COVID-19 Vaccination Program

Victorian update

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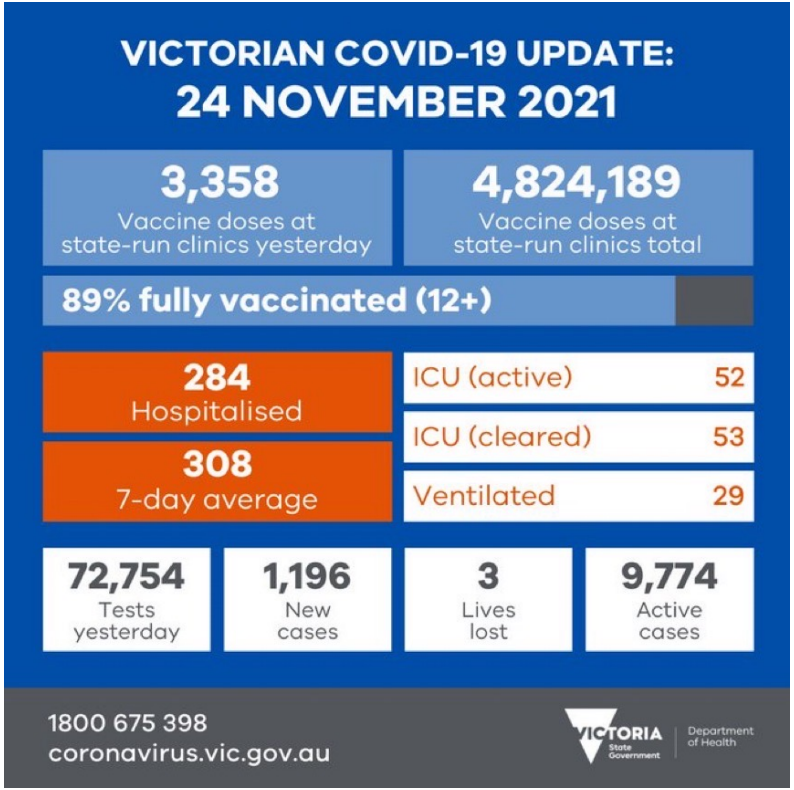
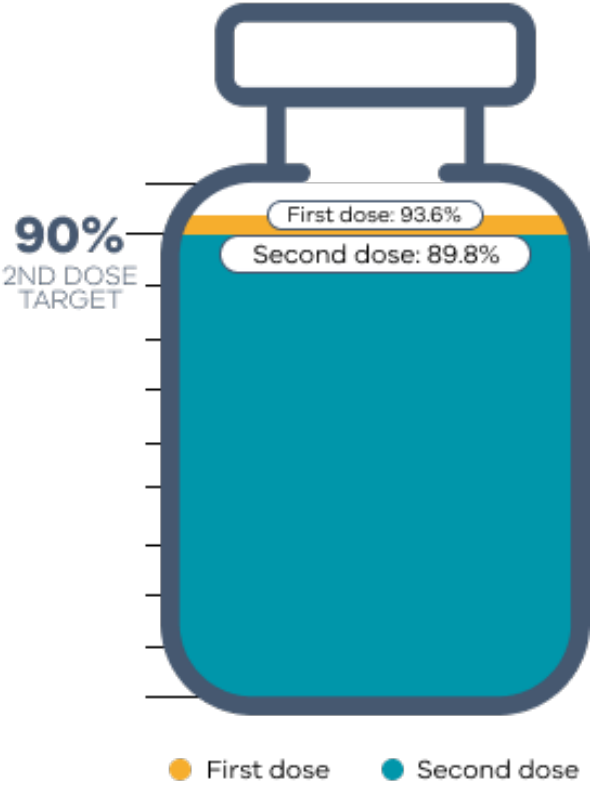
Engagement and Partnerships, COVID-19 Vaccination Program
COVID-19 Immunisation Program, DH

Wednesday 24 November 2021

VICTORIA State Government | Department of Health

COVID-19 vaccination program updates





Source: https://www.coronavirus.vic.gov.au/

Achieving parity for Aboriginal and Torres Strait Islander communities in mainstream primary care

- Promoting in-home COVID-19 vaccination models of care and the Disability Liaison Service, particularly to Aboriginal health commissioned services and local Aboriginal Community Controlled Organisations to reduce barriers to access
- Promoting the Victorian Department of Health's 'Community Unity Immunity' campaign collateral via existing communication channels such as social media, direct electronic messages, newsletters (eDMs) or professional email signatures
- Prompting local general practices via targeted communiqués to nudge identification of non-vaccinated members of the Aboriginal and Torres Strait Islander community via an electronic medical records (eMR) audit and development of outreach plans to vaccinate.
- Continuing to promote the delivery of 715 Aboriginal Health Checks claimable under the Medicare Benefits Schedule and availability of Pfizer vaccines, noting community preference
- Exploring opportunities via Integrated Team Care, Area Pharmacotherapy Network and other relevant PHN-funded programs to engage with sub-groups of Aboriginal and Torres Strait Islander communities who need COVID-19 vaccination but may be hard to reach.

Adverse Eevents following Immunisation
Safety signals – mRNA vaccines

Data presented are for **myocarditis** and **pericarditis**, priority vaccine safety signals observed following vaccination with **Pfizer and Spikevax** mRNA vaccines.
Case count and vaccine administered are specific for **Victoria**, and therefore rates may differ from those reported nationally.

Myocarditis cases

Inflammation of the heart muscle

162

149 following Pfizer
13 following Spikevax
2.4 cases per 100,000 mRNA doses
Expected 0.03 cases per 100,000 doses

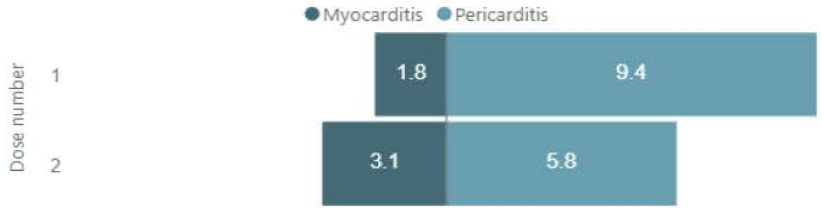
Pericarditis cases

Inflammation of the heart lining

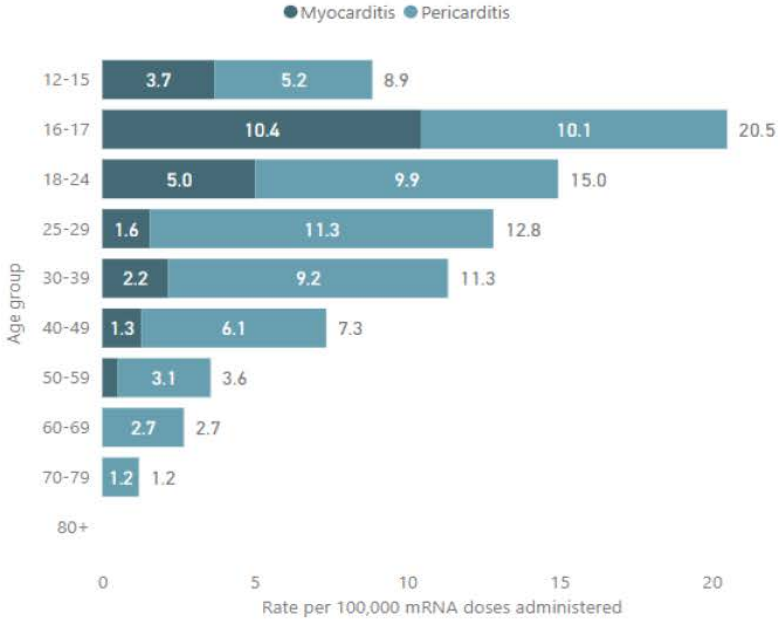
507

481 following Pfizer
26 following Spikevax
7.6 cases per 100,000 mRNA doses
Expected 0.36 cases per 100,000 doses

