MEDI + PHYSICS' Daily

is like having your own radiopharmacist and cyclotron.
You should be able to get radiopharmaceuticals reliably, any time, and on short notice.

Medi+Physics has developed a network of service laboratories throughout the country. They can deliver the radiopharmaceuticals you need in a day or less.

Now you can order late today and receive shipment by tomorrow morning. And for most of the U.S., deliveries are made by dependable, surface transportation.

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CINE 200:
The image-data processor for cameras and scanners that speaks your language.

Acquisition, recall and processing operations — all on a single console — with single-button, clearly-labeled controls. This unique CINE 200 feature allows rapid selection of parameters and functions without the use of a teletype or similar I/O device. Elimination of computer access codes permits ordinary language operation by any radioisotope technologist.

Specifically designed for use with any Anger-type gamma camera or rectilinear scanner, CINE 200 provides simultaneous acquisition from two imaging devices — or simultaneous acquisition and processing. And it’s priced within your budget.

CINE 200 from Intertechnique — just about the most versatile image-data processor ever developed. Sold and serviced in the U.S. exclusively by Raytheon Company. For complete information, contact Raytheon Company, Medical Electronics, Fourth Avenue, Burlington, Massachusetts 01803. 617-272-7270.
Gallium Ga 67

Gallium Ga 67 is produced on a regular basis on NEN's own Cyclotron, by the proton irradiation of enriched Zinc Oxide. It is made into a dosage form of Gallium citrate Ga 67, and contains a preservative. It is now under clinical evaluation for such disease states as bronchogenic carcinoma, lymphomas, and Hodgkin's disease.

Send for additional information

Name

Affiliation

Address

Zip

New England Nuclear
Radiopharmaceutical Division
Atomlight Place, North Billerica, Mass. 01862
Telephone (617) 667-8531

Canada: NEN Canada Ltd, Dorval, Quebec. H9P-1B3 Tel (514) 636-4971. Telex 05-821808
Europe: NEN Chemicals GmbH, D-6072 Dreieichenhain, Siemensstrasse 1. W Germany Tel Langen (06103) 85035
Cleon Corporation's new Whole-Body Imager, now in clinical operation, makes whole-body and organ imaging more informative for the clinician, more productive for the hospital, more comfortable for the patient, and simpler for the technician. Here's how:

Unique opto-electronic design eliminates the cross-body movement of a scanner head. The whole-body image is produced by a one-time, slow, noiseless sweep of the 24-inch wide crystal array from head to foot of the patient. Time to scan this 24-inch by 76-inch area is reduced to as little as five minutes (adjustable to 40 minutes, maximum). The patient spends less time on the couch and is relieved of the anxiety caused by a rapidly moving scanner head.

Large crystal area (109 square inches) gives high information density and reproducible results for selected scan times. Display and recording options include: video screen; 8” x 10” x-ray film; Polaroid film; magnetic disk record with playback; keyboard entry of patient data; continuous digital readout of
A Quiet Revolution in Whole-Body Imaging

count density; video magnification of selected image areas. Controls are few and simple; set-up time is minimal; technicians can learn to use the equipment on the day it's installed.
For technical specifications, clinical data, price and delivery information, call or write:

cleon CORPORATION 15 Tech Circle, Natick, Massachusetts 01760 / Telephone 617/235-7708
Do you know any other test saving more of your time: pipette once incubate for 1 hour phase separation measure.

12 calibrated tubes with 3.4 ml Thyron®, each (J-125) solution
Total activity: 3 uCi (J-125) adsorption tube
Sodium and 12 ml serum or defined TBG capacity in vitro
1 ml standard serum or defined TBG capacity
Preservative: 0.02% sodium azide

STORAGE
in the refrigerator at +4 °C

ORDER NO.: 55113, 1 package (12 tests)

8 weeks at proper storage
The expiry date is indicated on the package.

For further information and service please contact your local AG in your country.
In technetium-99m generators, Mallinckrodt is the only someone who makes all these.

Because we have a complete line of generators, we can make sure you get the right one for your application, whether you require 50 mCi or 500 mCi. You’ll not only get the right technetium generator, you’ll get one you can rely on. Every Mallinckrodt Ultra-TechneKow® Generator column is sterilized by autoclaving, and each generator is eluted and tested in our laboratories before shipment.

The Ultra-TechneKow® Generator provides every feature you need. Uniformly high yields help you maintain scanning schedules. The “Ion Control” process keeps aluminum levels at almost undetectable levels. A minimum of 1½” of lead shielding and short elution time safeguard the technician, by providing minimum radiation exposure. A 500 ml saline supply permits an uninterrupted milking schedule.

If you use technetium-99m generators in your laboratory, deal with the manufacturer who sells you what you need. Not just what he has.

Write for full information, or call (314) 731-4141 (Extension 339) collect.

<table>
<thead>
<tr>
<th>Choice of Ultra-TechneKow® Generators</th>
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<tbody>
<tr>
<td>MOLY</td>
</tr>
<tr>
<td>50 mCi</td>
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<tr>
<td>100 mCi</td>
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<tr>
<td>150 mCi</td>
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<tr>
<td>400 mCi</td>
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<tr>
<td>500 mCi</td>
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Subject to AEC or state licensing regulations.
GOOD RESPONSE TIME. You get it, because we have enough men in our Service Group to handle even the peak demands created by seven hundred installations in the U.S. alone. More in Europe and other places, but that's another story.

OUR FIELD ENGINEERS ARE EQUIPPED, not only with their "little black bag" and an oscilloscope, but with so much gear in their service cars that we specify heavy duty suspensions on all vehicles we lease. Why?

MODULAR DESIGN in everything we build. That's important. Pull one out, and plug another in. Even down to individual ICs (integrated circuits) and transistors. And nobody else can offer you that. We do it at the expense of some short range profit. But our long range thinking tells us, if it's easier to maintain, you get better service. And we get a better customer.

And EXCLUSIVE SPECIALIZATION. Our Field Engineers work only on clinical nuclear equipment. That's what we sell. That's what we service. No other equipment. We're specialists.

We're also RECOGNIZED IN THE INDUSTRY. It's interesting. Two years ago, we had a tough time recruiting experienced Field Engineers. Today, they're coming to us, all the time. Does that tell you something?

Right. WE'RE GROWING. And that means a better opportunity, for the right man. During 1974, we plan to add five new Field Engineers each quarter, twenty for the year, just to keep up with our increasing sales.

"DIRECT SERVICE IS MORE IMPORTANT THAN DIRECT SALES." Quote. Joe Teague, President, Ohio-Nuclear. Want proof? Last year, one of our sales territories was without a salesman for about six months. Yet sales continued, over projected quota. Why? Our Field Engineers were there, on the job. We figure those potential customers knew they could get service, knew the equipment was right for them, and decided we would somehow get the orders processed and the equipment installed. Which we did.

