EPIC DIGITAL DETECTORS BRING ENABLING TECHNOLOGY TO NUCLEAR CAMERA DESIGN.
ADAC raises the standard for nuclear imaging.

Digital Done Right.
EPIC™ Detectors make "total-digital" image chains an essential clinical standard. Enhanced performance, system stability and remote servicing lead to increased productivity. Enabling technology means clinical protocols, like weighted-spatial analysis, 511 keV and other imaging protocols are software-driven, bringing a new ease to system expandability.

A New Focus on Attenuation.
VANTAGE™ Technology offers new ways to improve clinical accuracy in thallium and technetium cardiac SPECT imaging. Efficient dual 90° narrow-beam geometries optimize throughput with simultaneous transmission mapping during emission data collection. (*Pending 510k Approval)

A Visual Program Environment.
MacroVision™ is a multi-level, object-driven visual programming language. For the first time, there's an easy and effective tool for creating customized macros or entire new applications.

See for yourself how ADAC is changing the outcome of nuclear imaging.
For information and video, call 800-538-8531 ext. 2100 (U.S.).
It's not over until you get past the artifacts

When female and large-chested or obese male patients undergo myocardial perfusion imaging, there is the potential for images to be peppered with artifacts—possibly resulting in inconclusive studies.

Cardiolite® comes through, especially in these patients. The higher photon energy (140 keV) provides greater anatomical detail to enhance interpretive confidence—which may reduce false-positives and equivocal cases.

Cardiolite also offers the unique advantage of direct measurement of both myocardial perfusion and ventricular function from one study.

So rather than settle for potentially inconclusive images, use Cardiolite and reduce soft-tissue attenuation.

Cardiolite
Kit for the preparation of Technetium Tc99m Sestamibi

To reduce soft-tissue attenuation
Cardiolite comes through

© 1994, DuPont Pharma
The isobutylisonitrile.
coronary Tc:99n exposure minimize Radiopharmaceuticals mammary comparison usually active localization (all safe testing) radiation of myocardial infarction use of myocardial agent in preparation. Preparation by labeling the agent, myocardial abnormality, artesys stress and intestinal occlusion occurred in inferior-posterior wall in patients with suspected angina pectoris or coronary artery disease was shown. Disease localization isolated to the apex has not been established.

Tc99m Sestamibi has not been studied or evaluated in other cardiac diseases. It is usually not possible to differentiate recent from old myocardial infarction or to differentiate 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 continue continuous monitoring and treatment in accordance with the 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). 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 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 Tc99m Injection is added, adequate shielding of the final preparation must be maintained.

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

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

Technetium Tc99m Sestamibi should not be used more than six hours after preparation.

Radiohazardous 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:

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>35%</td>
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<tr>
<td>Dyspnea</td>
<td>17%</td>
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<tr>
<td>Chest Pain</td>
<td>16%</td>
</tr>
<tr>
<td>ST-depression</td>
<td>7%</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>1%</td>
</tr>
</tbody>
</table>

Carcinogenesis, Mutagenesis, Impairment of Fertility

In comparison with most other diagnostic radiopharmaceuticals, the radiation dose to the organs (1Sv/60g for adults) at rest, 1.2 rad/g for cardiac exercise activity, is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosimetry subsection in DOSAGE AND ADMINISTRATION section.)

The active intermediate, Cu(MIBI)BF₆, was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/HPTRT and sister chromatodeletion tests all (0.0001). At 30 Gy, no increase in cells with chromosome aberrations was observed in the in vitro human lymphocyte assay. Cu(MIBI)BF₆, did not show genotoxic effects in the in vivo mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (30mg/kg = 400 × maximal human dose).

Pregnancy Category C

Animal reproduction and teratogenicity 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 should be given to a pregnant woman only if clearly needed.

Nursing Mothers

Technetium Tc99m Pertechnetate 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.
To keep current in a scientifically and technologically challenging field, nuclear medicine practitioners need to be up to date on the tools they need to perform at peak.

But do you have the tools you'll need to remain competitive among a range of diagnostic specialties competing for referrals?

The Society of Nuclear Medicine's "Pocket Lecture Series" can help you put Nuclear Medicine at the top of the list when referring physicians seek diagnostic imaging. This series provides concise, accurate, visually memorable presentations on a range of key nuclear medicine procedures.

When your referring physician colleagues are well-informed about nuclear medicine diagnostic tests, they'll be more likely to use them. The Pocket Lecture Series is targeted to improve YOUR referral rates.

Four lectures are available to new subscribers and other valuable presentations will appear in 1995. Each package comprises exactly what you need for an informative and informal talk to referring physicians and residents—

- 14 instructional slides, plus title and references slides
- a booklet summarizing and explaining each slide

And remember: Pocket Lecture Series slides are now the ONLY professional slides now being offered through the Society of Nuclear Medicine's Audiovisual Program.
When you order your subscription to the Pocket Lecture Series, you’ll receive Volumes 1 through 4, with three new volumes forthcoming in 1995.

**Volume 1:** “Captopril Renography,” Salil D. Sarkar, MD, SUNY Health Science Center, Brooklyn, NY.

Highlights today’s nuclear medicine approach for the diagnosis of patients with renovascular hypertension. With today’s high-resolution quantitative scintigraphy and ACE inhibiting drugs, nuclear medicine provides an exceptional test to identify that fortunate patient with potentially surgically reversible hypertension. Lecture clarifies principles of ACE-inhibition scintigraphy, teaches how to utilize an efficient protocol for performing and interpreting captopril renography.

**Volume 2:** “Double-Phase Tc99m Sestamibi Parathyroid Scintigraphy,” Raymond Taillefer, MD, FRCP (C), Hotel Dieu Hospital, Montreal, Quebec.

Provides a distillation of decades of development in clinical gastrointestinal scintigraphy from Temple University Hospital, a center renowned for its contributions to the subject. This pocket lecture will enable you and your colleagues to better understand this area, including clinical presentation of GI motility disorders, preparation of standardized gastric emptying acquisition protocol, processing of standardized gastric emptying studies, and more.

**Volume 3:** “Comprehensive Gastric Motility Studies,” Alan H. Maurer, MD, Temple University Hospital, Philadelphia, PA.

Clearly demonstrates the diagnostic advantages of a new and simpler scintigraphic method for noninvasive localization of hyperfunctional parathyroid tissue. Dr. Taillefer’s presentation includes topics such as the clinical presentation and etiology of hyperparathyroidism, standardized acquisition and processing protocols, interpretation of typical case findings, and more.

**Volume 4:** “Quantitative Cholescintigraphy,” Gerbail T. Krishnamurthy, MD, FACP, VA Medical Center, Tucson, AZ.

Dr. Krishnamurthy demonstrates optimal hepatobiliary scintigraphy technique by supplementing diagnostic images with accurate quantization of liver and gall bladder function. Shows how nuclear medicine physicians can now provide referring physicians a reproducible measure of gall bladder contractile function, which can uniquely answer many clinical questions.

