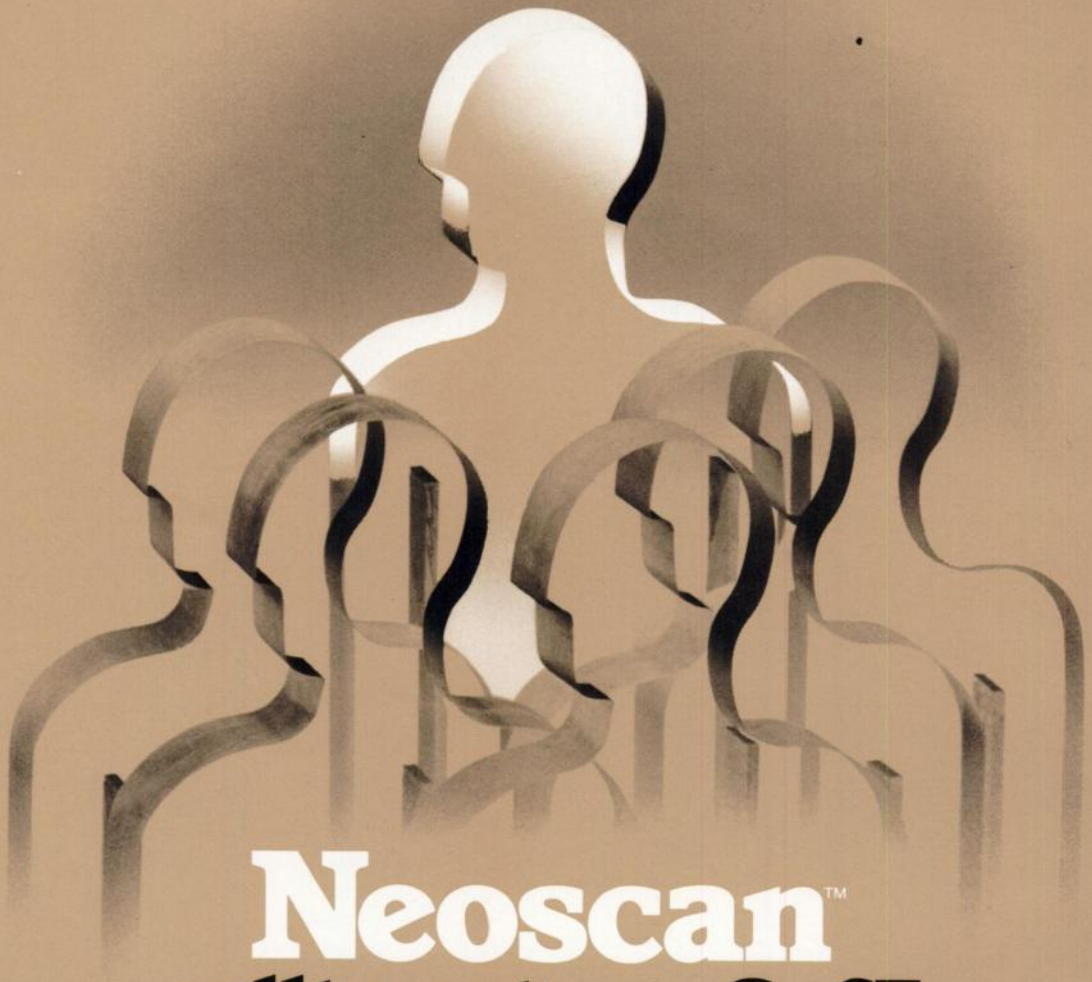
When nuclear medicine discusses gallium imaging, one name will keep coming up...



Neoscan™
gallium citrate Ga 67

from medi+physics™

NEOSCAN MEANS gallium citrate Ga 67 from Medi-Physics, Inc. Neoscan can aid in demonstrating the presence and extent of Hodgkin's disease, lymphoma *and* bronchogenic carcinoma. Positive uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

NEOSCAN MEANS a gallium citrate Ga 67 that is produced by MPI on both the East and West Coasts and is available from 6 locations across the country for easy access when you need it. Neoscan is calibrated twice weekly in two convenient sizes: 3.0mCi and 13.2mCi.

NEOSCAN MEANS a gallium citrate Ga 67 that MPI will send to you with no additional delivery charge along with your supply of Sodium Iodide I 123, Technetium Prepared Products or Xenon 133-V.S.S. (xenon Xe 133).

With deliveries to meet your needs.

Contact the facility nearest you to arrange a standing order:

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(Outside Calif.) (800) 227-0483
Los Angeles (213) 245-5751
Houston (713) 641-5731
Toll Free (Inside Tex.) (800) 392-1893

Chicago (312) 671-5444
Toll Free (Outside Ill.) (800) 323-3906
New York/New Jersey (201) 757-0500
Toll Free (Outside N.J.) (800) 631-5367
Miami (305) 557-0400

Neoscan™
gallium citrate Ga 67

For complete product information, consult the package insert, a summary of which follows:

DESCRIPTION: Neoscan for diagnostic use is supplied as a sterile, apyrogenic aqueous solution for intravenous injection. Each milliliter of the solution contains 2 millicuries of gallium Ga 67 at calibration time, no-carrier-added, 2.5% sodium citrate, and 1% benzyl alcohol as a preservative. The pH is between 4.5-7.5. Gallium Ga 67, with a half-life of 78.1 hours, is cyclotron produced by the proton irradiation of zinc Zn 68-enriched zinc oxide. The radionuclidic composition, at calibration time, is not less than 98.9% of the total activity from gallium 67 with less than 1% of the total radioactivity due to gallium 66 and with zinc 65 and other radiocontaminants contributing less than 0.1% of the total activity.

INDICATIONS AND USAGE: Neoscan may be useful to demonstrate the presence and extent of Hodgkin's disease, lymphomas, and bronchogenic carcinoma. Positive gallium Ga 67 uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

CONTRAINDICATIONS: None known.

WARNINGS: This radiopharmaceutical should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, in women of child-bearing capability should be performed during the first few (approximately 10) days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered gallium citrate Ga 67 is essential in order to accurately interpret pathologic studies. The finding of an abnormal gallium concentration usually implies the existence of underlying pathology, but further diagnostic studies should be done to distinguish benign from malignant lesions. Neoscan is intended for use as an adjunct in the diagnosis of certain neoplasms. Negative results do not preclude the presence of disease.

Gallium citrate Ga 67 as well as other radioactive drugs, must be handled with care. Appropriate safety measures should be used to minimize radiation exposure to clinical personnel and to patients, consistent with proper patient management.

No long-term animal studies have been performed to evaluate carcinogenic potential.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Gallium citrate Ga 67 should be used in pregnant women only when clearly needed.

Gallium citrate Ga 67 has been found to accumulate in breast milk and should not be used in nursing mothers.

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions have been reported with the use of Neoscan at this time.

DOSAGE AND ADMINISTRATION: The recommended adult (70 kg) dose is 2-5 millicuries. Neoscan is intended for intravenous administration only. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

Studies indicate the optimal tumor-to-background concentration ratios are often obtained about 48 hours after administration. However, considerable biological variability may occur in individuals, and acceptable images may be obtained as early as 6 hours and as late as 120 hours after injection.

Approximately 10% of the administered dose is excreted in the feces during the first week after injection. Daily laxatives and/or enemas are recommended from the first day of injection until the final images are obtained in order to cleanse the bowel of radioactive material and minimize the possibility of false positive studies.

Radiopharmaceuticals should be used only by persons 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.

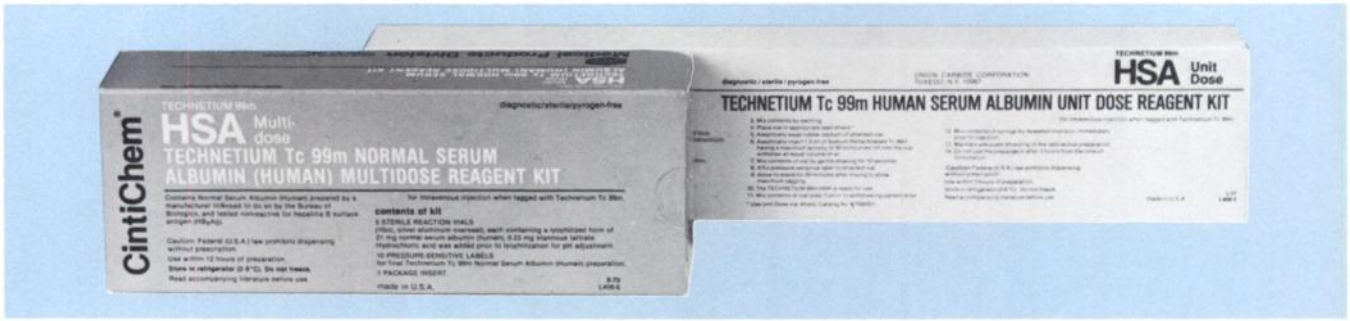
HOW SUPPLIED: Neoscan is supplied as a no-carrier-added sterile apyrogenic aqueous solution for intravenous use. Each milliliter contains 2 mCi ± 10% gallium Ga 67 at the time of calibration with 2.5% sodium citrate. Benzyl alcohol 1% is present as a preservative. The pH is between 4.5-7.5.

The contents of the vial are radioactive and adequate shielding and handling precautions must be maintained.

When you think of gallium imaging, think of Neoscan™ from

medi+physics™

THE EASY WAY TO YOUR PATIENT'S HEART



- **RAPID EASY PREPARATION[1]**
- **EXCELLENT BINDING EFFICIENCY[2]**
- **STABLE FORMULATION[2]**
- **CONVENIENT USAGE METHODOLOGY[1]**
- **CONSISTENT RESULTS[2]**
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CintiChem®
TECHNETIUM 99m

Technetium Tc 99m Normal Serum Albumin (Human) Reagent Kit HSA
DIAGNOSTIC-FOR INTRAVENOUS USE

BRIEF SUMMARY OF PRESCRIBING INFORMATION

Indications and usage

Technetium Tc 99m Human Serum Albumin is used as an agent for imaging the heart blood pool and to assist in the detection of pericardial effusion and ventricular aneurysm.

contraindications

The use of Technetium Tc 99m Human Serum Albumin is contraindicated in persons with a history of hypersensitivity reactions to products containing human serum albumin.

warnings

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.

This radiopharmaceutical preparation should not be administered to children or to patients who are pregnant or to nursing mothers unless the expected benefits to be gained outweigh the potential hazards.

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

precautions

The components of the kit are sterile and pyrogen-free. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the radiodiagnostic.

Technetium Tc 99m Human Serum Albumin must not be used after three hours from the time of formulation.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m Human Serum Albumin should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken while a patient is on a drug since many drugs are excreted in human milk.

Safety and effectiveness in children have not been established.

Technetium Tc 99m Human Serum Albumin, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

The labeling reactions involved in preparing the agent depend on maintaining the tin in the reduced state. Any oxidant present in the Sodium Pertechnetate Tc 99m supply may thus adversely affect the quality of the prepared agent. Hence, Sodium Pertechnetate Tc 99m containing oxidants, or other additives, should not be employed without first demonstrating that it is without adverse effect on the properties of the resulting agent.

adverse reactions

Hypersensitivity reactions are possible whenever protein-containing materials such as Technetium Tc 99m labeled human serum albumin are used in man. Epinephrine, antihistamines and corticosteroid agents should be available for use.

how supplied

unit dose kit

The kit consists of 10 unit dose reaction vials each containing a lyophilized mixture of 7 mg human serum albumin and 0.08 mg stannous tartrate. Hydrochloric acid was added prior to lyophilization for pH adjustment.

multidose kit

The kit consists of 5 multidose reaction vials each containing a lyophilized mixture of 21 mg human serum albumin and 0.23 mg stannous tartrate. Hydrochloric acid was added prior to lyophilization for pH adjustment.

FOR FULL PREPARATION AND PRESCRIBING INFORMATION, SEE PACKAGE INSERTS.

