The New Measure of Performance.

From around the world. **WE LISTENED TO YOU.** Lots of you. We looked at the whole picture. Through your eyes.

With purpose, we set our sights on a new standard in camera flexibility. **IMAGING YOUR PATIENTS.** Every one of them. For any nuclear procedure.

Using your vision, we expanded the clinical possibilities. At any energy. **BEYOND SPECT.** Well beyond.

We reached into a new dimension. And found the future. **EMISSION TOMOGRAPHY**

Visit us at RSNA booth #1522
The CAPRAC-R Well Counting System offers:

- Speed
- Accuracy
- Economy
- PLUS an abundance of performance-boosting features.

Menu-driven software programs offer:

- Schilling
- Dicopac®
- Blood Volume (Cr-51 & I-125)
- Wipe Tests
- Leak Testing

Using the General Counting Section, the CAPRAC-R can replace older systems for any type of gamma counting that performs RIA's or other lab procedures.

**WIPE TEST COUNTING**

The CAPRAC-R monitors ultra-low levels of activity in as little as 6 seconds using NaI detector for 1 nCi while giving preliminary isotope identification through gamma spectroscopy.

An Epson printer is optional. A choice of detectors are also available: the standard 1-1/2" NaI detector or a 2" x 2" NaI crystal with 1" shielding.

Phone or fax us today!
Delivery from stock ... the CAPRAC-R.
Gray Hair

When was the first time you saw a gray hair? Not just any gray hair; your gray hair, your first gray hair?

It seems that people can be categorized as one of two types: those for whom a gray hair is just a gray hair, perhaps part of a process, a milestone along the journey of life.

For others, it is an ominous sign: a sign that something bad has happened, a source of unhappiness. These individuals may pull out the offending gray hair so as to deny its existence and the reminder of the biology of aging: that tell-tale sign that we are not as young as we used to be. It’s as though, if we do not see it, it does not exist; the personal and visual equivalent of the existential question “If a tree falls in the forest and no one hears it...?”

We all value many things “that get better with age”: cheese, wine, coins, stamps, art and furniture. Why is that some people are troubled by their own aging? Why are we not able to think of ourselves in the same way we think of a good Bordeaux or camembert: We are getting better and more distinctive with unique and special qualities as we age?

Certainly there are benefits related to the aging process—even before Medicare or Golden Age discounts on airplanes and at the movies kick in.

When “things” do not go as I had wished, I am not as bitterly disappointed. After all, I know from experience that “these things happen.” When events do not progress as fast as I would have liked, I am less discontent. These “things” have happened before; it is not surprising that they are happening again.

Yes indeed, there is nothing like experience. Stay calm. None of these things are really unexpected any longer. “It” is all just part of life. Maybe even enriching, an experience I will look back on and savor.

Wait a minute! Is that another gray hair?

Stanley J. Goldsmith, MD
Editor-in-Chief, The Journal of Nuclear Medicine
November 1996
A Look Into The Future...

Available Today!

FDA 510(k) clearance to market granted 9/12/96.

Come see us at RSNA booth #4220.
Positron Coincidence Detection

Once again, Picker International is on the leading edge of nuclear medicine imaging with the introduction of the new Positron Coincidence Detection (PCD™) imaging.

Available on the PRISM™ 2000XP, PCD is pioneering the use of PRISM XP multi-head cameras for imaging positron isotopes. By offering multiple crystal thicknesses, on-the-fly rebinning of data, unique scatter removal, and the fastest advanced image processing in nuclear medicine, PCD offers the best range of options for imaging positron-based pharmaceuticals.

To find out more about all the advantages PCD gives you, call us today at 1-800-323-0550; e-mail us at info@nm picker.com; or visit us on the Web at the Nuclear Medicine Modality Home Page, http://www.picker.com/nuclear/nuclear.html.
Asymptomatic.
Rising CEA.
2 years post-op for colorectal cancer.
CT is equivocal.

Now there's a new way to determine resectability.
INTRODUCING

CEA-Scan®
(Arcitumomab)

SENSITIVE IMAGING TO HELP DRIVE MANAGEMENT DECISIONS

CEA-Scan is a new imaging agent that enhances your pre-operative determination of colorectal cancer resectability. CEA-Scan is indicated, in conjunction with standard diagnostic evaluations, for detection of the presence, location and extent of recurrent and/or metastatic colorectal carcinoma involving the liver, extrahepatic abdomen and pelvis in patients with a histologically confirmed diagnosis of colorectal carcinoma.

Surgery confirms that CEA-Scan with CT can help you make decisions concerning surgical resectability. Compared to CT alone, CEA-Scan with CT:

- Identified 59/89 versus 42/89 patients with resectable disease, a 40% increase in detection rate
- Identified 34/73 versus 14/73 patients with non-resectable disease, or more than twice as many
- In patients with negative or equivocal CT (occult disease), reduced the number of false-negative patients from 59 to 23, a 60% decrease.

CEA-Scan has a 97% positive predictive value for lesions when concordant with CT (146 true-positive lesions versus 4 false-positives).

BETTER IDENTIFICATION OF RESECTABLE/NON-RESECTABLE DISEASE

<table>
<thead>
<tr>
<th></th>
<th>CT alone</th>
<th>CT plus CEA-Scan</th>
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<tbody>
<tr>
<td>Sensitivity</td>
<td>57.9%</td>
<td>71.3%</td>
</tr>
<tr>
<td>(103/178)</td>
<td>(127/178)</td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>84.4%</td>
<td>62.5%</td>
</tr>
<tr>
<td>(27/32)</td>
<td>(20/32)</td>
<td></td>
</tr>
</tbody>
</table>

IMPROVES SENSITIVITY
SENSITIVE, SAME-DAY IMAGING
CEA-Scan enables improved colorectal cancer detection compared to standard diagnostic methods (SDM, 95% of which were CT).

- In general, CEA-Scan was more sensitive and less specific in the abdomen and pelvis than CT.
- However, direct comparisons of the performance characteristics of SDM to CEA-Scan are difficult to interpret, since the results of SDM were entry criteria for both Phase 3 protocols.

ADVANCED TECHNOLOGY
CEA-Scan offers the advantages of Fab' fragment design.

- Short biological half-life (13±4 hours) and rapid blood clearance improve tumor-to-background ratios.
- Minimal liver metabolism allows hepatic imaging.
- Small fragment size enhances renal clearance.
- Fragment technology provides lower immunogenicity.

ESTABLISHED SAFETY PROFILE
Over 400 patients who have received CEA-Scan have been evaluated for human anti-mouse antibody (HAMA).
- <1% showed an elevation of HAMA levels.
- Limited data are available regarding the safety of re-administration.

In the patients studied with CEA-Scan, one patient each developed the following minor self-limiting adverse effects: transient eosinophilia, nausea, bursitis, urticaria, generalized itching, headache, upset stomach and fever. Out of a total of over 500 patients receiving the product to date, there has been a single report of an apparent grand mal epileptic seizure in a severely hypertensive patient that was "possibly related" to CEA-Scan infusion.

HELPING YOU MAKE DECISIONS ABOUT TUMOR RESECTABILITY

Manufactured by: IMMUNOMEDICS, INC.

Distributed by: MALLINCKRODT MEDICAL

Please see adjacent page for brief summary of prescribing information.

References:
Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate the carcinogenic or mutagenic potential of Technetium Tc 99m arctumomab or to determine its effects on fertility in males or females.

Carcinogenesis, Mutagenesis, Impairment of Fertility

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No long-term animal studies have been performed to evaluate the carcinogenic or mutagenic potential of Technetium Tc 99m arctumomab or to determine its effects on fertility in males or females.
Nuclear medicine’s future depends upon its ability to better detect and treat disease. So you have a stake in the future of CEA-Scan® (Arcitumomab), a new radiodiagnostic agent for detection and staging of recurrent and metastatic colorectal cancer.

CEA-Scan is the first Tc99m-labeled antibody. The first antibody fragment. The first same-day antibody fragment imaging agent. The first antibody fragment diagnostic agent with the ability to detect liver metastases. And the first with virtually no immunogenicity (less than 1%).

