

# Drug Interactions and Their Impact on Treatment Outcome

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# Outline

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- Introduction
- Types of Drug Interaction
- Finding from literature
- Impact to our health
- Mechanisms to minimize risk of Drug interactions
- Conclusion

# Introduction

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- Drug interaction is a pharmacological effect, alterations of effect, when two or more drugs are taken concurrently.
- Drug interactions can decrease or increase the action of either drug or both drugs or cause adverse affects and unintended consequences.



# Types of Drug Interactions

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- ✓ **Drug and Disease Interaction** – this is a situation where a drug used to treat a particular disease causes worsening of another disease.
- ✓ **Drugs and Food Interaction** – this is a situation that happens when something you eat or drink affects the effect of the drug being taken.
- ✓ **Drug – Drug interaction** - is a pharmacological or clinical response to the administration of two or more drugs concurrently that are different from the response when individually administered.



# Drug - Drug Interaction Classification based on severity

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- ❑ **Mild** - do not usually require a change in therapy
- ❑ **Moderate** - cause considerable change in patients' clinical status and extension of hospital stay and may require alteration of therapy.
- ❑ **Severe** –cause life-threatening clinical response or prolonged or permanent damage, and may require emergency care and alteration of the original treatment.



# Drug-Drug Interaction Classification based on mechanism of action

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- **Pharmacokinetic drug–drug interactions:** when one drug changes the systemic concentration of another drug, altering ‘how much’ and for ‘how long’ it is present at the site of action.
- **Pharmacodynamics drug–drug interactions:** when interacting drugs have either additive effects, in which case the overall effect is increased, or opposing effects, in which case the overall effect is decreased or even ‘cancelled out’.



# Studies in Ethiopia

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- Prevalence drug- drug interactions in Ethiopian hospitals was 72.2%. (95% CI: 59.1, 85.3%); of which 25.1% were severe. A systematic review and meta analysis. (*Ayenew et al , 2020*)
- A study done in Amhara region East Gojjam Zone: Prevalence rate of drug–drug interaction was 43.7% and 50% of interactions was moderate . (*Tessema et al, 2021*)
- A study done in northern part of Ethiopia: Severe drug- drug interactions reported in 9.63% (*Gebretsadik et al 2017*)
- ✓ *Risk factors include:* polypharmacy, old age, co-morbidity, length of hospital stay, poor organ functions (kidney, liver), alcohol consumption, smoking, unhealthy diet



# Impact of Drug Interaction on Treatment Outcome

- **Adverse effect-** If there is interaction between concomitantly administered medications, the intended effect can be exaugurated
- **Failure of therapy** - If the interaction decreases the effect of the other drug or when it fastens the excretion, the intended treatment may fail
- **Increase length of stay in the hospital** – If the interaction affects the therapeutic effect of drugs, a prolonged treatment and/or a lengthy hospital stay may be required
- **Affect Internal organs- drug interactions** that affect the metabolism and excretion through kidney and liver can cause additional burden on the organs that may damage/fail the organs



## Measures patients can take to minimize the risk of Drug interactions

- Take each medications properly in accordance to doctor's advice
- Know how to take drugs in relation to meals
- Re-fill all your prescriptions at the same pharmacy, in as much as possible
- Be suspicious about supplements; they can interact with prescribed drugs
- Limit alcohol and cigarette consumption
- Consult health professionals/doctors when in doubt



# Conclusion

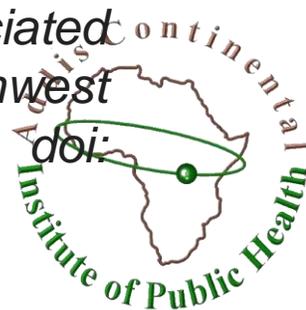
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- ❑ Drug interactions are very common globally and in Ethiopia.
- ❑ Medications need to be carefully planned, especially if the person is taking multiple drugs
- ❑ Persons taking medications must exercise healthy lifestyle and diet.
- ❑ Properly consult doctors about all the medications being taken.



# Reference

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# Thank you