Notes: [1]Refer to package insert for full preparation and prescribing information. [2]Data on file at Union Carbide Corporation, Tuxedo, New York

UNION CARBIDE FROM ATOM TO IMAGE

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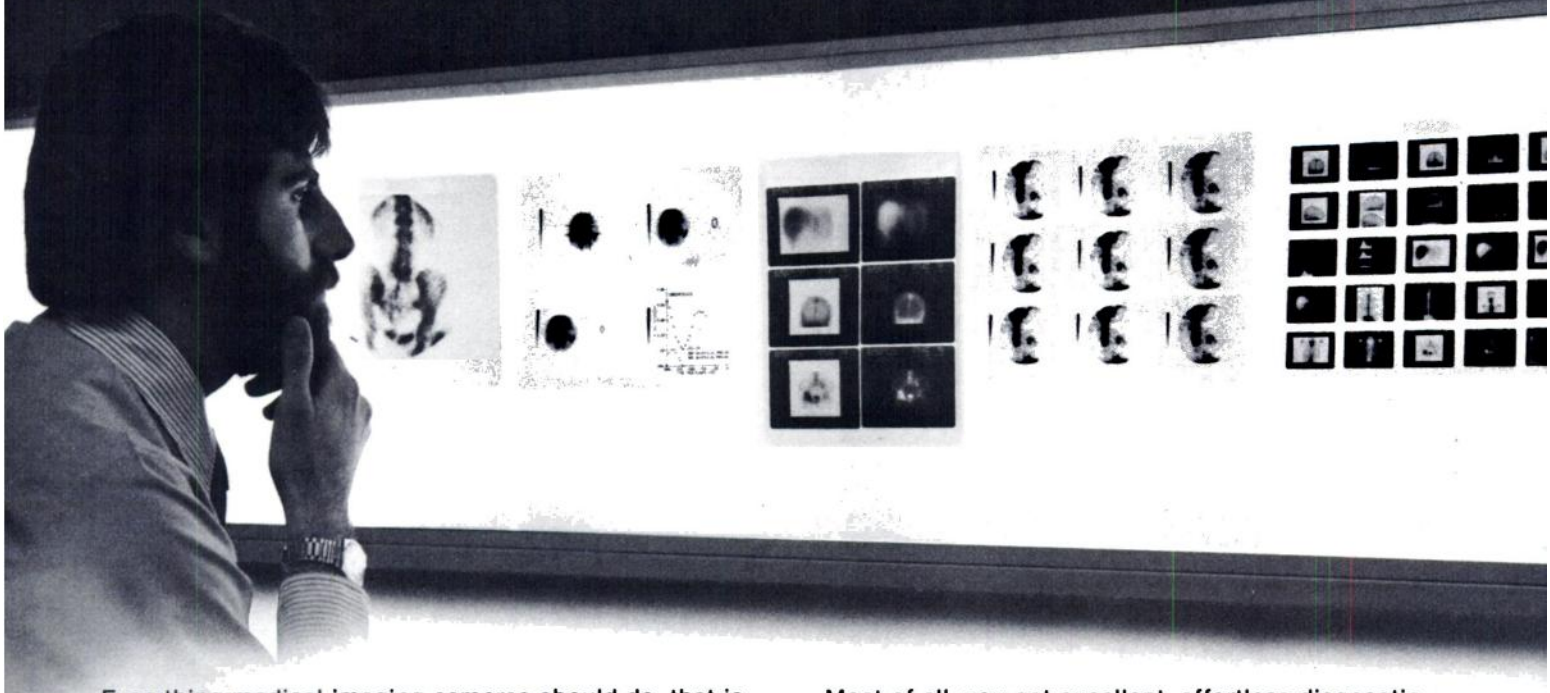
Matrix video cameras do everything but develop the film...

and that's next.



Everything medical imaging cameras should do, that is. Effortlessly. Automatically. Excellently, in over 1,000 new installations a year. Matrix video cameras embody the latest in video, optical and microprocessor technology. They handle the relatively diverse demands of ultrasound and nuclear computers as well as the special, high line rate requirements of CT or fluoroscopy reproduction. They give you quality images, from which you can diagnose confidently.

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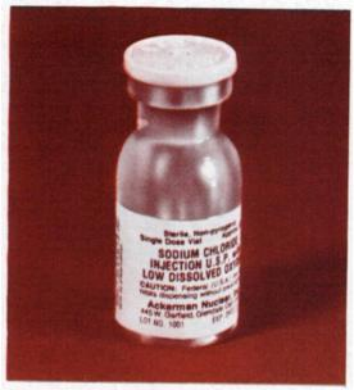
Low* Dissolved Oxygen Non-preservative normal saline U.S.P.

Designed with Nuclear Medicine in mind, Low Dissolved Oxygen, non-preservative, normal saline for routine use is now available from Ackerman Nuclear, Inc.



- ELUTION:
  Use for eluting Technetium-99m generators.
- DILUTION:
  Use for diluting high specific concentrations of Technetium-99m.

SODIUM CHLORIDE INJECTION U.S.P.
with LOW DISSOLVED OXYGEN
pH 4.5 to 7.0

DESCRIPTION:
SODIUM CHLORIDE INJECTION U.S.P. with LOW DISSOLVED OXYGEN is a sterile isotonic solution of sodium chloride in water for injection. It contains no antimicrobial agent. It contains 0.9% sodium chloride and is packaged in single dose vials. The osmolarity is 300 mOsm/1, the dissolved oxygen content is less than 5 ppm.

INDICATIONS:
SODIUM CHLORIDE INJECTION U.S.P. with LOW DISSOLVED OXYGEN is indicated for eluting, preparing and/or diluting pharmaceuticals that specify oxidants may cause adverse effects on the final product. SODIUM CHLORIDE INJECTION U.S.P. with LOW DISSOLVED OXYGEN is also used as a fluid and electrolyte replenisher or as an irrigating solution.

WARNING:
Excessive amounts of sodium chloride by any route may cause hypopotassemia and acidosis. Excessive amounts by the parental route may precipitate congestive heart failure and acute pulmonary edema, especially in patients with cardiovasular disease, and in patients receiving corticosteroids or corticotropin drugs that may give rise to sodium retention. No antimicrobial agent has been added.

PRECAUTIONS:
Unused amounts should be discarded immediately following withdrawal of any portion of the contents.

HOW SUPPLIED:

Catalog No.	Product	Packaging
S-25	SODIUM CHLORIDE INJECTION U.S.P. with LOW DISSOLVED OXYGEN	25/10 ml vials

Each 10 ml single dose vial contains approximately 6 ml. Each ml contains 9 mg sodium chloride providing 0.154 mEq each of sodium and chloride ions. Total osmolarity 300 mOsm/1; pH between 4.5 and 7.0. Dissolved oxygen content less than 5 ppm. Contains no preservatives.

ACKERMAN NUCLEAR, INC.
445 W. Garfield Avenue
Glendale, Calif. 91204

1/78

Decrease the amount of oxygen you add daily and reduce the effect of one more variable from your radiopharmacy. Use Low Dissolved Oxygen saline when preparing kits containing any stannous tin products.

*less than 5 ppm

For additional information call or write to:

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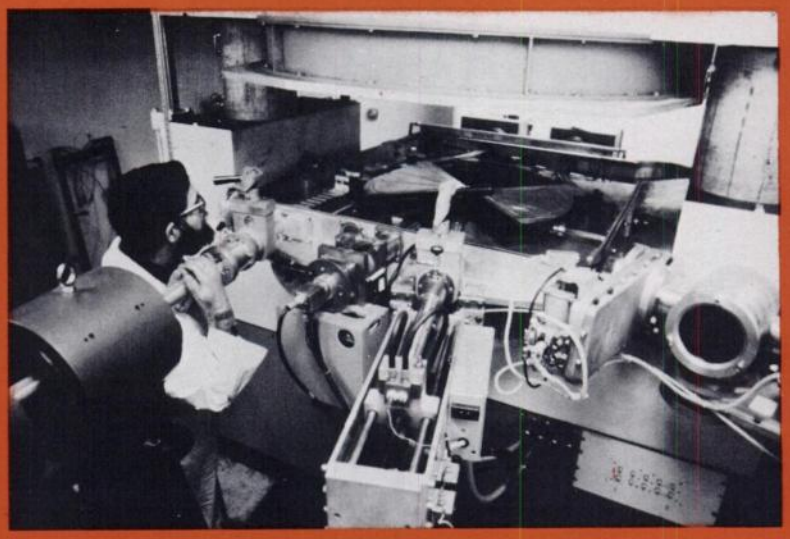
Pharmaceuticals for Nuclear Medicine
445 W. Garfield Ave.
Glendale, CA 91204, USA
(213) 240-8555

An NEN commitment today
to nuclear medicine's tomorrow:

Our fourth cyclotron.



Nuclear medicine depends upon industry leaders to convert its research concepts into diagnostic agents for routine clinical use. In the past seven years, nuclear medicine has learned it can depend upon New England Nuclear.

In 1979, we are adding our fourth cyclotron...so you can continue to receive all the thallium-201 and gallium-67 you need, when you need it.

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If that commitment came easy, our competitors wouldn't always be behind us in meeting your needs. But...

We're committed. We're NEN New England Nuclear®

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The never ending struggle for product popularity often leads a manufacturer to add gadgets. It's called "one-upmanship." We sometimes lose sight of what YOU, the user, wants.

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It is not a gadget, it calibrates doses accurately, with precision and unprecedented reliability. It's the Assayer 1—$2950.

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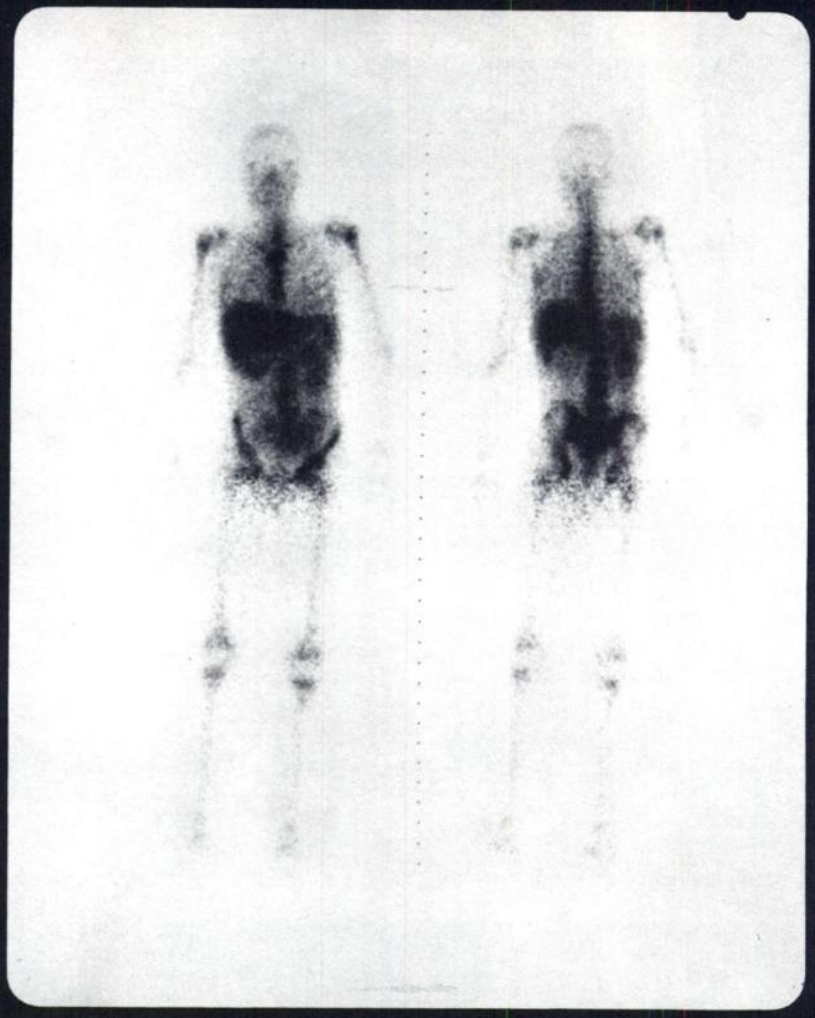
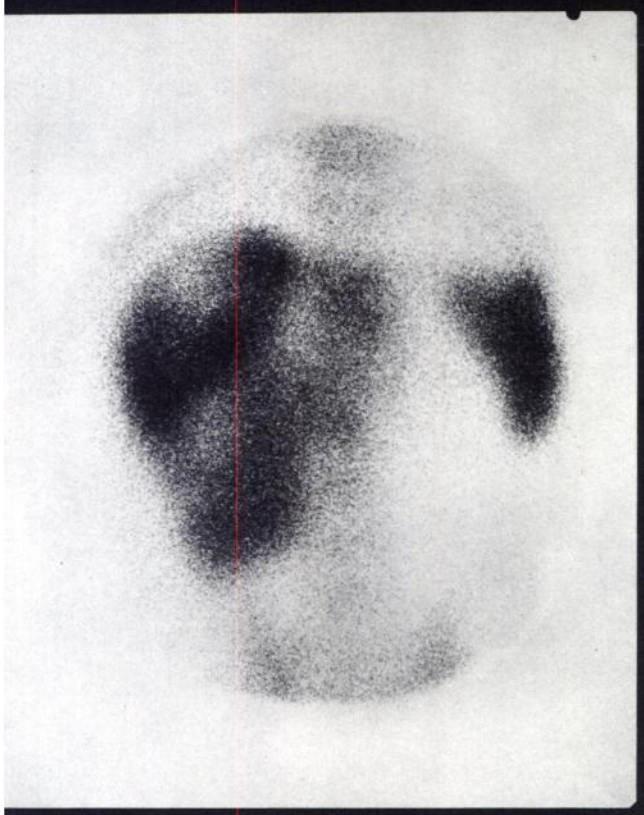
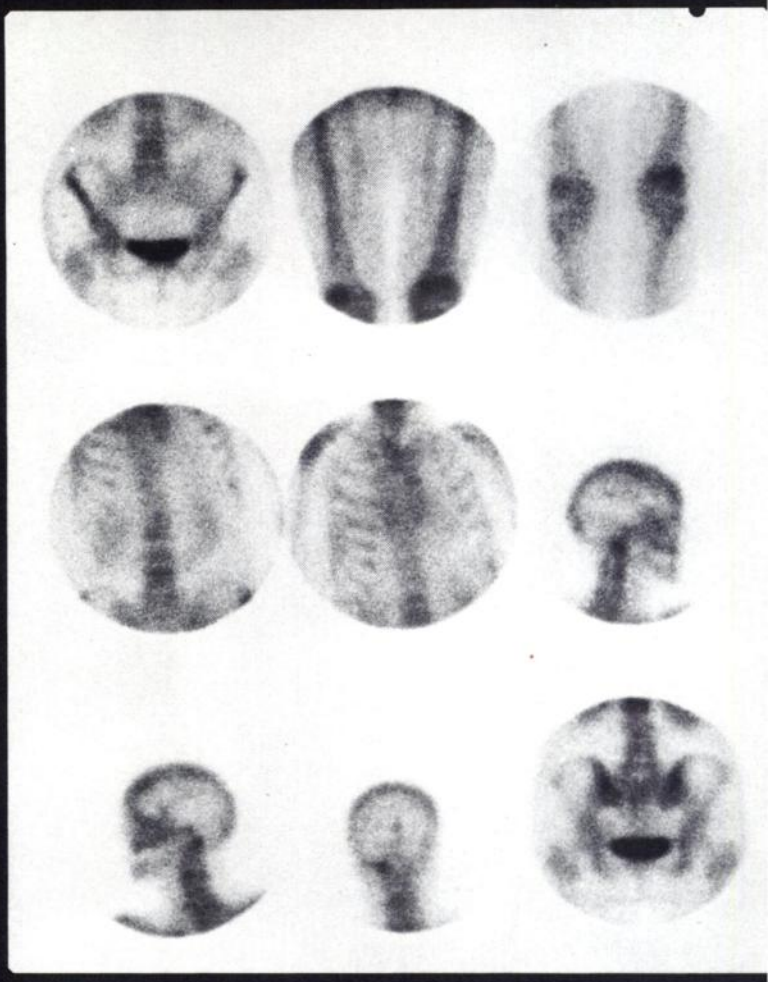


NUCLEAR IMAGES ON *KODAK* FILM: SHARP.





