

NUCLEAR MEDICINE TECHNOLOGY REVIEW. Sheila Dworkin Rosenfeld and Susan A. White. Chicago, Year Book Medical Publishers, Inc., 1977. 250 pp, illustrated, \$13.95.

The authors state in the preface that their text is intended to be a supplemental aide in registry preparation and a review of nuclear medicine technology for students during their training period. In addition to these functions, the text also fulfills the role of an abbreviated reference book. The approach is direct and concise and provides an easy reference for a number of topics.

The Basic Physics sections of the book is presented with a glossary of terms and schematics describing decay and modes of interaction. The mathematics of decay and instrumentation are presented in the same style, utilizing straightforward schematics and concise outline plans. Suggested instrument quality control measures are a helpful addition.

The Radiopharmaceutical chapter deals with the characteristics of Tc-99m radiopharmaceuticals. Specific quality control procedures for radiopharmaceutical purity, however, are not offered. Hematologic-related procedures and thyroid-function tests are covered adequately, comprising 57 of the 250 pages.

The remainder of the text is devoted primarily to imaging. Commonly used imaging procedures are outlined specifying indications, patient preparation, collimation, dynamic study, static study, anatomic landmarks, interpretation, and radiopharmaceuticals used (chemical form, administered activity, T ½ gamma energy, other emissions, dose-to-scan time, method of localization, advantages and disadvantages). Several scan illustrations are offered for each. Unfortunately, radiopharmaceutical purity is not discussed as related to image quality. This information would have been desirable at least in reference to Tc-99m labeled phosphate bone scans with possible high-soft tissue uptake of reduced Tc-99m and gut localization of free Tc-99m. Cardiac function studies and myocardial imaging are discussed in detail, and several examples of computerized studies are included. The text concludes with short sections on therapy, radiation protection, licensing, radiobiology, and basic statistics. A glaring omission is the lack of any mention of dose calibrators. As an integral form of instrumentation in an imaging department, a discussion of quality control, linearity check, etc., would have been appropriate.

While radioassay does not usually comprise more than 10% of any nuclear medicine registry exam, it often maintains equal, if not major, standing in a nuclear medicine department and as such must be presented in technology training. The authors have devoted 3% of their review text to radioassay, discussing only hematology-related procedures and thyroid-function tests at any length. The text is exhaustive in its coverage of most other aspects of nuclear medicine, and exhibits a fresh approach to the material, but the user will need to supplement the radioassay portion.

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TUMOUR LOCALIZATION WITH RADIOACTIVE AGENTS. International Atomic Energy Agency Proceedings, Vienna, Austria, 1976. 130 pp, \$10.00.

This fine text contains the proceedings of the IAEA Meeting held in Vienna, Austria, December 9-13, 1974 on the subject indicated in the title of the text. There were 12 sessions at the meeting and the contents of each session included an excellent abstract, a bibliography, and the discussion. Numerous appropriate illustrations and figures are contained throughout the proceedings. The meeting participants are listed at the back of the publication.

The first session reviews several aspects of tumor localizing agents (TLA): a) the principal applications of present TLA, mainly the detection of malignant tumours; b) the differential diagnostic considerations of TLA uptake; c) the physical characteristics of the radionuclide used as a tracer; d) the amount of radiation a patient will receive from a particular TLA; e) tumor detection statistics in relation to analyses of images obtained in clinical measurements; f) nuclear medicine imaging equipment—commercial and experimental; and g) possible mechanisms of accumulation of TLA in tumors.

Session Two provides a detailed discussion of the factors influencing uptake of TLA in tumors and other tissues. These factors include: a) vascularity, blood flow, and interstitial fluid space; b) uptake of a protein-bound form of the TLA; c) cell proliferation; d) absence or presence of a carrier; e) cell and capillary permeability; f) presence or absence of an infectious process; g) pH; and h) specific properties of the tissues being studied.

The other sessions, but not the last, reviewed the application of routinely used TLA and research TLA. The former group of TLA include the following nuclide compounds: I-131 for thyroid carcinoma, [¹²⁵I] 19-iodocholesterol for the study of a variety of adrenal tumors and adrenal hyperfunction, Tc-99m (except antibiotics), In-113m, In-111 including bleomycin (an antibiotic), Hg-197, and Ga-67. The research TLA include the following compounds: bleomycin labeled with Tc-99m, Ca-57, or other radionuclides; tetracycline labeled with Tc-99m, radiolanthanides, radionuclide labeled globulins (e.g. I-131 CEA), and cyclotron-produced short-lived radionuclides (O-15, N-13, and C-11).

TLA; c) cell proliferation; d) presence or absence of a sion of this radionuclide, including its diagnostic value. The session on radiolanthanides has sections especially reviewing Yb-169 citrate and Tm-167.

Several sessions, including those on Se-75, Hg-197, Ga-67, and In-111, discuss the usefulness of these TLA for following patients who receive chemotherapy and/or radiation therapy. Accumulation of TLA in tumorous areas may occur before treatment. After radiotherapy and/or chemotherapy, TLA will diminish greatly or become absent; this would indicate therapeutic effect.

Mentioned through the text, but particularly discussed in the last session is the future development of TLA from several directions: animal tumor model systems, radio-

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nuclide-labeled antibodies against specific tumour antigens, and tumour treatment.

This text contains 12 excellent sessions which will provide the reader with a large amount of valuable information on TLA. This publication reviews the topic of TLA from known daily applications to potential uses. It should be "must" reading for nuclear medicine physicians, and would be of value to other physicians—particularly cancer specialists—to help them keep abreast on the applications of TLA in the initial and followup evaluation of the cancer patient.

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MANUAL ON RADIATION PROTECTION IN HOSPITALS AND GENERAL PRACTICE, VOL. 4: RADIATION PROTECTION IN DENTISTRY. K. Koren and A. H. Wuehrmann. Geneva, Switzerland, World Health Organization, 1977. 52 pp, \$4.00.

The purpose of the *Manual on Radiation Protection in Hospitals and General Practice*, of which this is volume 4, is to present information on a subject that has received little attention in the international literature. The manual is a

joint effort of the International Labour Organization, the International Atomic Energy Agency, and the World Health Organization.

The volume includes nine chapters and a brief index. The first two chapters discuss the need for radiation protection in the field of dentistry and responsibilities of the dentist and the public. The next four chapters deal with technical matters such as the equipment used, radiographic film, film processing, and radiographic techniques. Chapters seven and eight discuss the exposure dose received by the patient and methods to insure that excessive radiation will not be received by the patients or technical staff. The last chapter details the educational training needed to control radiation exposure in dentistry.

This short booklet is a useful review of the problem of radiation exposure in dentistry. It, along with the other volumes in this series, should prove highly useful for those concerned about controlling the level of radiation exposure in medical practice.

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BOOKS RECEIVED

The receipt of the following books is acknowledged:

The Physical Principles of Diagnostic Radiology, Perry Sprawls. 365 pp, illustrated. Baltimore, Maryland, University Park Press, 1977. \$24.50.

Review of NCRP Radiation Dose Limit for Embryo and Fetus in Occupationally-Exposed Women, Recommendations of the National Council on Radiation Protection and Measurements. 42 pp. Washington, D.C., National Council on Radiation Protection and Measurements, 1977. \$3.00.