

Allergy to local (and general) anaesthetics

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Key is a clinical approach

- HISTORY
- Knowledge
 - Presentations
 - Anaesthetic agents; which drugs cause
 - Timing
- Able to conduct skin tests /investigation

BEFORE TESTING have a LIKELY CAUSE

Near fatal anaphylaxis: atracurium

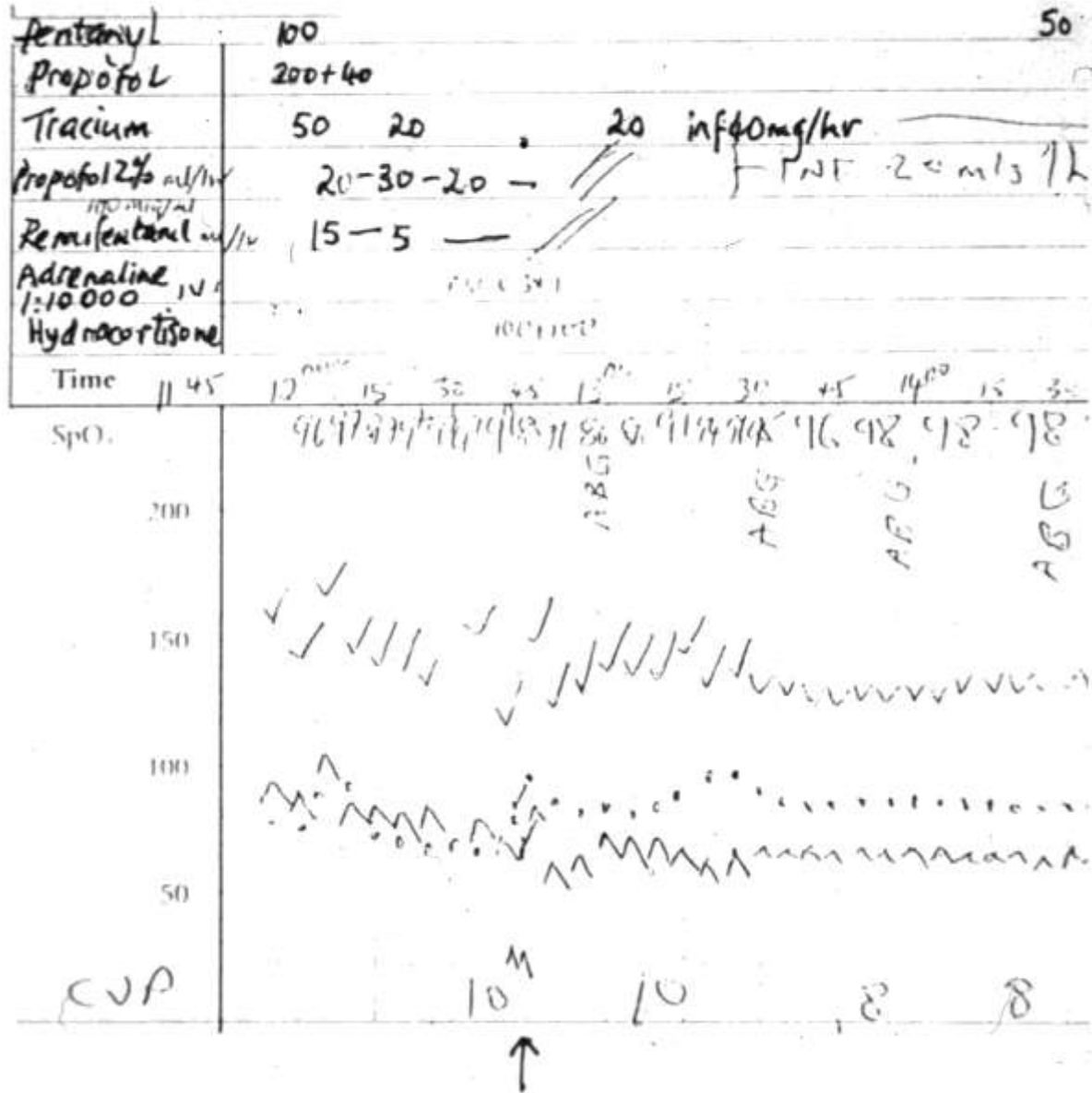
SD 63F

- 1 min from induction (alfent, prop, atra)
- Difficult to ventilate
reduced oxygen saturation
- EMD arrest
generalised erythema and rash
- CPR 20 min + 5 doses adrenaline
- Tryptase at 2h 183 ng/ml

