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QUALITY CONTROL OF NUCLEAR MEDICINE INSTRUMENTATION

R.F. Mould, ed, The Hospital Physicists Association, London, UK, 1983, 180 pp, $17.40.

This 169-page paperback joins the British Hospital Physicists Association Conference Report Series. Since it contains the papers presented at a meeting held in February 1983, yet was published in September 1983, it is an excellent example of how rapidly a meeting report can be published. The material is complementary to that contained in other publications in the same field from the World Health Organization (1982) and the International Atomic Energy Agency (1983) and has contributors from both hospitals and industry.

The book is conveniently divided into four sections: Gamma Cameras; Interfaces, Computers and Emission Tomography; Radionuclide Measurement; and Image Assessment, with a total of fourteen chapters each of which represents a paper presented at the original meeting.

The first section, Gamma Cameras, includes chapters on Performance Assessment of the Anger Camera, Review of the Recent Contributions of the IAEA and WHO to Quality Control Procedures, Testing Techniques and Unit Variations in Scintillation Cameras; and Long Term Stability of Three Gamma Camera Systems. These chapters tend to reflect a physicist's approach to instrument performance and though valuable and interesting (particularly the last) do not purport to provide a day-by-day approach to quality control procedures.

The second section, Interfaces, Computers and Emission Tomography, contains five chapters: Digital Quality Control of Camera-Computer Interface; Computer Programming Standards in Nuclear Medicine; Quality Control of Single Photon Emission Tomographic Systems; Monitoring Rotating Gamma Camera Performance for Emission Tomography; and Gamma Camera Computer System Quality Control for Conventional and Tomographic Use. Primarily because of the freshness of the topics this section contains much useful and new information. Once again, it does tend to reflect the physicists' viewpoint of system performance assessment, but the material contained therein would assist in the establishment of a valuable quality assurance program for both computers and SPECT.

As might be expected the greatest emphasis is placed on imaging systems and the last two sections are smaller. Radionuclide Measurement contains chapters on Quality Control of Radionuclide Calibrators; Assessment of Radionuclide Impurities and Quality Control; and the Multicrystal Counter. The first of these chapters is a comprehensive review of the sources of error in dose calibrators and how they may be assessed. The second chapter in this section is the only one that does not deal specifically with instrumentation but, instead, suggests several means by which radionuclide impurities may be detected. The Quality Control of Multicrystal Counters is timely when one considers the increasing number of such devices being used in in vitro laboratories.

The last section deals with the images obtained and the first chapter in this section is entitled Gamma Camera Image Quality: A Comparison of Subjective and Objective Measurements while the second gives some advice about Optimisation of Monochrome Images.

As in any book that reports the proceedings of a meeting, this one contains some repetitious material and even material that has appeared in essentially the same form in other publications. The style and quality of presentation might also be expected to be somewhat variable, but it is to the editor's credit that this book is of uniformly high quality with good figures and easily read text. It represents a collection of up-to-date information on quality control that will prove both interesting and valuable to nuclear medicine physicists and technologists responsible for departmental quality assurance programs. It is not, nor does it claim to be, a compendium of quality control protocols, but it does provide the basic information necessary for the establishment, or perhaps modification, of such protocols.

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