---

**FORTHCOMING IN 1995**

**Volume 5:** “Combined Functional Perfusion Myocardial Perfusion Imaging,” Mark D. Wittry, MD, St. Louis University Hospital, St. Louis, MO.

**Volume 6:** “Thallium and Sestamibi Breast Scintigraphy,” Alan D. Waxman, MD, Cedars-Sinai Medical Center, Los Angeles, CA.

**Volume 7:** “Detection of Cerebrovascular Disease with Diamox/HMPAO Scintigraphy,” Jack E. Juni, MD, William Beaumont Hospital, Royal Oak, MI.
The Next Generation
TRIAD XLT 20 Whole BodySPECT

Superior Imaging Through Clinical Validation

Best Image Resolution
- PROXIMA Real-time Auto Body-Contouring
- Center-of-Rotation and Axial Alignment accuracy guaranteed to 0.1mm rms
- Angular accuracy guaranteed to 0.1° rms
- Patented linearity and X-Y shift correction

New Imaging Applications in Nuclear Medicine
- Whole BodySPECT multiple FOV SPECT
- 511 keV F-18 FDG SPECT
- Gated Cardiac SPECT/ Ejection Fraction

Imaging Complete Patient Population
- Industry-best 20 in. axial FOV
- Industry-best 30 in. patient imaging aperture
- 500 lb. patient weight capacity
- 6 ft. 4 in. patient height imaging capacity

Best Clinical Throughput
- Entire torso SPECT in one rotation
- Entire torso three planar views
- Six-view WholeBody Scan in 22 minutes
- Whole BodySPECT up to 6 ft. 4 in.
- Optimized for Oncology Applications

Patient Comfort
- 36 in. Open Access Gantry
- Elegant "Whisper-Quiet" Operation
- Extra-wide Patient Table

Efficient Clinical Operation
- QuickVIEW Swing Arm P-scope
- Automated Pre-Scan System Setup
- Simple Protocol-based Scan Setup
- State-of-the-art Sun computing speed

First Communications of Multi-Site Clinical Validation Results From TRIONIX. Spring, 1995
Worldwide Validation Track Record Communication
of TRIAD XLT Products

-Triple Crown Results-  
-Benefits-
  * Excellent Image Resolution:  
  Better Diagnostic Detection  
  * High Clinical Throughput:  
  Better Clinical Revenue  
  * Elegant Whisper-Quiet Operation:  
  Better Patient Acceptance  
  with  
  * F-18 FDG SPECT at 10 mm FWHM Resolution:  
  Metabolic Imaging Reality

TRIAD XLT 20", Whole BodySPECT

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<tr>
<th>Validation Sites</th>
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<tr>
<td>St. Luc, UCL, Brussels, Belgium</td>
<td>Dr. Beckers, Dr. Pauwels</td>
<td>May 1994</td>
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<tr>
<td>Hospital of St. Raphael, New Haven, Connecticut</td>
<td>Dr. Caride</td>
<td>July 1994</td>
</tr>
<tr>
<td>ASAN Medical Center, Seoul, Korea</td>
<td>Dr. Moon, Dr. Lee</td>
<td>July 1994</td>
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<tr>
<td>Mt. Godinne, UCL, Brussels, Belgium</td>
<td>Dr. DeCoster</td>
<td>September 1994</td>
</tr>
<tr>
<td>Centennial, Nashville, Tennessee</td>
<td>Dr. Bell</td>
<td>November 1994</td>
</tr>
<tr>
<td>VA Indianapolis &amp; University of Indiana</td>
<td>Dr. Witt, Dr. Burt</td>
<td>January 1995</td>
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TRIAD XLT 9", Cardiac/Brain SPECT

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<tr>
<td>Johns Hopkins, Baltimore, Maryland (two systems)</td>
<td>Dr. Natarajan</td>
<td>February, June 1993</td>
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<tr>
<td>VA San Francisco, UC, San Francisco, California</td>
<td>Dr. Gerard</td>
<td>February 1993</td>
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<tr>
<td>Duke, Durham, North Carolina (two systems)</td>
<td>Dr. Coleman, Dr. Jaszczak</td>
<td>June 1993, August 1994</td>
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<tr>
<td>University of Virginia, Charlottesville, Virginia</td>
<td>Dr. Teats, Dr. Crot</td>
<td>June 1993</td>
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<tr>
<td>Memorial Mission, Asheville, North Carolina</td>
<td>Dr. Peterson</td>
<td>July 1993</td>
</tr>
<tr>
<td>Austin, Heidelberg, Australia</td>
<td>Dr. Mackay</td>
<td>September 1993</td>
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<tr>
<td>Pontiac Osteopathic, Pontiac, Michigan</td>
<td>Dr. Kottaryar</td>
<td>October 1993</td>
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<tr>
<td>Royal Prince Alfred, Sydney, Australia</td>
<td>Dr. Van der Wil</td>
<td>November 1993</td>
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<td>KUL., Leuven, Belgium</td>
<td>Dr. DeRoo, Dr. Mortelmans</td>
<td>December 1993</td>
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<td>Karolinska, Stockholm, Sweden</td>
<td>Dr. Larsson</td>
<td>February 1994</td>
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<tr>
<td>Samsung Medical Center, Seoul, Korea</td>
<td>Dr. Kim</td>
<td>March 1994</td>
</tr>
<tr>
<td>Cleveland Clinic Foundation, Cleveland, Ohio</td>
<td>Dr. Go, Dr. McIntyre</td>
<td>October 1994</td>
</tr>
</tbody>
</table>

Word-of-Mouth Marketing Program
Based on
Clinical Environment Performance Validation Track Record
from
A Company Driven by Quality, Business Ethics, and
Long-Term Clinical Innovation & Effectiveness
New from DuPont Radiopharmaceuticals:
High Quality and Extended Stability in a SPECT Brain Perfusion Agent

JUST WHAT YOU’RE LOOKING FOR...
Technetium Tc99m Bicisate should be used with caution in patients with renal or hepatic impairment since it is eliminated primarily by renal excretion. Adverse reactions are rare (≤1%). For details, see Adverse Reactions section of the prescribing information. In clinical trials, at least one of three readers of Neurolite® images (blinded to all other clinical information) correctly diagnosed stroke for 85% of the subjects with stroke while unblinded interpretation of CT/MRI images resulted in the correct diagnosis of stroke in 88% of subjects with stroke. There were 11 false positive and 34 false negative interpretations of Neurolite images and 0 false positive and 31 false negative interpretations of CT/MRI results.

