1. Introduction

Anaphylaxis is a severe, life-threatening, generalized or systemic hypersensitivity reaction. The clinical features of allergic and non-allergic anaphylaxis may be identical.

Antibiotics are the most common trigger for anaphylaxis, followed by muscle relaxants, chlorhexidine and patent blue dye.

Perioperative anaphylaxis is a clinical diagnosis, and presenting features may have many other causes that are more frequent than anaphylaxis. Despite this, early recognition and treatment of anaphylaxis during anaesthesia is essential for avoiding harm.

Drug hypersensitivity reactions are Type B drug adverse reactions. They are the result from an unintended and unwanted stimulation of immune or inflammatory cells by a medication.

When the activation of immune or inflammatory cells occurs due to a specific mechanism ,like IgE mediated it is called “allergic”. However immune or inflammatory cells can be activated through a non-specific mechanism or “non-allergic”, examples are direct activation of mast cell or a mast cell-independent mechanism such as selective inhibition of cyclooxygenase 1 (e.g. NSAIDs).

The severity-grading of hypersensitivity drug reactions depends on signs and symptoms. Minor or moderate reactions (Grade 1 and Grade 2) are correctly termed ‘perioperative hypersensitivity reactions’ as only Grade 3, 4 and hypersensitivity can correctly be termed ‘anaphylaxis’.

Modified Ring and Messmer classification

Grade 1: is characterized by mucocutaneous features such as generalized erythema, urticarial rash with or without angioedema.

Grade 2: moderate multivisceral signs like mucocutaneous signs, moderate hypotension, tachycardia or both with or without moderate bronchospasm or gastrointestinal symptoms.

Grade 3: Life-threatening mono- or multivisceral signs such as life-

threatening hypotension, tachycardia or bradycardia with or without cardiac arrhythmia, mucocutaneous signs, severe bronchospasm or gastrointestinal symptoms The cutaneous features may be

Grade 4: fulfils the requirements for initiating cardiopulmonary resuscitation.

2. Scope

The guidance applies to all anaesthetist who are responsible for the clinical management and care of these patients.

The guidance details the immediate clinical management of an anaesthetic anaphylactic reaction, the documentation and communication required and the allergy clinic referral for investigation and follow-up.

This Guideline covers both suspected perioperative anaphylaxis and hypersensitivity reactions.

3. Guideline Standards and Procedures

Anaphylaxis is likely when all the following criteria are met:

Sudden onset and rapid progression of symptoms

Life threatening **A**irway and/or **B**reathing and/or **C**irculation problems,

HYPOTENSION being the most frequent presenting feature

Skin and/or mucosal changes (flushing, urticarial, angioedema) are uncommon presenting features.

Under Anaesthesia Common Signs include:

- HYPOTENSION
- BRONCHOSPASM

Inmediate Management

- Use ABCD approach
- Adrenaline is the mainstay of the treatment of anaphylaxis
- Remove Causative Agent
- Elevate Legs
- **CALL FOR HELP AND INVESTIGATION BOX.**
- IF SYSTOLIC BLOOD PRESSURE LESS 50mmHG start CRP as ALS guidelines

Anaphylaxis during Anaesthesia

Immediate Management

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NHS Trust

IF Adult CARDIAC ARREST
Pulseless Electrical Activity, PEA or SBP<50mmHg

- ALS GUIDELINES for non-shockable rhythms.
- 1mg I.V ADRENALINE.
- **Start CPR if SBP< 50mmHg.**
- Elevate legs. 2L Crystalloids.

DIAGNOSIS REMOVE

- Unresponsive hypotension or bronchospasm.
- Remove triggers: chlorhexidine, synthetic colloid.
- Stop procedure. Use minimal volatile if GA.

CALL FOR HELP AND ANAPHYLAXIS BOX

AB

- Maintain Airway/100% O2.
- Consider early intubation.
- Delay may lead to complete obstruction.

CIRCULATION

ADULT IV ADRENALINE: 50 mcg 1-2 min
1:10 000 100mcg/ml 0.5 ml.
ADULT IM ADRENALINE: 500mcg
1:1000 1mg/ml 0.5 ml lateral thigh
PAEDIATRIC IV ADRENALINE: 2-10mcg/kg
1:10 000 100mcg/ml
PAEDIATRIC IM ADRENALINE
1:1000 1mg/ml
< 6 YEARS 150 mcg (0.15ml)
6-12 YEARS 300mcg(0.30ml)

Rapid iv fluid bolus 20ml/kg
Crystalloids
Elevate legs

Anaphylaxis during Anaesthesia

Refractory Management

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Request more help

- Call for Senior help
- May require assistance with fluids

Triggers removed?