Finally, we're COMMITTED to service, wherever we sell. And we live up to that commitment, day after day, before and after that occasional breakdown that plagues any piece of sophisticated equipment. Ask our users. Or ask us, about service agreements. Details and cost vary with type and model of equipment. Write us for full information. We'll be here — this year, next year, and the year after.

Specific diagnosis

When you spend thousands of dollars for nuclear equipment, what should you be getting? SERVICE.

your bag

and our bag
**Skeletal Imaging Agent**

Stannous Polyphosphate is provided in lyophilized form. Nitrogen flushed. It is reconstituted with pertechnetate Sodium Tc 99m for intravenous administration as a diagnostic skeletal imaging agent.
New from Squibb

Minitec™ (Technetium 99m) Generator

Made small to make sense
MINITEC™ (Technetium 99m) GENERATOR FROM SQUIBB

MINITEC™ (Technetium 99m) GENERATOR makes sense: **Tc** in your lab when, where and how you want it.

**Virtually instantly.** Sets up in seconds, elutes in 3 minutes.

**Conveniently.** Small, light, complete high-potency generator. Weighs only 24½ pounds, measures less than 5" in diameter, under 8½" high. Occupies minimal laboratory bench space.

**Highly concentrated—designed for safety.** High shielding-to-activity ratio; 1½" of lead surrounds the column. Top access ports permit storage with constant shielding. Generator is prepared with fission product moly. Yields sterile, non-pyrogenic eluate. High-concentration eluates yield maximum flexibility. MINITEC GENERATOR is available in 50, 100, 200, or 300 mCi potencies, delivered Monday AM, precalibrated through Thursday. A compact, high-activity generator designed for user protection.

New MAXI-Shield™ makes added protection part of the system. Removable base, cap and interlocking half rings on site to add 1½" of extra lead protection. Only the cap is removed for elution.
Made small to make sense

Minitec™ (Technetium 99m) Generator

BRIEF SUMMARY

Minitec™ (Technetium 99m) Generator provides a means of obtaining a sterile, non-pyrogenic supply of technetium 99m (99mTc) as sodium pertechnetate 99mTc.

Indications: Sodium pertechnetate 99mTc is indicated for brain imaging, thyroid imaging, salivary gland imaging, blood pool imaging, and placenta localization.

Contraindications: At present, there are no known contraindications to the use of sodium pertechnetate 99mTc.

Warnings: Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and safe handling of radionuclides, produced by nuclear reactor or cyclotron, and whose experience and training have been approved by the appropriate federal or state agency authorized to license the use of radionuclides.

This radiopharmaceutical should not be administered to women who are pregnant or who may become pregnant or during lactation unless the information to be obtained outweighs the possible potential risks from the radiation exposure involved. Ideally, examinations using radiopharmaceuticals, especially those selective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Since radioactive pertechnetate is secreted in milk during lactation, formula-feedings should be substituted for breast-feedings.

Important: Since material obtained from the generator may be intended for intravenous administration, aseptic technique must be strictly observed in all handling. Only the eluent provided should be used to elute the generator. Do not administer material eluted from the generator if there is any evidence of foreign matter.

Precautions: As in the use of any other radioactive material, care should be taken to insure minimum radiation exposure to the patient consistent with proper patient management and to insure minimum radiation exposure to occupational workers.

At the time of administration, the solution should be crystal clear.

Adverse Reactions: At present, adverse reactions have not been reported following the use of sodium pertechnetate 99mTc.

For complete prescribing information, consult package insert.

How Supplied: Minitec (Technetium 99m) Generator is available in potencies of 50, 100, 200, and 300 mCi. Supplied with the generator are vials of eluent containing 5 ml of a sterile non-pyrogenic solution of 0.9% sodium chloride in water for injection. Also supplied is suitable equipment for eluting, collecting, and assaying the technetium 99m.

Mike Finamore was told he had leukemia.
Nine years ago.

When Mike Finamore was thirteen years old, he was told he had leukemia.

At that time, this meant he had five, maybe six months to live.

But just about then, leukemia research produced some dramatic results.

A special combination of drugs that would kill the leukemia cells in the blood and permit the person to live longer than ever before.

So Mike was treated.

And it worked.

He didn’t die.

Instead, he became one of the fortunate few to have leukemia and live. And today his weekly treatments enable him to lead a normal life.

In fact, right now he’s putting the roof on a house he built himself.

And when it’s finished there will be a double celebration.

The new house. And Mike’s 22nd birthday.

Most people expect presents.

Mike’s happy just to have a birthday.

We want to wipe out cancer in your lifetime. Give to the American Cancer Society.
The NEN Stannous Glucoheptonate Kit provides lyophilized stannous glucoheptonate to be used in preparing technetium Tc 99m stannous glucoheptonate agent by the injection of technetium pertechnetate sodium Tc 99m. The resulting diagnostic agent, upon intravenous administration, is being studied for its usefulness for kidney and brain imaging and perfusion studies.

☐ Send for additional information

Name_________________________________
Affiliation_____________________________
Address______________________________
__________________________________ Zip______

New England Nuclear
Radiopharmaceutical Division
Atomight Place, North Billerica, Mass. 01862
Telephone (617) 667-9531

Canada NEN Canada Ltd, Dorval Quebec H9P 1B3 Tel (514) 636-4971 Telex 05-821808
Europe NEN Chemicals GmbH D6072 Dreieichham Siemensstrasse 1 W Germany Tel Langen (06103) 85035
Roche Diagnostics announces an in vitro test to aid in the management and diagnosis of cancer

CEA-ROCHE
Carcinoembryonic Antigen assay

CEA-ROCHE: a diagnostic test of major clinical significance

Roche has long had a serious commitment to cancer research which has resulted in several important chemotherapeutic agents. Now, working in conjunction with the original researchers and with investigators at over 100 leading medical centers throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated CEA-ROCHE, an in vitro test for the carcinoembryonic antigen (CEA) found in a variety of malignant and nonmalignant conditions. An extensive collaborative study, under way for almost three years, has tested CEA-ROCHE in over 35,000 assays in more than 10,000 patients using identical protocols, procedures and reporting methods.1 Because of the importance of this assay, one of the most thorough and well controlled research programs conducted for a diagnostic product was undertaken. The following data were derived from these studies.

Decreases in CEA titers were reported to be associated with effective therapy.2-7 Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy.2-4 Persistent increases in titer were associated with a lack of response to therapy or a recurrence of disease; in some cases, the titer rise preceded clinical signs by as much as three months.8-10 Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease.8-10 However, metastatic disease may also occur when the CEA titer is below 20 ng/ml. Nonmalignant inflammatory diseases in their active state may give rise to CEA titers above 2.5 ng/ml. These titers usually drop below 2.5 ng/ml when these diseases are in remission.5-10-12

In a special study of 883 patients, cigarette smoking with titer elevations was associated with atypical sputum cytology.13 Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

It must be stressed that test results and data arrived at using the CEA-ROCHE assay cannot be compared with results obtained by any other method or where other reagents are used.