Normal images, using Neurolite, of a 36-year-old female.
—Courtesy of Thomas C. Hill, MD,
Deaconess Hospital, Boston, Mass
Just what you’re looking for...
HIGH-QUALITY IMAGES...
EXTENDED STABILITY...

High-Definition Perfusion Images

- Well-defined lesions
  - Clear definition of perfusion defects as determined by visual analysis
- High brain-to-background activity
  - Clear delineation between brain and background structures early after injection

Extended In Vitro Stability

- The SPECT brain agent with 6-hour stability after preparation
  - Allows for more flexible patient scheduling
  - Useful in the acute setting since doses can be prepared beforehand
  - Enables SPECT brain imaging to be used with agitated or uncooperative patients where study delays are often encountered
  - Allows for convenience of unit dosing

Please see brief summary of prescribing information at the end of this advertisement.
Introducing Neurolite®

JUST WHAT YOU’RE LOOKING FOR...

Desirable pharmacokinetics/dosimetry

- Accumulates rapidly in the brain\(^1,2\)
- Localizes as a function of regional brain perfusion, cellular uptake, and metabolism within the cells
- Rapid blood clearance—(<10% remains in the blood after 1 minute, <5% after 60 minutes)
- A dosing range of 10-30 mCi of Neurolite provides the flexibility to achieve improved image quality and/or reduced imaging time\(^1\)

Simple room-temperature preparation

One-step quality control procedure

NEUROLITE®

KIT FOR THE PREPARATION OF TECHNETIUM Tc99m BICISATE INJECTION

Quality you expect. Stability you need.
The following is a brief summary. For more information please see complete prescribing information.

INDICATIONS
Neurrolite, a single photon emission computerized tomography (SPECT) is indicated as an adjunct to conventional CT or MRI imaging in the localization of stroke in patients in whom stroke has already been diagnosed.

CONTRAINDICATIONS
None known.

WARNINGS
None known.

PRECAUTIONS
General

USE WITH CAUTION IN PATIENTS WITH RENAL OR HEPATIC IMPAIRMENT. TECHNETIUM Tc99m BICISATE IS ELIMINATED PRIMARILY BY RENAL EXCRETION. WHETHER TECHNETIUM Tc99m BICISATE IS DIALYZABLE IS NOT KNOWN. DOSE ADJUSTMENTS IN PATIENTS WITH RENAL OR HEPATIC IMPAIRMENT HAVE NOT BEEN STUDIED.

Patients should be encouraged to drink fluids and to void frequently during the 2-6 hours immediately after injection to minimize radiation dose to the bladder and other target organs.

Contents of the vials are intended only for use in the preparation of Technetium Tc99m Bicisate and are not to be administered directly to the patient without first undergoing the preparation procedure.

The contents of each vial are sterile and nonpyrogenic. To maintain sterility, aseptic technique must be used during all operations in the manipulation and administration of Neurrolite.

Technetium Tc99m Bicisate should be used within six hours of the time of preparation.

As with any other radioactive material, appropriate shielding should be used to avoid unnecessary radiation exposure to the patient, occupational workers, and other people.

Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radiomides.

Carcinogenesis, Mutagenesis, Impairment of Fertility

Studies have not been conducted to evaluate carcinogenic potential or effects on fertility. When tested in vitro, Neurrolite prepared with decayed generator eluate induced unscheduled DNA synthesis in rat hepatocytes and caused an increased frequency of sister chromatid exchanges in CHO cells; but, it did not induce chromosome aberrations in human lymphocytes or cause gene mutations in the Ames test or in a CHO/HGPRT test. Unreacted bicisate ditydrochloride increased the apparent rate of gene mutation of the TA 97a strain of S. typhimurium in the Ames test; but, it did not demonstrate clastogenic activity in an in vivo micronucleus assay in mice.

Pregnancy: Teratogenic Effects

Pregnancy Category C

Animal reproduction studies have not been conducted with Technetium Tc99m Bicisate. It is not known whether Technetium Tc99m Bicisate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Therefore, Technetium Tc99m Bicisate should not be administered to a pregnant woman unless the potential benefit justifies the potential risk to the fetus.

Nursing Mothers

Technetium Tc99m Perchelatene 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 children have not been established.

ADVERSE REACTIONS

In clinical trials, Neurrolite has been administered to 1022 subjects (262 normals, 760 patients). Of these, 545 (54%) were men and 473 (46%) were women. The mean age was 58 years (range 17 to 92 years). In the 760 patients who had experienced neurologic events, there were 11 (1.4%) deaths, none of which were clearly attributed to Neurrolite.

A total of 60 subjects experienced adverse reactions; the adverse reaction rates were comparable in the <65 year and the >65 year age groups.

The following adverse effects were observed in ≤1% of the subjects: headache, dizziness, seizure, agitation/anxiety, malaise/somnolence, parosmia, hallucinations, rash, nausea, syncope, cardiac failure, hypertension, angina, and apnea/cyanosis.

In clinical trials of 197 patients, there were inconsistent changes in the serum calcium and phosphate levels. The cause of the changes has not been identified and their frequency and magnitude have not been clearly characterized. None of the changes required medical intervention.

DOSAGE AND ADMINISTRATION

Before administration, a patient should be well hydrated. After administration, the patient should be encouraged to drink fluids liberally and to void frequently.

The recommended dose range for intravenous administration for a 70 kg patient is 370 - 1110 MBq (10-30 mCi). Dose adjustments for age, weight, gender, or renal or hepatic impairment have not been studied.

The dose for the patient should be measured by a suitable radioactivity calibration system immediately before administration to the patient. Radiochemical purity should be checked before administration to the patient.

Neurrolite, like other parenteral drug products, 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 all applicable regulations.

Prior to reconstitution, vial A and vial B are stored at 15°-25°C. Protect vial A from light.

Store at room temperature (15°-30°C) after preparation.

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

RADIATION DOSIMETRY

The radiation doses to organs and tissues of an average patient (70 kg) for Technetium Tc99m Bicisate injected intravenously for 370 MBq (10 mCi) are shown in Table 4 and for 1110 MBq (30 mCi) are shown in Table 5.

