before a Board of Review, or other similar method. What is primary is not whether reevaluation should take place, but rather, in what way and how often.

Finally, the matter of eligibility can be simplified by setting forth three points as policy:

1. Current registry in nuclear medicine by ARRT or ASCP will serve to qualify an individual to take the Board examination; or,
2. Graduation from an AMA-approved school of nuclear medicine technology and a year of continuous, full-time employment in a nuclear medicine section of an accredited hospital will qualify an individual to take the Board examination; or,
3. Some combination of academics at the college level and/or registry in an allied health profession plus several years of full-time employment in nuclear medicine would also serve as qualification for the Board examination.

This will make the initial phases of eligibility for examination rather more inclusive than exclusive as it should be in the beginning of such an endeavor. The nature of the examination itself will provide the discrimination that is most meaningful—that is, between those who are knowledgeable and competent, and those who have some further work to do.

An adjunctive consideration is the matter of licensure by some level of governmental agency. Licensure, as the definition proposed for acceptance by the Advisory Committee on Education for the Allied Health Professions and Services of the AMA states, is the process by which an agency of the government grants permission to *persons meeting certain predetermined qualifications* to engage in a given occupation, or grants permission to institutions to perform specified functions. Clearly, a Board of Certification would be the logical group to provide expert testimony on the credentials that are appropriate for licensure. It is also clear that, in the absence of such expert testimony, localities and states and the Federal government will seek counsel from those who are prepared to give it, and the possibility of perpetuating in law what is now only a professional controversy should make the need for prompt action very apparent.

In conclusion, the registries of ARRT and ASCP served a useful function in the formative years of nuclear medical technology, for technician-technologist and employer alike. Now that there are sufficient numbers of individuals engaged full-time in nuclear medical technology, a curriculum approved by the AMA for the training of future practitioners of that technology, and a separate organization of these persons that has come of age, it is time to take the final step of creating the vehicle by which excellence in this field of endeavor can be defined, identified, and communicated to the larger world of physicians and patients—certification in nuclear medical technology.

RALPH ZEISS
RAY DIELMAN
STAN HUBER
Nuclear Advisors, Inc.
Technical & Management Consultants
Specializing in Hospital Nuclear Medicine
Palos Heights, Illinois

ALTERATION OF ^{99m}Tc RED BLOOD CELLS

In their Concise Communications (*1,2*) Eckelman, et al describe a method of using the stannous ion to label red blood cells with ^{99m}Tc and to simultaneously damage the cells. The rate and extent of uptake of tracer within the spleen are not optimal. They state that they prefer this method because it overcomes the problems of time, sterility, and reproducibility that are encountered with the heat-treatment method of Fischer, et al (*3*). We have been using a smaller amount of tin to label the cells and then heating the cells as described by Fischer without encountering the problems mentioned by Eckelman.

The method we use is as follows:

1. Add 8 ml of the patient's blood to a sterile capped tube containing 2 ml ACD.
2. Separate the cells and plasma by centrifugation and wash the cells twice with isotonic saline.
3. Add the desired activity of ^{99m}Tc-pertechnetate in 2 ml saline.
4. Stand for 5 min.
5. Add 1 ml of 0.1 mg/ml $SnCl_2 \cdot 2H_2O$ in saline, freshly prepared and passed through a Millipore filter.
6. Stand for 5 min.
7. Wash twice with isotonic saline and leave cells suspended in saline.
8. Heat the cells in a 50°C waterbath for 20 min and cool immediately in an ice waterbath.
9. Separate cells and saline by centrifugation and resuspend the cells in saline.

As we have found no need to use the prolonged standing times recommended by Eckelman, et al, the whole procedure takes the same length of time as their method, i.e., 1½ hr. Incubation for 5 min