CEA-ROCHE: limitations

CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA titers less than 2.5 ng/ml are not proof of the absence of malignant disease.
CEA-ROCHE: nature of assay

CEA-ROCHE uses the Hansen Z-gel method and combines the specificity of an immunological procedure and the sensitivity of radiochemistry. It provides results at nanogram (billionth of a gram) levels and detects CEA levels as low as 0.5 ng/ml. Briefly, the principle of CEA-ROCHE is as follows: CEA is extracted from the plasma specimens and allowed to react with specific CEA antiserum. 125I-CEA is then added and allowed to react with the remaining CEA antiserum. The 125I-CEA bound to antibody is separated from excess free 125I-CEA with zirconyl phosphate gel and the bound 125I-CEA determined by counting in a gamma scintillation spectrometer. The partition of 125I-CEA between bound and free fractions is a function of the amount of CEA present in the plasma. The amount of CEA present in the plasma sample is determined from a standard inhibition curve.

CEA-ROCHE: the test kit

Each kit contains CEA antiserum, CEA standard, 125I-CEA, EDTA buffer stock solution and zirconyl phosphate gel (Z-gel). All components are supplied in excess to assure sufficient material for at least 100 tubes (or for approximately 40 patient plasma samples assayed in duplicate with the necessary controls). Because of the stringent quality control procedures used in the production of CEA-ROCHE, you are assured of consistency from lot to lot. The CEA-ROCHE™ kit has a 17-day shelf-life and should be stored at 4° to 8° C. Store EDTA buffer and Z-Gel at 15° to 30° C.

- materials available
  Control specimens in four titer ranges (0-2.5 ng/ml, 2.6-5.0 ng/ml, 5.1-10.0 ng/ml, greater than 10.0 ng/ml); 2.5-ml dispensers for Z-gel bottles; presealed dialysis bags and 125I-CEA to refurbish kits which may have expired are all available separately from Roche Diagnostics.

- equipment needed
  The laboratory must have the following equipment to perform CEA-ROCHE: micropipettes; vortex-type mixer; horizontal-head centrifuge; gamma scintillation spectrometer and access to approximately 150 liters/100 tubes of distilled or deionized water.

- AEC license required
  Because CEA-ROCHE contains radioactive material, an AEC or agreement State license is required. A copy of your license or completed License Declaration Form available from Roche Diagnostics is required before shipment can be made.

ROCHE DIAGNOSTICS: provides these special services to laboratories using CEA-ROCHE

Because of the clinical significance of the CEA-ROCHE assay and the critical area of medicine involved, Roche Diagnostics will provide laboratories wishing to run this test with advice and technical assistance in setting up the necessary facilities. Should any questions arise during testing, Roche Diagnostics will be pleased to provide further advice and assistance. A plasma evaluation service and consultation on volume processing are also available.

In addition, two in-depth brochures have been prepared:
1. CEA-ROCHE Clinical Monograph — providing complete clinical information.
2. CEA-ROCHE Procedure Manual — providing complete technical information.

Either or both may be obtained by completing and returning the reply coupon below.

Finally, Roche Diagnostics will be sponsoring an extensive educational program to physicians, including audio, visual and print material.

references:
10. Data available on request from Hoffmann-La Roche Inc., Nutley NJ.
The XYZ-101 Imaging Table

• Simplicity • Versatility • Economy

The XYZ-101 Imaging table combines vertical motion with X & Y movement of the table top for maximum versatility with all cameras and scanners. And since it is entirely manually operated, it requires no heavy, complicated hydraulic systems, motors, or electrical connections. As a result it is surprisingly low priced at $1,295.00

Other tables for Nuclear Medical Applications

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-101</td>
<td>Permits 10” of table top travel in both X and Y directions with graduated calibration scales for accurate re-positioning.</td>
<td>$995.00</td>
</tr>
<tr>
<td>EZ-101</td>
<td>Can be raised or lowered to exact height desired for patient transfer and gamma imaging.</td>
<td>$825.00</td>
</tr>
<tr>
<td>SC-101</td>
<td>Provides general purpose utilization.</td>
<td>$425.00</td>
</tr>
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</table>

* All prices F.O.B. Plainview, N.Y.
Now You Have a Choice of Moves

GRAPHIC™
the portable scanner
Move it anywhere—for use or storage. The GRAPHIC scanner is compact, yet capable of performing thyroid uptake and other scanning duties...in any room. The GRAPHIC Rectilinear Scanner is your scanning lab on wheels.

Abbott Laboratories
Diagnostics Division
North Chicago, IL60064
No Extra Space Needed
Use the space you have—present facilities become nuclear scanning facilities. No need for a special diagnostic room or department. Simply move the GRAPHIC into the room where it’s needed… GRAPHIC has room-to-room mobility. Turn a corridor into a temporary nuclear scanning lab… GRAPHIC will go with you, anywhere. Then push it into a nearby closet—even a corner—when you’re finished.

No Need For Additional Staff
Our professional representatives will show your technician how to get high-quality scans easily with GRAPHIC. And GRAPHIC is simple to operate… little technical skill is required. A minimum of training will teach your technician to get excellent scans from your GRAPHIC time after time.

Nuclear Medicine In Your Intensive Care Unit
Bring the advantages of nuclear medicine anywhere you want: intensive care unit, operating room, emergency room… now the scanner will come to the patient—allowing further diagnostic aid to those not-to-be-moved patients. With GRAPHIC, you now have a choice of moves.

Move Your GRAPHIC By Van
The superior performance of a GRAPHIC scanner can go anywhere—even by van. Because GRAPHIC has:
• low physical profile
• lower center of gravity
• compact-size dimensions
GRAPHIC fits easily into small vans—with no counterbalancing necessary.

Mobility — Just One Of Many Advantages
The portable GRAPHIC Scanner has room-to-room mobility, plus it’s:
• able to give more scans per day • dependable • built to last • requires little care • covered by full warranty • backed with a full service commitment

World Leaders In Diagnostic Research
Abbott Laboratories
Diagnostics Division
North Chicago, IL 60064
Now RCA makes the big difference in PMTs for soft X-ray detection.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>RCA's new C31061</th>
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<tbody>
<tr>
<td>1. Pulse Height Resolution</td>
<td>47% (typ.)</td>
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<tr>
<td>(with Fe55)</td>
<td></td>
</tr>
<tr>
<td>2. Peak-to-Valley Ratio</td>
<td>30:1</td>
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<tr>
<td>3. Dark Noise</td>
<td>200 cps</td>
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<tr>
<td>32 pe</td>
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<td>¼ pe</td>
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</table>

It's the new RCA C31061 that outperforms its competitive photomultiplier in the most important parameters required in soft X-ray spectrometry. Best of all, the C31061 is a plug-in replacement for competitive brand XP1010. As a result, practically all equipments using that brand can be simply switched to RCA.

Behind the dramatic performance achievements of the C31061 is one of today's significant advances in photomultiplier technology: a new and unique electron-optics approach that results in improved cathode efficiency due to greater collection efficiency. It produces a new level of performance that can improve, significantly, a wide variety of X-ray and clinical instrumentation.