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It is not a gadget, it calibrates doses accurately, with precision and unprecedented reliability. It's the Assayer 1—$2950.

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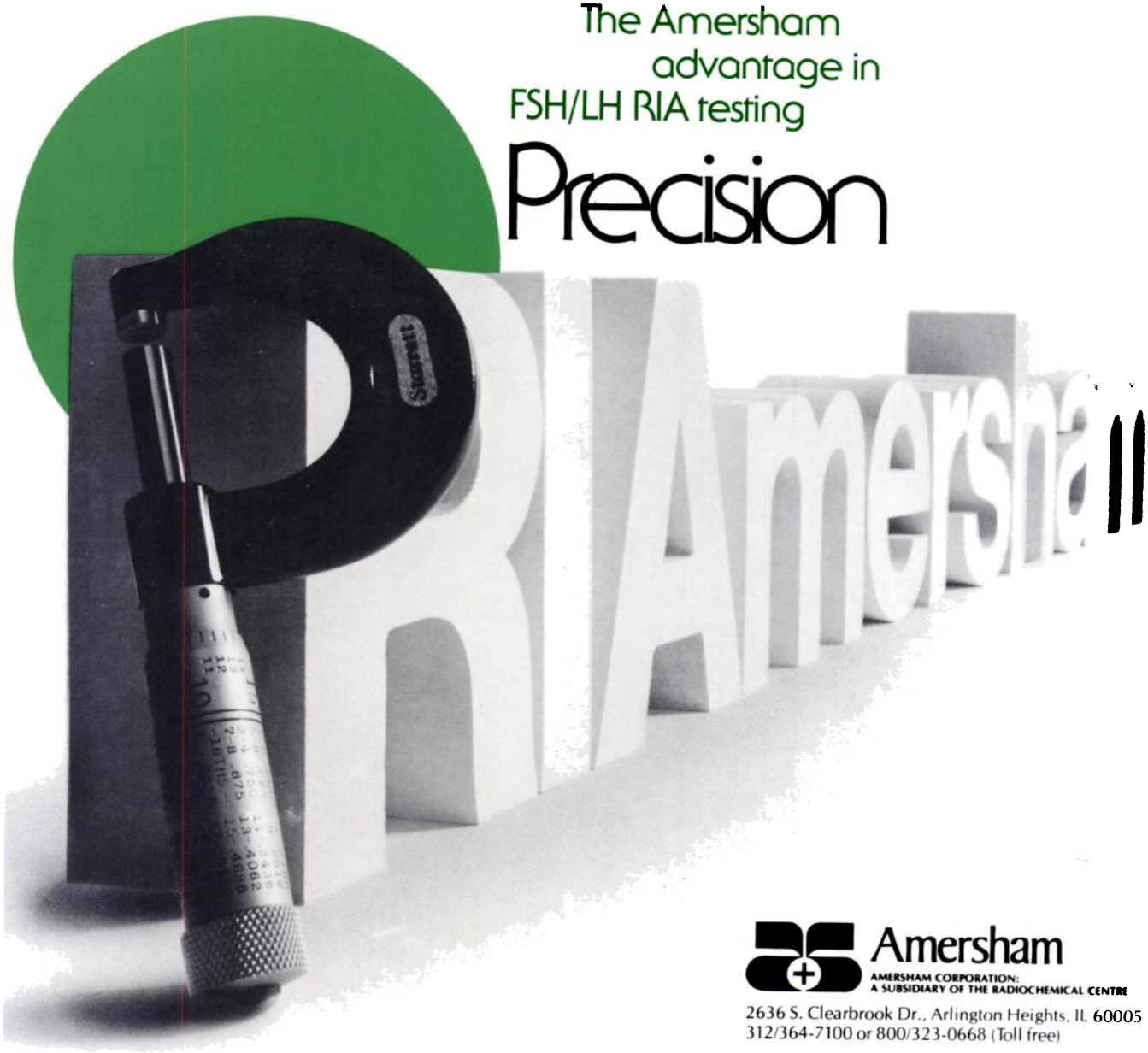

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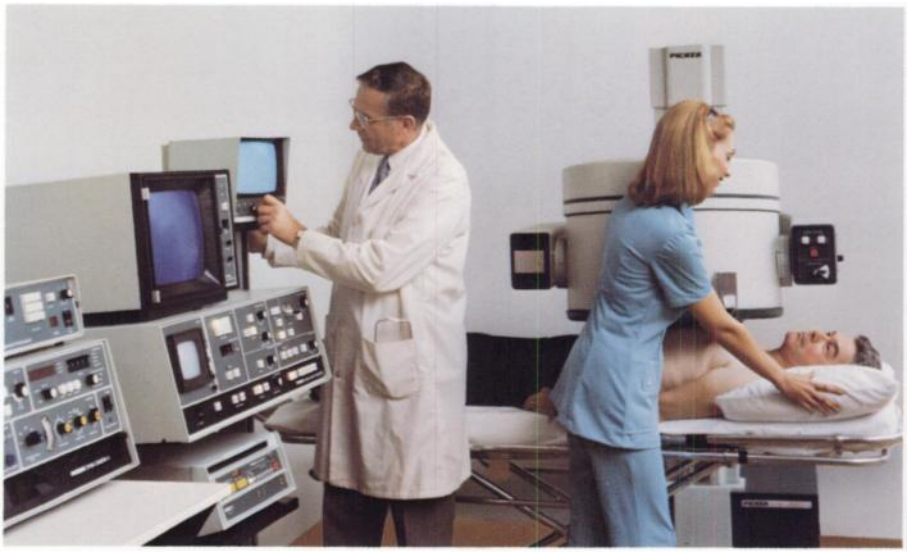
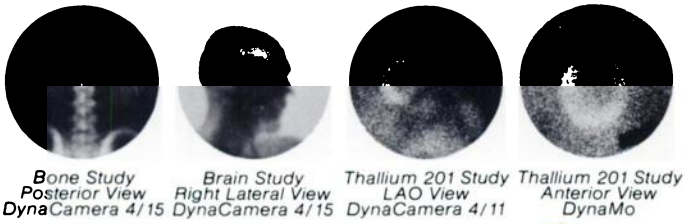


As the uses for nuclear medicine continue to expand, the responsibilities of the nuclear physician and the radiologist will increase just as rapidly. Their services are requested in more and more disciplines. Picker gamma-camera systems have been designed to allow the physician to select and refine the views he needs. Picker Dyna®Camera accessories help our cameras to see more. As our systems have grown more sophisticated in their ability to deliver results, they've also become simpler to use and maintain.

DynaCamera 4/15 takes the large view. Within the DynaCamera 4 series, Picker's 4/15 becomes the nucleus of a nuclear medicine department. Its 15"(380 mm) detector brings high uniformity and exceptional system resolution. It can image lung and liver/spleen studies in one view—without a diverging collimator. It's ideal for cerebral and cardiac flow studies, lung perfusion studies, bone, liver/pancreas and kidney studies.



Bone Study Posterior View DynaCamera 4/15 *Brain Study Right Lateral View DynaCamera 4/15* *Thallium 201 Study LAO View DynaCamera 4/11* *Thallium 201 Study Anterior View DynaMo*

DynaCamera 4/11 for unparalleled resolution—3.6 mm FWHM. DynaCamera 4/11 delivers big performance in small areas, and lets you visualize small lesions, often hidden, and shows larger lesions with clearer definition. With the 4/11, you can easily image the myocardium to locate and measure infarcts, get precise region placement in left ventricular ejection fraction studies, and obtain cardiac-output measurements.

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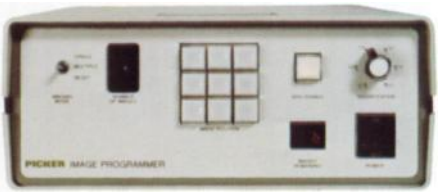

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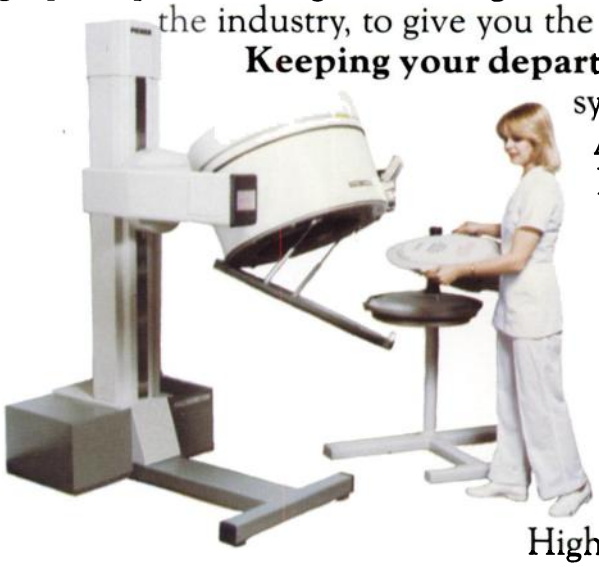

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Peritonitis
Cystitis
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Pyelonephritis

Now, the precise indications for gallium-67 imaging have been expanded by Mallinckrodt to include focal inflammatory lesions...

Gallium-67 has been shown to be useful as an adjunct in the diagnosis of focal areas of infection, such as abdominal (retroperitoneal, subphrenic) and thoracic abscesses, osteomyelitis, and surgical wounds.

A positive gallium-67 study usually indicates the presence of pathology. However, care must be taken to distinguish malignant from benign lesions. A negative study cannot be definitely interpreted as ruling out the presence of disease; therefore, a negative finding should always be supported by negative clinical findings and other diagnostic procedures.

Put Mallinckrodt Gallium Citrate Ga 67 in your active file... a good resource for diagnostic imaging.

Mallinckrodt NUCLEAR The IMAGE MAKER

Mallinckrodt, Inc.
St. Louis, MO 63134

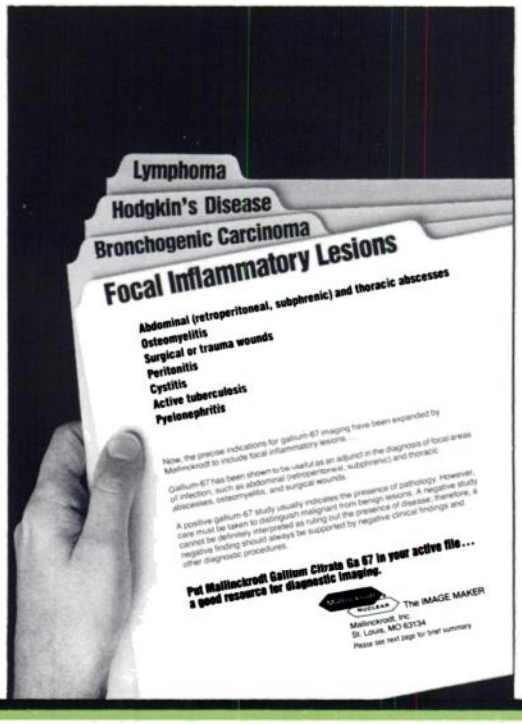
Please see next page for brief summary

Mallinckrodt NUCLEAR

GALLIUM CITRATE Ga 67

Injection
Diagnostic
Sterile Solution

ADDS A NEW INDICATION



Brief Summary:

INDICATIONS AND USAGE

Gallium Citrate Ga 67 may be useful to demonstrate the presence and extent of Hodgkin's Disease, lymphoma, bronchogenic carcinoma, and focal inflammatory lesions. Positive Gallium Ga-67 uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

CONTRAINDICATIONS

None known.

WARNINGS

Gallium Citrate Ga 67 should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. If this drug is administered to nursing mothers, artificial feeding should be temporarily substituted for the mother's milk. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of women of childbearing capability, should be performed during the first few (approximately ten) days following the onset of menses.

PRECAUTIONS

A thorough knowledge of the normal distribution of intravenous administered Gallium Citrate Ga 67 is essential in order to accurately interpret pathologic states. The finding of an abnormal Gallium Ga-67 concentration usually implies the existence of underlying pathology, but further diagnostic studies should be done to distinguish benign from malignant lesions. Gallium Citrate Ga 67 is intended for use as an adjunct in the diagnosis of certain neoplasms as well as focal areas of infection. Certain pathologic conditions may yield up to 40 percent false negative Gallium Ga-67 studies. Therefore, a negative study cannot be definitely interpreted as ruling out the presence of disease.

Adequate reproduction studies have not been performed in animals to determine whether the drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Gallium Citrate Ga 67 should be used in pregnant women only when clearly needed.

Safety and effectiveness in children have not been established. As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient consistent with proper management and to insure minimum radiation exposure to occupational workers.

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 governmental agency authorized to license the use of radionuclides.

ADVERSE REACTIONS

None have been reported.

