aspect of the middle third of the thigh (ideally), or arm, depending on access.
	• Give IM injection with the needle at a 90º angle to the skin, which should be stretched not bunched.
	• A small volume syringe should be used.
	• The needle used for injection needs to be sufficiently long to ensure that the adrenaline is injected into muscle.
	  ○ A 23G 25mm (Blue) needle is suitable for all ages
	  ○ A 25G 16mm (Orange) needle is suitable for pre-term or small infants
	  ○ A longer length 21G 38mm (Green) needle may be needed for some adults
	• Do not use if the solution is discoloured.
	• Check expiry date of the product.
	• Check the correct strength of adrenaline injection has been chosen

	• The patient should be monitored as soon as possible—measure vital signs (respiratory rate, oxygen saturations, heart rate, BP, level of consciousness), if possible, and auscultate for wheeze to monitor the effect of treatment and assess if further doses of adrenaline are required.
	• Remove the trigger if possible (Do not delay definitive treatment if removing the trigger is not feasible):
	  ○ stop any drug suspected of causing anaphylaxis (e.g. drug infusion, blood products)
	  ○ remove the stinger after a bee sting. Early removal is more important than the method of removal
	  ○ For food-induced anaphylaxis, do NOT try to make a patient vomit.

<table>
<tr><td>Information for administration</td><td>

Adrenaline may cause or exacerbate hyperglycaemia, blood glucose should be monitored, particularly in diabetic patients.
Intravenous route should be used with extreme care by specialists only. This route is excluded from the PGD.

</td></tr>
<tr><td>Dose and frequency</td><td>
Adrenaline 1 in 1000 (1:1000) IM dose (1mg/mL)
<table>
<tr><td>Age</td><td>Dose</td><td>Volume</td></tr>
<tr><td>Under 6 months</td><td>100-150 micrograms</td><td>0.1 – 0.15ml</td></tr>
<tr><td>6 months– 5 years</td><td>150 micrograms</td><td>0.15ml</td></tr>
<tr><td>6 years -12 years</td><td>300 micrograms</td><td>0.3ml</td></tr>
<tr><td>Adult and child >12 years</td><td>500 micrograms (300 microgram to be administered if child is small or prepubertal)</td><td>0.5ml
(or 0.3ml if child is small or prepubertal)</td></tr>
</table>
Some patients may have their own auto-injector preparations – commonly 150 microgram or 300 microgram.

In an emergency if the patient’s own adrenaline auto-injector is the only adrenaline preparation readily available, healthcare providers may use it, providing they are familiar enough with the device to use it correctly and safely.
</td></tr>
<tr><td>Quantity to be administered</td><td>
Repeat the IM dose after 5 minutes if there is no improvement in the patient's condition according to blood pressure, pulse, and respiratory function.

If after TWO doses no improvement, confirm resuscitation team ambulance has been called via 999, clearly stating ANAPHYLAXIS – URGENT, and refer to the Resuscitation Council UK refractory anaphylaxis algorithm in Appendix B. NB Intravenous adrenaline for anaphylaxis to be given only by experienced specialists in an appropriate setting- not covered by this PGD.
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</table>

