NHS North Bristol NHS Trust

NHS University Hospitals Bristol and Weston NHS Foundation Trust

Management of anaphylaxis risk in OPAT patients

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Sirona care & health

NHS Bristol, North Somerset and South Gloucestershire

What is anaphylaxis?

- Anaphylaxis is a potentially life-threatening allergic reaction characterised by sudden onset and rapid progression of ABC problems.
- Anaphylaxis is a clinical diagnosis that lies along a spectrum of severity of allergic symptoms (mild to severe) and no symptom is entirely specific for the diagnosis.
- Airway and/or breathing and/or circulation problems (ABC)
- Usually, skin and/or mucosal changes (urticaria, flushing or angioedema); these may be subtle or absent in 10%–20% of reactions.

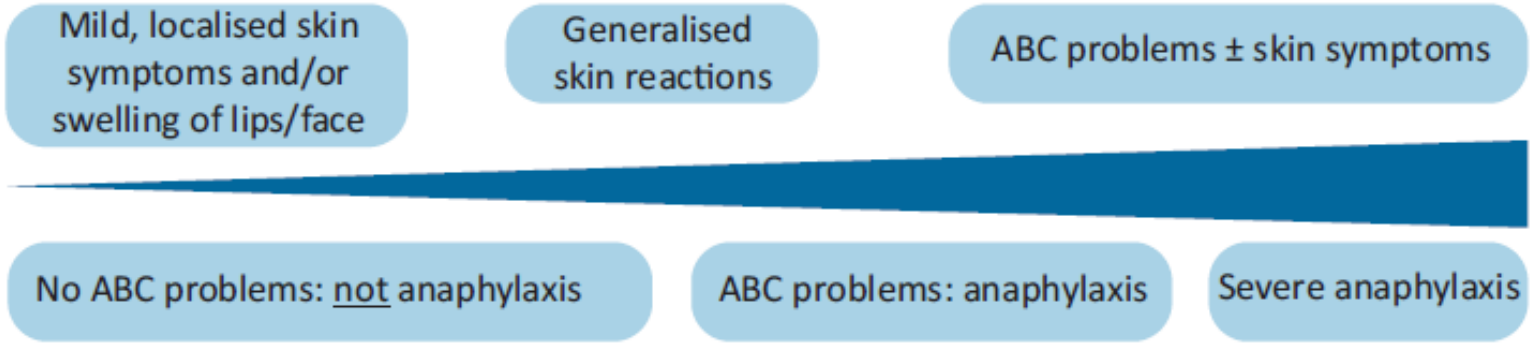
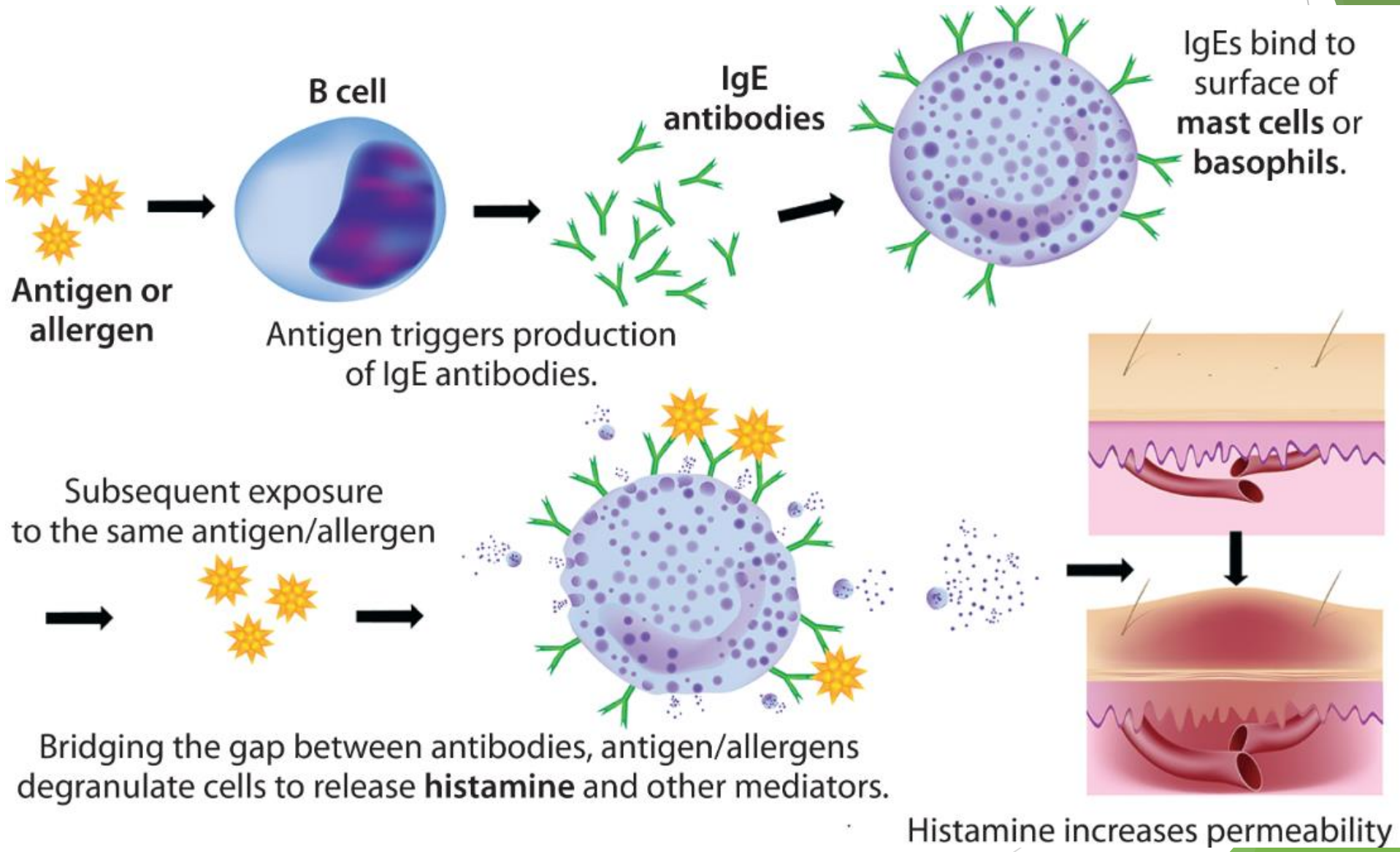