Table 4.—Radiation Absorbed Doses From 370 MBq (10 mCi) of Technetium Tc99m Bicisate

<table>
<thead>
<tr>
<th>Organ</th>
<th>2.0 Hr. Void</th>
<th>4.8 Hr. Void</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mGy/100 mCi</td>
<td>mGy/100 mCi</td>
</tr>
<tr>
<td>Brain</td>
<td>3.77</td>
<td>4.22</td>
</tr>
<tr>
<td>Gallbladder Wall</td>
<td>1.65</td>
<td>1.27</td>
</tr>
<tr>
<td>Intestine Wall (Lower)</td>
<td>9.68</td>
<td>9.96</td>
</tr>
<tr>
<td>Intestine Wall (Small)</td>
<td>1.13</td>
<td>1.22</td>
</tr>
<tr>
<td>Kidneys</td>
<td>2.67</td>
<td>2.78</td>
</tr>
<tr>
<td>Liver</td>
<td>1.43</td>
<td>1.50</td>
</tr>
<tr>
<td>Ovaries</td>
<td>2.67</td>
<td>2.81</td>
</tr>
<tr>
<td>Red Marrow</td>
<td>1.43</td>
<td>1.50</td>
</tr>
<tr>
<td>Tests</td>
<td>1.13</td>
<td>1.22</td>
</tr>
<tr>
<td>Thyroid</td>
<td>2.78</td>
<td>2.91</td>
</tr>
<tr>
<td>Urinary Bladder Wall</td>
<td>6.27</td>
<td>6.60</td>
</tr>
<tr>
<td>Total Body</td>
<td>11.09</td>
<td>11.82</td>
</tr>
<tr>
<td>Neurrolite</td>
<td>370 MBq</td>
<td>4.8 Hr. Void</td>
</tr>
<tr>
<td></td>
<td>3.77</td>
<td>4.22</td>
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<td>6.60</td>
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<tr>
<td></td>
<td>11.09</td>
<td>11.82</td>
</tr>
</tbody>
</table>

Table 5.—Radiation Absorbed Doses From 1110 MBq (30 mCi) of Technetium Tc99m Bicisate

<table>
<thead>
<tr>
<th>Organ</th>
<th>2.0 Hr. Void</th>
<th>4.8 Hr. Void</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>mGy/100 mCi</td>
<td>mGy/100 mCi</td>
</tr>
<tr>
<td>Brain</td>
<td>3.89</td>
<td>4.76</td>
</tr>
<tr>
<td>Gallbladder Wall</td>
<td>2.44</td>
<td>2.71</td>
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<tr>
<td>Intestine Wall (Upper)</td>
<td>3.70</td>
<td>4.50</td>
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<tr>
<td>Intestine Wall (Small)</td>
<td>1.30</td>
<td>1.33</td>
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<tr>
<td>Kidneys</td>
<td>1.14</td>
<td>1.30</td>
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<tr>
<td>Liver</td>
<td>1.05</td>
<td>1.05</td>
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<tr>
<td>Ovaries</td>
<td>1.14</td>
<td>1.30</td>
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<tr>
<td>Red Marrow</td>
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<td>1.33</td>
</tr>
<tr>
<td>Thyroid</td>
<td>0.89</td>
<td>0.93</td>
</tr>
<tr>
<td>Urinary Bladder Wall</td>
<td>0.81</td>
<td>0.81</td>
</tr>
<tr>
<td>Total Body</td>
<td>1.05</td>
<td>1.05</td>
</tr>
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</table>

Dosimetry calculated using the MIRD software program at Oak Ridge Associated Universities, P.O. Box 117, Oakridge, TN. 25 July 1988.
Recently published books from SNM provide authoritative, up-to-date discussion of key subjects in nuclear medicine technology. Adding to your professional library has never been easier—simply call the toll-free number below for fast, efficient service.

**Clinical Computers in Nuclear Medicine**
Katherine L. Rowell, MS, CNMT, Editor
$35 members/$49 non-members. A companion text to Computers in Nuclear Medicine, this survey traces the evolution of nuclear medicine computer technology. An essential guide for staff operating computers in clinical settings.

**Computers in Nuclear Medicine: A Practical Approach**
Kal Lee, PhD
$30 members/$42 non-members. This illustrated guide explains both how computers work and how processing techniques obtain diagnostic information from radionuclide images.

**A Patient’s Guide to Nuclear Medicine**
Kal Lee, PhD
Pamphlet, $0.40 (100 copies, minimum order). This popular pamphlet explains nuclear medicine procedures in clear, concise language, helping to allay patient anxieties. Format includes common questions and answers; step-by-step descriptions of procedures; photographs showing patients undergoing imaging. An update of the highly successful patient pamphlet in use since 1983.

**Review of Nuclear Medicine Technology**
Ann M. Stevens, MS, CNMT
$30 members/$42 non-members. Both an overview of the latest techniques in nuclear medicine technology as well as an authoritative study guide, this practical handbook is a valuable addition to the libraries of students and specialists alike.

**Curriculum Guide for Nuclear Medicine Technologists, 2nd Edition**
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- Brain Single-Photon Emission Computed Tomography (SPECT) (Seminar)
- SPECT Brain Imaging Practicum, introduction & Advanced (CME)

**Cardiology**
- Cardiovascular Nuclear Medicine (Seminar)
- Diagnosis of Pulmonary Embolism (CME)
- Clinical Nuclear Cardiology Update (CME)
- "Read With the Experts" (CME)

**General Practice**
- Infection Imaging (CME)
- Cancer Evaluations with PET (Seminar)
- The Role of Functional Imaging in Clinical Practice (Seminar)

So if nuclear medicine is part of your practice, research, or academic program, consider attending the Society of Nuclear Medicine's Annual Meeting, Minneapolis, June 11 through 15. For further information or to register, contact

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Introducing

A New Way to Image Neuroendocrine Tumors
Introducing

OctreoScan®
Kit for the Preparation of Indium In-111 Pentetreotide

Somatostatin Receptor Imaging for Neuroendocrine Tumors

Somatostatin is an endogenous neuropeptide that acts as a regulator of growth hormone secretion. Neuroendocrine tumors contain a high density of somatostatin receptors. OctreoScan®, a radiolabeled form of the somatostatin analog octreotide, shares the same binding site as naturally occurring somatostatin, which makes it a sensitive indicator for somatostatin receptor-bearing neuroendocrine tumors. Since the concentration of receptors on tumors may vary, the sensitivity of OctreoScan® may vary among tumor types.

Enhances Neuroendocrine Tumor Localization

Neuroendocrine tumors generally are small and slow-growing in nature, which can make localization difficult. Functional imaging with OctreoScan® frequently is sensitive enough to enable localization of small primary tumors or metastases. In a multicenter study, OctreoScan® results were consistent with the final diagnosis in 86.4% of patients (267/309).* OctreoScan imaging results produced a change in patient management in 31.1% of cases (64/206).*

*Source: Data on file, Mallinckrodt Medical, Inc.
**Patient Management Benefits**

OctreoScan® whole-body imaging enables rapid localization of the primary neuroendocrine tumor and sites of metastatic spread. OctreoScan® imaging also provides tumor localization and characterization information that can help determine the extent of a patient's disease accurately, which may obviate the need for additional invasive procedures such as biopsy or angiography.

OctreoScan® imaging may enable clinicians to modify a patient's diagnostic work-up and initiate appropriate measures (resection, octreotide therapy) at an early stage of the disease process. OctreoScan® also can be used for patient follow-up to monitor the effects of surgery, radiotherapy, or chemotherapy.