Atracurium SPT (cross-reaction with mivacurium SD)



RG 13.2.02



RG

Pt transferred to operating table
flucloxacillin test dose given – no haemodynamic change
full dose of flucloxacillin given (1g)
as IV gentamicin 120mg was being given,
BP dropped to 59 systolic
airway pressure up to 60

manual ventilation, 100% O₂ IV adrenaline
BP up but sats still poor

RG

SPT

Atracurium

0

Propofol

0

Fentanyl

0

Remifentanil

0

Flucloxacillin 50 mg/ml

2

Gentamicin 40 mg/ml

0

PPL

0

MDM

0

RG	SPT	ID 1/100	ID 1/10
Atracurium	0		
Propofol	0		
Fentanyl	0		
Remifentanil	0		
Flucloxacillin 50 mg/ml	2	5/25	
Gentamicin 40 mg/ml	0		
PPL	0	0	4/15
MDM	0	0	0

ID flucloxacillin



PPL (and MDM)



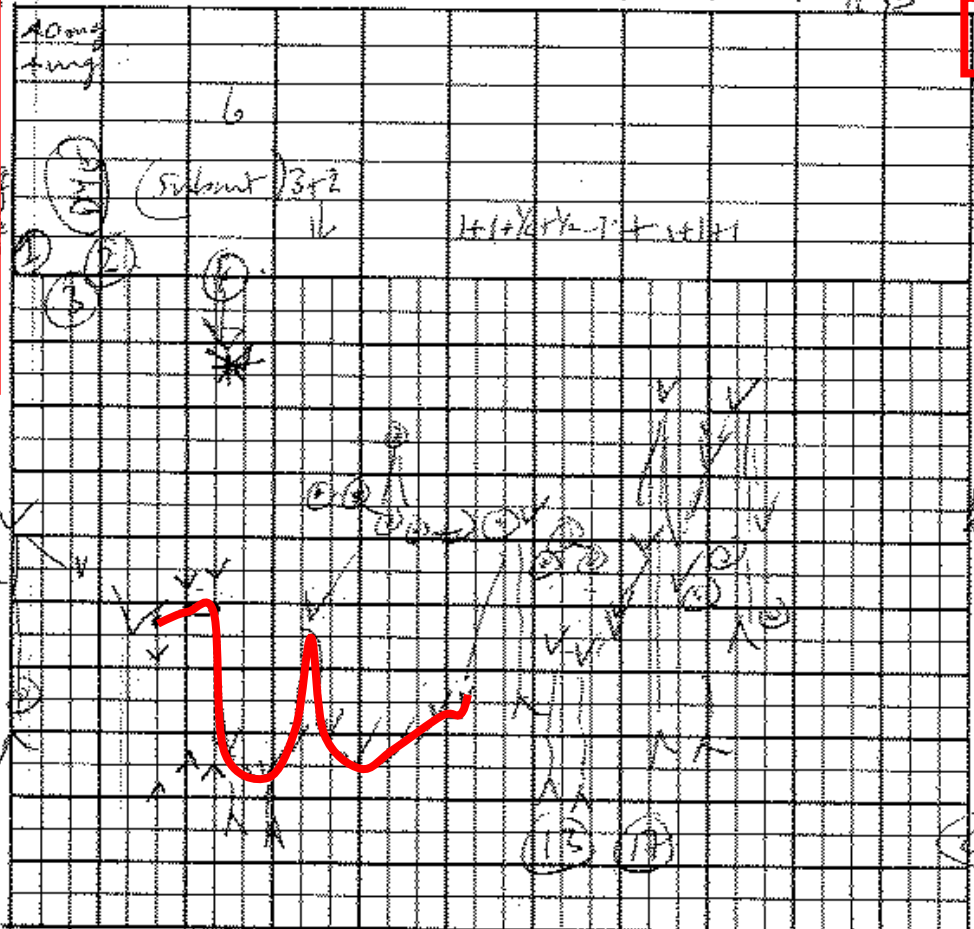
TIME: 00 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