Maximum or minimum treatment period	Can be repeated every 5 minutes if life-threatening cardiovascular and respiratory features persist. Refer to the Resuscitation Council UK anaphylaxis and refractory anaphylaxis algorithms in Appendix B. NB Intravenous adrenaline for anaphylaxis to be given only by experienced specialists in an appropriate setting- not covered by this PGD.
Storage	Do not store above 25 °C. Keep container in the original carton in order to protect from light. Do not freeze.
Drug interactions	Use of adrenaline with drugs that may sensitise the heart to arrhythmias, e.g. digitalis, or quinidine, ordinarily is not recommended. Alpha-adrenergic agents: The vasoconstrictor and pressor effects of adrenaline, mediated by its alpha-adrenergic action, may be enhanced by concomitant administration of drugs with similar effects, such as ergot alkaloids or oxytocin. Adrenaline increases blood pressure and may antagonise the effects of antihypertensive drugs. Apraclonidine: Adrenaline/epinephrine is predicted to decrease the effects of Apraclonidine. Alpha-blockers such as phentolamine antagonise the vasoconstriction and hypertension effects of adrenaline. Adrenaline specifically reverses the antihypertensive effects of adrenergic neurone blockers such as guanethidine with the risk of severe hypertension. Beta-adrenergic blocking agents: Severe hypertension and reflex bradycardia may occur with non-cardioselective beta-blocking agents such as propranolol, due to alpha-mediated vasoconstriction. Acebutolol, betaxolol, bisoprolol, celiprolol, esmolol, landiolol, labetalol, levobunolol, metoprolol, nadolol, nebivolol pindolol, sotalol, timolol and atenolol are predicted to increase the risk of hypertension and bradycardia when given with adrenaline/epinephrine.

	Beta-blockers, especially non-cardioselective agents, also antagonise the cardiac and bronchodilator effects of adrenaline. Patients with severe anaphylaxis who are taking non-cardioselective beta-blockers may not respond to adrenaline treatment. Carvedilol is predicted to increase the risk of hypertension and bradycardia when given with Adrenaline/epinephrine. General Anaesthetics: Administration of adrenaline in patients receiving halogenated hydrocarbon general anaesthetics that increase cardiac irritability and seem to sensitise the myocardium to adrenaline may result in arrhythmias including ventricular premature contractions, tachycardia or fibrillation. Adrenaline should be used cautiously, if at all, during general anaesthesia with halogenated hydrocarbon anaesthetics. Antidepressant agents: Tricyclic antidepressants such as imipramine and amitriptyline inhibit reuptake of directly acting sympathomimetic agents, and may potentiate the effect of adrenaline, increasing the risk of development of hypertension and cardiac arrhythmias. Concurrent use or use within 2 weeks of a monoamine oxidase inhibitor increases the risk of adverse events. Phenothiazines block alpha-adrenergic receptors. Adrenaline should not be used to counteract circulatory collapse or hypotension caused by phenothiazines; a reversal of the pressor effects of Adrenaline may result in further lowering of blood pressure. Some antihistamines (e.g. diphenhydramine, chlorphenamine) and thyroid hormones may potentiate the effects of Adrenaline, especially on heart rhythm and rate. Adrenaline increases the risk of cardiac adverse effects of levodopa. Use of catechol-O-methyl transferase inhibitors (COMT inhibitors) such as Entacapone may potentiate the chronotropic and arrhythmogenic effects of adrenaline. The hypokalaemic effect of adrenaline may be potentiated by other drugs that cause potassium loss, including corticosteroids, potassium-depleting diuretics, aminophylline and theophylline.

	Ozanimod: Adrenaline/epinephrine might increase the risk of a hypertensive crisis. Rasagiline, safinamide, or selegiline, when given with adrenaline/epinephrine, are predicted to increase the risk of a hypertensive crisis. Adrenaline-induced hyperglycaemia may lead to loss of blood-sugar control in diabetic patients treated with insulin or oral hypoglycaemic agents. Adrenaline should not be administered concomitantly with other sympathomimetic agents because of the possibility of additive effects and increased toxicity. Linezolid- Adrenaline/epinephrine is predicted to increase the risk of elevated blood pressure when given with Linezolid. Some manufacturers advise that half doses of adrenaline may be safer for patients who are taking amitriptyline, imipramine or a beta blocker. This list may not be comprehensive. A detailed list of drug interactions may be found in the BNF and SPC, however, checking for interactions should not delay treatment of anaphylaxis.

