Two patients take the exact same medications. One manages just fine. The other ends up in the emergency room. Same drugs, same doses, so what made the difference? The answer often comes down to vulnerability: the individual, social, and system-level factors that shape how safely someone can navigate polypharmacy.

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SafePolyMed.eu

Improving Safety in Polymedication by Managing Drug-Drug-Gene Interactions

Safety in Polypharmacy training 2026

Session 4 - Video 1/2

Patient Vulnerability Factors

Clinical Risk Factors in Polymedication: Why Some Patients Are More Vulnerable

Rachel Giles, Nadia Malliou, Bojana Mirosavljevich, Olga Millán

LeukaNET Leukemia Advocates Network

Patvocates PATIENT ENGAGEMENT IS IN OUR DNA

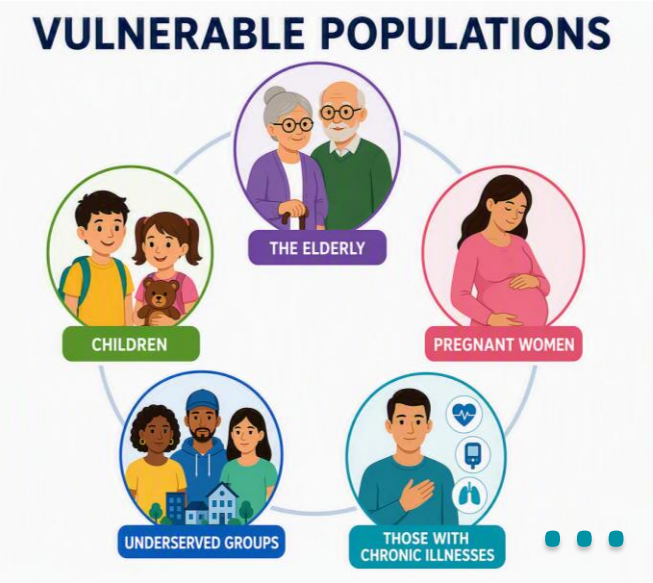
Funded by the European Union

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What do we mean by “vulnerability”?

An increased risk of poor health outcomes due to individual, social, or systemic factors

- Age
- Chronic illness
- Disability
- Language barriers
- Poverty
- Lack of access
- Discrimination



Vulnerability highlights the susceptibility to harm or adverse effects, especially with polymedication.

https://dictionary.cambridge.org/dictionary/english/vulnerability

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Adherence: more than just “following orders”

Adherence is how closely a person’s behaviour matches the recommendations agreed with a healthcare provider

COMPLIANCE

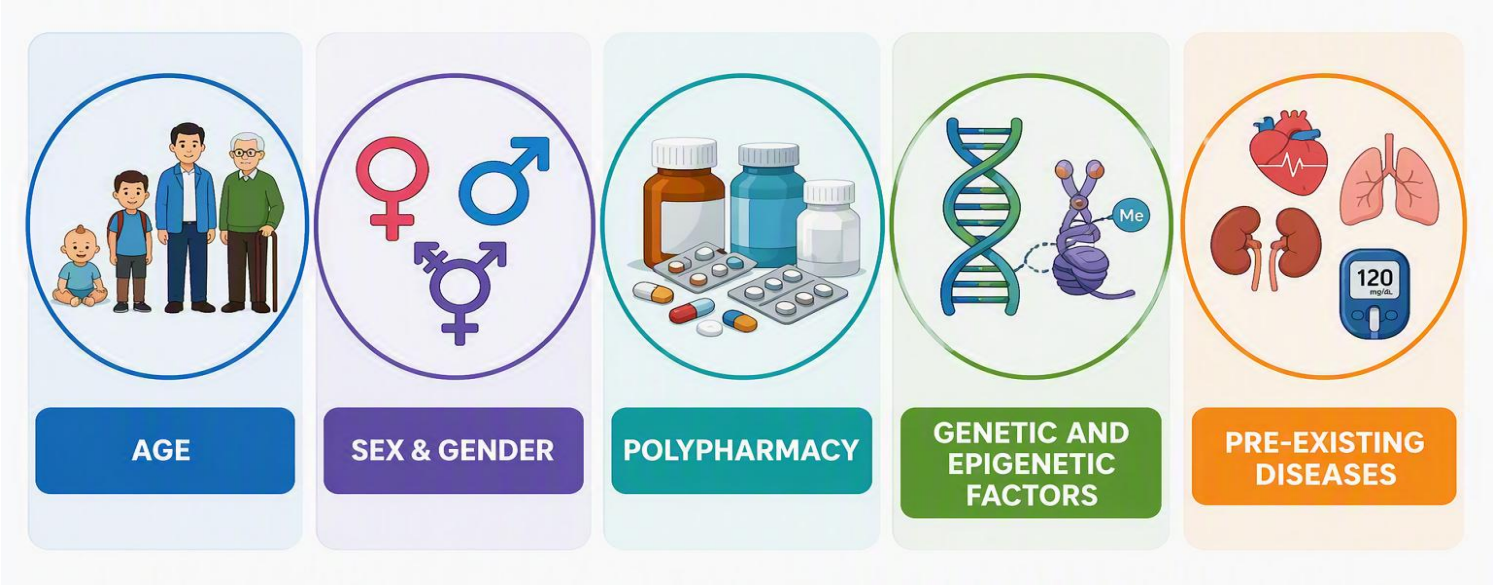
Doctor hands a prescription to a passive patient. Instructions to follow, not active agreement.