18G Vanflon.
Right incisors
IV Induction
Midazolam 3mg
Fentanyl 100mcg
Atropine 3mg
Propofol 130mg

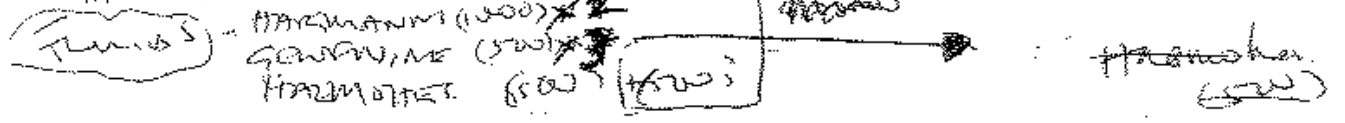
Pre O₂
CMA Size 4
(lateral)
Spont Ventilation
Respiratory
Maintenance

Paravertebral
Thoracic Nerve
Block

Aseptic; 22G Paed
Suby needle
20mls 0.5%
levobupivacaine
T₁₋₇ ml T₃₋₆ 5.7ml



SpO ₂	94	94	96	97	96	96	97	97	98	97
EtCO ₂	6.3	6.3	5.8	5.9	5.9	6.8	6.4	6.5	6.3	
PiO ₂	0.36	0.36	0.7	1.6	1.5	1.4	1.3	1.4	1.5	
EtNO	0.9	0.9								



Tryptase
Paracetamol
Cytidine
Morphine

- EVENTS:
1. Induction
 2. Paravertebral
Thoracic Nerve Block
 3. Hypocostals (5ml)
(? blue dye)
Hypocostals (5ml)
* Arginine HCl (20)
* Atropine (20)

Cobroctenol
(5ml)

Total Blood Loss:

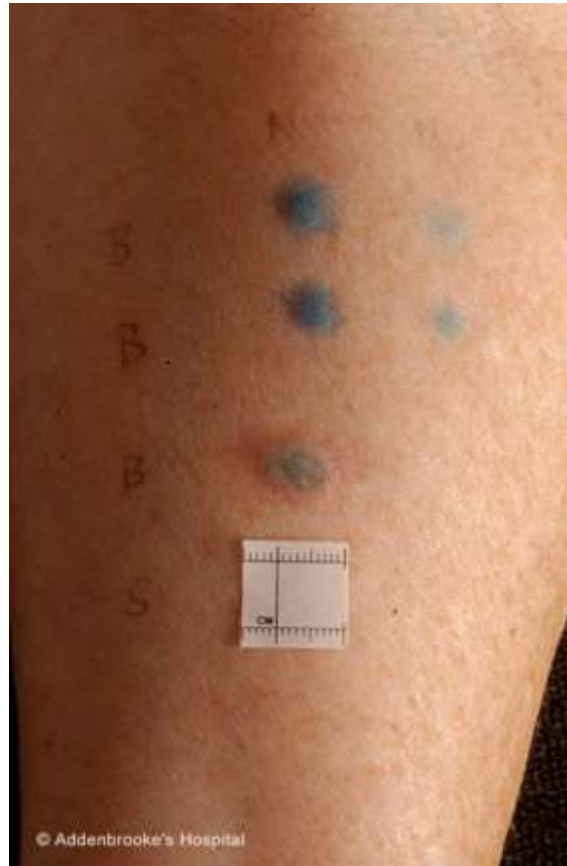
Uneventful?:

Signature:

MONITORS

<input checked="" type="checkbox"/> Machine Check
<input checked="" type="checkbox"/> E.C.G.
<input checked="" type="checkbox"/> N.I.S.P.
<input checked="" type="checkbox"/> P.OXIM
<input checked="" type="checkbox"/> CAPNO
<input checked="" type="checkbox"/> FIO ₂
<input checked="" type="checkbox"/> VOL%
<input checked="" type="checkbox"/> EYES TAPED
<input checked="" type="checkbox"/> DISCONN ALARM
<input checked="" type="checkbox"/> TEMP
<input checked="" type="checkbox"/> P.N.S.

