

## How to Manage a Latex-Allergic Patient

### CLEVELAND CLINIC FOUNDATION

This is a comprehensive summary of how to manage a patient diagnosed or suspected allergic to latex.

See [Latex Allergy - the Bare Essentials](#) for a brief account of the principles of management

See the [Home Page](#) for a table of contents which will lead you to more detailed information

### The Problem

[IgE-mediated anaphylactic reaction](#) in latex-sensitised patients on exposure to the latex antigen.

### Who is at risk

The [patients at risk](#) are those with prolonged or frequent exposure to latex products, especially:

- \* Patients with neural tube defects (meningomyelocele, spina bifida) and congenital urologic abnormalities.
- \* Health care workers with increased exposure to latex, usually gloves.

### Objective

Prevention of reactions by providing a latex-free environment.

### Preoperative Diagnosis

#### A. History

Take a careful [history](#) in patients at risk, particularly those with co-existing atopy and/or multiple allergies. Ask for a history of balloon or glove intolerance and allergies to medical products used in chronic care e.g. catheters

#### B. Diagnostic Tests

Routine [diagnostic testing](#) in the at-risk population is not recommended at present - only for those with a positive history. Tests available are:

1. Skin-prick test - less sensitive than intradermal test but more sensitive than RAST.
2. Radioallergosorbent test (RAST) - an *in-vitro* test for IgE antibodies in the patient's serum. Positive in as few as 65 - 95% of cases. Expensive.

- \* Elective patients in whom you suspect latex allergy should be referred to an allergist.
- \* If you suspect a patient presenting for urgent or emergent surgery has latex allergy - treat as such.

#### C. Medic-Alert Bracelet.

Patients who are confirmed allergic should have a Medic-Alert bracelet and wear it at all times.

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### Pre-operative medications

Routine preoperative H1 and H2 blockers and steroids are no longer recommended.

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### Scheduling

Since latex is an aeroallergen and present in the O.R. air for at least an hour after the use of latex gloves, whenever possible your patient should be scheduled as the first case of the day.

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### Anesthesia Equipment

A special [Latex Allergy cart](#) is available. It has:

- \* Glass syringes
- \* Drugs in glass ampoules
- \* IV tubing without latex injection ports
- \* Neoprene reservoir bags
- \* Webril
- \* Neoprene gloves
- \* Ambu bags with silicone valves
- \* 36" arterial line extension sets for use as IV extensions
- \* Neoprene bellows for the Ohmeda ventilator

### THE MOST IMPORTANT PRECAUTION IS [NON-LATEX GLOVES FOR SURGICAL USE](#)

e.g. **NOTE** also:

- \* Sleeve on the fiberoptic bronchoscope is non-latex
  - \* The esophageal stethoscope is safe to use
  - \* Plunger in the LTA kit is latex
  - \* Cuff on the Laryngeal Mask Airway is non-latex (silicon)
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### Surgical Equipment

Many surgical items are latex, and substitutes should be available. These include:

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#### Urinary catheters

- \* Drains (e.g. Penrose)
  - \* Instrument mats
  - \* Rubber-shod clamps
  - \* Vascular tags
  - \* Bulb syringes for irrigation
  - \* Rubber bands
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### Afternoon Prior to Surgery

A. Check [Latex Allergy cart](#) for supplies and "uphill" refrigerator for muscle relaxants.

B. Call Pharmacy and order all drugs you might need, and do not have, dispensed in glass ampoules. You will need patient's name and clinic number. e.g. [Decadron which has to be drawn up into glass syringes by Pharmacy](#)

C. Notify O.R. nurses on service. No latex gloves or latex products should come into contact with the patient. Neoprene (non-latex) gloves need to be obtained. O.R. nurses may also provide gloves for anesthesia personnel.

