

The JNMT Style Manual

The intent of the first edition of the JNMT Style Manual for authors was to guide contributors in the organization of data, preparation of illustrations, and use of preferred syntax.

Similarly, this second edition presents a refinement of that intent. Some modifications to the contents are the result of comments, questions, and submissions from authors and editors. We have tried to simplify, clarify, and amplify each section as needed. Other changes reflect state-of-the-art evolution in nuclear medicine and medical publishing in general.

We urge you to use this Style Manual to prepare your manuscripts. It is designed to make technical writing easier—from the assembly of scientific data to the submission of the finished product. Particularly important is the section on illustrations; adherence to the stated requirements will assure high quality reproduction.

While the editorial staff makes every effort to assist an author, knowledge and application of the JNMT format simplifies the review, revision, and publication process for everyone concerned. Therefore, call us with any questions you have. We would be delighted to help.—Patricia Weigand, Editor.

PART I:

TYPES OF MANUSCRIPTS ACCEPTED

The *Journal of Nuclear Medicine Technology* publishes original submissions of scientific articles, case reports and cases of the quarter, gadgetry articles, reviews of educational programs and audiovisuals, book reviews, letters to the editor, abstracts of technologist scientific papers presented at the Annual Meetings of the Society of Nuclear Medicine and the Technologist Section, news items, reports from the chapters, descriptions of commercial new products, and calendar items.

A. Scientific Articles

Definitive accounts of significant, completed studies documented both by references to the literature and by description of the technique used should be submitted as full-length articles. These articles should present new, important data or provide a fresh approach to an established subject. Articles in this category may also describe an educational program in nuclear medicine technology that has been implemented in an institution. Such articles should describe the objectives, curriculum, innovative educational concepts, and results and applications of these concepts.

B. Case Reports and Case of the Quarter

1. Case reports are concise descriptions of clinical cases. More than one patient may be included when similar data support the findings. Pertinent clinical data, results of nuclear medicine examinations, and the course of the disease are stated in chronological order. A discussion completes the report.
2. A case of the quarter features a technical or clinical problem encountered in an imaging or an in vitro procedure. The simple format includes an introduction describing the problem (e.g., a case history), a description of the diagnostic techniques used, and a discussion with illustrations demonstrating the problem. At least four possible solutions to the problem are presented; the correct response is given with a discussion that includes supportive evidence (references) and illustrations.

C. Gadgetry Articles

These articles will include illustrations and concise descriptions of devices such as imaging phantoms, electronic modifications, and special adaptors that have been designed and constructed to satisfy a specific need or to assist in a specific procedure.

D. JNMT Bookshelf

Selected members of the Technologist Section review new books pertaining or related to nuclear medicine technology. Book reviews from outside sources may be soli-

For reprints contact: Patricia Weigand, Nuclear Medicine Service, VA Hospital, University and Woodland Aves., Philadelphia, PA 19104.

cited at the editor's discretion.

E. Letters to the Editor

This section is designed to invite comments and suggestions about previously published material, or personal opinions of immediate interest to the field.

F. JNMT Audiovisual Reviews

A current listing of all nuclear medicine-related audio-visuals will be published periodically. New audiovisual aids will also be reviewed by members of the Continuing Education Committee.

G. Abstracts

In the March and June issues, the *Journal* publishes the abstracts of scientific papers and the titles of scientific exhibits to be presented for the Section's Scientific Program at Annual Meetings of the Section and the Society of Nuclear Medicine. An abstract reproduction form with guidelines and rules can be obtained from the Society's National Office and is then submitted to the current Scientific Program chairman. Please see Part III-C-2 for additional guidelines on writing abstracts.

H. News Items

National News: The "Technologist News" Section of the *Journal* contains reports of current activities of interest to nuclear medicine technologists. These may include legislative activities, highlights of forthcoming SNM and Technologist Section meetings, a message from the Technologist Section President, reports from Section Committee chairmen, and so on. If you have a suggestion for a news article, contact the coordinating editor, whose name can be found on the Table of Contents page of the *JNMT*, at the Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016.

Chapter News: The "News from the Chapters" section of the *Journal* consists of reports of activities and programs that the Society's individual chapters are currently conducting. We prefer these chapter reports to deal with upcoming meetings, rather than summaries of recent events. Provide all necessary details of future meetings: who, what, when, and where. We also welcome results of annual elections. All chapter news submissions, which should be limited to 250 words, are sent to the *JNMT* editor at the SNM National Office.