So why wait to make the big difference in your equipment. The new RCA C31061 is available now through your RCA Representative or RCA Industrial Tube Distributor. Or contact Manager, Marketing, RCA Electro Optics, New Holland Avenue, Lancaster, PA 17604. Telephone (717) 397-7661. TWX 717-560-4430. Or complete and return the reply coupon.

Manager, Marketing, Electro Optics
RCA, New Holland Avenue, Section 189G
Lancaster, PA 17604

Please send me more information on the big difference in PMTs... RCA's C31061.

Name ___________________________
Company _________________________
Street __________________________
City/State/Zip ____________________

RCA Electro Optics
FOR ROUTINE USE, NO LONGER INVESTIGATIONAL.

ALBUMIN MICROSPHERES (HUMAN) FROM THE 3M BRAND ALBUMIN MICROSPHERE 99mTc-LABELING KIT
FOR
CONSISTENT
LUNG IMAGES
day after day after day after day!
USE 99mTc ALBUMIN MICROSPHERES

- Uniform Shape and Size
  Perfectly spherical, the 3M Albumin Microspheres are uniformly sized to 15-30 microns in diameter. This uniformity, coupled with an extremely low tendency to agglomerate, results in truer images of lung perfusion. The result — no hot spots or extra-lung activity.

- Integral, yet Biodegradable
  Each Albumin Microsphere is a single homogeneous sphere of albumin — they won’t disintegrate in the vial or syringe. Yet, microspheres readily clear from the lung. Pulmonary clearance half-times are long enough for multiple view imaging but are still short enough to allow daily imaging, if required. Microscopic analysis of lung tissue in the mouse showed 99 percent of the administered microspheres were gone after 29 hours.

- Eliminate Interference from “Free” Technetium
  “Free” isotope need no longer interfere with the scan. The unique filter construction of the Microsphere Labeled of Vial allows the free isotope to be removed, leaving just labeled microspheres for suspension.

- Stable Kit
  Currently the expiration date of each kit is 6 months after the date of manufacture. You can stock the kit and have it available for immediate use. Even a department doing a moderate amount of lung imaging can take advantage of quantity discounts.

- Each Lot FDA Approved
  Thoroughly tested by 3M, each lot is checked by the Bureau of Biologics, FDA, and approved for shipment. This provides a double-check of sterility, lack of pyrogens, and all the important performance parameters of the kit.

INDICATIONS: Scintillation imaging of the lungs with 99mTc-Labeled Albumin Microspheres is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

CONTRAINDICATIONS: The safety of Albumin Microspheres in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated.

SIDE EFFECTS: Although no anaphylactoid reactions have been reported in patients following the administration of Albumin Microspheres, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who receive additional doses of the Microspheres.

HOW SUPPLIED: Each kit contains five labeling units. Each labeling unit contains one day’s supply of Albumin Microspheres (5mg — enough for 5 to 7 patients) plus all the reagents necessary to attach technetium to the microspheres.

For detailed information about Microspheres and the 3M Brand Albumin Microsphere 99mTc-Labeling Kit, write: Nuclear Products for Medicine, 3M Company, 3M Center, St. Paul, Minnesota 55101, or phone TOLL FREE (800) 328-1671.

1. Data on file at the 3M Company and the Bureau of Biologics.
Versatile information and procedural capability proven by in-hospital scanning performance

More usable diagnostic information, obtained with reduced procedural set-up time and less opportunity for technic error throughout, is marking the in-hospital performance of the Maxiscan™ two-probe whole body scanner.

This is true across the performance range of the unit: Whole body scans, single organ studies, scan minification, multiple scans on a single film, vertex views of the brain, a choice of image display with scans in black and white or full color, and more.

For skeletal surveys, the Maxiscan unit covers a full 24 x 80 inches. Saves time. Makes sure no ankles or elbows are cut off the image, even with taller and wider patients. The minified image permits location and diagnosis of bone metastases, with whole body reference.

For single organ examinations, images may be viewed full size, or minified 2:1, 3:1, 4:1 or 5:1. Up to four scans can be displayed on one film, with precise quadrant placement and no image overlap. Provides better patient throughput while maintaining diagnostic quality images.

For all procedures, the unit's two probes, top and bottom, cover the patient's isoresponse curve without turning him over. And, collimators can be interchanged in seconds. For optional vertical plane scanning, the unit permits studies with the patient upright; also permits vertex views of the brain with the patient reclining normally.

**Videodisplay Processor**

All scans produced with the Maxiscan unit can be viewed using standard film photorecording, or with GE's optional Videodisplay Processing unit. The VDP displays and quantifies patient count information in black and white or in fully functional color. Images, displayed on the unit's video monitor and produced from count information stored in the electronic memory, can be manipulated to enhance desired details. This aids interpretation and diagnosis. Enhanced VDP data can also be played back to the scanner and photorecorded on film. Scans, recorded on cassette tape, permit off-line playback and use in teaching. Count information from any scanner or camera can also be transmitted from one VDP to another over regular telephone lines.
Digital Dose Calibrator with a unique plus

Sliderule calculations have been replaced by the flip of a switch. That easily, the General Electric Digital Dose Computer — working in concert with the Digital Dose Calibrator — displays activity, plus assay volume, computed concentration, the patient’s dose and the computed volume (dosage) required.

The procedure is performed by, first, placing the radioisotope in the Calibrator at the beginning of the day or after milking the generator. The Dose Computer then measures the activity and computes the concentration. Its run-down memory continually updates the Tc-99m concentration as it decays.

Calculations may also be performed on other radioisotopes without disturbing the stored information for the Tc-99m. The volume required for any patient dose is available whenever needed. And, this performance speed and accuracy are combined with integral safety features. After the once daily assay, the radioisotope is returned to shielded storage. The concentration of Tc-99m is entered into the run-down memory of the Dose Computer, which is programmed for a 6.0 hour half-life. With ±5% accuracy maintained throughout 12 hours (2 half-lives).

Measure changes and losses of bone mineral in seconds

Without biopsy, without x-ray examinations, hospitals are now quantitatively assessing skeletal integrity for the diagnosis and treatment of maladies involving bone mineral metabolism.

The non-invasive Bone Mineral Analyzer available from General Electric precisely measures changes and losses in bone mineral content and bone width. Permits studies at various stages of disease progress, to help project the likelihood of fracture and aid development of treatment programs.

This proven performance capability is provided by (1) a scanner which automatically transports a closely collimated beam of mono-energetic gamma rays (125I) across the forearm in a programmed pattern; and, (2) a mini-computer which utilizes the generated data to calculate the mineral content and bone width, and digitally displays the measurements. This data can then be related to normal and specific patient populations.

The radioisotope for this compact, portable, easy-operating Bone Mineral Analyzer can be purchased from General Electric.

