



Home → Health Topics → Drug Reactions

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Drug Reactions

Also called: Side effects

Most of the time, medicines make our lives better. They reduce aches and pains, fight infections, and control problems such as high blood pressure or diabetes. But medicines can also cause unwanted reactions, such as drug interactions, side effects, and allergies.

What is a drug interaction?

A drug interaction is a change in the way a drug acts in the body when taken with certain other drugs, foods, or supplements or when taken while you have certain medical conditions. Examples include:

- Two drugs, such as aspirin and blood thinners [<https://medlineplus.gov/bloodthinners.html>]
- Drugs and food, such as statins [<https://medlineplus.gov/statins.html>] and grapefruit
- Drugs and supplements, such as gingko and blood thinners
- Drugs and medical conditions, such as aspirin and peptic ulcers [<https://medlineplus.gov/pepticulcer.html>]

Interactions could cause a drug to be more or less effective, cause side effects, or change the way one or both drugs work.

What are side effects?

Side effects are unwanted, usually unpleasant, effects caused by medicines. Most are mild, such as a stomachache, dry mouth [<https://medlineplus.gov/drymouth.html>], or drowsiness, and go away after you stop taking the medicine. Others can be more serious. Sometimes a drug can interact with a disease that you have and cause a side effect. For example, if you have a heart condition, certain decongestants can cause you to have a rapid heartbeat.

What are drug allergies?

Drug allergies are another type of reaction. They can range from mild to life-threatening. Skin reactions, such as hives [<https://medlineplus.gov/hives.html>] and rashes [<https://medlineplus.gov/rashes.html>], are the most common type. Anaphylaxis [<https://medlineplus.gov/anaphylaxis.html>], a serious allergic reaction, is less common.

How can I stay safe when taking medicines?

When you start a new prescription or over-the-counter medicine, make sure you understand how to take it correctly [<https://medlineplus.gov/medicationerrors.html>]. Know which other medicines, foods, and supplements you need to avoid. Always talk to your health care provider or pharmacist if you have questions about your medicines.

Start Here

- Drug Allergy [<https://www.mayoclinic.org/diseases-conditions/drug-allergy/symptoms-causes/syc-20371835?p=1>] (Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/drug-allergy/symptoms-causes/syc-20371835?p=1>]
- Drug Interactions: What You Should Know [<https://www.fda.gov/drugs/resources-drugs/drug-interactions-what-you-should-know>] (Food and Drug Administration)
Also in Spanish [<https://www.fda.gov/drugs/resources-drugs/interacciones-de-medicamentos-lo-que-usted-debe-saber>]

- Drug Reactions [<https://familydoctor.org/drug-reactions/?adfree=true>] (American Academy of Family Physicians)
Also in Spanish [<https://es.familydoctor.org/reacciones-a-los-medicamentos/?adfree=true>]
- Medications and Drug Allergic Reactions [<https://www.aaaai.org/tools-for-the-public/conditions-library/allergies/medications-and-drug-allergic-reactions>] (American Academy of Allergy, Asthma, and Immunology)
Also in Spanish [<https://www.aaaai.org/tools-for-the-public/biblioteca-de-condiciones/biblioteca-de-alergia/reacciones-alergicas-a-medicamentos-y-farmacos-con>]

Diagnosis and Tests

- Allergy Skin Test [<https://medlineplus.gov/lab-tests/allergy-skin-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-alergias-en-la-piel/>]
- Anaphylaxis [<https://www.aaaai.org/tools-for-the-public/conditions-library/allergies/anaphylaxis>]
(American Academy of Allergy, Asthma, and Immunology)
Also in Spanish [<https://www.aaaai.org/tools-for-the-public/biblioteca-de-condiciones/biblioteca-de-alergia/anafilaxia-consejos-para-tener-en-cuenta>]
- Anaphylaxis-Like Reactions [<https://www.nationaljewish.org/conditions/anaphylaxis/reactions?modal=1>]
(National Jewish Health)
- Pharmacogenetic Tests [<https://medlineplus.gov/lab-tests/pharmacogenetic-tests/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/pruebas-farmacogeneticas/>]
- Pharmacogenetics: How Genetic Testing Can Guide Medicine Decisions
[<https://kidshealth.org/en/parents/pharmacogenomics.html>]  (Nemours Foundation)
Also in Spanish [<https://kidshealth.org/es/parents/pharmacogenomics.html>]
- Therapeutic Drug Monitoring [<https://medlineplus.gov/lab-tests/therapeutic-drug-monitoring/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/monitorizacion-de-farmacos/>]

Learn More

- Drug Allergies: What to Look Out For [<https://newsinhealth.nih.gov/2022/03/drug-allergies>]  (National Institutes of Health)
Also in Spanish [<https://salud.nih.gov/recursos-de-salud/nih-noticias-de-salud/alergias-a-medicamentos>]
- Medication/Drug Allergy [<https://www.nationaljewish.org/conditions/medication-allergy?modal=1>]
(National Jewish Health)