- **Chlorhexidine** including impregnated CVP.
- **Colloids**
- **Latex** remove from theatre

Monitoring

- Arterial line.
- CVP
- Consider TTE/TOE

RESISTANT HYPOTENSION

- Adrenaline Infusion
- Additional iv fluids 50ml/Kg
- Add second vasopressor
- Consider CVP

- **Vasopressin:** 2 units iv.
  Dilute 20units (1ml) in 20ml of NaCl 0.9%.
  Consider in patients taking ACE Inhibitors.
  Repeat if necessary.
- **Glucagon** 1mg iv. Consider in patients on Beta-blockers. Repeat dose if necessary at 5min intervals.
- **Noradrenaline infusion.**

RESISTANT BRONCHOSPASM

- Adrenaline infusion
- Consider tension pneumothorax
- Add alternative bronchodilators

- **Salbutamol:**
  -Metered dose inhaler max 12puffs.
  PAEDIATRIC 6 puffs<6Y 12puffs> 6Y
  - Slow iv 250 mcg.
  PAEDIATRIC DOSE: **>2 YEARS** 15mcg/Kg iv
  1month-2YEARS 5mcg/Kg iv

- **Magnesium Sulphate 50% I.V**
  -2g during 20min.
  PAEDIATRIC DOSE 50mg/kg iv max 2g over 20min.

CONSIDER OTHER DRUGS

- **Hydrocortisone i.v. doses:**
- Adult: 200 mg
  - Child 6-12 years: 100 mg
  - Child 6 months-6 years: 50 mg
  - Child <6 months: 25 mg
- **Chlorphenamine i.v. doses:**
- Adult: 10 mg
  - Child 6-12 years: 5 mg
  - Child 6 months-6 years: 2.5 mg
  - Child <6 months: 250 µg.kg

Recommendations/ Cautions

Drug treatments

1-Adrenaline is the primary treatment of anaphylaxis and should be administered immediately if anaphylaxis is suspected. In the perioperative setting this will usually be IV.

2-A rapid IV crystalloid (not colloid) fluid challenge of 20 ml/kg should be given immediately. This should be repeated several times if necessary.

3-If an IV colloid is being administered at the time of the anaphylactic event, it should be discontinued, and the IV administration set replaced.

4 -During anaphylaxis with a systolic blood pressure <50 mmHg in adults, even without cardiac arrest, CPR should be started simultaneously with immediate treatment with adrenaline and liberal IV fluid administration.

5- Vasopressin and glucagon for the management of intractable perioperative anaphylaxis should be available within 10 minutes, wherever anaesthesia is administered**.**

Details of locations are in RARE EMERGENCY DRUGS LOCATIONS CHART WITHIN THEATRES AREAS UHL.

6- Administration of IV vasopressin 2 Units, dilute 20 units(1ml) in 20 ml of Sodium Chloride 0.9% , repeated if necessary, should be considered when hypotension due to perioperative anaphylaxis is refractory.

7- During perioperative anaphylaxis in patients taking beta blockers early administration of IV glucagon 1 mg should be considered, repeated as necessary.

8- After adequate resuscitation consider Corticosteroids and / Chlorphenamine,

9- Sugammadex has no immediate role in resuscitation of suspected anaphylaxis.

Anaphylaxis triggers

1.-When anaphylaxis occurs following recent insertion of a chlorhexidine coated central venous catheter, this should be removed, and if appropriate replaced with a plain one.

2- Where pulse oximeter saturations fall during anaphylaxis in a patient who has received patent blue dye, hypoxia should be assumed to be real. A blood gas sample should be taken, when the patient is stable enough for this.

3- Latex related anaphylaxis – atypical late presentation often occurs 30-60 minutes after contact. This is due to airborne exposure or mucous membrane contact.

4- If an adverse reaction to blood or blood components is suspected, return all components to the laboratory where possible and follow the adverse blood transfusion reaction protocol.

Monitoring

1- All patients with suspected anaphylaxis should be closely monitored in PACU/HDU for a minimum of 6 - 12 hours in case of late deterioration from a biphasic response which is rare.

2- Patients with severe anaphylaxis should be admitted to critical care.

Proceeding with surgery

1. Non-essential surgery should not be started after severe perioperative anaphylaxis.

2- If postponed surgery is urgent ,refer to **Urgent Surgery Management Plan.(appendix 4)**

- **Departmental Organization**

-All cases of suspected perioperative hypersensitivity reaction should be referred, including grade 1 and 2.