**Clinical Impact of OctreoScan® Imaging**

- Yielded information about localizations not known before
  - 27.9% (57/204)
- Demonstrated uptake in lesions known to exist, but not verified as neuroendocrine tumors
  - 28.2% (55/195)
- Localized neuroendocrine tumors in patients with clinical and hormonal evidence of tumor but no prior localizations
  - 37.5% (21/56)

**Special Considerations**

Adverse effects observed in clinical trials (at a frequency of <1%) included dizziness, fever, flush, headache, hypotension, changes in liver enzymes, joint pain, nausea, sweating and weakness. Pentetreotide is an analog of octreotide, which has been shown to produce severe hypoglycemia in insulinoma patients. In patients suspected of having an insulinoma, an IV solution containing glucose should be administered before and during OctreoScan® administration. Patients should be well hydrated prior to OctreoScan® administration to enhance renal clearance and reduce the radiation dose to the bladder and other target organs. Use in patients with impaired renal function should be carefully considered.

The sensitivity of OctreoScan® scintigraphy may be reduced in patients concurrently receiving therapeutic doses of octreotide acetate. Consideration should be given to suspending octreotide therapy before OctreoScan® administration and monitoring the patient for signs of withdrawal.

Please consult the following page for a 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 components:
1. A 15-mL, 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 Usage**
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) admixtures or inject into TPN intravenous administration lines. In these solutions, a complex glycolyl 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 withdrawal.

**Precautions**

1. Therapy with octreotide acetate can produce severe hypoglycemia in patients with insulinomas. 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 eliminated 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 milk laxative (e.g., milk of magnesia) 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 product must be used within hours of preparation.

6. Components of the kit are sterile and nonpyrogenic. To maintain sterility, it is essential that directions are followed carefully. Aseptic technique must be used during the preparation and administration of indium-111 pentetreotide.

7. Octreotide acetate and the natural somatostatin hormone may be associated with cholelithiasis, presumably by altering fat absorption and possibly by decreasing mobility of the gallbladder. A single dose of indium-111 pentetreotide is not expected to cause cholelithiasis.

8. As with any other radioactive material, appropriate shielding should be used to avoid unnecessary radiation exposure to the patient, occupational workers, and other persons.

9. Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides.

**Cardiacography, Mutagenesis, Impairment of Fertility**

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

**Pathology**

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 reproductive capacity. Therefore, indium-111 pentetreotide should not be administered to a pregnant woman unless the potential benefit justifies the possible risk to the fetus.

**Parent Use**

Safety and effectiveness in children have not been established.

**Adverse Reactions**

The following adverse effects were observed in clinical trials at a frequency of less than 1% of patients: dizziness, fever, flush, headache, hypotension, changes in liver enzymes, joint pain, nausea, sweating, and weakness. These adverse effects were transient. Also in clinical trials, there was one reported case of bradycardia and one case of decreased hematocrit and hemoglobin.

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. The following adverse reactions have been associated with octreotide in ≥10% of patients: nausea, injection site pain, diarrhea, abdominal pain/discomfort, loose stools, and vomiting. Hypotension and hypoglycemia have also been reported with the use of octreotide.

**Dosage and Administration**

Before administration, the 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., milk of magnesia) 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 ionization 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 dose to the average adult (70 kg) from intravenous administration of 111 MBq (3 mCi) and 222 MBq (6 mCi) are presented below. These estimates were calculated by Oak Ridge Associated Universities using the data published by Krengel, et al.

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

<table>
<thead>
<tr>
<th>Organ</th>
<th>Dose (MBq)</th>
<th>Absorbed Dose (mrem)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidneys</td>
<td>54.16</td>
<td>108.32</td>
</tr>
<tr>
<td>Liver</td>
<td>12.15</td>
<td>24.31</td>
</tr>
<tr>
<td>Spleen</td>
<td>73.86</td>
<td>147.73</td>
</tr>
<tr>
<td>Urinary Bladder Wall</td>
<td>30.24</td>
<td>60.48</td>
</tr>
<tr>
<td>Urinary Bladder Wall</td>
<td>30.24</td>
<td>60.48</td>
</tr>
<tr>
<td>Stomach Wall</td>
<td>5.67</td>
<td>11.34</td>
</tr>
<tr>
<td>Small Intestine</td>
<td>4.78</td>
<td>9.56</td>
</tr>
<tr>
<td>Lower Large Intestine</td>
<td>7.73</td>
<td>15.46</td>
</tr>
<tr>
<td>Adrenal</td>
<td>7.55</td>
<td>15.11</td>
</tr>
<tr>
<td>Thyroid</td>
<td>7.43</td>
<td>14.86</td>
</tr>
</tbody>
</table>

**Effective Dose Equivalent**

13.03 x 1.30 = 26.06 x 2.61

1. Values listed include a correction for a minimum of 0.1% indium-111 radiocontaminant at calibration.
3. Assumes 4.8 hour voiding interval and International Commission on Radiological Protection (ICRP) 30 model for the gastrointestinal tract calculations.
4. Estimated according to ICRP Publication 53.

**How Supplied**

The OctreoScan kit, NDC 0019-0500, is supplied with the following components:

1. A 10-mL, OctreoScan Reaction Vial which contains a lyophilized mixture of:
   - (i) 10 μg pentetreotide [N-(D-tyrosinylamino)-L-NH2]-octreotide-acid-3H-acetyl-D-
   - (ii) 2.5 mCi (10 mCi) pentetreotide-DTPA, (iii) 2.5 mCi (10 mCi) pentetreotide-clinrecan, (iv) 4.8 mCi iodine chloride, (v) 0.37 mCi citric acid, (vi) 10.0 mg NaCl.

Before lyophilization, sodium hydroxide or hydrochloric acid may have been added for pH adjustment. The vial contents are sterile and nongenotoxic. No bacteriostatic preservative is present.

2. A 10-mL vial of Indium-111 Chloride Sterile Solution, which contains 1.1 mL of 111 MBq (3.0 mCi) indium-111 chloride in 0.02 N HCl at time of calibration. The vial also contains ferric chloride at a concentration of 3.5 μg/mL (ferric ion, 1.2 μg/mL). The vial contents are sterile and nongenotoxic. No bacteriostatic preservative is present.

In addition, the kit also contains the following items: (1) a 25 x 500 μL needle (90-0, Monoject) used to transfer Indium-111 Chloride Sterile Solution to the OctreoScan Vial, (2) a pressure sensitive label, and (3) a package insert.
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The Clinical Director oversees a research program of national and international scope and importance including a 28-bed residential research ward, substantial outpatient research facilities, and a PET (Positron Emission Tomographic) unit. Salary range to $148,400 depends on qualifications, with relocation expenses available. An extended salary range of up to $200,000 may be possible for a candidate with extraordinary credentials.