All chapter and general news items must be submitted at least six weeks before the first of the publication month (e.g., for a September issue, news items must be submitted by July 15.) All submitted news items will be edited by the *JNMT* editor in the National Office as well as the scientific editor. Galley proofs will be sent to every author.

I. What's New

This section provides concise descriptions and illustrations of new commercial products. The descriptions are derived from information provided by the manufacturers. They are chosen for publication by the editorial staff of the *JNMT* on the basis of their merit as being of service to professionals working in the field of nuclear medicine.

Their inclusion in the *JNMT* does not constitute an endorsement.

J. Other Types of Submissions

Other sections and types of original submissions, such as interviews, commentaries, continuing education reviews, and papers presented at meetings, may be published at the scientific editor's discretion.

PART II:

SUBMISSION, EDITING, AND PUBLICATION

A. Submission

An original manuscript, three copies, and two sets of original illustrations accompanied by a cover letter must be sent to the scientific editor, whose name and address appears on the Table of Contents page of the latest issue of the *JNMT*.

The manuscript must be typed double- or triple-spaced throughout (including references and figure legends) with at least 1½-in. margins. Use non-erasable bond paper. Its presentation should conform to the style and format of the *JNMT* as set forth in this manual under parts III, IV, and V.

A previously published article will not be considered for publication unless the Scientific Editor deems it to be of special interest to the *Journal* readers. In this case, written permission to reprint the article must be obtained from the original publisher. A copy of the permission must be submitted with the manuscript.

A previous abstract or oral presentation of the submitted paper should be acknowledged at the bottom of the title page.

Authors are held responsible for the accuracy and originality of all the material presented.

B. Acceptance Procedure

A submitted manuscript is reviewed by the scientific editor and selected reviewers for technical content and style. The associate editor for references checks the manuscript for accuracy of the references. After receiving and summarizing the critiques of the reviewers, the scientific editor notifies the author of the status of his article. The decision may be to accept without alteration, to accept with minor revisions, to defer publication until major revisions are made, to reject, or to suggest submission of the article to another scientific journal. When revisions are requested, recommended changes and queries will be outlined in a letter to the author. We suggest that authors complete the recommended revisions within three weeks to assure an expedient and timely publication.

C. Technical and Stylistic Editing

All accepted manuscripts are sent by the scientific editor to the *JNMT* editor in the SNM National Office (the coordinating editor) for technical and stylistic editing. This editor also marks the manuscript for the printer to follow when setting the manuscript into type.

A copy of the edited manuscript is sent to the author, with any queries clearly marked. The author checks the

manuscript, giving special attention to changes made by the editorial staff, answers all queries, makes last-minute changes, and returns the manuscript to the National Office editor *no later than 48 hours after receipt*. Do not answer queries by such expressions as "O.K." or "Yes" as these do not tell whether it is O.K. as changed or O.K. as it was originally. All comments and changes are to be made in red ink.

D. Galleys

A set of galley proofs and a set of figure proofs are sent to the author for final check. The author should read the galley proofs thoroughly and should indicate in red ink only those corrections essential to the paper. *This is not the time to change sentence structure or to make extensive additions to the manuscript*, because extensive changes at this point are very expensive and may delay the publication of the paper. Mark corrections for the figures, such as mislabeling or cut-off areas, directly on the figure proofs. All corrected galleys must be returned to the National Office editor no later than 48 hours after receipt.

E. Reprints

One month before publication, the author will be sent an order form for reprints. He should return his order and purchase authorization quickly so that it can be processed promptly. Reprints are generally shipped one month after publication.

PART III:

PREPARING AND WRITING A PAPER

A. Preparation

A good scientific paper is a clear, concise, and accurate report of new or existing research, work done, results observed, and conclusions drawn.

How effective your article will be depends on such factors as what aspect of your research you plan to present, what background and knowledge of the topic your general readership has, and what the best means are to present your ideas to that audience. Helpful guidance may be found in studying articles already published in the *JNMT* or the *JNM*. A previously published article may deal with a topic closely related to the one that you wish to present and may give you ideas on general format.

Your first step should be to write an outline with subdivisions. The outline is derived from your recorded data, observations, results, conclusions, and references arranged in a logical sequence. Although your first outline may be rewritten and refined later on, it is a necessary first step in developing a logical and clear report.

Writing a tentative abstract at this time will also help you to realize what the necessary inclusions should be for a complete presentation, and help you discard irrelevant data. Like the outline, the abstract should give the reasons for starting the research—what you did, how you did it, and what answers you found—in a logical order.

Now you can begin to write the first draft of your paper

following your outline. The most important consideration in writing is to make the task of your readers as easy as possible. Clarity is the primary stylistic tool with which to achieve that goal.

