Adult Systemic Anti-Cancer Therapy (SACT) Induced Anaphylaxis Guideline

TARGET AUDIENCE	Predominantly those working in the cancer care service within secondary care, with information for primary care and secondary care clinicians involved in cancer care
PATIENT GROUP	All patients receiving systemic anti-cancer therapy (SACT) where there is a risk of anaphylaxis

Clinical Guidelines Summary

- There is no universally agreed definition of anaphylaxis. The following definition has been offered 'Anaphylaxis is a severe, life-threatening, generalised or systemic hypersensitivity reaction', characterised by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes.
- All healthcare professionals should understand the signs/symptoms of anaphylaxis, know how to diagnose it and to be able to recommend/administer appropriate treatment.
- These guidelines are to help practitioners prevent, recognise and successfully treat the incidence of reaction/anaphylaxis from systemic anti-cancer therapy.

Guideline Body

This guideline has been adapted for use in NHS Lanarkshire from the NHS Greater Glasgow and Clyde guideline of the same name.

Introduction

Anaphylaxis is a severe, systemic, rapid life threatening allergic reaction that presents as a medical emergency. It can be precipitated in susceptible individuals by a wide range of substances, however, for the purpose of this document, the substances are cytotoxic drugs and biological therapies.

Anaphylaxis requires rapid recognition, treatment and management by health professionals. SACT drugs are foreign substances able to induce anaphylaxis and reactions range from mild cutaneous symptoms to severe respiratory distress and cardiovascular collapse. This adverse/allergic reaction can occur generally within seconds or minutes of drug administration with features of an anaphylactic reaction. It is important that these signs and symptoms are recognised quickly and appropriate treatment commenced promptly.

Recognising an Anaphylactic reaction

All systemic anti-cancer drugs (as with any other drugs) have the potential to cause allergic (hypersensitivity) / anaphylactic reactions.

A diagnosis of an anaphylactic reaction is likely if a patient who is exposed to a trigger (allergen) develops a sudden illness, usually within minutes of exposure, with rapidly progressing skin changes and life-threatening airway and/or breathing and/or circulation problems

The range of signs and symptoms vary and certain combinations of signs make the diagnosis of an anaphylactic reaction more likely.

When recognising and treating an acutely ill patient, a rational **ABCDE**, **A**irway, **B**reathing, **C**irculation, **D**isability (relating to conscious level), **E**xposure (relating to skin and mucosal changes) approach must be followed and life-threatening problems treated as they are recognised. **See appendix 2.**

Anaphylaxis is likely when **all of the following 3 criteria are met**:

- 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)

The decision to restart an infusion following a hypersensitivity reaction will depend on the severity of the reaction and discretion of the treating clinician. Prior to restarting, consider methods to minimise anaphylactic/hypersensitivity reactions.

Skin and/or mucosal changes should be assessed as part of the Exposure when using the ABCDE approach. They are often the first feature and present in over 80% of anaphylactic reactions. They can be subtle or dramatic.

Although skin changes can be worrying or distressing for patients and those treating them, skin changes without life-threatening airway, breathing or circulation problems do not signify an anaphylactic reaction. Reassuringly, most patients who have skin changes caused by allergy do not go on to develop an anaphylactic reaction. (www.acaai.org)

Preventing Anaphylactic reactions

Taking a full history of previous allergic reactions for patients receiving chemotherapy will highlight patients who may be at an increased risk of allergic reaction and in turn will minimise risk.

Educating patients and providing information on the signs and symptoms of chemotherapy induced anaphylaxis and the importance of reporting such symptoms will allow early detection and intervention.

Check if any pre-medications including steroids and antihistamines have been prescribed/administered prior to chemotherapy. This will guide concurrent measures/treatment that may or may not be required if a chemotherapy induced anaphylactic reaction occurs.

If the patient has had previous reaction, consider reducing the infusion rate and administering over a longer period of time. Alteration of subsequent infusion rates may be undertaken if initial dose is well tolerated, according to manufacturer's guidelines

Nursing and medical staff should be familiar with SACT drugs likely to cause anaphylaxis and ensure they are aware how to access emergency equipment and drugs if required.

