Care of the child with allergic conditions

For Children’s Nurses, Health Visitors and School Nurses

Paediatric Allergy Nurse Specialist
Adele Durge

Children's Allergy - 'The Unmet Need'

Multi - system

- Immediate and delayed reactions
- Eczema
- Asthma
- Hay fever
- Gastrointestinal

Quality of Life

- 1 in every 5 children are affected
- Whole family is severely impacted

Poor & inaccessible care

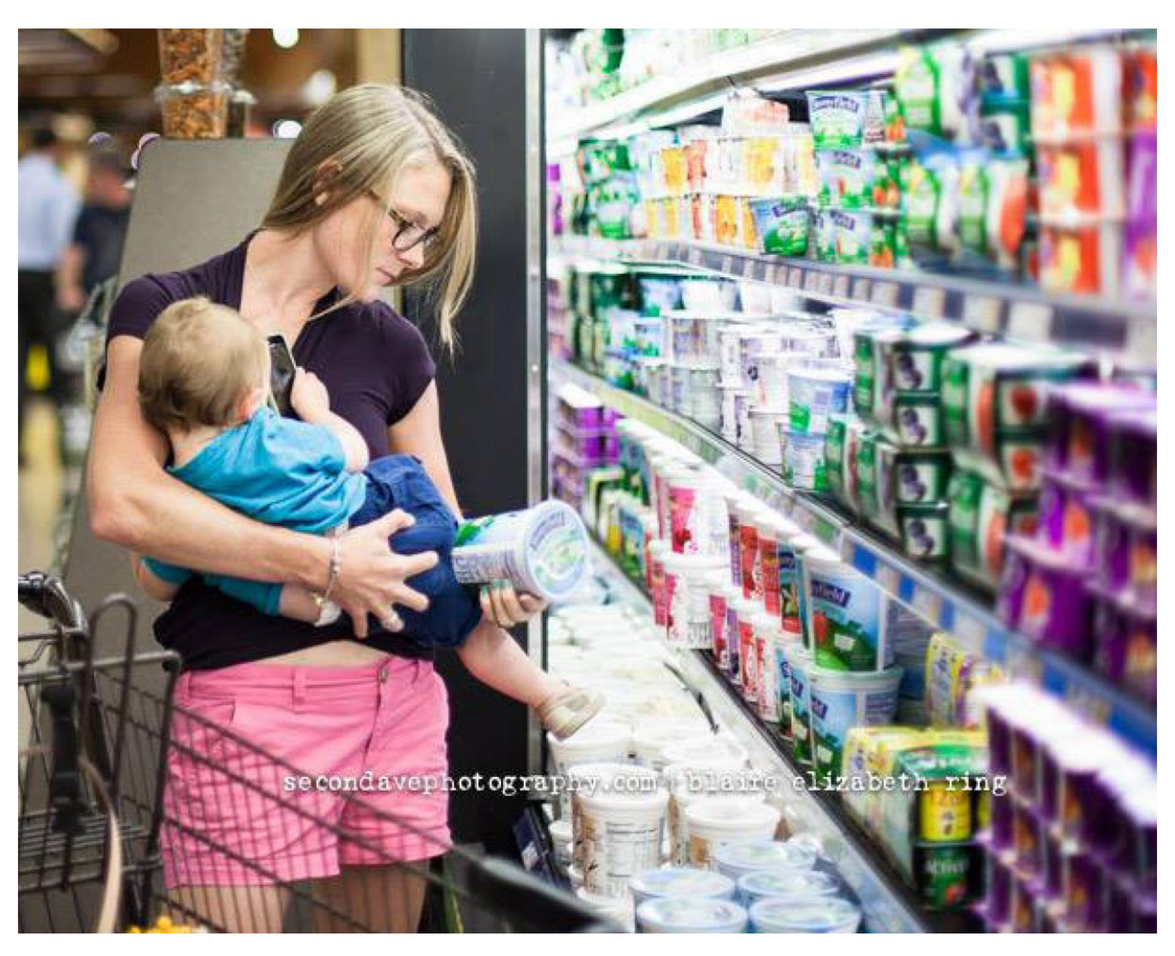
- Misinformation on Social media
- 12 Health Professional encounters before referral

Learning Objectives:

- Non-IgE mediated (delayed) food allergy
  - ➢ Identification and Management

- IgE mediated allergies
  - ➢ Symptoms
  - ➢ First Aid
  - ➢ Management in hospital, nursery and school settings

- Eczema update
- Risk Factors & Prevention
- Atopy Q&A

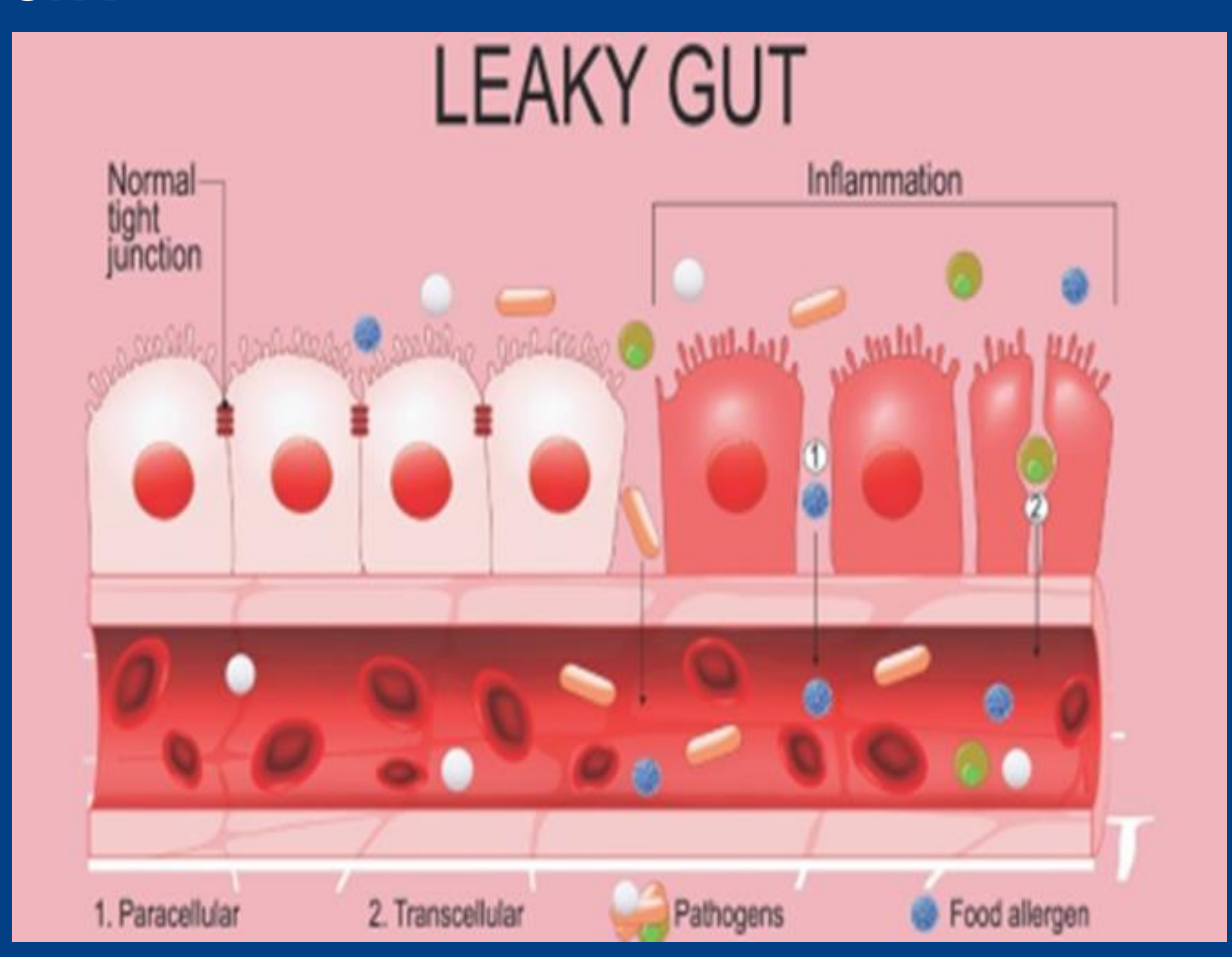


Non-IgE (delayed) Allergy
Identification and management

Origins of Allergy

Where can you stop the allergic march?

- Babies born with a depleted gut biome
- Gut immune system cannot process milk protein
- Intestinal wall becomes inflamed
- Reflux, enterocolitis, proctocolitis
- Skin becomes inflamed (eczema)
- Skin barrier breaks – further sensitisations
- Allergens drive eczema
- More food allergies
- Asthma
- Rhinitis



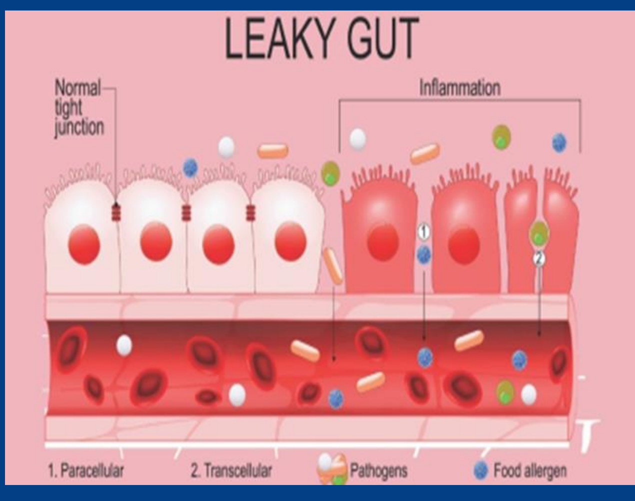
Symptoms of non-IgE (delayed) CMPA

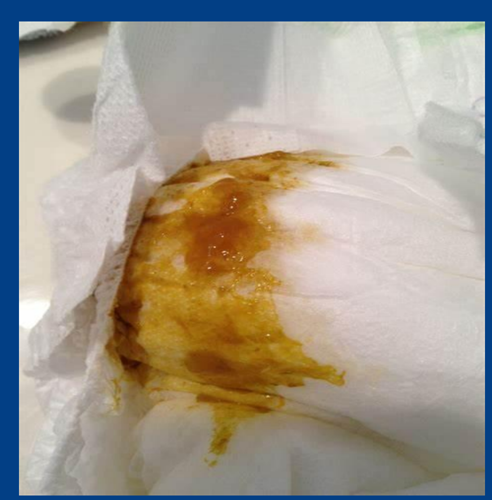
Intestinal wall becomes inflamed

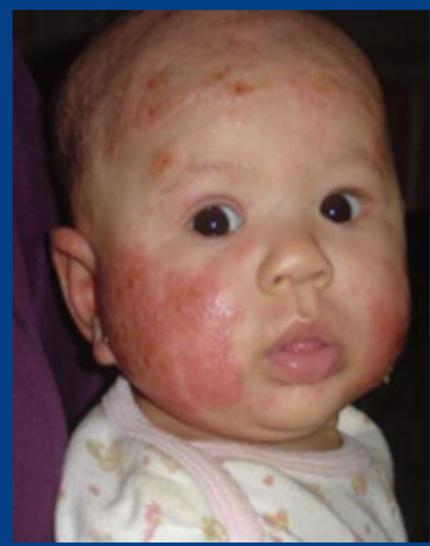
- Reflux
- Enterocolitis (constipation and / or diarrhea)
- Proctocolitis (mucus and / or blood on stool)
- Malabsorption (further sensitisations)
- Faltering Growth

Skin becomes inflamed/itchy/broken

- Further sensitisations
- Poor sleep, irritability, mental health
- Faltering growth
- Chronic changes in skin quality







Management of non-IgE CMPA

<u>Step 1:</u> Strict dairy exclusion from mother and baby's diet for 4-6 weeks (check labels)

<u>Breastfeeding Mother:</u>

- Soya (if no gut symptoms) or Oat milk
- Calcium and Vitamin D supplements

<u>Formula or Mixed fed infant <1yr:</u>

- Mild-Moderate symptoms - Extensively Hydrolysed (EHF)
- Severe symptoms / Faltering growth - Amino Acid Formula (AAF)

<u>Child >1yr:</u>

- Soya (if no gut symptoms) or Oat <300ml/day (not growing up or organic varieties)
- Vitamin D supplement

Cow's Milk Free Diet for Infants and Children

Patient Name:

Dietitian:

Management of non-IgE CMPA

Step 2: Treat symptoms

Reflux:
- Conservative measures (education)
- Gaviscon, thickener
- PPIs eg Lansoprazole / Omeprazole (can increase risk of allergy)

Eczema:
- Topical Steroids
- Topical Calcineurin Inhibitors
- Emollients

Faltering growth:
- Increase calories (oatly barrista, extra puddings, fortification)
- Refer to dietician (concentrate formula)

Management of non-IgE CMPA

Step 3: Reintroduction of dairy after 4-6 weeks

Breastfeeding Mother:

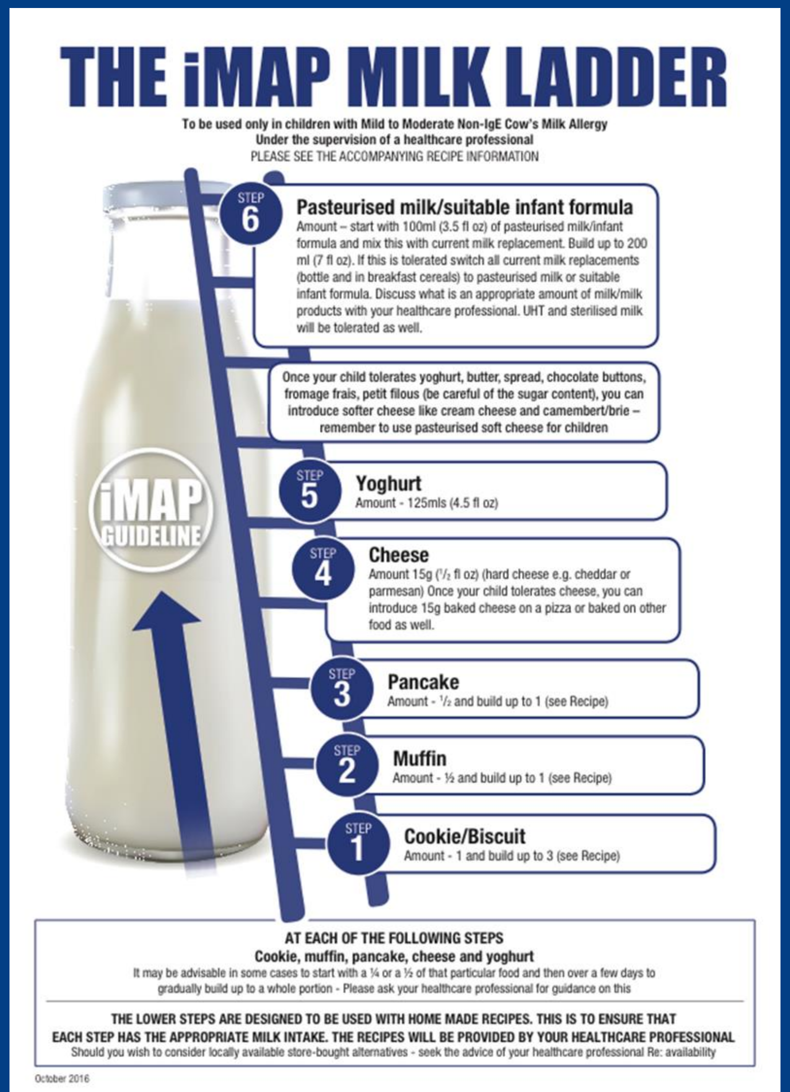
- iMAP – each step to mother first

Formula or Mixed fed infant <1yr:

- Add 30ml cow's milk formula to prescription formula bottle, first bottle of each day only, increasing by 30ml each day (1oz).

Child >1yr:

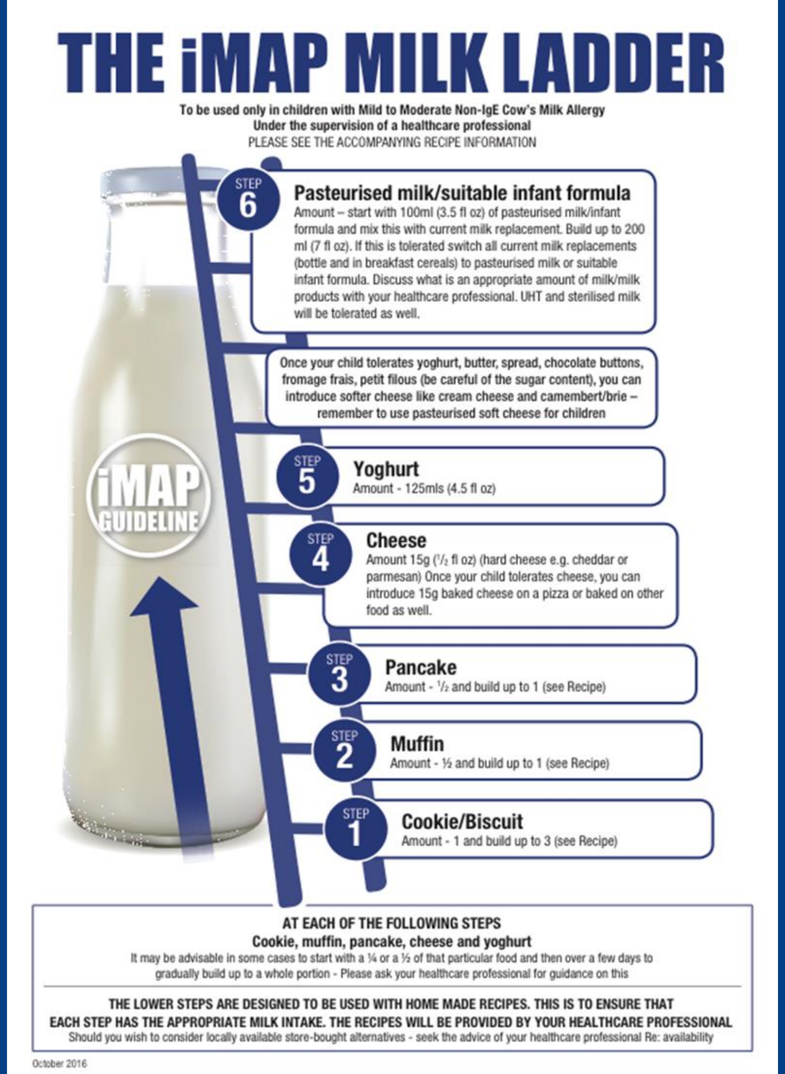
- iMAP



Management of non-IgE CMPA

Step 4: Observe for recurrence of symptoms with reintroduction

- If symptoms mild: treat symptoms and press on with iMAP
- If symptoms troublesome: Take a step back on ladder and continue to offer what was tolerated for 3-4 months, before trying to step up again.
- Total exclusion ↑ risk of developing immediate allergy



IgE Mediated (immediate) Allergy

Keeping Children Safe

Why is this important?