Rate per 100,000 mRNA doses by dose number and condition



Rate per 100,000 mRNA doses by condition and age group



All data are for Victorian cases
Data as at 7:00am 15 November and are subject to change

Mimickers of Anaphylaxis and Anaphylaxis treatment

Associate Professor Sara Barnes

Allergist/Immunologist and General Physician

Monash Health

Anaphylaxis to vaccines

1.31 cases per million vaccines doses

No fatalities reported

Banerji, Wickner et al (2021) JACI in practice April

Anaphylaxis to vaccines

- 0 cases post 5.5 million doses of infant and pre school vaccines
- 12.0 per 100, 000 doses per single component measles vaccine
- 1.4 (2.6 in Australia HPV4) per million doses of bivalent HPV
- Female predominance in adult not children.

McNeil, Weintraub, Duffy, 2016, JACI March, 137, 3
Potential immediate hypersensitivity reactions following immunization in preschool aged children in Victoria, Australia (2018), Baxter, Clothier and Perrett

Cases of reported anaphylaxis to COVID 19 vaccine

247 per million doses of mRNA in Massachusetts.

- **Using Brighton criteria 45 per million**

- **Versus 1.31 per million doses**

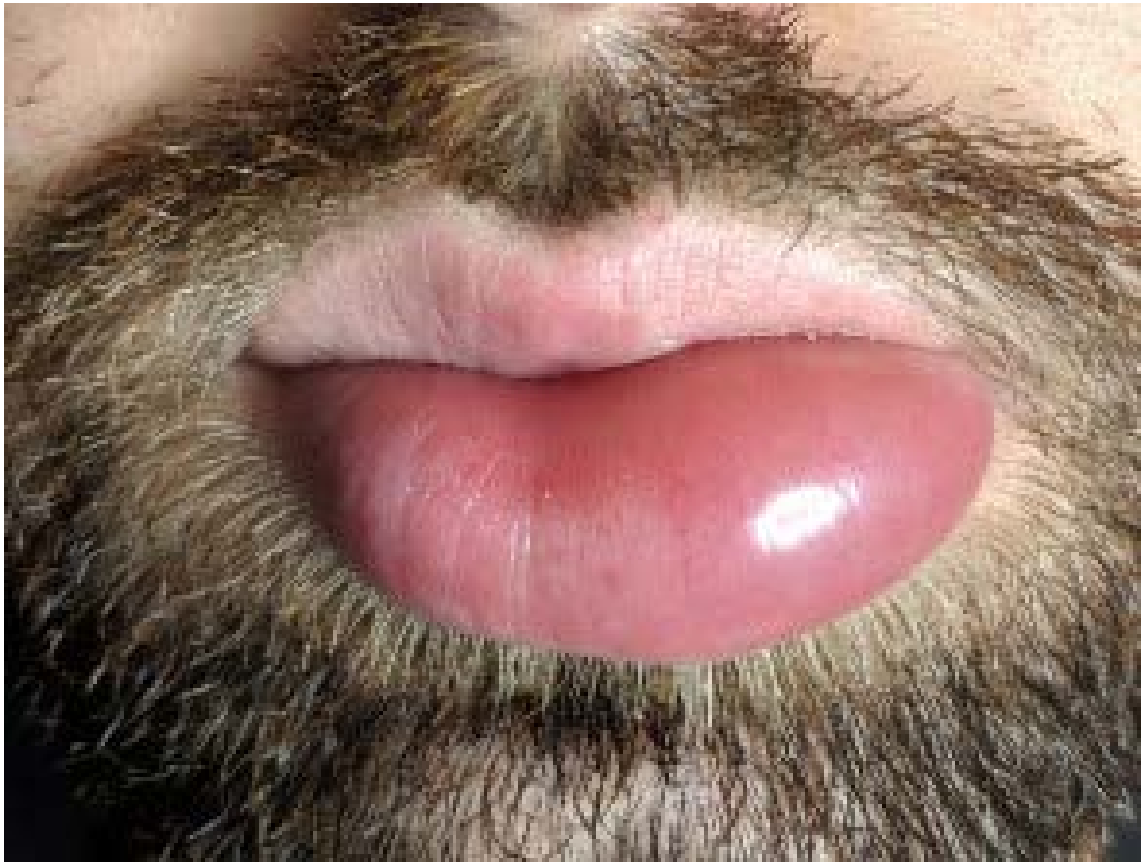
Blumenthal KG, Robinson LB, Camargo CA, Jr. , et al. Acute allergic reactions to mRNA COVID-19 vaccines. *J Am Med Assoc*. 2021;325(15):1562-1565. 10.1001/jama.2021.3976

Urticaria and Angioedema

Mechanisms and treatments

Angioedema

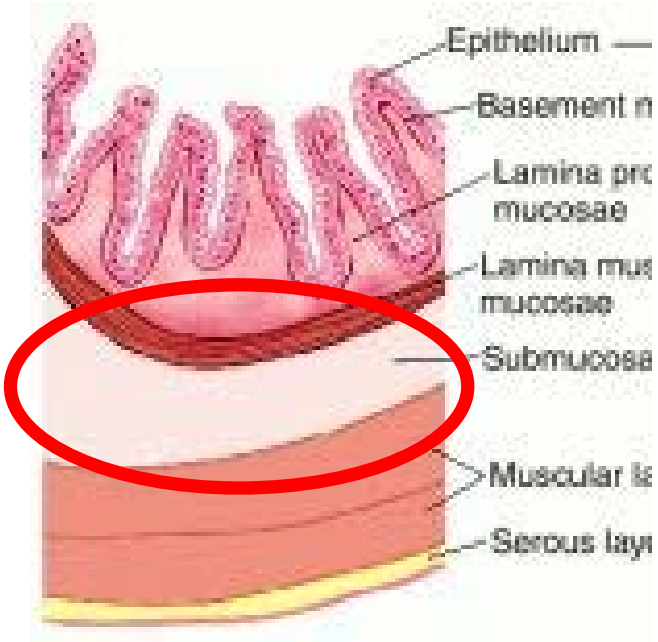
What is it?



Dermnet.nz

Angioedema. What is it?

- Localised subcutaneous or sub mucosal swelling.
- Caused by fluid leaking from small blood vessels
  - Increased vascular permeability
- Resolves over 24-48 hours

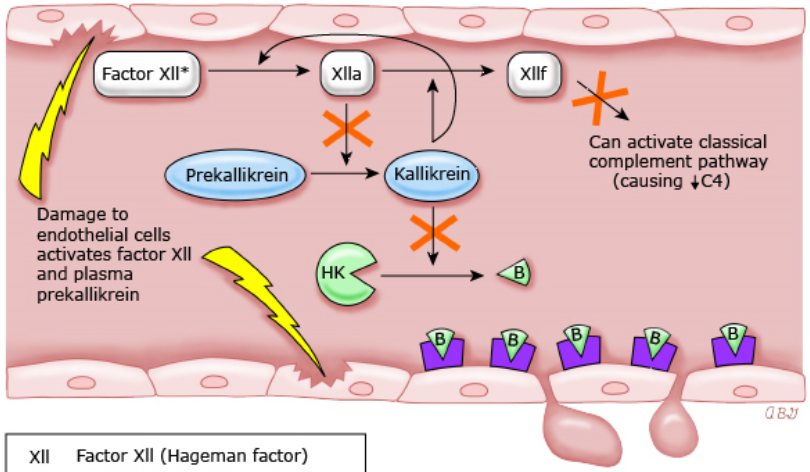


Causes

Histamine mediated

Bradykinin mediated

Pathways involved in kinin-mediated angioedema and actions of drugs



C4: complement component 4; C1INH: C1 inhibitor.
* In the disorder hereditary angioedema (HAE) with factor XII mutations, factor XII may be prone to excessive activation.