DOSAGE AND ADMINISTRATION

The recommended adult (70 kg) dose of Gallium Citrate Ga 67 is 2-5 mCi. Gallium Citrate Ga 67 is intended for intravenous administration only.

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

HOW SUPPLIED

Gallium Citrate Ga 67 sterile solution is available in 3 mCi, 6 mCi and 12 mCi vials on calibration date. Each ml contains 2 mCi of Gallium Ga-67 on the calibration date, as a complex formed from 8.3 ng gallium chloride Ga-67, 1.9 mg of sodium citrate, 7.8 mg of sodium chloride, 0.9% benzyl alcohol v/v as preservative. The pH is adjusted to between 5.5-8.0 with hydrochloric acid and/or sodium hydroxide solution.

Mallinckrodt NUCLEAR

GALLIUM CITRATE Ga 67

Injection
Diagnostic Sterile Solution

ADDS A NEW INDICATION

Lymphoma

Hodgkin's Disease

Bronchogenic Carcinoma

Focal Inflammatory Lesions

Abdominal (retroperitoneal, subphrenic) and thoracic abscesses
Osteomyelitis
Surgical or trauma wounds
Peritonitis
Cystitis
Active tuberculosis
Pyelonephritis

Now, the precise indications for gallium-67 imaging have been expanded by Mallinckrodt to include focal inflammatory lesions...

Gallium-67 has been shown to be useful as an adjunct in the diagnosis of focal areas of infection, such as abdominal (retroperitoneal, subphrenic) and thoracic abscesses, osteomyelitis, and surgical wounds.

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Diagnostic
Sterile Solution

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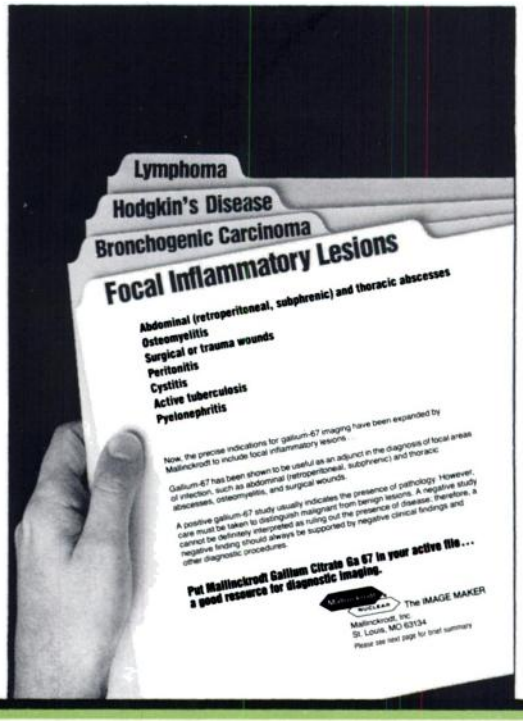

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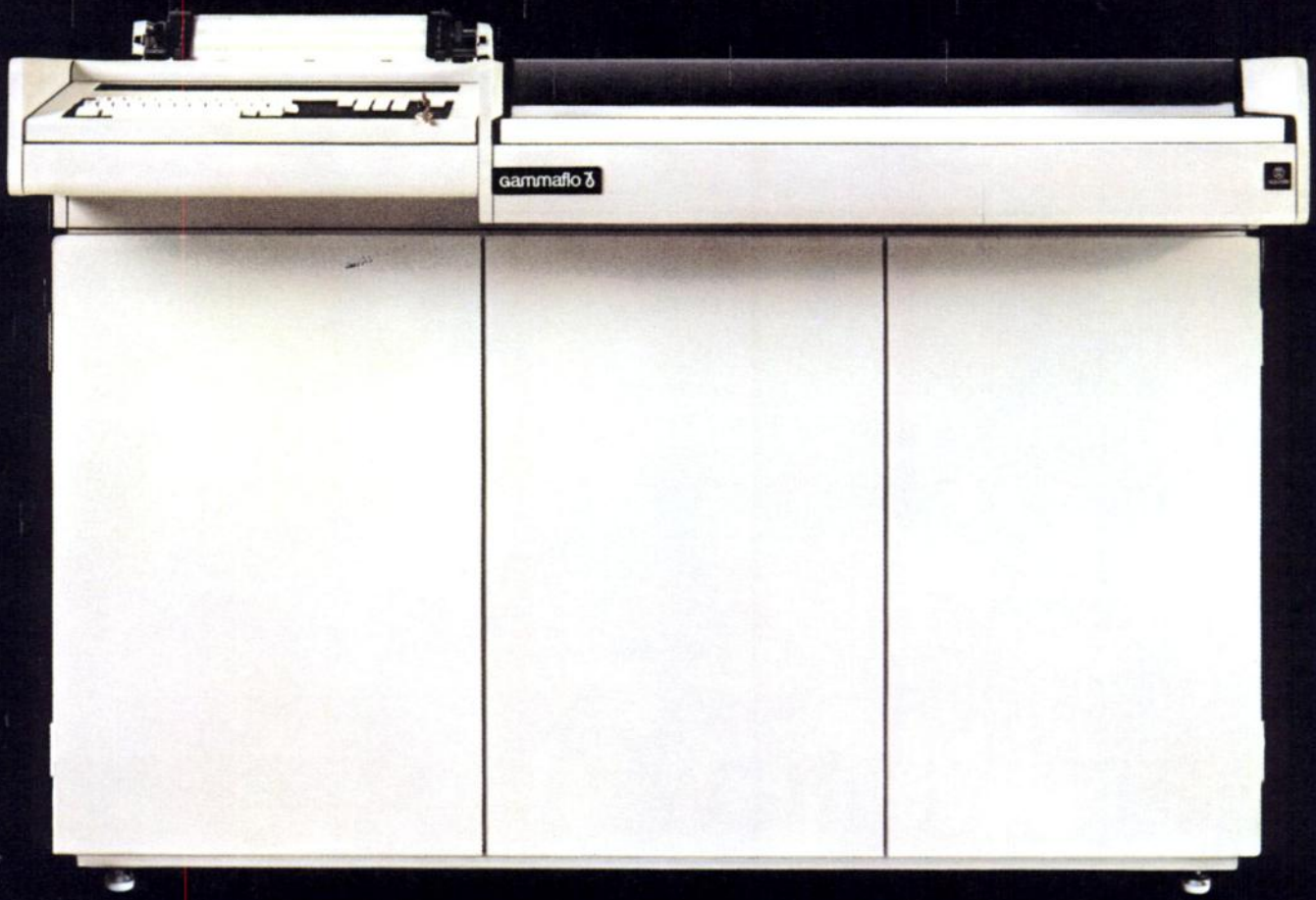

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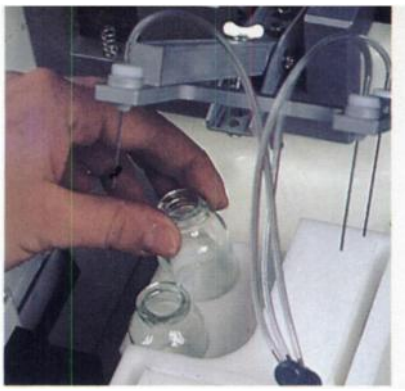

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1 **No operator intervention** from time samples and standards are loaded until tabulated results are collected.

2 **High sample capacity, rapid throughput.** Accepts 175 samples (no pretreatment necessary); processes at a rate of up to one per minute after initial sample run.

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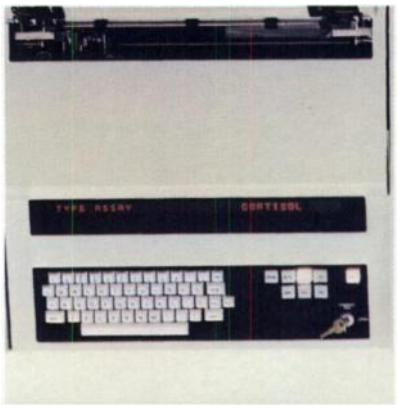
8



SQUIBB®

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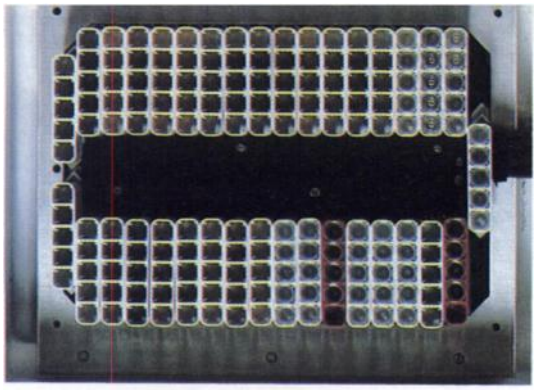

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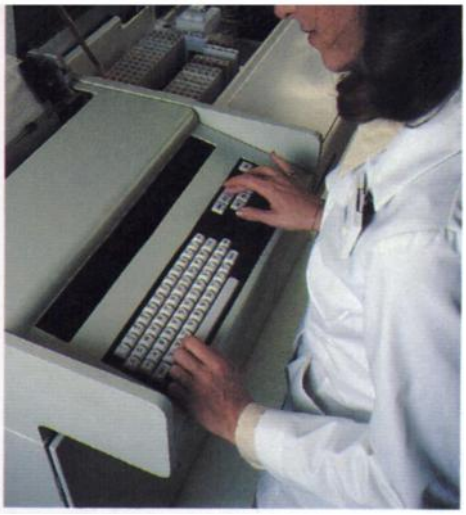

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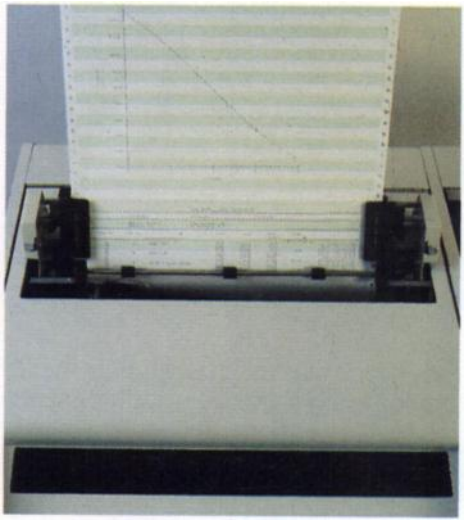

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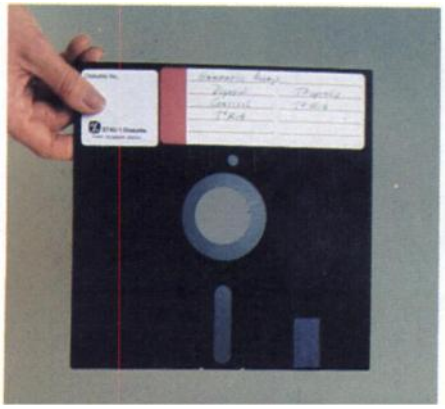

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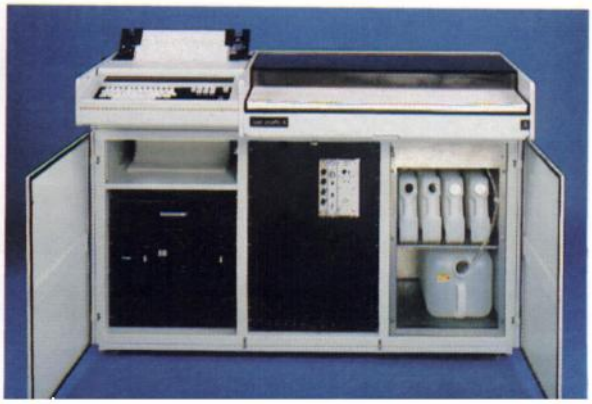

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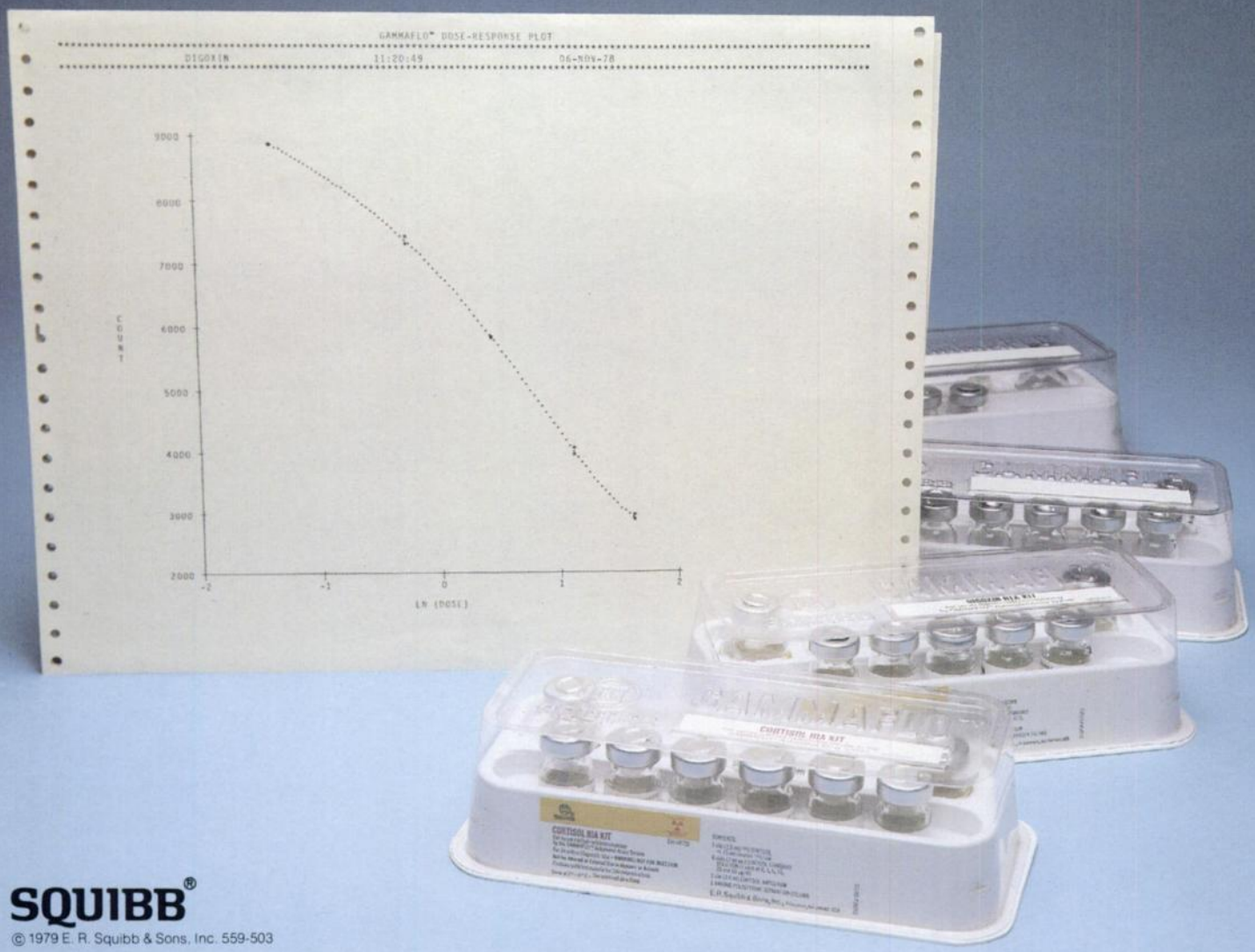

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- 200 determinations per kit.
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When Toshiba gave nuclear medicine the world's first jumbo gammacamera in 1973, the medical community was very impressed. But we were dedicated to giving you more, so we introduced the world's first jumbo gammacamera with high resolution, fine diagnostic detail over a large area. That was important, but we knew it still wasn't enough.