1 in 5 children in UK have an allergic condition

Many children are not aware they have food allergies

20% of serious reactions happen at school

17% fatal anaphylaxis happen at school in UK

Anaphylaxis is time critical

Delay giving adrenaline common in fatal reactions

Parents of boy who died after school dinner allergic reaction say staff 'failed' their son

THE parents of a boy killed by an allergic reaction to his school dinner have hit out at staff after an inquest heard he may have survived if given his EpiPen as he lay dying on the floor.

By ALLISTER HAGGER

PUBLISHED: 16:11, Fri, May 12, 2017 | UPDATED: 16:37, Fri, May 12, 2017

No peace: Nigel, Martha, Dylan and Jack Baptist, with photos of Alex.

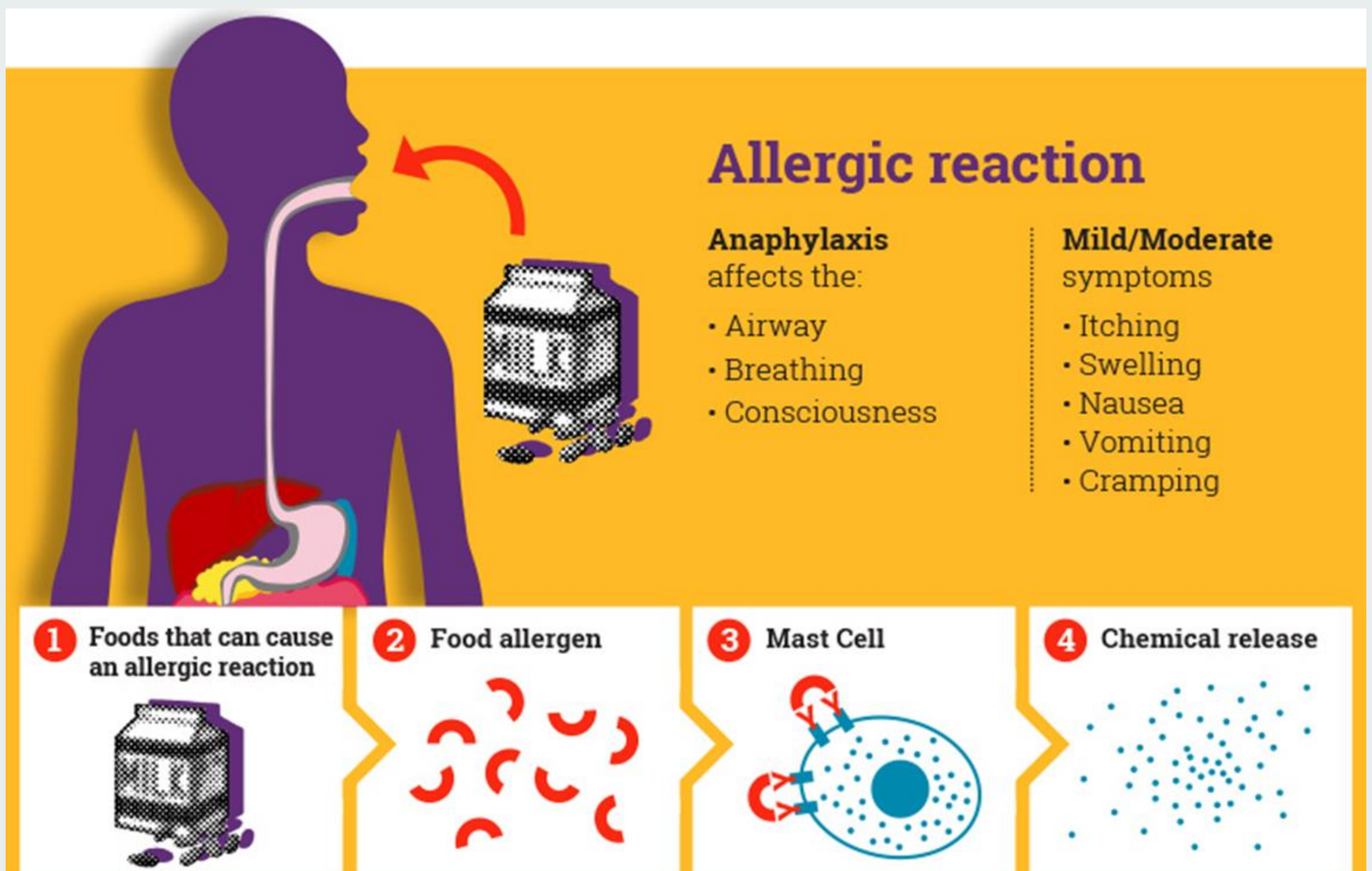
What causes reactions?

- 90% of reactions in children are caused by….

- Milk (dairy) dangerous for teens!

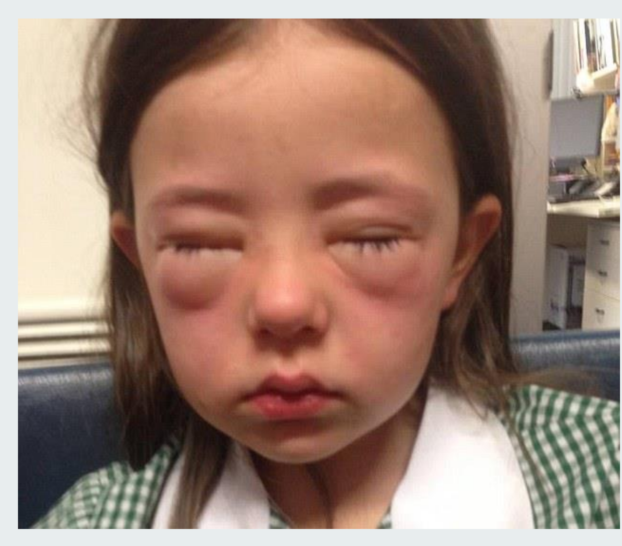
- Latex
- Medicines
- Insect stings
- Spontaneous urticaria / angioedema

Pathophysiology of reactions

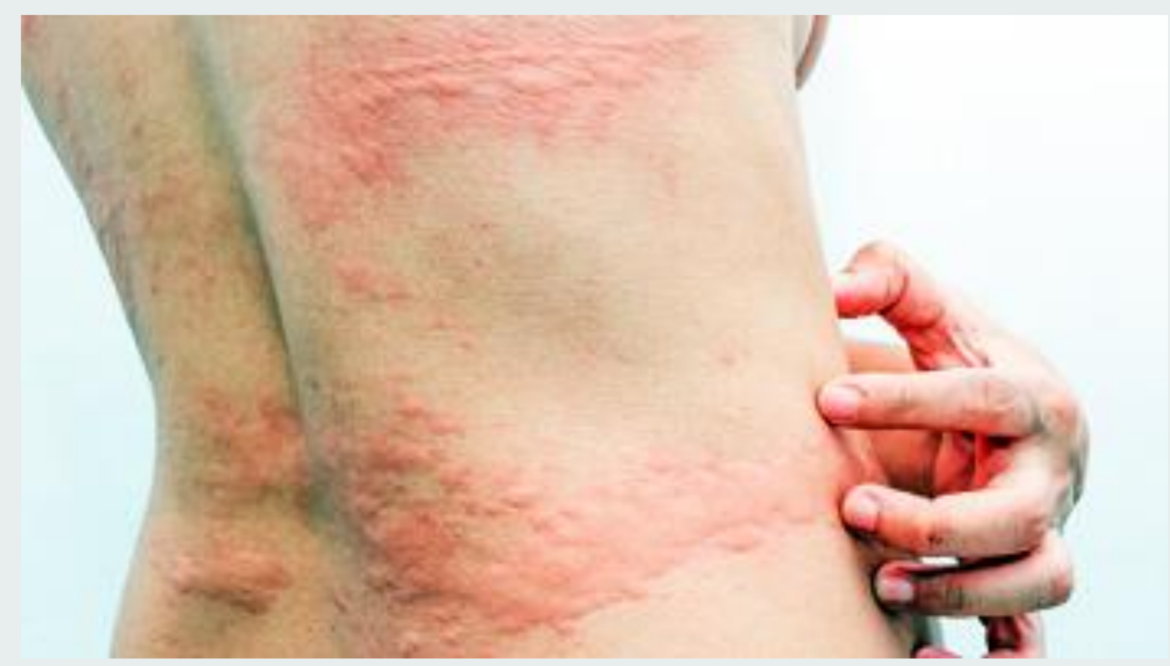


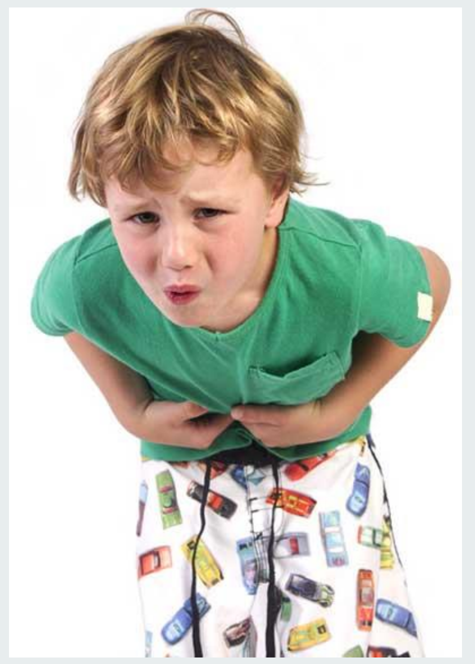
Identifying a reaction?

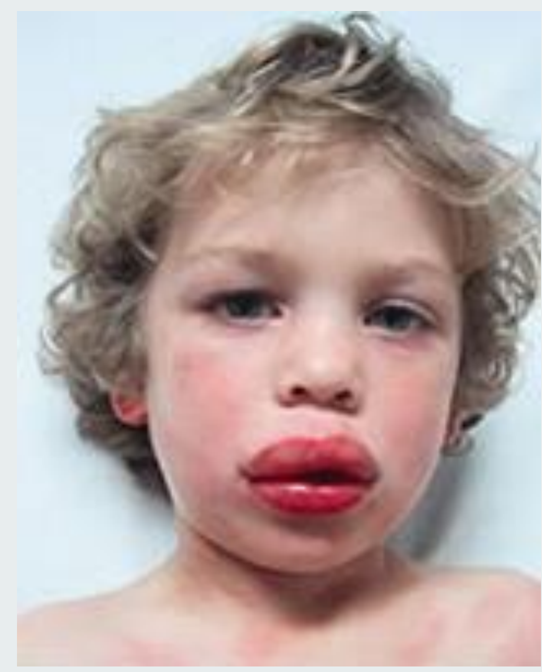
Symptoms of a mild to moderate allergic reaction:



- Hives / Urticaria, Itchy rash
- Facial Swelling – eyes & lips
- Abdominal pain, vomiting +/- diarrhoea
- “I don’t feel right” – Impending doom







When does it become anaphylaxis?

Anaphylaxis – a life-threatening reaction

- Time critical
- Early recognition and treatment essential
- Onset within seconds, minutes, or rarely, hours of exposure to allergen

AIRWAY

- Persistent cough
- Voice changes
- Difficulty swallowing
- Swollen tongue

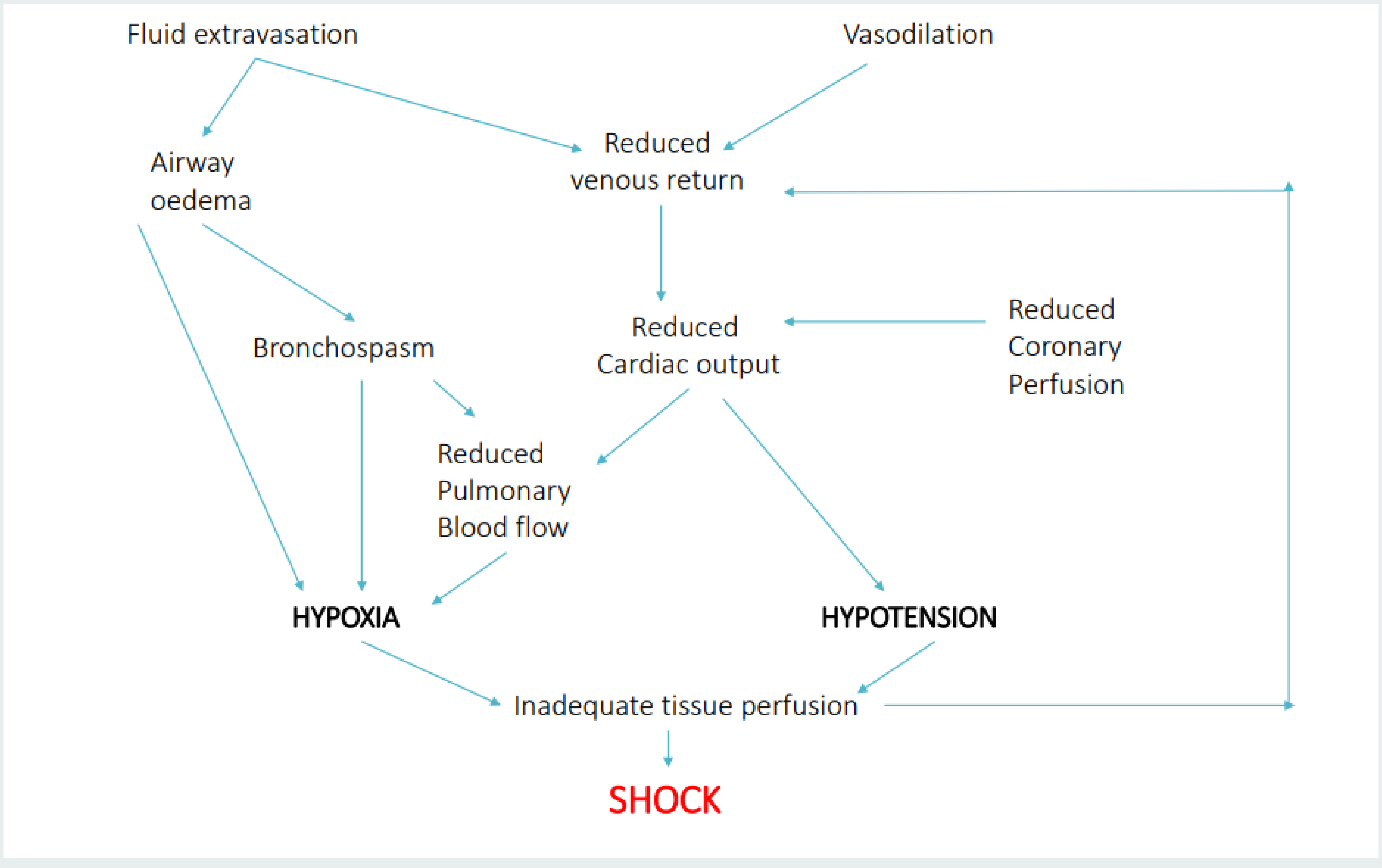
BREATHING

- Difficult or noisy breathing
- Wheezing or persistent cough

CONCIOUSNESS

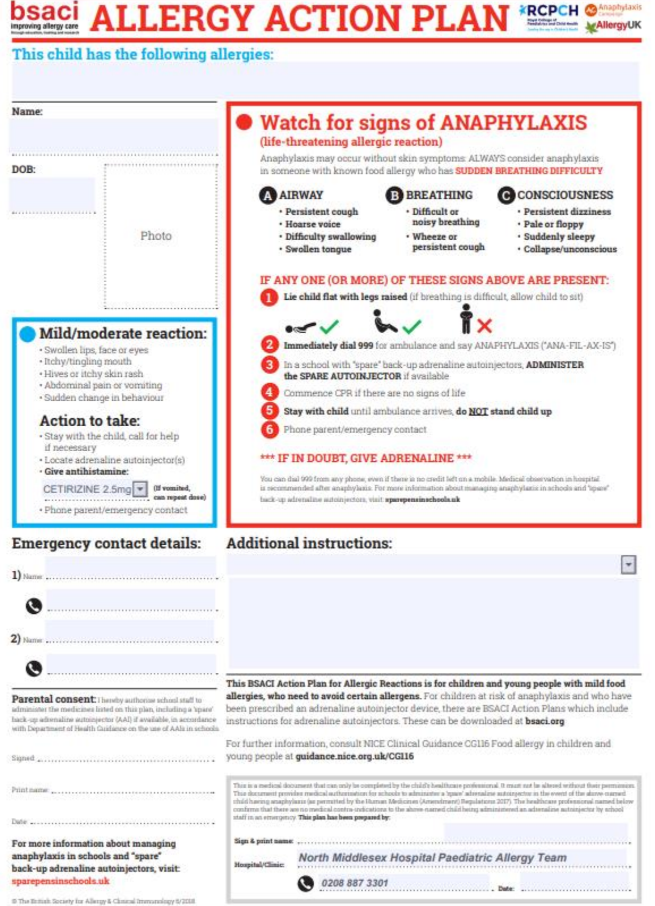
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
- Collapse / Unconscious

Pathophysiology of Anaphylaxis



What to do?