Some common cytotoxic drugs likely to cause immediate hypersensitivity reactions

High Risk	Moderate to Low Risk	Rare Risk
Paclitaxel	Carboplatin	Cisplatin
Rituximab	Docetaxel	
Trastuzumab	Cetuximab	
Oxaliplatin		

Management of a Mild to Moderate Acute Hypersensitivity Reactions or Allergic Reactions

Mild to Moderate Adverse Drug Reaction – i.e. slowly progressing peripheral oedema or changes restricted to the skin e.g. urticaria

Action to be taken	Rationale
1. Stop the infusion/injection of chemotherapy immediately, maintaining IV access	To prevent further exposure to the allergen and minimise any further adverse reaction
2. Explain all care to the patient and their family	To inform patient of what is happening and to help reduce anxiety
3. Assess the patients airway, breathing and circulation and level of consciousness	To ensure patient is not developing a more severe reaction
4. Initiate frequent vital signs including oxygen saturation	To monitor hypotension, tachycardia and respiratory status
5. Recline the patient into a comfortable position	May be helpful for patients with hypotension, however, may be unhelpful for patients with breathing difficulties
6. Summon medical and nursing assistance	Ensures prompt support especially if patients condition deteriorates
7. Close observation of the patient, vital signs and escalate if any concerns	Risk of shock/severe reaction
8. Administer chlorphenamine 10mgs IV slowly	Counter histamine mediated vasodilation
9. Administer hydrocortisone 100mg IV	May help prevent or shorten protracted reactions.
10. Document allergic reaction fully in the medical and nursing notes	Prevention
11. Monitor for 8 – 24 hours	Risk of early recurrence
12. Treat prophylactically for the next treatment	Prevention

Management of Anaphylaxis in Adult Patients

This algorithm has been taken from the guideline on Emergency Treatment of Anaphylactic reactions: Guidelines for healthcare providers, Resuscitation Council UK (2021).
https://www.resus.org.uk/sites/default/files/2021-04/Anaphylaxis%20algorithm%202021.pdf

Patient feels unwell. Assess for signs of Anaphylaxis. Stop administration of Systemic Anti-Cancer Drug. Administer oxygen (10-15 litre/min) via facemask.

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Assess Airway, Breathing, Circulation, Disability, Exposure (ABCDE)

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Diagnosis – look for:

- Acute onset of illness
- Life-threatening **A**irway and/or **B**reathing and/or **C**irculation problems **(1)**

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Call for help (dial 2222 in NHSL)

- Remove trigger (e.g stop infusions)
- Lie patient flat (with or without patient's legs elevated)

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Give Adrenaline (2)

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When skills and equipment are available:

- Establish airway
- High flow oxygen
- IV fluid challenge **(3)**
- Chlorphenamine **(4)**
- Hydrocortisone **(5)**

Monitor:
Pulse Oximetry
ECG
Blood Pressure

1. Life-threatening problems:

Airway: swelling, hoarseness, stridor

Breathing: rapid breathing, wheeze, fatigue, cyanosis, Sp02 < 92%, confusion

2. Adrenaline (*give IM unless experienced with IV adrenaline*)

IM doses of 1:1000 adrenaline (repeat after 5 minutes if no better)

- Adult > 12 years 500 micrograms IM (0.5 ml)

Adrenaline IV to be given **only by experienced specialists**.

3. IV Fluid Challenge:

Adult – 500 – 1000 ml of Sodium Chloride 0.9%

	(4) Chlorphenamine	(5) Hydrocortisone
	(IM or slow IV)	(IM or slow IV)
Adult dose:	10 mg	200 mg

Action to be taken	Rationale
1. Stop the infusion/injection of chemotherapy immediately, maintaining IV access	To prevent further exposure to the allergen and minimise any further adverse reaction
2. Call the cardiac resuscitation team and commence CPR if necessary	
3. Recline the patient into a comfortable position	May be helpful for patients with hypotension. However, may be unhelpful for patients with breathing difficulties
4. Administer oxygen 10 – 15 l/min	To increase cell perfusion
5. Administer adrenaline 1:1000 solution 0.5ml (500 micrograms) by IM injection	Alpha-receptor agonist, it reverses peripheral vasodilation and reduces oedema. Its beta-receptor activity dilates the airways, increases the force of the myocardial contraction and suppresses histamine and leukoytriene release.
6. Administer chlorphenamine 10 mg by IM or slow IV injection	To counter histamine mediated vasodilation
7. Administer hydrocortisone 200 mg by IM or slow IV injection	May help prevent or shorten protracted reactions.
8. Repeat dose of adrenaline only after 5 minutes and if no clinical improvement	Recovery can be transient and sometimes several doses may be required
9. If severe hypotension does not respond rapidly to drug treatment, IV fluids 500 – 1000 ml should be used, sodium chloride 0.9% would be suitable	Improve hypotension
10. Record vital signs and maintain accurate documentation	
11. Obtain 10ml clotted blood 45 – 60 minutes after and no later than 6 hours, for specific IgE antibody and mast cell tryptase	To assess whether episode is a genuine anaphylactic reaction
12. Admit patient – at discretion of medical team	Repeat episode can occur 1 – 72 hours after clinical recovery

