

## Penicillin Allergy Assessment Oral Challenge Secondary Care

### Introduction

A label of penicillin allergy is carried by 5.9% of the general population with an estimated 182,000 people in the North East and North Cumbria (NENC) affected<sup>1</sup>. Around 95% of penicillin allergy labels are incorrect when tested<sup>2</sup>. A penicillin allergy label can be associated with increased morbidity, increased length of stay, greater healthcare costs, and increased rates of methicillin resistant *Staphylococcus aureus* (MRSA), *Clostridioides difficile*, and vancomycin-resistant *Enterococcus* (VRE) infection. This may be due to use of alternate antibiotics to beta-lactams.

Despite this clear association with harm, penicillin allergy testing is a scarce resource in the NHS<sup>3</sup>. Testing is currently performed by allergists and immunologists working in specialist clinics and is consequently limited to select patient groups<sup>4</sup>. The provision of de-labelling at-scale is therefore only possible with the engagement of clinicians who are not trained in allergy or immunology. A drug provocation test (DPT) is considered the gold standard test to confirm or refute the diagnosis of allergy in individuals at low risk of an IgE-mediated type 1 immediate hypersensitivity reaction<sup>1</sup>. In recent years, several studies have demonstrated that it is possible to identify patients who are at low risk of penicillin allergy with an allergy history alone. It appears to be safe and efficacious to offer a direct drug provocation test (DPT) without prior skin testing in such patients.

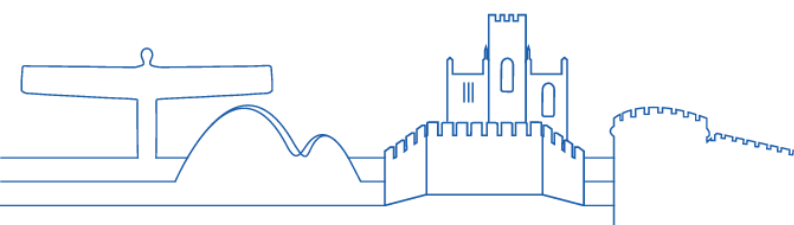
This guideline refers to the administration of a single dose of a penicillin without prior skin testing. In some patients, the allergy history may indicate that there is no increased risk of allergy compared with that of the baseline population risk. In this group, no allergy testing is required before removing the allergy label.

Clinical presentation of penicillin allergy is variable and dependent on the immunological mechanism. Type 1 hypersensitivity/ immediate IgE mediated reactions occur within 6h (typically <1h) after drug administration, but can occur up to 4 days into a course (accelerated/immediate). These reactions have features ranging from life-threatening anaphylaxis to urticarial, angioedema, bronchospasm/wheezing and laryngeal oedema. Type 4 hypersensitivity/ non-immediate reactions (non-IgE) occur >1h to several days after administration and are generally cutaneous reactions

This guideline is aimed at challenging 'low risk' penicillin allergies. These include:

- Childhood rashes where timing of rash onset is unknown and there were no severe features or hospitalisation
- A delayed rash (>24h after starting antibiotics) with no other symptoms, either diffuse or localised rash, which occurred over 10 years ago
- Unknown reactions which occurred over 10 years ago
- Non-specific reactions such as mild CNS effects (headache, confusion) or GI effects (diarrhoea, nausea, vomiting)

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



## **Oral Penicillin Challenge Guidance**

Antibiotic challenges can result in immediate allergic reactions, including anaphylaxis. Patients must be closely observed during this procedure and must not leave the ward for 1 hour after challenge.

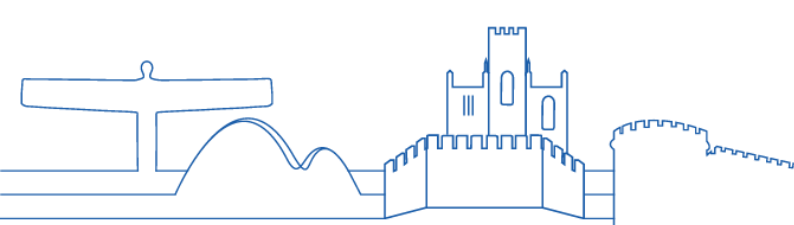
Ensure that properly equipped resuscitation equipment is immediately available in the clinical areas.