Follow Allergy Action Plan



bsaci ALLERGY ACTION PLAN RCPCH Anaphylaxis Campaign AllergyUK

This child has the following allergies:

Name:

DOB:

Photo

Watch for signs of ANAPHYLAXIS
(life-threatening allergic reaction)

Anaphylaxis may occur without skin symptoms: ALWAYS consider anaphylaxis in someone with known food allergy who has SUDDEN BREATHING DIFFICULTY

A AIRWAY
- Persistent cough
- Hoarse voice
- Difficulty swallowing
- Swollen tongue

B BREATHING
- Difficult or noisy breathing
- Wheeze or persistent cough

C CONSCIOUSNESS
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
- Collapse/unconscious

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:
1. Lie child flat with legs raised (if breathing is difficult, allow child to sit)
2. Immediately dial 999 for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")
3. In a school with "spare" back-up adrenaline autoinjectors, ADMINISTER the SPARE AUTOINJECTOR if available
4. Commence CPR if there are no signs of life
5. Stay with child until ambulance arrives, do NOT stand child up
6. Phone parent/emergency contact

*** IF IN DOUBT, GIVE ADRENALINE ***

Mild/moderate reaction:
- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:
- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- Give antihistamine: CETIRIZINE 2.5mg (If vomited, can repeat dose)
- Phone parent/emergency contact

Emergency contact details:
1) Name
2) Name

Additional instructions:

This BSACI Action Plan for Allergic Reactions is for children and young people with mild food allergies, who need to avoid certain allergens. For children at risk of anaphylaxis and who have been prescribed an adrenaline autoinjector device, there are BSACI Action Plans which include instructions for adrenaline autoinjectors. These can be downloaded at bsaci.org

For further information, consult NICE Clinical Guidance CG116 Food allergy in children and young people at guidance.nice.org.uk/CG116

Parental consent:

Signed

Print name

Date

For more information about managing anaphylaxis in schools and "spare" back-up adrenaline autoinjectors, visit: sparepensinschools.uk

Hospital/Clinic: North Middlesex Hospital Paediatric Allergy Team

0208 887 3301

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bsaci ALLERGY ACTION PLAN

This child has the following allergies:

Watch for signs of ANAPHYLAXIS

How to give EpiPen®

Additional instructions:

If wheezy, GIVE ADRENALINE FIRST, then asthma reliever (blue puffer) via spacer

North Middlesex Hospital Paediatric Allergy Team

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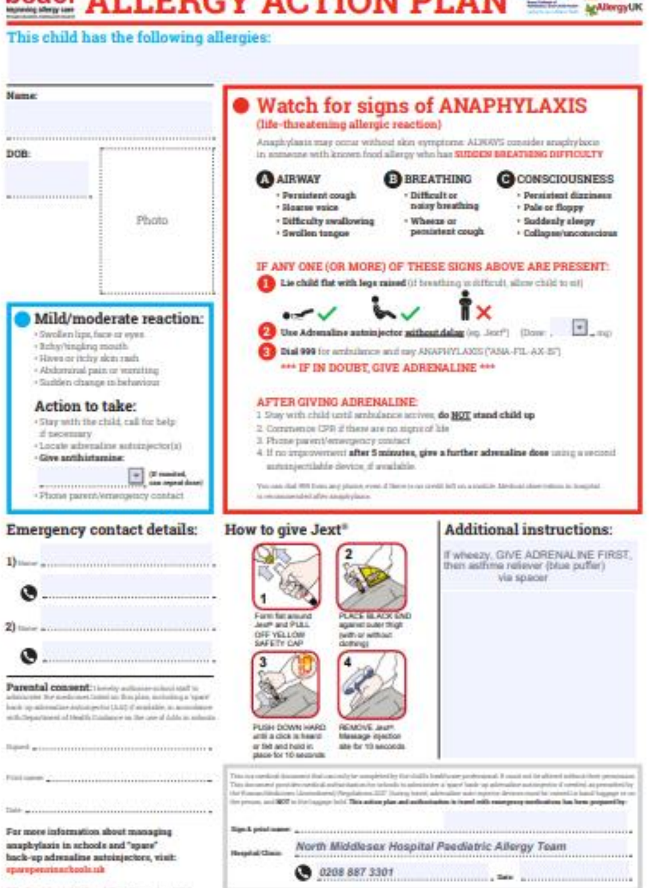

bsaci ALLERGY ACTION PLAN

This child has the following allergies:

Watch for signs of ANAPHYLAXIS

How to give Jext®

Additional instructions:

If wheezy, GIVE ADRENALINE FIRST, then asthma reliever (blue puffer) via spacer

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0208 887 3301

Jext

First aid for mild & moderate

Mild/moderate reaction:

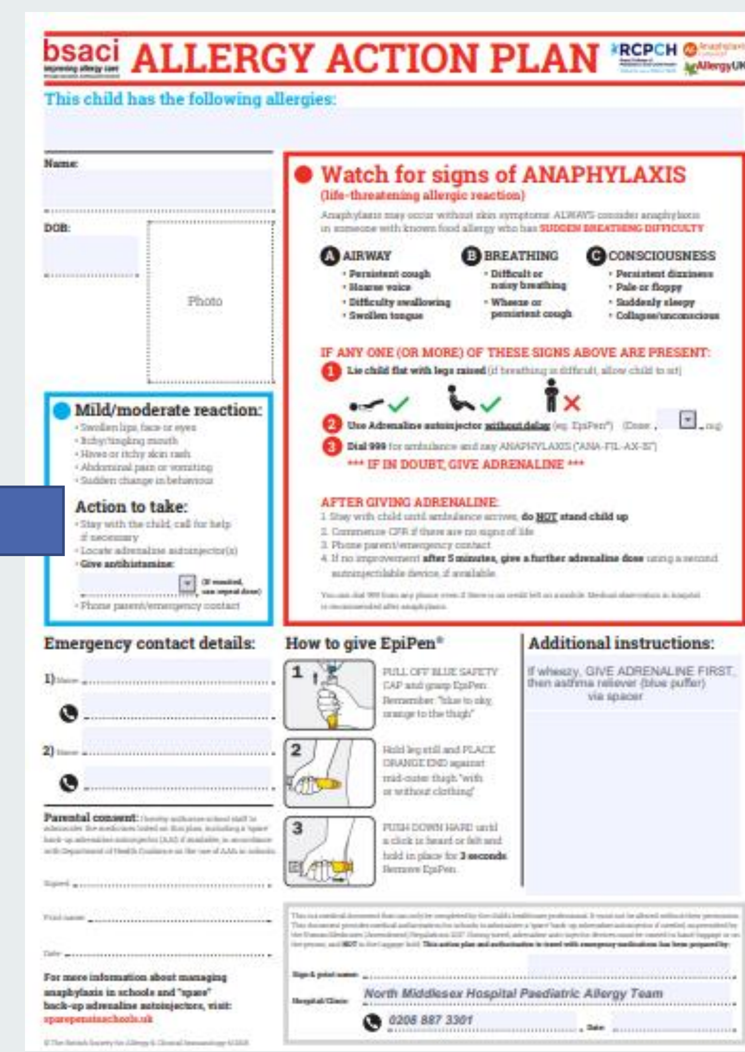
- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:

- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- **Give antihistamine:**

CETIRIZINE 10mg (If vomited, can repeat dose)

- Phone parent/emergency contact



bsaci ALLERGY ACTION PLAN RCPCH AllergyUK

This child has the following allergies:

Name:

DOB:

Photo

Mild/moderate reaction:

- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:

- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- **Give antihistamine:**

(If vomited, can repeat dose)

- Phone parent/emergency contact

Watch for signs of ANAPHYLAXIS
(life-threatening allergic reaction)

A AIRWAY
- Persistent cough
- Hoarse voice
- Difficulty swallowing
- Swollen tongue

B BREATHING
- Difficult or noisy breathing
- Wheeze or persistent cough

C CONSCIOUSNESS
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
- Collapse/unconscious

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

1 Lie child flat with legs raised

2 Use Adrenaline autoinjector without delay

3 Dial 999 for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

*** IF IN DOUBT, GIVE ADRENALINE ***

AFTER GIVING ADRENALINE:

Emergency contact details:

How to give EpiPen®

1 PULL OFF BLUE SAFETY CAP and grasp EpiPen.

2 Hold leg still and PLACE ORANGE END against mid-outer thigh

3 PUSH DOWN HARD until a click is heard or felt and hold in place for 3 seconds. Remove EpiPen.

Additional instructions:

If wheezy, GIVE ADRENALINE FIRST, then asthma reliever (blue puffer) via spacer

Parental consent:

North Middlesex Hospital Paediatric Allergy Team

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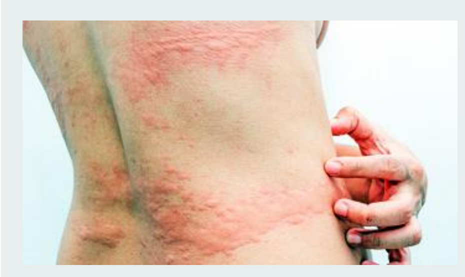
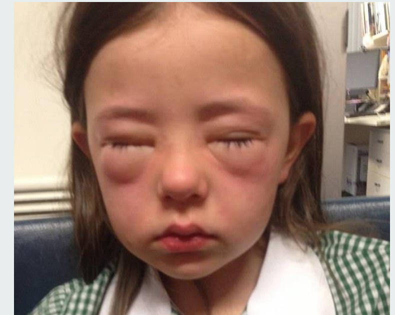
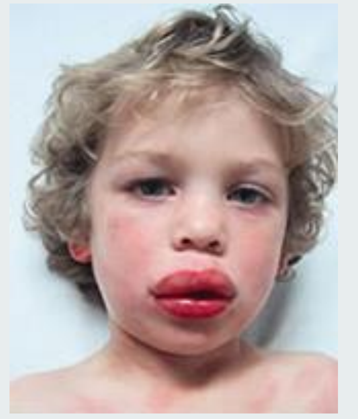


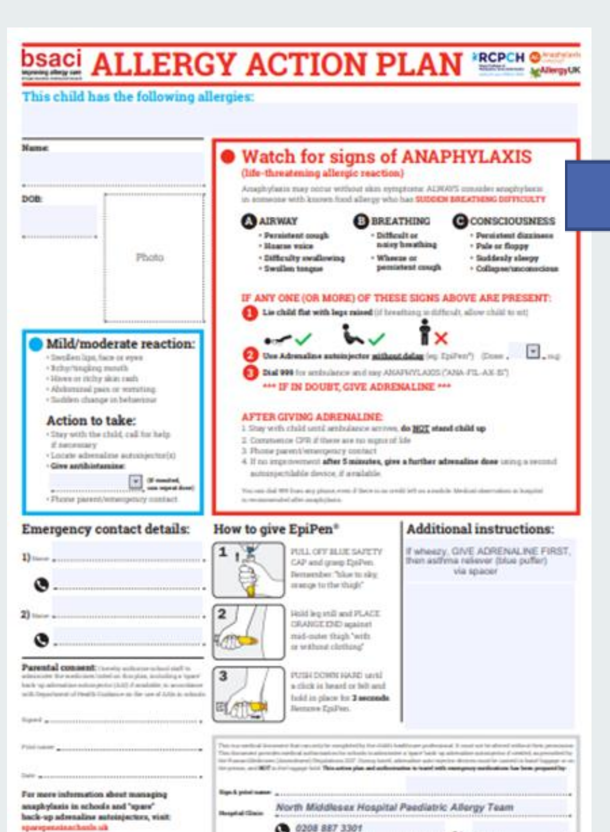




First aid for anaphylaxis

Anaphylaxis – a life-threatening reaction

- Time critical
- Early recognition and treatment essential
- Onset within seconds, minutes, or rarely, hours of exposure to allergen



bsaci ALLERGY ACTION PLAN RCPCH AllergyUK

This child has the following allergies:

Name:

DOB:

Photo

Watch for signs of ANAPHYLAXIS

Mild/moderate reaction:

Action to take:

Emergency contact details:

How to give EpiPen®

Additional instructions:

Parental consent:

North Middlesex Hospital Paediatric Allergy Team

0208 887 3301

Watch for signs of ANAPHYLAXIS

(life-threatening allergic reaction)

Anaphylaxis may occur without skin symptoms: ALWAYS consider anaphylaxis in someone with known food allergy who has **SUDDEN BREATHING DIFFICULTY**

A AIRWAY
- Persistent cough
- Hoarse voice
- Difficulty swallowing
- Swollen tongue

B BREATHING
- Difficult or noisy breathing
- Wheeze or persistent cough

C CONSCIOUSNESS
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
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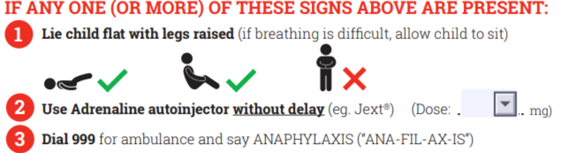


IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

1. **Lie child flat with legs raised** (if breathing is difficult, allow child to sit)
2. **Use Adrenaline autoinjector without delay** (eg. Jext®) (Dose: ___ mg)
3. **Dial 999** for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

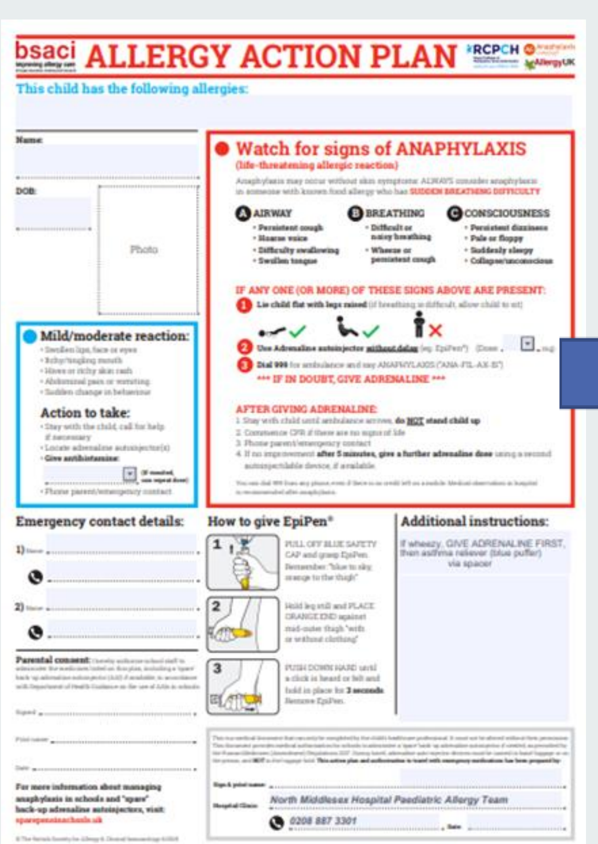
*** IF IN DOUBT, GIVE ADRENALINE ***

AFTER GIVING ADRENALINE:

1. Stay with child until ambulance arrives, **do NOT stand child up**
2. Commence CPR if there are no signs of life
3. Phone parent/emergency contact
4. If no improvement **after 5 minutes, give a further adrenaline dose** using a second autoinjectable device, if available.

First aid for anaphylaxis

Anaphylaxis – a life-threatening reaction


bsaci ALLERGY ACTION PLAN

This child has the following allergies:

Name:

DOB:

Photo

Mild/moderate reaction:

Action to take:

Watch for signs of ANAPHYLAXIS

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

AFTER GIVING ADRENALINE:

Emergency contact details:

How to give EpiPen®

Additional instructions:

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***** IF IN DOUBT, GIVE ADRENALINE *****

Watch for signs of ANAPHYLAXIS
(life-threatening allergic reaction)

Anaphylaxis may occur without skin symptoms: ALWAYS consider anaphylaxis in someone with known food allergy who has **SUDDEN BREATHING DIFFICULTY**

A AIRWAY	B BREATHING	C CONSCIOUSNESS
• Persistent cough • Hoarse voice • Difficulty swallowing • Swollen tongue	• Difficult or noisy breathing • Wheeze or persistent cough	• Persistent dizziness • Pale or floppy • Suddenly sleepy • Collapse/unconscious

AFTER GIVING ADRENALINE:

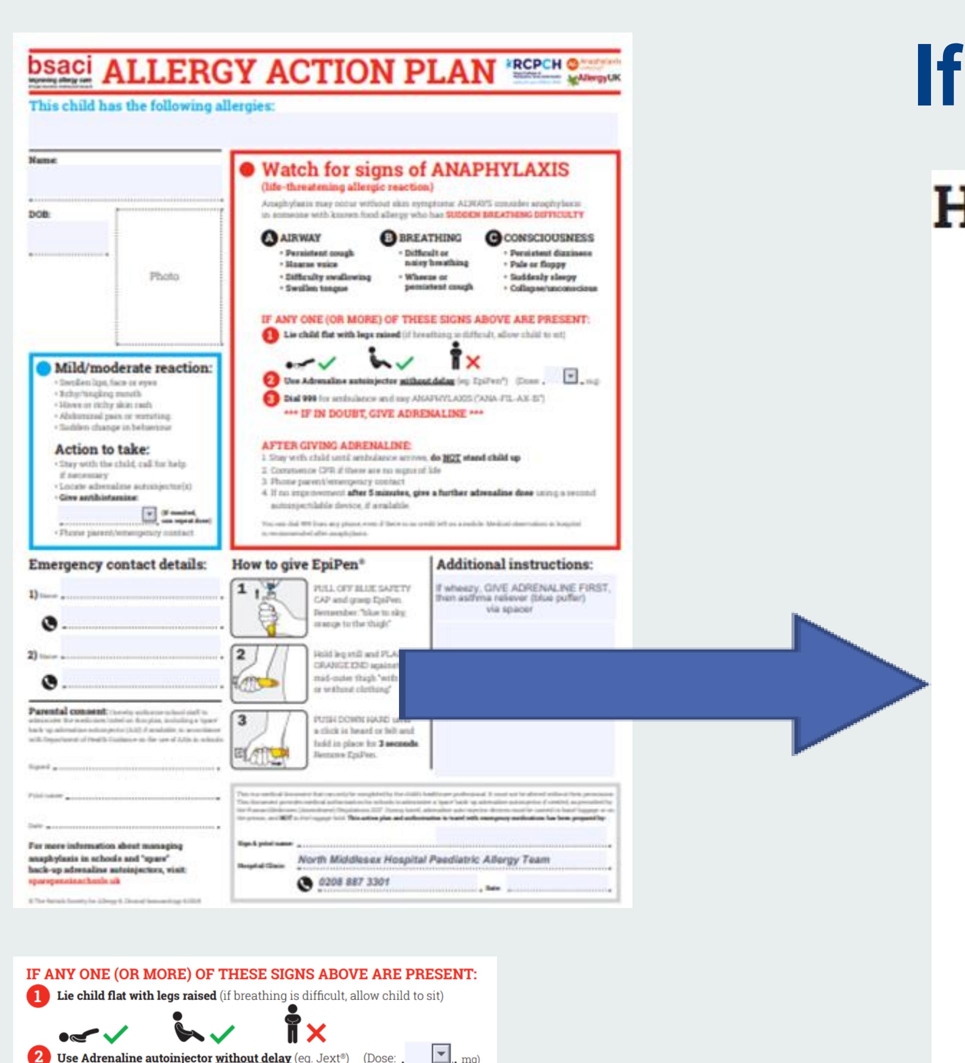
1. Stay with child until ambulance arrives, **do NOT stand child up**
2. Commence CPR if there are no signs of life
3. Phone parent/emergency contact
4. If no improvement **after 5 minutes, give a further adrenaline dose** using a second autoinjectable device, if available.

Early Adrenaline

- Reverses peripheral vasodilation
- Reduces tissue oedema
- Dilates bronchial airways
- Improves myocardial contraction
- Suppresses histamine and leukotriene release
- Inhibits mast cell activation
- Peak absorption 5-10mins after injection

Giving adrenaline

Anaphylaxis – a life-threatening reaction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This child has the following allergies:

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Watch for signs of ANAPHYLAXIS (life-threatening allergic reaction)

A AIRWAY
B BREATHING
C CONSCIOUSNESS

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

*** IF IN DOUBT, GIVE ADRENALINE ***

AFTER GIVING ADRENALINE:

Mild/moderate reaction:

Action to take:

Emergency contact details:

How to give EpiPen®

Additional instructions:

North Middlesex Hospital Paediatric Allergy Team

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:

1. **Lie child flat with legs raised** (if breathing is difficult, allow child to sit)
2. **Use Adrenaline autoinjector** <u>without delay</u> (eg. Jext®) (Dose: ___ mg)
3. **Dial 999** for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

*** IF IN DOUBT, GIVE ADRENALINE ***

If in doubt, give adrenaline!