The position must be filled by a physician. Applicants with certification in internal medicine, psychiatry, neurology, nuclear medicine or related specialties, and demonstrated research and clinical excellence are encouraged to apply to: "Clinical Director", c/o Personnel, NIH/NIDA/DIR, P.O. Box 5180, Baltimore, Maryland 21224.

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Simultaneously targets all sites of metastatic bone pain.

LONG-TERM PALLIATION IN ONE CONVENIENT DOSE.

▼ Palliation of pain demonstrated in the majority of patients.\textsuperscript{1,2}

▼ One dose of Metastron provides pain relief for an average of up to 6 months.\textsuperscript{1}

▼ As an adjunct to radiotherapy, 63.6\% of patients receiving Metastron (10.8 mCi) had reduced pain at 6 months as compared to 35.0\% of patients receiving placebo (n=42).\textsuperscript{3}

▼ Preferentially incorporates into multiple sites of metastatic bone — the dose absorbed in metastatic deposits is approximately ten times that absorbed in normal bone marrow.\textsuperscript{3,5}
ADJUNCTIVELY DELAYS THE MEDIAN TIME TO PROGRESSION OF PAIN BY 28.1 WEEKS OVER RADIOThERAPy ALONE.

Median time to requirement for additional radiotherapy at new pain site.3

| METAstrON (10.8 mCi) + RADIOTherAPy |
| PLACeBO + RADIOTherAPy |

From a multicenter, double-blind study of 126 patients who received a single injection of either Metastron 400 MBq, 10.8 mCi or placebo with fractionated doses of local field radiotherapy (20-30 Gy).

HIGHLY EFFECTIVE NON-NARCOTIC THERAPY.

▼ Metastron may reduce or eliminate the need for dose escalation of narcotic analgesics.1,3

▼ Onset of pain relief is generally within 7 to 20 days — Metastron is therefore not recommended in patients with very short life expectancy.

GENERALLY WELL TOLERATED.

▼ A depression of white blood cell (20%) and platelet (30%) levels may occur in patients treated with Metastron — clinically significant toxicity is rare.

▼ Metastron should be used with caution in patients with significantly compromised bone marrow from previous treatment. Caution should also be used in patients with platelet counts below 60,000 or white blood cell counts below 2,400.

▼ Some patients have reported a transient increase in bone pain lasting 36 to 72 hours following an injection — this can usually be controlled with analgesics.

AN IMPROVED QUALITY OF LIFE FOR PATIENTS.

▼ Metastron may improve patient quality of life, as measured by assessments of mood, mobility, appetite, sleep pattern, and analgesic consumption.1,4

Please see following page for full prescribing information.

METAstrON®
(STRONtIUM-89 CHLORIDE INJECTION)

An effective way
to manage metastatic bone pain.
**An effective way to manage metastatic bone pain.**

Metastasis, like other radioactive drugs, must be handled with care and appropriate safety measures to minimize radiation to clinical personnel.

In view of the delayed onset of pain relief, typical 7 to 20 days post injection, administration of Metastron to patients with very short shelf-life is not recommended. A calcium-like flushing sensation has been observed in patients following a rapid (less than 30-second injection) administration.

Side effects, such as urinary catheterization, should be taken following administration to patients who are incontinence to minimize the risk of radioactive contamination of clothing, bed linen and the patient's environment.

Carcinogenesis, Mutagenesis, Impairment of fertility: Data from a reproductive dose animal study suggests that Strontium-89 is a potential carcinogen. Thirty-three of 40 rats injected with Strontium-89 in two consecutive monthly doses of either 250 or 500 μCi developed malignant bone tumors after a latency period of approximately 3 months. No neoplasms were observed in the control animals. Treatment with Strontium-89 should be restricted to patients with well documented metastatic bone disease.

Adverse studies with Strontium-89 have not been performed to evaluate malacic potential or effects on fertility.

Pregnancy: Teratogenic effects.

Pregnancy Category: D. See Warnings section.

**Data:**

**Relevant Nuclide:** Strontium-89.

**Bone:** The radioisotope is found in bone, particularly in the soft trabeculae of bone, with the bone matrix. The bone matrix is then replaced by new bone matrix.

**Blood:** The radioisotope is excreted via the kidneys, with a half-life of 50.3 days. The maximum activity is 1.46 mCi (50 mBq) and the specific activity is 1.96 mCi/Mg. The maximum beta energy is 0.56 MeV. The maximum range of 5 from Strontium-89 is approximately 8 mm.

**Radiation decay factors to be applied to the stated value for radioactive concentration at calibration, when calculating injection volumes at the time of administration, are given in Table 1:

<table>
<thead>
<tr>
<th>Decay</th>
<th>Factor</th>
<th>Decay</th>
<th>Factor</th>
<th>Decay</th>
<th>Factor</th>
<th>Decay</th>
<th>Factor</th>
<th>Decay</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>1.22</td>
<td>12</td>
<td>1.18</td>
<td>6</td>
<td>0.82</td>
<td>+10</td>
<td>0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>1.24</td>
<td>3</td>
<td>1.15</td>
<td>+12</td>
<td>0.85</td>
<td>+24</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>2.00</td>
<td>3</td>
<td>1.09</td>
<td>+12</td>
<td>0.85</td>
<td>+24</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>2.25</td>
<td>4</td>
<td>1.08</td>
<td>+14</td>
<td>0.83</td>
<td>+26</td>
<td>0.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2.16</td>
<td>5</td>
<td>0.80</td>
<td>+26</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Days before (+) or after(-) the calibration date stated on the vial.**

Clinical Pharmacology: Following intravenous injection, soluble strontium compounds behave like their calcium analog, clearing rapidly from the blood and selectively localizing in bone matrix. Uptake of strontium by bone occurs preferentially in sites of active osteogenesis; thus primary bone tumors and areas of metastatic involvement (e.g., fracture) can accumulate significantly greater concentrations of strontium than surrounding normal bone. Strontium-89 is retained in bone until bone remodeling has occurred. Bone turnover is about 14 days. In patients with extensive skeletal metastases, well over half of the injected dose is retained in the bone. Extravasation pathways are two-thirds urinary and one-third local in patients with bone metastases. Urinary excretion is high in people without bone lesions. Urinary excretion is greatest in the first two days following administration. Strontium-89 is a pure beta emitter and Strontium-89 selectively irradiates sites of primary and metastatic bone involvement with minimal irradiation of soft tissue distant from the bone lesion. (The maximum range in tissue is 8 mm; maximum energy is 1.46 MeV.) Measured absorbed radiation dose are listed under the Radiation Dose/Activity section.