Adverse effects	**NB. Remember adrenaline can be life saving.** Refer to BNF or SPC via medicines.org.uk for complete list. Patients' ability to drive and use machines may be affected by the anaphylactic reaction, as well as by possible adverse reactions to adrenaline. Report any suspected adverse reactions to a doctor. Record all adverse drug reactions (ADRs) in the individual's medical record and the individual's GP should be informed. All significant adverse drug reactions should be reported via the Once for Wales Reporting System. Healthcare professionals and individuals/carers are encouraged to report suspected adverse reactions to the Medicines and Healthcare products Regulatory Agency (MHRA) using the Yellow Card reporting scheme on: http://yellowcard.mhra.gov.uk or search for MHRA Yellow Card in the Google Play or Apple App Store. For established medicines, serious adverse events in adults or all suspected adverse reactions in children that may be attributable to the medication should be reported. Guidance on the yellow card system is available at the back of the BNF, or using the above link. • Anaphylaxis reaction should be reported to the UK Anaphylaxis Registry (report via www.anaphylaxie.net or anaphylaxis.registry@ic.ac.uk)
Records to be kept	Record consultation details as required by local procedures. In addition, record: • That valid informed patient consent to treatment was obtained or a decision to treat was made in the individual's best interests in accordance with the Mental Capacity Act 2005. Record name of representative who gave consent, if appropriate. Record advice given and action taken, if patient excluded or declines treatment. • Name, date of birth and address of patient • Name and address of GP • Any medical and drug history taken (if established), including any allergies and previous adverse events • A detailed description of the reaction with circumstances and timings and if possible potential trigger and all administered treatments, including the date and the times they were given. • Injection site, route, volume and strength of adrenaline administered.

	Product name, manufacturer, batch number(s) and expiry date(s). • Printed name and signature (or a password controlled e-records) of registered health professional responsible for administration • Any reasons for exclusion or referral, including actions taken, referral arrangements made, and advice given. • Details of any adverse reactions and actions taken. • The healthcare professional involved must complete a DATIX report via the Once for Wales Reporting System. If a medicine was the potential cause for the reaction, a yellow card should be completed. • Precautions should be taken where practicable to avoid future exposure to the suspected allergen. Patients with known allergies should wear a red allergy identification band whilst an in-patient on any ward (if relevant). • An Anaphylaxis Registry has been established in the UK. Healthcare professionals are encouraged to report all anaphylaxis events to anaphylaxie.net (to register, healthcare professionals should email anaphylaxis.registry@ic.ac.uk). • Any advice received from medical cover and advice given to patient / carer. • Examination finding/s, where relevant. • Record that medication was administered via Patient Group Direction (PGD), record PGD title and version number • If individual was not treated under PGD record action taken. Records should be signed and securely kept for a defined period in line with local policy. All records should be clear, legible and contemporaneous. A record of all individuals receiving treatment under this PGD should also be kept for audit purposes in accordance with local policy.

Patient information

Written/ verbal information to be given to patient or carer	If/when the situation allows, explain indications, contraindications, cautions and potential side effects. All patients should be advised to seek medical review / contact their GP if there are signs of side effects or any reason for concern. Also follow the **discharge arrangements** advice in the PTHB / CDP 007 Management of anaphylaxis procedure.