Obstacles to clarity and simplicity are many. Among the worst is the specialist's tendency to use pompous, abstract, and unnecessary words or technical jargon. The concern is probably that simple words and phrases make one's work sound or look less impressive. You should use a writing style that comes easily, readily, and naturally. Follow conventional usage and avoid the vernacular.

Lengthy expressions tend to confuse and bore the reader and can usually be shortened without altering the meaning. Your reader will in general prefer to see "many" rather than "a considerable portion of."

Another hindrance is the tendency toward anonymity, which often results in passive voice sentences such as "therapy" was commenced." The active voice "we started therapy" is more accurate and interesting to the reader.

As you write, always try to put yourself in the place of your readers.

B. Organization of Data

Before starting to write, examine all data carefully to decide what should be included, based on whether they support your results and whether they justify your tentative conclusions. Perhaps you spent time gathering data which, in the end, prove unnecessary to your article and conclusions. Do not include data in your paper simply because much time was spent collecting it; conserve space and cost.

Once relevant data are identified, you must decide on the order they should appear in and the best way to present them (i.e., text, tables, or figures). Be sure that your tables and figures are not used to present data that might simply be incorporated in the text of the paper.

Remember to check carefully all calculations, preferably in at least two ways, as you will be held fully responsible for their accuracy once they are published.

C. Parts of the Scientific Article

A typical scientific article for the *JNMT* consists of the title page, an abstract page, an introduction, a materials and methods section, a results and discussion part, often an acknowledgment, and references. Appendixes are discouraged, but should their inclusion be of vital importance they are to follow the references in the manuscript.

Each main heading in the manuscript should be set at the left margin and typed with initial capital letters. Secondary headings should be run in with the text, with an indent, and underlined.

All parts of the manuscript must be typed at least double spaced.

1. Title Page (Page 1 of Manuscript)

Title: The title of the article should be short, specific, and clear. It should describe accurately what the article

is about and what distinguishes it from similar works or methods published. Avoid titles of only two or three words that may not adequately describe the content of the paper or titles in excess of 14 words, which are unnecessarily long and may discourage your readers. Omit such phrases as “the use of,” “the treatment of,” and “the report of a case of.”

Byline and Affiliation Line: The first name, middle initial, and surname of each author appear below the title. Below the names, type and underline the institution, city, and state where the work was performed.

If the authors are at different institutions, provide a separate affiliation line under each author. If one of the authors has moved from the institution where the work was done, use a footnote to his name in the byline, indicated by an asterisk, to provide the new affiliation.

Reprint Requests: The name and complete mailing address of the person to whom reprint requests are to be sent is given on the title page:

For reprints contact: J.P. Wilson, Div.
of Nuclear Medicine, Emory University,
Atlanta, GA 30322.

2. Abstract (Page 2 of Manuscript)

The abstract is a brief description—usually no more than one paragraph—of your article. It is a summary of your subject, objectives of the research, treatment given to the research, mention of methods used, any new facts observed, experimental and theoretical findings, and conclusions. Generally no more than one short sentence should be used for any of these items if they apply.

Your reader should not have to refer to any other part of the article in order to understand the abstract. Therefore exclude mention of any tables, illustrations, examples, numbered equations, references, footnotes, or information not discussed in the text.

Avoid phrases such as “a study is reported,” “a case is described,” “it was found that,” or “on the basis of these results it may be concluded that.” Again, the abstract has much more impact when you write in the active voice.

3. Introduction (Page 3 of Manuscript; Beginning of Paper)

The first sentence and the first paragraph of your paper are particularly important. They should be designed to “catch” the reader’s attention for the paper as a whole. The purpose and subject of the article should be carefully stated to include the scope of the paper, the ranges of the parameters, and the statement of either theoretical or experimental conditions used. In long papers, a plan of the material to be presented is also useful to the reader. The introduction should not include results or conclusions about the work that you are about to report.

At all times, be aware of how important it is to keep your article short. Avoid excessive detail in the introduction and try not to repeat what is said in the introduction in other parts of the article, especially the discussion.

No heading should be used for the introduction.

4. Materials and Methods

This section should include a description of the materials used, as well as any experimental procedures. Materials should be identified specifically and the name of the manufacturer given in parentheses (include city and state if the manufacturer is not well known in the field). Apparatus should be described *only* if it is not standard. Commercially available instruments do not need to be described in detail; this information is available from the manufacturer.

