

**DRUG SAFETY, PHARMACOECONOMICS AND PHARMACOEPIDEMOLOGY**

The number of new therapeutic agents approved by the Food and Drug Administration (FDA) is rapidly increasing. With the availability of these new agents and the widening use of other agents, pharmaceutical costs have grown more than any other sector of healthcare, as have concerns about adverse drug events (ADEs) from these agents. Hospitalists who strive to prescribe evidence based therapies must understand how to evaluate the benefits, harms, and financial costs of drug therapy for individual patients. Hospitalists promote and lead multidisciplinary teams to implement protocols, guidelines and clinical pathways that recommend preferred drug therapies. Hospitalists should be able to interpret outcomes measurement (pharmacoepidemiology) and economic analyses (pharmacoeconomics).

**KNOWLEDGE**

*Hospitalists should be able to:*

- Discuss principles of evaluating clinical efficacy, pharmacokinetics, dosing, drug and food interactions, and adverse effects that can affect the hospitalist's choice of agent, dosing frequency and route of administration.
- Explain options for measuring medication benefit.
- Explain the evidence based rationale for prophylactic drug therapies, comparing the costs, risks and benefits of competing strategies.
- Explain how pharmacodynamics change with age, liver disease and renal insufficiency.
- Describe the incidence of various types of ADEs in hospitalized patients, which may include adverse effects, interactions, and errors.
- Explain the role of polypharmacy in the development of delirium, ADEs, and noncompliance.
- Describe how the overuse of broad spectrum antibiotics promotes resistance.
- Describe key principles for interpreting pharmacoeconomic analyses including inflation rate, discounting rate, incremental analysis, sensitivity analysis, and inherent bias.
- Describe the clinical efficacy, safety profile, pharmacokinetics, dosing, drug and food interactions, and costs of commonly prescribed medications and biological agents (e.g., blood products).

**SKILLS**

*Hospitalists should be able to:*

- Prescribe medications for elderly hospitalized patients based on altered pharmacokinetics and co-morbid conditions.
- Apply treatment guidelines to individual patients in the use of antibiotics to reduce cost and the emergence of resistance.
- Minimize ADEs by using best practice models of medication ordering and administration.
- Document medications accurately and legibly taking into account approved abbreviation, and indicate start and stop dates for short-term medications.
- Arrange adequate follow-up for therapies that require outpatient monitoring, dosage adjustment, and education (e.g., anticoagulants, antibiotics).
- Balance the benefits, risks, and cost of prophylactic therapies, which may include venous thromboembolism and stress ulcer prophylaxis
- Convert intravenous medications to the oral route when indicated to promote patient safety, satisfaction, and reduce cost.
- Standardize blood transfusion practices.

**ATTITUDES**

*Hospitalists should be able to:*

- Educate patients and families about the importance of acquiring medication information and communicating medication history to clinicians at each transition of care.
- Ensure patients and families comprehend medication instructions.
- Recognize the benefits and hazards of drug therapy.
- Recognize the risk of ADEs at the time of transfer of care.

- Reconcile outpatient medications with inpatient medications at the time of admission and discharge.
- Reconcile all documentation of medications at the time of discharge.
- Integrate knowledge of benefits and risks of drug therapies into medical decision making for individual patients, and routinely reassess decisions.
- Critically assess and apply results of new outcome studies to improve drug treatment and patient safety for individual patients.
- Collaborate with pharmacists to improve drug safety for individual patients and reduce hospital costs.
- Apply the principles of pharmacoepidemiology and drug safety to patient management.
- Lead, coordinate and participate in the development, use, and dissemination of local, regional, and national practice guidelines and patient safety alerts pertaining to the prevention of complications.
- Apply the principles of pharmacoepidemiology and pharmacoconomics to implement practice guidelines and protocols for a hospital.