	Provide advice and support as relevant depending on the individual circumstances, for example:
	• information about anaphylaxis, including signs and symptoms of anaphylaxis and the actions that should be immediately taken
	• information about the risk of a biphasic reaction and clear instructions to return to hospital if symptoms return (refer to Resuscitation Council (UK) Emergency Treatment of anaphylaxis– Guidelines for healthcare providers)
	• prescription for adrenaline auto-injectors (including provision of replacement(s) if patient's own have been used):
	  • advise to carry two in-date adrenaline auto-injectors at all times in case a second dose needs to be administered before the arrival of emergency services.
	  • advise to check the expiry dates and obtain replacements before they expire. Patients/carers should be advised to sign up for expiry alert services. Expired injectors will be less effective.
	  • if relevant, advise that all unexpired batches of *Emerade*® 500 micrograms and *Emerade*® 300 micrograms adrenaline auto-injectors (also referred to as pens) have been recalled as a precautionary measure as some auto-injectors failed to deliver adrenaline or activated prematurely after being dropped. Future production is on hold and no further supplies will be available; patients should be switched to an equivalent strength adrenaline auto-injector in an alternative brand- refer to prescriber.
	  • especially if newly supplied, or if switching between brands, demonstrate the correct use of the adrenaline injector and explain when to use it- instructions for use can be found in patient information leaflets and training videos on respective manufacturers' websites.
	  • advise that the risk of mishandling or failure exists with all adrenaline auto-injectors, and that a second adrenaline auto-injector should be used immediately if the first fails to activate, despite pressing firmly against the thigh. If the patient is not improving, further attempts to activate a failed auto-injector should be made even if one auto-injector has worked, as this may suggest a need for further doses while waiting for emergency services.
	  • depending on the auto-injector device supplied, advise if any solution will remain in the auto-injector device after use.
	  • advise the patient they will receive a patient information leaflet.

	• for children, the following Medicines for Children leaflet: Adrenaline auto-injector for anaphylaxis may be provided https://www.medicinesforchildren.org.uk/medicines/adrenaline-auto-injector-for-anaphylaxis/ • Advise to consider wearing a device, for example, a Medic Alert bracelet, that provides information on their history of anaphylactic reaction and trigger(s). • Information on what to do at the first sign of anaphylaxis: • use one adrenaline auto-injector immediately if you have any signs of anaphylaxis. Use even if in doubt of severity, don't delay; • call 999, ask for an ambulance and state "anaphylaxis". An ambulance should be called even if symptoms appear to be improving after using an adrenaline auto-injector and the individual should not be left alone. The purpose of adrenaline auto-injectors is to start treatment for anaphylaxis that is continued by the emergency services. • lie down and raise your legs. Lying down is important to keep blood flowing to your organs; you can sit up if you are struggling to breathe, but keep your legs elevated as far as possible and lie back down again as soon as you can. Young children may need to lie down first to help assist injection administration by carer • Use a second adrenaline auto-injector if your symptoms haven't improved after 5 minutes • An allergy Action Plan: this can be downloaded at bsaci.org or sparepensinschools.uk) • Advice about how to avoid the suspected trigger (if known) • Information about the importance for referral to a specialist allergy service for assessment and the referral process • Information about patient support groups • Information leaflets on anaphylaxis: • NHS A-Z has printable information on Anaphylaxis. • Anaphylaxis Campaign has factsheets on Anaphylaxis and Adrenaline. • Allergy UK, a national charity dedicated to supporting allergy sufferers in the UK, has a factsheet on Anaphylaxis and Severe Allergic Reaction and a dedicated helpline. • For further information, see MHRA guidance: Adrenaline Auto-Injectors (AAIs) Safety Campaign at: https://www.gov.uk/government/publications/adrenaline-auto-injectors-aais-safety-campaign.

Follow-up advice to be given to patient or carer	Advise that an ambulance has been called and the patient will require a review after they have been treated or discharged from hospital. The patients GP must be informed, and details recorded in the patient's notes.
	
	• Where appropriate, ensure that the person has been offered:
	  ○ Referral to a specialist allergy service (age-appropriate where possible) consisting of healthcare professionals with the skills and competencies necessary to accurately investigate, diagnose, monitor, and provide ongoing management of, and patient education on, suspected anaphylaxis.
	  ○ An appropriate adrenaline auto-injector as an interim measure before their specialist allergy service appointment.
	  ▪ Two adrenaline auto-injectors should be provided.
	  ▪ The person should be given a demonstration of the correct use of the adrenaline auto-injector and advice on when to use it.
	• Ensure the person has been given information on anaphylaxis, including information on:
	  ○ The symptoms and signs of anaphylaxis.
	  ○ The risk of a biphasic reaction.