How to give Jext®

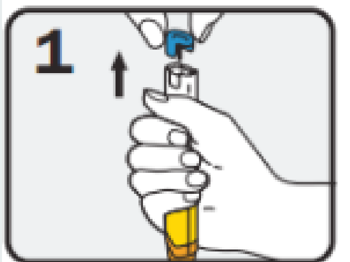
Form fist around Jext® and PULL OFF YELLOW SAFETY CAP

PLACE BLACK END against outer thigh (with or without clothing)

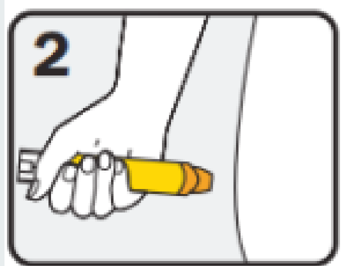
PUSH DOWN HARD until a click is heard or felt and hold in place for 10 seconds

REMOVE Jext®. Massage injection site for 10 seconds

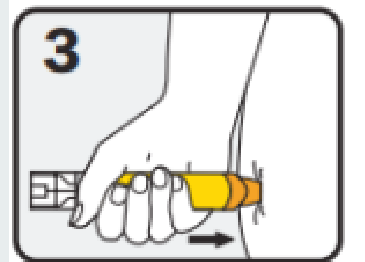
How to give EpiPen®



PULL OFF BLUE SAFETY CAP and grasp EpiPen. Remember: "blue to sky, orange to the thigh"



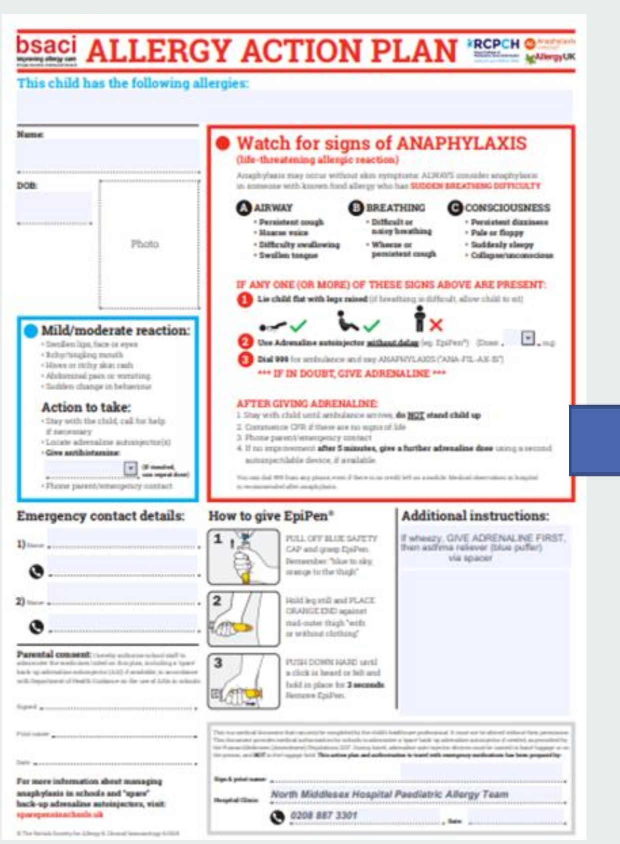
Hold leg still and PLACE ORANGE END against mid-outer thigh "with or without clothing"



PUSH DOWN HARD until a click is heard or felt and hold in place for **3 seconds**. Remove EpiPen.

First aid for anaphylaxis

Anaphylaxis – a life-threatening reaction



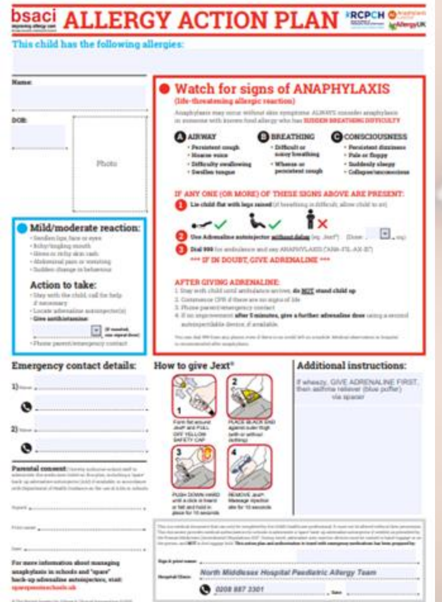
AFTER GIVING ADRENALINE:

1. Stay with child until ambulance arrives, **do NOT stand child up**
2. Commence CPR if there are no signs of life
3. Phone parent/emergency contact
4. If no improvement **after 5 minutes, give a further adrenaline dose** using a second autoinjectilable device, if available.

Case example 1 – Amy, 3yrs

- Amy was given a cheesy nacho by her friend at lunch
- She is known milk allergic
- She developed hives

- 5 minutes later, she starts wheezing


bsaci ALLERGY ACTION PLAN

This child has the following allergies:

Watch for signs of ANAPHYLAXIS

Mild/moderate reaction:

Emergency contact details:

How to give Jext®

Additional instructions:

Mild/moderate reaction:

- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:

- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- **Give antihistamine:**

CETIRIZINE 2.5mg (If vomited, can repeat dose)

- Phone parent/emergency contact

How to give Jext®

Form fist around Jext® and PULL OFF YELLOW SAFETY CAP

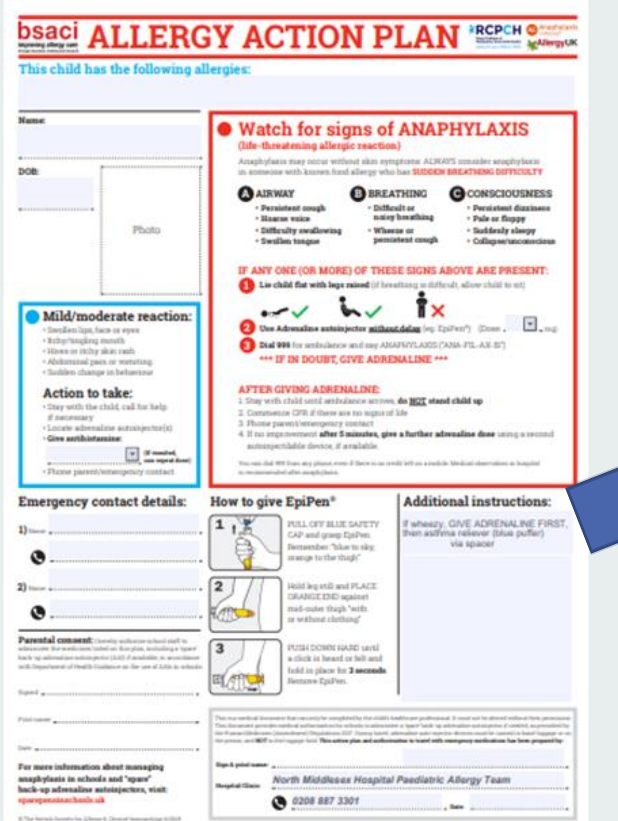
PLACE BLACK END against outer thigh (with or without clothing)

PUSH DOWN HARD until a click is heard or felt and hold in place for 10 seconds

REMOVE Jext®. Massage injection site for 10 seconds

Case example 1 – Amy, 3yrs

Anaphylaxis – a life-threatening reaction



bsaci ALLERGY ACTION PLAN

RCPCH

AllergyUK

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Watch for signs of ANAPHYLAXIS
(life-threatening allergic reaction)

Anaphylaxis may occur without skin symptoms: ALWAYS consider anaphylaxis in someone with known food allergy who has SUDDEN BREATHING DIFFICULTY

A AIRWAY
- Persistent cough
- Hoarse voice
- Difficulty swallowing
- Swollen tongue

B BREATHING
- Difficult or noisy breathing
- Wheeze or persistent cough

C CONSCIOUSNESS
- Persistent dizziness
- Pale or floppy
- Suddenly sleepy
- Collapse/unconscious

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:
1. Lie child flat with legs raised (if breathing is difficult, allow child to sit)
2. Use Adrenaline autoinjector without delay (eg. EpiPen®) (Dose: mg)
3. Dial 999 for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

*** IF IN DOUBT, GIVE ADRENALINE ***

AFTER GIVING ADRENALINE:
1. Stay with child until ambulance arrives, do NOT stand child up
2. Commence CPR if there are no signs of life
3. Phone parent/emergency contact
4. If no improvement after 5 minutes, give a further adrenaline dose using a second autoinjectable device, if available

Mild/moderate reaction:
- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:
- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- Give antihistamine:
- Phone parent/emergency contact

Emergency contact details:

1)

2)

Parental consent:

Signed:

Print name:

Date:

For more information about managing anaphylaxis in schools and "spare" back-up adrenaline autoinjectors, visit: sparepensinschools.uk

How to give EpiPen®

1. PULL OFF BLUE SAFETY CAP and grasp EpiPen. Remember: "blue to sky, orange to the thigh"
2. Hold leg still and PLACE ORANGE END against mid-outer thigh "with or without clothing"
3. PUSH DOWN HARD until a click is heard or felt and hold in place for 3 seconds. Remove EpiPen.

Additional instructions:

If wheezy, GIVE ADRENALINE FIRST, then asthma reliever (blue puffer) via spacer

Hospital/Clinic: North Middlesex Hospital Paediatric Allergy Team

0208 887 3301

Additional instructions:

If wheezy, GIVE ADRENALINE FIRST, then asthma reliever (blue puffer) via spacer

Case example 2 – Hatice, 16yrs

- Hattie was leaving the school yard
- She started itching, developed hives all over
- She is known to be allergic to wheat
- You administer cetirizine
- She vomits
- Re-dose cetirizine

Mild/moderate reaction:
- Swollen lips, face or eyes
- Itchy/tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

Action to take:
- Stay with the child, call for help if necessary
- Locate adrenaline autoinjector(s)
- **Give antihistamine:**
  CETIRIZINE 10mg **(If vomited, can repeat dose)**
- Phone parent/emergency contact

- 10 minutes later, she becomes very agitated, cyanosed, then collapses

IF ANY ONE (OR MORE) OF THESE SIGNS ABOVE ARE PRESENT:
1. **Lie child flat with legs raised** (if breathing is difficult, allow child to sit)
2. **Use Adrenaline autoinjector without delay** (eg. Jext®) (Dose: ... mg)
3. **Dial 999** for ambulance and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

*** IF IN DOUBT, GIVE ADRENALINE ***

How to give Jext®
1. Form fist around Jext® and PULL OFF YELLOW SAFETY CAP
2. PLACE BLACK END against outer thigh (with or without clothing)
3. PUSH DOWN HARD until a click is heard or felt and hold in place for 10 seconds
4. REMOVE Jext®. Massage injection site for 10 seconds

Keeping children with allergies safe

1) Avoidance

- Nut free?
- Allergen aware
- Catering staff identify who's allergic and to what?
- Prevent cross contamination during preparation and serving
- Discourage food sharing
- Top 14 allergens must be listed on dishes

Keeping children with allergies safe

2) First Aid

- Up to date Allergy Action Plans
- Correct storage of medications
    - Central location <5mins
    - Not locked away
    - Protocol for checking expiry dates
    - Correct temperature range
    - External trips
- Annual staff training

3) Spare Pens in Schools

- Purchase extra pens
- Can be used on children where consent for use is signed
- Or under direction from a HCP e.g. 999

Keeping children with allergies safe

Resources for School Nurses, Heads, Teachers, First Aiders, Parents and Pupils!

[Anaphylaxis UK Homepage | Anaphylaxis UK]

[Spare Pens in Schools | Homepage]

[Schools | The Allergy Team]

Schools Allergy Register

Take allergy off your 'to-do' list, train staff and test competency with tailored support from experts.

LEARN MORE

Services and Pricing

Support for every setting, in person or online. Our work with schools explained in detail.

VIEW OPTIONS

Staff Allergy Training

'Gold-standard' online allergy and anaphylaxis training in partnership with Allergy UK. CPD accredited.

BUY NOW

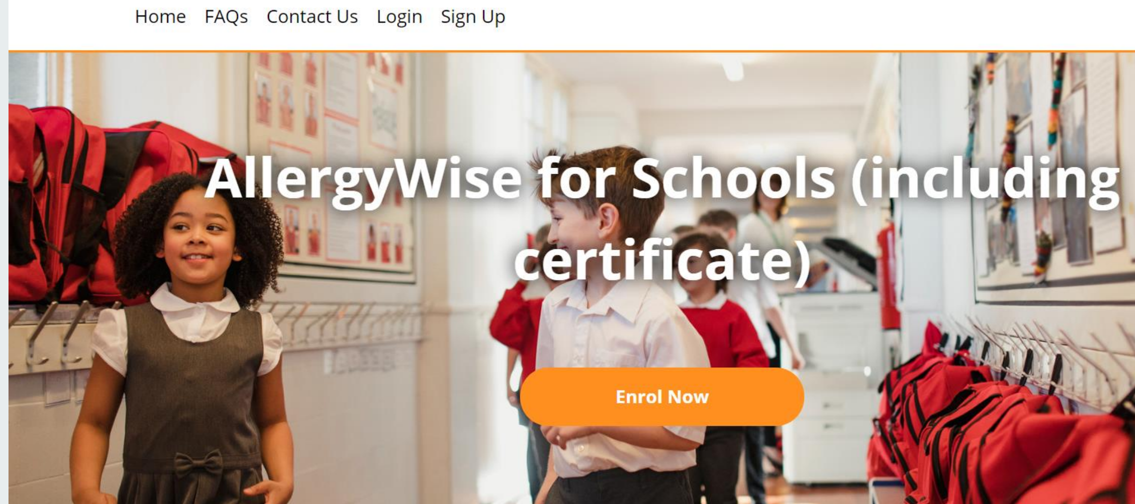
Allergy Awareness Week resources

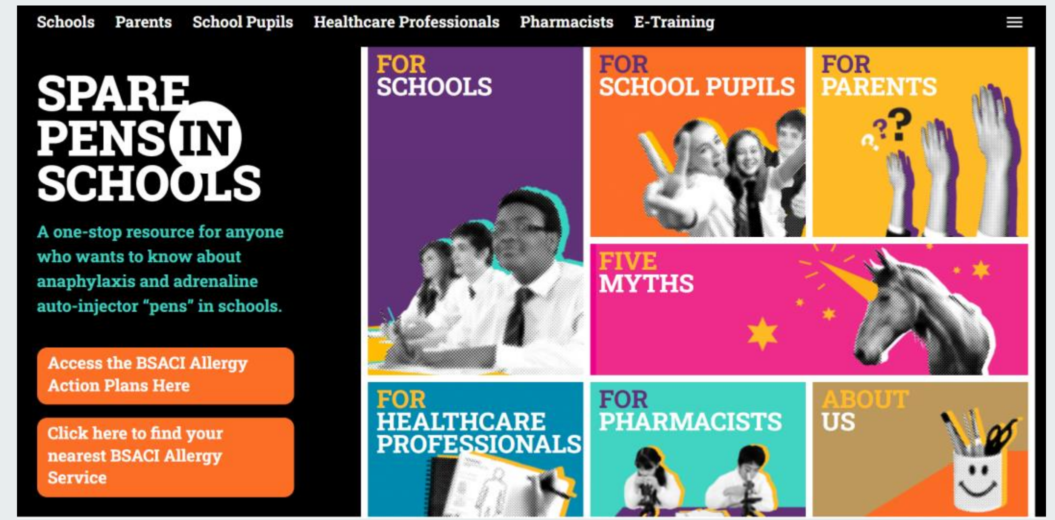
Start a conversation about allergy and build awareness with our free resources.

RESOURCES

anaphylaxis UK

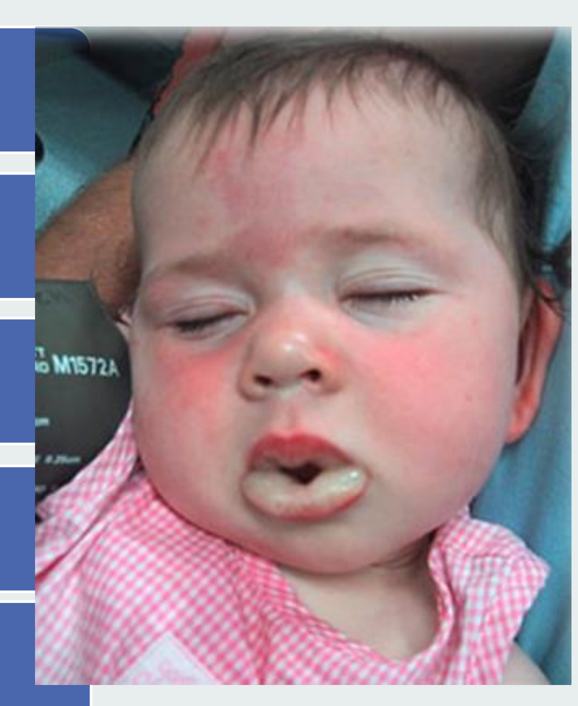
A brighter future for people with serious allergies

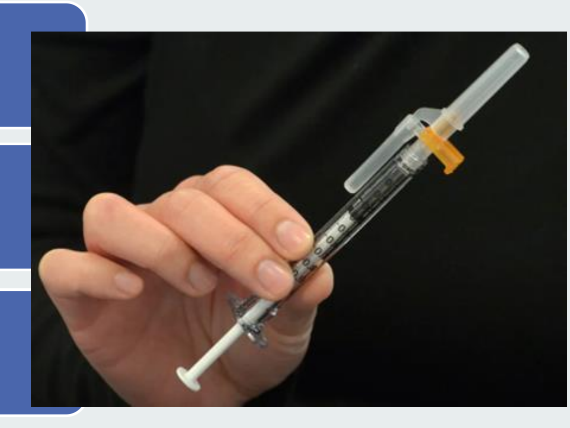




Management in hospital

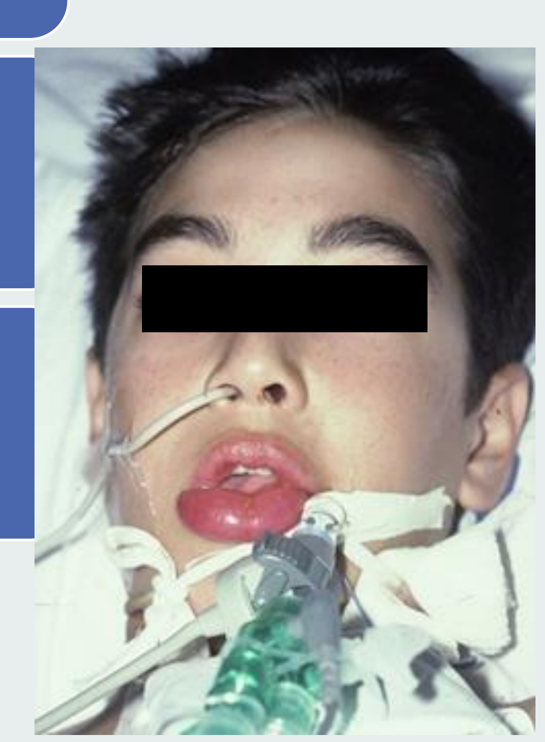
- Avoidance - Alerts on admission
- Recognition – Remove trigger - Call for help
- Position patient (lie down if decreased LOC or hypotensive)
- IM adrenaline (Delay in giving most common finding in fatal reactions)
- ABCDE (start CPR with adrenaline (IV, IO, IM))
- Oxygen – NRBM, High flow/concentration, Sats >94%
- Fluids – Bolus child 10ml/kg, or adult, 500-1000ml
- Monitoring – BP on minutely cycles, Pulse oximetry, ECG



