bration procedures for external beam radiotherapy. It is limited to dose measurements free-in-air or in homogeneous phantoms for single beams, and the quality control of various beam parameters. General quantities used in medical physics such as TAR, TMR, depth dose, SAD are defined briefly, but in general this document is directed towards medical physicists who are already familiar with dosimetry equipment and procedures.

What NCRP-69 does provide is an excellent checklist for calibration and quality control of standard radiation therapy treatment machines. Discussions of secondary standards and transfer dosimetry are presented, for example, and quality control procedures are outlined and illustrated in sufficient detail to make the handbook quite useful and comforting to a consulting physicist. The inclusion of a section on uncertainties in the delivery of absorbed dose is very important in this regard as it puts the calibration procedure in perspective. The real purpose of the NCRP is to make recommendations and NCRP-69 does an important job in this regard by recommending intervals for the various tests and acceptance values, complete with the now familiar "shalls" and "shoulds."

One shouldn't read this book for a treatise on dosimetry or the theory of ion chambers, but there are some nice moments in this section. For example, the Bragg-Gray approach to C_λ is very clearly presented, and the basic concepts of exposure and absorbed dose are rigorously defined and explained. The material on calorimetry, chemical dosimetry, and solid state dosimetry is extremely cursory, however, and the brief mention of neutron contamination is particularly disappointing in its almost total lack of information. References are given in each of these sections, of course, but such brevity in a report purporting to cover dosimetry up to 50 MeV seems questionable.

This report will be very useful for physicists involved in the routine calibration and quality control of radiation therapy machines in the energy ranges common to most departments. It provides a thorough and valuable annotated checklist of suggested procedures along with a good discussion of the rationale for each. The report is well written and well edited. It is hoped that the recommendations so clearly presented in this report will be incorporated into the QC protocols of all practicing medical physicists.

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NUCLEAR MEDICINE TECHNOLOGY EXAMINATION REVIEW. D. L. Gryniewicz, S. Spies, and D. R. Martin. New York, Arco Publishing Inc., 1981, 155 pp

As implied in the title, this book is a review of nuclear medicine specifically aimed at preparation for examination. Its usefulness, however, does not end there. As a technologist of some years' experience with all three certifications, this reviewer also sees practical application for the "seasoned veteran." The book has been updated from the multiple choice reviews available to the present, and the amount of information available with reference to little used, if not already obsolete, radiopharmaceuticals is minimal (as it should be), but not excluded. Some information on older agents is useful to remind one of the reasons why they are no longer widely used.

The questions are presented in a topical format similar to most nuclear medicine reference texts recommended for students, making it somewhat easier to test oneself on recall of information by organ system. At the same time, the experienced technologist seeking to "brush up" on a specific area of nuclear medicine will find it easy to locate that subject without having to test him or herself on the entire text.

The book is divided into three sections including fundamentals, clinical nuclear medicine, and in vitro studies, and the length of each section varies from an almost insignificant six questions on placental localization to 197 questions on instrumentation. There are a total of 1200 questions with more than half dedicated to the fundamentals including chapters on mathematics, basic sciences, instrumentation, radiopharmacy, radiobiology, and quality control. The clinical section consists of nine chapters with an average content of 63 questions for the central nervous, thyroid, cardiovascular, pulmonary, digestive, renal, and osseous systems. The chapters on venography and placental localization contain only eight and six questions, respectively. The single chapter on in vitro testing consists of 192 questions covering not only the standard thyroid tests, Schilling, and red cell studies, but also a variety of radioimmunoassay (RIA) techniques.

The information appears quite current and applicable to the field today since it includes sections on nuclear cardiology and specific references to computer applications. Although the section on in vitro testing includes more references to RIA than previously seen in other books of this type, it could be more complete with respect to specific RIA techniques in order to approach the level of knowledge needed to score well on the NMTCB exam.

The section on fundamentals is particularly useful for the practicing technologist concurrent with the daily clinical applications of our field, but not necessarily with the basic science behind it. Very little outdated information is presented with one notable exception—placental localization is a nice addition in the historical sense, but not a widely used procedure now. Some of the more recent advances in techniques concerned with GI nuclear medicine are not covered—specific examples are gastric emptying studies, gastroesophageal reflux examinations, and techniques for imaging GI bleeding. The authors might keep this in mind if a revised edition is planned.

The inclusion of many excellent, though brief, explanations of why a certain choice is the correct answer is very helpful and makes the review more than an exercise in simple recall but an informative test as well. Although the short answers point out the authors' reasons for a correct answer, follow-up on weak areas of knowledge is left up to the reader, which is as it should be. The bibliography, containing 29 references for more thorough investigation into specific areas of interest, facilitate further study.

Although information is timely and scores for good technologists will range from the 80s to the 90s, no one will score consistently perfect scores in all areas, so this review can be an aid in identifying weak areas of recall and can pinpoint areas for improvement. There are some typographical errors in the answer key, which detract slightly from an otherwise useful tool in examination preparation and refresher for practicing technologists.

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