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There have been infrequent reports of signs and symptoms consistent with seizure and severe hypersensitivity after administration of Tc99m Sestamibi. Please see brief summary of prescribing information on adjacent page.
INDICATIONS AND USAGE: CARDIOLITE® Kit for the preparation of Technetium Tc99m Sestamibi, is a myocardial perfusion agent that is indicated for detecting coronary artery disease by localizing myocardial ischemia (non-reversible defect) or evaluating myocardial function and developing information for use in patient management decisions. CARDIOLITE® Kit for the preparation of Technetium Tc99m Sestamibi is only useful in combination with rest and cardiovascular stress tests (e.g., exercise or pharmacologic stress in accordance with the pharmacologic stress agent's labeling).

It is usually not possible to determine the age of a myocardial infarction or to differentiate a recent myocardial infarction from ischemia.

CONTRAINDICATIONS: None known.

WARNINGS: In patients with known cardiac disease or who are suspected, care should be taken to assure continuous monitoring and treatment in accordance with accepted clinical procedure. Infrequently, death has occurred 4 to 24 hours after Tc99m Sestamibi use and is usually associated with exercise stress testing (See PRECAUTIONS).

Pharmacologic induction of cardiovascular stress may be associated with serious adverse events such as myocardial infarction, arrhythmias, hypertension, bronchoconstriction and cerebrovascular events. Caution should be used when pharmacologic stress is selected as an alternative to exercise; it should be used when indicated and in accordance with the pharmacologic stress agent's labeling.

PRECAUTIONS:

GENERAL

The contents of the vial are intended only for use in the preparation of Technetium Tc99m Sestamibi and are not to be administered directly to the patient without first undergoing the preparative procedure.

Radioactive drugs must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinic personnel. Also, care should be taken to minimize radiation exposure to the patients consistent with proper patient management.

Contents of the kit before preparation are not radioactive. However, after the Sodium Percetate Tc99m Injection is added, adequate shielding of the final preparation must be maintained.

The contents of the kit are sterile and non-pyrogenic. It is essential to follow directions carefully and to adhere to strict aseptic procedures during preparation.

Technetium Tc99m labeling reactions involved depend on maintaining the stannous ion in the reduced state. Hence, Sodium Percetate Tc99m Injection containing reactants should not be used.

Technetium Sestamibi Solutions should not exceed more than six hours after preparation.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

Stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

The most frequent exercise stress test endpoints, which resulted in termination of the test during controlled Tc99m Sestamibi studies (two-thirds were cardiac patients) were:

- Fatigue
- Dyspnea
- Chest Pain
- ST-depression
- Arrhythmia

Cardiogenic shock, angina, Impairment of Fertility

In comparison with most other diagnostic technetium labeled radiopharmaceuticals, the radiation dose to the ovaries (1.5mGy/30mCi at rest) 12 (rads/30mCi at rest) is high. Minimal exposure (ALARA) is necessary in women of childbearing age. (See Dose Intensity sub-section in DOSAGE AND ADMINISTRATION section.)

The active intermediate, [Cu(MBIB)2]BF4, was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/HGPRT and sister chromatid exchange tests (all in vitro). At genotoxic concentrations (2 μg/ml), an increase in cells with chromosome aberrations was observed in the in vitro human lymphocyte assay. [Cu(MBIB)]2BF4 did not show genotoxic effects in the in vivo mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (10 μg/ml, > 500 x maximal human dose).

Pregnancy Category C

Animal reproduction and teratogenecity studies have not been conducted with Technetium Tc99m Sestamibi. It is also not known whether Technetium Tc99m Sestamibi can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. There have been no studies in pregnant women. Technetium Tc99m Sestamibi Solutions should be given to a pregnant woman only if clearly needed.

Nursing Mothers

Technetium Tc99m Sestamibi is excreted in human milk during lactation. It is not known whether Technetium Tc99m Sestamibi is excreted in human milk. Therefore, formula feedings should be substituted for breast feedings.

Pediatric Use

Safety and effectiveness in children below the age of 18 have not been established.

ADVERSE REACTIONS: During clinical trials, approximately 8% of patients experienced a transient paraesthesia and/or taste perversion (metallic or bitter taste) immediately after the injection of Technetium Tc99m Sestamibi.

A few cases of transient headache, flushing, edema, injection site inflammation, dyspnea, nausea, vomiting, pruritus, rash, urticaria, dry mouth, fever, dizziness, fatigue, dyspnea, and hypotension also have been attributed to administration of the agent. Cases of angina, chest pain, and death have occurred (See WARNINGS and PRECAUTIONS).

The following adverse reactions have been rarely reported: signs and symptoms consistent with seizure occurring shortly after administration of the agent; transient asthenia, transient weakness, and syncope; and a severe hyperresponse, which was characterized by dyspnea, hypotension, bradycardia, and ashenia and vomiting within two hours after a second injection of Technetium Tc99m Sestamibi.

DOSAGE AND ADMINISTRATION: The suggested dose range for I.V. administration in a single dose to be employed in the average patient (70kg) is:

<table>
<thead>
<tr>
<th>Organ</th>
<th>2.0 hour</th>
<th>4.0 hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tc99m Sestamibi</td>
<td>1110MBq</td>
<td>1110MBq</td>
</tr>
<tr>
<td>30mCi</td>
<td>rua/gy</td>
<td>rua/gy</td>
</tr>
<tr>
<td>Brests</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Gallbladder Wall</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Small Intestine</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Large Upper Intestine Wall</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Low Upper Intestine Wall</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Stomach Wall</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Heart Wall</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Kidneys</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Liver</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Lung</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Bone Surfaces</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Ovaries</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Tests</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Red Marrow</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Urinary Bladder Wall</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Body</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Ingestion and injection of the radioactive solution must be accomplished with rest and cardiovascular stress (e.g., exercise or pharmacologic stress in accordance with the pharmacologic stress agent's labeling).

The dose administered should be the lowest required to provide an adequate study consistent with ALARA principles (see also PRECAUTIONS).

When used in the diagnosis of myocardial infarction, imaging should be completed within four hours after administration (see also CLINICAL PHARMACOLOGY).

The patient dose should be measured by a suitable radionuclide dosimetry system immediately prior to patient administration. Radiochemical purity should be checked prior to patient administration. Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

Store at 15-25°C before and after reconstitution. RADIATION DOSIMETRY: The radiation doses to organs and tissues of an average patient (70kg) per 1110MBq of Technetium Tc99m Sestamibi injected intravenously are shown in Table 4.

The following is a reagent kit for distribution to persons licensed to use non-pyrogenic materials pursuant to section 35.1 of Title 10 CFR Part 35, to persons who hold an equivalent license issued by an Agreement State, and, outside the United States, to persons authorized by the appropriate authority.

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The diagnostic sensitivity of Miraluma™ is decreased in tumors <1 cm in largest dimension. There have been rare reports of signs and symptoms consistent with severe hypersensitivity and seizure after administration of Technetium Tc 99m Sestamibi.

For more information, call Technical Services at 1-800-635-2683 or access the DuPont Radiopharmaceuticals Web site at www.radiopharm.com
INDICATIONS AND USAGE: Breast Imaging: MIRALUMA™, Kit for the Preparation of Technetium Tc 99m Sestamibi, is indicated for planar imaging as a second line diagnostic drug after mammography to assist in the evaluation of breast lesions in patients with an abnormal mammogram or a palpable breast mass.

MIRALUMA™ is not indicated for breast cancer screening, to confirm the presence or absence of malignancy, and it is not an alternative to biopsy.