Now, we are introducing the latest in the state-of-the-art, the GCA-402. The world's first Super High Resolution, Large Field Gammacamera combining stability and exceptional workload capability in one instrument. Frankly, we're pleased.

Toshiba's system approach allows for no compromise where clinical diagnostic values are concerned. The GCA-402 is a prime example. High resolution is the basis for obtaining useful diagnostic images. The intrinsic resolution and linearity of the GCA-402, combined with its range of ten collimators provides unsurpassed images of exceptional diagnostic value. The GCA-402 incorporates 61 photo-multiplier tubes to electronically smooth the image and eliminate the high-energy collimator hole patterns unavoidable in conventional systems. Its 35cm field of view combined with 17 preselected isotope ranges allows unobstructed views of large organs, or groups of organs, as well as whole body scanning.

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Of course, the GCA-402 has a wide range of accessories including special collimators, whole body scanning bed, video tape and film recorders, plus, the GCA-402 may be interfaced to any computer.

This combination of human engineering, fail-proof auto exposure and easy collimator changeover provides the highest efficiency while minimizing patient discomforture.

When you're ready to fill your nuclear medicine department's need for a large field gammacamera, remember Toshiba. We're the first.

*Patented Delay Line, U.S. Patent Number 3,717,763

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Here at Harshaw, we have complete control of our crystal growth and processing — from careful synthesis and purification of the mother chemicals to patented forging and extrusion techniques.

Extensive testing ensures that each detector will function optimally in your application. Our meticulous technical approach consistently results in high-performance detectors that exceed all guaranteed performance specifications. In fact, a record 5.6% resolution was recently published for one of our sodium iodide detectors.*

At Harshaw, we make scintillation crystals that set performance standards for the industry.

*IEEE Transactions on Nuclear Science, Volume NS-25 No. 1, February 1978.

Mike Mayhugh, Ph.D.

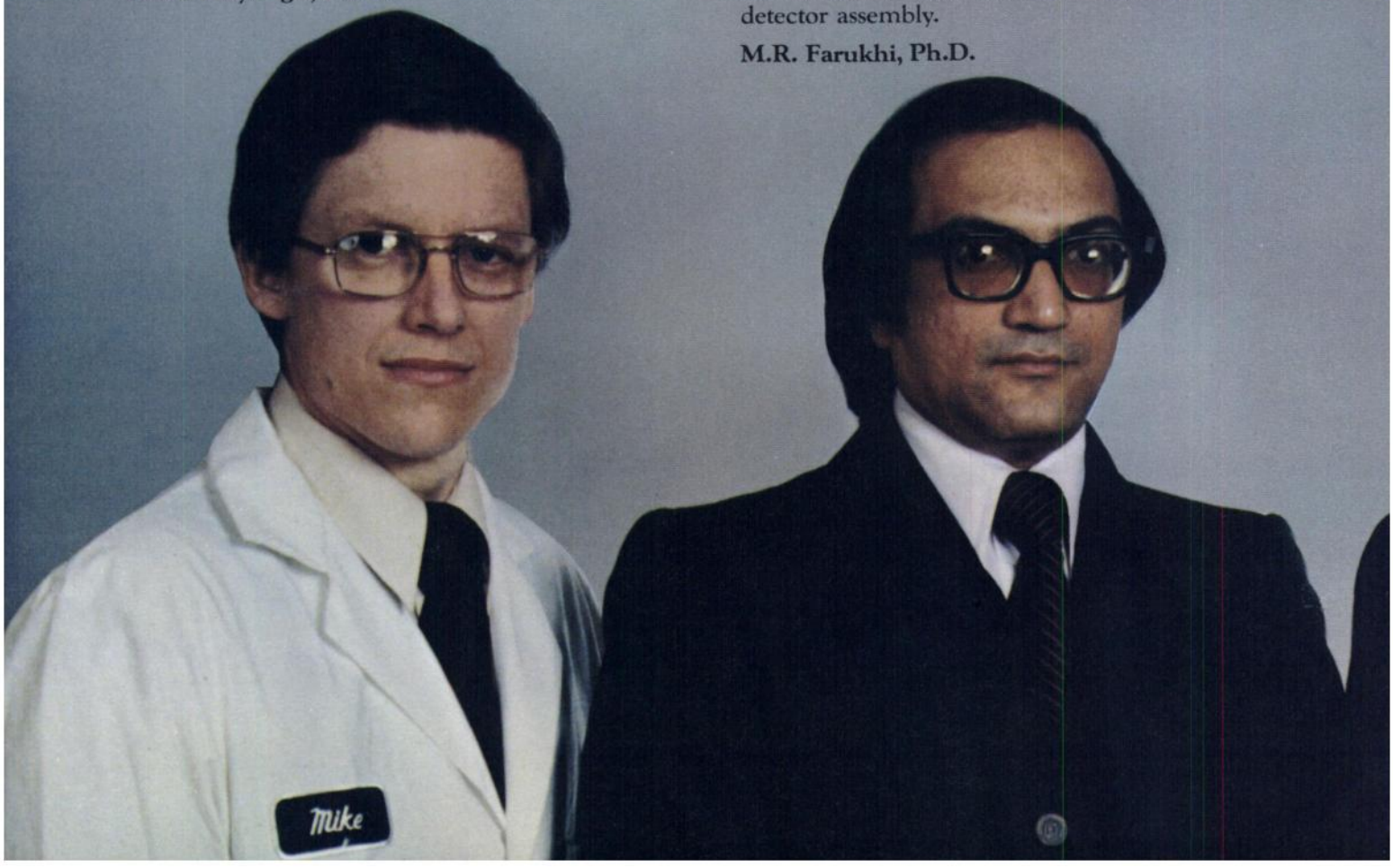
"In-depth design consultation service."

We take pride in providing in-depth design consultation service. We'll help you not only by growing uniform, high-performance crystals, but designing the appropriate detector assembly. Tell us what your application and performance requirements are, and we'll design detector assemblies with any configuration to solve your problem.

All members of our large staff of dedicated scintillation experts have MS degrees or better. Our experience in measuring and guaranteeing detector performance under a variety of field conditions is enhanced by the extensive in-house computer-controlled performance and environmental test equipment.

You can depend on our advice, whether you need standard scintillators or a new, unique detector assembly.

M.R. Farukhi, Ph.D.



Over forty years ago Harshaw began experimenting with crystals. We had no idea how much we'd excel. But here we are. Today we're the leader in sodium iodide scintillation detectors. And we've come up with a dozen other problem-solving crystals, too. We offer experience, in-depth service, and warranties which are second to none in the industry.

We also have a large group of multi-disciplined technical experts. They want to talk with you. But first, listen to what they have to say. They have four good reasons why it makes sense to buy detectors from Harshaw. After you hear them out, call them. And let them hear you out.

Call us at (216) 248-7400. Or write to The Harshaw Chemical Company, Crystal & Electronic Products, 6801 Cochran Road, Solon, Ohio 44139.

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For detectors not in stock, simply tell us what you want and we'll quote a firm, minimum-time delivery date.

At Harshaw we know you need quality and delivery. We make it our business to give you the best of both.

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Philip Parkhurst, Field Sales Manager

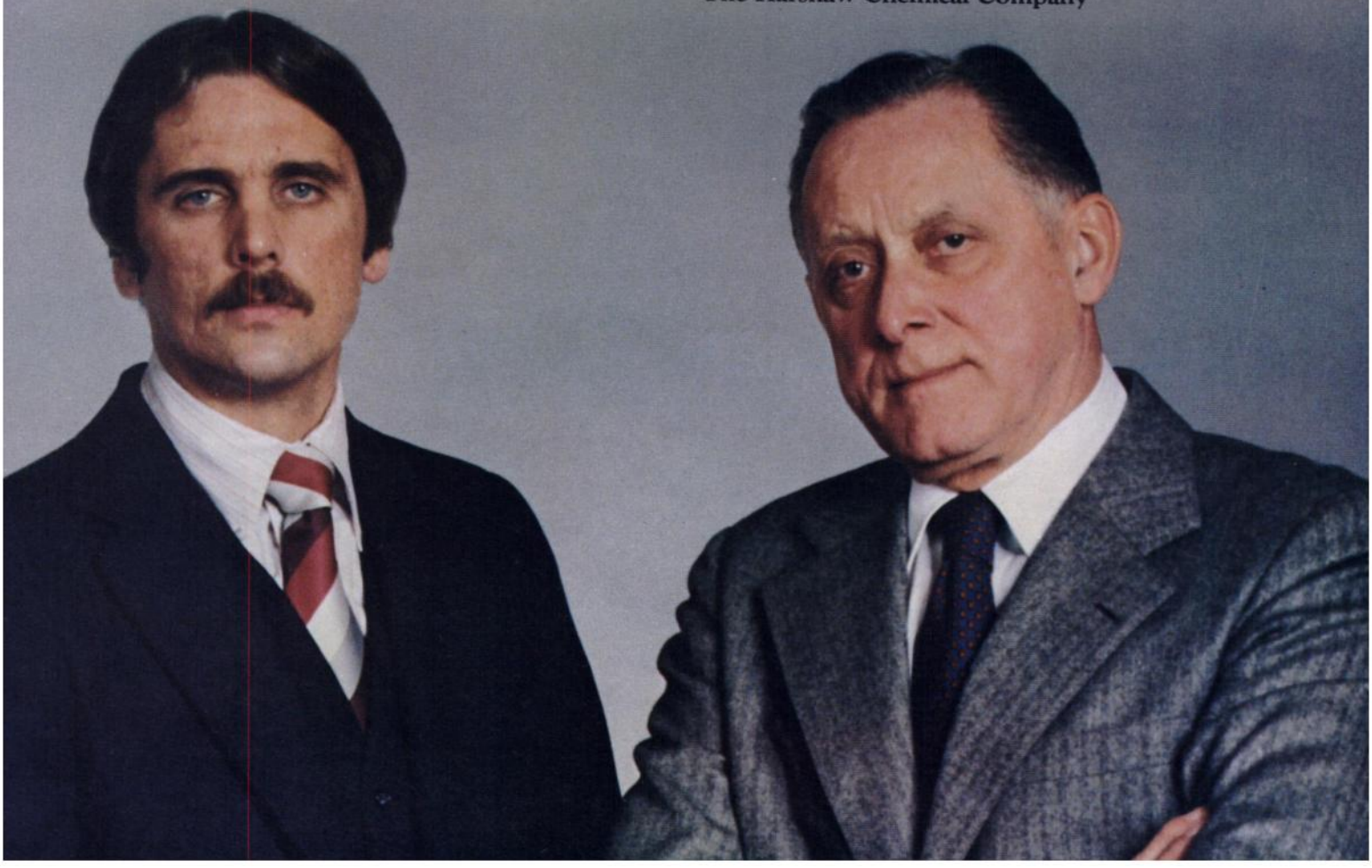
"Guaranteed performance and reliability."

All Harshaw detectors come with two warranties. First, detector resolution and other requirements are mutually agreed upon by you and Harshaw. The detectors are guaranteed to meet or exceed those specifications. Photomultiplier tubes carry the manufacturers' warranty extended from date of shipment by Harshaw.

Secondly, when used in a normal laboratory environment, they carry a two-year warranty against malfunction due to faulty construction or failure of hermetic seal.

At Harshaw we have confidence in our products, and we're proud to back them up.

Elmer Stewart, Vice President
The Harshaw Chemical Company



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Room Temperature Incubation Eliminates the use of a water bath for the incubation stages.