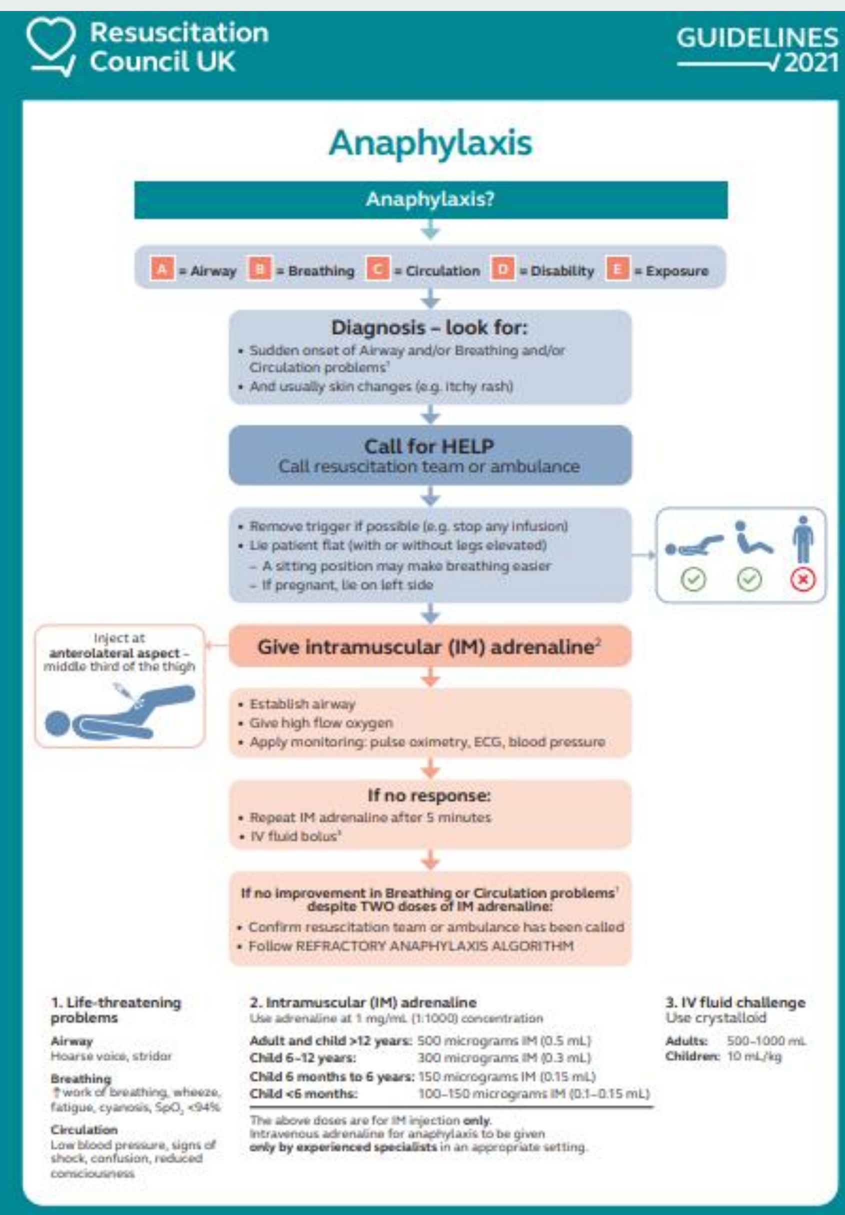


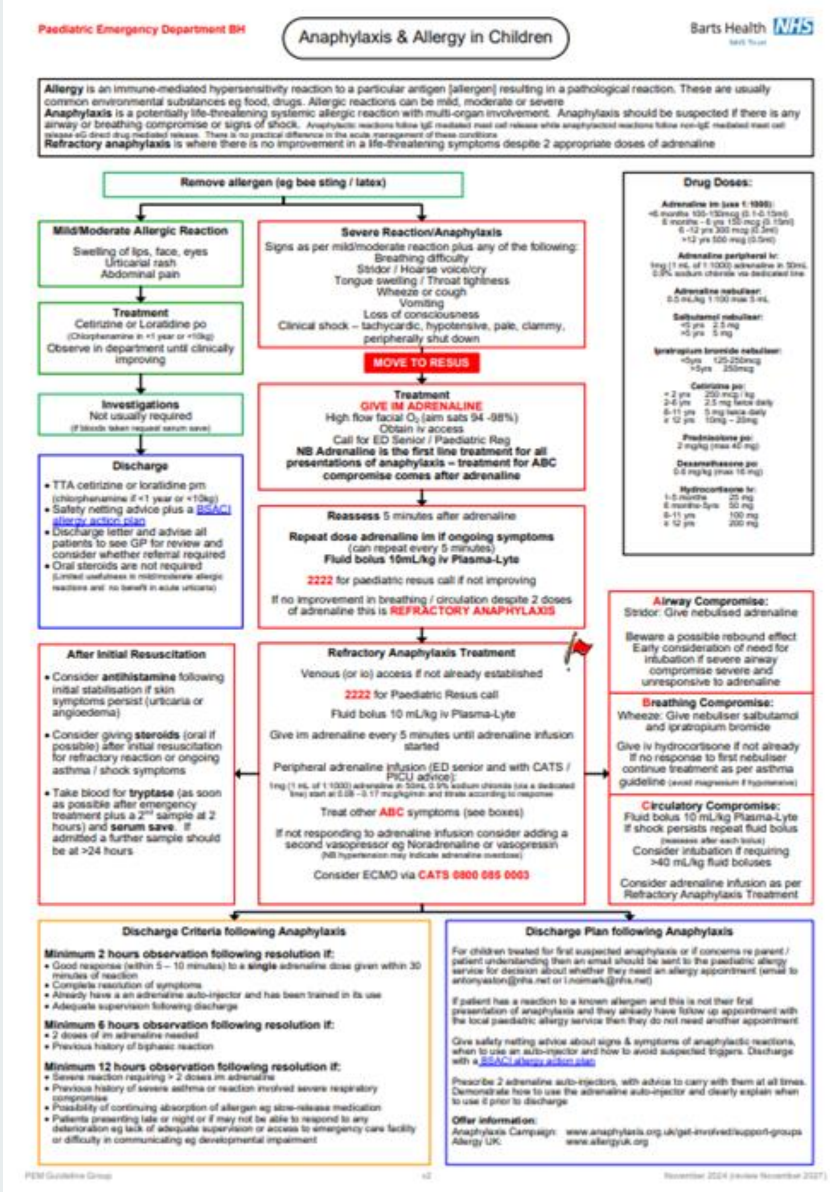
Refractory Anaphylaxis

- IV adrenaline infusion via IVC or IO needle until central access
- Continue IM adrenaline 5 minutely until infusion started
- Consider level of airway management, oxygenation, circulatory support
- Consider critical care



Management of anaphylaxis in hospital





Treatment of refractory anaphylaxis

GUIDELINES 2021

Refractory anaphylaxis

No improvement in respiratory or cardiovascular symptoms despite 2 appropriate doses of intramuscular adrenaline

Establish dedicated peripheral IV or IO access

Seek expert[1] help early
Critical care support is essential

Give rapid IV fluid bolus
e.g. 0.9% sodium chloride

&

Start adrenaline infusion
Adrenaline is essential for treating all aspects of anaphylaxis

Give IM* adrenaline every 5 minutes until adrenaline infusion has been started

*IV boluses of adrenaline are not recommended, but may be appropriate in some specialist settings (e.g. peri-operative) while an infusion is set up

Give high flow oxygen
Titrate to SpO_2 94–98%

Monitor HR, BP, pulse oximetry and ECG for cardiac arrhythmia
Take blood sample for mast cell tryptase

Follow local protocol
OR
Peripheral low-dose IV adrenaline infusion:
- 1 mg (1 mL of 1 mg/mL [1:1000]) adrenaline in 100 mL of 0.9% sodium chloride
- Prime and connect with an infusion pump via a dedicated line

DO NOT 'piggy back' on to another infusion line
DO NOT infuse on the same side as a BP cuff as this will interfere with the infusion and risk extravasation

- In both adults and children, start at 0.5–1.0 mL/kg/hour, and **titrate according to clinical response**
- Continuous monitoring and observation is mandatory
- ↑↑ BP is likely to indicate adrenaline overdose

Continue adrenaline infusion and treat ABC symptoms
Titrate according to clinical response

[1]Intravenous adrenaline for anaphylaxis to be given only by experienced specialists in an appropriate setting.

= Airway

Partial upper airway obstruction/stridor:
Nebulised adrenaline (5mL of 1mg/mL)

Total upper airway obstruction:
Expert help needed, follow difficult airway algorithm

= Breathing

Oxygenation is more important than intubation

If apnoeic:
- Bag mask ventilation
- Consider tracheal intubation

Severe/persistent bronchospasm:
- Nebulised salbutamol and ipratropium with oxygen
- Consider IV bolus and/or infusion of salbutamol or aminophylline
- Inhalational anaesthesia

C = Circulation

Give further fluid boluses and titrate to response:
Child 10 mL/kg per bolus
Adult 500–1000 mL per bolus
- Use glucose-free crystalloid (e.g. Hartmann's Solution, Plasma-Lyte®)

Large volumes may be required (e.g. 3–5 L in adults)

Place arterial cannula for continuous BP monitoring
Establish central venous access

IF REFRACTORY TO ADRENALINE INFUSION
Consider adding a second vasopressor **in addition** to adrenaline infusion:
- Noradrenaline, vasopressin or metaraminol
- In patients on beta-blockers, consider glucagon

Consider extracorporeal life support

Cardiac arrest – follow ALS ALGORITHM
- Start chest compressions early
- Use IV or IO adrenaline bolus (cardiac arrest protocol)
- Aggressive fluid resuscitation
- Consider prolonged resuscitation/extracorporeal CPR

Documentation and Discharge

- Discharge checklist?
- MHRA – Yellow Card
- Local alert / UK Anaphylaxis Registry
- Allergy Action Plan
- Adrenaline Auto Injector prescription
- Specialist referral
- Psychological support

North Middlesex University Hospital NHS Trust

Paediatric Allergy

Anaphylaxis Discharge Checklist

Avoidance of suspected food / substance advice given ☐
(Including maternal exclusion if breastfed)

Customised Allergy Action Plan provided, and training given:
Non-AAI ☐ *Jext* ☐ *EpiPen* ☐

Rescue medications provided:
Cetirizine: ☐
Up to 2years: 0.25mg/kg
2 – 5 years: 2.5mg
6 – 12years: 5mg
>12yrs: 10mg

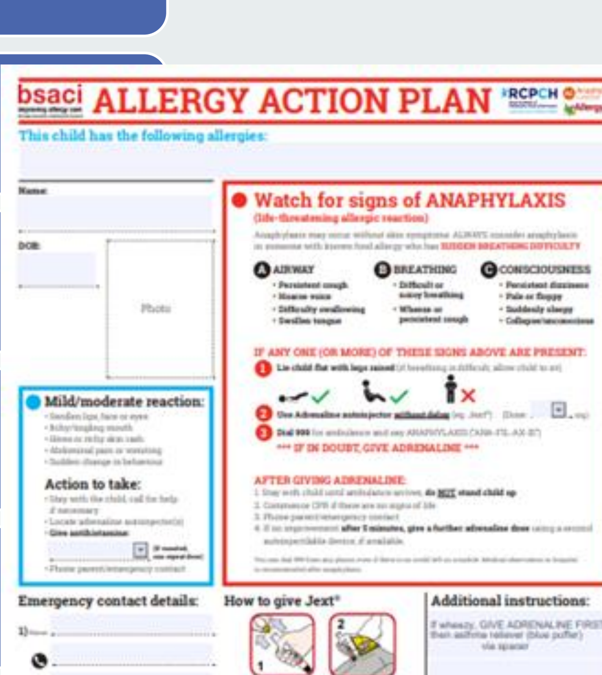
Adrenaline Auto Injector (AAI) ☐
Absolute indications: Previous anaphylaxis and/or co-existent asthma & food allergy, teenagers with cow's milk protein allergy.
Relative indications (one or more of): Reaction to a trace amount, nut allergy, teenager with food allergies, living/visiting a remote location, multiple IgE mediated food allergies.

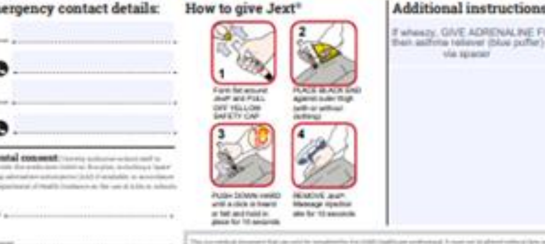
Jext (First choice brand)
- Children between 8kg -12kg prescribe **ONE** Jext (150mcg) only
- Children 12-25kgs = **TWO** Jext (150mcg) for home (GP to provide 2 further for nursery)
- Children above 25kgs = **TWO** Jext (300mcg) for home (GP to provide 2 further for school)

EpiPen (To be given if the family are used to this brand)
- Children between 8kg -12kg prescribe **ONE** EpiPen Jr (150mcg) pen only
- Children 12-25kgs = **TWO** EpiPen juniors (150mcg) for home (GP to provide 2 for Nursery)
- Children above 25kgs or 12years of age = **TWO** EpiPen (300mcg) for home (GP to provide 2 further for school)

Other comorbidities of allergy addressed:
Eczema ☐
Cow's Milk Substitute – maternal exclusion if breastfed, extensively hydrolysed formula or amino acid formula (refer to milk guideline) ☐
Rhinitis ☐
Asthma ☐

Referral to the North Middlesex University Hospital Paediatric Allergy Team made ☐
Email the allergy nursing team on **northmid.paedsallergy@nhs.net**





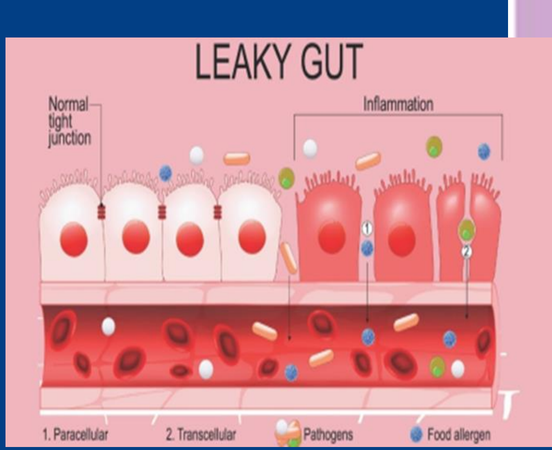
Paediatric Atopic Eczema

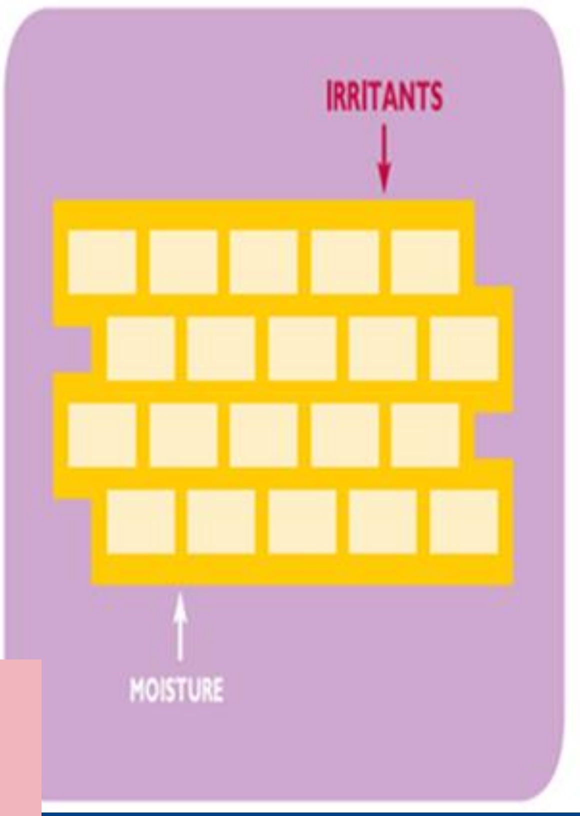
Identification, management & prevention

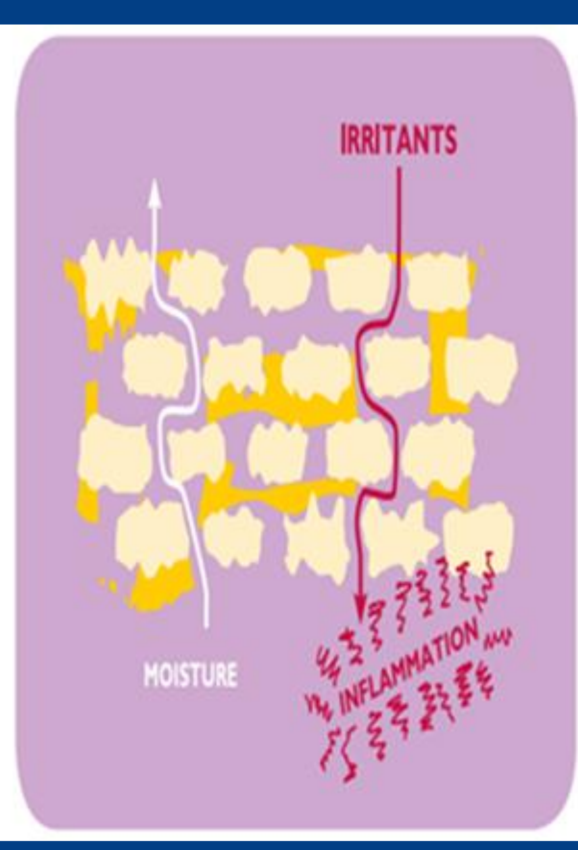
Infantile eczema

Where can you stop the allergic march?