Myocardial Imaging: CARDIOLITE® Kit for the preparation of Technetium Tc 99m Sestamibi, is a myocardial perfusion agent that is indicated for detecting coronary artery disease by localizing myocardial ischemia (reversible defects) and infarction (non-reversible defects), in evaluating myocardial function and developing information for use in patient management decisions. CARDIOLITE® evaluation of myocardial ischemia can be accomplished with rest and cardiovascular stress techniques (e.g., exercise or pharmacologic stress in accordance with the pharmacologic stress agent's labeling).

It is usually not possible to determine the age of a myocardial infarction or to differentiate a recent myocardial infarction from ischemia.

CONTRAINdications: None known.

WARNINGS: In studying patients in whom cardiac disease is known or suspected, care should be taken to assure continuous monitoring and treatment in accordance with safe, accepted clinical procedure. Infrequently, death has occurred 4 to 24 hours after Tc 99m Sestamibi use and is usually associated with exercise stress testing (See Precautions).

Pharmacologic induction of cardiovascular stress may be associated with serious adverse events such as myocardial infarction, arrhythmia, hypotension, bronchoconstriction and cerebrovascular events. Caution should be used when pharmacologic stress is selected as an alternative to exercise. It should be used when indicated and in accordance with the pharmacologic stress agent's labeling.

Technetium Tc 99m Sestamibi has been rarely associated with acute severe allergic and anaphylactic events of angioedema and generalized urticaria. In some patients the allergic symptoms developed on the second injection during CARDIOLITE® imaging. Patients who receive CARDIOLITE® or MIRALUMA™ imaging are receiving the same drug. Caution should be exercised and emergency equipment should be available when administering Technetium Tc 99m Sestamibi. Also, before administering either CARDIOLITE® or MIRALUMA™, patients should be asked about the possibility of allergic reactions to either drug.

PRECAUTIONS: GENERAL:
The contents of the vial are intended only for use in the preparation of Technetium Tc 99m Sestamibi and are not to be administered directly to the patient without first undergoing the preparative procedure.

Radioactive drugs must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to the patients consistent with proper patient management.

Contents of the kit before preparation are not radioactive. However, after the Sodium Pertechnetate Tc 99m Injection is added, adequate shielding of the final preparation must be maintained.

The components of the kit are sterile and non-gemogtic. It is essential to follow directions carefully and to adhere to strict aseptic procedures during preparation.

Technetium Tc 99m labeling reactions involved depend on maintaining the stannous ion in the reduced state. Hence, Sodium Pertechnetate Tc 99m Injection containing oxidants should not be used.

Technetium Tc 99m Sestamibi should not be used more than six hours after preparation.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radiopharmaceuticals and whose experience and training have been approved by the appropriate government agency authorized to license the use of radiopharmaceuticals.

Stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

The most frequent exercise stress test endpoints sufficient to stop the test reported during controlled studies (two-thirds were cardiac patients) were:

- Fatigue: 35%
- Dyspnea: 17%
- Chest Pain: 16%
- ST-depression: 7%
- Arthrymia: 1%

Information for Patients:
CARDIOLITE® and MIRALUMA™ are different names for the same drug. Patients should be advised to inform their health care provider if they had an allergic reaction to either drug or if they had an imaging study with either drug.

Carcinogenesis, Mutagenesis, Impairment of Fertility:
In comparison with most other diagnostic technetium labeled radiopharmaceuticals, the radiation dose to the ovaries (1.5 mrad/30 mCi at rest, 1.2 mrad/30 mCi at exercise) is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosimetry subsection in DOSAGE and ADMINISTRATION section.)

The active intermediate, Cu(MB)2BF4 was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/Hprt and sister chromatid exchange tests (all in vitro).

At cytotoxic concentrations (> 20 μg/ml), an increase in cells with chromosome aberrations was observed in the in vitro human lymphocyte assay. Cu(MB)2BF4 did not show genotoxic effects in the in vivo mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (9 mg/kg, > 600 × maximal human dose).

Pregnancy Category C
Animal reproduction and teratogenicity studies have not been conducted with Technetium Tc 99m Sestamibi. It is also not known whether Technetium Tc 99m Sestamibi can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. There have been no studies in pregnant women. Technetium Tc 99m Sestamibi should be given to a pregnant woman only if clearly needed.

Nursing Mothers
Technetium Tc 99m Pertechnetate is excreted in human milk during lactation. It is not known whether Technetium Tc 99m Sestamibi is excreted in human milk. Therefore, formula feedings should be substituted for breast feedings.

Pediatric Use
Safety and effectiveness in the pediatric population have not been established.

ADVERSE REACTIONS:
Adverse events were evaluated in 3741 adults who were evaluated in clinical studies. Of these patients, 3068 (77% men, 22% women, and 0.7% of the patient's genders were not recorded) were in cardiovascular clinical trials and 673 (100% women) in breast imaging trials. Cases of angina, chest pain, and death have occurred (see Warnings and Precautions). Adverse events reported at a rate of 0.5% or greater reported after receiving Technetium Tc 99m Sestamibi administration are shown in the following table:

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Selected Adverse Events Reported in &gt; 0.5% of Patients Who Received Technetium Tc 99m Sestamibi in Either Breast or Cardiac Clinical Studies*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body System</td>
<td>Breast Studies</td>
</tr>
<tr>
<td>Breast Studies</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>n = 673</td>
</tr>
<tr>
<td>Headache</td>
<td>21 (3.1%)</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>11 (1.6%)</td>
</tr>
<tr>
<td>Chest Pain/Angina</td>
<td>9 (1.3%)</td>
</tr>
<tr>
<td>ST segment changes</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Digestive System</td>
<td>8 (1.2%)</td>
</tr>
<tr>
<td>Nausea</td>
<td>4 (0.6%)</td>
</tr>
<tr>
<td>Special Senses</td>
<td>12 (1.8%)</td>
</tr>
<tr>
<td>Taste Perversion</td>
<td>129 (19.2%)</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>8 (1.2%)</td>
</tr>
</tbody>
</table>

* Excludes the 22 patients whose gender were not recorded.

In the clinical studies for breast imaging, breast pain was reported in 12 (1.7%) of the patients. In 10 of these patients the pain appears to be associated with biopsy/surgical procedures.

The following adverse reactions have been reported in ≤0.5% of patients: signs and symptoms consistent with sepsis occurring shortly after administration of the agent; transient arthralgia; angioedema, arthrymia, diziness, syncope, and severe hypersensitivity characterized by dyspnea, hypotension, bradycardia, asthma, abdominal pain, vomiting, pruritis, rash, and urticaria within two hours after a second injection of Technetium Tc 99m Sestamibi. A few cases of flushing, edema, injection site inflammation, dry mouth, fever, and fatigue have also been attributed to administration of the agent.

DOSAGE AND ADMINISTRATION:
For Breast Imaging: The recommended dose range for I.V. administration of MIRALUMA™ is a single dose of 740-1110 MBq (20 - 30 mCi).

For Myocardial Imaging: The suggested dose range for I.V. administration of CARDIOLITE® in a single dose to be employed in the average patient (70 Kg) is 370-1110MBq (10-30mCi).

Manufactured by DuPont Radiochemical Division The DuPont Merck Pharmaceutical Company 331 Treble Cove Road Billerica, Massachusetts USA 01822 For Ordering Tel: Toll Free 800-225-1572 All Other Business: 800-362-2698 (For Massachusetts and International, call 508-667-9531)

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  - determine diagnostic work-up
  - avoid unnecessary procedures
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  - evaluate response to treatment

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Kit for the Preparation of Indium In-111 Pentetreotide

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Please see adjacent page for brief summary of prescribing information.
**BRIEF SUMMARY OF PRESCRIBING INFORMATION**

**DESCRIPTION**

OctreoScan® is a kit for the preparation of indium-111 pentetreotide, a diagnostic radiopharmaceutical. It is a kit consisting of two components:

1. A lyophilized OctreoScan Reaction Vial which contains a lyophilized mixture of 10 μg pentetreotide.
2. A 10-mL vial of Indium-111 Chloride Sterile Solution.