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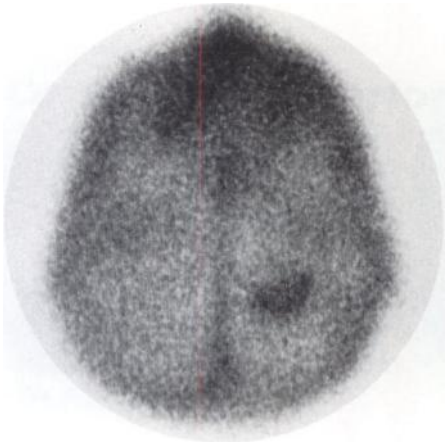
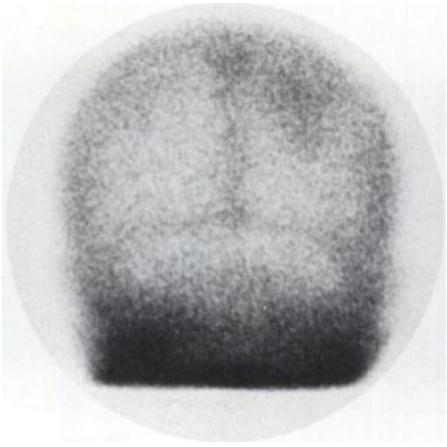
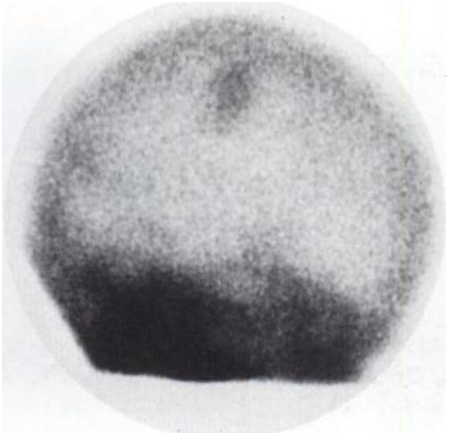
1864

"Glucoheptonate offers...







GLUCOSCAN

May 1978

Technetium Tc 99m Gluceptate Sodium Kit

FOR DIAGNOSTIC USE

DESCRIPTION: New England Nuclear's GLUCOSCAN™ Technetium Tc 99m Gluceptate Sodium Kit is supplied sterile and non-pyrogenic in lyophilized kit form suitable for reconstitution with sodium pertechnetate Tc 99m to form a diagnostic imaging agent for intravenous administration. Each vial contains 200mg gluceptate sodium, 0.07mg maximum tin and 0.06mg (min.) stannous chloride. Prior to lyophilization, hydrochloric acid and/or sodium hydroxide solution may be added to adjust the pH.

PHYSICAL CHARACTERISTICS

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.02 hours (SOURCE: Martin, M.J., Nuclear Data Project, ORNL, March, 1976). Photons that are useful for imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data

Radiation	Mean %/ Disintegration	Mean Energy (keV)
Gamma-2	88.96	140.5

To facilitate correction for physical decay of Technetium Tc 99m, the fractions of initial activity that remain at selected intervals after the time of calibration are shown in Table 2.

Table 2. Technetium Tc 99m Physical Decay Chart; Half-Life 6.02 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining
0*	1.000	5	.562
1	.891	6	.501
2	.794	7	.447
3	.708	8	.398
4	.631		

*Calibration Time

EXTERNAL RADIATION

The specific gamma ray constant for Technetium Tc 99m is 0.8R/mCi-hr at 1 cm. The first half-value thickness of lead (Pb) is 0.2mm. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from interposition of various thicknesses of lead is shown in Table 3. For example, the use of a 6.3mm thickness of lead will attenuate the radiation by a factor greater than 10^{-6}.

Table 3. Radiation Attenuation by Lead Shielding

Shield Thickness Lead (Pb) mm	Coefficient of Attenuation
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}
5.4	10^{-6}
6.3	10^{-7}

CLINICAL PHARMACOLOGY: Technetium Tc 99m Gluceptate Sodium has been shown by comparative renograms to concentrate in the kidney by both glomerular filtration and tubular secretion. Kinetic studies have shown that while some of the activity is rapidly cleared through the urine, the remainder is retained in the renal cortex. In humans, about 25% of the injected dose is excreted in the urine during the first hour post-injection. Within the same interval, blood activity rapidly clears to less than 2% of the injected dose.

Technetium Tc 99m Gluceptate Sodium has also been shown to localize in areas of intracranial pathology characterized by a disturbance in the blood brain barrier. The mechanism is probably non-specific since neoplasms, cerebrovascular accidents and extracerebral hematomas have all shown pronounced radionuclide uptake. Used in conjunction with dynamic flow studies, Technetium Tc 99m Gluceptate Sodium may detect vascular stenoses and arteriovenous malformations. There is no concentration of the agent by the salivary glands or the choroid plexus.

INDICATIONS AND USAGE: Technetium Tc 99m Gluceptate Sodium is used for brain imaging.

Technetium Tc 99m Gluceptate Sodium is indicated for renal perfusion imaging as an adjunct in the diagnosis, localization and evaluation of kidney disease. It may provide useful information about renal size, shape, and position and may delineate lesions affecting renal blood flow.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the GLUCOSCAN vial are intended only for use in the preparation of Technetium Tc 99m Gluceptate Sodium and are NOT to be directly administered to the patient.

Ideally examinations using radiopharmaceuticals—especially those elective in nature—of a woman of childbearing capability should be performed during the first ten days following the onset of the menses.

Dehydration and/or patient positioning may result in failure to visualize urinary excretory structures in the presence of normal function. Adequate patient fluid intake and repositioning may reduce the incidence of such false positive studies.

PRECAUTIONS: Technetium Tc 99m Gluceptate Sodium, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel.

Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m Gluceptate Sodium depends on the maintenance of tin in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

No long term animal studies have been performed to evaluate carcinogenic potential.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m Gluceptate Sodium should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: Although infrequent, erythema has been reported in association with the use of Technetium Tc 99m Gluceptate Sodium.

DOSAGE AND ADMINISTRATION: The recommended dose for the average (70kg) adult patient is 10-20 millicuries for both renal and brain imaging. Technetium Tc 99m Gluceptate Sodium is intended for intravenous administration only.

Technetium Tc 99m Gluceptate Sodium should be used within eight hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimal results, this time should be minimized. The reaction vial contains no bacteriostat.

Optimal results for both renal and brain imaging are obtained one hour after administration. Studies have shown that although optimal target-to-background ratios for brain lesions are obtained at two hours post-injection, there is no improvement in diagnostic efficacy after one hour.

Radiopharmaceuticals should be used by persons with 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 governmental agencies authorized to license the use of radionuclides.

The components of the New England Nuclear GLUCOSCAN Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

RADIATION DOSIMETRY

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Kidneys	3.40
Liver	0.20
Bladder Wall	5.60
Ovaries	0.32
Testes	0.20
Whole Body	0.15

HOW SUPPLIED: NEN's GLUCOSCAN Technetium Tc 99m Gluceptate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each vial contains in lyophilized form:

Gluceptate Sodium—200mg
Maximum Tin—0.07mg
Stannous Chloride (min.)—0.06mg

Prior to lyophilization the pH is adjusted with hydrochloric acid and/or sodium hydroxide solution. Store at room temperature (15°-30°C). Included in each five vial kit is one package insert and six radiation labels. Included in each thirty vial kit is one package insert and thirty-six radiation labels.

INSTRUCTIONS FOR PREPARATION OF TECHNETIUM Tc 99m GLUCEPTATE SODIUM KIT: Aseptically inject 3 to 7ml of sodium pertechnetate Tc 99m into the supplied vial of GLUCOSCAN after placing vial in a radiation shield. Swirl for several seconds to dissolve completely. Label shield appropriately. Use within eight hours of reconstitution.

Using proper shielding, the vial containing the reconstituted solution should be visually inspected to insure that it is clear and free of particulate matter.

The contents of the kit vials are not radioactive: however, after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling precautions must be maintained.

This reagent kit is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.14 and 35.100 Group III of 10 CFR or under equivalent licenses of Agreement States.

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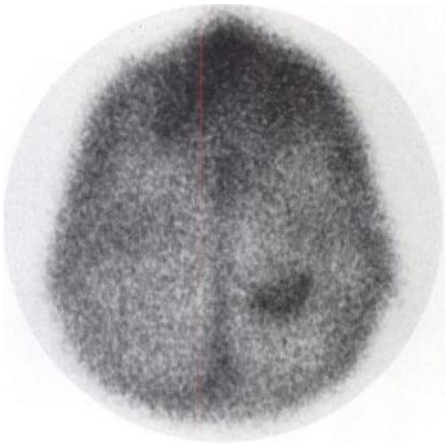
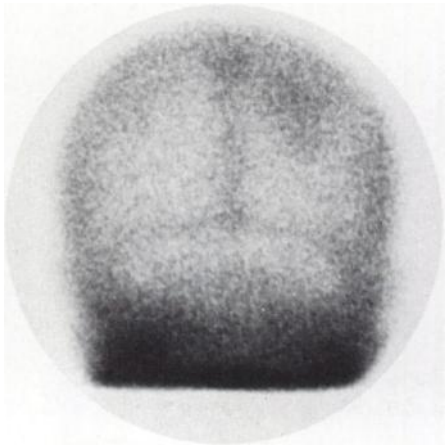
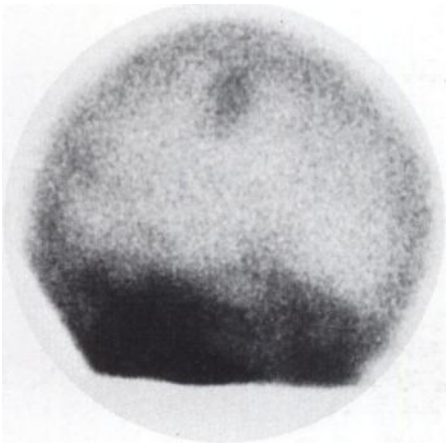
"Glucoheptonate offers...

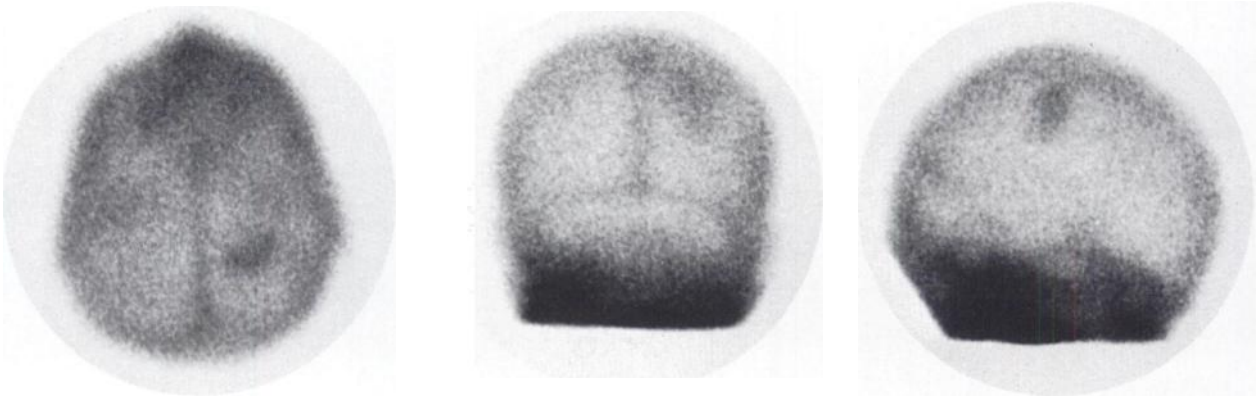






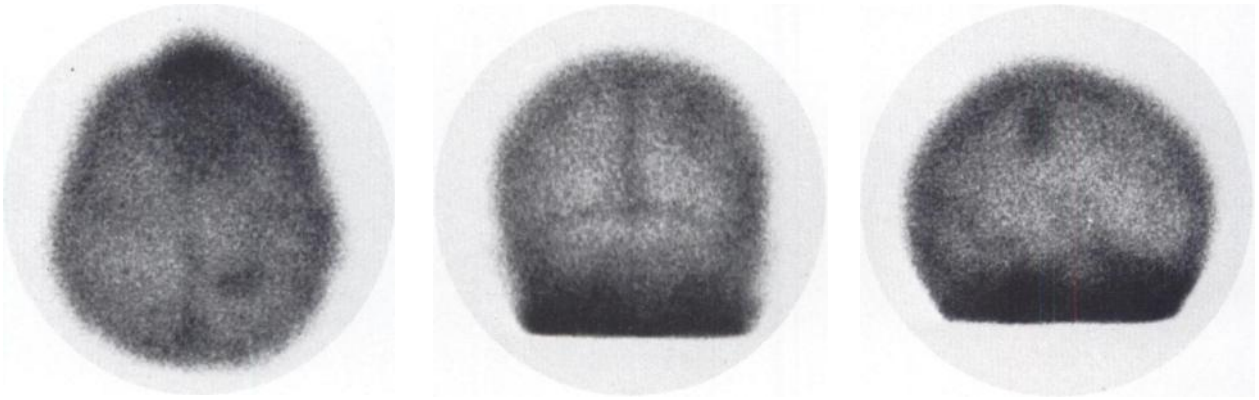
...a significant improvement in

Gluceptate Sodium



Vertex | Posterior | Right Lateral

Sodium Pertechnetate



Vertex | Posterior | Right Lateral

A 67-year-old female patient was referred for a brain scan two weeks following bilateral carotid endarterectomy, shortly after onset of left-sided weakness and slurred speech. ^{99m}Tc gluceptate sodium images made two hours postinjection clearly demonstrate several areas of abnormally increased uptake in the right parietal and temporal regions, yielding the impression of multiple emboli. A repeat study with ^{99m}Tc sodium pertechnetate made five days later at three hours postinjection revealed the same lesions, although the lower target-to-background ratio of sodium pertechnetate clearly diminishes appreciation of abnormal areas.

lesion detection."[3]

Considered superior to sodium pertechnetate, DTPA

Published studies by Léveillé et al[1], Rollo et al[2] and Waxman et al[3] compared Technetium Tc 99m gluceptate sodium (glucoheptonate) to sodium pertechnetate and/or Technetium Tc 99m DTPA. Their findings:

24% higher target-to-background ratio

"The results of the computer background study for ^{99m}Tc GH versus $^{99m}TcO_4$ show an average calvaria/brain ratio of 2.1 and 1.6 for ^{99m}Tc GH and $^{99m}TcO_4$, respectively, at 90 minutes after injection." Rollo et al[2]

May detect lesions not seen with other agents

". . . ^{99m}Tc glucoheptonate concentrates in all lesions which accumulate $^{99m}TcO_4$ or ^{99m}Tc DTPA, and in certain cases, appears to localize lesions which do not concentrate other agents." Rollo et al[2]

When compared to pertechnetate . . . "Glucoheptonate offers a significant improvement in lesion detection (for both infarcts and tumors)." Waxman et al[3]

Optimal imaging at 90 minutes postinjection, without $KClO_4$

"^{99m}Tc glucoheptonate combines the absence of oral activity with the convenience of obtaining highly diagnostically accurate images at 90 minutes." Rollo et al[2]

1. Léveillé J et al: Technetium-99m glucoheptonate in brain-tumor detection: An important advance in radiotracer techniques. J Nucl Med 18 (10):957-961, 1977.
2. Rollo FD et al: Comparative evaluation of ^{99m}TC GH; $^{99m}TcO_4$; and ^{99m}Tc DTPA as brain imaging agents. Radiology 123:379-383, 1977.
3. Waxman AD et al: Technetium 99m glucoheptonate as a brain scanning agent: A critical comparison with pertechnetate. J Nucl Med 17 (5):345-8, 1975.