General Electric Medical Systems, Milwaukee and Toronto.
In Europe, Elscint GmbH, Wiesbaden;
Elscint France SARL, Buc.
A safe, economical method of storing, dispensing and controlling radioactive gas. It utilizes the most inexpensive form of $^{133}$Xe presently available—a 1 curie, 5cc glass ampoule. The system is contained in two free-standing consoles.

The Radx transfers high specific activity gas to a clinically useful dose—either gas or gas/saline solution. For ventilation studies $^{133}$Xe gas can be transferred directly to the Radx Ventil-Con.

The Ventil-Con console dispenses controlled gas to the patient for pulmonary investigations. A system designed for the convenience of the technologist, the physician and the patient.

Call RADX or write for complete literature.
Roche announces a significant contribution to the management and diagnosis of cancer. CEA-ROCHE Carcinoembryonic Antigen assay.
In 1974 the estimated incidence of new internal cancer cases in the United States will reach approximately 655,000 persons. Moreover, within this year 355,000 Americans will die of malignancy, a large portion of which is potentially curable. Survival trends are inversely related to the extent of the disease—the less involvement, the better the chances of therapeutic success. This problem of detecting cancer has long absorbed researchers. Now, ten years after the basic investigations were begun, the blending of the sciences of immunology and radiochemistry has resulted in...

**CEA-ROCHE (ROCHE)**

Carcinoembryonic Antigen assay

A new *in vitro* test to aid in the management and diagnosis of cancer

---

**the discovery of carcinoembryonic antigen**

The term carcinoembryonic antigen (CEA) was first used in 1965 by Gold and Freedman of the Montreal General Hospital to describe a glycoprotein which is a constituent of the glycocalyx of embryonic entodermal epithelium; it is also present in extracts of carcinoma cells. The embryonic gene responsible for CEA synthesis is expressed by many carcinoma cells; however, preliminary experiments suggest that the amount of CEA in different carcinomas varies, indicating gene expression is not an all-or-none phenomenon.

As the carcinoma disrupts the normal tissue architecture, cells penetrate the underlying tissue, and glycocalyx components including CEA enter the vascular system.

---

**Diagrammatic representation of microscopic section of fetal colon. CEA is present in glycocalyx which faces lumen of colon.**

---

**Diagrammatic representation of primary adenocarcinoma of colon. As underlying tissue is invaded by tumor cells, CEA is released and diffuses into the vascular bed.**

---

**a long-term commitment to cancer research**

Roche has long had a serious commitment to cancer research which has resulted in the development of such important chemotherapeutic agents as Fluorouracil (5-fluorouracil), FUDR (fluorouracil), Efudex® (fluorouracil) and Matulane® (procarbazine HCl). Working in conjunction with the original Canadian researchers and with investigators at over 100 leading medical centers and research institutions throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated this test for carcinoembryonic antigen (CEA) found in a variety of cancerous and noncancerous states.

CEA-ROCHE, a radioimmunoassay, employs the Hansen Z-gel method which is capable of detecting and measuring plasma levels of CEA in the nanogram (one billionth of a gram) range. The sensitivity of the assay has been shown to be 0.5 ng/ml of CEA.
Using the CEA-ROCHE assay, elevated CEA titers have been detected in carcinomas of entodermal and nonentodermal origin; in noncarcinomatous malignancies; in such nonmalignant diseases as emphysema, inflammatory bowel disease and colorectal polyps; and in some healthy individuals, particularly chronic smokers. The following data were derived from these studies.\(^1\)

<table>
<thead>
<tr>
<th>Patients</th>
<th>CEA Titer Ranges</th>
<th>0-2.5 ng/ml</th>
<th>2.6-5.0 ng/ml</th>
<th>5.1-10 ng/ml</th>
<th>&gt;10 ng/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonsmokers</td>
<td>892</td>
<td>97%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Former smokers</td>
<td>235</td>
<td>93%</td>
<td>5%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Smokers</td>
<td>620</td>
<td>81%</td>
<td>15%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Colorectal Carcinoma</td>
<td>544</td>
<td>28%</td>
<td>23%</td>
<td>14%</td>
<td>1%</td>
</tr>
<tr>
<td>Pulmonary Carcinoma</td>
<td>181</td>
<td>24%</td>
<td>25%</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>Pancreatic Carcinoma</td>
<td>55</td>
<td>9%</td>
<td>31%</td>
<td>25%</td>
<td>35%</td>
</tr>
<tr>
<td>Gastric Carcinoma</td>
<td>79</td>
<td>39%</td>
<td>32%</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>Breast Carcinoma</td>
<td>125</td>
<td>53%</td>
<td>20%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>Other Carcinoma</td>
<td>343</td>
<td>51%</td>
<td>28%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>Noncarcinoma Malignancy</td>
<td>228</td>
<td>60%</td>
<td>30%</td>
<td>8%</td>
<td>2%</td>
</tr>
<tr>
<td>Nonmalignant Disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benign Breast Disease</td>
<td>115</td>
<td>85%</td>
<td>11%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Rectal Polyps</td>
<td>90</td>
<td>81%</td>
<td>15%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Cholecytitis</td>
<td>39</td>
<td>77%</td>
<td>17%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Alcoholic Cirrhosis</td>
<td>120</td>
<td>29%</td>
<td>44%</td>
<td>25%</td>
<td>2%</td>
</tr>
<tr>
<td>Active Ulcerative Colitis</td>
<td>146</td>
<td>69%</td>
<td>18%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Pulmonary Emphysema</td>
<td>49</td>
<td>43%</td>
<td>37%</td>
<td>16%</td>
<td>4%</td>
</tr>
</tbody>
</table>

During the initial studies with CEA, it became clear that in order to make the CEA assay an important and reliable diagnostic tool, strict standardization of procedure and reagents was required. Therefore, Roche embarked upon a unique investigational program. More than 35,000 assays using standardized CEA-ROCHE reagents and procedure were run on samples from over 10,000 patients at over 100 leading medical centers and research institutions. Identical protocols and reporting methods were also utilized, thereby subjecting the CEA-ROCHE assay to one of the most thorough and well-controlled evaluations made on a diagnostic test.
representative case history of patient being treated for malignancy without known metastases

A 42-year-old woman presented with a squamous-cell anal carcinoma. CEA-ROCHE level at time of surgery was 0.6 ng/ml. CEA titer rose to 12.6 ng/ml 10 days later and was still 9.8 ng/ml 20 days after surgery. Upon discharge three months later CEA level was 4.1 ng/ml and there was no clinical evidence of disease. Six weeks later titer had risen to 8.8 ng/ml and then to 9.3 ng/ml after another 30 days without any clinical sign of disease. Patient was hospitalized three months later and biopsy was positive for recurrence of cancer. In spite of initial low CEA value preoperatively, titer levels accurately reflected patient's condition and gave evidence of recurrence some 4 months prior to clinical signs.

representative case history of patient being treated for malignancy with metastases

Chemotherapy was initiated in a 37-year-old man presenting with synovial sarcoma and metastases to the lungs. The first CEA-ROCHE titer was performed three months later. Titer level was 6.2 ng/ml. In six weeks CEA titer dropped to 3.0 ng/ml and a 50% reduction of tumor in the right upper lobe of the lung was noted. One month later titer rose to 4.6 ng/ml and there was a reappearance of a left upper lung lesion.