Indium-111 pentetreotide is prepared by combining the two kit components.

**INDICATIONS AND USE**

Indium-111 pentetreotide is an agent for the scintigraphic localization of primary and metastatic neuroendocrine tumors bearing somatostatin receptors.

**CONTRAINDICATIONS**

None known.

**WARNINGS**

DO NOT ADMINISTER IN TOTAL PARENTERAL NUTRITION (TPN) ADMISSIONS OR INJECT INTO TPN INTRAVENOUS ADMINISTRATION LINES. IN THESE SOLUTIONS, A COMPLEX GLUCOSYL OCTREOTIDE CONJUGATE MAY FORM.

The sensitivity of scintigraphy with indium-111 pentetreotide may be reduced in patients concurrently receiving therapeutic doses of octreotide acetate. Consideration should be given to temporarily suspending octreotide acetate therapy before the administration of indium-111 pentetreotide and to monitoring the patient for any signs of withdrawals.

**PRECAUTIONS**

**General**

1. Therapy with octreotide acetate can produce severe hyponatremia in patients with insulinoma. Since pentetreotide is an analog of octreotide, an intravenous line is recommended in any patient suspected of having an insulinoma. An intravenous solution containing glucose should be administered just before and during administration of indium-111 pentetreotide.
2. The contents of the two vials supplied with the kit are intended only for use in the preparation of indium-111 pentetreotide and are NOT to be administered separately to the patient.
3. Since indium-111 pentetreotide is administered primarily by renal excretion, use in patients with impaired renal function should be carefully considered.
4. To help reduce the radiation dose to the thyroid, kidneys, bladder, and other target organs, patients should be well hydrated before the administration of indium-111 pentetreotide. They should increase fluid intake and void frequently for one day after administration of this drug. In addition, it is recommended that patients be given a mild laxative (e.g., bisacodyl or lactulose) before and after administration of indium-111 pentetreotide (see Dosage and Administration section).
5. Indium-111 pentetreotide should be tested for labeling yield of radioactivity prior to administration. The test solution must be used within six hours of preparation.

**Components**

- Lyophilized OctreoScan Reaction Vial: Contains 10 μg pentetreotide (N-[dextero-/alpha]-n,n,n,N'-tetraoctylacid-N'-alpha-D-
  phenylalaninyl-H-methylcyclst-L-phenylalaninyl-D-thyrophtyl-L-lysyl-L-threonyl-L-hemicyclst-L-threo-cydlic (2->7) disulfide, also known as octreotide DTPA).
  - For intravenous use.
  - Maximum concentration: 10,000 μg/mL.
  - Maximum activity: 111 MBq (3 mCi).
- Indium-111 Chloride Sterile Solution: Contains 0.9% sodium chloride (sterile). The solution is colorless to slightly yellow in color and is sterile and pyrogen-free. The pH of the solution is 5.0 to 7.0.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**

Studies have not been performed with indium-111 pentetreotide to evaluate carcinogenic potential or effects on fertility. Pentetreotide was evaluated for mutagenic potential in an in vitro mouse lymphoma forward mutation assay and in an in vivo mouse micronucleus assay. Evidence of mutagenicity was not found.

**Pregnancy Category C**

Animal reproduction studies have not been conducted with indium-111 pentetreotide. It is not known whether indium-111 pentetreotide can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Therefore, indium-111 pentetreotide should not be administered to a pregnant woman unless the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when indium-111 pentetreotide is administered to a nursing woman.

**Pediatric Use**

Safety and effectiveness in children have not been established.

**ADVERSE REACTIONS**

The following adverse events were observed in clinical trials at a frequency of less than 1% of 538 patients:

- Nausea, fever, flush, headache, hypotension, changes in liver enzymes, pruritus, rash, nausea, vomiting, and weakness.

These adverse effects were transient. Also in clinical trials, these were one reported case of bronchospasm and one case of decreased hemoglobin and hematocrit.

Pentetreotide is derived from octreotide which is used as a therapeutic agent to control symptoms from certain tumors. The usual dose for indium-111 pentetreotide is approximately 5 to 20 times less than for octreotide and is subtherapeutic.

**Dosage and Administration**

Before administration, a patient should be well hydrated. After administration, the patient must be encouraged to drink fluids liberally. Elimination of extra fluid intake will help reduce the radiation dose by flushing out unbound, labeled pentetreotide by glomerular filtration. It is also recommended that a mild laxative (e.g., bisacodyl or lactulose) be given to the patient starting the evening before the radioactive drug is administered, and continuing for 48 hours. Ample fluid intake is necessary during this period as a support both to renal elimination and the bowel-cleansing process. In a patient with an insulinoma, bowel-cleansing should be undertaken only after consultation with an endocrinologist.

The recommended intravenous dose for planar imaging is 111 MBq (3.0 mCi) of indium-111 pentetreotide prepared from an OctreoScan kit. The recommended intravenous dose for SPECT imaging is 222 MBq (6.0 mCi) of indium-111 pentetreotide.

The dose should be confirmed by a suitably calibrated radioactivity monitor chamber immediately before administration.

As with all intravenously administered products, OctreoScan should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Preparations containing particulate matter or discoloration should not be administered. They should be disposed of in a safe manner, in compliance with applicable regulations.

Aseptic techniques and effective shielding should be employed in withdrawing doses for administration to patients. Waterproof gloves should be worn during the administration procedure.

Do not administer OctreoScan in TPN solutions or through the same intravenous line.

**Radiation Dosimetry**

The estimated radiation doses to the average adult (70 kg) from intravenous administration of 111 MBq (3 mCi) and 222 MBq (6.0 mCi) are presented below. These estimates were calculated by Oak Ridge Associated Universities using the data published by Krenning, et al.

**Estimated Absorbed Radiation Doses after Intravenous Administration of Indium-111 Pentetreotide**

<table>
<thead>
<tr>
<th>Organ</th>
<th>111 MBq (3 mCi)</th>
<th>222 MBq (6.0 mCi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidneys</td>
<td>10.33 rem</td>
<td>21.66 rem</td>
</tr>
<tr>
<td>Liver</td>
<td>2.43 rem</td>
<td>5.315 rem</td>
</tr>
<tr>
<td>Spleen</td>
<td>14.77 rem</td>
<td>29.54 rem</td>
</tr>
<tr>
<td>Stomach</td>
<td>1.2 rem</td>
<td>2.43 rem</td>
</tr>
<tr>
<td>Upper Large Intestine</td>
<td>1.16 rem</td>
<td>2.32 rem</td>
</tr>
<tr>
<td>Lower Large Intestine</td>
<td>1.55 rem</td>
<td>3.1 rem</td>
</tr>
<tr>
<td>Adrenals</td>
<td>1.51 rem</td>
<td>3.02 rem</td>
</tr>
<tr>
<td>Thyroid</td>
<td>1.49 rem</td>
<td>2.975 rem</td>
</tr>
</tbody>
</table>