GLUCOSCAN™
Technetium Tc 99m Gluceptate Sodium Kit

NEN New England Nuclear®

See following page for full prescribing information.

GLUCOSCAN

May 1978

Technetium Tc 99m Gluceptate Sodium Kit

FOR DIAGNOSTIC USE

DESCRIPTION: New England Nuclear's GLUCOSCAN™ Technetium Tc 99m Gluceptate Sodium Kit is supplied sterile and non-pyrogenic in lyophilized kit form suitable for reconstitution with sodium pertechnetate Tc 99m to form a diagnostic imaging agent for intravenous administration. Each vial contains 200mg gluceptate sodium, 0.07mg maximum tin and 0.06mg (min.) stannous chloride. Prior to lyophilization, hydrochloric acid and/or sodium hydroxide solution may be added to adjust the pH.

PHYSICAL CHARACTERISTICS

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.02 hours (SOURCE: Martin, M.J., Nuclear Data Project, ORNL, March, 1976). Photons that are useful for imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data

Radiation	Mean %/ Disintegration	Mean Energy (keV)
Gamma-2	88.96	140.5

To facilitate correction for physical decay of Technetium Tc 99m, the fractions of initial activity that remain at selected intervals after the time of calibration are shown in Table 2.

Table 2. Technetium Tc 99m Physical Decay Chart; Half-Life 6.02 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining
0°	1.000	5	.562
1	.891	6	.501
2	.794	7	.447
3	.708	8	.398
4	.631		

°Calibration Time

EXTERNAL RADIATION

The specific gamma ray constant for Technetium Tc 99m is 0.8R/mCi-hr at 1 cm. The first half-value thickness of lead (Pb) is 0.2mm. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from interposition of various thicknesses of lead is shown in Table 3. For example, the use of a 6.3mm thickness of lead will attenuate the radiation by a factor greater than 10^{-6}.

Table 3. Radiation Attenuation by Lead Shielding

Shield Thickness Lead (Pb) mm	Coefficient of Attenuation
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}
5.4	10^{-6}
6.3	10^{-7}

CLINICAL PHARMACOLOGY: Technetium Tc 99m Gluceptate Sodium has been shown by comparative renograms to concentrate in the kidney by both glomerular filtration and tubular secretion. Kinetic studies have shown that while some of the activity is rapidly cleared through the urine, the remainder is retained in the renal cortex. In humans, about 25% of the injected dose is excreted in the urine during the first hour post-injection. Within the same interval, blood activity rapidly clears to less than 2% of the injected dose.

Technetium Tc 99m Gluceptate Sodium has also been shown to localize in areas of intracranial pathology characterized by a disturbance in the blood brain barrier. The mechanism is probably non-specific since neoplasms, cerebrovascular accidents and extracerebral hematomas have all shown pronounced radionuclide uptake. Used in conjunction with dynamic flow studies, Technetium Tc 99m Gluceptate Sodium may detect vascular stenoses and arteriovenous malformations. There is no concentration of the agent by the salivary glands or the choroid plexus.

INDICATIONS AND USAGE: Technetium Tc 99m Gluceptate Sodium is used for brain imaging.

Technetium Tc 99m Gluceptate Sodium is indicated for renal perfusion imaging as an adjunct in the diagnosis, localization and evaluation of kidney disease. It may provide useful information about renal size, shape, and position and may delineate lesions affecting renal blood flow.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the GLUCOSCAN vial are intended only for use in the preparation of Technetium Tc 99m Gluceptate Sodium and are NOT to be directly administered to the patient.

Ideally examinations using radiopharmaceuticals—especially those elective in nature—of a woman of childbearing capability should be performed during the first ten days following the onset of the menses.

Dehydration and/or patient positioning may result in failure to visualize urinary excretory structures in the presence of normal function. Adequate patient fluid intake and repositioning may reduce the incidence of such false positive studies.

PRECAUTIONS: Technetium Tc 99m Gluceptate Sodium, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel.

Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m Gluceptate Sodium depends on the maintenance of tin in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

No long term animal studies have been performed to evaluate carcinogenic potential.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m Gluceptate Sodium should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: Although infrequent, erythema has been reported in association with the use of Technetium Tc 99m Gluceptate Sodium.

DOSAGE AND ADMINISTRATION: The recommended dose for the average (70kg) adult patient is 10-20 millicuries for both renal and brain imaging. Technetium Tc 99m Gluceptate Sodium is intended for intravenous administration only.

Technetium Tc 99m Gluceptate Sodium should be used within eight hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimal results, this time should be minimized. The reaction vial contains no bacteriostat.

Optimal results for both renal and brain imaging are obtained one hour after administration. Studies have shown that although optimal target-to-background ratios for brain lesions are obtained at two hours post-injection, there is no improvement in diagnostic efficacy after one hour.

Radiopharmaceuticals should be used by persons with 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 governmental agencies authorized to license the use of radionuclides.

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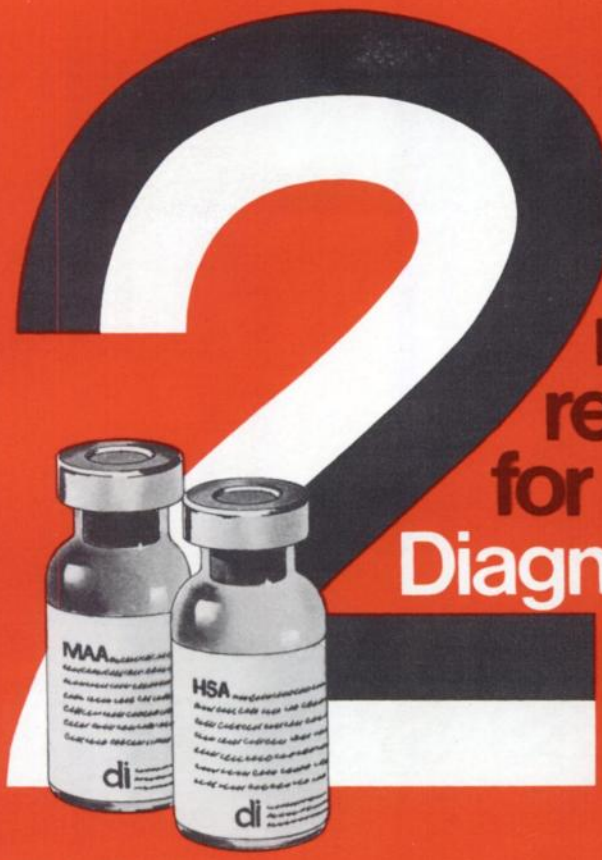

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1. Bonadonna, G. et al: Phase I and preliminary Phase II evaluation of adriamycin (NSC 123127), Cancer Res. *30*, 2572, 1970
2. Middleman, E. et al: Clinical trials with adriamycin. Cancer, *28*, 844, 1971
3. Wang, J. et al: Therapeutic effect and toxicity of adriamycin in patients with neoplastic diseases. Cancer, *28*, 837, 1971

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1. S.W. Pitman et al: Clinical Trial of High-Dose Methotrexate (NSC-740). With Citrovorum Factor (NSC-3590)-Toxicologic and Therapeutic Observations. Cancer Chemotherapy Reports Part 3 Vol. 6, No. 1, July 1975.
2. Stoller, Ronald G. et al: Use of Plasma Pharmacokinetics to Predict and Prevent Methotrexate Toxicity. N.E. Jr. of Med. Vol. 297 No. 12:630-634, Sept. 22, 1977.
3. Jaffe N. and Traggis D. Toxicity of high-dose methotrexate (NSC- 740) and citrovorum factor (NSC-3590) rescue in osteogenic sarcoma. Cancer Chemother. Rep. Part 3, Vol.6(1):31-36, 1975.

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INDICATIONS

Dicopac Kit consisting of cyanocobalamin Co 58 and cyanocobalamin Co 57 combined with human intrinsic factor is used to assess vitamin B_{12} absorption in the diagnosis of malabsorption due to the lack of intrinsic factor, e.g. Addisonian (pernicious) anemia, and as a diagnostic adjunct in other defects of intestinal absorption.

CONTRAINDICATIONS - None.

WARNINGS

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

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

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.

The test should not be started within 24 hours of a therapeutic dose (1000 μg) of vitamin B_{12} or within 24 hours of a loading dose of vitamin B_{12} given for the Schilling test.

If bone marrow examinations are to be done, they should precede the administration of this test, as the flushing parenteral dose of vitamin B_{12} may alter the bone marrow picture.

ADVERSE REACTIONS - None.

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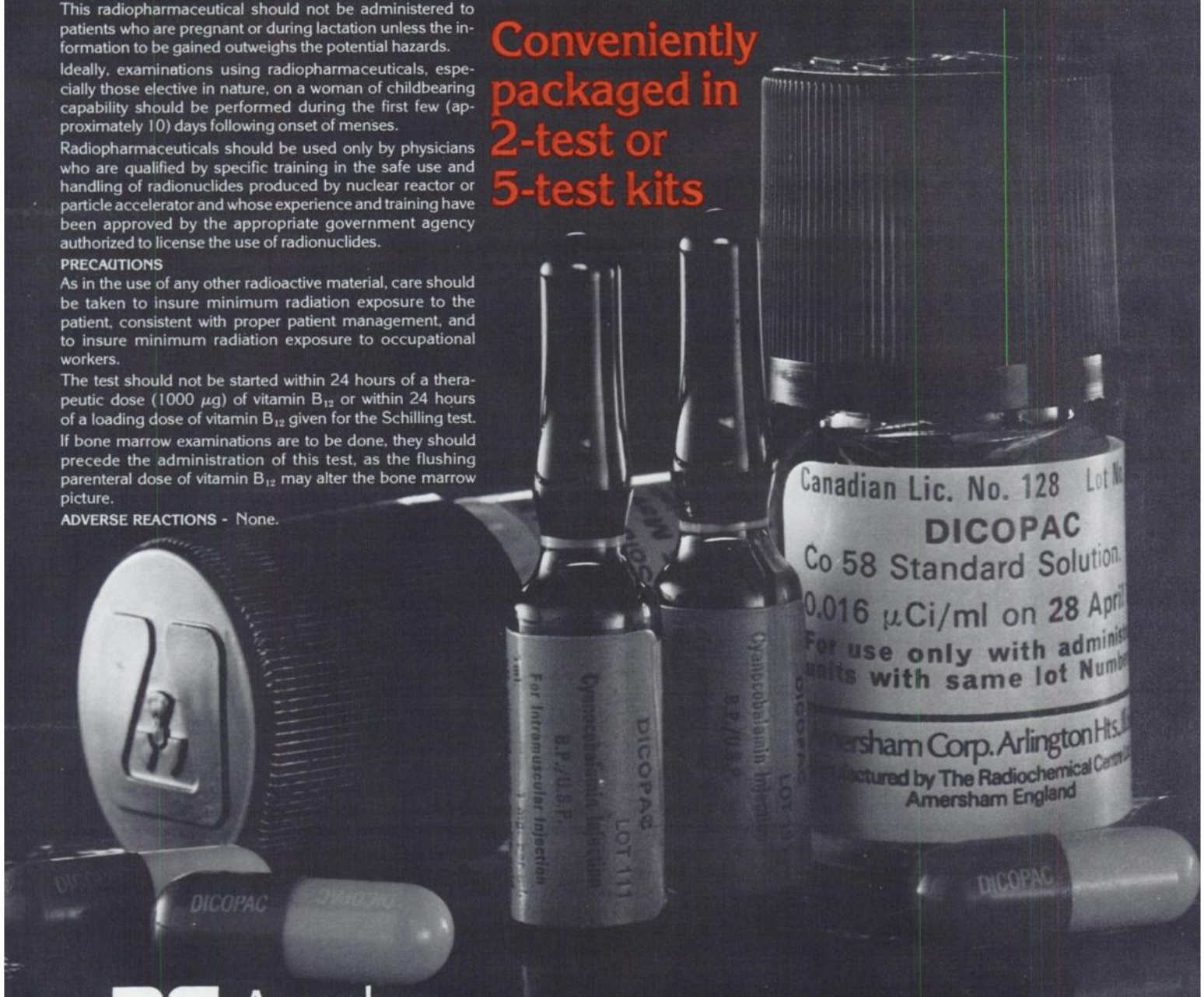