The experimental procedure should include only those details that are important to understanding the significance of the results. Only original methods deserve detailed descriptions. A previously reported method should be referenced.

5. Results, Discussion and Conclusion

In most articles the results, discussion of their significance, and conclusions reached are separated into three distinct sections. Occasionally, however, a combined approach may be preferable. Regardless of which style you follow, include only relevant data but do not omit important negative results. Use equations, figures, and tables only when necessary for clarity and conciseness. Do not repeat information in both figures and tables and do not give a detailed description in the text of data already evident in a table or figure.

Many readers will skip from the abstract or introduction to the conclusion to see what has actually been accomplished. Again, the first few sentences should sum up your findings. You can then elaborate on them and draw conclusions, which should be summed up at the end of this section. Your conclusions must stem from the data presented earlier in the paper. They should be consistent with the introduction and fulfill the objectives that you stated there. Any recommendations, although not necessary, should also follow logically from the data.

6. Acknowledgment

An acknowledgment of people or agencies who have contributed substantially to the author’s work may be published in the acknowledgments section at the author’s discretion. In addition, such nontechnical information as grant support should also be noted the acknowledgment section, which is placed at the end of the manuscript.

7. References

References are discussed in part IV-C of this manual.

8. Footnotes

Footnotes should be used sparingly, if at all, in the text. References to manufacturers and suppliers of products mentioned in the text should be placed in parenthesis immediately after the mention of the product. If used, footnotes are to be typed double spaced at the bottom of the page on which they are cited. They are to be identified by a symbol, in the order (* † ‡ §), and placed after the appropriate word in the text.

D. Checklist

After you have finished the first draft of the article,

check it carefully for the following:

1. Is all necessary information included?
2. Is there more material than necessary? And if so, what can be deleted?
3. Is there adequate emphasis on the most important ideas?
4. Is the presentation logical and continuous?
5. Are the data adequate to support the conclusions and assumptions drawn from them?
6. Are the presentations of data adequate?
7. Is the article clear and concise; do you avoid vagueness, inexactness, or complex construction?

This is the time to examine and judge the effectiveness of your presentation. Your ideas and findings should be described in words that you would use when talking to a colleague; otherwise you will probably have used unnatural, unnecessary, and elaborate words and phrases.

You might approach associates and friends who are not totally familiar with your research and ask them to read the article. They will be able to judge how clear and complete your presentation is or whether you have treated a portion inadequately or phrased it in too specialized

lized a jargon. Their constructive criticism may also show you what can be easily left out of the article.

After accumulating some additional comments and ideas, it is a good practice to set aside your manuscript for at least a week and not involve yourself with it in any way. This pause should allow you to come back to the article with a fresh outlook. Your colleagues' comments and criticisms can now be evaluated. With them, you should be able to realize objectively if you have accomplished your purpose successfully or, if not, what changes are needed (such as major mistakes in data, something about which only you would know).

PART IV:

PRESENTATION OF SUPPORTIVE MATERIALS

A. Tables

A table is a condensation of related data or facts arranged in columns. Tables should be self-explanatory and should supplement, not duplicate, the text. They should provide information that is unambiguous, and enhance the understanding of the text. Tables should be numbered consecutively with arabic numerals and have titles. Make the titles as descriptive, complete, and brief as possible. Do not use such phrases as "Table showing" or "Tabular listing." Explanatory material should be included in footnotes to the table or in the text. Each table must be referred to at least once in numerical order as it is cited in the text.

The relationship and comparison of the vertical and horizontal columns are established by the column heads (captions of vertical columns) and stubs (captions of horizontal columns). All vertical columns must have heads and, in general, all horizontal rows have stubs. Heads for columns that list numerical data should include in

parentheses the abbreviated units of measurement. Arrangements that have excessive blank space should be avoided. Lengthy tables should be examined critically in an effort to reorganize, reduce, or split them, so that they can be read more easily. Horizontal lines are to be placed above the title, under the title, under the column heads, and at the end of the table. Omit all vertical lines. A typical table is illustrated on page 176.

Each table must be typed on a separate sheet of paper and placed at the end of the manuscript; no tables are to be embedded in the text.

B. Figures

Figures consist of all material that cannot be set in type: photographs (halftones), images on x-ray film, line drawings, graphs, and charts. Omit any figure that fails to increase the understanding of the text, such as photographs of standard laboratory apparatus. Refer to all figures at least once in numerical order in the text.