Clinical trials have examined relief of pain in cancer patients who have received therapy for bone metastases (radioactive irradiation to affected sites but in whom persistent pain recurs. In a multi-center Canadian placebo-controlled trial of 525 patients, pain relief was noted in 93% of patients treated with a single injection of Metastron than in patients treated with an injection of placebo. Results are given in the following table.

Table 2: Comparison of the number and percentage of patients treated with Metastron or placebo who had reduced pain and no increase in radiotherapy re-treatment.

| Month | Post-Treatment |<| Month | Post-Treatment |<| Month | Post-Treatment |<| Month | Post-Treatment |<| Month | Post-Treatment |
|-------|----------------|<|-------|----------------|<|-------|----------------|<|-------|----------------|<|-------|----------------|
| Metastron | 71.4% | 78.9% | 60.6% | 59.2% | 38.4% | 83.6% |
| Placebo | 61.4% | 71.7% | 55.0% | 25.0% | 31.8% | 35.0% |

At each visit, treatment success, defined as a reduction in a patient's pain score without any increase in analgesic intake and without any supplementary treatment at the site of the, was more frequent among patients assigned to Metastron than to placebo.

The number of patients classified as treatment success who were pain free at the index site and required no analgesics was consistently higher in the Metastron group.

New pain sites were less frequent in patients treated with Metastron. In another clinical trial, pain relief was greater in a group of patients treated with Metastron compared with a group treated with non-radioactive strontium-89.

**Radiations and Dosage:** Strontium (Strontium-89 Chloride Injection) is indicated for the relief of bone pain in patients with untreated metastases.

The presence of bone metastases should be confirmed prior to therapy.

**Contraindications:** None known.

**Warnings:** Use of Metastron in patients with evidence of seriously compromised bone marrow from previous therapy or disease intolerance is not recommended unless the potential benefit of the treatment outweighs the risk. Bone marrow toxicity is to be expected following the administration of Metastron. The effect of strontium on the extent of toxicity is variable. It is recommended that the patient's peripheral blood cell counts be monitored at least once every 6 weeks. Typically, counts are decreased by about 30% compared to pre-administration levels. The rate of platelet depression in most patients is between 12 and 15 weeks following administration of Metastron. White blood cells are usually depressed to a varying extent compared to pre-administration levels. Similarly, recovery occurs slowly, typically requiring 6 months to 1 year after administration of the drug.

In the presence of metastases, the patient's hematologic response to the initial dose, the patient's blood cell levels and other evidence of marrow depression should be carefully evaluated.

**Verification of dose and patient identification is necessary prior to administration because Metastron delivers a relatively high dose of radioactivity.**

Metastron may cause maternal harm when administered to a pregnant woman. There are no adequate and well-controlled studies in pregnancy. If the patient becomes pregnant while receiving the drug, the patient should be apprised of the potential hazard to the fetus. Women of childbearing potential should be advised to avoid pregnancy during therapy.

**Precautions:** Metastron is not indicated for use in patients with cancer not involving bone. Metastron should be used with caution in patients with plates counts below 80,000 and white cell counts below 4,000.

Radioisotopes used in this device and the resultant radiation may cause harm to the patient and others in the immediate environment.

**References:**


Amersham Healthcare
2636 S. Clearbrook Drive
Arlington Heights, Illinois 60005

ZENEXA
Pharmaceuticals
A Business Unit of ZENEX Inc.
Winnsboro, Delaware 19973 USA

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New Products

Each description of the products below was condensed from information supplied by the manufacturer. The reviews are published as a service to the professionals working in the field of nuclear medicine and their inclusion herein does not in any way imply an endorsement by the Editorial Board of The Journal of Nuclear Medicine or by the Society of Nuclear Medicine.

New Device Offers Simpler and More Precise Beta Measurements

Accurate beta-emitter measurements can now be achieved using the Capintec BETA-C® Dose Calibrator, a new radiation measurement device for ⁹⁰Sr and ⁶⁰P. The BETA-C Dose Calibrator from Capintec allows users to concentrate on quality patient care while meeting NRC regulations, which require accurate measurements of beta radiopharmaceuticals prior to patient administration. The BETA-C is available for fast and accurate measurement and is particularly useful for measuring ⁹⁰Sr before patient administration of Metastron® to relieve metastatic bone pain in cancer patients. The new calibrator is designed for accurate dose determination in both syringes and vials and eliminates potential errors from beta assays. Counting is performed quickly and accurately, with all results displayed on an easy-to-read graphic display. Capabilities include: test source data storage with automatic decay correction, system tests, auto-calibration and quality control testing, which are built-in along with automatic background subtraction. With state-of-the-art counting circuits, the BETA-C NaI crystal scintillation detector measures beta activities up to 25 mCi. The BETA-C also estimates impurity levels and nullifies their effect on measurements of the principal radionuclide. Christine Santalli, Capintec, Inc., 6 Arrow Rd., Ramsey, NJ 07446. Phone: (201) 825-9500. Fax: (201) 825-1336.

Analog, Digital Color Printer Ready for Delivery

Vital Image Technology announces the Mitsubishi CP-2000U analog and digital color printer which features: dye sublimation technology, 325 DPI and auto scanning from 15.75-85 KHz. Signals from NTSC, PAL, HP, SUN, INDIGO, Mac and SVGA can be accepted thru the analog RGB connection. Vital Image Technology, 26496 Broadway, Suite B, Oakwood Village, Ohio 44146. Phone: (800) 860-46243.

New Table-Top Impax™ DI 2000 Dry Digital Imager

Agfa introduces a new dry, digital table-top imaging and processing system that produces dense, sharp, grey scale and color images on film in full daylight. To produce color images, the Impax DI 2000 has a dual-component system that uses heat to transfer a colored dye from a donor sheet to an acceptor sheet. Color hardcopies can be produced for Doppler ultrasound and three-dimensional workstation diagnoses. Designed to accept video or digital inputs, the imager can differentiate 256 grey levels and 16.7 million colors. The imager, only 18 x 27 x 15, does not use liquid chemicals, water or plumbing and its film packaging is recyclable. Agfa Technical Imaging Systems, 100 Challenger Rd., 100 Challenger Rd., Ridgefield Park, NJ 07660. Phone: (201) 641-9566. Fax: (201) 440-1512.

Improved Safety Options for Waste Disposal

A new standard of safety has been set in place by Syncor International Corporation with the recent introduction of the Secure™ Safety Insert System. The system allows Syncor pharmacies to pick up unit-dose radiopharmaceutical waste from their nuclear medicine customers in such a way that increases the safety for both parties. The new system consists of a clear plastic insert which is nested inside the unit-dose shield to provide a safe receptacle for contaminated sharps. Using the Secure system, the syringe containing the radiopharmaceutical is carried to the patient injection site inside the safety insert, which remains in the unit-dose shield. Nuclear medicine facilities now have another option when disposing of unit-dose radiopharmaceutical waste in their established medical waste streams. Syncor Pharmacy Services, 2001 Prairie St., Chatsworth, CA 91311. Phone: (800) 999-9098.