1. Values include a correction for a maximum of 0.1% indium-114m contaminant at calibration.
3. Assumes 4.8 hour voiding interval and International Commission on Radiological Protection (ICRP) 30 model for the gastrointestinal tract calculation.
4. Estimated according to ICRP Publication 53.
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Medi-Physics, Pharmacokinetic complex When CLINICAL days All have been conducted to evaluate carcinogenic potential or effects on fertility. Tetrofosmin sulphoniate was not mutagenic in vitro in the Ames test, mouse lymphoma, or human lymphocyte tests, nor was it clastogenic in vivo in the mouse micronucleus test. Pregnancy Category C Animal reproduction studies have not been conducted with Myoview. It is not known whether Myoview can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Therefore, Myoview should not be administered to a pregnant woman unless the potential benefit justifies the potential risk to the fetus. Nursing Mothers Technetium Tc99m Pertechnetate can be excreted in human milk. Therefore, formula should be substituted for breast milk until the technetium has cleared from the body of the nursing woman. Pediatric Use Safety and effectiveness in pediatric patients have not been established. ADVERSE REACTIONS Adverse events were evaluated in clinical trials of 764 adults (511 men and 253 women) with a mean age of 58.7 years (range 25-94 years). The subjects received a mean dose of 7.67 MBq on the first injection and 22.4 mCi on the second injection of Myoview. Deaths did not occur during the clinical study period of 2 days. Six cardiac deaths occurred 3 days to 6 months after injection and were thought to be related to the underlying disease or cardiac surgery. After Myoview injection, serious episodes of angina occurred in 3 patients. Overall cardiac adverse events occurred in 576 (less than 1%) of patients after Myoview injection. The following events were noted in less than 1% of patients: Cardiovascular: angina, hypertension, Torsades de Points Gastrointestinal: vomiting, abdominal discomfort Hypersensitivity: cutaneous allergy, hypertension, dyspnea Special Senses: metallic taste, burning of the mouth, smelling something There was a low incidences (less than 4%) of a transient and clinically insignificant rise in white blood cell counts following administration of the agent. DOSAGE AND ADMINISTRATION For exercise and rest imaging, Myoview is administered in two doses: • The first dose of 5-8 mCi (185-296 MBq) is given at peak exercise. • The second dose of 15-24 mCi (555-888 MBq) is given approximately 4 hours later, at rest. Imaging may begin 15 minutes following administration of the agent. Dose adjustment has not been established in renally or liver impaired, pediatric or geriatric patients. RADIATION DOSIMETRY Based on human data, the absorbed radiation doses to an average human adult (70 kg) from intravenous injections of the agent under exercise and resting conditions are listed in Table 1. The values are listed in descending order as rad/MCi and µGy/MBq and assume urinary bladder emptying at 3.5 hours. 

Table 1 Estimated Absorbed Radiation Dose (Technetium Tc99m Tetrofosmin Injection)

<table>
<thead>
<tr>
<th>Target Organ</th>
<th>Absorbed radiation dose</th>
<th>Exercise</th>
<th>Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gall bladder wall</td>
<td>0.123 mCi</td>
<td>33.2 µGy</td>
<td>180 µGy</td>
</tr>
<tr>
<td>Upper large intestine</td>
<td>0.075 mCi</td>
<td>20.1 µGy</td>
<td>113 µGy</td>
</tr>
<tr>
<td>Bladder wall</td>
<td>0.058 mCi</td>
<td>15.6 µGy</td>
<td>71 µGy</td>
</tr>
<tr>
<td>Lower large intestine</td>
<td>0.057 mCi</td>
<td>15.3 µGy</td>
<td>83.2 µGy</td>
</tr>
<tr>
<td>Kidney</td>
<td>0.045 mCi</td>
<td>12.1 µGy</td>
<td>65.3 µGy</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>0.032 mCi</td>
<td>8.0 µGy</td>
<td>40.4 µGy</td>
</tr>
<tr>
<td>Ovaries</td>
<td>0.029 mCi</td>
<td>7.88 µGy</td>
<td>35.5 µGy</td>
</tr>
<tr>
<td>Uterus</td>
<td>0.027 mCi</td>
<td>7.34 µGy</td>
<td>31.2 µGy</td>
</tr>
<tr>
<td>Bone surface</td>
<td>0.023 mCi</td>
<td>6.23 µGy</td>
<td>29.2 µGy</td>
</tr>
<tr>
<td>Pancreas</td>
<td>0.019 mCi</td>
<td>5.00 µGy</td>
<td>24.8 µGy</td>
</tr>
<tr>
<td>Stomach</td>
<td>0.017 mCi</td>
<td>4.60 µGy</td>
<td>21.7 µGy</td>
</tr>
<tr>
<td>Thyroid</td>
<td>0.016 mCi</td>
<td>4.34 µGy</td>
<td>20.2 µGy</td>
</tr>
<tr>
<td>Adrenals</td>
<td>0.016 mCi</td>
<td>4.32 µGy</td>
<td>21.6 µGy</td>
</tr>
<tr>
<td>Heart wall</td>
<td>0.015 mCi</td>
<td>4.14 µGy</td>
<td>21.4 µGy</td>
</tr>
<tr>
<td>Red marrow</td>
<td>0.015 mCi</td>
<td>4.14 µGy</td>
<td>21.4 µGy</td>
</tr>
<tr>
<td>Spleen</td>
<td>0.015 mCi</td>
<td>4.12 µGy</td>
<td>21.4 µGy</td>
</tr>
<tr>
<td>Muscle</td>
<td>0.013 mCi</td>
<td>3.52 µGy</td>
<td>15.2 µGy</td>
</tr>
<tr>
<td>Testes</td>
<td>0.013 mCi</td>
<td>3.41 µGy</td>
<td>14.1 µGy</td>
</tr>
<tr>
<td>Liver</td>
<td>0.012 mCi</td>
<td>3.22 µGy</td>
<td>14.1 µGy</td>
</tr>
<tr>
<td>Thymus</td>
<td>0.012 mCi</td>
<td>3.11 µGy</td>
<td>14.0 µGy</td>
</tr>
<tr>
<td>Brain</td>
<td>0.010 mCi</td>
<td>2.72 µGy</td>
<td>14.0 µGy</td>
</tr>
<tr>
<td>Lungs</td>
<td>0.008 mCi</td>
<td>2.27 µGy</td>
<td>12.8 µGy</td>
</tr>
<tr>
<td>Skin</td>
<td>0.008 mCi</td>
<td>2.07 µGy</td>
<td>11.7 µGy</td>
</tr>
<tr>
<td>Breasts</td>
<td>0.008 mCi</td>
<td>2.22 µGy</td>
<td>14.0 µGy</td>
</tr>
</tbody>
</table>

Dose calculations were performed using the standard MIRD method (MIRD Pamphlet No.1 (Rev). Society of Nuclear Medicine, 1976. Effective dose equivalents (EDE) were calculated in accordance with ICRP 53 (Ann. ICRP 18 (1-4), 1988) and gave values of 8.61 x 10^-6 mSv/MBq and 1.12 x 10^6 mSv/MBq after exercise and rest respectively. Manufactured by Amersham International plc - Amersham, United Kingdom. Patent No. 5,045,302 (r) 

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Therapeutic: For Intravenous Administration

INDICATIONS: Quadramet is indicated for relief of pain in patients with confirmed osteoblastic metastatic bone lesions that enhance on radionuclide bone scan.

CONTRAINDICATIONS: Quadramet is contraindicated in patients who have shown hypersensitivity to EDTMP or similar phosphonate compounds.

WARNINGS: Quadramet causes bone marrow suppression. In clinical trials, while blood cell counts and platelet counts decreased to a nadir of approximately 40% to 50% of baseline in 123 (85%) of patients within 3 to 5 weeks after Quadramet, and tended to return to pre-treatment levels by 6 weeks. The grade of marrow toxicity is shown in the table below.