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### **Anesthesia Setup and Care**

A. Set up a regular circuit on the anesthesia machine and use a neoprene reservoir bag. Use plastic masks (adult or pediatric)

B. Draw up drugs in glass syringes from glass ampules:

1. Etomidate or propofol for induction (thiopental syringe plunger is latex)
2. Fentanyl or other narcotic. Duramorph (epidural morphine) is available in glass ampules in the narcotic machine and can be used IV)
3. Epinephrine diluted to 100 ug/ml and to 10 ug/ml
4. Atropine 0.4 mg/ml
5. Succinylcholine
6. Non-depolarising muscle relaxant (pancuronium is available in glass)

### **DO NOT DRAW UP DRUGS FROM VIALS WITH RUBBER STOPPERS**

In an emergency, the rubber stoppers can be popped and drug drawn up in a glass syringe.

C. IV infusion setup with two three way stopcocks and no injection ports. (Alternatively tape all injection ports over and do not use).

D. Use Webril under the rubber tourniquet for IV placement. Teflon catheters can be used safely (e.g. angiocath). If BP cuff is rubber, use Webril under it.

E. Latex allergy should not alter your choice of anesthetic technique. There are no drugs that are specifically contra-indicated. However, if you are planning a GA, note that:

- \* Thiopental syringe plunger is latex
- \* Morphine stopper is latex
- \* Vecuronium & atracurium vials have rubber stoppers, succinylcholine & pancuronium are in glass ampules.

F. Place the sign, which is supplied, on the O.R. door warning that the patient is allergic to latex.

G. Advise surgeon that if patient needs antibiotics, their service should order them from the pharmacy.

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### **Diagnosis of Latex Anaphylaxis**

Anaphylaxis has been reported even in patients pre-treated with H1, H2 blockers and steroids and managed in a latex-free environment. Always be prepared to treat. See [Diagnosis of Anaphylaxis](#).

Onset is generally 20 - 60 minutes after exposure to the antigen.

Anaphylaxis presents with the clinical triad of:

1. Hypotension
2. Rash
3. Bronchospasm

**NOTE:** Hypotension is the commonest sign. A rash is not always seen.

- \* Serum mast cell tryptase levels are high during an episode and up to 4 hours after.
  - \* Complement C3 and C4 done at 30 mins, 1 and 4 hrs post-episode will show a serial increase.
- Take blood in an EDTA tube. These tests will help confirm the diagnosis of anaphylaxis, but do not identify latex as the antigen. Results will not be immediately available.
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### **Treatment of Latex Anaphylaxis**

(adapted from: Levy JH. " The Allergic Response" in "Clinical Anesthesia" 2nd ed., Eds Barash PG, Cullen BF, Stoelting RK.)

[Treatment of latex anaphylaxis](#) does not differ from the treatment of severe allergy caused by other antigens.

#### **A. Primary Treatment**

- \* Stop administration of latex (usually gloves in contact with peritoneum)
- \* Maintain airway with 100% oxygen
- \* Discontinue all anesthetic agents
- \* Restore intravascular volume (2 - 4 litres of crystalloid). Start at least two large bore IV's
  
- \* The pharmacological cornerstone of treatment is **EPINEPHRINE**

Epinephrine, in adequate doses, is crucial for the successful treatment of anaphylaxis.

A characteristic of anaphylaxis is the failure to respond to vasopressors other than epinephrine. Start with a dose of 10 ug, or 0.1 ug/kg and escalate rapidly to higher doses depending on the response.

If an IV has not established, epinephrine can be given subcutaneously, in doses larger than would be administered intravenously (300 - 500 ug or more)

**NOTE:** The dose used initially for hypotension is not the same as in cardiovascular collapse or cardiac arrest. Large doses may ultimately be necessary, but starting with 1 mg epinephrine may cause life-threatening hypertension, myocardial ischemia and stroke.

#### **B. Secondary Treatment** may include the following:

- \* Corticosteroids (0.25 - 1 g hydrocortisone or 1 - 2 g methylprednisolone)
- \* Antihistamines (0.5 - 1 mg/kg diphenhydramine[Benadryl])
- \* Catecholamine infusions (epinephrine 2 - 4 ug/min or more)
- \* Aminophylline (5 - 6 mg/kg over 20 minutes for persistent bronchospasm)
- \* Sodium bicarbonate (0.5 - 1 mEq/kg for persistent hypotension with acidosis)
- \* Airway evaluation (prior to extubation)