Key references

1. BNF – accessed online 21/11/24
2. Resuscitation Council (UK) Emergency Treatment of anaphylaxis – Guidelines for healthcare providers, published May 2021; available at www.resus.org.uk
3. Resuscitation Council (UK) Additional information for the treatment of anaphylaxis following vaccination; published 2021; available at www.resus.org.uk
4. Resuscitation Council (UK) Paediatric Cardiac arrest in vaccination settings; revised August 2021
5. Resuscitation Council (UK) Management of Anaphylaxis In The Vaccination Setting; published August 2021
6. Summary of Product Characteristics (SPC) available at www.emc.medicines.org.uk:
    - Adrenaline (Epinephrine) Injection BP 1 in 1000 Hameln Pharma ltd; last updated: 18 June 2024
    - Adrenaline (Epinephrine) 1mg/ml (1:1000) Solution for injection (ampoule) Martindale Pharma, last updated 24 September 2019
    - Adrenaline (Epinephrine) Injection 1:1000 for anaphylaxis (glass prefilled syringe) Martindale Pharma, last updated 13 Feb 2020
    - Adrenaline Injection BP 1/1000 (1mg/1ml) Advanz Pharma, last updated 7 November 2023
7. NICE Clinical Knowledge Summaries- Angio-oedema and anaphylaxis, last revised: August 2024
8. PTHB / CDP 007 Management of Anaphylaxis Procedure accessed 26/11/24

Appendix A. Staff accredited to use this Patient Group Direction

Authorising Manager: I confirm that the practitioners named below have declared themselves suitably trained and competent to work under this PGD. I give authorisation on behalf of Powys Teaching Health Board or a Powys GP practice or Powys Out of Hours Service for the named healthcare professionals below who have signed the PGD to work under it.
The authorising manager must use the competency checklist (below).

Practitioner: By signing this PGD you are indicating that you agree to its contents and that you will work within it. PGDs do not remove inherent professional obligations or accountability. It is the responsibility of each professional to practise only within the bounds of their own competence and professional code of conduct.
I confirm that I have read and understood the content of this Patient Group Direction and that I am willing and competent to work to it within my professional code of conduct.

Printed name of registered health professional	Signature of registered health professional	Printed name of senior representative authorising health professional (Authorising manager)	Signature of senior representative authorising health professional (Authorising manager)	Date

The authorising manager should retain a copy of the list, which will be requested for audit purposes. This list should be kept by PTHB for 25 years after the PGD expires. The healthcare professional should retain a copy of the document after signing.