With CEA-Scan and CT, you can help oncologists and surgeons better evaluate the 600,000 Americans who’ve undergone laparotomy for colorectal cancer. You can better detect lesions which, if excised, make surgical cure possible. Conversely, CEA-Scan and CT can detect otherwise occult disease that can make such resection useless.

Soon, we’ll be introducing additional products for the diagnosis and treatment of other diseases, providing truly new capabilities for nuclear medicine, and those who practice it.
Confidence in motion

The goal of cardiac imaging is to obtain studies that allow you to accurately view the status of cardiac perfusion and function. And that’s where Cardiolite® comes through.

With gated stress Cardiolite studies, you simultaneously obtain stress perfusion and resting function (wall motion, wall thickening, and LVEF)—that’s more diagnostic information than perfusion alone, which can help you improve patient management. And, the higher photon energy (140 keV) reduces attenuation and improves image quality.

So remember, to enhance interpretive confidence and patient management, perform gated stress Cardiolite.

With gated stress Cardiolite studies you can...
• Acquire stress perfusion and resting function from one study
• Obtain function information for patients with diseases that coexist with CAD (eg, cardiomyopathies)
• Differentiate scar tissue from artifact
• Potentially reduce false-positive interpretations and the need for other costly and invasive procedures

Cardiolite®
Kit for the preparation of Technetium Tc99m Sestamibi

To reduce the uncertainty Cardiolite comes through

© 1996, DuPont Pharma

Stress testing should be performed only under the supervision of a qualified physician in a laboratory equipped with appropriate resuscitation and support apparatus. 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 (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 radiation 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 procedures. 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 ischemia, infarction, bronchospasm, hypotension, 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 vials 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 aseptic procedures during preparation.

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

Technetium Tc99m Sestamibi should be disposed of more than 6 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
- Arhythmia

Carcinogenesis, Mutagenesis, Impairment of Fertility

In comparison with most other diagnostic technetium labeled pharmaceuticals, the radiation dose to the ovaries (1.5 mrad/30mCi at rest, 1.2 mrad/30mCi at exercise) is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosometry subsection in DOSAGE AND ADMINISTRATION section).

The active intermediate, [14C]MIBG in [14C]MIBG, was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/HFRP and sister chromatid exchange tests (all in vitro). At cytotoxic concentrations (≥ 20μg/ml), an increase in cells with chromosome aberrations was observed in the in vivo human lymphocyte assay. [14C]MIBG in [14C]MIBG did not show genotoxic effects in the in vivo mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (100μg/kg > 600 × maximum 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 pregnant women 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.

Pediatric Use

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

Visit us at RSNA booth #1361

ADVERSE REACTIONS: During clinical trials, approximately 8% of patients experienced a transient paraesthesia 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, dyspepsia, nausea, vomiting, pruritus, rash, urticaria, dry mouth, fever, diarrhea, fatigue, dyspepsia, and hypertension 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 arthritis in a wrist joint; and severe hypersensitivity, which was characterized by dyspnea, hypotension, bradycardia, anaphylaxis and vomiting within two hours after a second injection of Technetium Tc99m Sestamibi.

DOSEAGE AND ADMINISTRATION: The suggested dose range for I.V. administration in a single dose to be employed in the average patient (75kg) is: 370-1110MBq (10-30mCi)

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 calibration 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 (75kg) per 1110MBq (30mCi) of Technetium Tc99m Sestamibi injected intravenously are shown in Table 4.

<table>
<thead>
<tr>
<th>Table 4. Radiation Absorbed Doses from Tc99m Sestamibi</th>
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<tr>
<td>Estimated Radiation Absorbed Dose</td>
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<tr>
<td>2.0 hour void</td>
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<tr>
<td>rad/s mGy/30mCi</td>
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<td>rad/s mGy/30mCi</td>
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<tr>
<td>Organs</td>
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<tr>
<td>Bones</td>
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<tr>
<td>Gallbladder Wall</td>
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<tr>
<td>Small Intestine</td>
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<td>Upper Large Intestine Wall</td>
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<td>Stomach Wall</td>
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<td>Testes</td>
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<td>Red Marrow</td>
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<td>Urinary Bladder Wall</td>
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<td>Total Body</td>
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<td>2.0 hour void</td>
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<tr>
<td>Total Body</td>
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</tbody>
</table>

The U.S. Nuclear Regulatory Commission has approved this radionuclide kit for distribution to persons licensed to use byproduct material pursuant to sections 35.11 and 35.200 of Title 10 CFR Part 35, to be used only for purposes that are licensed by an Agreement State, and, outside the United States, to persons authorized by the appropriate authority.

Marketing by

DuPont Radiopharmaceuticals Division
The DuPont Merck Pharmaceutical Company
331 Treble Crest Road
Billerica, Massachusetts, USA 01821
For ordering Tel. Toll Free: 800-225-1572
All other business: 800-362-2966
(For Massachusetts and international, call 508-667-9031)

Circle Reader Service Number 34

3/96 Printed in U.S.A.
A breakthrough in clinical imaging is happening...
one patient at a time.

**MOLECULAR COINCIDENCE DETECTION** offers routine clinical benefits no one expected this century. ADAC's high throughput cameras acquire unsurpassed images, making more accurate and timely diagnosis a reality right now. MCD™ promises fewer exploratory operations, earlier staging, improved patient outcomes, reduced hospital costs, and more referrals to nuclear medicine.

We think of our investment in R&D as an investment in the future of nuclear medicine. To gain the immediate clinical advantages of this breakthrough technology, stop by booth #1139 at RSNA, or call 1-800-538-8531.
CORONAL VIEW OF PATIENT with lung cancer. MCD scan revealed abnormal uptake of FDG, showing primary tumor and metastatic disease.

TRANSVERSE VIEW OF PATIENT with epilepsy. MCD scan revealed decreased activity of FDG in right lobe.

CORONAL VIEW OF PATIENT with esophageal cancer. MCD scan revealed abnormal uptake of FDG in the neck correlating with PET and CT scans.

ADAC LABORATORIES
Visit RSNA booth #1139
Customer feedback

"The development of MCD will encourage the widespread use of FDG, a drug previously limited to major research centers. These examinations can produce dramatic changes in clinical management with resultant effects on costs and outcomes."

"The new EPIC detector technology and the image quality are superb. The software is extremely user friendly. I think ADAC is a true leader in the field and is fully committed to meet the challenges beyond the year of 2000. Undoubtedly, it sets the pace for continued refinement and innovations."

"MCD will have a dramatic impact on care and treatment of cancer patients. It will contribute significantly to cost effective management by providing more accurate information at a lower cost."

540 Alder Drive  Milpitas, California 95035
800-538-8531, ext. 1800  phone  408-321-9536  fax
http://www.adaclabs.com

ADAC LABORATORIES

ADAC EUROPE (NETHERLANDS) 31-30-2424500   ADAC DENMARK 45-98-183661
ADAC FRANCE 33-1-69411233   ADAC GERMANY 49-211-418620   ADAC ITALY 39-2-22471588
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ADAC AUSTRALIA 61-2-882-8600   ADAC CANADA 905-513-1370   ADAC LATIN AMERICA 305-376-3245
For higher quality images — GET CLOSE

The new CurvePlate™ detector for gamma cameras gets you closer than the flat detectors you’re now using.

In gamma cameras, image quality depends upon spatial resolution. With flat detectors, spatial resolution is best along that part of the detector closest to the structure being imaged. Spatial resolution degrades as the distance to from the detector to the body increases.

The new CurvePlate™ resolves this limitation by putting more detector surface in greater proximity to the body. The resulting spatial resolution improvement means a higher quality image for you.

