1. Aim/Purpose of this Guideline

1.1. The purpose of this guideline is to provide a clear care pathway for healthcare professionals caring for infants and children less than sixteen years of age with anaphylaxis.

2. The Guidance

2.1. If an Infant or Child is suspected of having anaphylaxis and you wish to treat immediately, please refer to page 3: Resuscitation Council (UK) algorithm.

2.2. Anaphylaxis is a severe, life-threatening, generalised or systemic hypersensitivity reaction, characterised by rapidly developing airway, breathing and/or circulation problems, usually associated with skin and mucosal changes.

2.3. Commonest triggers in children -

- Food (particularly peanuts, tree nuts, milk, fish, shellfish, sesame, eggs, kiwi fruit)
- Insect venoms
- Latex
- Drugs
- Idiopathic
- Exercise induced (particularly after some foods such as wheat or fish)

2.4. Diagnosis and key features of anaphylaxis.

**Anaphylaxis is likely when all of the following 3 criteria are met (+/- exposure to a known allergen for the patient)**

- Sudden onset and rapid progression of symptoms
- Life-threatening Airway and/or Breathing and/or Circulation problems
- Skin and/or mucosal changes (flushing, urticaria, angioedema)

**However it can be less obvious - remember:**

- Skin or mucosal changes alone are not a sign of an anaphylactic reaction
- Skin and mucosal changes can be subtle or absent in up to 20% of reactions (some patients can have only a decrease in blood pressure, i.e., a Circulation problem)
- There can also be gastrointestinal symptoms (e.g. vomiting, abdominal pain, incontinence) but only when persistent are these likely to be 'Gastrointestinal Anaphylaxis'.
### 2.5. Main clinical features of anaphylaxis.

Patients who fulfil the criteria for anaphylaxis should be labelled as having had a ‘suspected anaphylactic reaction.’

<table>
<thead>
<tr>
<th>Airway</th>
<th>Breathing</th>
<th>Circulation</th>
<th>Disability</th>
<th>Exposure – skin and / or mucosal changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swelling, e.g., throat and tongue swelling (pharyngeal/laryngeal oedema). The patient has difficulty in breathing and swallowing and feels that the throat is closing up</td>
<td>‘Shortness of breath’ with increased respiratory rate</td>
<td>Look for signs of shock: Pale, clammy increased pulse rate (tachycardia). Low blood pressure (hypotension) Feeling faint (dizziness), Collapse. Decreased conscious level or loss of consciousness. Anaphylaxis can cause myocardial ischaemia and electrocardiograph (ECG) changes even in individuals with normal coronary arteries</td>
<td>The above Airway, Breathing and Circulation problems can all alter the patient’s neurological status because of decreased brain perfusion; there may be - Confusion Agitation Loss of consciousness</td>
<td>Often the first feature and present in over 80% of anaphylactic reactions. Erythema – a patchy, or generalised, red rash Urticaria (also called hives, nettle rash, weals or welts), which can appear anywhere on the body. They can be different shapes and sizes, and are often surrounded by a red flare. They are usually itchy.</td>
</tr>
<tr>
<td>Hoarse voice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stridor – the high-pitched inspiratory noise caused by upper airway obstruction</td>
<td>Wheeze (particularly if known to have asthma)</td>
<td>Cyanosis (appears blue) – this is usually a late sign</td>
<td>Becoming tired</td>
<td>Respiratory arrest</td>
</tr>
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</tbody>
</table>
2.6. Anaphylaxis Algorithm – Resuscitation Council (UK) March 2008

Resuscitation Council (UK)

Anaphylactic reaction?
Airway, Breathing, Circulation, Disability, Exposure

Diagnosis - look for:
- Acute onset of illness
- Life-threatening Airway and/or Breathing and/or Circulation problems
- And usually skin changes

- Call for help
- Lie patient flat
- Raise patient’s legs

Adrenaline

When skills and equipment available:
- Establish airway
- High flow oxygen
- IV fluid challenge
- Chlorphenamine
- Hydrocortisone

Monitor:
- Pulse oximetry
- ECG
- Blood pressure

Reproduced with the kind permission of the Resuscitation Council (UK)
• The exact treatment will depend on the patient’s location, the equipment and drugs available, and the skills of those treating the anaphylactic reaction.

1 (a) If there is cardiorespiratory arrest following an anaphylactic reaction, start cardiopulmonary resuscitation (CPR) immediately and follow current APLS guidelines. Use doses of IV adrenaline recommended in the APLS guidelines.

(b) If the patient has asthma-like features alone, follow the British Thoracic Society – SIGN asthma guidelines. As well as the drugs listed above, consider further bronchodilator therapy with salbutamol (inhaled or IV), ipratropium (inhaled), aminophylline (IV) or magnesium (IV). Remember that intravenous magnesium can make hypotension worse.