Chemotherapy was reinstituted and assays run at 2, 3, 5, 12 and 20 weeks. There was no change in radiologic appearance of metastases. Patient gained weight and worked regularly. The CEA titers during this period were 3.8, 0.0, 0.5, 0.0 and 4.6 ng/ml respectively. One and one-half weeks later, CEA titer rose to 10.0 ng/ml and a review of x-ray films revealed appearance of new lesions.

The above representative case histories, using actual CEA-ROCHE titer readings and timing of assays, illustrate the correlation of results with published clinical studies.
CEA-ROCHE
Carcinoembryonic Antigen assay
A significant contribution to the management and diagnosis of cancer

availability of CEA-ROCHE
The CEA-ROCHE™ assay may be obtained through your hospital, institutional and private clinical laboratory obtaining the necessary reagents and procedure in a kit developed by Roche Diagnostics or as a direct reference service of Roche Clinical Laboratories, Inc.

And, as with all our pharmaceutical agents, this assay may be obtained for your patients who are unable to afford it through the Roche Indigent Patient Program.

comprehensive information available
Because of the clinical significance of CEA-ROCHE and the critical area of medicine involved, a comprehensive Clinical Monograph containing in-depth information on the nature of the assay, its applications and interpretation as well as an extensive summary of the collaborative study has been prepared.

It is recommended that this brochure be consulted before ordering or interpreting the CEA assay. You may obtain a copy by completing and returning the coupon below.

references
1. American Cancer Society: 1974 Cancer Facts and Figures
7. Ci VlW: Data on file, Hoffmann-La Roche Inc, Nutley NJ
9. See Package Insert or Physicians' Desk Reference for complete product information.
11. Third Conference, Carcinoembryonic Antigen (CEA) Test Collaborative Study, Hoffmann-La Roche Inc, Nutley NJ, April 21, 1973
20. Data available on request from Hoffmann-La Roche Inc, Nutley NJ
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Excerpts from recent literature on stannous pyrophosphate:

"With the rectilinear scanner, ¹⁸F appeared to be the best bone scanning agent. Technetium-⁹⁹m-phosphate compounds were favorable for clinical use because of availability and usefulness in studies with the gamma camera. Quality of scan with polyphosphate was most variable. Sometimes phosphate compounds and ⁸⁷mSr showed considerable interference with bone scan due to soft-tissue radioactivity. Diphosphonate might be regarded as the agent of choice because of its low concentration in the soft tissue. Pyrophosphate appeared to be most favorable agent considering ease of preparation, reproducibility, and quality of scan." (1) (Italics added.)

"While the physical properties of ¹⁸F are poor, the biological properties are still superior for bone imaging. The biological properties of polyphosphate made from this kit are significantly worse than the pyrophosphate or EHDP prepared from kits. The latter two are more similar to ¹⁸F in blood clearance and soft-tissue uptake." (2)

'In summary, ¹⁸F seems to be the best radiopharmaceutical for bone scanning. Technetium-labeled pyrophosphate gives better results than polyphosphate of higher molecular weight, and the availability of these two compounds makes bone scanning easier." (3)

BEFORE USING, PLEASE CONSULT COMPLETE PRODUCT INFORMATION, A SUMMARY OF WHICH FOLLOWS:

DESCRIPTION
The Technescan PYP reaction vial contains all of the non-radioactive reagents required to prepare a sterile, non-pyrogenic solution of Technetium Tc 99m Stannous Pyrophosphate (Technescan PYP Tc 99m) for intravenous injection. Each 10-milliliter reaction vial contains a total of 15.4 milligrams of stannous pyrophosphate in the lyophilized state in a nitrogen gas atmosphere. The pH of the solution is adjusted with hydrochloric acid prior to lyophilization.

ACTION
When injected intravenously, Technescan PYP Tc 99m has a specific affinity for areas of altered osteogenesis.

INDICATIONS
Technescan PYP Tc 99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None.

WARNINGS
This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses. Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

The Technescan PYP Kit must be maintained at refrigerator temperature until use. The contents of the Technescan PYP reaction vial are intended only for use in the preparation of Technetium Tc 99m Stannous Pyrophosphate and are not to be directly administered to the patient. Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are not suitable for use with the Technescan PYP Kit. The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained. The Technescan PYP Tc 99m should not be used more than six hours after preparation.

PRECAUTIONS
Both prior to and following Technescan PYP Tc 99m administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the Technescan PYP Tc 99m injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation. As in the use of any other radioactive material, care should be taken to ensure minimum radiation exposure to the patient, consistent with proper patient management, and to insure minimum radiation exposure to occupational workers.

ADVERSE REACTIONS
None.

DOSEAGE AND ADMINISTRATION
The recommended adult dose of Technescan PYP Tc 99m is 5 to 15 millicuries (1 to 14 milligrams of stannous pyrophosphate).

Technescan PYP Tc 99m is injected intravenously over a 10- to 20-second period. For optimal results, bone imaging should be done 1 to 6 hours following administration. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

DIRECTIONS FOR PREPARATION

Procedural Precautions
All transfer and vial stopper entries must be done using aseptic techniques.

Procedure:
1. A reaction vial is removed from the refrigerator and approximately five (5) minutes are allowed for the contents to come to room temperature.
2. Affix "Caution—Radioactive Material" label to boxed area of reaction vial label.
3. Sodium pertechnetate Tc-99m solution (1 to 10 milliliters) is added to the Technescan PYP reaction vial. In choosing the amount of technetium-99m radioactivity to be used in the preparation of the Technescan PYP Tc 99m (Technetium Tc 99m Stannous Pyrophosphate), the labeling efficiency, number of patients, administered radioactive dose, and radioactive decay must be taken into account. The recommended maximum amount of technetium-99m to be added to the Technescan PYP reaction vial is 100 millicuries.
4. Shake the reaction vial sufficiently to bring the lyophilized material into solution. Allow to stand for five (5) minutes at room temperature.
5. Using proper shielding, the reaction vial should be visually inspected. The resulting solution should be clear and free of particulate matter. If not, the reaction vial should not be used.
6. Calculate the radioactivity concentration of the Technescan PYP Tc 99m and fill in the appropriate information on the string tag.

HOW SUPPLIED
Catalog Number—094 Technescan PYP Kit

Kit Contains:
5—Stannous Pyrophosphate Reaction Vials (Lyophilized) for the preparation of Technetium Tc 99m Stannous Pyrophosphate.
5—Pressure-sensitive "Caution—Radioactive Material" labels.
5—Radioassay Information String Tags.

Reaction Vial Contains:
15.4 mg Sterile Stannous Pyrophosphate (Lyophilized). Hydrochloric acid is added for pH adjustment prior to lyophilization.