Number and percent of patients who experienced marrow toxicity in clinical trials of Quadramet

<table>
<thead>
<tr>
<th>Hemoglobin</th>
<th>Leucocytes</th>
<th>Platelets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity Grade</td>
<td>Placebo</td>
<td>Placebo</td>
</tr>
<tr>
<td>0-2</td>
<td>N = 85</td>
<td>N = 185</td>
</tr>
<tr>
<td>3</td>
<td>6 (7%)</td>
<td>20 (11%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (1%)</td>
<td>3 (2%)</td>
</tr>
</tbody>
</table>

* Toxicity Grade based upon National Cancer Institute Criteria. Normal levels are Hemoglobin >10 g/dL, Leucocytes =4 x 10^9/L, and Platelets >150 x 10^9/L.

Before Quadramet is administered, consideration should be given to the patient's current clinical and hematologic status and bone marrow response history to treatment with myelotoxic agents. Metastatic prostate and other cancers can be associated with disseminated intravascular coagulation (DIC). Caution should be exercised in treating cancer patients whose platelet counts are falling or who have other clinical or laboratory findings suggesting DIC. Because of the unknown potential for additive effects on bone marrow, Quadramet should not be given concurrently with chemotherapy or external beam radiation therapy unless the clinical benefits outweigh the risks. Use of Quadramet in patients with evidence of compromised bone marrow reserve from previous therapy or disease involvement is not recommended unless the potential benefits of the treatment outweigh the risks. Blood counts should be monitored weekly for at least 6 weeks, or until recovery of adequate bone marrow function.

Pregnancy: As with other radiopharmaceutical drugs, Quadramet can cause fetal harm when administered to a pregnant woman. Adequate and well controlled studies have not been conducted in animals or pregnant women. Women of child-bearing age should have a negative pregnancy test before administration of Quadramet. If this drug is used during pregnancy, or if a patient becomes pregnant after taking this drug, the patient should be apprised of the potential hazard to the fetus. Women of child-bearing potential should be advised to avoid becoming pregnant soon after receiving Quadramet. Men and women patients should be advised to use an effective method of contraception after the administration of Quadramet.

PRECAUTIONS: EDTMP is a chelating agent. Although the chelating effects have not been evaluated thoroughly in humans, dogs that received non-radioactive samarium EDTMP (6 times the human dose based on body weight, 3 times based on surface area) developed a variable electrophoretic change (with or without the presence of hypocalcemia). The causal relationship between the hypocalcemia and ECG changes has not been studied. Whether Quadramet causes electrocardiographic changes or arrhythmias in humans has not been studied. Caution and appropriate monitoring should be given when administering Quadramet to patients (See Laboratory Tests). Because concomitant hydration is recommended to promote the urinary excretion of Quadramet, appropriate monitoring and consideration of additional supportive treatment should be used in patients with a history of congestive heart failure or renal insufficiency.

This drug should be used with caution in patients with compromised bone marrow reserves. See Warnings.

Skeletal: Spinal cord compression frequently occurs in patients with metastases to the cervical, thoracic or lumbar spine. In clinical studies of Quadramet, spinal cord compression was reported in 7% of patients who received placebo and in 6.5% of patients who received 1.0 mCi/kg Quadramet. Quadramet is not indicated for treatment of spinal cord compression. Spinal cord compression by metastatic growth for pain relief of metastatic bone cancer does not prevent the development of spinal cord compression. When there is a clinical suspicion of spinal cord compression, appropriate diagnostic and therapeutic measures must be taken immediately to avoid permanent disability.

Radiopharmaceutical agents should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

Quadramet, like other radioactive drugs, must be handled with care, and appropriate safety measures must be taken to minimize radiation exposure of clinical personnel and others in the patient environment.

Special precautions, such as bladder catheterization, should be taken with incontinent patients to minimize the risk of radioactive contamination of clothing, bed linens, and the patient's environment. Urinary excretion of radioactivity occurs over about 12 hours (with 35% occurring during the first 6 hours). Studies have not been done on the use of Quadramet in pregnant women or in patients with renal impairment.

PREGNANCY: Pregnancy Category D. See Warnings Section.

NURSING MOTHERS: It is not known whether Quadramet is excreted in human milk. Because of the potential for serious adverse reactions in nursing infants from Quadramet, a decision should be made whether to continue nursing or to administer the drug. If Quadramet is administered, formula feedings should be substituted for breast feedings.

PEDiatric USE: Safety and effectiveness in pediatric patients below the age of 16 years have not been established.

ADVERSE EVENTS:

Adverse events were evaluated in a total of 580 patients who received Quadramet in clinical trials. Of the 580 patients, there were 472 men and 108 women: with a mean age of 66 (range 20 to 91).

Of these patients, 472 (85%) had at least one adverse event.

In a subgroup of 395 patients who received Quadramet 1.0 mCi/kg, there were 23 deaths and 46 serious adverse events. The deaths occurred at an average of 67 days (9 to 130) after Quadramet. Serious events occurred at an average of 45 days (1 - 118) after Quadramet. Although most of the patient deaths and serious adverse events appear to be related to the underlying disease, the relationship of end stage disease, marrow invasion by cancer cells, previous myelotoxic treatment and Quadramet toxicity can not be easily distinguished.

In clinical studies, two patients with rapidly progressive prostate cancer developed thromboembolism and died 4 weeks after receiving Quadramet. One of the patients showed evidence of disseminated intravascular coagulation (DIC); the other patient experienced a total coagulation. Recorded with a suspicion of DIC. The relationship of the DIC to the bone marrow suppressive effect of Samarium is not known. Marrow toxicity occurred in 277 (47%) patients (See Warnings Section).

In controlled studies, 7% of patients receiving 1.0 mCi/kg Quadramet (as compared to 6% of patients receiving placebo) reported a transient increase in bone pain shortly after injection (flare reaction). This was usually mild, self-limiting, and responded to analgesics.

*Includes hemorrhage (gastrointestinal, ocular) reported in <1%.

In an additional 200 patients who received Quadramet in uncontrolled clinical trials, adverse events that were reported at a rate of 10% were similar except for 4 (5%) patients who had agranulocytosis. Other selected adverse events that were reported in <1% of the patients who received Quadramet 1.0 mCi/kg in any clinical trial include: alopecia, angina, congeal heart failure, sinus bradyarrhythmia, and vasospasm.

OVERDOSE: Overdose with Quadramet has not been reported. An antidote for Quadramet overdose is not known. The anticipated complications of overdosage would likely be secondary to bone marrow suppression from the radioactivity of 153Sm or secondary to hypocalcemia and cardiac arrhythmias related to the EDTMP.

DOSE and ADMINISTRATION: The recommended dose of Quadramet is 1.0 mCi/kg, administered intravenously over a period of one minute through a secure in-dwelling catheter and followed with a saline flush. Dose adjustment in patients at the extremes of weight have not been studied. Caution should be exercised when determining the dose in very thin or very obese patients.

The dose should be measured by a suitable radioactivity calibration system, such as a radioscintos waste collector, immediately before administration.

The dose of radioactivity to be administered and the patient should be identified by administering Quadramet. Patients should not be released until their radioactivity levels and exposure rates comply with federal and local regulations.

The patient should ingest (or receive by i.v. administration) a minimum of 590 mCi (2 cu. mCi) of fluid prior to injection and should void as often as possible after injection to minimize radiation exposure to the bladder.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit. The solution should not be used if it is cloudy or if it contains particulate matter.

Quadramet contains calcium and may be incompatible with solutions that contain calcium that can complex with and form calcium precipitates.

Quadramet should not be diluted or mixed with other solutions.