2. Give adrenaline IM unless anaesthetists, senior emergency physicians, or intensive care doctors involved and decision made to give intravenously. If an adrenaline auto-injector is the only available adrenaline preparation when treating anaphylaxis, healthcare providers should use it.

3. Large volumes of fluid may leak from the patient’s circulation during an anaphylactic reaction. If there is intravenous access, infuse intravenous fluids immediately. There is no evidence to support the use of colloids over crystalloids in this setting.

4. Antihistamines are a second line treatment for an anaphylactic reaction, to be given after initial resuscitation. Used alone, they are unlikely to be lifesaving in a true anaphylactic reaction.

5. Corticosteroids given after initial resuscitation may help prevent or shorten protracted reactions.
3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>RCHT paediatric anaphylaxis acute care pathway - all aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Dr. Simon Bedwani with input from Emergency Department.</td>
</tr>
<tr>
<td>Tool</td>
<td>RCHT paediatric anaphylaxis acute care pathway. See Appendix 1</td>
</tr>
<tr>
<td>Frequency</td>
<td>Every 2-3 years as rare event</td>
</tr>
<tr>
<td>Reporting arrangements</td>
<td>Clinical effectiveness</td>
</tr>
<tr>
<td></td>
<td>Directorate audit and guidelines meeting</td>
</tr>
<tr>
<td>Acting on recommendations and Lead(s)</td>
<td>Paediatrics</td>
</tr>
<tr>
<td></td>
<td>Dr. Simon Bedwani</td>
</tr>
<tr>
<td></td>
<td>ED dept. lead where appropriate</td>
</tr>
<tr>
<td>Change in practice and lessons to be shared</td>
<td>Required changes to practice will be identified and actioned. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders</td>
</tr>
</tbody>
</table>

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 3.
Appendix 1. Acute Care Pathway

This form is a sample only. To print a copy for patient use go to RCHT intranet, A-Z services, F, Forms, Forms to Print.

(Audited aspects have a ‘tickbox’ – please tick if completed)

Emergency care in hospital
Paediatric admissions unit (PAU) and Emergency Department (ED)

- Child must remain in prone position until fully assessed by health care professional and blood pressure is within normal parameters for age. Condition may deteriorate if child is made to sit or stand.
- Assess child using ABCDE approach (Airways, Breathing, Circulation, Disability, Exposure) as per Advanced Life Support Group guidance.
- Administer age appropriate IM injectable adrenaline as indicated and available.
- Provide further treatment if required as per Resus Council UK algorithm. E.g. IV fluids/steroids.
- Measure mast cell tryptase if cause likely to be venom, drugs or idiopathic:
  - 1st sample as soon as possible (serum ‘clotted’ sample), date and time of reaction and implicated trigger on Haematology form.
  - 2nd sample ideally within 1-2 hours (but no later than 4 hours) from onset of symptoms
  - Admit to hospital to most appropriate setting. PAU if in ED, Paediatric ward, HDU or ITU.
  - Request PAS alert for allergy: email to Kinelle.cornwall.nhs.uk

Sign: ___________________________ Print: ___________________________ Date: __________

Inpatient care

- Further history taking to include documentation of:
  - Acute clinical features of the suspected anaphylactic reaction.
  - Time of onset.
  - Circumstances immediately before onset of symptoms, to identify possible trigger.
  - Measure specific IgE of any implicated foods or other substances from history (EDTA tube 1ml per allergen to haematology)
  - Monitor SaO2, resp. rate, blood pressure, 3 lead ECG as per Child Health Observation and Monitoring Policy.
  - Observe for a minimum of 6 hours and discuss discharge planning with Paediatric Middle grade/Consultant.

Sign: ___________________________ Print: ___________________________ Date: __________

Pre discharge

- Offer basic prevention and treatment advice including:
  - Signs and symptoms of anaphylactic reaction.
  - Risks of a biphasic response.*
  - If patient has pre-existing asthma, review current treatment and compliance.
  - Provide appropriate adrenaline auto injector as interim measure prior to specialist allergy service appointment.
  - Provide training for auto injector administration (dummy trainer pens on Gwthiun Unit, sister’s office).
  - Refer to allergy clinic, in writing to Dr. Simon Bedwani, Paediatric Consultant.