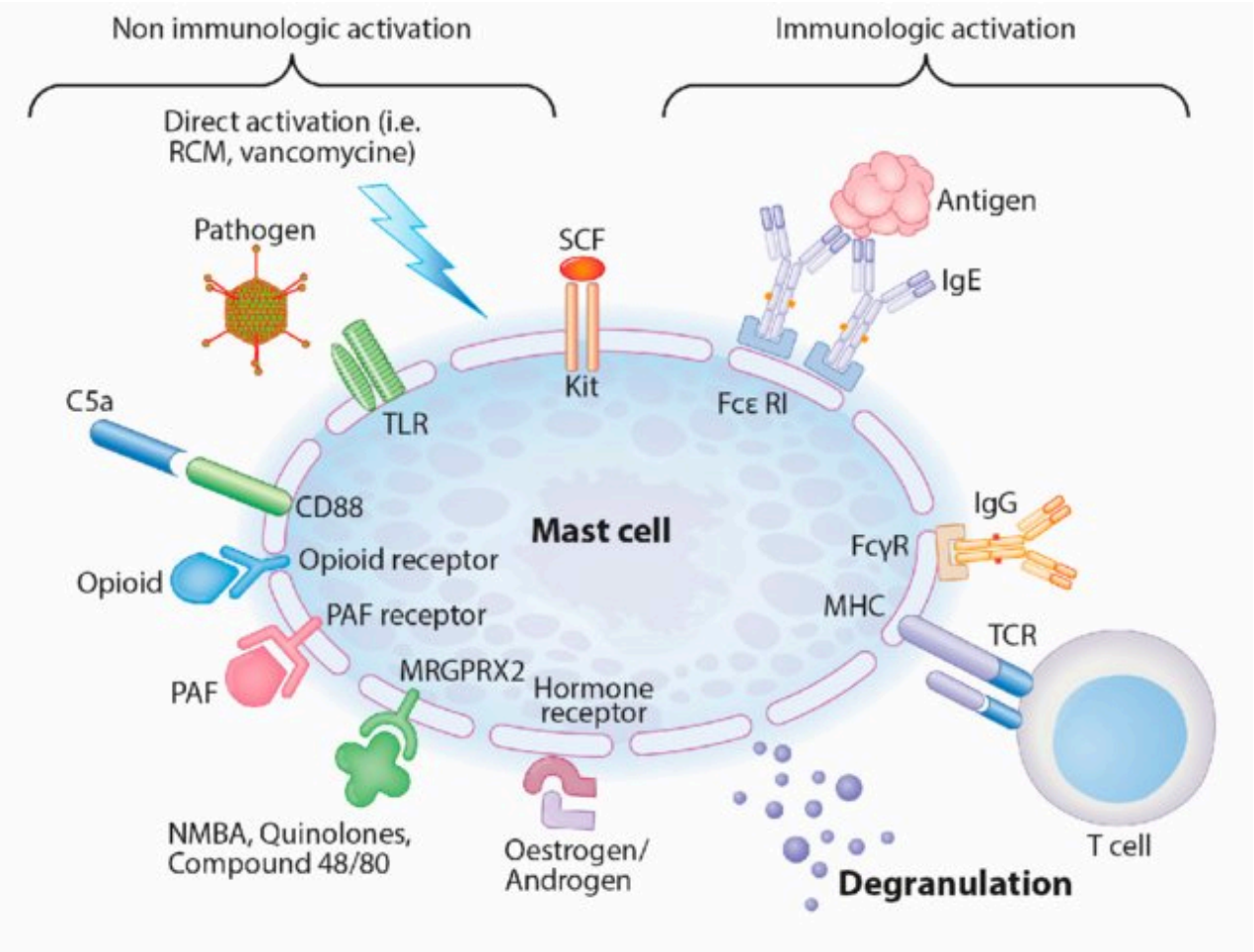
Data from:

1. *Morgan PB. Hereditary angioedema—therapies old and new. N Engl J Med 2010; 363:581.*
2. *Longhurst H, Cicardi M. Hereditary angio-oedema. Lancet 2012; 379:474.*

UpToDate®

Hereditary Angioedema	Acquired Angioedema	Drug Induced Angioedema	Idiopathic (non histamine) angioedema
Rare	Very rare	Accounts for 4-8%	Very rare
Swelling of extremities, respiratory and GIT	Onset generally >40 years	Swelling can occur anywhere	No underlying disease
Family history in 75% of cases Autosomal Dominant chromosome 11	No family history	No family history.	No family history
Absence of urticaria	Absence of urticaria	Absence of urticaria	Absence of urticaria
Triggered spontaneously of by stress of trauma	Triggered by stress or trauma or spontaneous	Other medications NSAIDS	
Decreased C1 inhibitor levels increasing kallikrein and then increased production of bradykinin	Associated with lymphoproliferative or autoimmune (SLE low C4)	Frequently caused by ACE inhibitors	
Measure C4, C1 esterase levels of function		Can occur hours of years after starting ACE	