Treatments and Therapies

- Anaphylaxis: First Aid [<https://www.mayoclinic.org/first-aid/first-aid-anaphylaxis/basics/ART-20056608?p=1>]
(Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/first-aid/first-aid-anaphylaxis/basics/ART-20056608?p=1>]

Related Issues

- Did you know? Supplements and Medications Can Interact in Unexpected Ways
[<https://magazine.medlineplus.gov/article/did-you-know-supplements-and-medications-can-interact-in-unexpected-ways>] 
Also in Spanish [<https://magazine.medlineplus.gov/es/art%C3%ADculo/sabia-usted-que-los-suplementos-y-los-medicamentos-pueden-interactuar-de-formas-inesperadas>]
- Drug-Food Interactions [<https://familydoctor.org/drug-food-interactions/?adfree=true>]
(American Academy of Family Physicians)
Also in Spanish [<https://es.familydoctor.org/medicamentos-y-comida-cuando-no-pueden-ir-juntos/?adfree=true>]
- Drug-Nutrient Interactions and Drug-Supplement Interactions: Examples of Dietary Supplement Interactions
[<https://familydoctor.org/drug-nutrient-interactions-and-drug-supplement-interactions-examples-of-dietary-supplement-interactions/?adfree=true>]
(American Academy of Family Physicians)
Also in Spanish [<https://es.familydoctor.org/ejemplos-de-las-interacciones-de-suplementos-dieteticos/?adfree=true>]
- FDA Pharmacists Help You Use Medicines Safely [<https://www.fda.gov/consumers/consumer-updates/fda-pharmacists-help-you-use-medicines-safely>]
(Food and Drug Administration)
Also in Spanish [<https://www.fda.gov/consumers/articulos-para-el-consumidor-en-espanol/los-farmaceuticos-de-la-fda-ayudan-los-consumidores-usar-los-medicamentos-de-una-manera-segura>]

- Harmful Interactions: Mixing Alcohol with Medicines [<https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/harmful-interactions-mixing-alcohol-with-medicines>]  **Easy-to-Read** (National Institute on Alcohol Abuse and Alcoholism)
Also in Spanish [<https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/reacciones-adversas>]
- Know the Science: How Medications and Supplements Can Interact [<https://www.nccih.nih.gov/health/know-science/how-medications-and-supplements-can-interact/introduction>]  (National Center for Complementary and Integrative Health)
- Medication Interactions: Food, Supplements, and Other Drugs [<https://www.heart.org/en/health-topics/consumer-healthcare/medication-information/medication-interactions-food-supplements-and-other-drugs>] (American Heart Association)
- MedWatch, the FDA Safety Information and Adverse Event Reporting Program [<https://www.fda.gov/safety/medwatch-fda-safety-information-and-adverse-event-reporting-program>] (Food and Drug Administration)
- OTC Medicines: Know Your Risks and Reduce Them [<https://familydoctor.org/otc-medicines-know-your-risks-and-reduce-them/?adfree=true>] (American Academy of Family Physicians)
Also in Spanish [<https://es.familydoctor.org/medicamentos-de-venta-libre-conozca-sus-riesgos-y-reduzcalos/?adfree=true>]

Specifics

- Aspirin Allergy: What Are the Symptoms? [<https://www.mayoclinic.org/diseases-conditions/drug-allergy/expert-answers/aspirin-allergy/FAQ-20058225?p=1>] (Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/drug-allergy/expert-answers/aspirin-allergy/faq-20058225?p=1>]
- Grapefruit Juice and Some Drugs Don't Mix [<https://www.fda.gov/consumers/consumer-updates/grapefruit-juice-and-some-drugs-dont-mix>] (Food and Drug Administration)
Also in Spanish [<https://www.fda.gov/consumers/articulos-para-el-consumidor-en-espanol/el-jugo-de-toronja-y-algunos-medicamentos-son-una-mala-combinacion>]
- Neuroleptic Malignant Syndrome [<https://rarediseases.info.nih.gov/diseases/7195/neuroleptic-malignant-syndrome>] 
- Penicillin Allergy [<https://www.mayoclinic.org/diseases-conditions/penicillin-allergy/symptoms-causes/syc-20376222?p=1>] (Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/penicillin-allergy/symptoms-causes/syc-20376222?p=1>]
- Sulfa Allergy: Which Medications Should I Avoid? [<https://www.mayoclinic.org/diseases-conditions/drug-allergy/expert-answers/sulfa-allergy/FAQ-20057970?p=1>] (Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/drug-allergy/expert-answers/sulfa-allergy/faq-20057970?p=1>]

Genetics

- Stevens-Johnson syndrome/toxic epidermal necrolysis: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/stevens-johnson-syndrome-toxic-epidermal-necrolysis>] 
- Thiopurine S-methyltransferase deficiency: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/thiopurine-s-methyltransferase-deficiency>] 