**Inclusion Criteria** (if answer NO to any question, NOT appropriate for challenge)

- Age greater than 18
- Labelled as penicillin allergic currently on antibiotic therapy
- Capacity/ability to consent (i.e. no cognitive impairment)

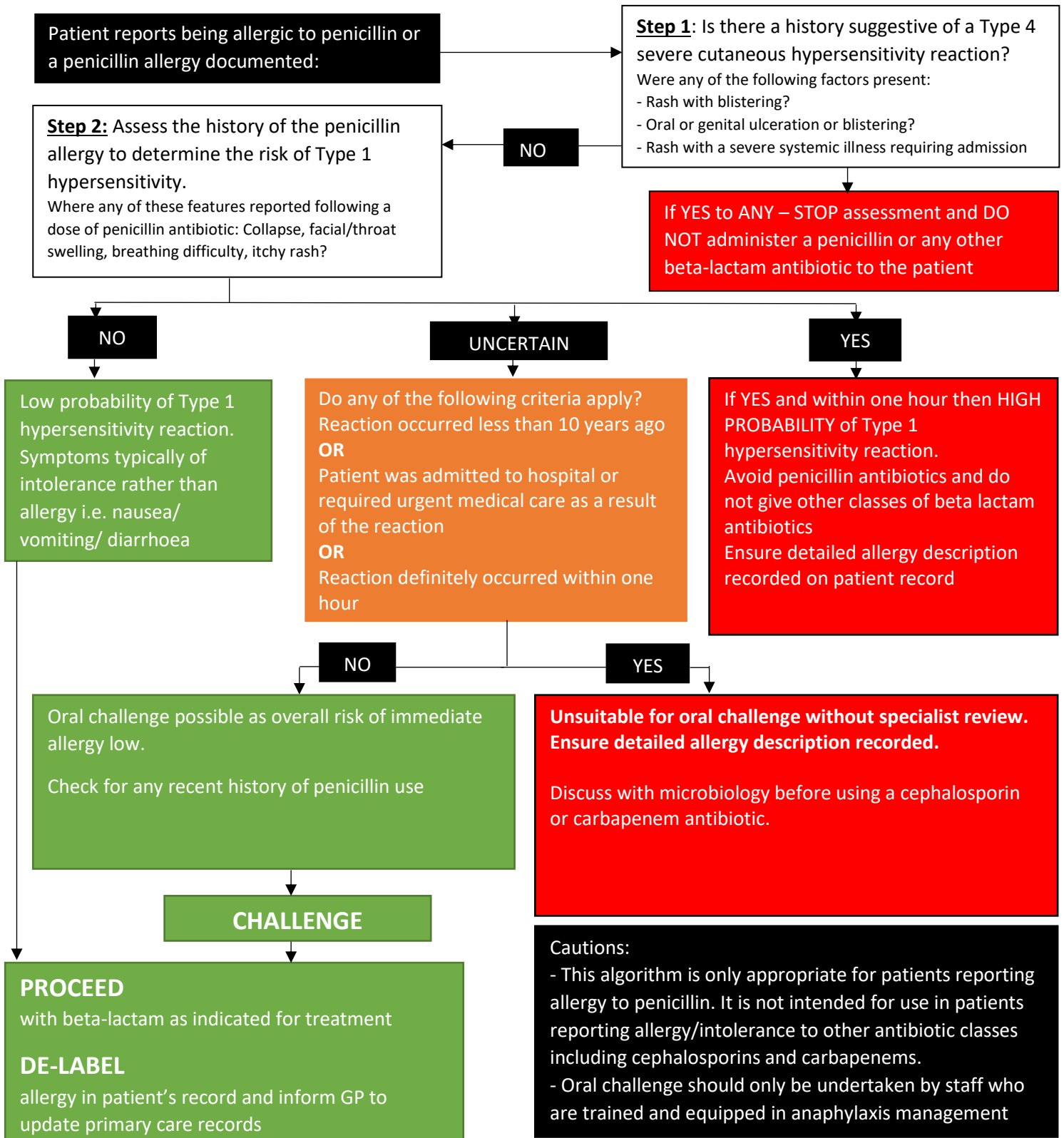
**Exclusion criteria**

- Medically unstable (NEWS greater than or equal to 2)
- On inotropic support
- Pregnant or breastfeeding
- Uncontrolled asthma
- Unstable coronary artery disease