Mast cells and Histamine

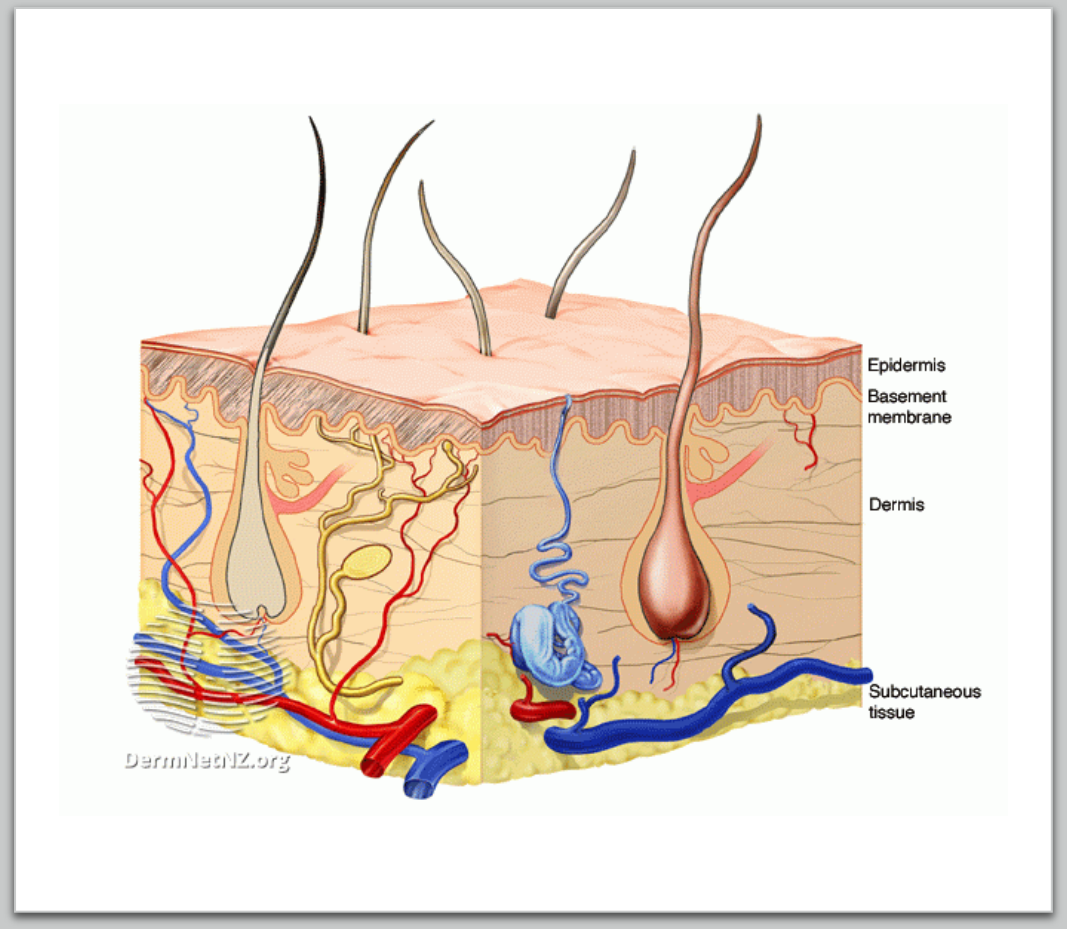


Reclassifying Anaphylaxis to Neuromuscular Blocking Agents Based on the Presumed Patho-Mechanism: IgE-Mediated, Pharmacological Adverse Reaction or "Innate Hypersensitivity"?
Article

Histamine mediated Urticaria/angioedema

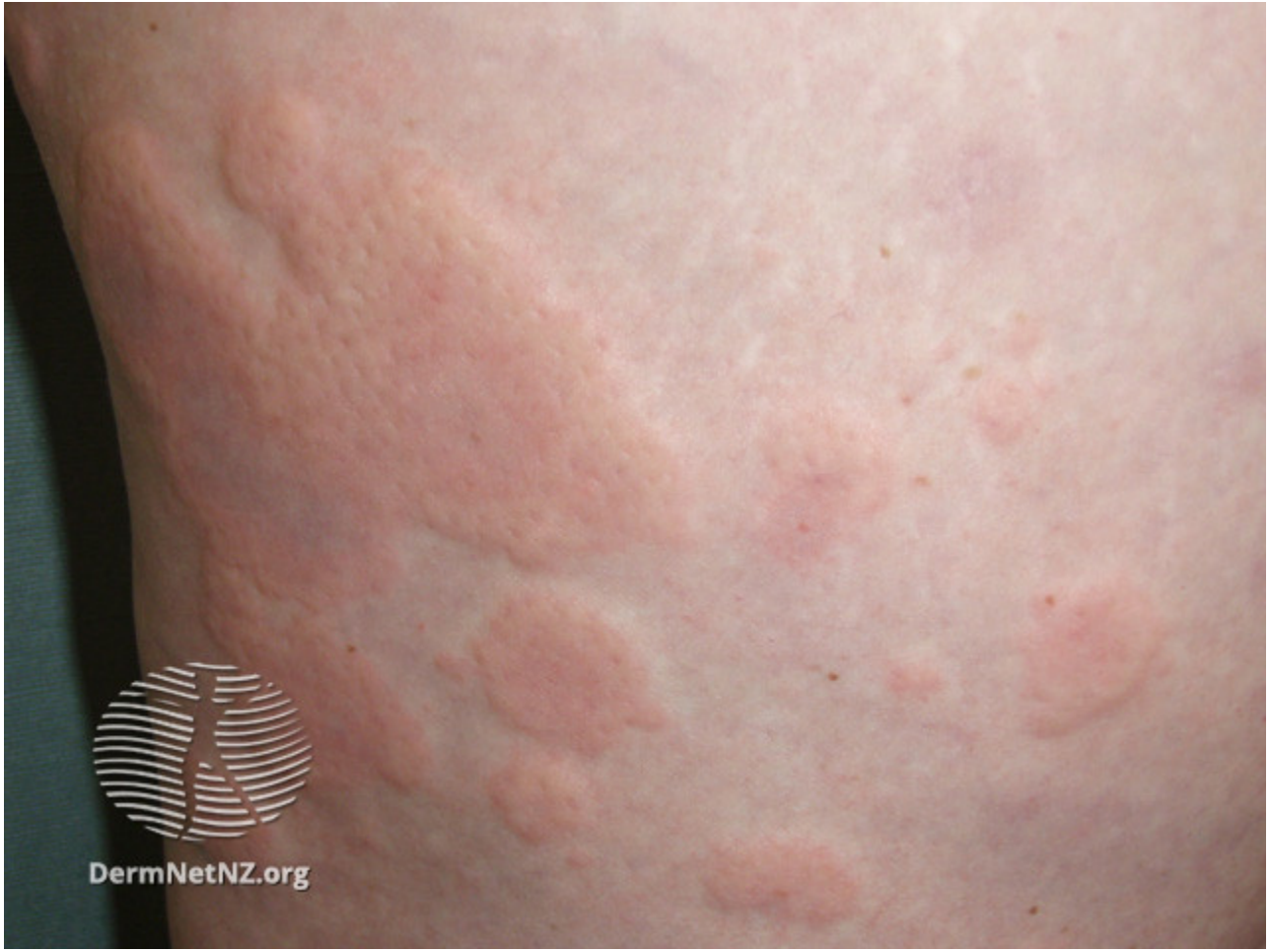
- Swellings on the surface of the skin
  - Epidermis and dermis
- Transitory (<24 hours)

- Dermnet.nz



Histamine mediated angioedema /urticaria

- Most common type
- Urticaria present often
- Can be IgE mediated


DermNetNZ.org

Causes

Food	**Medication** •NSAIDS •Opiates •Contrast	**Insect** •JJA •Bee •Wasp
Spontaneous	Cold	Solar
Heat	Pressure	Aquagenic
Contact	Vibration	**Infections** •COVID 19 •EBV •CMV etc
	Vaccinations •COVID 19, •Influenze	

Treatment

Up to 4 a day of non sedating antihistamine

Second line if not controlled

- H2
- Monteluklast

Omalizumab

Anaphylaxis

ASCIA defines anaphylaxis as:

Any acute onset illness with typical skin features (urticarial rash or erythema/flushing, and/or angioedema), plus involvement of respiratory and/or cardiovascular and/or persistent severe gastrointestinal symptoms; or

Any acute onset of hypotension or bronchospasm or upper airway obstruction where anaphylaxis is considered possible, even if typical skin features are not present.

World Allergy Organisation Anaphylaxis Guidance Position Paper 2020.

Anaphylaxis is highly likely when any one of the following two criteria are fulfilled:

- **Criteria 1**.
  - Acute onset of an illness (minutes to several hours) with simultaneous involvement of the skin, mucosal tissue, or both (e.g. generalized hives, pruritus or flushing, swollen lips-tongue-uvula), and at least one of the following:
  - a) Respiratory compromise (e.g. dyspnea, wheeze-bronchospasm, stridor, reduced peak expiratory flow, hypoxemia).
  - b) Reduced blood pressure or associated symptoms of end-organ dysfunction (e.g. hypotonia [collapse], syncope, incontinence).
  - c) Severe gastrointestinal symptoms (e.g. severe crampy abdominal pain, repetitive vomiting), especially after exposure to non-food allergens.
- **Criteria 2.**
  - Acute onset of hypotension or bronchospasm or laryngeal involvement after exposure to a known or highly probable allergen for that patient (minutes to several hours), even in the absence of typical skin involvement.

