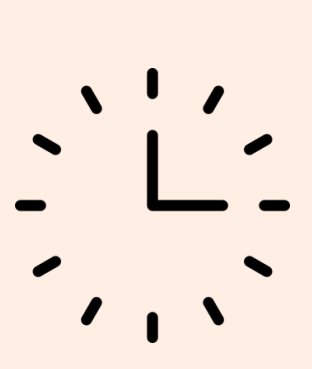


ANTIBIOTICS HYPERSENSITIVITY MECHANISM

February 2024, Volume 56; Issue 1

TYPE I (IMMEDIATE) IGE-MEDIATED HYPERSENSITIVITY



**ONSET OF REACTION:
 LESS THAN 1 HOUR**

TYPICAL CLINICAL FINDINGS

- Anaphylaxis
- Hives
- Angioedema
- Nausea and vomiting
- Abdominal pain
- Shortness of breath (SOB)
- Wheezing
- Anxiety
- Confusion
- Chest pain
- Palpitations
- Syncope
- Cardiac arrest

Anaphylaxis is a severe hypersensitivity reaction that can be fatal and often affects multiple organ systems. Beta-lactams are the most frequently mentioned antibiotic class that causes anaphylaxis.



By Mohammed Abou Daya & George Du Toit, 2020

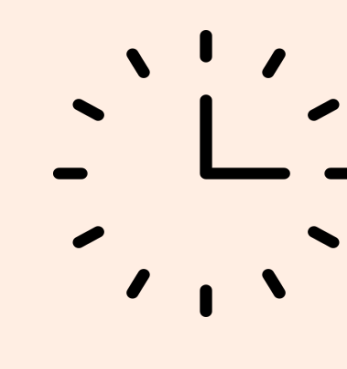
COMMONLY ASSOCIATED ANTIBIOTICS

CEPHALOSPORINS,
 FLUOROQUINOLONES, PENICILLIN



TYPE II (DELAYED) ANTIBODY-MEDIATED HYPERSENSITIVITY

SYMPTOM



**ONSET OF REACTION:
 7-14 DAYS**



HEMOLYTIC ANEMIA

Elina Wadia, M.Sc Dietetics, Dr. Simi Paknikar, MD, 2016



NEUTROPENIA

Dr Rajesh Shah, 2023



TROMBOCYTOPENIA

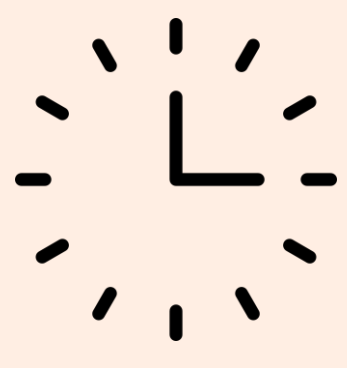
Blood Specialist Clinic, 2023.

COMMONLY ASSOCIATED ANTIBIOTICS

CEPHALOSPHORINS, PENICILLIN,
 TRIMETHOPRIM/SULPHAMETHOXAZOLE



TYPE III (DELAYED) IMMUNE COMPLEX MEDIATED HYPERSENSITIVITY



**ONSET OF REACTION:
 7-14 DAYS**

ASSOCIATED ANTIBIOTICS

CEPHALOSPORINS (ESP CEFACLOR),
 CIPROFLOXACIN, PENICILLIN,
 TRIMETHOPRIM/SULPHAMETHOXAZOLE



SYMPTOM 1



By Dr Delwyn Dgall-Smith FACD, Dermatologist, 2009

Serum sickness-like reaction (SSLR)

- rash
- fever
- polyarthrititis

*mimic serum sickness that is very similar based on symptoms but does not involve the production of immune mediated complexes.

SYMPTOM 2



By James Heilman, 2020

Vasculitis

Prepared by third year student
 Kulliyah of Pharmacy IIUM 2022/23:

- Muhammad Haziq bin Ezani
- Muhammad Irfan bin Mohamad Zahir
- Nur Tasnim Adila binti Mazdi
- Aina Zafirah binti Azhar

Reviewed by:

- Syahira Afiqah Mohamad Pauzi
- Nur Aida Murni Mamamad
- Nurul Fatimah Zainuddin

Edited by:

- Khairul Bariah Johan

TYPE IV (DELAYED) DELAYED TYPE HYPERSENSITIVITY

IVa
 Monocytic inflammation
 (Th1 and IFN- γ)

**ONSET OF REACTION:
 10-15 DAYS**

TOPICAL NEOMYCIN, BACITRACIN,
 POLYMYXIN



Julie Marks March 14, 2023

Contact Dermatitis

IVb
 Th2-mediated eosinophilic
 inflammation

**ONSET OF REACTION:
 2-8 WEEKS**

PENICILLINS, CEPHALOSPORIN, DAPSONE,
 MINOCYCLINE, SMX/TMP, VANCOMYCIN



ADMIN EMBJ ON DECEMBER 12, 2022

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS)

IVc
 CD8 T Cell mediated cytotoxicity

**ONSET OF REACTION:
 4-28 DAYS**

FLUOROQUINOLONES, NEVIRAPINE,
 PENICILLIN, SMX/TMP



By SJS Foundation, 2012

Stevens-Johnson syndrome (SJS)

Toxic epidermal necrolysis (TEN)



Glossary And Pictures Of Clinical Manifestation Of Cutaneous Adverse Drug Reaction By NPRA

IVd
 T-cell-mediated neutrophilic
 inflammation

**ONSET OF REACTION:
 24-48 HOURS**

AMPICILLIN, ANTIFUNGALS,
 FLUOROQUINOLONES, SMX/TMP



By Dr. Manoj Kumar Nayak, 2021



By MDedge, 2016

Acute generalised exanthematous pustulosis (AGEP)

References:

Maker, J. H., Stroup, C. M., Huang, V., & James, S. F. (2019). Antibiotic hypersensitivity mechanisms. *Pharmacy*, 7(3), 122.