- Babies born with a depleted gut biome
- Gut immune system cannot process milk protein
- Intestinal wall becomes inflamed
- Reflux, enterocolitis, proctocolitis
- Skin becomes inflamed (eczema)
- Skin barrier breaks – further sensitisations
- Allergens drive eczema
- More food allergies
- Asthma
- Rhinitis

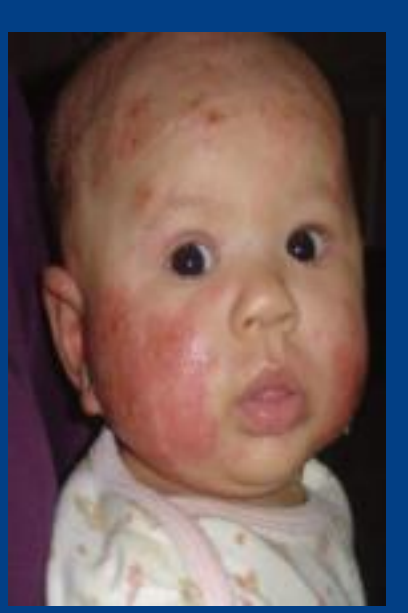


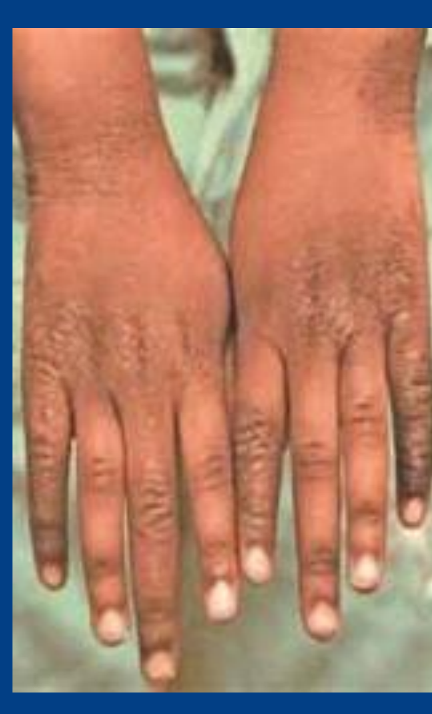


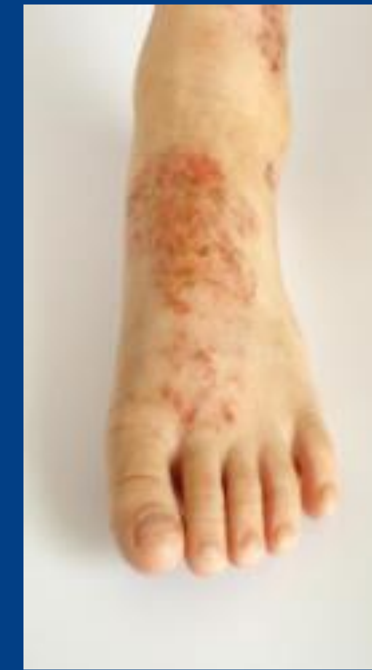


Paediatric Eczema

Distribution



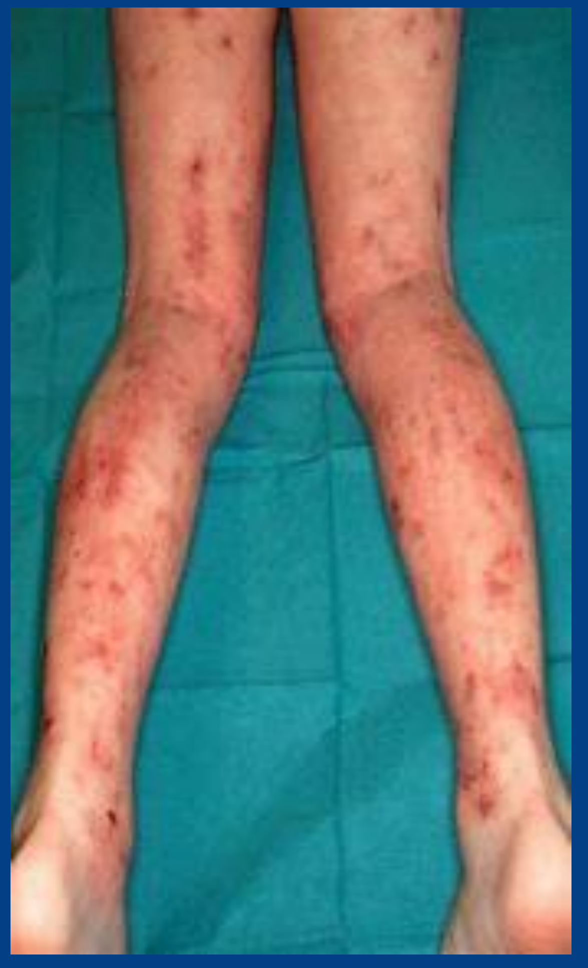


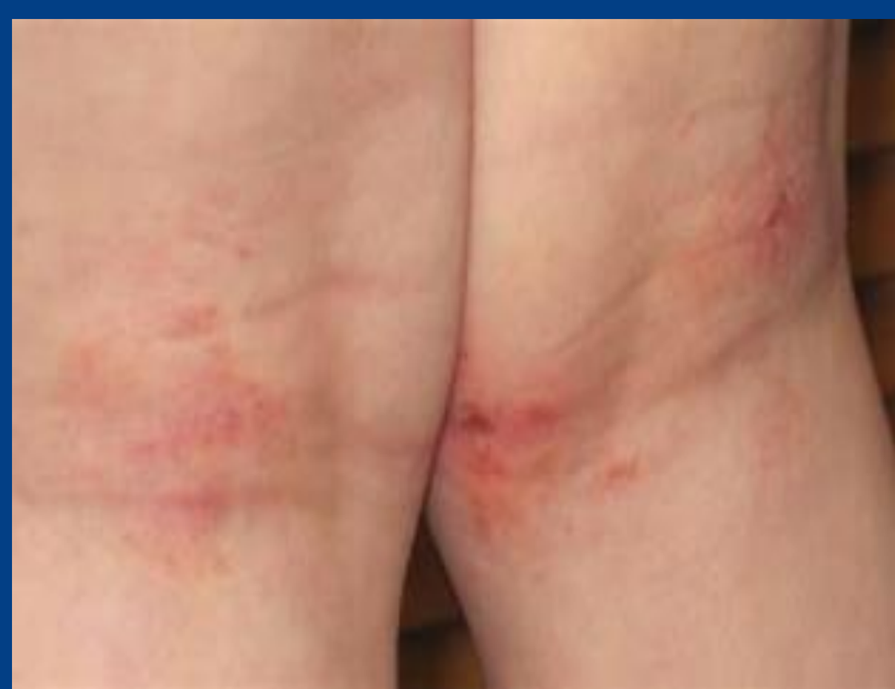


Paediatric Eczema

Severity of inflammation

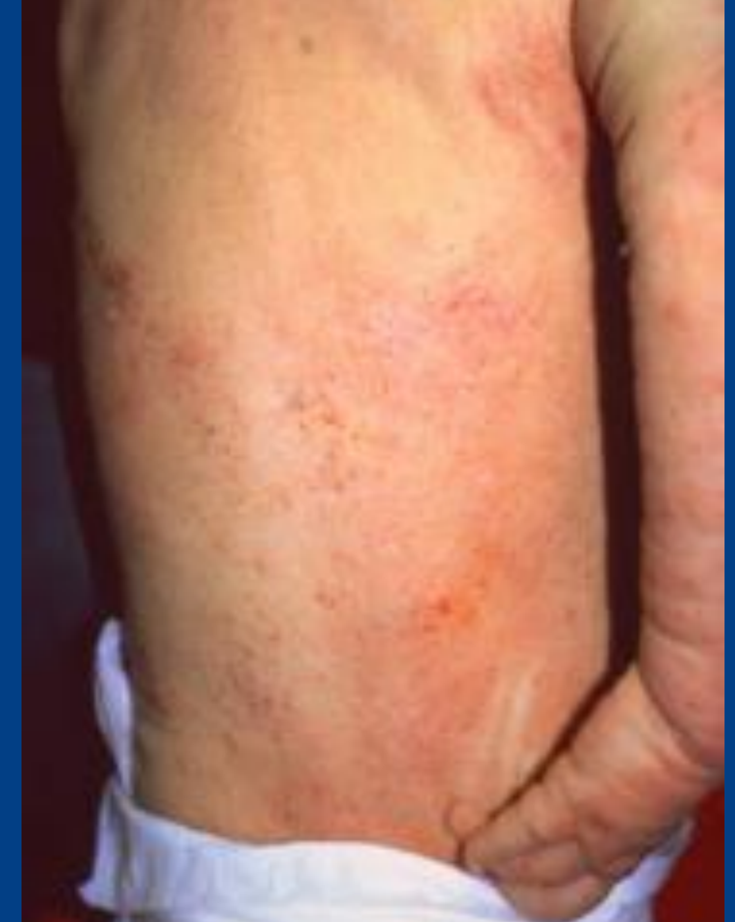
- Will guide your steroid choice – Mild, Moderate or Potent steroid

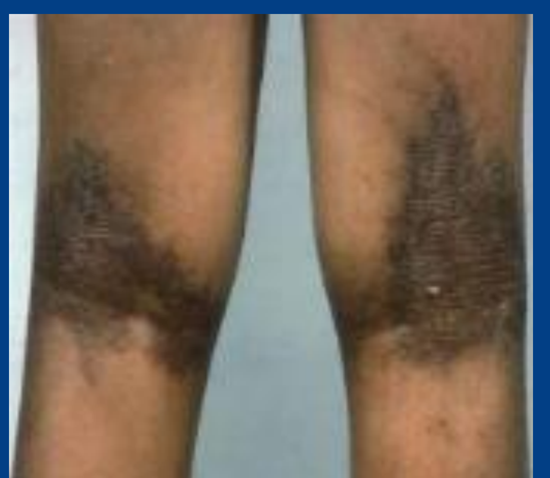


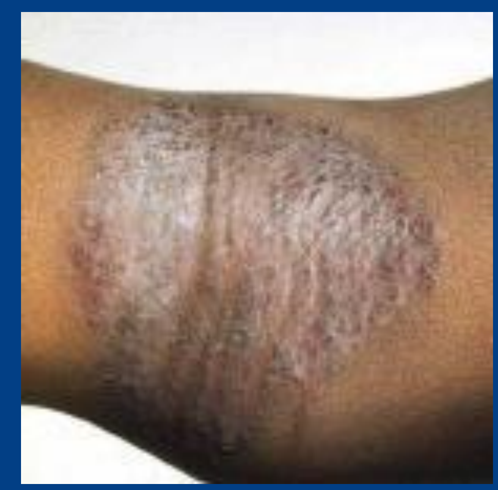


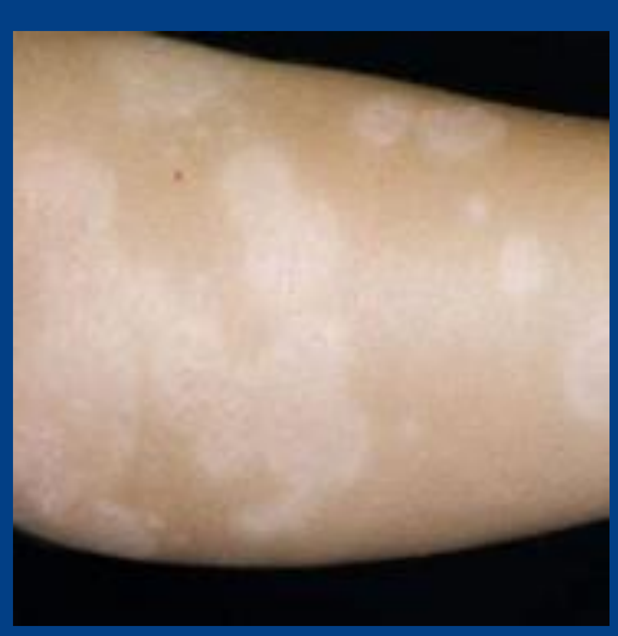
Paediatric Eczema

Quality of eczema – excoriated, erythrodermic, lichenified, hyperpigmented, hypopigmented