Treatment


Stay calm
Use reassuring words
Adrenaline if felt indicated

Mimickers of anaphylaxis and Immunisation stress-related responses (ISRR)

Organization WH. Immunization stress-related response: a manual for program managers and health professionals to prevent, identify and respond to stress-related responses following immunization. 2019;

Differential diagnosis of anaphylaxis

Common disorders
Acute generalized urticaria and/or angioedema*
Acute asthma exacerbation*
Vasovagal syncope (faint)
Panic attack/acute anxiety attack
Other respiratory events
Pulmonary embolism
Pneumothorax
Foreign body aspiration (especially in children)
Vocal cord dysfunction
Epiglottitis
Hyperventilation
Cardiac events
Myocardial infarction*
Dysrhythmia
Acute symptoms related to structural disorders (eg, aortic stenosis, hypertrophic cardiomyopathy)
Shock
Hypovolemic¶ (eg, gastrointestinal bleed, ruptured ectopic pregnancy, ruptured aortic aneurism, systemic capillary leak syndrome)
Cardiogenic
Distributive¶ (eg, sepsis, spinal cord injury)
Obstructive (eg, pulmonary embolism, tension pneumothorax, cardiac tamponade)
Flushing
Perimenopause
Carcinoid syndrome
Autonomic epilepsy
Medications
Alcohol
Medullary carcinoma of the thyroid
Vancomycin flushing syndrome
Postprandial syndromes
Scombroidosis
Anisakiasis
Pollen-food allergy syndrome
Food poisoning
Caustic ingestion (especially in children)
Neurologic events
Seizure
Cerebrovascular event (stroke)
Nonorganic disease
Munchausen syndrome
Psychosomatic episode

The differential diagnosis in children and adults is shown. In infants, the differential diagnosis of anaphylaxis is unique.

* Acute asthma symptoms, acute generalized urticaria, or myocardial infarction symptoms can also occur during an anaphylactic episode.
¶ In anaphylaxis, shock is distributive and hypovolemic. Distributive shock may be due to anaphylaxis or to spinal cord injury.

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Medications that can cause histamine release

Antibiotics
Ciprofloxacin, vancomycin
Barbiturates
Narcotic analgesics*
Neuromuscular antagonists
Quaternary amine
Succinylcholine
Benzylisoquinolinium compounds
Atracurium, cisatracurium, doxacurium, mivacurium, tubocurarine
Plasma expanders
Dextran, polygeline (Haemaccel [brand name])
Radiocontrast agents

The medications listed above can cause nonimmunologic histamine release, which can predispose patients to vancomycin reactions and/or prevent successful vancomycin desensitization.

* Fentanyl rarely induces histamine release.

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Mimickers

- Flushing
- Transient dyspnea
- Tachycardia
- Inducible laryngeal obstruction
- CDC report 175 possible reactions 49% were non-anaphylactic allergic reactions.

Banerji, Wickner et al (2021) JACI in practice April

Munchausen Stridor-A Strong False Alarm of Anaphylaxis

Sami L. Bahna Jennifer L. Oldham

[A CASE OF VOCAL CORD DYSFUNCTION, WHO USED ADRENALIN AUTOINJECTOR (EPIPEN ®) FREQUENTLY AFTER BEING DIAGNOSED AS ANAPHYLAXIS]

[Article in Japanese]

Hiromi Teranishi [1], Takeshi Koga [1 2], Yutaka Ueda [1 2], Takahiro Shimizu [1 2], Keisuke Okada [1 2], Shunichi Ogawa [1 2], Eiji Morita [1 2], Toshiko Itazawa [1 2], Kenichi Tokuyama [1 2]

Idiopathic Anaphylaxis—A Diagnostic and Therapeutic Dilemma

Julie K. Kim MD &

David A. Khan MD

Current Treatment Options in Allergy **volume 2**, pages 183–192 (2015)

"In our experience, vocal cord dysfunction itself is a common diagnosis in patients labeled with IA who present chiefly with a complaint of "throat swelling.""

- https://creativecommons.org/licenses/by-nc-nd/3.0/nz/legalcode
- Skin graphics reference
- https://mvec.mcri.edu.au/wp-content/uploads/2021/03/Guidance-for-differentiating-anaphylaxis-and-acute-stress-response-for-vaccine-providers_15042021.pdf

Delayed Cutaneous Reactions to COVID Vaccination

RACGP Education Session

Dr Joseph De Luca *BSc (Mol Biol) MBBS MPHTM FRACP*
Clinical Immunologist and Allergist
Austin and Melbourne Health
PhD Candidate University of Melbourne

@DrJoeDeluca

Centre for Antibiotic Allergy & Research
Department of Infectious Diseases (Austin Health)

Centre for Antibiotic Allergy and Research
Optimising antibiotic therapy

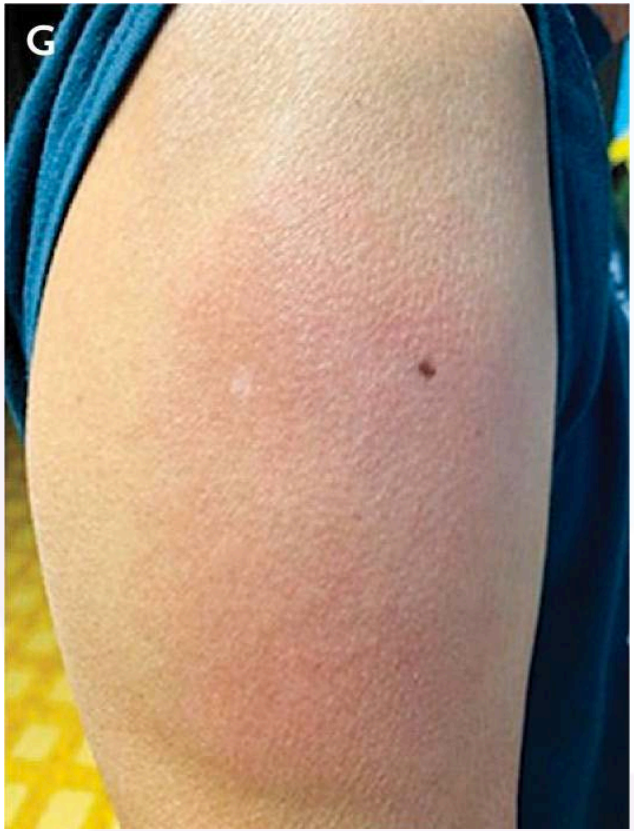
Allergy vs Hypersensitivity

- Hypersensitivity
  - An abnormal/harmful immune response that produces tissue injury and disease
- Allergy
  - A hypersensitivity reaction to a normally innocuous exogenous antigen

Delayed Cutaneous Reactions to Vaccine

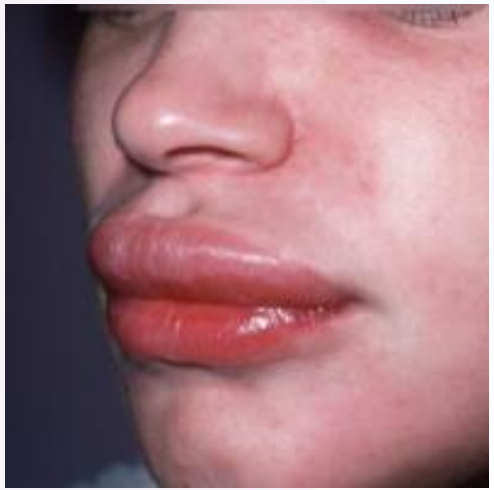
Large Local Reactions

- Characterised by:
  - Delayed onset (between 4-11 days)
  - Large indurated swelling (>10cm)
  - Local pain and erythema
- Frequently misdiagnosed as cellulitis
- Typically resolves over 4-5 days