Fig 1. Spectrum of severity of anaphylaxis. Reproduced with permission from Resuscitation Council UK. ABC = airway and/or breathing and/or circulation.

Mechanism


B cell
IgE antibodies
IgEs bind to surface of mast cells or basophils.
Antigen or allergen
Antigen triggers production of IgE antibodies.
Subsequent exposure to the same antigen/allergen
Bridging the gap between antibodies, antigen/allergens degranulate cells to release histamine and other mediators.
Histamine increases permeability

Mechanism

- IgE production requires prior exposure to the antigen (i.e. the antimicrobial). Prior exposure cannot be categorically ascertained and therefore, within a treatment course, the risk of anaphylaxis is deemed greater during the first dose administration
- The production of IgE in a sufficient quantity to induce anaphylaxis requires the withdrawal of the antigen. Therefore, the risk of anaphylaxis significantly decreases after the first dose, within a treatment course, but increases again at the first dose of a subsequent course
- The risk of anaphylaxis increases with the number of treatments received
- The risk of anaphylaxis is not dose dependent
- The risk of anaphylaxis increases for patients who have a history of previous anaphylaxis to two or more medications

Mechanism

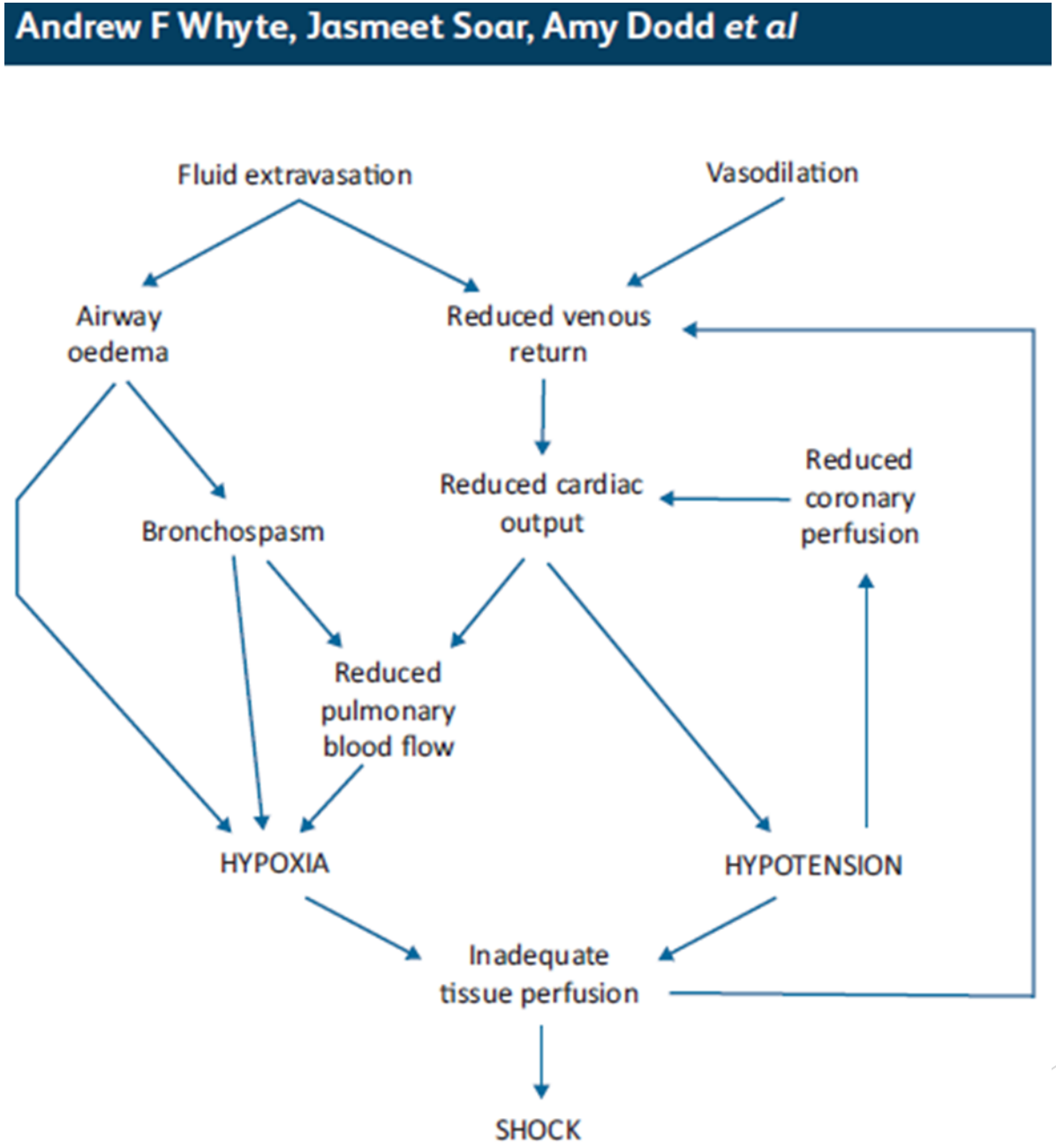


Fig 4. Pathophysiological mechanisms responsible for anaphylactic shock.

How common is anaphylaxis?

- The estimated incidence of anaphylaxis from all causes in Europe is 1.5–7.9 per 100,000 people per year
- 1 in 300 people experience anaphylaxis at some point in their lives!
- The overall prognosis of anaphylaxis is good: case fatality rate of <1% in those presenting to UK hospitals
- The mortality rate in the general population is <1 per million per annum
- Approximately 20–30 deaths/year reported due to anaphylaxis in the UK