Patent blue anaphylaxis



Haque et al Allergy 2010;65:396



6 patients GA anaph
Sentinel node identif

Delay to onset 20-30m
Severe anaph
Late blue angioedema

All pos spt neat
3/4 pos spt 1/10
All pos IDT 1/100

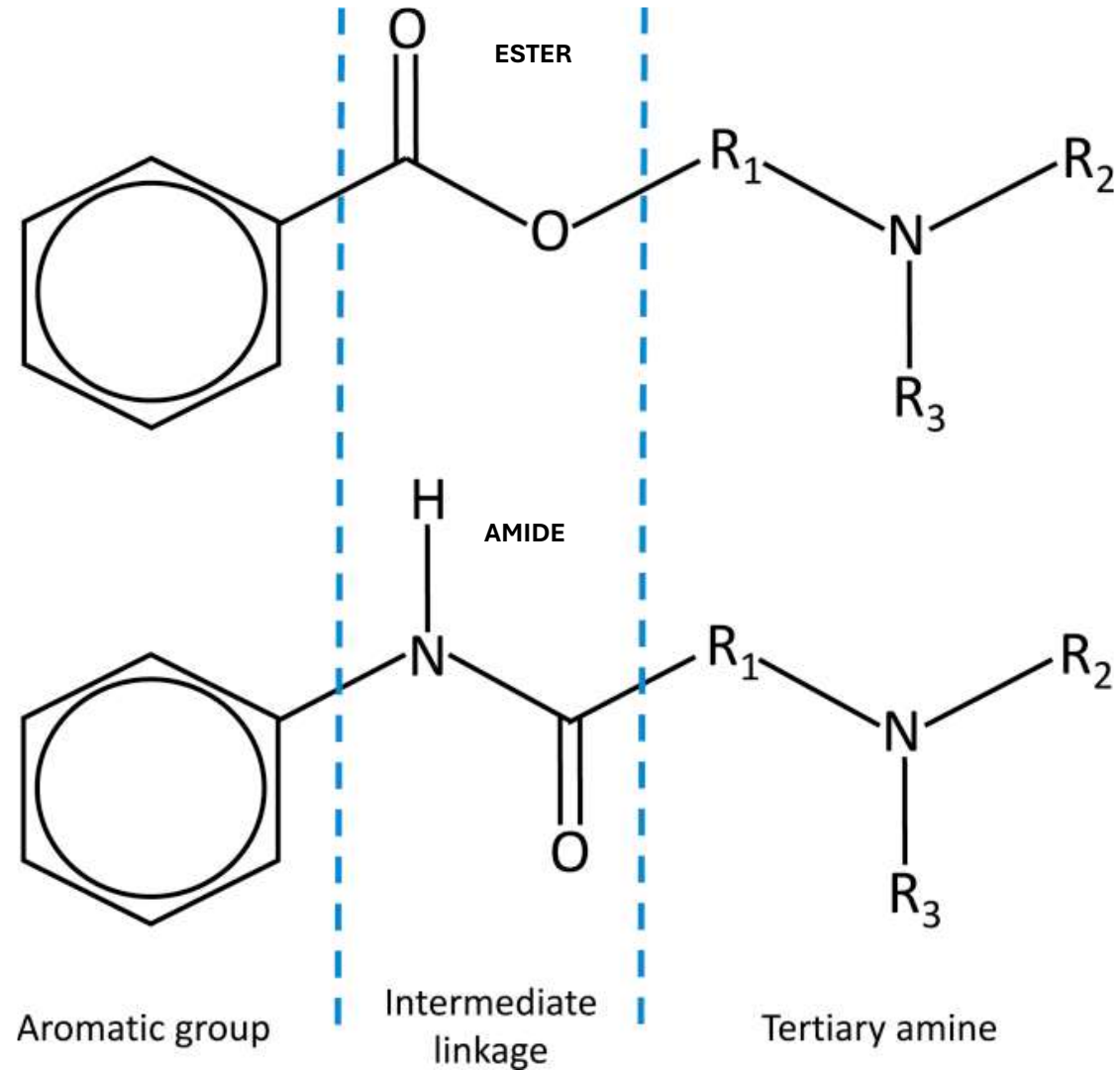
12 controls
11 neg spt N and 1/10

Allergy to local anaesthetics

- Type 1 IgE mediated

- Type IVa T cell mediated – contact dermatitis
 EMLA, rectal creams

Structure of local anaesthetics



Name some local anaesthetics

Classification of local anaesthetics

Group	Drug
Amino-amides	Lidocaine Mepivacaine Prilocaine Articaine (amide & ester) Bupivacaine Ropivacaine
Amino-esters	Tetracaine Benzocaine Cocaine Procaine

Classification of local anaesthetics

Group	Drug (dental)
Amino-amides	Lidocaine Mepivacaine (Scandonest) Prilocaine (Citanest + felypressin) Articaine (amide & ester) (Septanest) Bupivacaine (Marcaine) Ropivacaine
Amino-esters	Tetracaine Benzocaine Cocaine Procaine

Excipients

- **Parabens** (parahydroxybenzoates or parahydroxybenzoic acids)
 - bacteriostatic and fungistatic
 - used in multi-dose cartridges; phased out when single use available
 - preservative containing lidocaine for sub-cut use
but not IV or spinal/epidural

Where do you keep your LAs
during an LA clinic?

Excipients

- **Sulphites** (metabisulphite)

Prevent degradation of vasopressors by oxidation or light eg adrenaline

LA preparations without parabens and sulphites available

- **Polyethylene glycol (PEG)** intra-articular Depo-medrone methylprednisolone

Suspected LA allergy

- Dental in 99%



Suspected LA allergy

- Dental in 99%
- Intra-articular injections
- Epidural for delivery
- Skin and subcutaneous

Uses

- Dental LA
 - lidocaine
 - articaine
 - mepivacaine
 - prilocaine
- Sub-cutaneous LA
- Intra-articular
- Epidural, spinal and regional
- Post-op analgesia
- Topical - ester or amide eg EMLA, rectal
- Cardiopulmonary by-pass to induce cardioplegia - procaine