Bringing Imaging to Your Desktop

ImportACCESS™ is available for importing medical and scientific files directly into your favorite Macintosh program. Written as an Adobe Photoshop plug-in for the Macintosh line of PCs, ImportACCESS from Digital Access brings CT, MR, SPECT, PET and other forms of digitally collected data to the desktop, regardless of the format in which the data have been saved. By supporting most raw data formats as well as evolving standards such as ACR-NEMA 2.0, DICOM 3.0, Interfile 3.3 and Papyrus, ImportACCESS provides both backward and forward compatibility for accessing imaging files. ImportAccess has been designed as a low-cost solution for clinicians, technologists and other investigators using imaging data to fill in the gaps created by the increasing amount of data being collected and stored digitally. Hugh Lyshkow, Chief Technical Officer, Designed Access, 702 Wrightwood Ave., Chicago, IL 60614. Phone: (312) 880-2034. Fax: (312) 472-8834.
Join more than 8000 of your colleagues in celebrating the 42nd Annual Meeting of the Society of Nuclear Medicine in Minneapolis, Minnesota, June 11-15, 1995. Participate in the intensive educational program, review posters, discuss the most recent developments with colleagues, and join any of a host of much talked about extracurricular activities. Don't miss this opportunity to learn, mingle with your colleagues, and visit with exhibitors.

**Scientific Papers**

This year's presentation of over 1000 scientific papers and posters includes a distillation of the latest advancements and finest work achieved by outstanding scientists and physicians in the field of nuclear medicine. These papers, presented by the original authors, with over 30 subjects to choose from, will provide a unique opportunity for enhancing your knowledge or exploring new avenues in correlative areas of nuclear medicine. Ample time is allotted at these presentations for questions and discussions. An extensive display of scientific posters and exhibits will augment the presentation. The ever-increasing importance of the role of the nuclear medicine technologist will be explored in our Technologist Program, and over 70 hours of clinical updates will provide chief and staff technologists with the latest in basic, intermediate, and advanced studies. This program will broaden expertise and enhance the technologist's contribution to nuclear medicine.

**Audiovisuals, Books, Journals**

The Society of Nuclear Medicine is continuously adding to its library of audiovisuals, books, and other publications. A stop at the publications booth is well worth the time. Here you will find on display what the Society has to offer for year-round educational advancement. Networking opportunities and job referral boards are available at special locations throughout the meeting as well as membership information at our membership booth.

**Exhibit**

All the major manufacturers of nuclear medicine products and services—more than 100 in all—will be on hand to explain and demonstrate the most technologically-advanced equipment. Several companies will present User Meetings to give an in-depth understanding of their products.

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Positions Available

Head of Nuclear Medicine

Head of Nuclear Medicine at Hadassah Medical Organization, Jerusalem. This important post is open to candidates with board certificate in Nuclear Medicine. The Department, located at the Hebrew University Hadassah Medical Center of Ein Karem, provides service to all the departments of the two Hadassah Hospitals, as well as to outpatients from within and without the Hadassah Organization in Jerusalem and nationwide. Hadassah Hospitals are the clinical teaching arms of the Hebrew University-Hadassah Medical School; therefore the appointment is linked with senior academic status at the Medical School, with responsibility for teaching nuclear medicine at the undergraduate, graduate and residency levels. The Department has large, recently modernized facilities with up-to-date equipment, including research laboratories. The candidate must have extensive experience in clinical nuclear medicine. Previous administrative experience, while not imperative, is an asset. The Hadassah Hospital being a highly research-oriented, academic institution, the candidate must show evidence of research capacity at a high international level. Salary and other emoluments are at the appropriate high level on Hadassah medical/academic scales. Enquiries, and applications including a full bibliography, should be addressed to the Director General, Hadassah Medical Organization, P.O. Box 12000, Jerusalem 91120, Israel, within 60 days of publication.

Nuclear Medicine Physician

The University of California, Davis School of Medicine has a full-time faculty position available in the Nuclear Medicine Division of the Department of Radiology. Appointment will be at the Assistant Professor level (Professor of Clinical Radiology Series). Candidates must be Board certified in nuclear medicine, eligible for licensure in California, and have an academic background in nuclear medicine. Since this position will be Open Until Filled please forward curriculum vitae, a letter outlining background and interests in teaching/research and the names of five references as promptly as possible. This position is Open Until Filled, but no later than June 30, 1995. Reply to: Richard W. Katzberg, MD, Professor and Chairman, Department of Radiology, 2525 Stockton Boulevard, MSF Building, Sacramento, CA 95817. The University of California is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and persons of color.

Nuclear Medicine ABR Special Competency or ABNM Residency Position

Unexpected opening for 1 year ABR special competency or 2 year Nuclear Medicine Residency to begin July 1995. Program involves 3 hospitals with diverse patient population and state-of-the-art PACS, teleradiology and SPECT imaging equipment. Strong emphasis on teaching and research. The University is located at the base of the beautiful Wasatch mountains with skiing, hiking and other outdoor activities nearby. If interested contact Frederick L. Datz, MD, at the University of Utah Health Sciences Center (801) 581-2716.

Resident

Two and three year Nuclear Medicine Residencies are available at St. Luke's Medical Center, Milwaukee, WI. St. Luke's is a 600-bed general and acute care community hospital, and is one of the largest cardiac care centers in the U.S. The program gives the resident very strong training in nuclear cardiology, SPECT imaging, and general nuclear medicine. Instrumentation is modern and includes on a triple head SPECT camera, one dual head SPECT camera, five single head SPECT cameras, one dual head whole body camera, one LFOV camera, one mobile gamma camera, and one large networked nuclear medicine computer system. Well over 11,000 imaging procedures are performed annually. Staff includes 2 full time double boarded ABNM certified physicians, 1 medical physicist, 1 nuclear pharmacist, 1 programmer and a technical staff of 16. The residency is structured around a strong teaching program in the basic sciences and clinical nuclear medicine. Call is shared among multiple individuals, residents are always backed by staff, and adequate time is available for reading and research. Residents are required to write one paper per year. Address applications and inquiries to Dr. David Yuille, Director of Nuclear Medicine Residency, St. Luke's Medical Center, 2900 W. Oklahoma Avenue, Milwaukee, WI 53215, (414)649-6418.

Part time position: Nuclear Medicine Physician

100% NM private hospital practice. Send CV to Dr. Cheng, 3118 Colyar Dr., Chattanooga, TN 37404, (615) 495-8736.

PRODUCT MANAGER

Nuclear Medicine

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