**CurvePlate™ advantages**

- Ideal for bone scans and oncological studies
- Improves 511 keV/coincidence detection performance
- Enhances SPECT performance with single-head gamma cameras

Note to Practitioners: This product was introduced at the SNM-Denver Meeting and is now available for nuclear medicine imaging. Ask your gamma camera supplier to build your next camera with CurvePlate™ detectors.
DATA SPECTRUM CORPORATION
ECT Cardiac Insert Phantom with Fillable Defect Set (Model ECT/CAR/I)

Example SPECT horizontal long-axis (left), vertical (center) and short axis (right) images of Cardiac Insert with 50% cold defect. Filtered backprojection images acquired with Cardiac Insert mounted in Anthropomorphic Torso Phantom (optionally available) as pictured below.

Cardiac Insert shown separately with Fillable Defect Set. Insert may also be used in Cylindrical and Elliptical Phantoms.

Cardiac Insert shown mounted in Anthropomorphic Torso Phantom Model ECT/TOR/P.

To study the effect of breast attenuation on cardiac images, Breast Attachments large (left) or medium (right) may be used together with the Torso Phantom and Cardiac Insert.

UNIQUE FEATURES AND APPLICATIONS
• Assures overall system quality • Solid and fillable inserts simulate transmural and non-transmural cold and hot abnormalities • Evaluates cardiac ECT data acquisition protocols and reconstruction methods • Image interpretation training • Quantitative evaluation of uniform and nonuniform attenuation and scatter compensation methods • Evaluate cardiac image contrast, % rms noise and signal/noise ratio.

Data Spectrum Corporation
437 Dimmocks Mill Road, Hillsborough, North Carolina 27278
Tel: (919) 732-6800 Fax: (919) 732-2260
Email: lgk@spect.com
Visit us on the web at http://www.spect.com

Circle Reader Service No. 31
Abdominal MRI indicated evidence of recurrent disease...

Abdominal MRI indicating evidence of hepatic tumor.
OctreoScan imaging identified additional metastases for surgical intervention

Patient History

This middle-aged male underwent resection of a pancreatic carcinoid tumor four years ago. Subsequent 3 and 4 year CT scans presented evidence of recurrent disease. The patient was referred for OctreoScan imaging.

OctreoScan Scintigraphy

Five hepatic tumors and two periaortic nodal lesions were clearly visible on the whole-body planar images. OctreoScan imaging enabled differentiation between a non-receptor-expressing cavernous hemangioma and receptor-positive carcinoid metastases.

Clinical Course

Correlative MRI indicated disease, but some lesions would likely have been missed without the benefit of OctreoScan scintigraphy. The patient underwent surgery to freeze all five hepatic lesions identified by OctreoScan. Follow-up MRI and OctreoScan studies were planned to assess post-operative status.

Decisive Clinical Information

In patients who have a known or suspected neuroendocrine tumor, OctreoScan imaging often can be the difference between cautious uncertainty and decisive clinical intervention. Contact your nuclear medicine specialist for more information.

OctreoScan whole-body images showing five hepatic lesions and two periaortic lesions.

OctreoScan Kit for the Preparation of Indium In-111 Pentetreotide

Please see adjacent page for brief summary of prescribing information.
using aerosols to determine the patency of the pulmonary airway system? Use a gas (that's what the airway system is for), and Xenon (127 or 133) are gases which are safe, economical and easy to administer with the XENAMATIC™ 3000.

- Shielded for Xe 127 and Xe 133 (radiation profile available on request).
- World's only system that allows you to study patients on Ventilators.
- Largest and most efficient Xenon trap with a built-in monitor alarm system.
- Built-in O₂ monitor with digital display and control.
- A rebreathing system that saves Xenon.
- Low breathing resistance so you can study sick patients.
- Semi-automatic operation.
- Remote Control Capability.

Get out of the FOG-making business, and call today for more information on putting gases where gases belong, with the XENAMATIC.

Also available, Model 2000.

For more information, please call or write,
Circle Reader Service No. 32

Visit us at RSNA booth #1919

DIVERSIFIED DIAGNOSTIC PRODUCTS, INC.
11603 Windfern
Houston, TX 77064
713-955-5323
Introducing a view from the heart.

**MYOCVIEW**™
Technetium Tc99m Tetrofosmin for Injection

**A clear view.**
- Technetium – labeled
- Rapid and sustained myocardial uptake, with images available from 15 minutes to 4 hours post-injection
- Rapid GI clearance

**A convenient view.**
- Room temperature preparation, and 8 hour reconstituted shelf-life
- No redistribution
- Available in unit dose

**An efficient view.**
- Flexible scheduling
- Assessment of myocardial perfusion and ventricular function with a single injection
- Sensitive and reliable detection of coronary disease

**A patient’s view.**
- Low-radiation exposure compared to other myocardial perfusion agents
- Less than 1% of patients experienced side effects in clinical trials of 764 adults.

Amersham HEALTHCARE

See brief summary of prescribing information on following page
Brief Summary

MYOVIEW™

Kit for the Preparation of Technetium Tc99m Tetrofosmin for injection

Diagnostic radiopharmaceutical For Intravenous use only

Code N186A

DESCRIPTION

The Medi-Physics Myoview™ kit is supplied as a pack of five vials for use in the preparation of a technetium Tc99m tetrofosmin intravenous injection to be used for the scintigraphic delineation of regions of reversible myocardial ischemia in the presence or absence of infarcted myocardium. Each vial contains a pre-dispersed, sterile, non-pyrogenic, lyophilized mixture of 0.23 mg tetrofosmin [6,9-bis(2-ethoxyethyl)-3,12-dioxo-6,9-diphospho-tetradecane], 30 μg stannous chloride dithydrate (minimum stannous tin 5.0 μg, maximum total stannous and stannic tin 15.8 μg), 0.32 mg disodium sulphasalicylate and 1.0 mg sodium D-glucuronate, and 1.8 mg sodium hydroxide. The lyophilized powder is sealed under a nitrogen atmosphere with a rubber closure. The product contains no antimicrobial preservative.

Caution: Federal (USA) law prohibits dispensing without a prescription

CLINICAL PHARMACOLOGY

General

When technetium Tc99m pertechnetate is added to tetrofosmin in the presence of stannous reducing, a lipophilic, cationic technetium Tc99m complex is formed, Tc99m tetrofosmin. This complex is the active ingredient in the reconstituted drug product, on whose biodistribution and pharmacokinetic properties the indications for use depend.

Clinical Trials

A total of 252 patients with ischemic heart disease or atypical chest pain who had a reason for exercise stress imaging were studied in two open-label, multi-center, clinical trials of Tc99m tetrofosmin (study a and study b). Of these 252 patients there were 212 (83%) males and 40 (17%) females with a mean age of 60.5 years (range 33.7 to 82.4 years). At peak exercise, maximum heart rate achieved and peak systolic blood pressure were comparable after Myoview and thallium-201 exercise studies.

All patients had exercise and rest planar imaging with Myoview and thallium-201; 191 (76%) patients also had SPECT imaging. The Myoview and thallium-201 images were separated by a mean of 5.1 days (1-14 days before or 2-14 days after Myoview). For Myoview imaging, each patient received 185-296 MBq (5.5-8.2 mCi) Tc99m tetrofosmin at peak exercise and 555-889 MBq (15-24 mCi) Tc99m tetrofosmin at rest approximately 4 hours later. For thallium-201 imaging, patients received thallium-201 55.5-74.5 MBq (1.5-2.0 mCi) at peak exercise.

The images were evaluated for the quality of the image (excellent, good or poor) and the diagnosis (with scores of 0 = normal, 1 = ischemia, 2 = infarct, 3 = mixed infarct and ischemia). The primary outcome variable was the percentage of correct diagnoses in comparison to the final clinical diagnosis. All planar images were blindly read; SPECT images were evaluated by the unblinded investigator. A subset of 181/252 (71%) patients had coronary angiography comparisons to the planar images of Myoview or thallium-201.

INDICATIONS AND USAGE

Myoview is indicated for scintigraphic imaging of the myocardium following separate administrations under exercise and resting conditions. It is useful in the delineation of regions of reversible myocardial ischemia in the presence or absence of infarcted myocardium.

CONTRAINDICATIONS

None known.