National Audit Project – Anaesthesia, Surgery and Life-Threatening Allergic Reactions 2018

- Incidence of antibiotic anaphylaxis is 4 per 100,000 administrations
- Teicoplanin and Co-amoxiclav are high-risk antibiotics for severe allergy (16.4 and 8.7 episodes per 100,000 administrations)
- Fatality rate for drug induced anaphylaxis estimated at 0.65%
- 4/100,000 x 0.65% = 0.000026 = estimated ~1/4,000,000 patients who receive IV antibiotic through OPAT expected to have fatal anaphylaxis (probably a bit higher than this as all OPAT patients are given IV antibiotics, and the fatality rate is probably a bit higher than 0.65% for IV dosing – **but still VERY low).**

Risk factors for drug induced anaphylaxis

- Previous history of drug allergy to that drug or a related drug
- Older age
- Female sex
- Possibly underlying systemic mastocytosis
- IV antibiotic use

Risk factors for worse outcomes from anaphylaxis

- Older age
- Cardiovascular disease
- Respiratory disease (asthma, COPD)
- Concomitant beta-blocker or ACE inhibitor use
- Possibly underlying systemic mastocytosis

What we use to do to mitigate the risk

- “Where intravenous treatment is required as a standard, the first two visits are completed in pairs. This standard is reduced to one visit if the patient has received the same intravenous therapy, at the same dose for two doses in hospital. Unregistered members of staff can act as the second double and can include Healthcare Assistants, Trainee Nurse Associates, Assistant Practitioners and Nursing Students.”
- This practice was applied to all patients, regardless of their anaphylaxis risk
- All OPAT nurses keep their up-to- competency in dealing with anaphylaxis, as per NBT Anaphylaxis policy CP5h. They all carry an anaphylaxis pack (2 ampoules of Adrenaline 1:1000) when visiting a patient and can administer adrenaline IM 500mcg as per NBT Anaphylaxis policy CP5h.