-All cases of severe perioperative anaphylaxis, including fatalities, should be discussed with allergist/ anaesthetist with interest in allergy at the first available opportunity.

-All cases of Grades 3–4 perioperative anaphylaxis should be presented and discussed at local Morbidity and Mortality meetings for purposes of education and familiarization.

-Operating theatres should have an accessible list of chlorhexidine-containing items. Appropriate alternatives should be available for patients with suspected or confirmed chlorhexidine allergy.

-If administration of patent blue dye is planned during surgery, the surgical team should discuss the risk of anaphylaxis as part of the consent process for surgery.

-Investigation of perioperative anaphylaxis should include follow-up, either in hospital or in primary care, to detect adverse sequelae such as new anxiety, impairment of cognition or activities of daily living or deterioration in cardiorespiratory or renal function. This will be done at the Adult Drug Allergy Clinic.

Investigations and referral to Allergy Clinic.

ANAESTHETIC ANAPHYLAXIS INVESTIGATION BOX CHECKLIST

Boxes should be in Recovery areas, ICUs, Maternity Suite, MRI, CTscan and Catheter Suite Laboratory.

This pack contains:
1.-Guideline of the management of suspected anaphylaxis during anaesthesia
2.-Details of where to find glucagon and vasopressin with details of doses. Less than 10 minutes away.
3.-Instructions on taking three timed blood samples for mast cell tryptase and forms.
4.-Stickers Anaesthetic Anaphylaxis Check List.
5.-Template for letter to be given to the patient.
6.- Template for letter to be sent to the GP.
7.-Referral form to be sent to the Allergy Clinic.
8.-Urgent surgery management plan.

MAST CELL TRYPTASE

MAST CELL TRYPTASE (Blood test) SENT TO IMMUNOLOGY AT		
0 hours	1-2 hours	24hours
Brown (serum) Bottle: Labelled with times		

- It is anaesthetist responsibility to ensure the samples are taken, including 24h sample
- Ensure you date and time the tubes. There is **no need to refrigerate the samples.**

- 1st sample as soon as the patient is stable.
- 2nd sample as close as 1-2 hours as possible after the event. (No more than 6h)
- 3rd baseline at least 24 hours after the event.

DOCUMENTATION AND COMMUNICATION

- Record full details of the anaphylaxis and resuscitation in the patient's medical record.
- **Anaesthetic Anaphylaxis Check List Sticker (Investigation box)** to be added to patient notes.
- Suspected medication stopped and an alternative prescribed on drug prescription system.
- Document potential allergens on wristband and drug prescription system.
- Report the event in **Datix System.**

- Explain to the patient what has happened as soon as practicable and record your conversation in the medical record. Give the patient the completed **Patient Letter (Appendix 2).**
- Inform patient's GP using **GP letter.(Appendix 3)**

- Inform Allergy Anaesthetic Consultant about suspected perioperative hypersensitivity/anaphylaxis via Anaphylaxis Anaesthetic Mailbox. (Anaesthanaphylaxis@uhl-tr.nhs.uk)

ALLERGY CLINIC REFERRAL and FOLLOW UP

- Complete all parts of the **Allergy Clinic Referral Form (Appendix 1)** and send together with photocopies of anaesthetic record, drug chart and other relevant documentation to Allergy Anaesthetic Consultant. Please insert a copy in patient notes.

- Ensure the event is reported to the MHRA though the Yellow Card system and keep a note of the MHRA Reference Number to update with the Allergy Clinic diagnosis. You will need this number for the Allergy Clinic Referral Form. https://yellowcard.mhra.gov.uk

- Ensure the patient is followed up by Adult Drug Allergy Clinic. The referral is a very important part of the process, and it is anaesthetist's responsibility that the patient is discharged with the appropriate documentation about the reaction.

- Follow this link for Appendix 1, 2 and 3 https://www.leicestershospitals.nhs.uk/aboutus/departments-services/allergy/

All patients experiencing suspected perioperative hypersensitivity reaction/anaphylaxis should be referred for specialist investigation to Adult Drug Allergy Clinic. This is the responsibility of the **Consultant Anaesthetist** in charge of the patient at the time of the event, the case to refer the patient with all the relevant documentation as previously explained. Patients not referred in an appropriate way (e.g by surgeons or without documentation) will be delayed for investigation and follow-up.