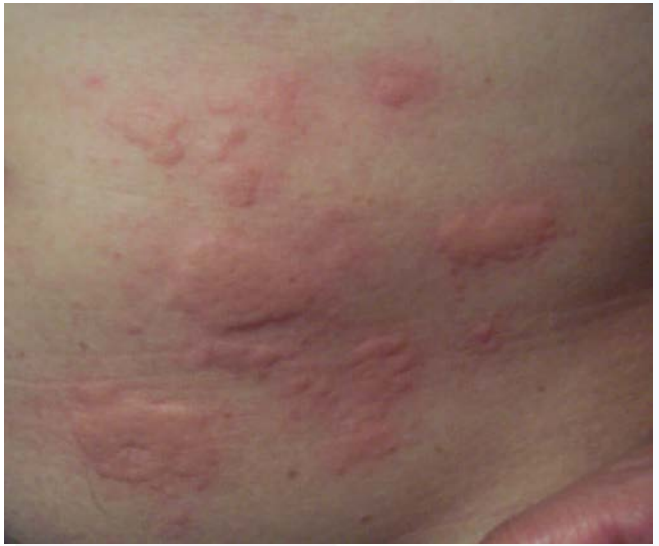
Angioedema

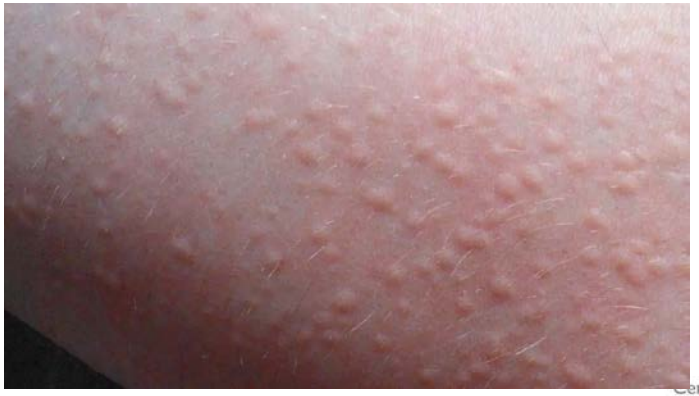
- Swelling of the subcutaneous and submucosal surfaces
- Can affect throat, tongue, genitals
- Delayed angioedema tends to develop slowly over hours
  - Can take days to slowly resolve
- Two main pathways of developing angioedema:
  - Histamine (Urticaria usually associated)
  - Bradykinin (Urticaria not associated)

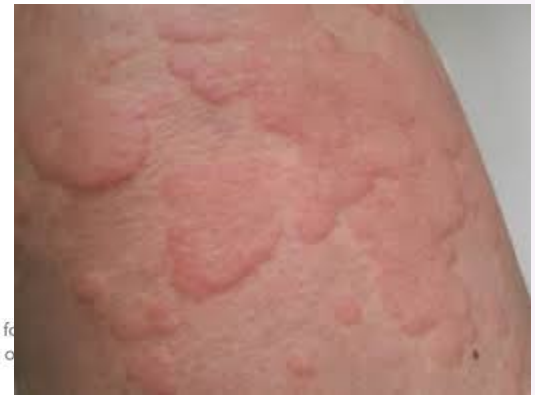


Urticaria

- Raised wheals
- Usually with surrounding flare
- Itchy+++++
- Usually transient and move across body

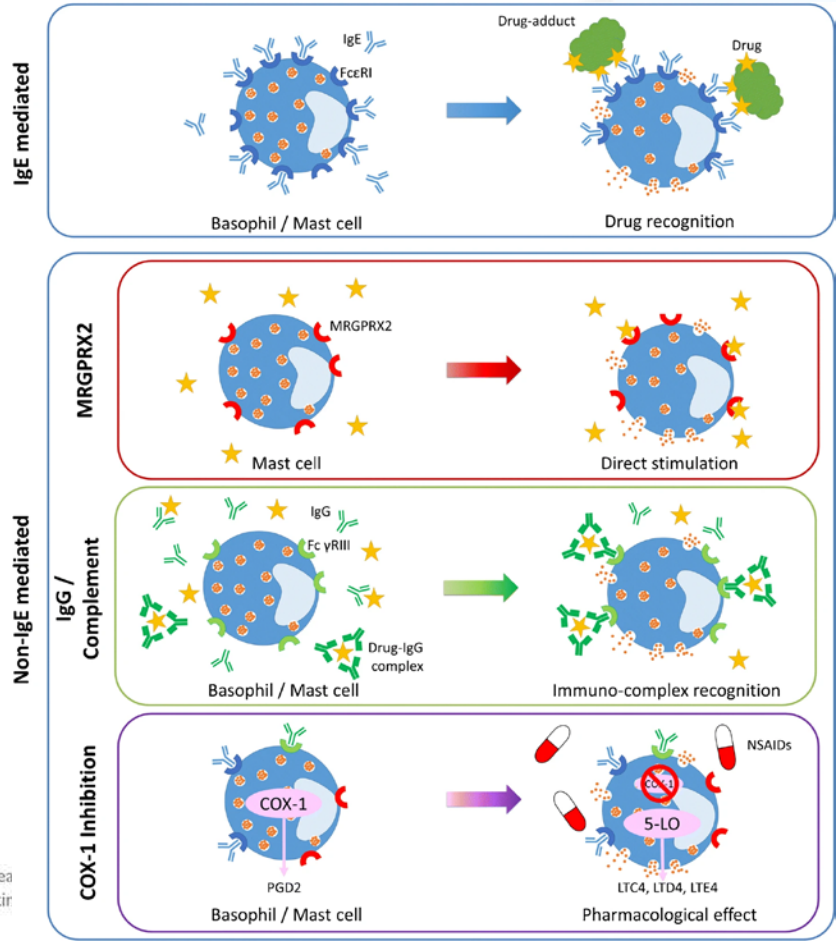






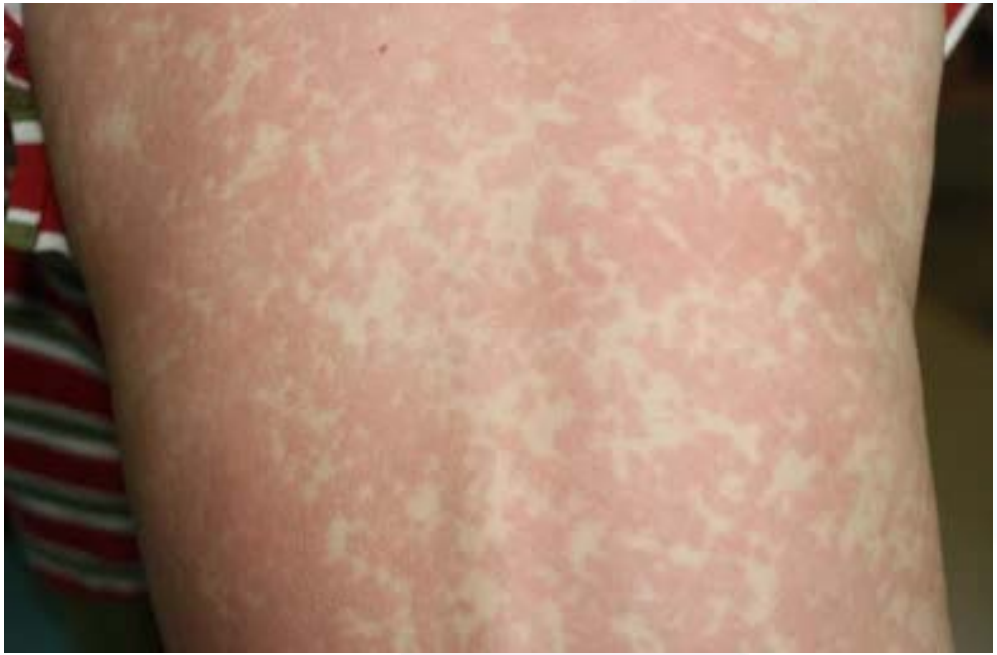
Urticaria/Angioedema – 2 sides of the same coin