Images

- Drug Eruption [<https://skinsight.com/skin-conditions/drug-eruption/?lmiw9cApl=1>] (VisualDX)

Clinical Trials

- ClinicalTrials.gov: Drug Hypersensitivity [<https://clinicaltrials.gov/search?cond=%22Drug+Hypersensitivity%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Drug Interactions [<https://clinicaltrials.gov/search?cond=%22Drug+Interactions%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Drug-Related Side Effects and Adverse Reactions [<https://clinicaltrials.gov/search?cond=%22Drug-Related+Side+Effects+and+Adverse+Reactions%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

Journal Articles

References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Assessing the Impact of Pharmacists' Interventions on Preventing and Resolving Drug-Related... [<https://www.ncbi.nlm.nih.gov/pubmed/40729081>]
- Article: [Translated article] Recommendations for the safe use of high-risk medications in... [<https://www.ncbi.nlm.nih.gov/pubmed/40716912>]
- Article: Recommendations for the safe use of high-risk medications in pediatrics. [<https://www.ncbi.nlm.nih.gov/pubmed/40716911>]
- Drug Reactions -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Chemical+and+Drug+Induced+Liver+Injury%22%5Bmajr%3Anoexp%5D+OR+%22Drug+Hypersensitivity%22%5Bmajr%3Anoexp%5D+OR+%22Metabolic+Side+Effects+of+Drugs+and+Substances%22%5Bmajr%5D+OR+%22Drug-Related+Side+Effects+and+Adverse+Reactions%22%5Bmajr%3Anoexp%5D+OR+%22Drug+Interactions%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bedat%5D+AND+%28patient+education+handout%5Bpt%5D+OR+guideline%5Bpt%5D+OR+clinical+trial%5Bpt%5D%29++NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+>

Reference Desk

- MedlinePlus: Drugs, Herbs, and Supplements [<https://medlineplus.gov/druginformation.html>] (National Library of Medicine) - Information on prescription and over-the-counter medicines and supplements
Also in Spanish [<https://medlineplus.gov/spanish/druginformation.html>]

Find an Expert

- Food and Drug Administration [<https://www.fda.gov/>]

Children

- Drug Eruption (Pediatric) [<https://skinsight.com/skin-conditions/drug-eruption-pediatric/?lmiw9cApl=1>] (VisualDX)
- Penicillin Allergy (For Parents) [<https://kidshealth.org/en/parents/penicillin-allergy.html>] (Nemours Foundation)
Also in Spanish [<https://kidshealth.org/es/parents/penicillin-allergy.html>]

Older Adults

- Medications Older Adults Should Avoid or Use With Caution [<https://www.healthinaging.org/medications-older-adults/medications-older-adults-should-avoid>] (AGS Health in Aging Foundation)

Patient Handouts

- Angioedema [<https://medlineplus.gov/ency/article/000846.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000846.htm>]
- Drug allergies [<https://medlineplus.gov/ency/article/000819.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000819.htm>]
- Drug-induced diarrhea [<https://medlineplus.gov/ency/article/000293.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000293.htm>]
- Drug-induced tremor [<https://medlineplus.gov/ency/article/000765.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000765.htm>]
- Taking multiple medicines safely [<https://medlineplus.gov/ency/patientinstructions/000883.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000883.htm>]



MEDICAL ENCYCLOPEDIA

Anaphylaxis [<https://medlineplus.gov/ency/article/000844.htm>]

Angioedema [<https://medlineplus.gov/ency/article/000846.htm>]

Drug allergies [<https://medlineplus.gov/ency/article/000819.htm>]

Drug-induced diarrhea [<https://medlineplus.gov/ency/article/000293.htm>]

Drug-induced tremor [<https://medlineplus.gov/ency/article/000765.htm>]

Erythema multiforme [<https://medlineplus.gov/ency/article/000851.htm>]

Hives [<https://medlineplus.gov/ency/article/000845.htm>]

Nausea and vomiting - adults [<https://medlineplus.gov/ency/article/003117.htm>]

Pharmacogenetic testing [<https://medlineplus.gov/ency/article/007795.htm>]

Pharmacogenetics [<https://medlineplus.gov/ency/article/007794.htm>]

Rashes [<https://medlineplus.gov/ency/article/003220.htm>]

Serum sickness [<https://medlineplus.gov/ency/article/000820.htm>]

Stuffy or runny nose - adult [<https://medlineplus.gov/ency/article/003049.htm>]

Swelling [<https://medlineplus.gov/ency/article/003103.htm>]

Taking multiple medicines safely [<https://medlineplus.gov/ency/patientinstructions/000883.htm>]

Wheezing [<https://medlineplus.gov/ency/article/003070.htm>]

Related Health Topics

Allergy [<https://medlineplus.gov/allergy.html>]

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Over-the-Counter Medicines [<https://medlineplus.gov/overthecountermedicines.html>]

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