Two sets of original figures must accompany the manuscript. Figures must be submitted in their original form (i.e., do not submit photographs of photographs); if it is absolutely necessary, original India ink drawings may be submitted. No Xerox, Bruning, or Ozalid copies will be accepted as the original figures. Freehand or typewritten lettering is *not* acceptable on figures. If you use press-on letters, be sure they are clear. No figure numbers should appear in the area of interest within a figure. Extraneous written material should be avoided on the figure and contained within the legend instead.

Figures that contain the patient's name, hospital identification number, or the name of the institution will not be accepted. Photographs that include a patient's face (use only if absolutely necessary) must have a small black rectangle burned in on the photograph to cover the patient's eyes and thus prevent identification.

Figures should be mailed to the editor flat and in between cardboard to avoid bending, cracking, and scratching. Figures should be clearly marked on the back with the author's name, title of the paper, and figure number. Use a very soft pencil and press lightly. Figures that do not meet the criteria set forth in this section will be sent back to the author to be redone.

Types of Figures

1. *Photographs:* Photographs submitted for publication should be printed on glossy paper with somewhat more contrast than that desired in reproduction, since contrast is often lost in the printing process. Again, for best reproduction, submit the original photographs, not photographs of photographs. Polaroids must be evenly coated and free from scratches and fingerprints. If your institution does not have an editorial/illustration department to assist you, do not put any labeling of any kind on photographs. Instead, submit sketches of your photographs indicating what kinds of labels your photographs need and where they should be placed. The National Office art department will then place the desired labels on

your photographs. The top of the illustration should be indicated on the back. Nuclear medicine images and radiographs for publication should not include hand-written material such as "R," "Anterior," the date, or the hospital code. Be careful not to press too hard on the back of photographs when marking them (again, use a very soft pencil), as this may cause an indentation that will be seen after the photograph is printed.

2. *Images on x-ray film*: These are acceptable but must be free of labeling or lettering near the images.

3. *Graphs, charts, line drawings*: In making line drawings, use a good grade of white drawing paper and black India ink. Graph paper should *not* be used. All lettering should be done professionally, with a stencil (LeRoy, Wrico, or Ames lettering devices are recommended), or with pressure-applied letters. Freehand or typewritten lettering is unacceptable. Drawn lines should be clear and sharp, show a uniform degree of blackness (any grayish areas will cause the rejection of a line drawing), and be proportionate to the size of the graph. The vertical and horizontal axes should be heavy black lines. The thickness should be only slightly less than that of the illustrated curves, which should be the darkest and heaviest lines on the graph. Usually no more than four curves should appear on a single illustration. If the curves cannot be widely separated, use less of them. Although the curves may appear to be well separated on the original drawing, they will come closer together when the figure is reduced for publication.

It is usually better to identify the different curves by using different lines for each: a solid line for one, a broken line for another, a dotted line or a combination of dotted and broken lines for a third. Each axis must be labeled clearly with both the quantity measured and the units of measurement. The label for each axis should be set parallel to the axis. The unit(s) of measurement should be abbreviated and placed in parenthesis at the end of the label. All labeling of numbered points should be horizontal on both horizontal and vertical axes.

Because the purpose of the curve is to represent the trend of certain data, it is rarely necessary for the reader to be able to make or check computations from it. Therefore, the scale values should be indicated by a short grid mark placed on each axis at appropriate intervals. The short rules should be placed widely and should not detract from the rest of the illustration.

Supporting Data

4. *Legends*: A separate page containing brief descriptive paragraphs (legends) for each figure should be provided after the tables in the manuscript. The legends should be typed double spaced in numerical order with the word "FIG." preceding each number.

Figure parts in the legends, as well as in the text, are to be indicated by a capital letter in parenthesis, e.g., FIG. 5(A). Figures that have been published before should have the publication reference included in the legend. A written permission from the original publisher and

author must be obtained and a copy submitted with the manuscript.

A legend should describe what is shown in the illustration. It should never directly duplicate the text. Identify in the legend any symbols used on the illustration. Do not use articles (a, an, the) in the legend.

5. *Reduction*: During reduction, all elements of the figure, including overall depth and lettering size, will be reduced proportionately. Keep in mind that the smallest lettering on the original artwork will be reduced further.

Because of the need for consistency in type, all lettering must be of approximately the same size; a figure with both very large *and* very small lettering may be sent back to the author for relettering.

6. *Color*: Because of the high cost of color printing, we discourage authors from submitting four-color illustrations unless they are indispensable to the paper. Those that are indispensable will be published at the author's expense. Prices and arrangements will be discussed with the editor and author upon request.