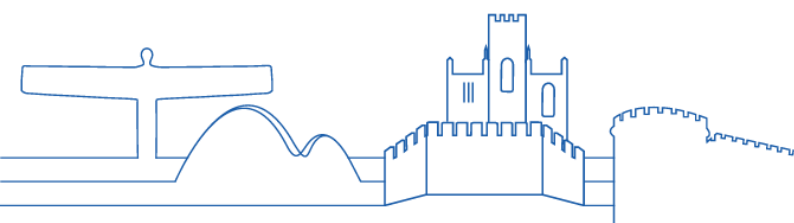


Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025

**Allergy severity assessment flowchart**



Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



This guidance is designed to be used in conjunction with the algorithm above and should be applied in clinical areas with staff trained and equipped in anaphylaxis management.

### Preparation:

1. Review the exclusion and inclusion criteria for oral challenge. Oral antihistamines should be stopped 72 hours prior to challenge since they may mask a true allergy.
2. Select the antibiotic to be used. In most cases this should be the penicillin antibiotic to which the patient had the adverse reaction. If the antibiotic is unknown then amoxicillin is an appropriate choice.
3. Discuss the plan for an oral penicillin challenge with the patient and give them the **Patient information leaflet penicillin allergy** (Appendix 2)
4. Complete the consent form (Appendix 1) and file this in the patient's notes.

### Procedure for the oral challenge:

1. Measure the patient's observations (HR, BP, oxygen saturations, RR). If the patient has asthma then measure peak expiratory flow rate (PEFR).
2. Prescribe and administer the antibiotic and remain in the clinical area for the first 20 minutes.
3. Antibiotics should be administered as a single oral dose i.e. Amoxicillin 500mg OR Flucloxacillin 500mg
4. Inform the patient to notify you immediately if they experience any adverse symptoms
5. Measure the patient's observations at regular intervals for up to one hour. Repeat observations if they experience an adverse reaction.
6. Record any symptoms that the patient experiences.
7. If the patient reports any symptoms of a positive test or they have a rising NEWS score then the patient should be reviewed immediately by an appropriate senior member of staff

### Post procedure care:

1. If the challenge is negative then give the patient the patient information leaflet found in Appendix 4, remove the allergy record from the patient's clinical records and include the result in the discharge letter. Consider adding 'please remove penicillin allergy from patient's records' to the GP action/follow up section of the discharge letter.
2. If the challenge outcome is positive for an allergic reaction then update the patients clinical records record to include the result of the oral penicillin challenge. Provide the patient with a patient information leaflet found in Appendix 5 and inform the GP of the outcome on the discharge letter.

### Interpretation of Oral Challenge

#### Negative Test

No symptoms reported during the period of observation and the patient's NEWS score does not rise. This includes patients who experience isolated nausea or isolated itch without any of the other features of a positive test

#### Equivocal Test

If there is doubt about the interpretation of the test then it should be discussed with a senior clinician/ microbiologist/

#### Positive test

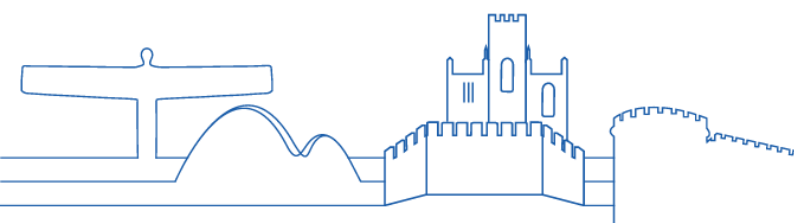
**Patient experiences any of the following: itchy rash, breathing difficulties, facial swelling, or hypotension**

#### Management of Reactions See Appendix 3

If severe symptoms – hypotension or breathing difficulties institute immediate medical management of anaphylaxis, call for senior medical review and consider contacting cardiac arrest team via '222'

If mild symptoms – isolated rash and NEWS score not elevated then give antihistamine (i.e. 4mg chlorphenamine or 10mg cetirizine) and consider single dose of prednisolone 30mg

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



**Appendix 1:**

**CONSENT FORM FOR PATIENT**

I confirm that:

I have read and understood the information about the project, as provided in the Information Sheet and had the opportunity to ask questions	Tick:
I understand the risk involved including anaphylaxis and will inform the nurse if I feel unwell at any time	
I consent to receiving a test dose of oral amoxicillin to test whether I have an allergy to penicillin	
I consent to my information being stored securely and the outcome shared with my GP	

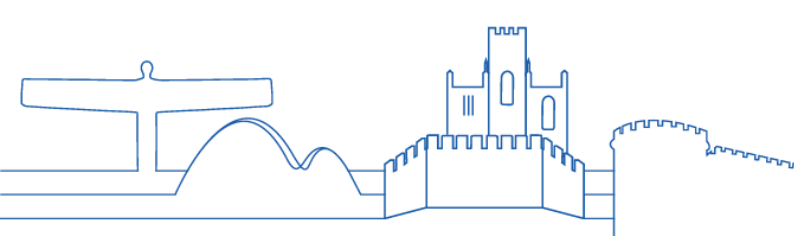
**Participant:**

\_\_\_\_\_  
Name of Participant                      Signature    Date

**Healthcare professional obtaining consent**

\_\_\_\_\_  
Name    Signature    Date

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



## Appendix 2

### Patient Information Leaflet Penicillin allergy

#### **BACKGROUND**

Antibiotics are used to treat infections caused by bacteria. Since their discovery over 70 years ago, antibiotics have revolutionised modern healthcare and enabled us to treat and cure infections that were previously untreatable. However, many bacteria are becoming resistant to antibiotics which means in the future we may not be able to successfully treat many of the infections we can now as the antibiotics will no longer work. This is an international problem and you may have heard about this in the news or on social media.

We therefore need to use the antibiotics we have carefully and choose the right drug for patients to treat their suspected infections. Different antibiotics work for different infections depending on where the infection is and what type of bacteria we think is causing the infection.

#### **WHAT IS A PENICILLIN?**

A penicillin is an important type of antibiotic that can be used to treat many common infections. Penicillin antibiotics are often the first choice antibiotic for common infections like pneumonia, skin infections and tonsillitis. They are widely used both in hospital and in the community and examples include Phenoxymethylpenicillin (Pen V), Amoxicillin, Flucloxacillin, Co-Amoxiclav (Augmentin), Piperacillin-tazobactam (Tazocin)

#### **WHY HAVE I BEEN GIVEN THIS LEAFLET?**

You have reported side effects or a possible allergy to penicillin. This means that you will not be given antibiotics which contain penicillin. However, we know that less than 1 in 1000 patients (less than 0.1% of patients) have a true allergy to penicillin. Sometimes patients are told they have an allergy when in fact they have simply experienced side effects to the antibiotic such as nausea, vomiting, diarrhoea, unpleasant taste or a mild rash. We also know that children were previously given antibiotics for common viral infections, many of which can give people a rash. This means that some patients were told they were allergic to antibiotics because of a rash when the rash was actually due to the condition that made them feel unwell and not the antibiotics.

#### **WHY IS THIS IMPORTANT?**

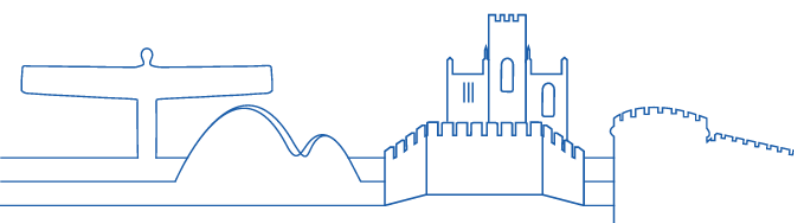
Penicillin antibiotics are very effective and are often used first to treat many infections. If we can't use penicillin then we have to use alternative antibiotics that are often less effective, have more side effects, and are often more expensive

For most people an allergic reaction will be an unpleasant mild skin reaction or rash that develops slowly after several hours or days of taking the medicine. Sometimes a more severe reaction can occur called anaphylaxis. Anaphylaxis is extremely rare but can be life threatening

#### **I HAVE HAD A RECORDED PENICILLIN ALLERGY FOR A LONG TIME. WHY SHOULD THAT CHANGE NOW?**

Penicillin's are very effective treatments for many infections including skin and chest infections. They are also commonly used in patients having a surgical procedure. Being unable to take penicillins may put you at a disadvantage especially if you are admitted to hospital with a severe infection.

