Age-related changes in pharmacokinetics and pharmacodynamics: basic principles and practical applications
LESSON 1. Introduction to Pharmacokinetics and Pharmacodynamics. C. OBJECTIVES. After completing Lesson 1, you should be able to:

Clinical pharmacokinetics is the application of pharmacokinetic principles to the safe and effective therapeutic management of drugs in an individual patient. Primary goals of clinical pharmacokinetics include enhancing efficacy and decreasing toxicity of a patient's drug therapy. In this standpoint as subtle changes in serum concentrations may result in marked changes in drug response. Figure 1-10 shows the relationship between theophylline concentration (x-axis, on a logarithmic scale) and its pharmacologic effect, (changes in pulmonary function [y-axis]). Age-related pharmacokinetics, pharmacodynamics, and prescribing errors. Everybody who prescribes for older people needs to be aware of the important physiological changes that occur with aging that affect drug pharmacokinetics (absorption, distribution, metabolism, and excretion) and pharmacodynamics (the effect a drug has on the body). These changes predispose older people to adverse outcomes arising from prescribing errors. Figure 2 summarizes the key pharmacokinetic changes associated with old age. Figure 2 Age-related changes in pharmacokinetics. Mangoni AA, Jackson SH. Age-related changes in pharmacokinetics and pharmacodynamics: basic principles and practical applications. Br J Clin Pharmacol. 2004;57(1):6–14. Illness • Basic pharmacokinetics and pharmacodynamics. principles • Pharmacology, pharmacokinetics, and spectrum of. activity of antimicrobial agents • Basic drug properties of commonly used drugs in critically ill patients • Pharmacogenetic testing and results interpretation. Table of common laboratory
reference values. In summary, critical illness may lead to changes in endogenous protein concentrations, tissue perfusion, and total plasma volume. The extent of those changes on each drug depends ultimately on the drug's properties. Table 1-1 describes drugs commonly used in critical care, their characteristics that may affect volume of distribution, and the potential effects caused by critical illness.