Aim of assessing anaphylaxis risk in OPAT patients

- To determine the setting in which patients should receive the first dose of their antibiotics, with respect to their anaphylaxis risk
- Provide clarity over the risk of anaphylaxis from antimicrobials
- Work in combination with our tertiary allergy and immunology service to maintain patient safety
- Determining the risk of anaphylaxis will hopefully negate the need for double visits for some patients
- This will increase our nursing capacity by freeing up nursing time to undertake more visits
- To increase our virtual ward patient numbers and capacity

What we do now

- For every patient referred to the OPAT service, the referring clinician is required to complete a anaphylaxis risk assessment
- This determines the number of staff needed on the first visits
- Patients are also monitored for 1 hour from the start of the administration of the antimocribal
- This risk assessment was approved by medicines governance after consultation with Dr Bright, Dr Albur and members of the OPAT team
- It is used across the BNSSG area by the staff within Sirona, UHBW and NBT
- It has been in use since 24/04/23

NHS@Home Antimicrobial Anaphylaxis Risk Assessment

This assessment is to be used for all patients referred to the OPAT service to identity the risk of anaphylaxis and standardise administration procedures to mitigate the risk. A separate risk assessment must be completed for each drug for each episode of care. A change in dose does not require a new risk assessment.

Patient Details	Name of drug being risk assessed
Name: DOB: NHS Number:	

Section 1

Has the patient received a **first dose** of the antimicrobial drug during the **current** treatment period?	YES = GREEN	NO ***Complete section 2***
Has the patient experienced any complications relating to the antimicrobial drug being assessed?	YES = Referrer to assess severity of complication and confirm drug is suitable to continue – please document decision in notes. ☐ Suitable to continue = GREEN ☐ Not suitable = risk assessment discontinued	NO = Green

If green selected in **BOTH** section 1 questions, do not complete section 2 and proceed to section 3

Section 2 – Only complete if indicated by section 1

Does the patient have known anaphylaxis to **any antimicrobial**?	YES = RED	NO = AMBER
Does the patient have known anaphylaxis to **two** or more of **any** drug (other than antimicrobials)?	YES = RED	NO = AMBER
Is the drug being assessed **Teicoplanin** or **Co-amoxiclav**?	YES = RED	NO = AMBER

Section 3

Risk Assessment Outcome *The highest indicated RAG rating above indicates outcome (only one 'red' response is needed to achieve a red outcome)*		
TICK	**RISK**	**MITIGATION**
	GREEN	The administration of the first dose has been completed and without complications. No further double visits or monitoring time required.
	AMBER	The administration of the first dose of the antimicrobial in the community setting will be completed as a **double** (two members of staff). The patient must be **monitored for one hour from the start of the infusion** for the first dose only.
	RED	The administration of the first dose of the antimicrobial must be carried out in **hospital setting** (e.g. SDEC). The patient must **be monitored for one hour from the start of the infusion** for the first dose only.
Allergy information source		☐ Verbally from patient ☐ Drug chart ☐ Allergy alerts in Careflow ☐ Connecting Care Record
Risk assessment completed by: Name: Role: Date:		

The effect of the change on the service

- Out of the 89 patients accepted onto the OPAT service (NBT patients) between 24/04/23 and 14/09/23, 28 required double visits
- 61 patients required no double visits (saving 122 double visits)
- 28 patients only had one double visit instead of two
- 150 double visits avoided (for our 89 patients, a total of 178 double visits would have been needed according to our old policy)
- 84.3% reduction in the total number of double visits!

The outcomes of the risk assessment implementation

- More nursing time freed up for other visits for our patients across all of our NHS@Home pathways
- Utilisation of SDEC for administration of first doses for patients classified as red on the risk assessment
- A greater appreciation within the OPAT teams of the need to ascertain the exact nature of adverse drug reactions and side effects
- Alterations to patient's drug allergies lists
- Referrals to allergy clinics for allergy delabelling

Thank you!

- Any questions welcome

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