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Evidence-based practice underpins the provision of healthcare to patients from the perspective of practitioners, payers, and policy makers. The principles of evidence-based medicine are necessary to support decision making at all levels and to inform the change agenda that is driving the search for better quality, decreased medical error, and improved outcomes, all the while maximizing value for money. Laboratory medicine has an important part to play in this global healthcare agenda and is crucial to achieving these goals.

Laboratory medicine has a strong foundation in the translation from basic and analytical science to clinical utilization as biomarkers for disease and strategies for patient care. In part, this translation includes optimizing quantification of the biomarkers with regard to accuracy, precision, and other technical characteristics. However, technical data do not prove clinical utility, let alone effectiveness. Furthermore, the more traditional model of healthcare delivery has been resourced and managed in a “silo approach,” with the fiscal performance being managed in the same way. Consequently, debate surrounding introduction of new tests, devices, and services has tended to focus on cost in isolation, rather than on value for clinical utility and integrated contributions to the outcome—let alone the change in practice that might be required to deliver that outcome.

The challenges facing healthcare can be met only by adopting an evidence-based approach to the practice of laboratory medicine. This book explains the core principles and how they can be applied in all aspects of practice from study design, reports, and critical appraisal of data to integration of research data into clinical guidelines, teaching concepts to students at all levels of training, and use in day-to-day practice. The context of the discussion is designed to span the patient’s journey and the interfaces among the laboratorian, the clinician, and the policy makers.
The application of pharmacogenomic principles to medication use is beginning to radically change the way drugs are selected and monitored. Those who wish to evaluate their knowledge in the basics of the subject and in applications such as drug selection and drug avoidance will therefore find Referenced Review Questions in Pharmacogenomics an invaluable guide to this rapidly evolving field.

The book features three sections:
- Questions
- Answers and Explanation
- References (provided as a basis for the answers and to encourage the reader to review the references and expand his/her knowledge or area of expertise)

The Questions section is further subdivided into the following topics: The Basics; Cytochrome P450s and Other Enzymes; Receptors; N-Acetyl Transferases; Asthma and Other Pulmonary Diseases; Neurology; Antimicrobials and Infectious Disease; Immunology; Oncology; Analgesics, Sedatives, Hypnotics, and Anesthetics; Psychiatry; Antiinflammatory Drugs; Oral Hypoglycemics; Glucose-6-phosphate Dehydrogenase; Anticoagulants; Inflammatory Bowel Disease and Other Gastrointestinal Drugs; Bone and Mineral Metabolism; and Cardiovascular Drugs. A large portion of the specific information on individual drugs is derived from the pharmaceutical industry, which performs the major ity of the pharmacogenomics testing as part of pre-market approval.

Because the emerging concept of personalized medicine is placing significant demands on physicians and on pharmacists in particular, they—as well as academic and practicing clinical chemists and pathologists who have an interest in pharmacogenomics—will find Referenced Review Questions in Pharmacogenomics especially useful. Technologists and other healthcare professionals who have an interest in molecular medicine and who would like to broaden their professional horizons will also find this text enlightening.
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Monarch Lifesciences

The Nucleic Acid Programmable Protein Array
Joshua LaBaer
Harvard Medical School Institute of Proteomics

The DxBox: A Low-cost POC Device
Paul Yager
University of Washington

PETing the Molecular Zoo
Claude Nahmias
University of Tennessee

Coordination Chemistry of Molecular Imaging
Thomas Meade
Northwestern University

3-D Imaging in Molecular Diagnostics
Barry Hanover
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Attomolar Diagnostics in Complex Matrices
Lloyd Whitman
U.S. Naval Research Laboratory

POC Magnetic-labeled Biosensor
Thea van der Wijk
Philips Research

Magnetic Relaxation Switches for Analyte Detection
Lee Josephson
Massachusetts General Hospital

Volume vs. Detection Tradeoff in Microfluidic Applications
Andreas Manz
ISAS Institute for Analytical Chemistry

Nano-fluidic-enabled, Single-molecule Imaging for DNA
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