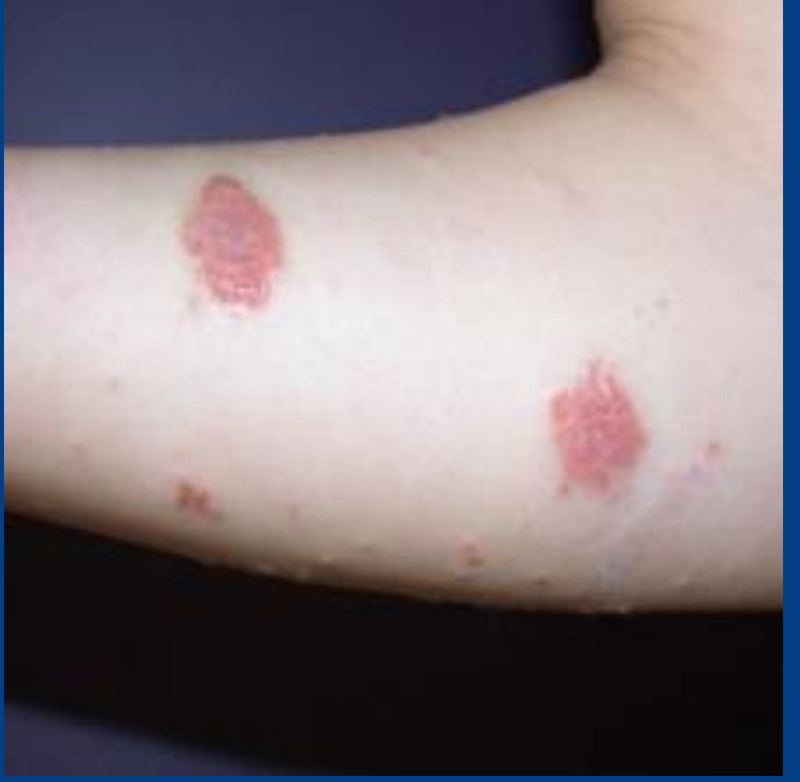


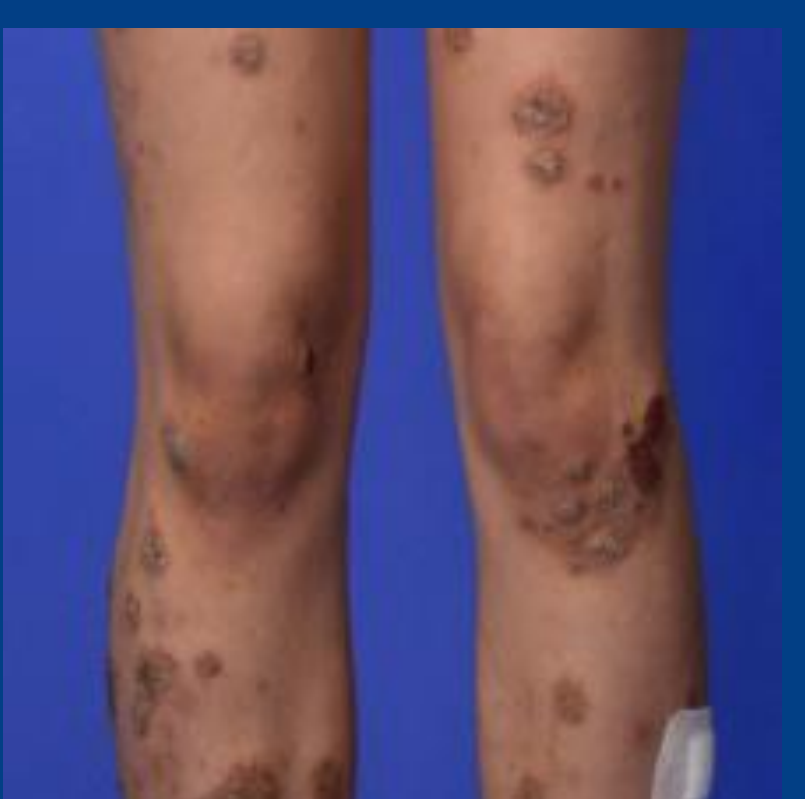


Paediatric Eczema

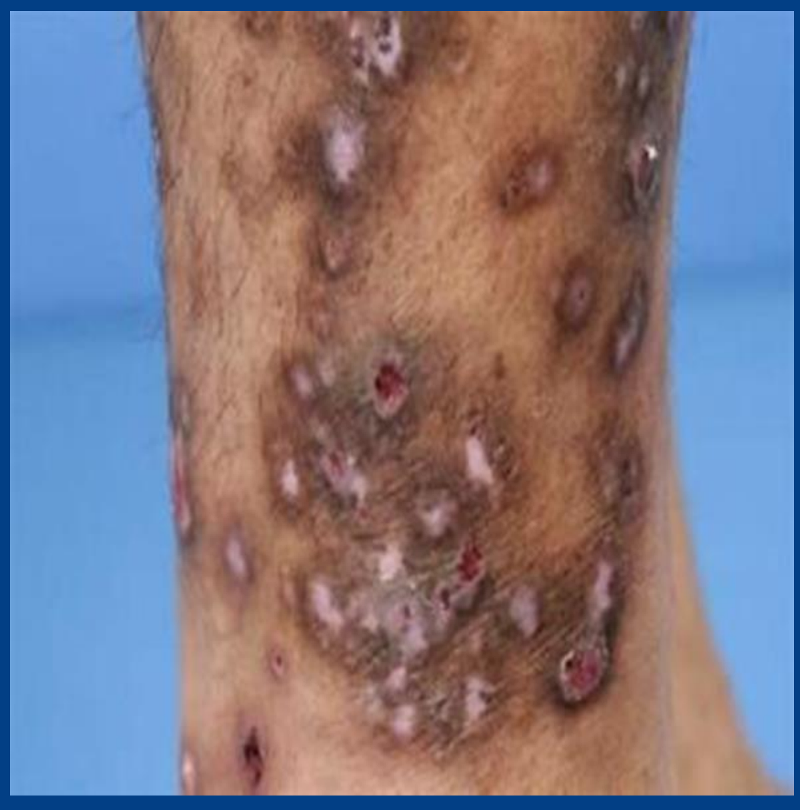
Type of eczema

Discoid / Nebular





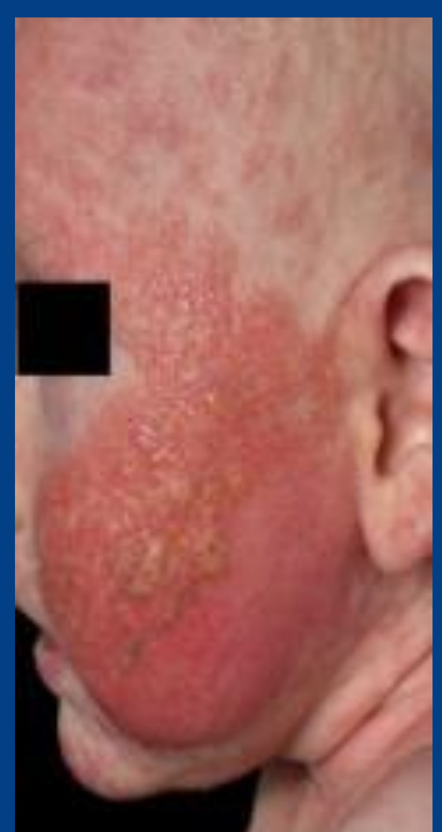
Pruiginous

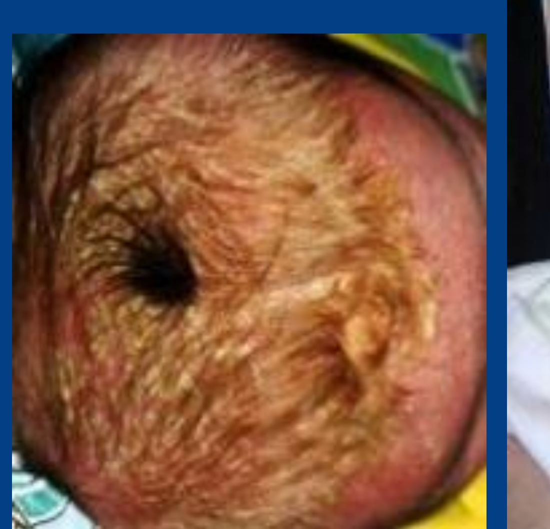


Paediatric Eczema

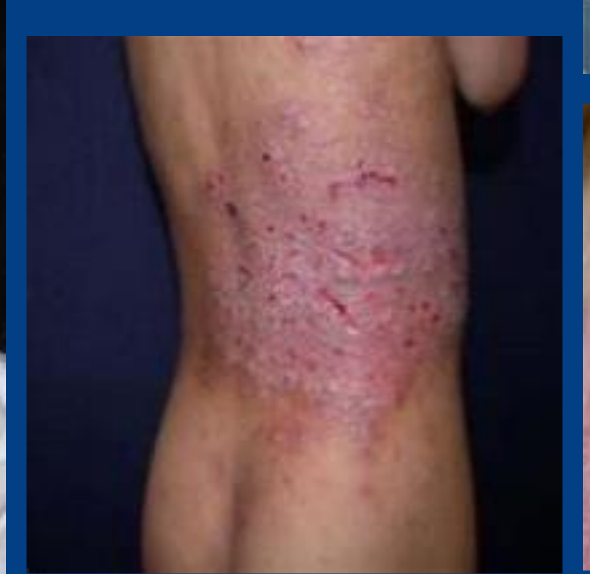
Infected Eczema

Bacterial – Oral antibiotics
e.g. Fluclox

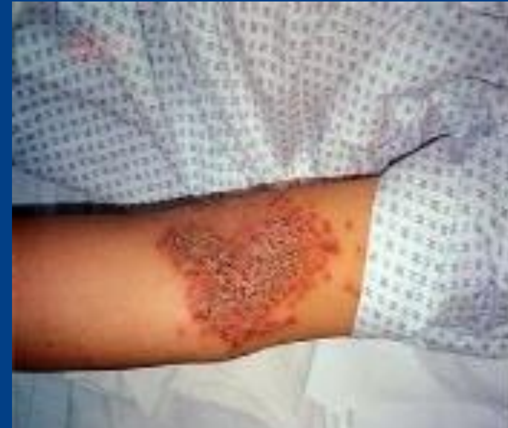


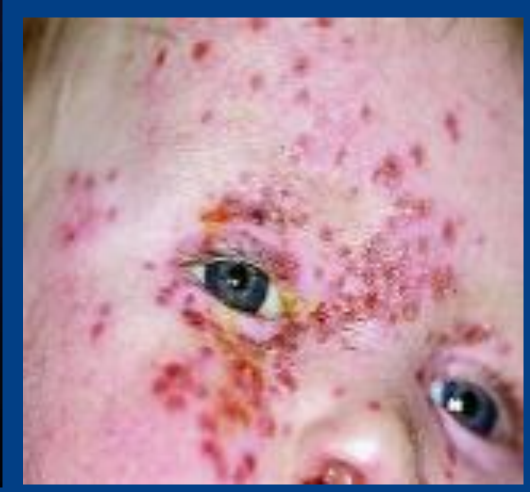


Fungal –
Antifungal cream,
oral



Viral (herpeticum)
– Medical
emergency, IV
acyclovir





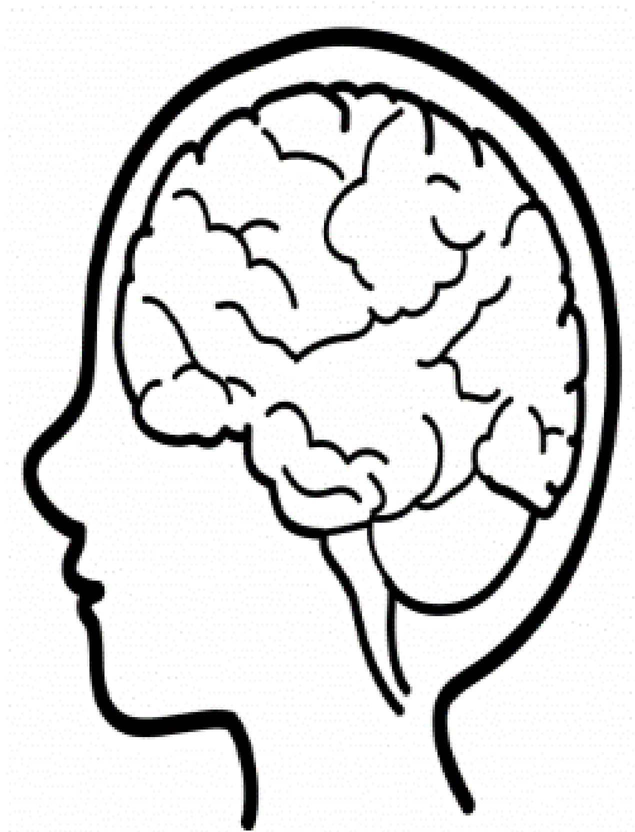
Paediatric Eczema

Eczema Psychiatric March

"I can't sleep"

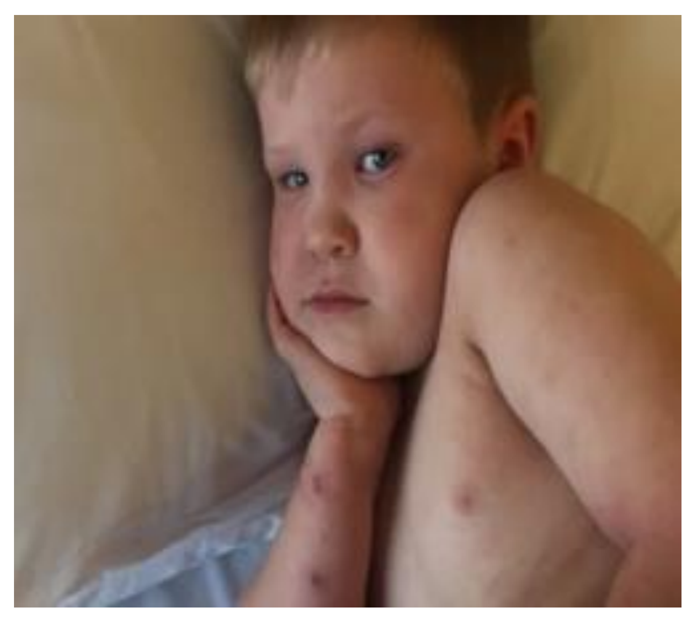
"I don't want to go to school"

"I can't concentrate"



Inflammatory soup→
↓Serotonin
↓Melatonin
↓Sleep
↑Stress
Depression
Anxiety disorders

"I am tired, emotional and angry all the time"

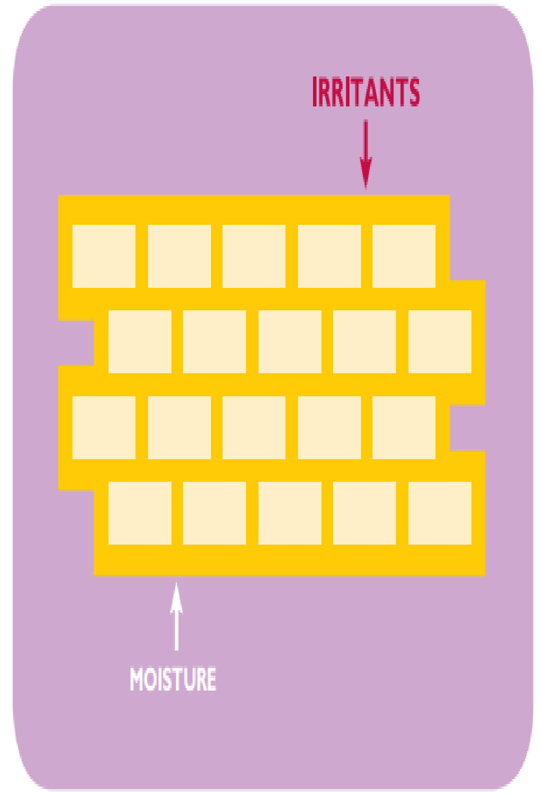


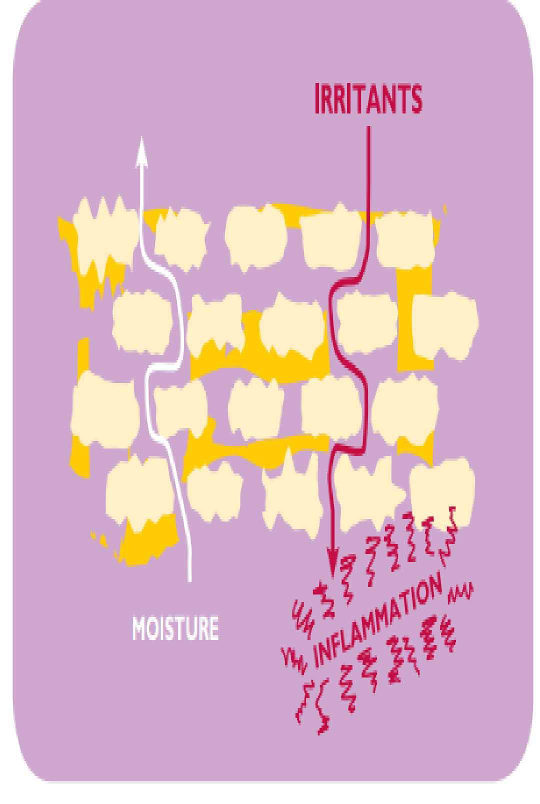
<u>Eczema psychiatric march</u>
Separation anxiety→ADHD→conduct disorder→substance misuse→suicide
Attachment disorder→anxiety→depression→suicide

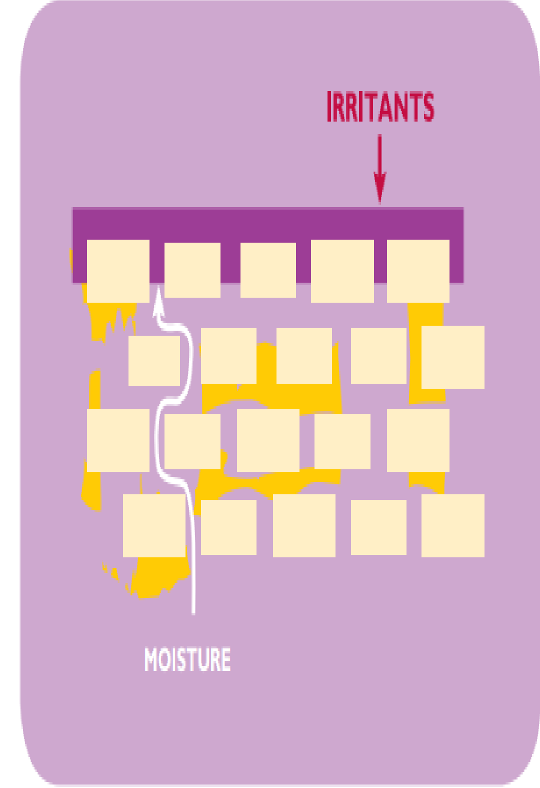
Paediatric Eczema - Management

Education for chronic conditions

- Self management
- Improved concordance
- Improved outcomes







Paediatric Eczema - Management

EuroGuiDerm Guideline on Atopic Eczema
Stepped-care plan for children and adolescents with atopic eczema

- Add antiseptic/antibiotic/antiviral/antifungal treatment in cases of infections
- Consider compliance and diagnosis, if therapy has insufficient effect
- Refer to table 3 for TCS classes recommended

SEVERITY (mild → severe)

In alphabetical order

Continue measures recommended below and select from (if appropriate):

Biologics		JAK-Inhibitors		Conventional systemic drugs	
↑↑	Dupi[2] in license for ≥ 6 m	↑↑	Abro[2] in license for ≥ 12 y	↑	AZA[1,3]
↑↑	Lebri[2] in license for ≥ 12 y	↑↑	Bari[2] in license for ≥ 2 y	↑↑	CyA[1,3] in license for ≥ 16 y
↑↑	Tralo[2] in license for ≥ 12 y	↑↑	Upa[2] in license for ≥ 12 y	↑	MTX[1,3]

Continue measures recommended below and select from (if appropriate):

- ↑↑ TCS[2] – proactive
- ↑↑ TCI[2] – proactive
- ↑ NB-UVB and medium dose UVA1
- ↑↑ Psycho-somatic counseling

Continue measures recommended below and select from (if appropriate):

- ↑↑ TCS[2] – acute
- ↑↑ TCI[2] – reactive
- ↑ Wet wraps – acute

Base:

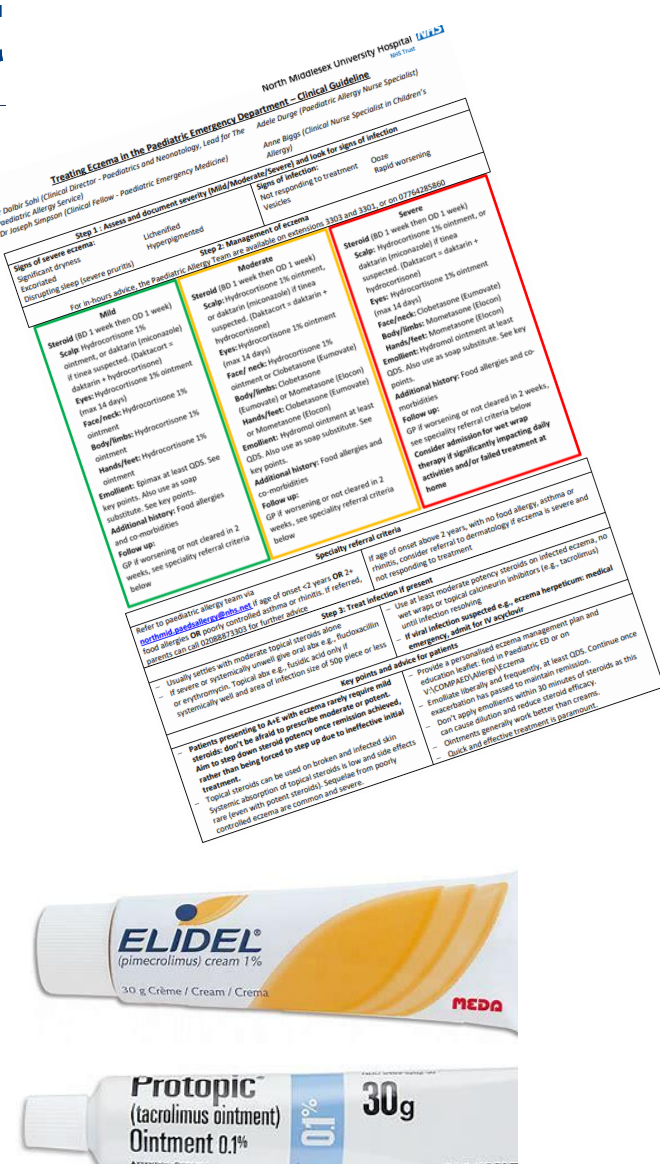
- ↑↑ Emollients – daily, in sufficient quantity and adjust frequency to degree of skin dryness
- ↑↑ Avoidance of allergens – as much as possible in sensitized patients
- ↑↑ Educational programmes

[1] refer to guideline text for restrictions, [2] licensed indication, [3] off-label treatment

↑↑ (dark green) strong recommendation for the use of an intervention / ↑ (light green) weak recommendation for the use of an intervention

For definitions of disease severity, acute, reactive, proactive see section 'VII' and section 'Introduction to systemic treatment' of the EuroGuiDerm Atopic Eczema Guideline

Abro= abrocitinib; AZA=azathioprine; Bari=baricitinib; CyA=ciclosporin; Dupi=dupilumab; Lebri=lebrikizumab; MTX=methotrexate; TCI=topical calcineurin inhibitors; TCS= topical corticosteroids; Tralo=tralokinumab; Upa=upadacitinib; UVA1=ultraviolet A1; NB-UVB=narrow-band ultraviolet B



Paediatric Eczema - Management

North Middlesex University Hospital NHS
NHS Trust

Care plan for ECZEMA

This plan was agreed between:			
Patient:	**AND**	Health Professional:	Date:

STEP 1 – MAINTAIN: everyday care – even when eczema is clear

- Use moisturiser / emollient at least twice every day – always wait 20 minutes after medicated creams
- Apply emollient thickly
- Apply emollient in direction of hair growth

If your skin is itchy, red, inflamed or flared Go to Step 2	
	EMOLLIENT (Moisturiser): - thick and frequent (>20 minutes after medicated cream)
	SOAP SUBSTITUTE: – apply thick layer, carefully lower into bath, massage into skin, then pat dry.
	FIRE RISK: Some ointments and skin care products are dangerous when near a naked flame or cigarette

STEP 2 – PROTECT & REPAIR: use only on active, itchy, red, inflamed eczema

	MEDICATED CREAMS/OINTMENTS (e.g. steroids or other)	A.M.	P.M.
Applying medicated creams and ointments One finger tip unit (FTU) is the amount of ointment from the first bend in finger to the fingertip. This will cover an area equal to two adult hands.	**Face and Neck:**		
	Scalp:		
	Body:		

If this treatment is not working, see your doctor or nurse for help Go to Step 3	Medications (tablets, syrups or other) 1. 2. 3.	How often:
	Other information **Wait 30 minutes between layers of cream**	

STEP 3 – SEEK MEDICAL HELP

- If your eczema is not responding or is getting worse
- If you suspect the eczema is infected – very red, oozing, or any blister like spots. Child may be unwell.

If you require further information please contact: **Paediatric Allergy Nurse Specialists, 0208 887 3303**

North Middlesex University Hospital NHS
NHS Trust

Care plan for ECZEMA

MOISTURISERS / EMOLLIENTS
Emollients should be non-perfumed and used frequently. It is safe to apply to all areas of skin on the body and face every few hours if possible. Use plenty—dry skin will soak it up. An ideal time to apply moisturisers is a few minutes after a warm bath or shower while skin is slightly damp. Greasier preparations such as ointments are ideal for very dry skin, although some people prefer the feel of lighter creams. Use a spoon or spatula to take moisturiser from a tub to avoid bacterial contamination from hands. Some ointments and skin care products are dangerous when near a naked flame or cigarette.

SOAP SUBSTITUTES
All soaps dry the skin, leaving it feeling tight and itchy. This can make eczema worse. A soap substitute is an emollient which is used instead of soap for washing and cleaning the skin. Apply generously to the whole body before getting into the bath and then use your hands to rinse off with warm water. Gently pat the skin dry with a clean towel afterwards.

MEDICATED CREAMS / OINTMENTS (STEROID / NON-STEROID ANTI-INFLAMMATORY)
You may have different strengths of medicated creams for different areas on the body. Your personal management plan should tell you what goes where. If you do not have a personalised up-to-date treatment plan, then ask your doctor or nurse to prepare one with you.
Apply these medicated creams / ointments to the affected areas and smooth them in, gently stroking in the direction of hair growth. Leave a short while, at least 15 minutes, between emollient and medicated cream to allow the first one to soak into the skin before putting on the next one.

One finger tip unit (FTU) is the amount of ointment from the first bend in finger to the fingertip.

This will cover an area equal to two adult hands.

FINGERTIP UNIT AMOUNT TO USE

STRENGTHS OF MEDICATED CREAMS VARY, HERE ARE A FEW EXAMPLES:

MILD	MODERATE	STRONG
1% Hydrocortisone Cream/O. Daktacort Cream/Ointment	Eumovate Cream/Ointment Synalar 1:4 Cream/Ointment Betnovate RD Cream/Ointment	Elocon Cream/Ointment Cutivate Cream/Ointment Betnovate Cream/Ointment

Mild to moderate strength medicated creams / ointments are fine to use on the face under the guidance of your doctor or nurse. Strong creams/ointments should not be used on the face unless recommended by an eczema specialist.