Patients should be ideally seen by Allergy Clinic within 6 weeks. Ideally the case should be discussed with the Allergist/Allergy Consultant prior the appointment.

PERIOPERATIVE ANAPHYLAXIS/ HYPERSENSITIVITY INVESTIGATIONS

1.-Document in Medical Notes
2.-Anaesthetic Anaphylaxis Check List Sticker.
3.-Stop and document suspected medication in drug prescription system and on wristband.
4.-Datix Form.
5.-Email Anaesthetic Anaphylaxis Mailbox (Anaesthanaphylaxis@uhl-tr.nhs.uk)
6.-Report to yellowcard.mra.gov.uk and keep a note of the MHRA Reference Number.
7.-Complete all parts of the Allergy Clinic Referral Form and with photocopies of anaesthetic record, and drug chart, these can be emailed to Anaesthetic Anaphylaxis mailbox or sent by post to:

ANAESTHETIC DEPARTMENT GLENFIELD HOSPITAL.

DR PATRICIA ROMERO

8.-Explain to patient and complete Patient Letter.
9.- Inform GP using GP letter.

4. Education and Training

All anaesthetist responsible for perioperative care should be trained in recognition and management of perioperative anaphylaxis and relevant local arrangements.
Clinical Directors of anaesthetic departments should ensure their anaesthetist have been trained in the management of perioperative anaphylaxis.

5.-Monitoring and Audit Criteria

Element to be Monitored	Lead	Method	Frequency	Reporting Arrangements
Anaphylaxis events	ITAP Q&S Lead	Datix Incidents and Audits	All Incidents	ITAPS Q&S Board
Referral Compliance	Anaesthetic Anaphylaxis Lead	Email to Anaesthetic Anaphylaxis Mailbox and Allergy Clinic Follow Up	Every two year.	ITAPS Q&S Board and Immunology Lead

6.-Supporting References

RCUK 2021: Emergency treatment of anaphylactic reactions: Guidelines for healthcare providers. Resuscitation council UK 2021. https://www.resus.org.uk/library/additional-guidance/guidance-anaphylaxis/emergency-treatment

MHRA 2012: All medical devices and medical products containing chlorhexidine - risk of anaphylactic reaction due to chlorhexidine allergy. Medicines and Healthcare Products Regulatory Agency (2012) https:/www. gov.uk/drug-device-alerts/medical-device-alert-all- medical-devices-and-medicinal-products-containing-chlorhexidine-risk-of-anaphylactic-reaction-due-to- chlorhexidine-allergy#action

-AAGBI resources Allergies and Anaphylaxis where you can find NAP 6 report, Quick Reference Handbook Card, link to the yellow card, and link to British Society of Allergists and Clinic Inmunologists in the UK.
https://www.aagbi.org/safety/allergies-and-anaphylaxis

-Anaesthesia, Surgery and Life-Threatening Allergic Reactions Report and findings of the Royal College of Anaesthetists' **6th National Audit Project:Perioperative Anaphylaxis** May 2018.

- Australian and New Zealand College of Anaesthetists (ANZCA) and Australian and New Zealand Anaesthetic Allergy Group (ANZAAG). Perioperative Anaphylaxis Management Guidelines.

- Garvey LH, Dewachter P, Hepner DL, Mertes PM, Voltolini S, Clarke R, et al. Management of suspected immediate perioperative allergic reactions: an international overview and consensus recommendations. British journal of anaesthesia. 2019; 123 (1): e50-e64.

- Dewachter P, Savic L. Perioperative anaphylaxis: pathophysiology, clinical presentation and management. BJA education. 2019; 19 (10): 313-320.

7.**Key Words**

Anaesthetic anaphylaxis; perioperative anaphylaxis; suspected adverse drug reaction; drug allergy; suspected drug allergy; hypersensitivity; mast cell tryptase, NAP 6.

8..

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) Patricia Romero, Allergy Consultant Anaesthetist. Prea Ramasamy, Consultant Anaesthetist, Perioperative Anaphylaxis Lead	**Lead Committee or Executive Lead** **ITAPS Quality Lead** P Ramasamy
Date of Next Review by Approval Committee: **April 2022** **Details**	**Details of Changes made during review:** -Corticosteroids and antihistamines should be given after an appropriate resuscitation in case of anaphylaxis.

	-Sugammadex has no role in rocuronium anaphylaxis. -Patients have to be referred by anaesthetists in an appropriate way. -Added perioperative hypersensitivity reactions (Grade 1 and 2) to be referred. -Change in the wording in patient and GP letter -Follow up of sequela to be done at Adult Drug Allergy Clinic.