C. References

References are cited in the text by underlined numbers in parentheses in order of appearance, e.g., (1). A consecutive list of references typed double spaced is provided after the text (or after the acknowledgment when this section is included) on a separate page. *All references included in the list must be cited in order in the text.* More than three authors are indicated by "et al." All journal names are abbreviated according to the *List of Journals Indexed in Index Medicus*. Examples of the style for specific types of references are given below. Pay special attention to punctuation: no commas are used between authors' last and first names and only one period is used throughout. Note also that inclusive page ranges are provided on all material referenced. Roman numerals and the abbreviations "Jr." and "Sr." after the authors' names are not used. Pay special attention to nomenclature, repeat it exactly as it appears in the cited article.

Journals

The period occurs after the title of the article and the volume year appears immediately following the journal abbreviation.

1. Suzuki A, Suzuki MN, Weis AM: Analysis of radioisotope calibrator, *J Nucl Med Technol* 1976; 4: 193-8.

2. Harper PV, Beck R, Charlston D, et al. Optimization of a scanning method using ^{99m}Tc. *Nucleonics* 1964; 22: 50-55.

Supplements to Journals

3. Loevinger R, Berman M. A schema for absorbed-dose calculations for biologically distributed radionuclides. MIRD Pamphlet No. 1, *J Nucl Med* 1968; 9: Suppl No 1, 7-14.

MIRD Pamphlet No. 10, however, and all subsequent

MIRD pamphlets are to be cited in the following format (note the addition of the month of publication):

4. Dillman LT, Von der Lage FC. *Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimates, MIRD Pamphlet No. 10*. New York, Society of Nuclear Medicine, Sept 1975

Books

The period occurs after the title of the book. The city of publication is placed before the publisher.

5. Early PJ, Razzak MA, Sodee DB. *Textbook of Nuclear Medicine Technology*. St. Louis, CV Mosby, 1969: 82–84

Place the word “eds” after the cited name if they are not the authors of the entire book.

Chapters in Books

The period occurs after the title of the chapter.

6. Oldendorf WH. Molecular criteria for blood-brain barrier penetration. In *Noninvasive Brain Imaging*, DeBlanc HJ, Sorenson JA, eds, New York, Society of Nuclear Medicine, 1975: 17–24

7. Wagner HN, Emmons H. Characteristics of an ideal radiopharmaceutical. In *Radioactive Pharmaceuticals*, Andrews GA, Kniseley RM, Wagner HN, eds, Symposium Series 6, CONF-651111, Springfield, VA, National Bureau of Standards, 1966: 1–32

Abstracts

Add an (A) after the page number.

8. LeFree MT, Kuch DL, Steele PP. Functional images of the left ventricle. *J Nucl Med Technol* 1975; 3: 102-3 (A)

Letters to the Editor

Add and (L) after the page number.

9. Richards P, O'Brien MJ. Rapid determination of ^{99m}Tc in separated ^{99m}Tc . *J Nucl Med* 1969; 10: 517 (L)

Reports

Follow book format.

10. Snyder WS, Ford MR. A dosimetric study for the administration of Neohydrin labeled with ^{203}Hg and ^{187}Hg . In *Health Physics Division Annual Progress Report* Oak Ridge, TN, ORNL 4168, July 31, 1967; 267–73

Unpublished Data

11. Alexander JM, Alavi A, Hansell JR. Bone Imaging in evaluation of jaw lesions. Presented at the 22nd Annual Meeting of the Society of Nuclear Medicine, Philadelphia, PA, June 18, 1975

12. Brown HS, Ray CT. New tracers in old spaces. *J Nucl Med*: (in press)

Do not write “in press” unless the article has actually

been accepted for publication in a journal. “Personal communications” should be cited in this way: e.g., Adelstein has indicated that in some patients. . . (S. James Adelstein 1978: personal communication.)

PART V:

STYLE CONSIDERATIONS

A. Authoritative Sources of Information

Style conventions adopted for the *Journal* have been derived from a number of authoritative sources. For general style considerations, grammar, and the presentation and composition of an article, we highly recommend the most recent editions of the following:

Council of Biology Editors: *CBE Style Manual*. Washington, DC, American Institute of Biological Sciences, *A Manual of Style*, 12th ed, Chicago, University of Chicago Press,

Skillin ME, Gray RM: *Words into Type*. New York, Appleton-Century-Crofts.

Writing and usage guidelines are also based on:

Strunk W, White EB: *The Elements of Style*. New York, Macmillan.

For medical style, the *Journal* closely follows the: *Journal of Nuclear Medicine* and the *AMA Stylebook/Editorial Manual*. Chicago, American Medical Association, and the *Uniform Requirements for Manuscripts Submitted to Biomedical Journals*, particularly for references. Philadelphia, PA (c/o *Annals of Internal Medicine*.)