Technescan™
PYP™ Kit
(Stannous Pyrophosphate)

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JOURNAL OF NUCLEAR MEDICINE
THE DYNAMIC DUO

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- For medical centers and teaching hospitals—Dyna Camera 4 (analog/digital capability with the Gamma 11 data analysis system).

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- Pulmonary Studies
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For electronic sophistication, high resolution quality and
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Picker's latest scintillation camera design, the Dyna Camera 4 (above, left), provides excellent resolution, combined with a high degree of flexibility.

Picker Dyna Camera 3C, shown (top, right) with Omniview table for whole-body imaging, provides even better resolution than the widely used Dyna Camera 2C.

The new Dyna Camera 3C control (center, right) features advanced state-of-the-art electronics for better imaging and much greater versatility.

User designed to provide complete control of all functions for optimum gamma imaging results for greater patient throughput.
**Dyna Camera 3C**

- Large imaging area views any organ completely, including both lungs, both kidneys or an enlarged liver and spleen.
- New high-resolution detector produces clear diagnostic images for accurate lesion perception.
- Excellent uniformity throughout the entire image area eliminates the possibility of instrument artifacts producing false positive readings.
- High-speed buffer circuits combined with efficient collimators provide the fastest imaging possible for minimum patient discomfort and high patient throughput.
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- Digital count integration for on-line analysis and quantitation of regions of interest organ profiles, and dynamic function histograms.
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All above are standard built-in and exclusive features, not add-on extra-cost options. Dyna Camera’s completely integrated system design means lowest overall cost, greatest operating convenience, and highest gamma imaging flexibility.

**Dyna Camera 4**

- High-resolution images, a result of advanced detector techniques producing a clear, sharp diagnostic gamma-image presentation.
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- Basic camera at a basic camera price yet includes many unique Dyna Camera features.
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Seven facts about computerized image processing and storage systems that our worthy competitors hope you never ever hear.

Fact: Nuclear Data has installed more such systems than all other companies combined.

Fact: Our MED II has helped with more nuclear medical diagnoses than any similar system.

Fact: MED II has more clinical software actually available today. (See facing page.)

Fact: Nuclear Data supplies superior continuing field support and service.

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- Lung Imaging
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In Vivo Tests (Dynamic)
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- Regional Cerebral Blood Flow
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This static scan looks normal. The patient isn’t.
The problems of qualitative evaluations of radioisotope distribution within the body have at last been solved. You can now link a scintillation camera to a Digital Equipment Corporation Gamma-11 computer for quantitative description of radionuclide flow.

In this system a cathode ray display is used for presentation of flow pattern data computed according to Region of Interest areas. These areas are indicated by means of a movable cursor (light spot) controlled from the keyboard. By relating pathological and clinical observations to this data, the physician can then establish significant differences in flow pattern and the areas in which they occur.

In the case study (left) of a right hemisphere space-occupying lesion, all static images show the distribution of radionuclide activity to be within normal limits. A quantitative Gamma-11 study using a series of 20 pictures, each containing two seconds of flow information, revealed, however, a difference of flow pattern between the left and right sides of the brain — a situation suggestive of a vascular lesion subsequently confirmed by a follow-up carotid angiogram.

Lung ventilation/perfusion studies, kidney perfusion and tubular functional studies, and left-to-right heart shunt studies are some of the many other diagnostic procedures for which the Gamma-11 is now being used.

Detection and quantitation of left-to-right shunts can be readily accomplished by analysis of time-activity curves generated from ROI’s placed over the lung fields during radionuclide angiocardiography. This relatively simple diagnostic procedure (particularly suited for children) greatly reduces patient trauma by eliminating the need for cardiac catheterization. When carefully performed it allows clinical management of certain patients suspected of having left-to-right shunts. Because this method carries no risk, it can be repeated as often as required to assess the patient progress. This method provides pulmonary to systemic flow ratios (Qp/Qs) directly.

Besides quantitative evaluation of ROI curves, Gamma-11 performs such other functions as flood correction, thresholding and contrast enhancement, image smoothing and profile slices. All data acquisition and processing of gamma camera information is accommodated by a modular machine language operating system. FOCAL-PLUS, an easy-to-use, highly interactive programming language, allows direct user modification of image displays, i.e. ROI curve fitting, as well as applications extensions beyond the basic system.

For further information on the techniques of Gamma-11 quantitative analysis or on the features of this low-cost system and how they are being applied, write or call Digital Equipment Corporation, Maynard, Mass. 01754. (617) 897-5111, Ext. 2277. European headquarters: 81 route de I’Aire, 1211 Geneva 26. Tel: 427950. Digital Equipment of Canada Ltd., P.O. Box 11800, Ottawa, Ontario K2H 8K8. (613) 592-5111.

Composite of 1 frame/2 sec. flow study for ROI definition.

The decreased flow on the right side is suggestive of a vascular lesion.

Right heart + lungs − left heart. ROI’s marked over both lung field, SVC, right atrium and right ventricle.

Pulmonary time-activity curve (2 points/sec.) showing a left-to-right shunt.
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Automatic mode may be interrupted for manual counting with no loss of index... greater assurance for your stats.

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This section in the Journal of Nuclear Medicine contains “Positions Open”, “Positions Wanted”, and “For Sale” listings. Nondisplay “Positions Wanted” ads by members of the Society are billed at 30¢ per word for each insertion with no minimum rate. Nondisplay “Positions Wanted” ads by nonmembers and all nondisplay “Positions Open” and “For Sale” ads by members and nonmembers are charged at 65¢ per word, with a minimum of $15. Display advertisements are accepted at $50 for ¼ page, $90 for ½ page, $165 for ¾ page, and $295 for a full page. Closing date for each issue is the 15th of the second month preceding publication. Agency commissions and cash discounts are allowed on display ads only. Box numbers are available for those who wish them.

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The Multi-Imager System is designed for use with scintillation cameras to provide dynamic, static, and physiological function synchronized imaging. The system operates by altering the CRT deflection signals, changing the size, location, and duration of the image on the display scope. Frame advance is achieved electronically, yielding sequential exposures with essentially no data loss.

The Cardiac Gate accessory records both end-systolic and end-diastolic images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the patient's cardiac cycle. The Cardiac Gate is a complete ECG instrument, including a heated stylus strip chart recorder that records both the cardiogram and the exposure gates.

The Respiratory Gate accessory records both inspiration plateau and expiration plateau images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the motion of the organ being imaged. The Respiratory Gate operates without attaching any sensors to the patient. Either the gamma camera split crystal mode or areas of interest are used to sense organ motion.

Cardiac and respiratory gating can be combined to simultaneously record in four frame format all four possible combinations: end-systole/inspiration plateau, end-systole/expiration plateau, end-diastole/inspiration plateau, and end-diastole/expiration plateau.