ADHERENCE

Doctor and patient in conversation, both holding the same plan. An active, agreed partnership.

The difference is agreement, not just instruction.

What increases the risk of drug-drug interactions?

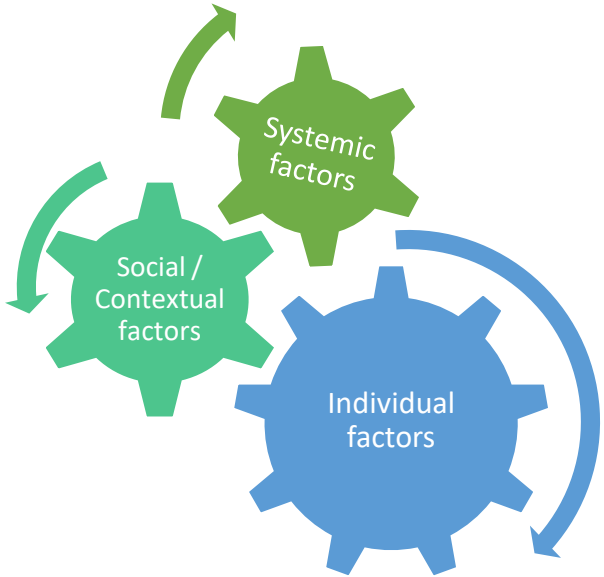


DDI RISK

https://link.springer.com/article/10.1007/s40266-021-00898-8
https://www.thelancet.com/journals/lanhl/article/PIIS2666-7568(21)00054-4/fulltext

The three layers of clinical risk

Three interconnected layers



Individual pressures shape social & contextual factors, which are reflected in systemic issues.

Individual factors

Traits that make each patient's response to medication genuinely unique. All centred on the individual.



Race & Ethnicity



Age



Body Weight



Depression



Genetics

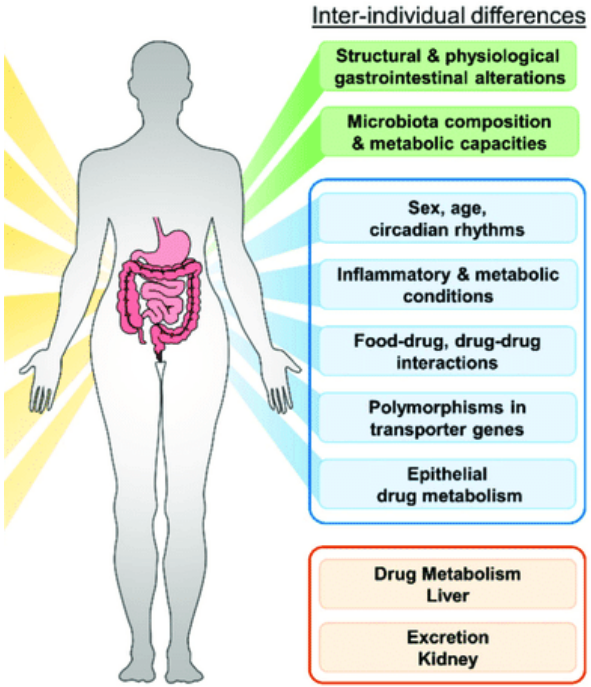


Image: adapted from Zietek T. et al. 2021 Pharmaceutics, Aug 17;13(8):1280. doi: 10.3390/pharmaceutics13081280 - CC BY 4.0

https://safetyinhealth.biomedcentral.com/articles/10.1186/s40886-018-0075-z
https://bsd.biomedcentral.com/articles/10.1186/s13293-022-00420-8