Warm at room temperature before administration and use within 8 hours of thawing.
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St. Lukes-Roosevelt Hospital Center, a 1315 bed voluntary university hospital of Columbia University College of Physicians and Surgeons, is offering a two-year nuclear medicine residency position beginning in July, 1998 consisting of concurrent training in clinical imaging, physics, radiopharmacy and radio-immunoassay. The program is designed to prepare trainees for examination and certification by the American Board of Nuclear Medicine. The Nuclear Medicine Service, a division of the Department of Radiology, is equipped with 16 state-of-the-art camera/computer systems, housed in laboratories for which new construction/renovation is nearly complete. A full spectrum of nuclear medicine and nuclear cardiology studies are performed. Research involves both clinical and basic sciences. Training programs include radiology and nuclear medicine residencies and a nuclear cardiology fellowship. A letter of inquiry should be sent to: Steven Parmett, MD. Roosevelt Hospital Site Director, Division of Nuclear Medicine, St. Lukes-Roosevelt Hospital, 1000 Tenth Amsterdam Ave., New York, NY 10019. SLRHC is an Equal Opportunity Employer.

Nuclear Medicine Residence/Fellowship
The Harvard Medical School, Joint Program in Nuclear Medicine, invites applications to the two-year residency and one-year fellowship programs that begin July, 1998. Please direct your inquiries to: Kathy Fantegrossi, Program Coordinator, Joint Program in Nuclear Medicine, Childrens Hospital, 300 Longwood Ave., Boston, MA 02115 or by phone at (617) 355-4004.

Position Wanted
ABNM eligible physician, trained in Johns Hopkins with excellent CV and experience in all areas in NM, seeking FT job. Dr. Lin (410)764-7973.

Soroka Medical Center of the Negev
Chair, Institute of Nuclear Medicine
Applications are invited for the for the Chair of the Institute of Nuclear Medicine at the Soroka Medical Center of the Negev, Beer Sheva, Israel. Soroka Medical Center is a 1000 bed tertiary medical center, a major teaching hospital of the Health Sciences Faculty of the Ben Gurion University of the Negev. Located in Beer Sheva, the fourth largest metropolitan center in Israel, it serves as a referral center for the entire population of the Negev and southern Israel. Once undergoing construction and development plans are completed within 4 years, the Soroka Medical Center will expand to 1200 beds and become Israel’s largest medical center.

The Institute of Nuclear Medicine at Soroka requires a leader to navigate and successfully develop it through this forthcoming phase of rapid growth. We seek to appoint to the position of Chair of the Institute of Nuclear Medicine an experienced clinician that has made significant contributions to the field of nuclear medicine. Applicants must be specialists or Boards Certified in nuclear medicine, and will be expected to provide leadership in teaching and research in clinical nuclear medicine. A conjoint teaching appointment at the Health Sciences Faculty of the Ben Gurion University of the Negev will be offered to the successful applicant.

For further information please contact:
Julian Zelingher M.D.
VP, Soroka Medical Center
PO Box 151
Beer Sheva 84101, Israel
Phone: 972 76403408
Facsimile: 97276277364
email: ilanz@bgumail.bgu.ac.il

Applications should be made in writing and mailed to the above mentioned address. Applications should include a letter of interest, a detailed curriculum vitae, evidence of medical licensure and specialization and names, addresses and contact numbers of three referees.
**CLINICAL SPECIALIST**

Perimmune, a biopharmaceutical company specializing in diagnostic imaging and radiotherapeutics has a position available in the Clinical Marketing Department for a Clinical Specialist. This challenging technical marketing position will involve working closely with our clinical research staff and sales marketing distributor to provide diagnostic imaging applications support and training to customers for our oncology imaging product line.

Within Perimmune, you will be responsible for developing technical training programs, technical marketing materials, recruitment of “core Imaging centers” and applications support for our clinical sites.

We seek an individual with a background in nuclear medicine with special emphasis in SPECT. CT and MRI experience is also desirable. Prior experience in application support is essential. Excellent communications skills required.

If you are interested in joining a dynamic biopharmaceutical company at the forefront of diagnostic imaging products, please send your CV in confidence to:

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Perimmune Inc.
1330 Piccard Drive
Rockville, MD 20850
Phone: 301-258-5200 • Fax: 301-840-2161
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**BRAIN SPECT IMAGING FELLOWSHIP**

A one or two year fellowship position in brain imaging is available beginning July 1, 1998 in the Division of Nuclear Medicine, Department of Radiology, at the University of Alabama Medical Center at Birmingham.

Applicants should have completed a residency in Nuclear Medicine or Radiology, have an intense interest in both clinical and research brain imaging and should be eligible for licensure in the state of Alabama. Successful candidates will assume a significant role in multiple research projects involving all aspects of clinical brain SPECT imaging, triple-head dynamic brain SPECT, quantitative Xe-133 brain SPECT on the Picker Prism, F-18 FDG PET imaging using the ADAC MCD coincidence camera, 4.1T NMR metabolic and 4.1T fMR brain imaging. Please send letter of interest and curriculum vitae to:

James M. Mountz, MD, PhD, Director of Neuro-Nuclear Imaging, Division of Nuclear Medicine, Department of Radiology, The University of Alabama at Birmingham, 619 South 19th Street, Birmingham, AL 35233-6835. Phone: (205) 975-8336, Fax: (205) 934-5589, E-Mail: medy010@uabdpd.dpo.uab.edu.

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**Medical Imaging Manager**

Kaiser Permanente South Sacramento has an immediate opening for a Medical Imaging Manager. You will manage all administrative and clinical operations of the radiology department and develop and maintain department budget. Requires Bachelor's degree in allied Health Care, Health Administration or Business (Master's preferred); CRT and ARRT certifications; 5 years' recent experience as a Diagnostic Imaging Technologist; 3 years' recent management experience; and knowledge of government regulations.

Please send your resume, or apply in person, Tuesday-Thursday, 10am-3pm, at: HR Staffing Services, 6600 Bruceville Rd., Sacramento, CA, 95823; or fax to (916) 688-2223. For this and other opportunities, please call our Jobline: (916) 688-2369. We are an EEO/C/AA employer.
STAFF SCIENTIST, MATHEMATICIAN/STATISTICIAN

The Life Sciences Division at the Lawrence Berkeley National Laboratory has an opening for a Staff Scientist, Mathematician with a very strong background in developing algorithms and procedures for the analysis of data from medical imaging systems. Participate in research on acquisition and analysis of nuclear medicine data with emphasis on positron emission tomography (PET) and single photon emission computed tomography (SPECT). Ph.D. or equivalent experience in mathematics or statistics. Extensive experience in inverse problems in general and reconstruction of three-dimensional distributions from projections in particular. Experience in compartmental modeling and kinetic analysis of dynamic biological systems. Experience with PET and SPECT data analysis, especially physical and physiological modeling. Apply to either the Berkeley Laboratory, Life Sciences Division, c/o Dr. Ronald H. Huesman, Center for Functional Imaging, Mail Stop 55/121, Berkeley, CA 94720, or to the Berkeley Lab, Staffing Office, One Cyclotron Road, Mail Stop 938A, Berkeley, CA 94720. You may see the full position description and qualification requirements on our LBNL Web site: http://www.lbl.gov/CJO. Affirmative Action Employer.

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- has the most retail shopping per capita of any North American city.

- has a 35% exchange rate in favor of the US dollar ($1 US = $1.35 Canadian)

- is the educational center of Canada with 3 universities and 6 colleges in Toronto proper.

- is Canada's economic center and one of the world's financial capitals.