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The Raytheon/ICN GammaSet 500 adds a major new dimension to automatic gamma counters: The unique Programmable Sample Cassette. Each 10-sample cassette can be easily programmed for automatic selection of counting parameters and user identification. The cassette can be coded for preset time, preset count, background subtract, and isotope selection on the 4-mode, dual scaler. The cassette concept also makes system loading and unloading considerably faster.

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Multi-User Capability. Rapid loading, 500 sample capacity accommodates many different users with various test requirements. Cassettes can be loaded in random order and interrupted at any time for manual counting.

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The Res-O-Mat ETR Test for thyroid function: what it can do, can't do and needs to do.

What the ETR test can do is deliver fast, highly accurate diagnosis of thyroid function. It's the first in vitro test to consider simultaneously total T4 concentration and the degree of hormone saturation of protein binding sites. It completely obviates the effects of pregnancy, the pill, iodides and many commonly used drugs. They don't even figure in the test system.

Based on actual clinical evaluation, this test has been shown to have a high degree of correlation with the true thyroid function of the patient. The Res-O-Mat ETR test has proven to be an extremely valuable method of monitoring thyroid therapy.

What the Res-O-Mat ETR test doesn't do is talk the routine language of traditional thyroid tests. It talks in ETR units. Precise, informative, but somewhat different. The test doesn't reflect protein abnormality. It isn't designed to. Its specific job is determining thyroid performance.

What the ETR test needs to do is to get a chance to prove itself to you. It's unfamiliar, so it's easy to resist. Those who have tried it usually see its advantages right away. They find themselves with a fast, highly accurate test. Isn't that worth looking into?

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HP's Scintigraphic Data Analyzer offers you the most flexible data manipulation available in nuclear medicine.

Its unique list mode preserves all data from the study. You can choose the frame rate you need to manipulate data the way you want — up to 100 frames/second — after the study is over.

In histogram mode the system accepts data up to 300,000 events/second at preset frame rates up to 20/second — ideal for static and slower dynamic studies.

That's performance enough for the fastest studies now being investigated and for the new generation of gamma cameras now appearing.

Yet for all its sophistication, the HP 5407 Scintigraphic Data Analyzer is easy to understand and operate. Its simple keyboard lets you or your technician tell the system exactly what to do. By using the light pen you can assign up to 16 overlapping regions of interest, with ample facilities to insert and display verbal information on the display scope.

The HP 5407 is already providing clinically-significant patient information in more than 20 leading hospitals in the U.S. and Europe. System performance is only one reason why. As a world leader in medical computer systems, HP has the equipment, experience and qualified personnel to assure dedicated training and service assistance to meet your needs today and in the future. Send for "HP's Total System Approach to Nuclear Medicine." HP brochure No. 3597.

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New diphosphonate bone scanning agent offers high target to non-target ratio, rapid blood clearance

Your confidence in detecting bone lesions depends on the ability of the imaging agent you use to deliver consistently excellent scans. Three hours post injection, 40-50% of 99mTc-labeled OSTEOSCAN has been taken up in the skeleton. Only 6% remains in the blood. The remainder is excreted in the urine. Together with the agent’s low soft tissue uptake, the high target to non-target ratio and rapid blood clearance result in clear delineation of skeletal lesions.

OSTEOSCAN consistently provides high labeling efficiency (greater than 95%)*. Because of its stable P-C-P bond, OSTEOSCAN resists in vitro hydrolysis and in vivo dissociation. This helps to minimize soft tissue uptake that can impair diagnoses.

Result: Consistently excellent scans—and confidence that detectable bone lesions will be imaged.

For product and ordering information, call Mr. Arnold P. Austin at (513) 977-8547 or write: Procter & Gamble, Professional Services Division, P.O. Box 171, Cincinnati, Ohio 45201.

*Thin Layer Chromatography (Cellulose acetate/85% methanol)

A. 15 mCi 99mTc-OSTEOSCAN
Scanned 3.5 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 32 cm/min, Length: 173 cm, Width: 60 cm
Anterior: 834,518 counts/1070 sec (17.8 min)
Comments: Metastatic meningioma

B. 15 mCi 99mTc-OSTEOSCAN
Scanned 4 hr post injection
High Sensitivity Collimator
Speed: 32 cm/min, Length: 170 cm, Width: 60 cm
Posterior: 961,752 counts/1054.3 sec (17.6 min)
Comments: Cancer of breast. Polaroid image; posterior view taken with detector under table

C. 15 mCi 99mTc-OSTEOSCAN
Scanned 4 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 48 cm/min, Length: 175 cm, Width: 60 cm
Anterior: 927,833 counts/737.4 sec (12.3 min)
Comments: Patient being treated for a lymphoma

(Above scans made with Searle Radiographics Pho/Gamma Scintiscan®)
PROCTER & GAMBLE
OSTEOSCAN
(5.9 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT

See following page for brief summary of package insert.
PROCTER & GAMBLE
OSTEOSCAN
(59 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT

Brief summary of Package Insert. Before using, please consult the full Package Insert included in each kit.

DESCRIPTION
Each vial of OSTEOSCAN contains 5.9 mg disodium etidronate and 0.16 mg stannous chloride as active ingredients. Upon addition of ADDITIVE-FREE 99mTc-pertechnetate, these ingredients combine with 99mTc to form a stable soluble complex.

ACTIONS (CLINICAL PHARMACOLOGY)
When injected intravenously, 99mTc-labeled OSTEOSCAN has a specific affinity for areas of altered osteogenesis. Areas of bone which are undergoing neoplastic invasion often have an unusually high turnover rate which may be imaged with 99mTc-labeled OSTEOSCAN.

Three hours after intravenous injection of 1 ml 99mTc-labeled OSTEOSCAN, an estimated 40-50% of the injected dose has been taken up by the skeleton. At this time approximately 50% has been excreted in the urine and 6% remains in the blood. A small amount is retained by the soft tissue. The level of 99mTc-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques.

INDICATIONS
OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None.

WARNINGS
This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Radiochemists should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

The 99mTc-generator should be tested routinely for molybdenum breakthrough and aluminum. If either is detected, the eluate should not be used.

PRECAUTIONS
Both prior to and following 99mTc-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the 99mTc-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

As in the use of any other radioactive material, care should be taken to select minimal radiation exposure to the patient, consistent with proper patient management, and to ensure minimum radiation exposure to occupational workers.

ADVERSE REACTIONS
None.

dosage and administration
The recommended adult dose of 99mTc-labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. 99mTc-labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within three (3) hours after its preparation. Optimum scanning time is 3-4 hours postinjection.

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

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- More accurate results
- More rugged dosimeters

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Quantitative brain dynamic showing 30% decreased perfusion on right side.

Curves produced in less than 30 seconds after conclusion of patient study.
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A new Multi Imager that produces up to 80 images on a single film. It's taken us some time but at last we can offer Pho/Gamma users a display system that puts it all together. Gone is the expensive and tediously inaccurate pulling of Polaroids. Gone is the unreliable and complicated 35 or 70 mm mechanical transport system.

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