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



## **WHAT ARE THE BENEFITS TO ME OF FINDING OUT WHETHER I AM ALLERGIC TO PENICILLIN ANTIBIOTICS?**

We can carry out a simple test within the hospital that will tell you if you have a penicillin allergy. If your test results show that you are not allergic to penicillin then your medical records will be updated. Removing the penicillin allergy label from your record means you can be given penicillins when you really need them. It also means you will have more treatment options if you have an infection or require antibiotics before an operation.

## **WHAT DOES THE TEST FOR PENICILLIN ALLERGY INVOLVE?**

Your medical team will ask you about the symptoms you had in the past that led to the penicillin allergy label. If they decide you may have been incorrectly recorded as having an allergy, they will offer you a test to decide if the allergy label can be removed. You will only be offered this test if the medical team believe that it is safe to do so and there is a very low chance of an allergic reaction. The test involves giving you a penicillin antibiotic tablet under careful supervision in hospital. Your pulse and blood pressure will be monitored for one hour after you take the tablet.

## **WHO CAN NOT BE CHALLENGED?**

The healthcare professional asking you the questions about what happened should already have determined if there is any reason why you could not be challenged with a penicillin antibiotic now. Common reasons why we can't safely give a challenge is if you are taking anti-histamine tablets (as you may not be able to mount an allergic reaction and this could mask any symptoms). Other medications such as immunosuppressant medications including steroids may mean it is not possible to offer you a challenge either.

## **WHAT HAPPENS AFTER THE TEST?**

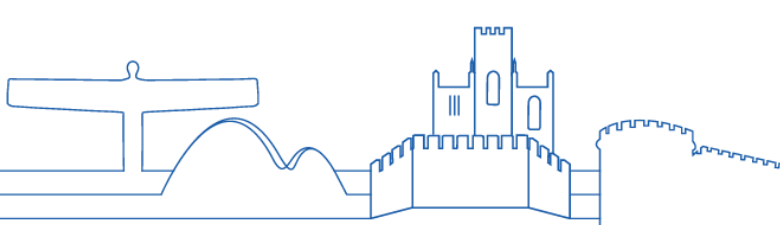
At the end of the test the hospital team will discuss with you what your test results mean. If you have not experienced any reaction, your discharge letter to your GP will include information informing them of the result of the test. Your GP will be asked to remove the penicillin allergy label from your GP record. We will also give you an information leaflet to take home with you explaining the results and what they mean for your future care. If you need an antibiotic now or in the future for either treatment or before surgery, then your doctor will have the option to use a penicillin antibiotic. Conversely, if the test confirms that you are allergic to penicillin then we will advise your GP of the test result and ask them to record this in your GP record. We will also give you a leaflet about avoiding penicillin in future.

## **DO I HAVE TO TAKE THIS TEST?**

The benefits of having the test have already been outlined. If you do not want to be tested please let the medical team know. Your decision will not affect your ongoing care.

## **ARE THERE ANY RISKS OR SIDE EFFECTS?**

There is a small chance that you may experience an unpleasant side effect such as nausea or an allergic reaction. Allergic reactions will usually be mild but a severe allergic reaction including anaphylaxis, although highly unlikely, is possible. You will be closely monitored during the test by staff trained in the recognition and treatment of allergic reactions and other side effects. In the unlikely



Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



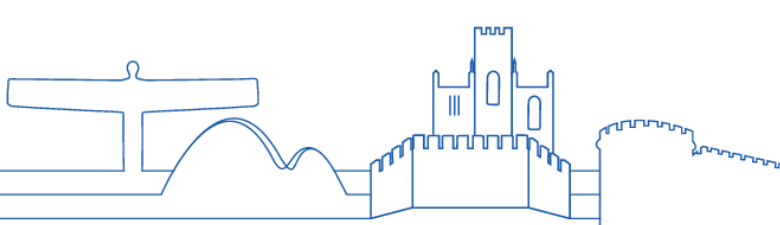
event you experience a severe allergic reaction, the medical team will give you treatment to reverse the reaction

**WHAT WILL HAPPEN IF I DO AGREE TO HAVE THE TEST?**

One of the medical team will ask you to read and sign a permission form indicating your consent to proceed with the test. The doctor will also sign this form and it will be retained in your medical notes as a record of your agreement to the test.

