USING PRECISION MEDICINE TO ADDRESS THE CHALLENGES OF POLYPHARMACY

POLYPHARMACY:
- Regular use of at least five medications
- Growing as the age of the population increases
- The risk of adverse effects increases with increasing numbers of medications

ACUTE COMORBIDITY:
- Reduced compliance
- Renal function
- Hepatic function

GENETICS
- Variant of genes involved in drug metabolism or disposition and other genes involved in drug efficacy or safety

PHARMACOGENETICS
- Pharmacodynamics
- Pharmacokinetics

WEIGHT
- Dose adjustment
- Off-label use

GENDER
- Age

ENIRONMENT
- Gene-environment interactions
- Socioeconomic conditions
- Toxins

DRUG-DRUG INTERACTIONS
- CYP450 enzymes implicated in the metabolism of a drug can be inhibited or induced by concomitant drugs

CHALLENGES TO ADDRESS
- Reduce therapeutic failure
- Avoid adverse drug reactions and inappropriate prescribing of additional drugs
- Increase adherence and compliance
- Increase inclusion and equity: consider needs of groups under-represented in clinical guidelines

ASSETS
- Training and education:
  - Increase knowledge of common causes of medication errors
  - Promote active involvement of patients and family members
- Advances in technology:
  - Reduced sequencing costs
  - Computerized information systems

IMPLEMENTING PRECISION MEDICINE IN CLINICAL PRACTICE MEANS THAT PRESCRIBING TAKES INTO CONSIDERATION:

- Reduce therapeutic failure
- Avoid adverse drug reactions and inappropriate prescribing of additional drugs
- Increase adherence and compliance
- Increase inclusion and equity: consider needs of groups under-represented in clinical guidelines

PRECISION MEDICINE:
- Identifying safer and more effective therapeutic approaches based on genetic, environmental and lifestyle factors

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