SUN PROTECTION
Sun protection is important for all children and especially if you use the medicated creams Protopic® or Elidel®. In that case, use sun block (>SPF 30) and cover up if possible. Chose a sun block for sensitive skin and please try this out on a test patch of skin before using it all over.

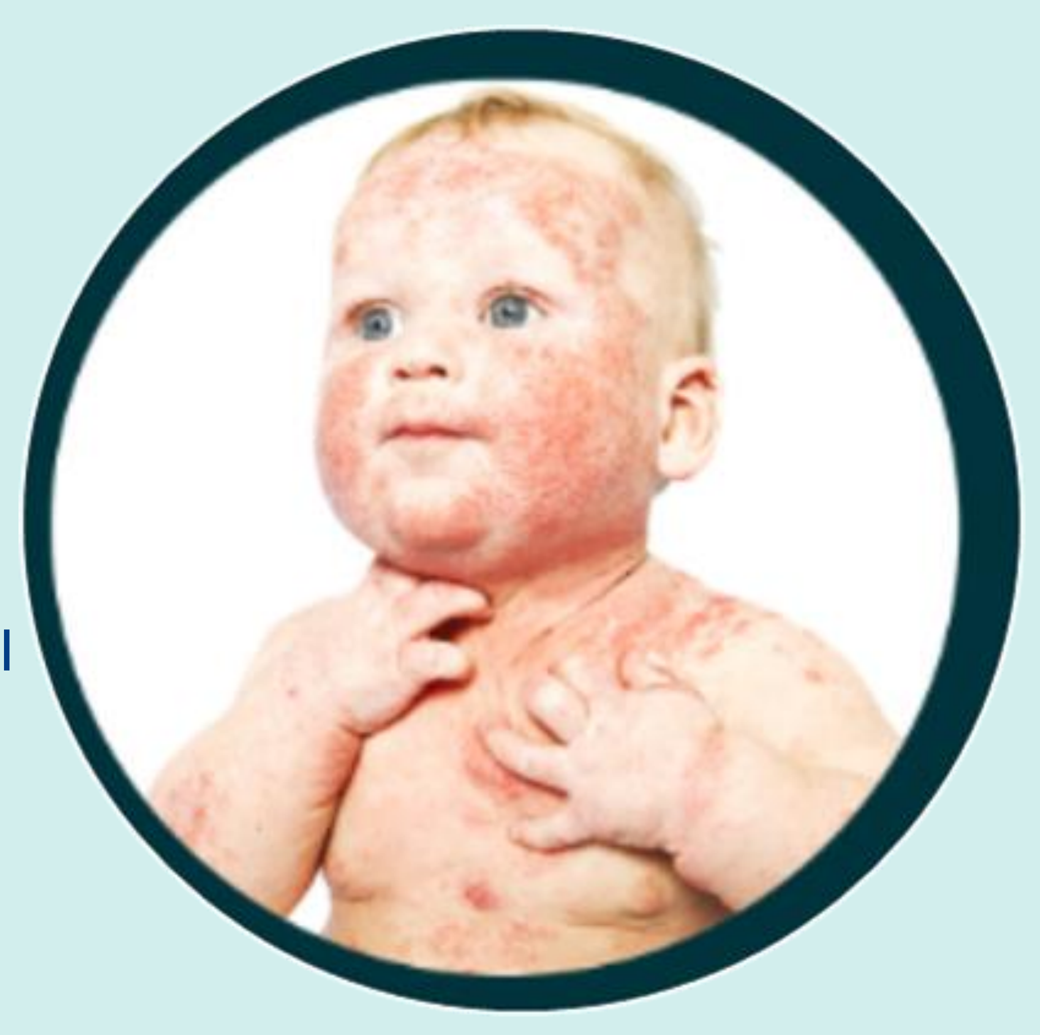
INFECTION
Skin with eczema is more vulnerable to infection than healthy skin. Signs of bacterial infection may include pustules, crusting or a sudden severe flare of eczema not responding to usual treatments. Please see your doctor as oral antibiotics may be needed. Moderate topical steroids can continue to be applied to infected skin but wet wraps or dressings need to be stopped. Protopic® or Elidel® should not be applied to infected skin. Should you see blisters (with fluid in) or cold sores please see a doctor urgently (the same day).

WHERE TO GET MORE INFORMATION
You are not alone with eczema. Your doctor and nurse can help you and more information is available:
- National eczema society: www.eczema.org
- Understanding the NICE guideline for eczema in children: www.nice.org.uk/CG057
- Anti-bullying website: www.antibullying.net ; www.kidscape.org.uk
- To watch videos on how to apply your creams go to: www.itchysneezywheezy.co.uk;

Paediatric Eczema

Take Home Messages for Eczema

- Early effective treatment to prevent life-long problems
- Steroids Steroids Steroids
- Match potency to level of inflammation
- Longer duration of treatment for chronic changes
- Ointments not creams
- Space layers of creams by >30mins
- Education and personalised management plans essential
- No foods on skin
- Keep cool
- Bath infrequently



Paediatric Eczema

Eczema Resources

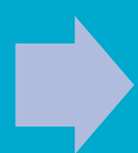
- National eczema society: www.eczema.org
- www.eczemacareonline.org.uk
- NICE guideline for eczema in children: https://www.nice.org.uk/guidance/CG57
- Anti-bullying websites: www.antibullying.net ; www.kidscape.org.uk
- To watch videos on how to apply your creams go to: www.itchysneezywheezy.co.uk;
- Powerful videos of patient and family experiences: https://www.patientvoices.org.uk/terrificteens.htm
- British Academy Dermatology: http://www.bad.org.uk/for-the-public
- Eczema and Allergy | British Society for Paediatric Dermatology (bspd.org): http://bspd.org/eczema-and-allergy/

Allergy Prevention
Advice from HCPs working with families

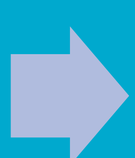
BSACI Weaning advice

To reduce development of food allergies

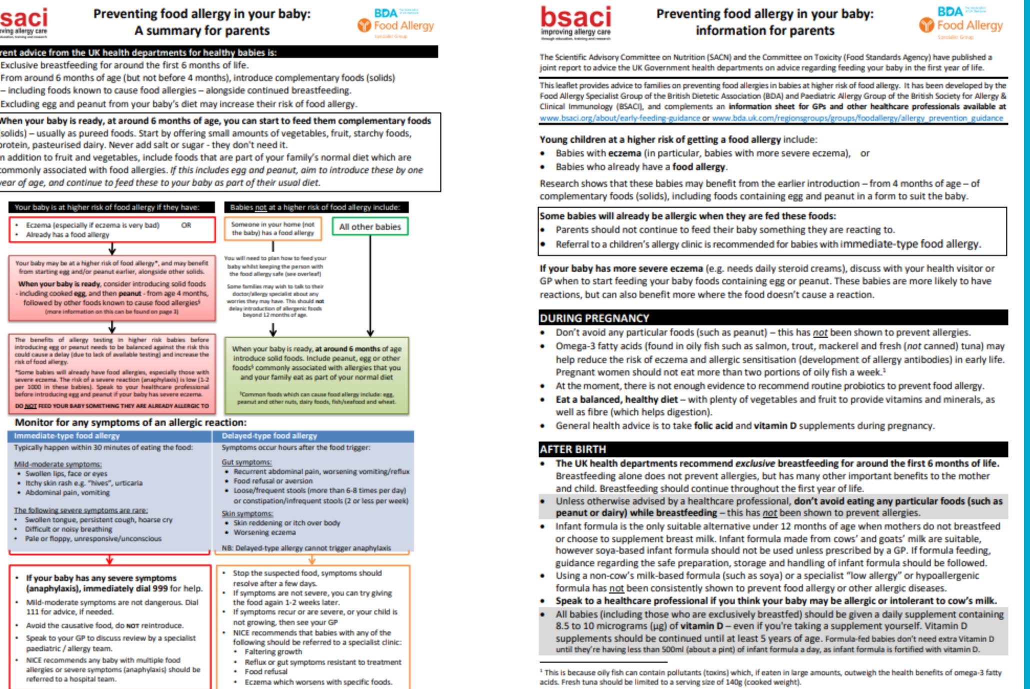
Early introduction of allergens – standard advice from all health visitors and EYP



Especially for those with eczema, existing or Family Hx allergy



– Peanut and Egg from 4-6 months BSACI weaning advice



bsaci improving allergy care — **Preventing food allergy in your baby: A summary for parents** — BDA Food Allergy Specialist Group

Current advice from the UK health departments for healthy babies is:

- Exclusive breastfeeding for around the first 6 months of life.
- From around 6 months of age (but not before 4 months), introduce complementary foods (solids) – including foods known to cause food allergies – alongside continued breastfeeding.
- Excluding egg and peanut from your baby's diet may increase their risk of food allergy.

- **When your baby is ready, at around 6 months of age, you can start to feed them complementary foods** (solids) – usually as pureed foods. Start by offering small amounts of vegetables, fruit, starchy foods, protein, pasteurised dairy. Never add salt or sugar - they don't need it.
- In addition to fruit and vegetables, include foods that are part of your family's normal diet which are commonly associated with food allergies. *If this includes egg and peanut, aim to introduce these by one year of age, and continue to feed these to your baby as part of their usual diet.*

Your baby is at higher risk of food allergy if they have:

- Eczema (especially if eczema is very bad) OR
- Already has a food allergy

Your baby may be at a higher risk of food allergy*, and may benefit from starting egg and/or peanut earlier, alongside other solids.

When your baby is ready, consider introducing solid foods - including cooked **egg**, and then **peanut** - from age 4 months, followed by other foods known to cause food allergies[§]
(more information on this can be found on page 3)

The benefits of allergy testing in higher risk babies before introducing egg or peanut needs to be balanced against the risk this could cause a delay (due to lack of available testing) and increase the risk of food allergy.

*Some babies will already have food allergies, especially those with severe eczema. The risk of a severe reaction (anaphylaxis) is low (1-2 per 1000 in these babies). Speak to your healthcare professional before introducing egg and peanut if your baby has severe eczema.

DO NOT FEED YOUR BABY SOMETHING THEY ARE ALREADY ALLERGIC TO

Babies not at a higher risk of food allergy include:

Someone in your home (not the baby) has a food allergy

You will need to plan how to feed your baby whilst keeping the person with the food allergy safe (see overleaf)

Some families may wish to talk to their doctor/allergy specialist about any worries they may have. This should **not** delay introduction of allergenic foods beyond 12 months of age.

All other babies

When your baby is ready, **at around 6 months** of age introduce solid foods. Include peanut, egg or other foods[§] commonly associated with allergies that you and your family eat as part of your normal diet

[§]Common foods which can cause food allergy include: egg, peanut and other nuts, dairy foods, fish/seafood and wheat.

Monitor for any symptoms of an allergic reaction:

Immediate-type food allergy

Typically happen within 30 minutes of eating the food:

Mild-moderate symptoms:
- Swollen lips, face or eyes
- Itchy skin rash e.g. "hives", urticaria
- Abdominal pain, vomiting

The following severe symptoms are rare:
- Swollen tongue, persistent cough, hoarse cry
- Difficult or noisy breathing
- Pale or floppy, unresponsive/unconscious

Delayed-type food allergy

Symptoms occur hours after the food trigger:

Gut symptoms:
- Recurrent abdominal pain, worsening vomiting/reflux
- Food refusal or aversion
- Loose/frequent stools (more than 6-8 times per day) or constipation/infrequent stools (2 or less per week)

Skin symptoms:
- Skin reddening or itch over body
- Worsening eczema

NB: Delayed-type allergy cannot trigger anaphylaxis

- **If your baby has any severe symptoms (anaphylaxis), immediately dial 999** for help.
- Mild-moderate symptoms are not dangerous. Dial 111 for advice, if needed.
- Avoid the causative food, do NOT reintroduce.
- Speak to your GP to discuss review by a specialist paediatric / allergy team.
- NICE recommends any baby with multiple food allergies or severe symptoms (anaphylaxis) should be referred to a hospital team.

- Stop the suspected food, symptoms should resolve after a few days.
- If symptoms are not severe, you can try giving the food again 1-2 weeks later.
- If symptoms recur or are severe, or your child is not growing, then see your GP
- NICE recommends that babies with any of the following should be referred to a specialist clinic:
  - Faltering growth
  - Reflux or gut symptoms resistant to treatment
  - Food refusal
  - Eczema which worsens with specific foods.

bsaci improving allergy care — **Preventing food allergy in your baby: information for parents** — BDA Food Allergy Specialist Group

The Scientific Advisory Committee on Nutrition (SACN) and the Committee on Toxicity (Food Standards Agency) have published a joint report to advice the UK Government health departments on advice regarding feeding your baby in the first year of life.

This leaflet provides advice to families on preventing food allergies in babies at higher risk of food allergy. It has been developed by the Food Allergy Specialist Group of the British Dietetic Association (BDA) and Paediatric Allergy Group of the British Society for Allergy & Clinical Immunology (BSACI), and complements an **information sheet for GPs and other healthcare professionals available at** www.bsaci.org/about/early-feeding-guidance or www.bda.uk.com/regionsgroups/groups/foodallergy/allergy_prevention_guidance

Young children at a higher risk of getting a food allergy include:
- Babies with **eczema** (in particular, babies with more severe eczema), or
- Babies who already have a **food allergy**.

Research shows that these babies may benefit from the earlier introduction – from 4 months of age – of complementary foods (solids), including foods containing egg and peanut in a form to suit the baby.

Some babies will already be allergic when they are fed these foods:
- Parents should not continue to feed their baby something they are reacting to.
- Referral to a children's allergy clinic is recommended for babies with immediate-type food allergy.

If your baby has more severe eczema (e.g. needs daily steroid creams), discuss with your health visitor or GP when to start feeding your baby foods containing egg or peanut. These babies are more likely to have reactions, but can also benefit more where the food doesn't cause a reaction.

DURING PREGNANCY
- Don't avoid any particular foods (such as peanut) – this has *not* been shown to prevent allergies.
- Omega-3 fatty acids (found in oily fish such as salmon, trout, mackerel and fresh (*not* canned) tuna) may help reduce the risk of eczema and allergic sensitisation (development of allergy antibodies) in early life. Pregnant women should not eat more than two portions of oily fish a week.[1]
- At the moment, there is not enough evidence to recommend routine probiotics to prevent food allergy.
- **Eat a balanced, healthy diet** – with plenty of vegetables and fruit to provide vitamins and minerals, as well as fibre (which helps digestion).
- General health advice is to take **folic acid** and **vitamin D** supplements during pregnancy.

AFTER BIRTH
- **The UK health departments recommend *exclusive* breastfeeding for around the first 6 months of life.** Breastfeeding alone does not prevent allergies, but has many other important benefits to the mother and child. Breastfeeding should continue throughout the first year of life.
- Unless otherwise advised by a healthcare professional, **don't avoid eating any particular foods (such as peanut or dairy) while breastfeeding** – this has *not* been shown to prevent allergies.
- Infant formula is the only suitable alternative under 12 months of age when mothers do not breastfeed or choose to supplement breast milk. Infant formula made from cows' and goats' milk are suitable, however soya-based infant formula should not be used unless prescribed by a GP. If formula feeding, guidance regarding the safe preparation, storage and handling of infant formula should be followed.
- Using a non-cow's milk-based formula (such as soya) or a specialist "low allergy" or hypoallergenic formula has not been consistently shown to prevent food allergy or other allergic diseases.
- **Speak to a healthcare professional if you think your baby may be allergic or intolerant to cow's milk.**
- All babies (including those who are exclusively breastfed) should be given a daily supplement containing 8.5 to 10 micrograms (μg) of **vitamin D** – even if you're taking a supplement yourself. Vitamin D supplements should be continued until at least 5 years of age. Formula-fed babies don't need extra Vitamin D until they're having less than 500ml (about a pint) of infant formula a day, as infant formula is fortified with vitamin D.

[1] This is because oily fish can contain pollutants (toxins) which, if eaten in large amounts, outweigh the health benefits of omega-3 fatty acids. Fresh tuna should be limited to a serving size of 140g (cooked weight).

Egg (both egg white and yolk)	**Choose British Lion-stamped eggs**: then you can offer your baby scrambled egg, omelette, soft or hard-boiled egg. You can mash egg into other foods e.g. pureed fruit/vegetables, yoghurt, or baby cereals such as rice. Aim for at least 1 egg over the course of a week. *If you are not using British Lion-stamped eggs, only give well-cooked or hard-boiled egg.*
Peanut	**Never give whole nuts, coarsely-chopped nuts or chunks of peanut butter to children under 5 years of age, as these are a choking risk.** You can use smooth peanut butter, "puffed peanut" snacks, or grind whole peanuts to a fine powder. Mix with pureed fruits/vegetables, yoghurt, porridge, baby cereals etc. or add to baby's milk. Suggested recipe: Mix 1 teaspoon of smooth peanut butter with 1 tablespoon of warm water (boiled) or baby's milk, or some pureed fruit/vegetable. Aim for a total of 2 level teaspoons per week.

In babies at higher risk of food allergy, studies have shown that starting egg and peanut earlier – from 4 months of age – can help prevent food allergy to egg and peanut.

If part of your family's diet, aim to introduce egg and peanut by 12 months of age, and **continue to give them to your baby regularly as part of their usual diet** as they get older.

You may also like to introduce some of the following foods if eaten as part of your family's diet:

Tree nuts	**Never give whole nuts or coarsely-chopped nuts to children under 5 years old.** Use finely-ground nuts, or a nut butter (e.g. almond butter, cashew butter etc). Mix with pureed fruits/vegetables or add to yoghurt, porridge or baby's milk.
Cow's milk	Yoghurt, fromage frais with no added sugar. Or add fresh whole milk to meals e.g. porridge, mashed potato
Wheat	Weetabix or similar breakfast cereal, well-cooked pasta shapes, toast fingers, couscous
Seeds	Hummus (houmous) which contains tahini (sesame) paste; crushed seeds added to yoghurt, porridge or mixed with pureed or mashed fruit/vegetables
Fish, seafood	Pureed, flaked or mashed cooked fish (e.g. cod, haddock, salmon, trout) or seafood (e.g. prawns, crab, mussels)

Supporting the immune system

To reduce risk of allergy….

Risks

- Antibiotics during pregnancy and labour
- Caesarean delivery
- Offering once off or sporadic bottles of cow's milk formula
- Maternal exclusion of allergens in pregnancy and breastfeeding
- Frequent bathing
- Food oils on skin
- Sterile living
- Poor air quality

Advise

- Prebiotic diet throughout & Probiotics during 3rd trimester
- Omega 3- fatty acids e.g. oily fish
- Perinatal Vit D – significant reduction in AD
- Vaginal delivery
- Exclusive Breastfeeding
- Continue formula - >3 X per week
- Early introduction of allergens
- Vitamin D for all BF babies (<500ml formula)
- Avoid food exclusions unless proven allergy
- Pharmaceutical emollients
- Bathe infrequently
- Treat emergence of eczema aggressively and asap

Thank you!
Any Questions?

Food Allergy – Delayed or Immediate
Eczema
Asthma
Allergic Rhinitis
Urticaria

Paediatric Allergy Nurse Specialist
Adele Durge