**WHAT WILL HAPPEN IF I DON'T HAVE THE TEST?**

If you don't have the test then your medical notes will continue to state you are allergic to penicillin and you will not be given penicillin when you are treated for an infection or have a surgical procedure in the future. You can re-consider having the test at any time.



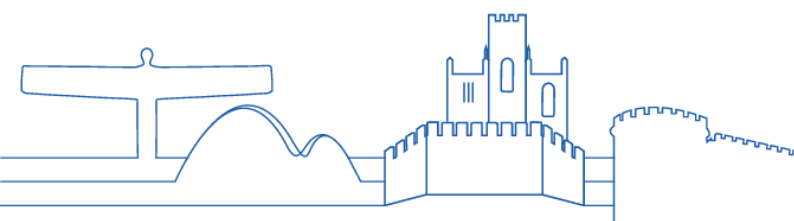
Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



**Appendix 3: Management of Allergy Symptoms**

<b>Response to challenge</b>	<b>Management</b>	<b>Outcome</b>
<b>No reaction</b>		
	<ul style="list-style-type: none"> <li>Observe for features of delayed drug reaction</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of drug allergy - allergy history should be amended</li> <li>Antibiotic can be given at usual dose and frequency</li> </ul>
<b>Subjective symptoms</b>		
<ul style="list-style-type: none"> <li>Itch without rash</li> <li>Scratchy throat, tongue, or palate</li> <li>Vague gastrointestinal symptoms (e.g. nausea)</li> </ul>	<ul style="list-style-type: none"> <li>Obtain vital signs</li> <li>Inform doctor – to perform physical exam looking for objective signs to support a minor cutaneous or systemic reaction</li> <li>Increase observation time by 30 min to observe for objective signs of reaction</li> </ul>	<ul style="list-style-type: none"> <li>If no objective signs of reaction, symptoms unlikely to be an allergic reaction – allergy history should be amended</li> <li>If objective signs of reaction, consider following the pathways below</li> </ul>
<b>Minor cutaneous reaction</b>		
<ul style="list-style-type: none"> <li>Flushing</li> <li>Rash</li> <li>Urticaria</li> </ul>	<ul style="list-style-type: none"> <li>Obtain vital signs</li> <li>Inform doctor – to look for symptoms and signs of a systemic (anaphylactic) reactions</li> <li>Consider giving an antihistamine</li> <li>Increase observation period by 30 min to observe for signs of systemic reaction or symptom resolution</li> <li>Avoid further test doses</li> </ul>	<ul style="list-style-type: none"> <li>Patient labelled as penicillin-allergic</li> </ul>
<b>Possible systemic (anaphylactic) reaction</b>		
<p>Typically involves <math>\geq 2</math> organ systems</p> <ul style="list-style-type: none"> <li>Cutaneous: itch, flushing, rash, urticaria or swelling</li> <li>Respiratory: shortness of breath, chest tightness, wheezing</li> <li>Cardiovascular: faintness, tachycardia, chest pain, hypotension, loss of consciousness</li> <li>Gastrointestinal: nausea, vomiting, cramping, diarrhoea</li> <li>Hypotension alone in the setting of a known allergen exposure is also considered anaphylaxis</li> </ul>	<ul style="list-style-type: none"> <li>Obtain vital signs</li> <li>Urgent medical review</li> <li>Manage according to Resuscitation Council (UK) Anaphylaxis algorithm*</li> <li>Avoid further test doses</li> </ul>	<ul style="list-style-type: none"> <li>Patient labelled as penicillin-allergic</li> </ul>

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



### **Oral Penicillin Challenge – Initial management of patients experiencing allergic symptoms**

Patients undergoing oral penicillin challenge should be managed by appropriately trained staff with immediate access to full resuscitation facilities including advanced life support equipment and drugs.