WARNINGS

In studying patients with known or suspected coronary artery disease, care should be taken to ensure continuous cardiac monitoring and the availability of emergency cardiac treatment.

PRECAUTIONS

General

To minimize radiation dose to the bladder, the patient should be encouraged to void when the examination is completed and as often thereafter as possible. Adequate hydration should be encouraged to permit frequent voiding.

The contents of the Myoview vial are intended only for use in the preparation of technetium Tc99m tetrofosmin injection and are NOT to be administered directly to the patient.

As with all injectable drug products, allergic reactions and anaphylaxis may occur.

Sometimes Tc99m labeled myocardial imaging agents may produce planar and SPECT images with different imaging information.

Technetium Tc99m tetrofosmin injection, like other radioactive drugs must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to the patient consistent with proper patient management.

Radio-pharmaceuticals should be used by or under the control of physicians who are qualified by specific training and experience in the safe use and handling of radionuclides, and whose experience and training have been approved by the appropriate governmental agency authorized to license the use of radionuclides.

Drug Interactions: Drug interactions were not noted and were not studied in clinical studies in which Myoview was administered to patients receiving concomitant medication. Drugs such as beta blockers, calcium blockers and nitrates may influence myocardial function and blood flow. The effects of such drugs on imaging results are not known.

Carotid Arteries, Multigenera, Impairment of Fertility

Studies have not been conducted to evaluate carcinogenic potential or effects on fertility. Tetrofosmin sulphasalicylate 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 784 adults (511 men and 253 women) with a mean age of 58.7 years (range 29-94 years). The subjects received a mean dose of 7.67 mCi 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 5784 (less than 1%) of patients after Myoview injection.

The following events were noted in less than 1% of patients:

Cardiovascular: angina, hypertension, Torsades de Pointes Gastrointestinal: vomiting, abdominal discomfort Hypersensitivity: cutaneous allergy, hypotension, dyspnea Special Senses: metallic taste, burning of the mouth, smelling something

There was a low incidence (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 5-6 mCi (185-296 MBq) is given at peak exercise.
- The second dose of 15-24 mCi (555-889 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 renal 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

<table>
<thead>
<tr>
<th>Target Organ</th>
<th>Absorbed radiation dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exercise</td>
</tr>
<tr>
<td>Gall bladder wall</td>
<td>0.123</td>
</tr>
<tr>
<td>Upper large intestine</td>
<td>0.075</td>
</tr>
<tr>
<td>Bladder wall</td>
<td>0.056</td>
</tr>
<tr>
<td>Lower large intestine</td>
<td>0.057</td>
</tr>
<tr>
<td>Small intestine</td>
<td>0.045</td>
</tr>
<tr>
<td>Kidney</td>
<td>0.039</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>0.030</td>
</tr>
<tr>
<td>Ovaries</td>
<td>0.029</td>
</tr>
<tr>
<td>Uterus</td>
<td>0.027</td>
</tr>
<tr>
<td>Bone surface</td>
<td>0.023</td>
</tr>
<tr>
<td>Pancreas</td>
<td>0.019</td>
</tr>
<tr>
<td>Stomach</td>
<td>0.017</td>
</tr>
<tr>
<td>Thyroid</td>
<td>0.016</td>
</tr>
<tr>
<td>Adrenals</td>
<td>0.016</td>
</tr>
<tr>
<td>Heart wall</td>
<td>0.015</td>
</tr>
<tr>
<td>Red marrow</td>
<td>0.015</td>
</tr>
<tr>
<td>Spleen</td>
<td>0.015</td>
</tr>
<tr>
<td>Muscle</td>
<td>0.013</td>
</tr>
<tr>
<td>Testes</td>
<td>0.013</td>
</tr>
<tr>
<td>Liver</td>
<td>0.012</td>
</tr>
<tr>
<td>Thymus</td>
<td>0.012</td>
</tr>
<tr>
<td>Brain</td>
<td>0.010</td>
</tr>
<tr>
<td>Lungs</td>
<td>0.008</td>
</tr>
<tr>
<td>Skin</td>
<td>0.008</td>
</tr>
<tr>
<td>Breasts</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Dose calculations were performed using the standard MIRD method (MIRD Pamphlet No.1 (rev). Society of Nuclear Medicine, 1976). The dose equivalents (DE) were calculated in accordance with ICRP 53 (Ann. ICRP 18 (1-4), 1988) and gave values of 8.81 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 (f)

Distributed by: Medi-Physics, Inc., Amersham Healthcare
2306 S. Clearbrook Dr., Arlington Heights, IL 60005
1-800-533-4123 (Toll Free)
February, 1996

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43-1011

Circle Reader Service Number 10
One of the goals of the Society Of Nuclear Medicine Technologist Section (SNM-TS) has been to take an active role in educating the public and the medical community about nuclear medicine procedures and the benefits of this functional imaging modality.

This is the official entry form for the 1996 PR Stars contest sponsored by the SNM-TS and Technology Imaging Services. Please fill out the information requested on the reverse side of this form. Based on this information, a panel of judges will evaluate the entries and select the winner. All entrants must be staff members of a hospital or Nuclear Medicine facility. Entries must be postmarked no later than December 16, 1996.

Prizes:
First Place: $1,000 for your institution; $350 for the entrant; up to $1,000 for airfare to the SNM 1997 Annual Meeting to accept your award.
Second Place: $500 for your institution; $250 for the entrant.
Third Place: $250 for your institution; $100 for the entrant.

Entry Form:
Your Name ____________________________
Hospital/Facility ____________________________
Address ____________________________
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Telephone/ Fax ____________________________

Mail or Fax by December 16, 1996 To:
Technology Imaging Services
P.O. Box 3589
Youngstown, Ohio 44513
Fax: (330) 758-1617 Tel: (800) 409-2688
Attn: Jenny O'Kane, Vice President

Complete Reverse Side
PR-STARS
CONTEST

Documentation of your activities is encouraged and may be mailed with your entry. (All original materials will be returned after judging has been completed.) You may also use additional pages as necessary.

1. Describe your Nuclear Medicine Week activities:
   a. When did you celebrate? ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   b. What was your primary objective or message? _________________________________________
   ____________________________________________________________
   ____________________________________________________________
   c. Who was your target audience? ____________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. What available resources did you use? (budget, manpower, media, etc.)
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

3. Describe your success in achieving your primary objective, hitting your target audience or successfully conveying your message. Include the most notable aspects and/or anecdotes.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

4. Did your celebration have any positive outcome(s)?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

5. Finally, can you offer the Nuclear Medicine Week Committee any suggestions for improving our materials or contest? ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

Thank you for your entry, and GOOD LUCK!

Patti Corrigan, C.N.M.T.
Nuclear Medicine Week Chairperson
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One of the valuable tools the Society of Nuclear Medicine (SNM) and Society of Nuclear Medicine Technologist Section (SNM-TS) have to offer everyone in the field of Medicine are the audiovisuals offered in the Society of Nuclear Medicine Educational Programs catalog.

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- **NUCLEAR MEDICINE BRAIN IMAGING**
  - General information about brain imaging
  - Perfusion Imaging
  - Stress-Rest Testing
  - Cisternography

- **NUCLEAR MEDICINE LIVER AND HEPATOBILIARY IMAGING**
  - General information about liver and hepatobiliary imaging
  - Hepatobiliary Imaging in children

For Spanish-speaking patients, Guidelines for Patients Receiving Radioiodine Treatment is available in Spanish. Look for other Spanish-language SNM Patient Pamphlet titles appearing in 1997.

To receive a complimentary sample of any SNM patient pamphlet, contact Stacey Silver at 703-708-9000 x223 or e-mail your request (and mailing address) to ssilver@snm.org

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Contraindicated in patients with 2nd- or 3rd-degree AV block, sinus node disease and known or suspected bronchoconstrictive or bronchospastic lung disease.

Adenoscan®
adenosine

Please see brief summary of prescribing information on adjacent page for warnings, precautions and contraindications.