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Social and contextual factors





Older women

Lower clearance rates of drugs. Women are generally at greater risk for ADEs. Routinely excluded from clinical trials



Older adults

Greater risk of multimorbidity. More chronic conditions, more medications. Multiple specialists without a primary care physician



Younger adults and children

Multiple treatments and various modalities



Patients with mental health

Psychotropic medications with high ADR plus more medications to mitigate side effects

https://www.thelancet.com/journals/lanhl/article/PIIS2666-7568(21)00054-4/fulltext
https://www.aafp.org/pubs/afp/issues/2019/0701/p32.html

Biological sex-related differences

Social / Contextual factors

1992: Legally required to include women in clinical trials

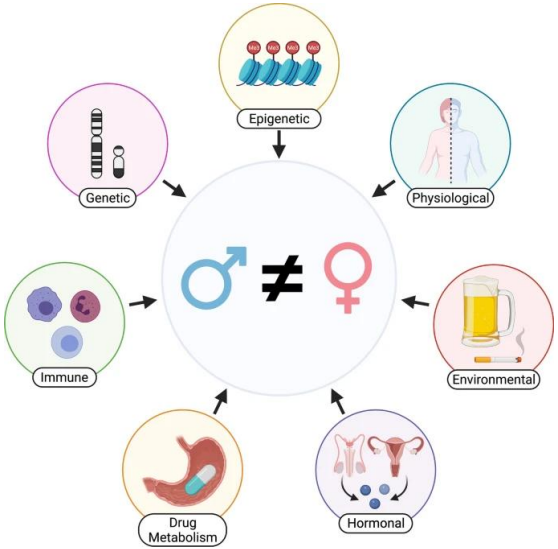


Image: adapted from Fisher, J.L. et al. 2022, *Biol Sex Differ* **13**, 13 (2022). https://doi.org/10.1186/s13293-022-00420-8 - CC BY 4.0

- **Different body composition**
- **Longer QT intervals**
- **Higher fat content**
- **Hormonal factors**

Decades of drug-safety data were generated almost exclusively in men, making women potentially more susceptible to certain interactions.

Systemic factors





Poor medical record keeping

E.g., discontinued medications are not removed from the record and refilled automatically.



Poor transitions of care

- Transition from paediatric to adult care.
- Patients discharged from hospital.
- Migrants.
- Exacerbated with poor health literacy, language barriers.



Challenge of prescribing

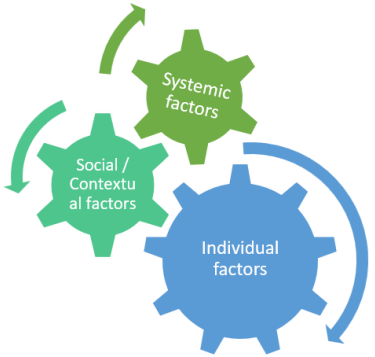
Lack of communication between HCPs.

Specialists may only look for and treat problems related to their specialty rather than viewing the patient as a whole.

https://www.aafp.org/pubs/afp/issues/2019/0701/p32.html

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Key Takeaways



- Clinical risk in polypharmacy rarely comes from just one place
- It is a combination of individual traits, social and contextual circumstances, and systemic gaps in the healthcare system
- As a patient, caregiver, or healthcare provider, learn to spot which “gear” needs attention

Coming up next: Video 2 — Health equity and the hidden systemic drivers behind so much of this vulnerability.

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Credits & Attributions

Authors

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Figures

- Inter-individual differences illustration adapted from Zietek T. et al. 2021 Pharmaceutics, 13(8):1280. doi: 10.3390/pharmaceutics13081280 - CC BY 4.0
- Sex-biased drug response illustration adapted from Fisher, J.L. et al. 2022, Biol Sex Differ **13**, 13. doi.org/10.1186/s13293-022-00420-8 - CC BY 4.0
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