Incidence

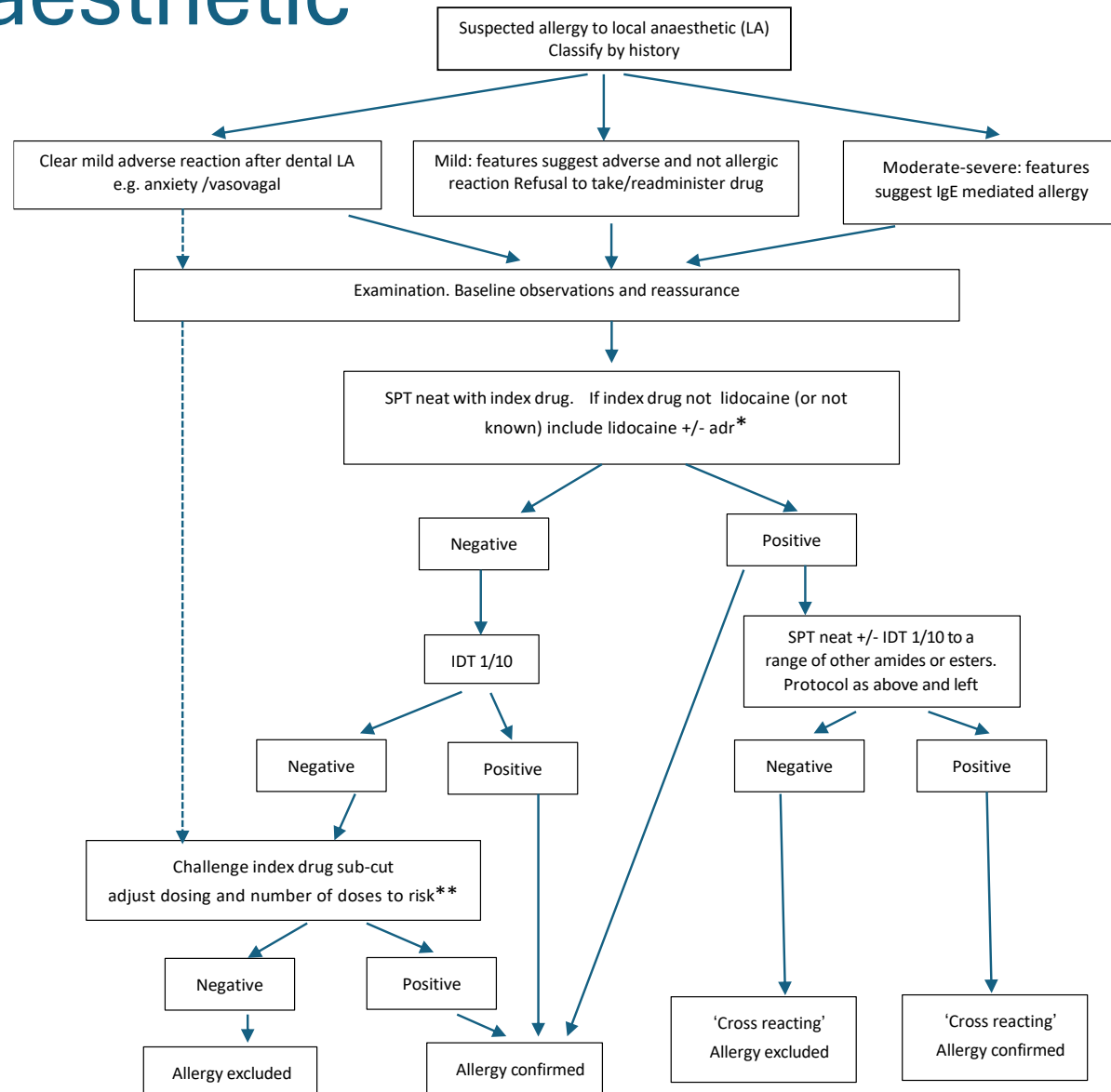
Study	Population	Result	Year
French pharmacovigilance database dental LA	35y retrospective IgE mediated rxns	Anaph 2.3 per100 million exposures	2022
UK NAP6	1y prospective. LA in 11,000 of 3 million anaesthetics UK	None	2018
Bohle	2978 pts from 23 case series	Sub-cut challenge pos in 19/2560 (0.74%)	2012
Berkun	236 pts	None Neg spt, IDT. And challenge unrelated LA	2003
De Shazo	60 pts	None	1979
Kvisselgaard, Garvey Danish Anaesth Allergy Centre	409 pts susp periop allergy; LA in 162	None	2017