- Caused by release of histamine in cutaneous tissues due to activation of mast cells
- Mast cell degranulation does not occur solely as a result of allergy!
- Other non-specific activators of mast cell degranulation:



Maculopapular Exanthem

- Frequently confused as urticaria
- Non-migratory or transient
- Itch less profound



Delayed reactions to COVID-19 vaccines

Case series of large local reactions – COVID arm

The NEW ENGLAND JOURNAL of MEDICINE

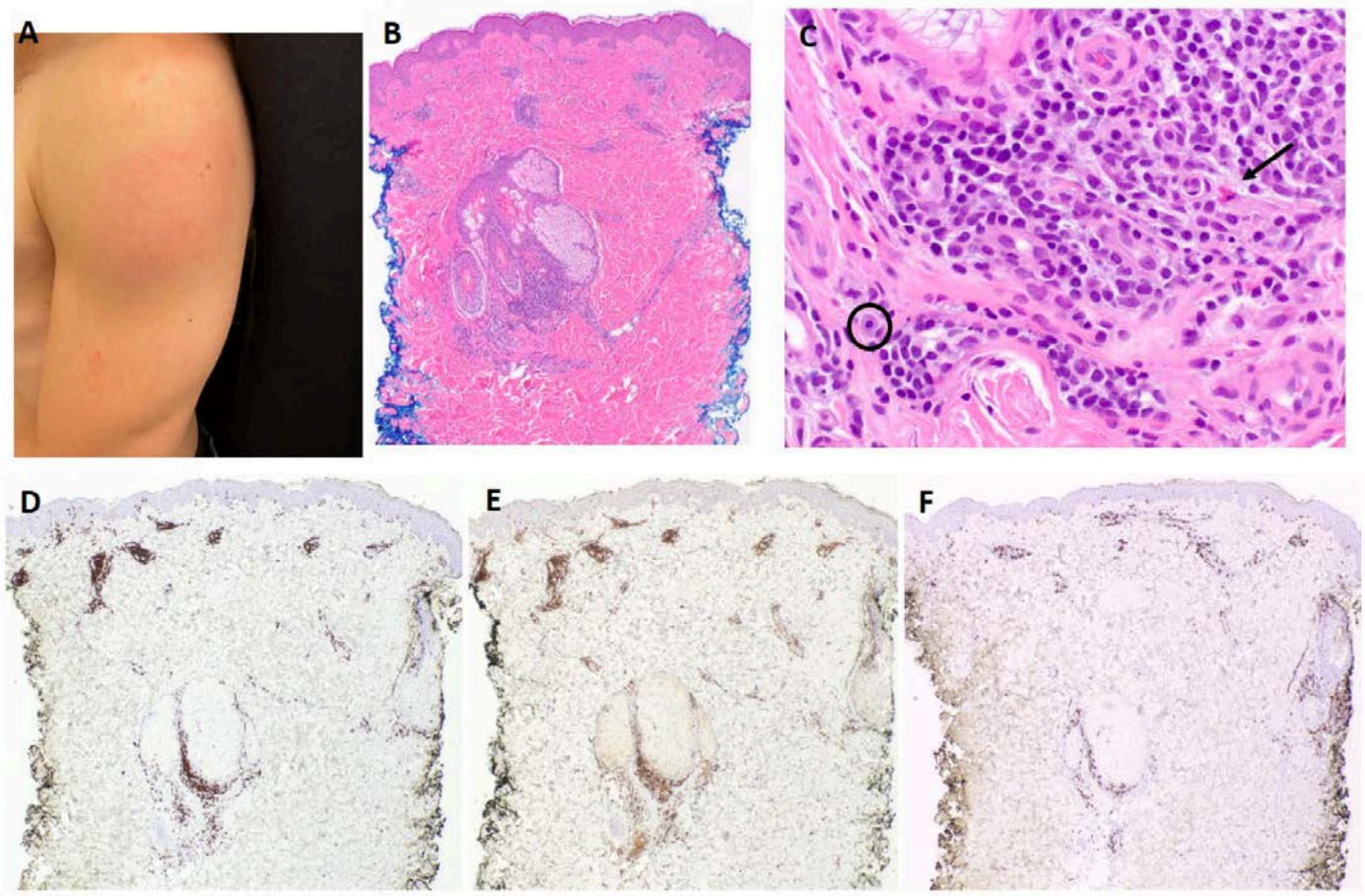
CORRESPONDENCE

Delayed Large Local Reactions to mRNA-1273 Vaccine against SARS-CoV-2

Blumenthal KG, Freeman EE, Saff RR, et al. Delayed Large Local Reactions to mRNA-1273 Vaccine against SARS-CoV-2. *N Engl J Med*. 2021;384(13):1273-1277. doi:10.1056/NEJMc2102131

Case series of large local reactions – COVID arm

- Series of 12 patients
- All received mRNA vaccines
- All managed with symptomatic treatment
  - Resolution over 4-5 days
- Skin biopsy demonstrated evidence of a T-cell mediated hypersensitivity



Blumenthal KG, Freeman EE, Saff RR, et al. Delayed Large Local Reactions to mRNA-1273 Vaccine against SARS-CoV-2. *N Engl J Med*. 2021;384(13):1273-1277. doi:10.1056/NEJMc2102131

Delayed reactions to COVID vaccines are mostly benign

- Vast majority are self-limiting and easily managed with symptomatic treatment
- Should therefore not discourage vaccination if no severe features

Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases

Devon E. McMahon, BA,[a] Erin Amerson, MD,[b] Misha Rosenbach, MD,[c] Jules B. Lipoff, MD,[c] Danna Moustafa, BS,[a] Anisha Tyagi, BA,[a] Seemal R. Desai, MD,[d,e] Lars E. French, MD,[f,g] Henry W. Lim, MD,[h] Bruce H. Thiers, MD,[i] George J. Hruza, MD, MBA,[j] Kimberly G. Blumenthal, MD, MSc,[k] Lindy P. Fox, MD,[b] and Esther E. Freeman, MD, PhD[a,l]

Boston, Massachusetts; San Francisco, California; Philadelphia, Pennsylvania; Dallas and Plano, Texas; Munich, Germany; Miami, Florida; Detroit, Michigan; Charleston, South Carolina; and St. Louis, Missouri