For physics and mathematics the *Journal* follows the: *AIP Style Manual*. New York, American Institute of Physics.

For chemical style and nomenclature, the *Journal* uses the:

Handbook for Authors. Washington, DC, American Chemical Society.

For abbreviations of journal titles, the *Journal* uses the: National Library of Medicine: *List of Journals Indexed in Index Medicus*. Washington, DC, DHEW Publication No. NIM 75-267,

Bibliographic Guide for Editors and Authors. Washington, DC, American Chemical Society.

The most current editions of the *American Heritage Dictionary* are recommended for spelling and hyphenation of nontechnical words. *Gould Medical Dictionary* (3rd edition) and *Dorland's Illustrated Medical Dictionary* (25th edition, 1974) are preferred for correct names of diseases and for medical and technical terms.

B. Radiopharmaceutical Nomenclature

The generic name of a radiopharmaceutical should be used throughout the manuscript. If the author wants to

introduce the trade name, he should do so in parenthesis the first time the generic name is used. It should not be repeated. Formally adopted generic names are listed in *United States Adopted Names (USAN)*, which the *Journal* has accepted as its authority on nonradioactive pharmaceuticals.

Abbreviations of chemical compounds are desirable for the sake of brevity (once the abbreviation has been defined). The following are guides for the selection of abbreviations: (a) use the accepted abbreviations in the literature that predate the labeling of these compounds, (b) use the official *chemical nomenclature* appearing in chemical abstracts, and (c) avoid trade name abbreviations or trademarks. For example, below are listed the accepted abbreviations for bone agents:

Pyrophosphate	PP ₂
Polyphosphate	PP _x (x = n + 2)
Methylenediphosphonate	MDP
Dichloromethylenediphosphonate	Cl ₂ MDP

Nuclides

1. Nuclides are characterized by their mass number, atomic number, ionic charge, and number of atoms.

Example:



This nuclide of oxygen has an atomic number of 8, a mass number of 16, and an ionic negative charge of -2.

2. The mass number of a radionuclide is placed as a superscript, upper left, e.g., ^{99m}Tc, when the radionuclide is part of a chemical compound. When the mass number and radionuclide appear in a text or manuscript as a label, however, the notation should follow the spoken form, e.g., technetium-99m, Tc-99m, Tc-99m colloid, etc.

3. The isotope prefix, when an integral part of the compound, should precede in brackets that part of the name to which it refers; for example, Na₂⁵¹Cr₇, would be written as [⁵¹Cr] sodium chromate, Na^{99m}TcO₄, as [^{99m}Tc] sodium pertechnetate.

4. When the position of a labeled element is known, the locale is indicated by an arabic number or an appropriate prefix: [2-¹⁴C] acetic acid, L-[methyl-¹⁴C] methionine, [α-¹⁴C] leucine, 17β-[³H] estradiol.

5. If the radioactive label is uniform, use [U-¹⁴C] glucose, or if general use [G-¹⁴C] glucose.

6. If isotopes of more than one element are included in a compound, then indicate: [3, 4-¹⁴C, ³⁵S] methionine.

7. The symbol indicating the configuration should precede the symbol for the isotope: D[3-¹⁴C] glucose.

8. The superscript mass number is never placed with the letter in an abbreviation, but should precede it: [³²P] AMP (not AM³²P).

9. Iodine-131-labeled albumin should not be written [¹³¹I] albumin since albumin does not contain iodine.

10. Square brackets should not be used when the isotopic symbol is attached to a word that is not a specific chemical name: ¹⁴C-steroids, ³H-ligands. This applies *only* when the radionuclide is an integral part of the chemical.

11. In formulae use Na¹³¹I, CH₃¹⁴COOH, etc. Do not refer to the radionuclide alone when the radiopharmaceutical is meant. Bear in mind pertechnetate is *injected*, but radioactive technetium is *detected*.

Distribution Data

Distribution data on drugs, chemical, radionuclides, etc., are a fundamental segment of many investigative studies. To improve comparison among different studies, the following methods are recommended:

1. Percent administered dose per organ.
2. Percent administered dose per gram normalized to a specific body weight (e.g., 70 kg for man, 1 kg for certain animals).

The general equation for normalization is:

$$\% \text{ dose/g (norm)} = \% \text{ dose/g} \times \frac{\text{body weight}}{\text{normalization weight}}$$

Distribution data should never be given in counts per minute.