Join 4,000 nuclear medicine professionals from around the world at the Society of Nuclear Medicine's 45th Annual Meeting June 7-11, 1998.

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One of the first requests from the inspector was for documentation of competencies for my staff.

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Cyberspace is filled with hundreds of fascinating sites for allied health professionals. But how do you access them? Which sites have solid information, and which are fluff?

Navigating the net can be confusing at first, but the SNM Technologist Section has made it easy for health care web-novices to make their way round the cyberuniverse.

The Internet Guide for Allied Health Professionals is the only internet handbook specifically designed for professionals in diagnostic imaging and allied fields. No prior experience with the internet is necessary—just a basic familiarity with computers. The Internet Guide covers all you need to get started surfing through the wealth of medical or diagnostic sites.

Order your copy now from SNM's book distributor, Matthews Medical Books, at their toll-free number 1-800-633-2665 (non-U.S., 314-432-1401, or Fax: 314-432-7044).

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Adapting your facility's procedures to Nuclear Regulatory Commission regulations can be a challenge. If you sometimes wonder how your nuclear medicine facility can best meet NRC rulings, or if you just have an occasional question about a specific regulation, you'll want to own The Nuclear Medicine Handbook for Achieving Compliance with NRC Regulations.*

Chapters cover the full range of NRC-related topics:
- Licensing and Administrative Controls
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For more than 40 years, the Society of Nuclear Medicine (SNM) has been the most respected publisher of specialized, definitive studies in the field. And SNM educational books set the gold standard for proficiency in key areas of the discipline. Because the Society publishes only clearly focused research on areas of broad importance, as well as on the most advanced findings in the field, its books, journals and pamphlets offer information available nowhere else. SNM study guides—on nuclear medicine science and technology—are underwritten by the expertise of leading SNM physicians, scientists and technologists. In addition, the Society offers highly regarded introductions to the field, both for patients as well as medical students.

No imaging sciences library is complete without these definitive SNM titles.
INTRODUCTIONS, GUIDES, STUDY AIDS

Review of Nuclear Medicine Technology, second edition

Preparation for Certification Examinations in Nuclear Medicine Technology
Ann M. Steves, University of Alabama

Review, softcover, 141 pp., 1996, $42 (S30 SNM member).
Preparation, softcover, 106 pp., 1997, $25 (S18 SNM member).

Ann Steves’ highly popular Review of Nuclear Medicine Technology is a proven performance-booster on national certification examinations.

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The illustrated Preparation contains hundreds of self-quizzing questions and answers mirroring the structure of those on national certification exams. Questions cover: Radiopharmacy • Radiation Safety • Instrumentation • Patient Care • Clinical Procedures.

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Naomi P. Alazraki and Andrew T. Taylor, Jr., Emory University School of Medicine

This entirely updated and revised edition builds on the enormous popularity of the original Fundamentals.

Unquestionably the single best advanced introduction to the field, the New Fundamentals will be used by hundreds of medical students, residents, referring physicians and industry specialists seeking to gain a comprehensive, authoritative perspective on the field. Concise, topical and clearly written, New Fundamentals is aimed at presenting major modern patient management in nuclear medicine.

Also covered are risks and benefits of nuclear medicine, radiation basics and rationales for ordering various common clinical imaging procedures. A nuclear medicine glossary and an appendix summarizing the uses of radionuclides for particular diseases complete this enormously popular handbook.

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New! The Nuclear Medicine Handbook for Achieving Compliance with NRC Regulations
Katherine M. Elliott, Jeffrey S. Mason and Alisha C. Mitro, Office of Radiation Safety, Indiana University School of Medicine


This clearly organized handbook explains how a nuclear medicine facility can best meet Nuclear Regulatory Commission (NRC) rulings. A valuable addition to any department’s reference library even when staff have only an occasional question about a specific regulation. This well-organized, easy-to-use guide has nearly everything needed to interpret and implement NRC regulations and license conditions as they apply to nuclear medicine.*

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Helpful appendices include information on record retention, nuclide data and NRC contacts.

The book also includes an extensive set of NRC-related forms easily adapted for your facility.

*The Handbook is not a substitute for any regulation or license condition and is not endorsed by the NRC.

New! Practical Mathematics in Nuclear Medicine Technology
Patricia Wells, University of Medicine and Dentistry of New Jersey and Martha Pickett, University of Arkansas Medical Science

Contains everything needed to perform a wide range of calculations in statistics, radiation safety, instrumentation, radiopharmacy and clinical procedures. Includes an introduction to essential mathematical functions for technologists working in radiation imaging.

Each chapter offers clearly stated basic principles, followed by steps for specific calculations, and fully illustrated (and explained!) examples.

In addition, each copy includes a Computerized Practice Test to help prepare for certification exams or simply to hone mathematical skills.

Curriculum Guide for Nuclear Medicine Technologists, second edition
Wanda M. Mundy and Gregory Passmore, Medical College of Georgia

Softcover, 86 pp., 1993, S13.95 (Bulk quantities of 5 or more, S9.95 each). [ISBN 0-932004-42-3]
SOCIETY OF NUCLEAR MEDICINE SELF-STUDY PROGRAMS

The SNM Nuclear Medicine Self-Study Programs are unequivocally the finest self-assessment tools available for nuclear medicine. Covering many of the major body systems and instrumentation areas of the field, all four programs offer timely, comprehensive and authoritative treatments of every area.

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Self-Study Program III: Nuclear Medicine Cardiology and Self-Study Program IV: Nuclear Medicine Oncology are the two newest in the series, offering an innovative package and approach to ensure that readers receive timely, targeted materials as soon as they're available. Both Self-Study series—Cardiology and Oncology—offer eight topic booklets, with a new topic published every three months beginning summer 1997.

New! Self-Study Program III: Nuclear Medicine Cardiology
Elias H. Botvinick, University of California San Francisco School of Medicine, Senior Editor

(Cardiology Topic Booklets, Current and Forthcoming:
• Physical and Technical Aspects of Nuclear Cardiology (October 1997) • Radionuclide Assessment of Congenital Heart Disease (January 1998) • Myocardial Perfusion Imaging by Single Photon Radionuclides I • Myocardial Perfusion Imaging by Single Photon Radionuclides II • Radionuclide Ventriculography • Imaging Acute Myocardial Infarction • Cardiac Positron Imaging • Scintigraphy with Pharmacologic Stress.

New! Self-Study Program IV: Nuclear Medicine Oncology
Thomas P. Haynie, MD Anderson Cancer Center, Senior Editor

(Oncology Topic Booklets, Current and Forthcoming:
• Nuclear Medicine Oncology Overview (July 1997) • Conventional Tumor Imaging (October 1997) • Antibody Tumor Imaging (February 1998) • PET Tumor Imaging (June 1998) • Non-Antibody Cancer Therapy (September 1998) • Antibody Cancer Therapy (December 1999) • Bone Cancer Therapy (March 1998) • The Future of Nuclear Medicine Oncology (June 1999).

Also Available
Self-Study Program I: Radiobiology and Radiation; Pulmonary Nuclear Medicine; Gastrointestinal Nuclear Medicine; Skeletal Nuclear Medicine
Barry A. Siegel, Mallinckrodt Institute of Radiology and Peter T. Kirchner, University of Iowa Hospital and Clinics, Senior Editors

SNM PATIENT PAMPHLETS

Nuclear medicine practitioners know that patients are more confident and more willing to undergo procedures if they're equipped with information about what studies involve. The all-new SNM Patient Pamphlet Series targets both general information on nuclear medicine and on specific common procedures. Each pamphlet includes an authoritative, clearly written general summary of nuclear medicine as well as preparation for a specific test and the purpose of particular studies.