Small case reports more detail but not fully investigated

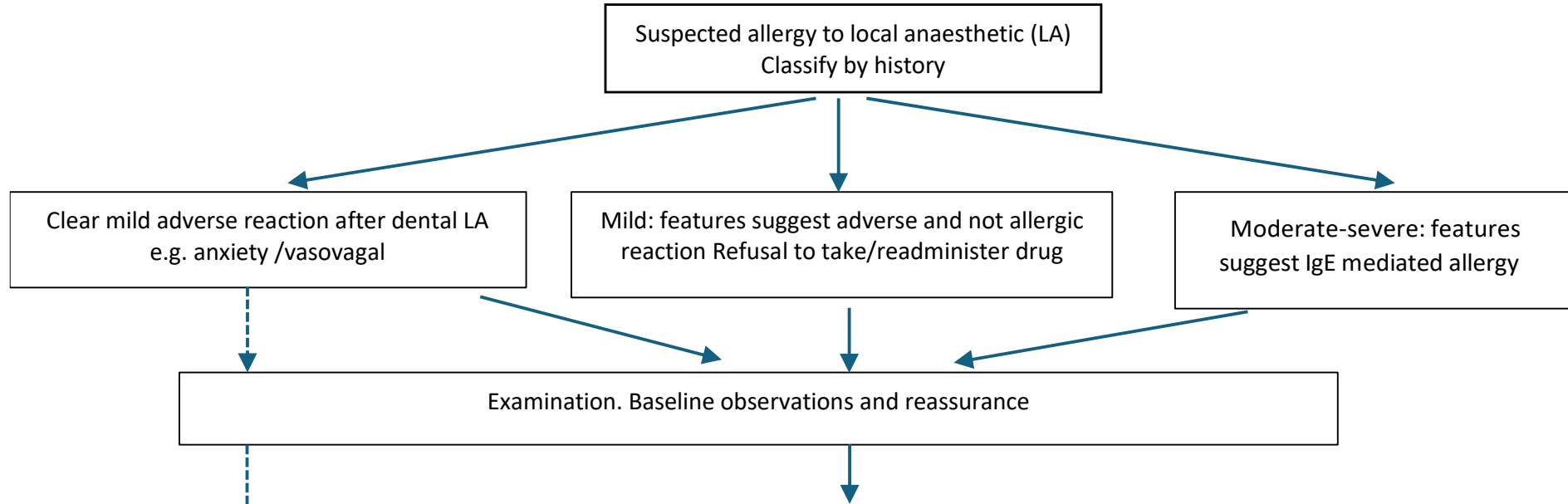
Diagnosis

- History – obtain *eg from dentist* ahead of consultation
drug name; symptoms; timing; treatment
- Skin prick test; IDT 1/10; challenge sub-cut with index drug