Patients experiencing mild to moderate allergic symptoms (e.g. itch, urticaria, sneezing or rhinitis) following an oral challenge should have their vital signs (heart rate, blood pressure, oxygen saturation and respiratory rate) monitored as part of an approach -

#### **Airway Breathing Circulation Disability Exposure**

If symptoms remain stable and non-life-threatening consider:

Oral antihistamines (e.g. 4mg chlorphenamine)

Inhaled bronchodilators (e.g. 2 puffs salbutamol)

Oral steroids (e.g. 30mg prednisolone)

Patients should be monitored closely and reassessed regularly. If symptoms do not improve, or the clinical picture deteriorates, call for senior medical assistance. Supplementary oxygen via should be given via a face mask and intravenous access obtained.

Signs and symptoms of a severe allergic or anaphylactic reaction include:

Respiratory compromise (e.g. shortness of breath, wheeze or stridor)

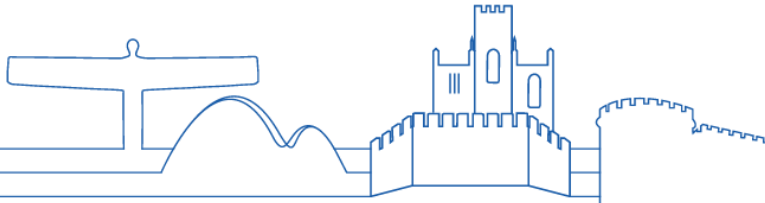
Loss of consciousness

Hypotension

Collapse

Worsening skin reaction changes (e.g. widespread rash, hives or itch)

If anaphylaxis is suspected treat according to Resuscitation Council (UK) guidelines below:



Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025

# 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<sup>1</sup>
- 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<sup>2</sup>

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<sup>3</sup>

## If no improvement in Breathing or Circulation problems<sup>1</sup> 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<sub>2</sub> <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.

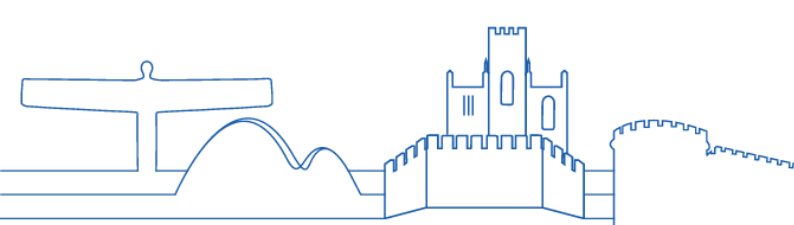
### 3. IV fluid challenge

Use crystalloid

**Adults:** 500–1000 mL

**Children:** 10 mL/kg

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



## Appendix 4

### Patient information leaflet

Insert Patient Sticker

#### Penicillin allergy testing result: **Negative**

The results of your penicillin allergy test show: **YOU DO NOT HAVE AN IMMEDIATE/SEVERE ALLERGY TO PENICILLIN**

#### What does this mean for me?

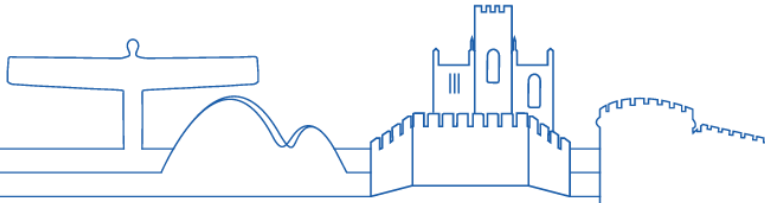
You no longer need to tell medical teams looking after you that you are allergic to penicillin e.g. when you are taken into hospital. This means if you ever need treatment for an infection in future you will now be able to receive antibiotics which contain penicillin. If you had side effects when you took penicillin in the past e.g. nausea you may still want to tell your doctor as they may give you medication to take along with the antibiotics to reduce these. If a rash develops within the next 72 hours please let your hospital doctor or GP (if you have been discharged from hospital) know.

#### What happens now?

A letter will be sent to your GP to let them know the results of the test and to ask them to remove 'penicillin allergy' from your medical record. We will also remove it from your hospital record.

Please let any other healthcare staff who may prescribe or give you medicines know that your allergy record has been updated.