Fujisawa

BRIEF SUMMARY

For Intravenous Infusion Only

DESCRIPTION

Adenoscan® (adenosine) is a white crystalline powder. It is soluble in water and practically insoluble in alcohol. Solubility increases by warming and lowering the pH of the solution.

Each Adenoscan vial contains a sterile, non-pyrogenic solution of adenosine 3 mg/mL and sodium chloride 9 mg/mL. In Water for Injection, q.s. The pH of the solution is between 4.5 and 7.5.

INDICATIONS AND USAGE:

Intravenous Adenoscan® is indicated as an adjunct to thallium-201 myocardial perfusion scintigraphy in patients unable to exercise adequately. (See WARNINGS.)

CONTRAINdications:

Intravenous Adenoscan® (adenosine) should not be administered to individuals with:

1. Known or suspected bronchospastic or bronchopulmonary lung disease (e.g., asthma).
2. Known or suspected bronchospastic or bronchopulmonary lung disease (e.g., asthma).
3. Sino-nasal disease, such as nasal sinus or symptomatic bronchospasm (except in patients with a functioning pacemaker).
4. Known or suspected bronchospastic or bronchopulmonary lung disease (e.g., asthma).
5. Known hypersensitivity to adenosine.

WARNINGS:

Fatal Cardiovascular Events: Bradycardia, Tachycardia, Ventricular Tachycardia, Hypertensive, Hypotension

Fetal cardiac arrest, sustained ventricular tachycardia (requiring resuscitation), and nonfatal myocardial infarction have been reported concurrent with Adenoscan® infusion. Patients with unstable angina may be at greater risk.

Bisemilod and Antimineraloid Events

Adenoscan (adenosine) exerts a direct depressant effect on the SA and AV nodes and has the potential to cause first-, second- or third-degree AV block, or sinoatrial block. Approximately 4.3% of patients developing AV block with Adenoscan, including first-degree (2.9%), second-degree (2.2%) and third-degree (0.5%) heart block. All episodes of AV block have been asymptomatic, transient, and did not require intervention. Adenoscan can cause sinus bradycardia and Adenoscan should be used with caution in patients with pre-existing first-degree AV block or bundle branch block and should be avoided in patients with high-grade AV block or sino-nodal dysfunction (except in patients with a functioning pacemaker). Adenoscan should also be used with caution in any patient who develops persistent or symptomatic high-grade AV block. Since paroxysm has been rarely observed with adenosine infusion.

Hypertension

Adenoscan (adenosine) is a potent peripheral vasodilator and can cause significant hypertension. Patients with an intact baroreceptor reflex may experience a decrease in mean blood pressure and cause perfusion in response to Adenoscan by increasing heart rate and cardiac output. However, Adenoscan should be used with caution in patients with autonomic dysfunction, severe cardiac heart disease, pericardial or pericardial effusion, or uncontrolled hypertension, due to the risk of hypertensive complications in these patients. Adenoscan should be discontinued in any patient who develops persistent or symptomatic hypertension.

Hypotension

Increases in systolic and diastolic pressure have been observed (as great as 140 mm Hg systolic in one case) concurrent with Adenoscan® infusion; most increases occurred spontaneously within several minutes, but in some cases, hypotension lasted for several hours. Tachycardias

Adenoscan (adenosine) is a respiratory stimulant (probably through activation of carotid body chemoreceptors) and intravenous administration in man increases minute ventilation 30% and arterial PCO2 (probably respiratory alkalosis). Approximately 28% of patients experience breathlessness (dyspnea) or an urge to breathe deeply with Adenoscan. These respiratory complaints are transient and only rarely require intervention.

Adenoscan administered by inhalation has been reported to cause bronchoconstriction in asthmatic patients, presumably due to an effect on the lower respiratory tract. The safety and efficacy of Adenoscan in the presence of these agents has not been systematically evaluated. The respiratory effects of Adenoscan are potentiated by bronchodilator transport inhibitors, such as propranolol. The safety and efficacy of Adenoscan in the presence of bronchodilators has not been systematically evaluated. Whenever possible, drugs that might interact or augment the effects of Adenoscan should be withheld for at least five half-lives prior to the use of Adenoscan.

Carcinoembryonic Antigens, (sutures), Impairment of Fertility

Studies in animals have not been performed to evaluate the carcinogenic potential of Adenoscan®. Adenoscan® was negative for carcinogenic potential in the Salmonella Ames Test and Mammalian Microsome Assay. Adenoscan® is known to be other nucleosides at millimolar concentrations present for several doubling times of cells in culture, is known to produce a dose of chromosomal aberrations. In rats and mice, adenoscan administered intraperitoneally once a day for five days at 50,100, and 500 mg/kg (15-93 mg/kg), 5-9 mg/kg (15 mg/kg) and 0.5-2 mg/kg (0.5 mg/kg) dose increased tumor incidences and increased numbers of abnormal sperm, a reflection of the ability of adenosine to produce chromosomal damage.

Pregnancy Category C

Animal reproduction studies have not been conducted with adenoscan; nor have studies been performed in pregnant women. Because it is not known whether Adenoscan can cause fetal harm when administered to pregnant women, Adenoscan should be used during pregnancy only if clearly needed.

Pediatric Use

The safety and effectiveness of Adenoscan® in patients less than 18 years of age have not been established.

ADVERSE REACTIONS

The following reactions with an incidence of at least 1% were reported with intravenous Adenoscan® among 1421 patients enrolled in controlled and uncontrolled U.S. clinical trials. Despite the short half-life of adenosine, 10% of the side effects occurred not with the infusion of adenosine but several minutes to an hour after the infusion terminated. Also, 8.4% of side effects occurred 24 to 48 hours following the infusion when the infusion was complete. In many cases, it is not possible to know whether these late adverse events are the result of Adenoscan infusion.

Cardiovascular System: Nonecardiac myocardial infarction; life-threatening ventricular arrhythmias; third-degree AV block; bradyarrhythmia; sinus node dysfunction; transient changes, tachycardia (systolic blood pressures > 200 mm Hg).

Central Nervous System: Cerebral ischemia; emotional instability; tremors.

Genital/Urinary System: Vaginal pressure, urgency.

Respiratory System: cough.

Special Senses: blurred vision; dry mouth; ear discomfort; metallic taste; nasal congestion; scotomata; tongue discomfort.

OVERDOSAGE

The half-life of Adenoscan® is less than 10 seconds and side effects of Adenoscan (adenosine) when they occur usually resolve quickly when the infusion is discontinued. Although delayed or persistent effects have been observed in patients or patients who have been observed to be effectively terminated (see adverse side effects). In controlled U.S. clinical trials, theophylline (50-120 mg slow intravenous injection) was used to abort Adenoscan® side effects in less than 2% of patients.

Dosage and Administration

For intravenous only.

Adenoscan® can be used as a continuous peripheral intravenous infusion.

The recommended intravenous dose for adults is 140 mg/kg/m² infused for six minutes (total dose of 0.84 mg/kg).

The required dose of thallium-201 should be injected at the midpoint of the Adenoscan® infusion (i.e., after the first three minutes of Adenoscan® infusion).

The injection should be as close to the venous access as possible to prevent an inadvertent increase in the dose of Adenoscan (adenosine) the patient is exposed to. There are no data on the safety or efficacy of alternative Adenoscan® infusion protocols. The safety and efficacy of Adenoscan® administered by the intracoronary route has not been established.

Notes: Perfusion drug products should be inspected visually for particulate matter and cloudiness prior to administration. (See CAUTIONS.)

CAUTIONS

Federal law prohibits dispensing without prescription.

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Circle Reader Service Number 50
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.

**Liquid Scintillation Counter Suitable for Helicobacter pylori \(^{14}C\)O\(_2\) Breath Tests**

Packard Instrument Company announces the Tri-Carb \(^{14}C\) model 2100TR liquid scintillation analyzer which is ideally suited for counting the samples and analyzing the results of \(^{14}C\)O\(_2\) breath tests, such as for *Helicobacter pylori* and triolein fat tests. The Tri-Carb 2100TR is a full capability liquid scintillation counter (LSC), featuring built-in 486SLC computer control. TR-LSC background reduction is standard on the 2100TR, providing the highest sensitivity (signal-to-noise ratio) of any low cost, full function LSC, to ensure the maximum sensitivity for differentiating between positive and negative *Helicobacter pylori* test results.