Sign: ___________________________ Print: ___________________________ Date: __________
<table>
<thead>
<tr>
<th>Guidance notes to support child and family</th>
</tr>
</thead>
<tbody>
<tr>
<td>- *Biphasic response. NICE definition: a recurrence after complete recovery of symptoms of anaphylaxis within 72 hours with no further exposure to the allergen.</td>
</tr>
<tr>
<td>- RCPCH Medicines for Children leaflet on auto injectors can be found on the medicines for children website by searching for a leaflet and entering the words: adrenaline-for-anaphylaxis.</td>
</tr>
<tr>
<td>- Provide basic avoidance advice. Allergy UK sheets are available for many allergens at the Allergy UK website, following links for fact sheets.</td>
</tr>
<tr>
<td>- Signpost child and family to Patient Information Group, Anaphylaxis Campaign, Allergy Wise, Food Standards Agency.</td>
</tr>
</tbody>
</table>
### Appendix 2. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Clinical Guideline for the management of anaphylaxis in infants and children under sixteen years of age.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>18 November 2013</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>18 November 2013</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>1 November 2016</td>
</tr>
</tbody>
</table>
| Directorate / Department responsible (author/owner): | Dr. Simon Bedwani  
Paediatric consultant |
| Contact details: | 018672252017 |
| Brief summary of contents | Clear guidelines for care of infant and child with anaphylaxis, includes auditable care pathway. |
| Suggested Keywords: | Anaphylaxis  
Infant  
Child |
| Target Audience | RCHT  
PCH  
CFT  
KCCG |
| Executive Director responsible for Policy: | Medical Director |
| Date revised: | November 2013 |
| This document replaces (exact title of previous version): | Care pathway for anaphylaxis in under 16 years. |
| Approval route (names of committees)/consultation: | Paediatric consultants  
Directorate audit and guidelines  
Forms review group |
| Divisional Manager confirming approval processes | |
| Name and Post Title of additional signatories | Not required |
| Signature of Executive Director giving approval | |
| Publication Location (refer to Policy on Policies – Approvals and Ratification): | Internet & Intranet  
✓ Intranet Only |
| Document Library Folder/Sub Folder | Paediatrics |
| Links to key external standards | none |
Related Documents:

- Allergy Care Pathways for Children. Anaphylaxis. Royal College of Paediatrics and Child Health; 2011.
- Anaphylaxis: assessment to confirm an anaphylactic episode and the decision to refer after emergency treatment for a suspected anaphylactic episode. NICE clinical guideline 134; Dec 2011.

Training Need Identified? No

Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2012</td>
<td>V1.0</td>
<td>Initial Issue</td>
<td>Dr. Simon Bedwani Paediatric Consultant</td>
</tr>
<tr>
<td>Nov 2013</td>
<td>V2.0</td>
<td>Re format and update to care pathway.</td>
<td>Dr. Simon Bedwani Paediatric Consultant Tabitha Fergus Deputy ward manager</td>
</tr>
</tbody>
</table>

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.

This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy on Document Production. It should not be altered in any way without the express permission of the author or their Line Manager.
Appendix 3. Initial Equality Impact Assessment Form

| Name of the strategy / policy / proposal / service function to be assessed (hereafter referred to as policy)  | Clinical guideline for the management of anaphylaxis in infants and children under sixteen years of age. |
| Directorate and service area: child health | Is this a new or existing Policy? existing |
| Name of individual completing assessment: T. Fergus | Telephone: 01872252800 |

1. Policy Aim*
Who is the strategy / policy / proposal / service function aimed at?
To provide clear guidance for multiple areas in RCHT for the care of infants and children with anaphylaxis.

2. Policy Objectives*
To provide clear guidance for multiple areas in RCHT for the care of infants and children with anaphylaxis.

3. Policy – intended Outcomes*
Clear guidance for multiple areas in RCHT for the care of infants and children with anaphylaxis.

4. How will you measure the outcome?
Audit of care pathway

5. Who is intended to benefit from the policy?
Children and families

6a) Is consultation required with the workforce, equality groups, local interest groups etc. around this policy?

b) If yes, have these *groups been consulted?
no

C). Please list any groups who have been consulted about this procedure.

7. The Impact
Please complete the following table.

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Clinical Guideline for the management of anaphylaxis in infants and children under sixteen years of age.
<table>
<thead>
<tr>
<th><strong>Sex</strong> (male, female, transgender / gender reassignment)</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race / Ethnic communities / groups</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Disability - learning disability, physical disability, sensory impairment and mental health problems</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Religion / other beliefs</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Marriage and civil partnership</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Pregnancy and maternity</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</strong></td>
<td>X</td>
</tr>
</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. or
- Major service redesign or development

8. Please indicate if a full equality analysis is recommended. **Yes** **No x**

9. If you are not recommending a Full Impact assessment please explain why. **No impact**

Signature of policy developer / lead manager / director T. Fergus  
Date of completion and submission Sep 2013

Names and signatures of members carrying out the Screening Assessment  
1.  
2.

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead, c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

A summary of the results will be published on the Trust’s web site.

Signed _____T. Fergus__________

Date _____Nov13___________

Clinical Guideline for the management of anaphylaxis in infants and children under sixteen years of age.

Page 11 of 11