ANAESTHETIC ANAPHYLAXIS REFERRAL FORM (4 pages)

Patient details

Name……

Date of birth ..../..../…….. Hospital / NHS Number ……..

Address ……

…… Telephone ……..……..

Referring consultant anaesthetist (for clinic correspondence)

Name……..

Address……..……

……..……..

Telephone…….. Secure Email …….

Patient's GP (for clinic correspondence)

Name……..……..

Address……..……

……..……..

Telephone…….. Secure Email …….

Surgeon (for clinic correspondence)

Name……..……..

Address……..……

……..……..

Telephone…….. Secure Email …….

Date of the reaction...../...../20....

Time of onset of Clinical Features ...../ h (24h clock)

<u>Suspected cause of the reaction (most likely first)</u>

1) …….. 2) ……..…… 3) ……..……

Proposed surgical or other procedure: ……..……

Was surgery/procedure completed? Yes ☒ No ☐

If 'no', has another date for surgery being scheduled? Yes ☐ ☐ No

Urgency/Date of future surgery……..

TIMELINE 1: Drugs administered in the hour before the reaction. Please include any other relevant exposures, e.g. chlorhexidine, iv colloids, Patent Blue dye

Drugs and other exposures	Time (24 hour clock)	Route of drug administration	Comments

Please continue on a separate page if you need to add more details

TIMELINE 2: Clinical features of the reaction and other relevant events. Please include lowest BP, SpO2 and expired CO2.

Clinical Features and Events	Time (24 hour clock)	Comments

Please continue on a separate page if you need to add more details

Neuraxial blockade

Spinal ☐ Epidural ☐ Epi-spinal ☐

Drug/Procedure	Time (24 hr clock)	Route

Peripheral nerve/regional block

Type of block(s) .....

Drug	Time (24 hr clock)	Route

Latex free environment? Yes ☐ No ☐

Chlorhexidine skin prep (by anaesthetist) Yes ☐ No ☐ Time(s) .....

Chlorhexidine skin prep (by surgeon) Yes ☐ No ☐ Time .....

Chlorhexidine medical lubricant gel Yes ☐ No ☐ Time .....

Chlorhexidine-coated intravascular catheter Yes ☐ No ☐ Time .....

TIMELINE 3: Drugs and IV fluids given to treat the reaction

Drug /IV fluid	Time (24 hour clock)	Route	Comments on response to treatment

Please continue on a separate page if you need to add more details

CPR REQUIRED? Yes ☐ No ☐ Time started ……/……h (24h clock)

Duration of CPR (minutes) ……

ADVERSE SEQUELAE from this reaction e.g. cardiac, renal, neurological, respiratory, anxiety

……

Investigations performed prior to referral (please give results)

N.B. It is the anaesthetist's responsibility to obtain the results from the laboratory

Were blood samples taken for Mast Cell Tryptase? Yes ☐ No ☐

First MCT sample Time___:___ Date___/___/____ Result…….....……

Second MCT sample Time___:___ Date___/___/____ Result…….....

Third MCT sample Time___:___ Date___/___/____ Result…….....……

Other bloods tests:

Test:…….....…… Time___:___ Date___/___/____ Result……

Test:…….....…… Time___:___ Date___/___/____ Result……

Case discussed at a multidisciplinary meeting? Yes ☐ No ☐

Reported to the MHRA Yes □ No □

By whom? …… MHRA Reference Number ……

Please send the completed form to the allergy clinic together with:

- **Photocopy of the anaesthetic record and any previous anaesthetic records**
- **Photocopy of the prescription record if relevant**
- **Photocopy of relevant recovery-room documentation**
- **Photocopy of relevant ward documentation**

Please file a copy of this form in the patient's casenotes

LETTER TO THE PATIENT FOLLOWING SUSPECTED PERIOPERATIVE ALLERGY.

Date:
Patient's name:
Patient's address:
Hospital Number:
NHS Number:
Planned Procedure:
Consultant Surgeon:
Consultant Anaesthetist:

Dear

You had a suspected allergic reaction during anaesthesia on
To find out the cause of the reaction I will refer you to the anaesthetic allergy clinic at:

Dr. Nasreen Khan
Respiratory Consultant Allergy Clinic
Glenfield Hospital Leicester

They will contact you with an appointment –this normally takes a few weeks.