When equipped with the automatic tandem processing option and >500 MB built-in hard disk, the Tri-Carb 2100TR is capable of providing unattended, on-line data processing of *Helicobacter pylori* and other radioisotope test results, including the possibility of generating customized patient reports. When equipped with the optional built-in network card, the 2100TR can be connected to virtually any network to automatically transmit count data, or even completed reports, to a mainframe computer or another work station on the network.

The Tri-Carb 2100TR standard features include: automatic instrumental performance assessment to help ensure GLP compliance, the highest 20-ml vial sample capacity of any commercially available LSC and the most positive sample identification available, including an optional work list feature that can be appended to the sample data file for accurate sample archiving. Packard Instrument Company, 800 Research Parkway, Meriden, CT 06450. Phone: (203) 238-2351. Fax: (203) 639-2172.

**Toshiba’s Nuclear Medicine Systems Feature New Computer Platform**

The dual-head GCA-7200A/DI and the single-head GCA-7100A/DI nuclear medicine gamma camera systems from Toshiba feature an improved computer platform. The two systems incorporate two Super-SPARC CPUs which provide a powerful base for nuclear medicine image processing. The dedicated graphics processor capably handles high-speed cine displays and requirements for real-time zoom. Easily understood icons and pull-down menus make for a user-friendly processing system. This combination also ensures smooth, quick execution of all software commands providing for increased clinical productivity.

A local area network (LAN) communications link can be established between other Toshiba gamma cameras, the GMS-5500A/DI workstation and digital laser images or color printers. Other Toshiba gamma camera include the rectangular large-field detectors (550 x 400 mm; 21.7" x 15.7") that provide fast, more complete coverage of any portion of the patient’s body. Whole-body scanning, SPECT and planar imaging are accomplished quickly with a minimum of operator involvement. The short distance (63 mm; 2.52") between the edge of the field of view and the detector casing makes imaging of the entire brain routinely possible. Fan-beam collimators are available for high-resolution brain SPECT.

The GCA-7200A/DI and GCA-7100A/DI systems also allow for autopositioning. When the operator pushes a button, the system automatically measures body thickness and adjusts the table height to center the patient to the detector. The autopositioning functions also enhance the ease of collimator exchange and reduce camera set-up time. Also, adjustable table height allows for easier access by patients and operators. Toshiba America Medical Systems Inc., 2441 Michelle Dr., Tustin, CA 92681-2068. Phone: (714) 669-4140.

**SmartDocs**: Accurate Billing for Hospital Rounds

SmartDocs from Berdy Medical Systems is a software program that helps physicians keep track of patient information. With SmartDocs, physicians now have a convenient method to capture patient information, diagnoses and procedures on a hand-held computer. The product runs on a small computer that conveniently fits in either a lab or breast coat pocket (computer size: 6.5" x 3.3" x 0.9"; weight: 11 ounces). There are no complicated codes or hard to remember commands—just press a key and go. Both the software and computer are being sold directly by Berdy Medical Systems for $620. SmartDocs is designed for the computer novice.

The Berdy SmartDocs package includes the Psion Series 3a, which is a powerful pocket-sized computer. This versatile personal digital assistant has built-in features that include: a word processor, spreadsheet, data manager, appointment scheduler, voice recorder and more. After recording your diagnosis and visit information on the spot you can print them out or display them for entry into the office billing system at a later time. SmartDocs helps you find the right codes so your billing and records are more accurate. Thus, penalties associated with errant billing are avoided. All evaluation and management current procedural terminology codes and the top international classification of disease codes are preloaded and easy to locate. A find feature allows for a word search for the desired code for fast access. Berdy Medical Systems Inc., Mack Centre 1, 365 West Passaic St., Rochelle Park, NJ 07662-3012. Phone: (201) 843-3366. Fax: (201) 843-0364.

Visit SNM home page at [http://www.snm.org](http://www.snm.org)
The American Board of Science in Nuclear Medicine 1997 Certification Examination

The 1997 examination will be given Sunday, June 1, 1997 in San Antonio, Texas in conjunction with the 44th Annual Meeting of the Society of Nuclear Medicine.

The examination is written and consists of two parts —

Part One (3.5 hours) assesses knowledge of basic aspects of Nuclear Medicine Science.

Part Two (2.5 hours) examines in depth the knowledge of a predetermined subspecialty area of the candidate's choice including:

• Nuclear Medicine Physics and Instrumentation
• Nuclear Pharmaceutical Science and Radiochemistry
• Radiation Protection

Completed Applications must be postmarked by March 14, 1997. The examination fee is $450 ($400 refundable if you do not qualify).

For applications and more information, please contact:
Joanna Wilson, Associate Coordinator
American Board of Science in Nuclear Medicine
c/o The Society of Nuclear Medicine
1850 Samuel Morse Drive, Reston, Virginia 20190-5316
Tel: (703) 708-9000, ext. 250 • Fax: (703) 708-9015

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SNM
44TH ANNUAL MEETING

Critical Dates

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DON'T FORGET THE MID-WINTER MEETING IS IN PALM SPRINGS, CALIFORNIA

DATE: February 5-11, 1997

LOCATION: The Palm Springs Riviera Resort and Racquet Club

EDUCATION PROGRAM SPONSOR: The Computer and Instrumentation Council
or PhD] in nuclear medicine for his/her accomplishments. Applications must include curriculum vitae, a statement detailing research accomplishments and future goals, three or more letters of recommendations from established investigators, and up to three selected reprints. Application deadline: March 1, 1997.

**Awards and Fellowships Sponsored by the Society of Nuclear Medicine and Other Organizations**

**DuPont Pharma Nuclear Oncology and Nuclear Cardiology Research Fellowships**—The Society of Nuclear Medicine Awards Committee announces two fellowships; one for $10,000 in nuclear oncology and one for $20,000 in nuclear cardiology. The fellowships will be available July 1, 1997. The objective of the nuclear oncology fellowship is to support high quality research in the area of Tc-labeled compounds for breast imaging as a complement to Mammography. The objective of the Nuclear Cardiology fellowship is to support high quality clinical research in any of the following areas: gated SPECT, heart failure, CAD prognosis or CAD in women. Both fellowships' goal is to encourage new entrants into the fields of nuclear oncology and nuclear cardiology. The awards will be announced at the Annual SNM Meeting in June, 1997 in San Antonio, TX. For more information and an application contact: Society of Nuclear Medicine, SNM Awards Committee, 1850 Samuel Morse Dr., Reston, VA 20190-5316. Application deadline: January 6, 1997.

**Mallinckrodt Fellowship**—Mallinckrodt Inc. announces its annual fellowship of $30,000 for a physician fellow active in nuclear medicine research and/or development. The award is to further a research project involving the development of single photon radiopharmaceuticals or beta emitters to be used in nuclear medicine oncology. Applicants are asked to submit their curriculum vitae, a detailed account of their research project including prior accomplishments on the project and future plans. Requested information, along with at least two letters supporting the application, should be forwarded to: William J. MacIntyre, PhD, Society of Nuclear Medicine, 1850 Samuel Morse Dr., Reston, VA 20190-5316. Nomination deadline: January 6, 1997.

**Paul C. Aebersold Award**—Applications are invited for the Paul C. Aebersold Award for outstanding achievement in basic science applied to nuclear medicine. This award commemorates the contributions of Dr. Paul Clarence Aebersold to the applications of nuclear physics to nuclear medicine and radiation biology, as well as his contributions to the Society of Nuclear Medicine. Dr. Aebersold contributed greatly to the emergence of nuclear medicine as a discipline by his energetic leadership in the provision of cyclotron-generated and reactor-produced radionuclides, and by his numerous publications and lectures. In giving this award, the Society thus symbolically signifies its appreciation of the warm and vital person who became the Society's first Honorary Member. Nominations should be supported by the nominee's curriculum vitae and at least two letters supporting the nomination. These letters should briefly describe the contributions in basic science for which the nominee is proposed. The nominee does not need to be a SNM member. Nomination deadline: December 31, 1996. Please submit nominations and supporting documents to: William J. MacIntyre, PhD, c/o Society of Nuclear Medicine, 1850 Samuel Morse Dr., Reston, VA 20190-5316.