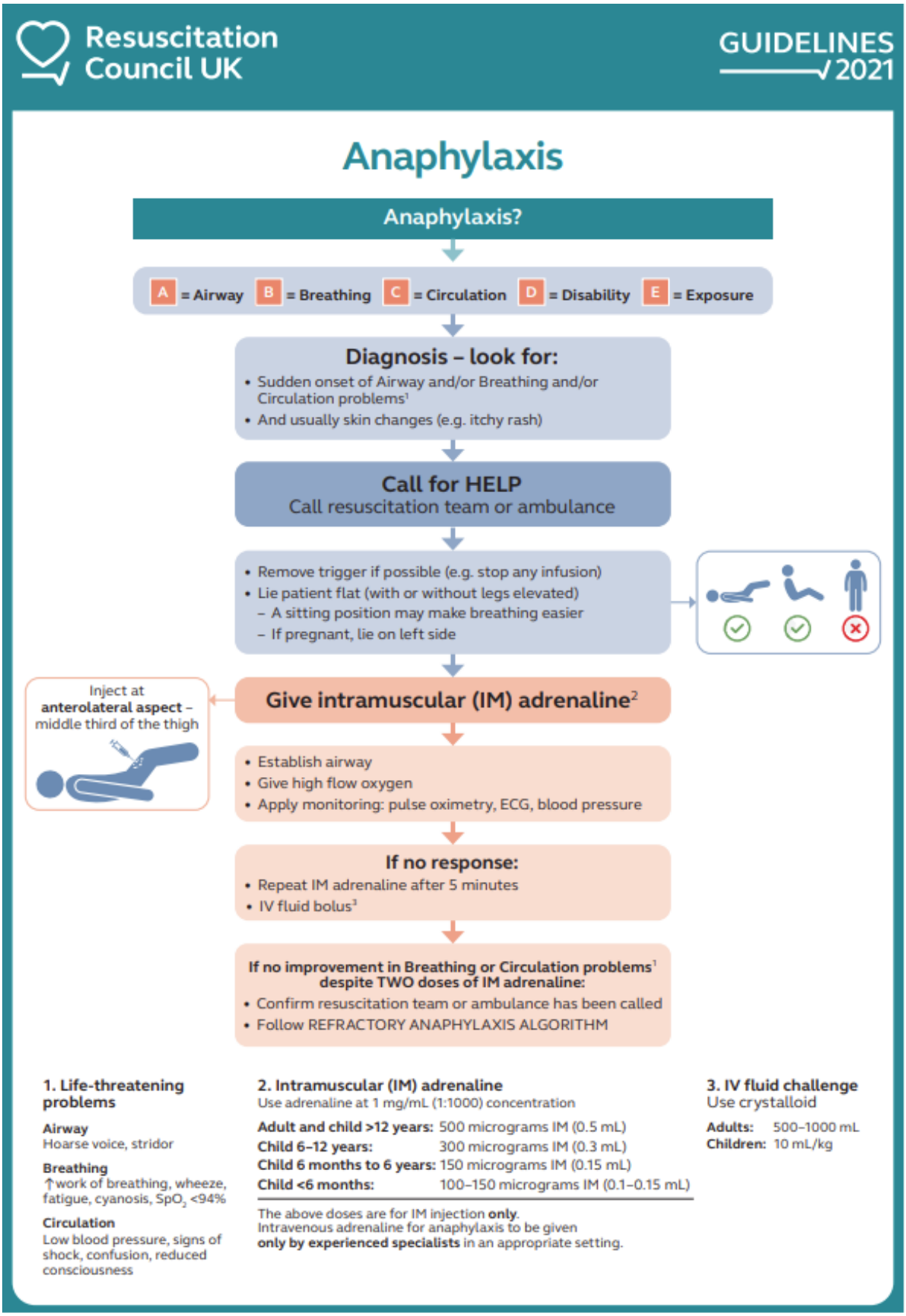
Competency check list for manager or senior team lead to use as part of the authorising process for health professionals to work to a Patient Group Direction (PGD). Review of authorisation will take place on each PGD update and at the individual's annual PADR.

Name: **Role:**		Sign / Initial	Further training identified (Y/N) Specify in " comments	Comments
1	The PGD sign off is for the following PGD:(document the exact title and PGD number) _____			
2	We have discussed the expiry of the PGD and are using a version accessed electronically			
3	The member of staff has the appropriate qualifications and professional registration as outlined in the PGD			
4	The Patient Group Direction has been read in full by the staff member			
5	The identified training has been completed as specified in the PGD and is in date			
6	We have discussed some examples of inclusion criteria and exclusion criteria			
7	The staff member is confident in the administration method and doses			