The guideline on Emergency Treatment of Anaphylactic reactions: Guidelines for healthcare providers, Resuscitation Council UK (2021) also has an algorithm for refractory anaphylaxis which can be accessed online: Refractory anaphylaxis algorithm 2021.pdf ***or*** *https://www.resus.org.uk/sites/default/files/2021-04/Refractory%20anaphylaxis%20algorithm%202021.pdf*

Other considerations:

Other concurrent measures to consider:	
Action	**Rationale**
If bronchospasm is severe and does not respond to other treatment – administer salbutamol 8 micrograms/kg as a SC or IM injection, or 4 micrograms/kg as a slow IV injection.	To reduce bronchospasm
Provide support to the patient and their family. Display a calm, competent and confident disposition. Reassure and explain to the patient and any relatives what is being done and what should be expected to happen shortly.	To reduce patient anxiety and promote wellbeing, by educating patients on delayed side effects and how to deal with them in the first instance
Ensure the episode is accurately documented (to include sensitivity) in appropriate nursing and medical records	To meet legal requirements and prevent/minimise future problems

Potential differential diagnosis:

Life threatening conditions	Non-life threatening conditions
Asthma – can present with similar symptoms and signs to anaphylaxis, particularly in children.	Vasovagal episode
Septic Shock – hypotension, usually in association with a temperature > 38 °C or < 36 °C. There is an increased risk if central venous access has been used recently.	Panic attack/anxiety
	Idiopathic (non-allergic) urticaria or angioedema

Seek help early if there are any doubts about the diagnosis.

Education

Anaphylaxis can be fatal and therefore healthcare workers require regular training in recognising, treating and managing anaphylaxis.

Patients should be given appropriate information and education to enable them to identify signs of chemotherapy induced anaphylaxis and emphasise the need to report these signs immediately if the occur.

References/Evidence

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Appendices

1. Governance information for Guidance document

Lead Author(s):	Rachel Findlay, Cancer Care Pharmacist NHSL
Endorsing Body:	NHS Lanarkshire SACT governance group Cancer Management team, ADTC
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Responsible Person (if different from lead author)	

CONSULTATION AND DISTRIBUTION RECORD	
Contributing Author/ Authors	Tracey Laird, Specialist Senior Nurse Haematology/ Oncology
Consultation Process / Stakeholders:	NHS Lanarkshire SACT governance group and Cancer Management team.
Distribution	

CHANGE RECORD

Date	Lead Author	Change	Version No.
27.11.19	John Milne/Anna McKenna	*e.g. Review, revise and update of policy in line with contemporary professional structures and practice*	1
20.12.24	Rachel Findlay	Reformatted on to new NHSL template. References updated with most up to date version, those no longer relevant removed.	2

			3
			4
			5

2. Recognition of anaphylactic reaction (ABCDE)

****Anaphylaxis is likely when criteria 1, 2 and 3 are met****

		Airway	Breathing	Circulation	Disability	Exposure
1. Sudden Onset & Rapid Progression of Symptoms	The patient will feel and look unwell An intravenous trigger will cause a more rapid onset of reaction				The patient is usually anxious and can experience a 'sense of impending doom'	
2. Life-Threatening Airway and/or Breathing and/or Circulation problems	Patients can have an A, B or C problem or any combination. Use the ABCDE approach to recognise these	- Airway swelling e.g. throat, tongue swelling - Difficulty breathing and swallowing & patient feels that the throat is closing up - Hoarse voice - stridor	- Shortness of breath - Wheeze - Patient becoming tired - Confusion cause by hypoxia - Cyanosis - Respiratory arrest	- Signs of shock, pale, clammy - Tachycardia - Hypotension, feeling faint, collapse - Decreased conscious level - Loss of consciousness - Myocardial Ischaemia and - ECG changes - Cardiac arrest	- Anxiety, Panic - Decreased conscious level caused by airway, breathing or circulation problems	- Skin, mucosal or both skin and mucosal changes
3. Skin and/or mucosal changes	Should be assessed as part of the exposure when using the ABCDE approach Often the first feature and present in over 80% of anaphylactic reactions Subtle or dramatic					Erythema Urticaria Angioedema – swelling of deeper tissues e.g. eyes, lips, mouth and throat

REPORTING OF CHEMOTHERAPY INDUCED ANAPHYLACTIC INCIDENT

Patient Name		**Dept/Ward**	
Unit No		**Consultant**	
DOB		**Date & Time**	

Diagnosis		**Regimen**	
Cycle No		**IV Access**	
Drugs Administered			

Amount of drug administered prior to onset of reaction (mls)

Symptoms Experienced		**Medical Staff Notified & Present**	

Nursing Action		**Follow Up Measures**	

A copy of this form must be scanned into the patient's clinical notes

Print Name & Designation……

Signed……

Date……..