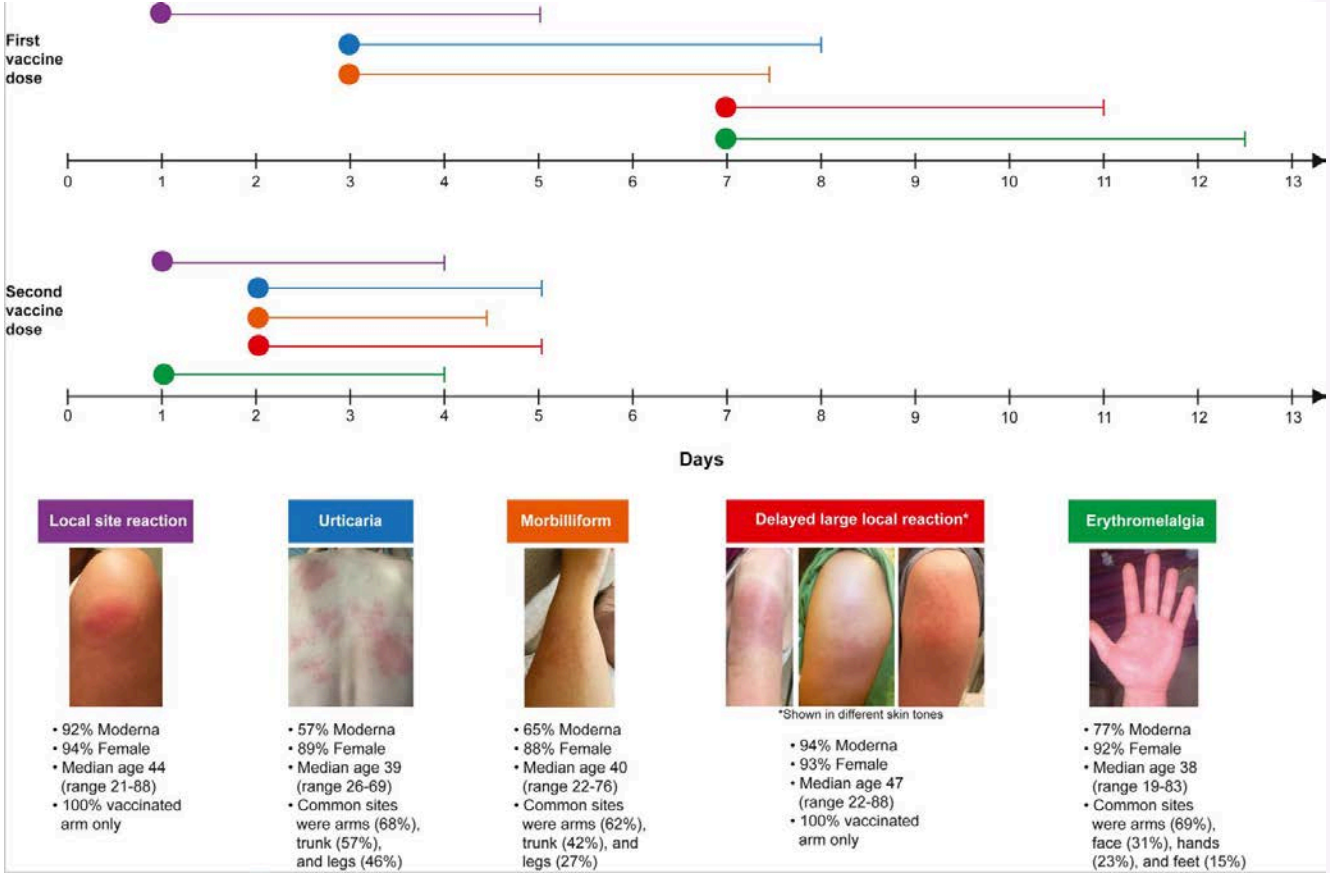
McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases. *J Am Acad Dermatol*. 2021;85(1):46-55. doi:10.1016/j.jaad.2021.03.092

mRNA associated cutaneous reactions

- International registry but primarily US patients (98%)
- 414 cutaneous reactions to mRNA COVID-19 vaccination
  - Moderna 83%
  - Pfizer 17%
- 90% Female, 78% Caucasian
- Only 180 had information about both doses and reactions occurred:
  - First dose only – 21%
  - Second dose only – 63%
  - Both doses – 16%

Timing of delayed reactions to COVID vaccine

McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases. *J Am Acad Dermatol*. 2021;85(1):46-55. doi:10.1016/j.jaad.2021.03.092



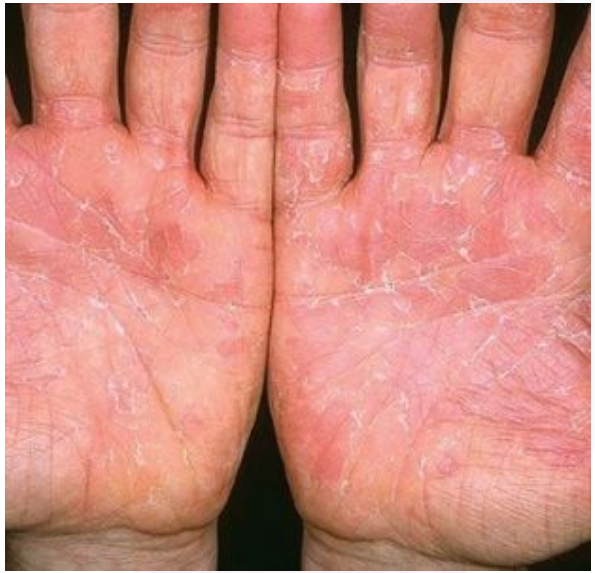
Centre for Antibiotic Allergy and Research
Optimising antibiotic therapy

Prognosis

- Majority of patients will tolerate second dose with no or minimal recurrence of symptoms
- Particularly in benign delayed cutaneous manifestations:
  - Large local reactions
  - Delayed urticaria and external angioedema
  - Benign maculopapular exanthems
- These should not represent barriers to re-vaccination
- Some benefit in discussions with a VicSIS clinician if symptoms were particularly distressing or if severe features

Severe features of cutaneous reactions

- Mucosal involvement
- Exfoliative skin
- Fever not otherwise explained
  - Associated with rash
- Organ involvement
  - Liver, Kidneys, Lung, Cytopenias



Management of Large Local Reactions

- Ice packs
- Oral antihistamine if itch
  - Standard dose, 1x tablet daily
- Simple analgesia

Management of Delayed Urticaria/Angioedema

- High dose non-sedating antihistamines
  - Up to four times the usual dose is standard
  - My standard approach is 20mg BD of Cetirizine or 360mg BD of Fexofenadine
- Topical steroids not generally helpful
- Avoid prednisolone/systemic corticosteroids wherever possible
  - May affect development of immunity to vaccine
  - Can cause rebound urticaria when weaned
- Consider referral to an allergy specialist if urticaria prolonged

Management of Maculopapular exanthems

- Topical corticosteroids with mid-high potency
  - Diprosone
  - Elocon
  - Advantan Fatty Ointment
- Can use antihistamines to help with itch
  - Standard dose, 1x tablet per day

Summary

- Delayed cutaneous reactions post-vaccination occur commonly
  - Large local reactions most common
  - Generally responsive to symptomatic management
- Majority of patients will go on to tolerate second dose
- Refer to VicSIS allergy clinics if any severe features

Thank you for participating tonight

Department of Health and RACGP's next webinar

Wednesday December 15 6pm- 7pm

Topic: Covid+ pathways program & roll out og new GP respiratory Clinics in Metropolitan Melbourne

VICTORIA State Government | Department of Health

For the latest information www.dhhs.vic.gov.au/coronavirus
Information is available in 50+ community languages at www.dhhs.vic.gov.au/translations