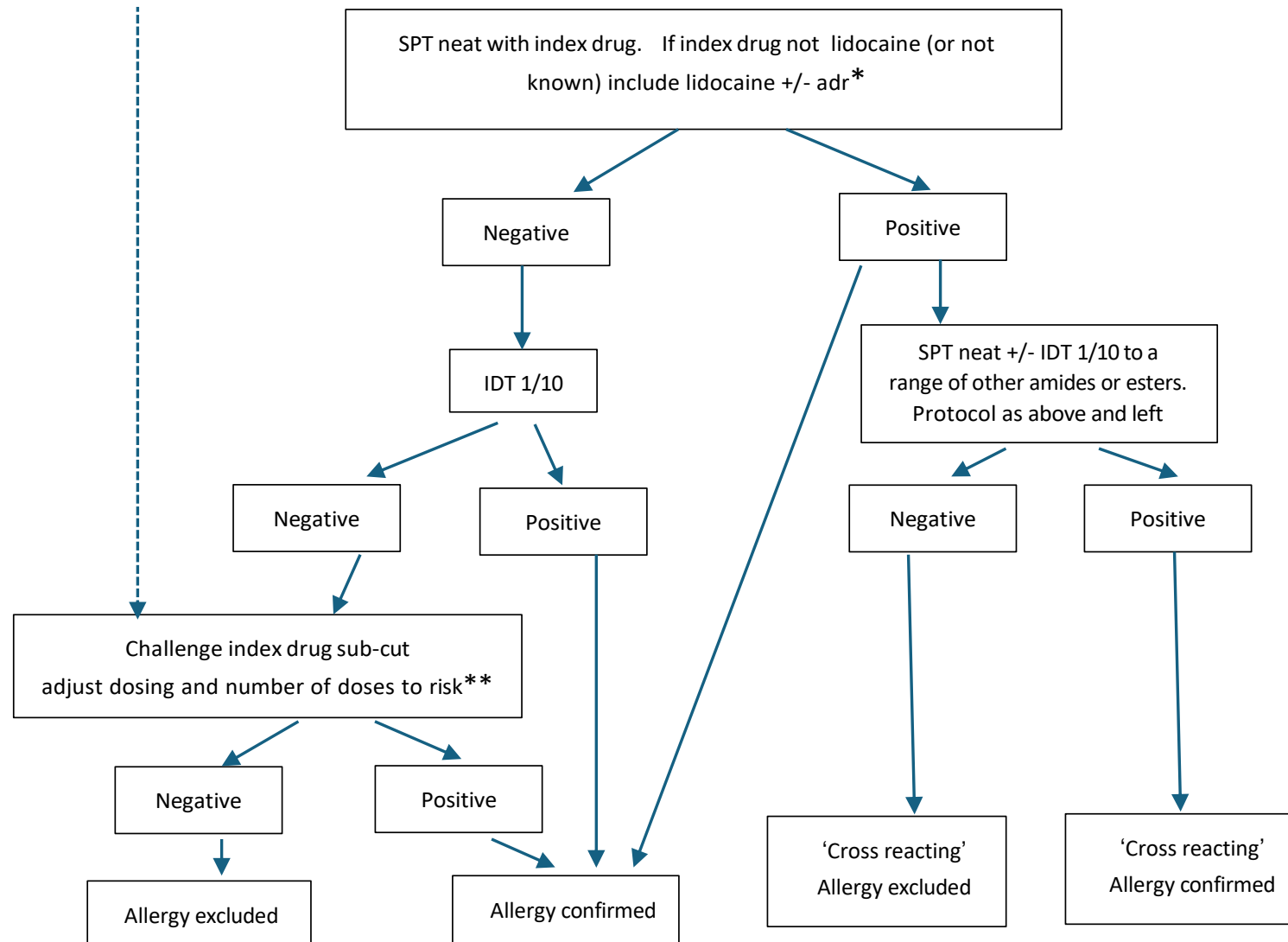
Investigation of suspected IgE mediated allergy to local anaesthetic



Investigation of suspected IgE mediated allergy to local anaesthetic



Investigation of suspected IgE mediated allergy to local anaesthetic



PEG skin testing

- Risk of anaphylaxis
- Test with PEG of different MWts
- Longer intervals between tests
- Different protocols according to risk

- Or use PEG containing drug eg laxido 3350

Managing the challenge especially after dental reactions

- Good atmosphere
- Skin tests provide reassurance
- Consent
- Baseline obs
- Examine pre- including throat, skin
- Objective signs for positive challenge

Documentation: complete drug allergy proforma

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NHS
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NHS Foundation Trust

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Kind
Excellent

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Cambridge Biomedical Campus
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Switchboard: 01223 245151

PRIVATE & CONFIDENTIAL

Clinic Date: 3/2/2026

No Recipients

Copy to: No Recipients

Patient:

DoB:

NHS

MRN:

TO WHOM IT MAY CONCERN

DRUG ALLERGY NOTIFICATION

Please update this patient's records to reflect the advice given below

Drug:	***
Clinical reaction:	***
Diagnosis confirmed by:	***

RECOMMENDATIONS:

Avoid:	***
Safe alternatives:	***

This patient's electronic medical records on Epic have been updated to reflect the information above.
*** *Must be done before this can be deleted and sent* ***

Note to GP: Kindly ensure that the primary care records are similarly updated with the information above.

Pamela Ewan, Consultant

Summary

- Allergy commonly suspected but IgE mediated allergy rare
- 99% occur after dental LA; adverse events vasovagal/ anxiety/ trauma
- Amide – IgE mediated; topical esters and amides – type IVa
- Detailed history with name of specific LA
- Adjust protocol for risk and number of drugs tested. Demonstrating the index drug was not the culprit excludes LA
- Anaphylaxis after intra-articular depot steroid/LA may be due to PEG
- Children: rare; similar approach but fewer IDTs
- Failure to de-label means unnecessary GAs. Can investigate in pregnancy