The new Benefits of Nuclear Medicine pamphlet provides a general overview of nuclear medicine as well as information about various nuclear medicine procedures and answers to the most commonly asked questions. (Replaces A Patient's Guide to Nuclear Medicine)
All pamphlets $0.40/each. Pamphlets sold in packages of 50.

Subject-Specific Pamphlets
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“Precauciones para pacientes que reciben tratamiento con radioyodo” (Spanish-language version of “Guidelines for Patients Receiving Radioiodine Treatment”)
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“Liver and Hepatobiliary Imaging”
“Ovarian and Colorectal Cancer Imaging”
“Prostate Cancer Imaging”
“Breast Imaging”
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Computers in Nuclear Medicine: A Practical Approach
Kai Lee, Department of Radiology, USC Medical School
Contents include:
Functions and Components of a Computer System • Mass Storage Devices • Input and Output Devices • Computer Software • Nuclear Medicine Image Acquisition Methods • Methods of Qualitative Image Analysis • Quantitative Image Analysis • Nuclear Cardiology • SPECT • An All-Digital Nuclear Medicine Department • Criteria for Selection of Computers • Appendices.

Clinical Computers in Nuclear Medicine
Katherine L. Rowell, University of Alabama, Birmingham, Editor
Contents include:
Introduction • General Imaging Applications • Computer Applications in Nuclear Cardiology • Renal Imaging • Computer Applications in Brain Imaging • Image Filtering • Appendix.

Self-Study Program II: Instrumentation
See Society of Nuclear Medicine Self-Study Programs.

PROCEEDINGS

Radionuclides in Nephrourology
Andrew T. Taylor, Jr., Joseph V. Nally and Henrik Thomsen, Editors
Contributions from an international panel of experts highlight state-of-the-art applications of nuclear medicine in nephrology and urology.

This collection of articles provides a comprehensive review of the latest nuclear medicine procedures used to evaluate patients with kidney and urinary tract disease. Consensus reports cover: ACE Inhibitor Renography for Detecting Renovascular Hypertension; Renal Clearance; Diuresis Renography for Investigating Dilated Upper Urinary Tract.

Other topics include:
Simultaneous OIH and DTPA Renography in Essential Hypertension • Noninvasive Quantification of Individual Renal Function • Renal SPECT with Dynamic Tracers • Prostate Cancer Radioimmunoscintigraphy.

MIRD BOOKS

SNM's Medical Internal Radiation Dose (MIRD) Committee serves as the international clearinghouse for data concerning the use of radionuclides in humans. MIRD publications are authoritative, up-to-date and thorough.
intracellularly localized radionuclides using cellular S values for emitters of monoenergetic electrons and alpha particles, and radionuclides listed in *Radionuclide Data and Decay Schemes*. Cellular absorbed-dose estimates play an important role in evaluating the relative merits of different radionuclides and radiopharmaceuticals in improving the overall safety and efficacy of diagnostic and therapeutic nuclear medicine.

**MIRD Primer for Absorbed Dose Calculations (Revised Edition)**
Prepared by Robert Loewinger, Center for Radiation Research, National Bureau of Standards; Thomas F. Budinger, Donner Laboratory; and Evelyn E. Watson, Oak Ridge Associated Universities

**MIRD Radionuclide Data and Decay Schemes**
David A. Weber, University of California, Davis; Keith F. Eckerman, Oak Ridge National Laboratory; L. Thomas Dillman, Ohio Wesleyan University and Jeffrey C. Ryman, Oak Ridge National Laboratory

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**Quality Assurance Resource Manual for Nuclear Medicine**
Susan Gilbert, Veterans Administration Medical Center, Portland, Oregon, Editor

**Low-Level Radiation Effects: A Fact Book**
A. Bertrand Brill, University of Massachusetts Medical Center, Editor

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Quite simply, the premiere journal in the field, *The Journal of Nuclear Medicine (JNM)* remains number one on the Science Citation Index *Journal Citation Index* ranking of diagnostic imaging journals. No other publication approaches *JNM*’s breadth and incisiveness in coverage of nuclear medicine science, research and news. The first choice for publication among the discipline’s leaders in research. Every month, *JNM* brings its readers recent advances in human and laboratory studies, the latest research in nuclear cardiology, oncology, neurology as well as continuing education. In addition, *JNM*’s *Newsline* offers in-depth reporting on news affecting every facet of the field—the lastest scientific events, government decisions, industry developments and socioeconomic trends.

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**Journal of Nuclear Medicine Technology**
The sister publication to *JNM*, the *Journal of Nuclear Medicine Technology (JNMT)* focuses entirely on the technology crucial to nuclear medicine. In peer-reviewed articles, every quarter the journal offers recent, technically-centered articles on imaging and instrumentation, radiopharmacy, quality assurance, radiation safety and more.

*JNMT* also serves as an invaluable continuing education tool, with teaching editorials, reviews of programs, certification updates.

Subscription Rates: $80 within the U.S.; $90 in Canada and Pan American countries; $95 elsewhere.

To subscribe to either journal, send your check or money order to: Journal Subscription, Society of Nuclear Medicine, 1850 Samuel Morse Dr., Reston VA 20190-5316.

Single copies may be ordered through our toll-free number. Both *JNM* and *JNMT* are indexed in *Index Medicus*.

**Uptake: The Newsletter of the Technologist Section**
Brings readers up-to-date, topical information on Technologist news. Includes continuing education articles and easy-to-understand explanations of current government regulations and rulings. Individual non-member subscriptions $15 U.S., $25 international (Contact (703) 708-9000, ext. 211 for more information.)
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CALL FOR TEACHING CASE STUDIES

The Society of Nuclear Medicine is embarking on a multi-year program to enhance the quality of nuclear medicine practice by providing a physician self-assessment program.

The Society is calling upon our membership to submit case studies to be considered by the Practice Management Committee for inclusion in SNM PEP. Cases will be assessed by physicians with varied levels of nuclear medicine practice.

The Physician Evaluation Program (SNM PEP) will target full and part-time nuclear medicine physicians as well as referring physicians such as radiologists, cardiologists, oncologists, and endocrinologists. Participating physicians will dictate a report after review and interpretation of each patient case and receive educational feedback on areas of weakness for each case module scored. Phase one of the program will include five nuclear medicine modules covering cardiovascular, bone, lung, thyroid and scintimammography procedures.

We ask that each case contain 2-5 images which may be submitted as original film or original digital (preferred). In addition, you should submit the real patient history, patient scan time and any other pertinent information, correlative imaging if available, and a copy of the final report in a separate word processing file.

Upon acceptance of each complete case for utilization in an SNM PEP module you will receive a $100.00 honorarium. Unfortunately, no honoraria will be awarded for cases submitted but not chosen for utilization. The decision for acceptance by the Practice Management Committee will be final.

If your program is interested in learning more about this exciting opportunity to submit case studies, please contact Wendy Smith, Director of Health Care Policy, at the SNM headquarters office at 703-708-9000, ext. 242.

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Society of Nuclear Medicine
45TH ANNUAL MEETING

Critical Dates

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<tr>
<td>PRE-REGISTRATION FORM</td>
<td>February 30, 1998</td>
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<td>HOUSING FORM</td>
<td>May 6, 1998</td>
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DON'T FORGET THE MID-WINTER MEETING IN LAS VEGAS, NEVADA

**DATE:** January 24 – February 3, 1998

**LOCATION:** The Alexis Park Resort

**EDUCATION PROGRAM SPONSOR:** The Computer and Instrumentation Council

*For the most current meeting information, please visit our web site at [www.snm.org](http://www.snm.org)*
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