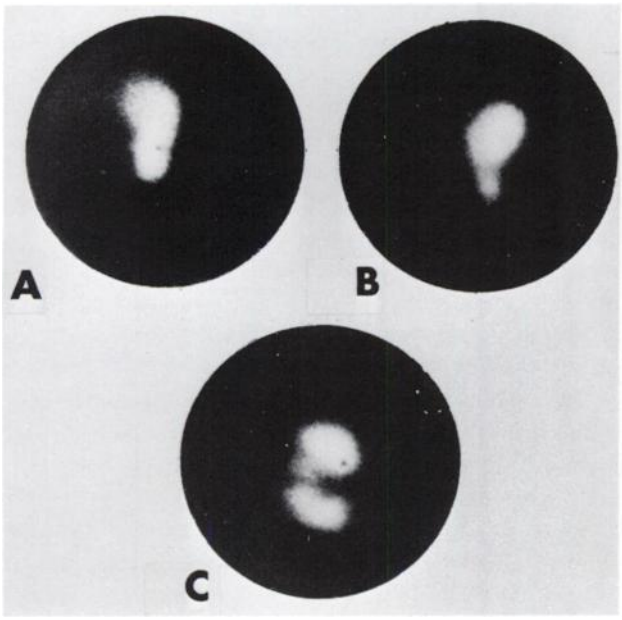

FIG. 1. Spleen scintiphotos 20–30 min after injection of heat-damaged RBC labeled with 2 mCi ^{99m}Tc. Anterior (A), posterior (B), and lateral (C) views show ruptured spleen. Note extent of injury is only apparent in lateral view.

before and 5 min after the addition of tin produces maximal uptake of ^{99m}Tc by the erythrocytes and results in yields of 50–70%.

Following injection, splenic uptake of labeled cells is rapid, and after 15 min most of the activity is in the spleen. Imaging at this time provides good scintiphotos of the spleen without evidence of blood pool activity (Fig. 1). The high splenic uptake enables 200,000 counts to be collected in 1–2 min from a 2-mCi dose of ^{99m}Tc.

The heating is carried out in a sealed tube, and the cells are resuspended in sterile saline so that this method involves no greater risk of bacterial contamination than does the method of Eckelman, et al. We have studied 43 patients by this method and have encountered no problems with reproducibility.

J. McRAE*
P. E. VALK
Department of Medicine
University of Sydney
Department of Nuclear Medicine
Royal Prince Alfred Hospital
Sydney, Australia

REFERENCES

1. ECKELMAN W, RICHARDS P, HAUSER W, et al: Technetium-labeled red blood cells. *J Nucl Med* 12: 22–24, 1971

2. ECKELMAN W, RICHARDS P, ATKINS HL, et al: Visualization of the human spleen with ^{99m}Tc-labeled red blood cells. *J Nucl Med* 12: 310–311, 1971

3. FISCHER J, WOLF R, LEON A: Technetium-99m as a label for erythrocytes. *J Nucl Med* 8: 229–232, 1967

* Present address: Donner Laboratory, University of California at Berkeley, Berkeley, Calif.

AUTHORS' REPLY

The authors congratulate Dr. McRae and Dr. Valk for developing a very useful procedure for altering red blood cells suspended in saline. However, this does not alter our statement that our method overcomes problems of time, sterility, and reproducibility *that are encountered in the heat treatment of Fischer, et al* (*1*). McRae and Valk have improved the procedure over *that described by Fischer, et al* in that they have avoided recombination of labeled cells with plasma prior to heating, a potentially dangerous procedure. Alteration of cells suspended in saline, rather than plasma, is preferred.

We have likewise been able to considerably shorten the procedure as reported at recent meetings (*2*). A description of our improved method and of the results obtained is in preparation.

WILLIAM ECKELMAN HAROLD ATKINS
POWELL RICHARDS WOLFGANG HAUSER
Brookhaven National Laboratory
Upton, New York

REFERENCES

1. FISCHER J, WOLF R, LEON A: Technetium-99m as a label for erythrocytes. *J Nucl Med* 8: 229–232, 1967

2. ECKELMAN W: Alteration of ^{99m}Tc-labeled red blood cells for use in visualization of the human spleen. Presented at the Greater New York Chapter, Society of Nuclear Medicine Meeting, Princeton, New Jersey, May 1971, and 18th Annual Meeting of the Society of Nuclear Medicine, Los Angeles, California, June 1971

ERRATUM

In the article "^{67}Ga for Tumor Scanning" by H. Langhammer, G. Glaubitt, S. F. Grebe, J. F. Hampe, U. Haubold, G. Hör, A. Kaul, P. Koeppe, J. Koppenhagen, H. D. Roedler, and J. B. van der Schoot (*J Nucl Med* 13: 25–30, 1972) the initial of the second author should have been "D" (D. Glaubitt).