PART VI:

SAMPLE MANUSCRIPT

We present sample sections from a model manuscript. (These samples have been reduced to approximately two-thirds of the original size.) Your manuscript should be typed double-spaced or better on 8 1/2 × 11-in. bond paper. At least 1 1/2-in. margins should be left on all sides. A new page should be started for each of the following sections: title page, abstract, body of the article, acknowledgments, references, tables, figure legends, and (if applicable) appendix.

A. Title Page

Determination of Radionuclide Impurities in Tc-99m:

A Rapid Pulse Height Analysis Technique

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B. Abstract

We have developed a simple and rapid procedure for determining levels of multiple radionuclide impurities in Tc-99m generator eluates before use in patients. The technique combines the use of a low gamma energy filter comprised of layers of lead, cadmium, and copper to re-

duce the radiation from Tc-99m—with pulse height analysis of the transmitted high energy photons from common impurities such as Ru-103, I-131, and Mo-99. The procedure, which employs a multichannel analyzer and subsequent calculations, can be performed in almost the same time required for the current technique using isotope calibrators.

C. Manuscript Pages

Most nuclear medicine clinics analyze pertechnetate solutions for radionuclidic purity by checking for the presence of Mo-99 using a Mo-99 breakthrough shield and an isotope calibrator (1). This technique is adequate when Mo-99 is present at levels near the upper range of the USP XIX acceptable limit of 1 μ Ci of Mo-99 per mCi of Tc-99m. However, at routine contamination levels, pulse height analysis of the radiation coming from the Mo-99 breakthrough shield shows that most of the radiation is due to lead x-rays produced by the interaction of Tc-99m 140-keV gamma rays with the lead walls of the container. These x-rays as well as radiation from Mo-99 and other radionuclidic impurities are lumped together in the computation of Mo-99 breakthrough....

MATERIALS AND METHODS

Specificity and increased sensitivity were obtained with two modifications of the standard breakthrough test. The first, designed to reduce the levels of x-rays from the breakthrough shield, involved placing thin layers of cadmium and copper around the outside of the lead shield as shown in Fig. 1. The second modification eliminated the need for an ionization chamber and substituted a detector that is energy specific. While a Ge(Li) detector has superior energy resolution, we chose to use a 3 in. x 3 in. NaI(Tl) scintillation detector because of higher interaction efficiency for gammas, general availability in nuclear medicine clinics, and ease of maintenance.

RESULTS AND DISCUSSION

Preliminary studies of the spectrum of generator eluents over a 3-month period revealed no photopeaks above 1 MeV; therefore, we calibrated our working baseline to 1 MeV per 512 channels. Figure 2 is an energy calibration curve obtained with sources through the low en-

ergy filter. Before determining the calibration curve, routine calibration checks were made prior to each analysis to ascertain that the 511-keV annihilation radiation of Na-22 was maximum in the proper channel. ...

D. Acknowledgment

We wish to thank the personnel of the Nuclear Science and Technology Facility of SUNY at Buffalo for their help in fabricating the low energy gamma filter used in this work and Patricia Limbardi for her help in preparing this manuscript.

E. References

1. Richards P, O'Brien MJ: Rapid determination of ^{99m}Tc in separated ^{99m}Tc . *J Nucl Med* 10: 517(L), 1969
2. Sodium Pertechnetate ^{99m}Tc Solution. *United States Pharmacopeia XIX*, 463-464, July 1, 1975
3. Otte WK, Benua RS: Evaluation of the lead filter method of calibrating ^{99m}Tc and ^{99}Mo . *J Nucl Med* 9: 380-381(A), 1968

F. Figure Legends

FIG. 1. Geometry of source and low energy filter relative to the detector; (A) lead cover; (B) lead layer of filter canister; (D) copper layer of filter canister; (E) low density spacer (cardboard ring) to facilitate precise positioning of source in the filter canister; (F) source--10-ml serum vial containing 6 ml of solution (G) open bottom aluminum planchet for reproducibility of filter position; and (H) NaI(Tl) scintillation detector.

G. Table

TABLE 1. Sensitivity of Techniques for the Evaluation of Radionuclide Purity in Tc-99m Radiopharmaceuticals ($\mu\text{Ci}/\text{mCi}$)

Impurities	Pulse Height Analyzer	Isotope Calibrator		USP XIX Acceptance Limits
		Pb	Pb/Cd/Cu	
Mo-99	7×10^{-4}	—	—	1
I-131	1×10^{-4}	—	—	5×10^{-2}
Ru-103	6×10^{-5}	—	—	5×10^{-2}