- **If you have not heard in six weeks or if you have any queries please contact me (details below).**

- **It is important you attend the allergy clinic to prevent a further severe allergic reaction.**

Until you have attended the allergy clinic, you should avoid all drugs and other potential causes you were exposed to the hour prior the allergy reaction. These include:

- Latex
- Chlorhexidine, including medical, dental and household products
- Anaesthetics drugs (specify)
- Antibiotics (specify)
- Analgesics (specify)
- Other drugs (specify

It is important that you show this letter if you have any medical appointments between now and the time of your clinic appointment.
I will write to your GP with this information.
Yours sincerely,

Consultant Anaesthetist Contact phone number

University Hospitals of Leicester NHS
NHS Trust

LETTER TO THE PATIENT'S GP FOLLOWING PERIOPERATIVE IMMEDIATE HYPERSENSITIVITY REACTION.

Date:

GP'S name and Address:

Dear Dr

Your patient:
Address:
Hospital Number:
NHS Number:
Planned Procedure:
Consultant Surgeon:
Consultant Anaesthetist:

Had a suspected allergic reaction during anaesthesia on

Your patient has been referred for investigation to the anaesthetic allergy clinic at
Dr Nasreen Khan,
Respiratory Consultant
Allergy Clinic
Glenfield Hospital, Leicester, LE3 9QP

Until the patient has attended the allergy clinic, they should avoid all drugs and potential allergens to which they are exposed during the hour prior the allergic reaction. These include:

- Latex
- Chlorhexidine, including medical, dental and household products
- Anaesthetics drugs (specify)
- Antibiotics (specify)
- Analgesics (specify)
- Other drugs (specify)

I have given the patient a letter providing the same information as here.

Yours sincerely,

Consultant Anaesthetist

Contact Phone Number

Urgent surgical intervention after suspected perioperative anaphylaxis and prior to allergy investigations: suggested management.

<u>It is possible to provide a safe anaesthesia in almost every case and unnecessary to postpone surgery.</u>

- ✓ It is important to discuss the case with a consultant Allergist or Clinical Immunologist as soon as possible after the suspected anaphylactic event.

- ✓ Regional anaesthesia, where practical may be a sensible option to enable avoidance of most drugs suspected to have caused anaphylaxis during previous general anaesthesia.

- ✓ If anaesthesia was induced with propofol and general anaesthesia is required, the choice of induction agents include inhalational agents, thiopental, etomidate (non-lipid formulation) and ketamine.

- ✓ If tracheal intubation is required and a NMBA is contraindicated:

    - A remifentanil infusion, magnesium sulphate and topical anaesthesia are helpful adjuncts to deep anaesthesia in facilitating laryngoscopy and intubation.
    - Where remifentanil was used in the previous anaesthetic, consider the use of alfentanil.
    - Awake intubation under topical anaesthesia is an alternative

- ✓ If local anaesthetics are not contraindicated, sufficient surgical muscle relaxation can usually be provided if necessary with adequate depth of anaesthesia and adjunct neuroaxial block, transversus abdominis blocks, rectus sheath blocks or other peripheral nerve block.

- ✓ Pre-warn the theatre team beforehand, and be prepared to diagnose and treat anaphylaxis promptly.

- ✓ Premedication with antihistamines and steroids may reduce the severity of reactions caused by non-specific histamine release but will not prevent anaphylaxis.

Avoid the following if administered/exposed during the 60 minutes prior to the suspected anaphylactic event:

- All drugs to which the patient was exposed, with exception of inhalational anaesthetist agents.
- All antibiotics of the same class that was administered (beta lactams; macrolides; fluorquinolones; aminoglycosides; monobactams; carbapenems). The surgical and anaesthetic team should discuss antibiotic choice with a microbiologist.
- If an NMBA was administered during this period, all NMBAs should be avoided unless it is impossible to do so, due to the risk of cross-sensitivity.
- Chlorhexidine (including chlorhexidine, antiseptic wipes, medical gel and chlorhexidine-coated intravascular lines/catheters)
- IV colloids
- Radiological contract and dyes used for lymph node identification
- Latex.
- Local anaesthetics of the same class.
- Histamine-releasing drugs (morphine and codeine) as the previous reaction may have been due to non-specific histamine release

If past anaesthetic records are not available, in addition to the above:

- Assume that the patient previously received an antibiotic. Antibiotics are the most common cause of perioperative anaphylaxis in the UK. Discuss antibiotic prophylaxis with a microbiologist beforehand.
- Assume that the patient was previously exposed to propofol, morphine, chlorhexidine, latex, IV colloid and NMBA.