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**SNM HELP LINE (703) 768-9000**

- For SNM membership questions or how to obtain a subscription to SNM journals, contact: Shal Laxarte, ext. 232 or e-mail her at slaxarte@snm.org.
- For information on obtaining VOICE credits, contact: Marcia Ferg, ext. 210 or e-mail her at mferg@snm.org.
- For questions pertaining to continuing education credits or your state requirements, contact: Marcia Ferg, ext. 210 or e-mail her at mferg@snm.org.
- To order the pocket lecture series, contact: National Audio Visual (800) 373-2952. Fax: (303) 292-5629.
- To order patient pamphlets for your hospital or university, contact: Matthews Medical Books (800) 633-2665 or (314) 432-1401.
- To order SNM books or single-copy issues of The Journal of Nuclear Medicine or the Journal of Nuclear Medicine Technology, contact: Matthews Medical Books (800) 633-2665 or (314) 432-1401.
- For questions on any SNM publication or how to obtain sample SNM pamphlets, contact: Stacey Silver, ext. 223 or e-mail her at ssilver@snm.org.
- For classified advertising space and price quotes, contact: Jessica McLane Petri, ext. 226 or e-mail her at jmcclane@snm.org.
- For permission requests on articles or figures appearing in either The Journal of Nuclear Medicine or the Journal of Nuclear Medicine Technology, contact: Dawn Murphy, ext. 211 or e-mail her at dmurphy@snm.org.
- For questions concerning adverse drug reactions to radiopharmaceuticals, contact: USP Drug Reports (800) 638-6725.
- SNM home page address: http://www.snm.org.
- For bulk reprints, contact: Steve Klein, ext. 213 or e-mail him at sklein@snm.org.

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**SNM MEETING DATES AND VENUES**

**44th Annual Meeting**
June 2-5, 1997
San Antonio Convention Center
San Antonio, TX

**45th Annual Meeting**
June 7-11, 1998
Toronto Convention Center
Toronto, Canada

**46th Annual Meeting**
June 6-10, 1999
Los Angeles Convention Center
Los Angeles, CA
INTRODUCING THE MOST UP-TO-DATE SELF-ASSESSMENT PROGRAM ON INSTRUMENTATION

Nuclear Medicine Self-Study Program II: Instrumentation is the most current and comprehensive self-assessment program on this vital topic available today. With more than 35 pages devoted to questions, answers and critiques, this program is an essential tool for reviewing and upgrading your skills or preparing for board certification.

Topics Include—
- Nonimaging Instrumentation
- Anger Scintillation Cameras
- Multiple-Element Scintillation Camera
- Effect of Camera Performance on Clinical Imaging
- Quality Control for Anger Cameras
- Emission Computed Tomographic Imaging
- Nuclear Medicine Computers, Acquisition and Processing Software and System Management


For more information on SNM books, visit our web site at http://www.snm.org

Call toll-free to order your copy today! $45.00 SNM members / $63.00 nonmembers.
Matthews Medical Books 800-633-2665 (outside U.S. 314-432-1401)

Computer and Instrumentation Council
Presents...

DATA MANAGEMENT IN NUCLEAR MEDICINE

LOCATION AND DATES
Palm Springs Riviera Resort and Racquet Club
Monday, February 10, through Tuesday, February 11, 1997

Call SNM Department: Meeting Services
703-708-9000

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<tr>
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The 1997 Scientific Program Committee, Scientific Exhibits Subcommittee and the Scientific & Teaching Sessions Committee solicit the submission of abstracts from members and nonmembers of the Society of Nuclear Medicine for the 44th Annual Meeting in San Antonio, TX. Accepted Scientific Paper and Scientific Exhibit abstracts will be published in a special supplement to the May issue of The Journal of Nuclear Medicine and accepted Technologist Section abstracts will be published in the June issue of the Journal of Nuclear Medicine Technology. Original contributions on a variety of topics related to nuclear medicine will be considered, including:

- Instrumentation and Data Analysis
- Radioassay
- Radiopharmaceutical Chemistry
- Dosimetry/Radiobiology
- Clinical Science Applications:
  - Bone/Joint
  - Cardiovascular (clinical, basic, and PET)
  - Endocrine
  - Gastroenterology
  - Neurosciences: Basic, Neurology and Psychiatry
  - Pediatrics
  - Pulmonary
  - Renal/Electrolyte/Hypertension
  - Hematology/Infectious Disease
  - Oncology Diagnosis (antibody)
  - Oncology Diagnosis (non-antibody)
  - Oncology/Therapy

Authors seeking publication for the full text of their papers are strongly encouraged to submit their work for immediate review to JNM, and for the technologist section, to JNMT.

The Scientific Paper and Exhibit abstract form can be obtained in the September and October 1996 JNM. You can also obtain an abstract form by writing to:

Society of Nuclear Medicine
Att: Abstracts
1850 Samuel Morse Drive
Reston, VA 20190
Tel: (703)708-9000
Fax: (703)708-9015
http://www.snm.org

Visit SNM homepage at
http://www.snm.org

The January
JNM Classified
Advertising Submission Deadline is
11/29/96

Please contact
Jessica McLane Petit
at the SNM
for more information
703-708-9000 x 226
Position Available

Brain SPECT Imaging Fellowship
A one or two year fellowship position in brain imaging is available beginning July 1, 1997 in the Division of Nuclear Medicine at Emory University Hospital, an 850-bed teaching hospital located in Atlanta, Georgia. This program is supported by a grant from the National Institute of Neurological Diseases and Stroke (R01 NS 21025) and will be directed by Dr. Gary M. Deonna, MD, PhD. Applicants must have completed a residency program in radiology. The selection will be based upon demonstrated interest in research involving brain imaging and performance of a research protocol. Fellowship recipients will be expected to become involved in the research projects involving all aspects of brain SPECT imaging, and to submit papers for publication in national and international journals. Fellowship recipients will also have the opportunity to present their results at scientific meetings. The fellowship will be supported at the level of $31,000 per year. In addition, Clinical and Academic rank will be commensurate with experience. An additional stipend of $10,000 per year is available for the purchase of research equipment. Fellowship recipients will be placed on the faculty of Emory University School of Medicine at the rank of Assistant Professor. The endowment will be matched by the department. Send curriculum vitae and three letters of recommendation to: Gary M. Deonna, MD, PhD, Director, SPECT Fellowship, Emory University Hospital, 1364 Clifton Road, NE, Atlanta, GA 30322. Applications must be received by January 1, 1997.

Cyclotron Operator/Maintenance
The Department of Radiology is looking for a dependable, well-organized individual to join the Cyclotron Facility. We operate a JSW 3015 machine for production of short-lived radioisotopes for PET studies. Candidates must have a BS degree in engineering, physics, computer, or related science and have knowledge of computer electrical, and mechanical skills. Prior experience highly desirable. Duties include daily operation of cyclotron, targets and related equipment. Routine maintenance and troubleshooting. Design and implementation of new remote systems and upgrades of existing components. Collaborate with investigators in research projects. Salary commensurate with experience and educational background. Includes a comprehensive benefits package. Send resume to: Dr. Carlos Gonzalez, Dept. of Radiology, 1 Silverstein University of Pennsylvania, Philadelphia, PA 19104-4283. AAE/EOE. http://www.upenn.edu/hr

Diagnostic Radiology Residency
First-year Diagnostic Radiology residency position available at a designated Level I Trauma Center and acute care 450-bed hospital in San Jose, California. Candidates must have completed one year of internship prior to acceptance. Send CV and applications to: Ms. Vickie Higgins, Dept. of Radiology, Santa Clara Valley Medical Center, San Jose, CA 95128. Phone: 408-883-6370.