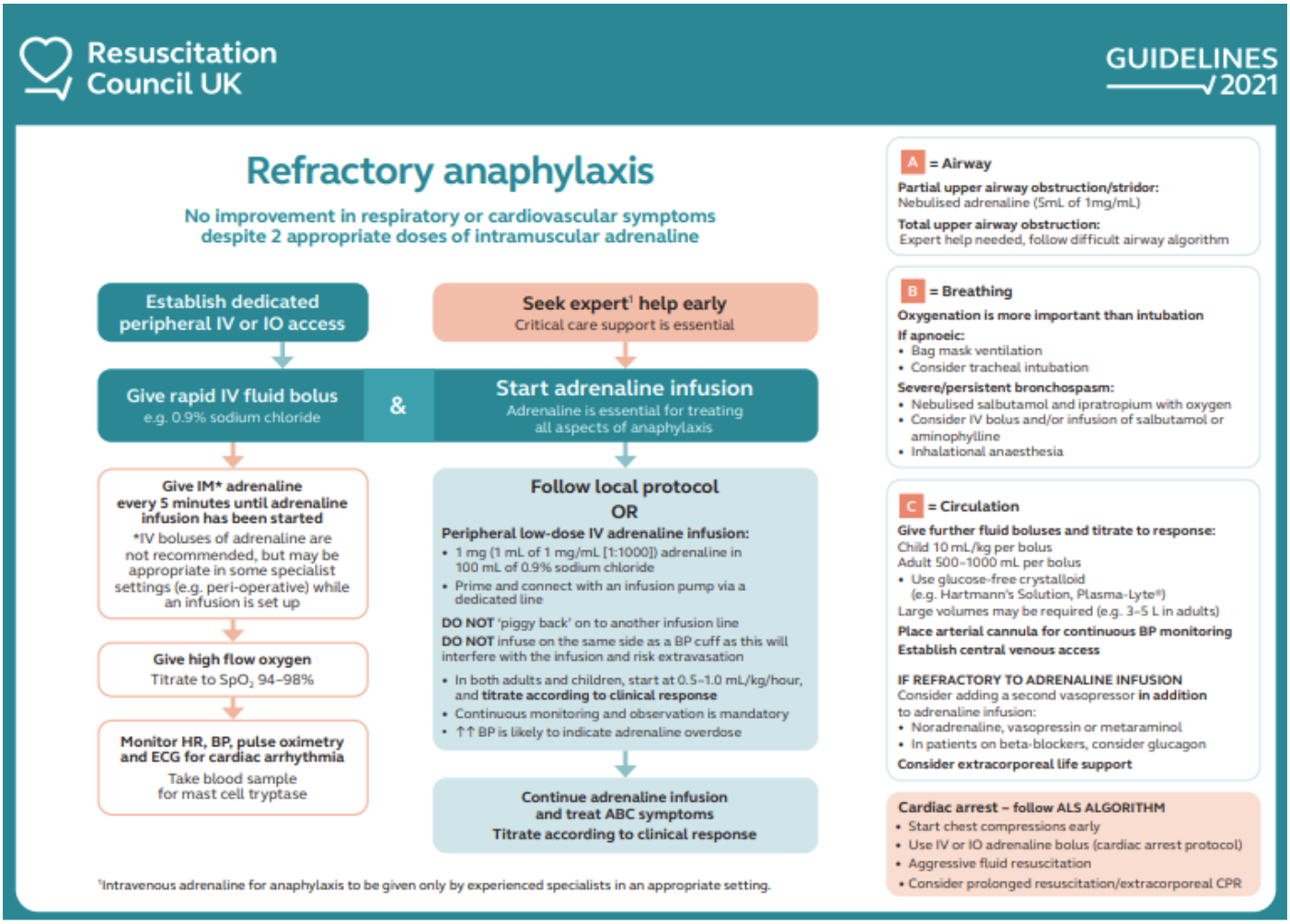
Staff member print & sign name		Date
Manager or senior team lead to print & sign name		Date

Please send a copy of this completed form to individual's line manager and to the staff member, in conjunction with the PGD Appendix A authorisation sheet. A copy of this form should also be kept by service lead in the training file.