**If you have any questions about the penicillin allergy test or your results and what that means for you please speak to a member of the medical team looking after you.**



Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025

## Appendix 5

### Patient information leaflet

Insert Patient Sticker

#### Penicillin allergy testing result: **Positive**

As you know you had a reaction to penicillin during the test which confirms: **YOU ARE ALLERGIC TO PENICILLIN**

You should continue to avoid taking antibiotics which contain penicillin.

Carry this leaflet with you to let people who need to give you medicine know that you have an allergy to penicillin and this will include all the medicines you should avoid.

Remember to ask any healthcare staff who may prescribe or give you medicines to check if it has penicillin in it.

A letter will be sent to your GP to tell them of the result of the test and will include the type of reaction you have had so that your medical record can be updated.

**If you have any questions about the type of reaction you have had please ask the medical team looking after you to tell you more about what happened.**

#### **I have a penicillin allergy**

*Please check that my medicine does not have penicillin in it (see over)*

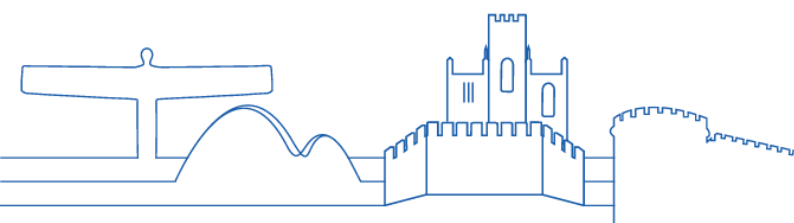
Reaction I had was:

On:

#### **These antibiotics have penicillin in them:**

- Penicillin (phenoxymethylpenicillin)
- Amoxicillin
- Ampicillin
- Benzylpenicillin
- Flucloxacillin
- Co-amoxiclav (Augmentin®)
- Piperacillin/tazobactam (Tazocin®)
- Pivmecillinam
- Temocillin
- Co-fluampicil (flucloxacillin + ampicillin)

Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025



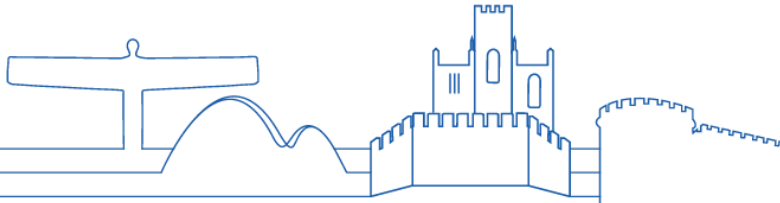
### **Acknowledgements**

This guideline has been completed with sections adapted from:

- CATALYST (Penicillin Allergy Challenge) protocol, Northumbria Healthcare NHS Foundation Trust
- Assessment and Management of Adult In-Patients Reporting Penicillin Allergy, South Tees Hospitals NHS Foundation Trust
- Protocol for Implementation of Penicillin Allergy De-Labeling in Adult Patients in Acute Hospitals, Scottish Antimicrobial Prescribing Group (SAPG)
- Penicillin Allergy Assessment and Guideline for Oral Challenge and De-labelling, County Durham and Darlington NHS Foundation Trust

### **References**

1. West RM, Smith CJ, Pavitt SH, et al. Warning: allergic to penicillin: association between penicillin allergy status in 2.3 million NHS general practice electronic health records, antibiotic prescribing and health outcomes. *J Antimicrob Chemo.* 2019;74(7):2075-2082
2. BSACI guideline for the set-up of penicillin allergy de-labelling services by non-allergists working in a hospital setting. *Clin Exp Allergy.* 2022;52:1135–1141
3. Royal Coll Physicians. Allergy: the Unmet Need. The Lavenham Press Ltd; 2003. URL: [www.bsaci.org/wp-content/uploads/2020/02/allergy\\_the\\_unmet\\_need.pdf](http://www.bsaci.org/wp-content/uploads/2020/02/allergy_the_unmet_need.pdf). Accessed 4/5/2022
4. National Institute for Health and Care Excellence Behaviour change: digital and mobile health interventions. 2020. Available at <https://www.nice.org.uk/guidance/ng183>. Accessed Feb 2023



Developed by	NENC AMS Subgroup of NENC AMR and HCAI Board
Approved by	NENC Medicines Subcommittee
Version	1.0
Approved	June 2023
Review	June 2025