Director of Nuclear Medicine Physics
Emory University, Division of Nuclear Medicine, is recruiting a physical scientist for a full-time tenure track faculty position. Applicants must possess a PhD in Medical Physics, Biomedical Engineering, Computer Science or a related field, two years experience in nuclear medicine and demonstrated ability to obtain extramural funding. Responsibilities include physics, computer and instrumentation support to nuclear medicine, including ongoing research and teaching residents. This scientist is expected to develop an independent grant funded program in nuclear medicine research. Unique research opportunity exists in collaboration with the Emory PET Center, in the development and validation of high-energy imaging techniques with hybrid SPECT systems. Academic rank and salary will be commensurate with experience. Forward CV to: Andrew Taylor, MD, Division of Nuclear Medicine, Emory University Hospital, 1364 Clifton Road, NE, Atlanta, GA 30322. Emory University is an EEO/AA employer.

Division Head of Nuclear Medicine
The Department of Radiology, Division of Nuclear Medicine at Emory University Hospital and Health Sciences Center is seeking a Head for the Division of Nuclear Medicine. This position will carry a part-time appointment with the University of British Columbia, in the Department of Radiology. Responsibilities will include: Head, Division of Nuclear Medicine, Vancouver Hospital & Health Sciences Center, and they will be expected to take an active role in teaching. As well, they must have proven research experience and it is desirable that this includes PET. The successful candidate will be joining two other nuclear medicine physicians in a practice which contains eight cameras, two bone density units and is totally networked. All aspects of nuclear medicine are currently practiced. There is also support for a Basic Science Division with physicists and a radiopharmacist. The expected start date of this appointment is July 1, 1997. The University of British Columbia welcomes all qualified applicants, especially women, Aboriginal people, visible minorities and persons with disabilities. In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. Send curriculum vitae and three references to: Dr. B. Lentle, Head, Department of Radiology, Vancouver Hospital & Health Sciences Center, 855 West 12th Ave., Vancouver, BC V5Z 1M9. The deadline for closing this competition is February 1, 1997.

Nuclear Medicine Physician
Active, affiliated VA Medical Center is seeking a BC/BE physician to join our nuclear medicine staff. Competitive salary/benefit package. Excellent location and diverse outdoor recreational opportunities. Send resume to: Patrick McDaniel, Human Resources (OSC), VA Medical Center, 2200 Fort Roots Drive, North Little Rock, AR 72114. Phone: 501-370-6683. EOE.

Nuclear Medicine Physician
The Dept. of Radiological Sciences of the University of Oklahoma Health Sciences Center has an opening for a mid-level radiologist with specialization in nuclear medicine. Faculty rank and remuneration will depend on credentials and experience. Members of the nuclear medicine section provide coverage for the University Hospital (adult), Childrens Hospital of Oklahoma and the DVA Medical Center in Oklahoma City. The section is well-equipped and performs approximately 10,000 studies/yr in aggregate. The individual selected will have primary responsibilities in one of the adult units, but be expected to provide cross coverage within the other units. In addition, the individual will spend at least one day a week covering other areas of radiology and will be included in radiology on-call coverage. If interested, please contact: Joe C. Leonard, MD, Chief, Pediatric Imaging Service, Childrens Hospital of Oklahoma, P.O. Box 26307, Oklahoma City, OK 73126.

Nuclear Medicine Residency
July 1997. Comprehensive imaging/RA/therapy program in 4 hospitals (private, county, VA) with 2500 total beds. Mobile imaging for over 200 ICU beds. Large pedi- atric population. Strong cardiovascular emphasis. State-of-the-art equipment including SPECT computer and PET. Research opportunities including SPECT and on-going studies. Once year of ACGME-approved preparatory residency required prior to entry. Contact: Warren H. Moon, MD, Department of Radiology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030. Baylor College of Medicine is an EOA/AA employer.

PET Fellowship
Research fellowship in PET at the Northern California PET Imaging Center affiliated with the University of California at Davis, for one year starting 7/1/97. Active clinical and research facility, 800 studies per year in oncology, neurology and cardiology. BC/BE applicant expected to participate in interpretation of studies, oncolgy PET research, presentation of results and teaching. Please send curriculum vitae to: Peter E. Valk, MD, Northern California PET Imaging Center, 3195 Folsom Blvd., Sacramento, CA 95816.

Postdoctoral Research Fellowship (MD, PhD): Cancer Imaging (UCSF and LBNL)
Two-year research fellowship training in diagnostic oncology imaging. Research training focuses on NMR imaging and spectroscopy, as well as emission tomography (PET and SPECT). Equipment includes state-of-the-art MRI, PET and other imaging devices and laboratory facilities at the UCSF Department of Radiology and at the Lawrence Berkeley National Laboratory Center for Functional Imaging. Trainees work under direct supervision of both UCSF and LBNL faculty. Send inquiries to: Robert A. Hawkins, MD, PhD, Department of Radiology, University of California, San Francisco, (UCSF), 505 Parnassus Ave., San Francisco, CA 94143-0252. Phone: 415-476-1521. E-mail: r.hawkins@mail.ucsf.edu.

Position Wanted
ABNM certified, young physician with expertise in all clinical aspects of nuclear medicine seeks a temporary or permanent, part-time or full-time employment in a Veterans administration hospital beginning immediately. Phone: 210-616-5311.

Nuclear medicine physician, took ABNM Sept. 1996, strong IM background, experienced in all aspects of diagnostic, therapeutic (1:131, SR89) NM including cardiac SPECT and oncology. Please respond to: Society of Nuclear Medicine, Box #1101, 1850 Samuel Morse Drive, Reston, VA 20190-5316.

ABNM and general surgery board certified physician seeks a full-time nuclear medicine position. Would consider a combination general surgery and nuclear medicine practice for the right opportunity. Willing to relocate. Experienced in all aspects of nuclear medicine including PET. Expertise in nuclear medicine departmental development. Excellent clinical rapport with referring physicians resulting in increased departmental productivity. Please reply to the Society of Nuclear Medicine, Box #1102, 1850 Samuel Morse Drive, Reston, VA 20190-5316.
Listed below are the companies that have advertised in this issue. Simply circle the numbers of those companies you are interested in, fill out the information below, and mail or FAX this to the Society of Nuclear Medicine, Advertising Department, 1850 Samuel Morse Drive, Reston, VA 20190, Fax 703-708-9015. We will forward this information to the advertiser(s).

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INSTITUTION: ____________________________ DEPT: ____________________________

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CITY: ____________________________ STATE: ____________________________ ZIP: __________

PHONE: ____________________________ FAX: ____________________________

PRIMARY SPECIALTY: ____________________________ SECONDARY SPECIALTY: ____________________________

CHECK ONE ANSWER IN EACH CATEGORY

Employer
☐ Hospital
☐ 500 patients plus
☐ 300-499 patients
☐ 200-299 patients
☐ 100-199 patients

Employer
☐ Private Clinic
☐ R&D Commercial
☐ University
☐ Government
☐ Other

Purchase Authority
☐ Recommend
☐ Specify
☐ Purchase

Reason for Inquiry
☐ Immediate Purchase
☐ General Information
☐ Budgeting Information

SNM Member
☐ Yes
☐ No

JNM/JNMT Subscriber
☐ Yes
☐ No
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- Leading in High-Energy Imaging
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- EleGantry™: Truly open, variable-angle (180°/90°) detector geometry
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Double-efficiency Whole-Body scan, featuring superior lesion detectability with OptiTrack real-time body contouring.

Double double-efficiency right-angle cardiac tomography: simultaneous dual-isotope FDG/MIBI SPECT. (Not for sale in U.S.)

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To find the best solutions in medical imaging, you simply need to look at what's on your lap. For more information, get in touch with Toshiba America Medical Systems at 800-521-1968.

Visit us at RSNA booth #6544

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