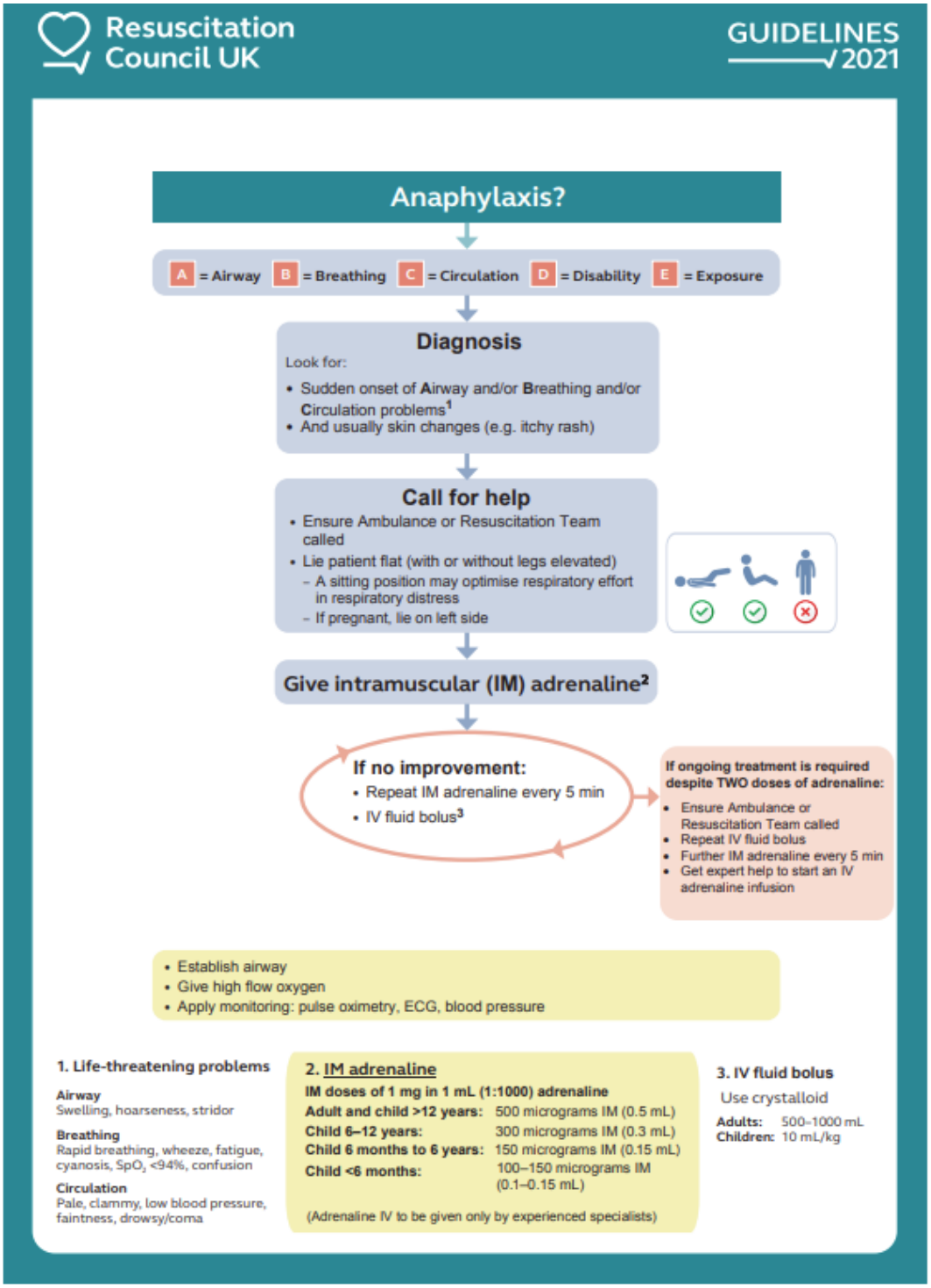
Appendix B. Anaphylaxis algorithm.



Reference Number: PGD0017H
Valid from: 03/02/2025
Review Date: 03/02/2027
Expiry Date: 02/02/2028



Appendix C. Management of anaphylaxis in vaccination settings.



Resuscitation Council UK BSACI Improving Allergy Care RCGP Royal College of General Practitioners Public Health England

Product code: COV2020381 1p 30K DEC (APS)