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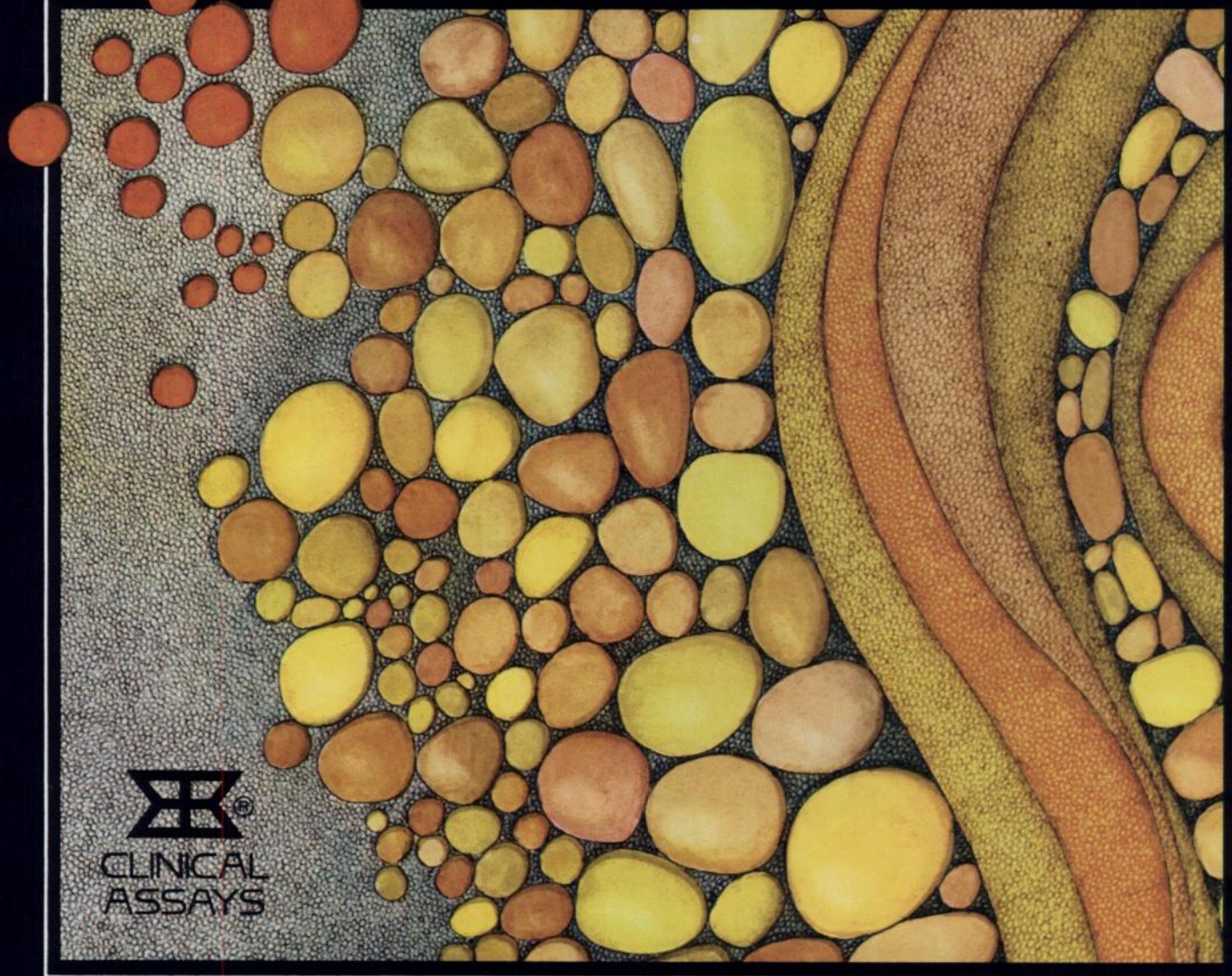

Inner-View No. 2

A continuing educational series in Nuclear Cardiology

The interview excerpted here was conducted with Glen W. Hamilton, M.D., Chief, Nuclear Medicine Section, Veteran's Administration Hospital, Seattle, Washington. Dr. Hamilton is also an Associate Professor of Medicine, University of Washington School of Medicine.

Q. Of the nuclear cardiology studies available in clinical practice today, which are the most difficult to interpret?

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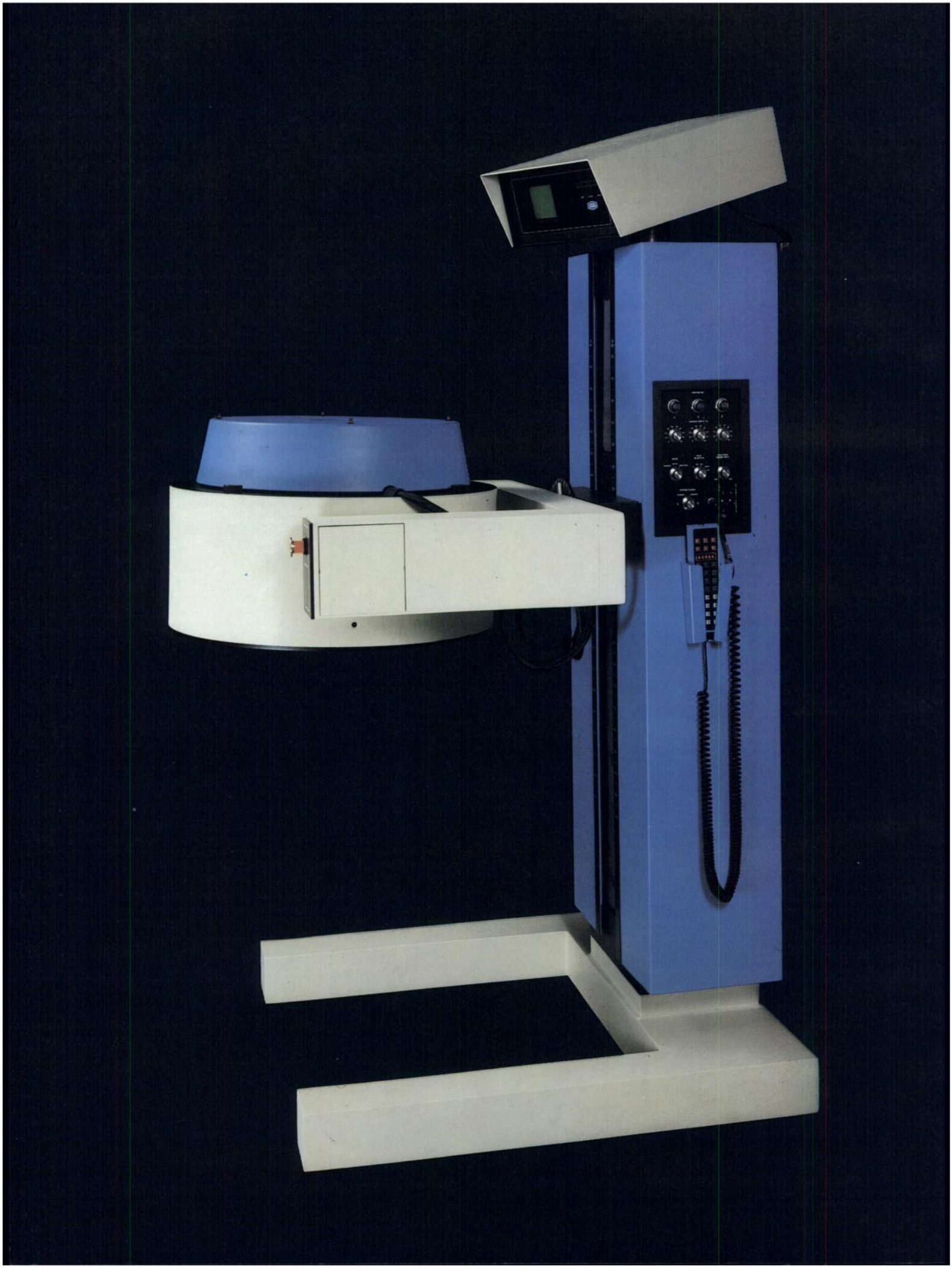

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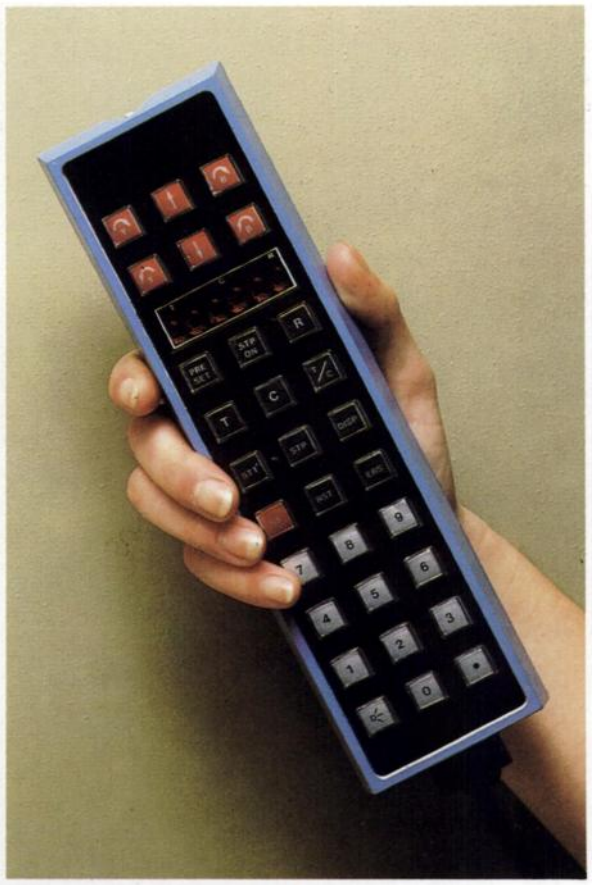

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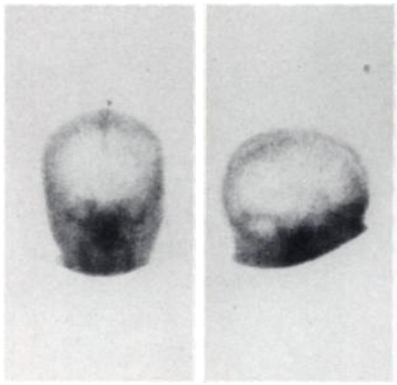
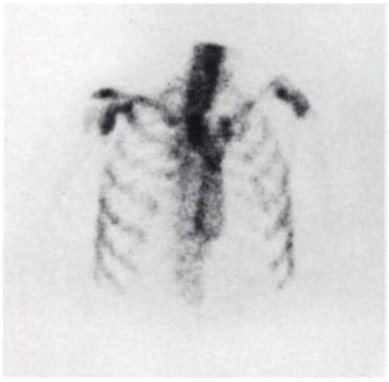
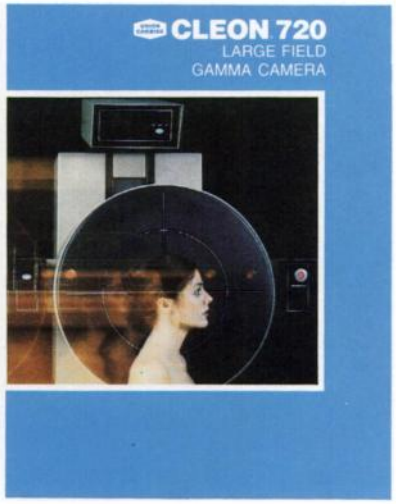


***Top** – Subdural hematoma on left, seen in 76-year-old male with 20 mCi D.T.P.A.*

***Bottom** – Anterior chest of a 76-year-old male with 15 mCi Tc^{99m} P.Y.P.; slight rotation gives a three dimensional effect.*





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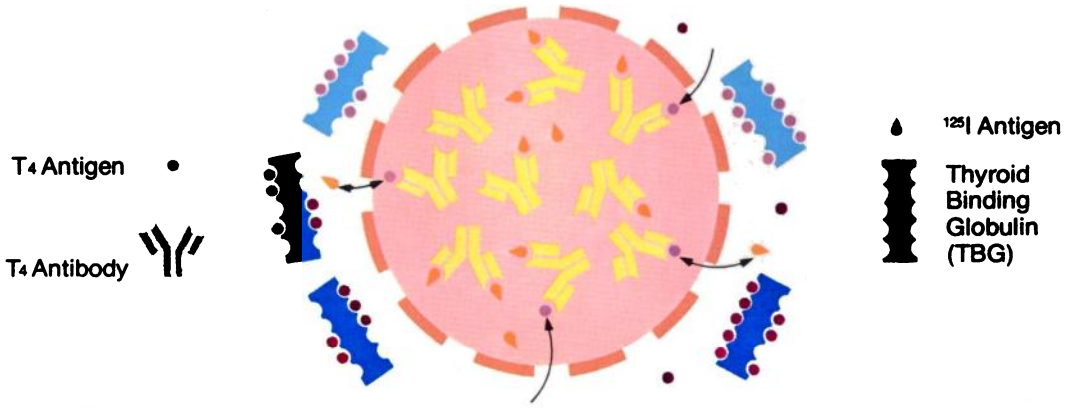

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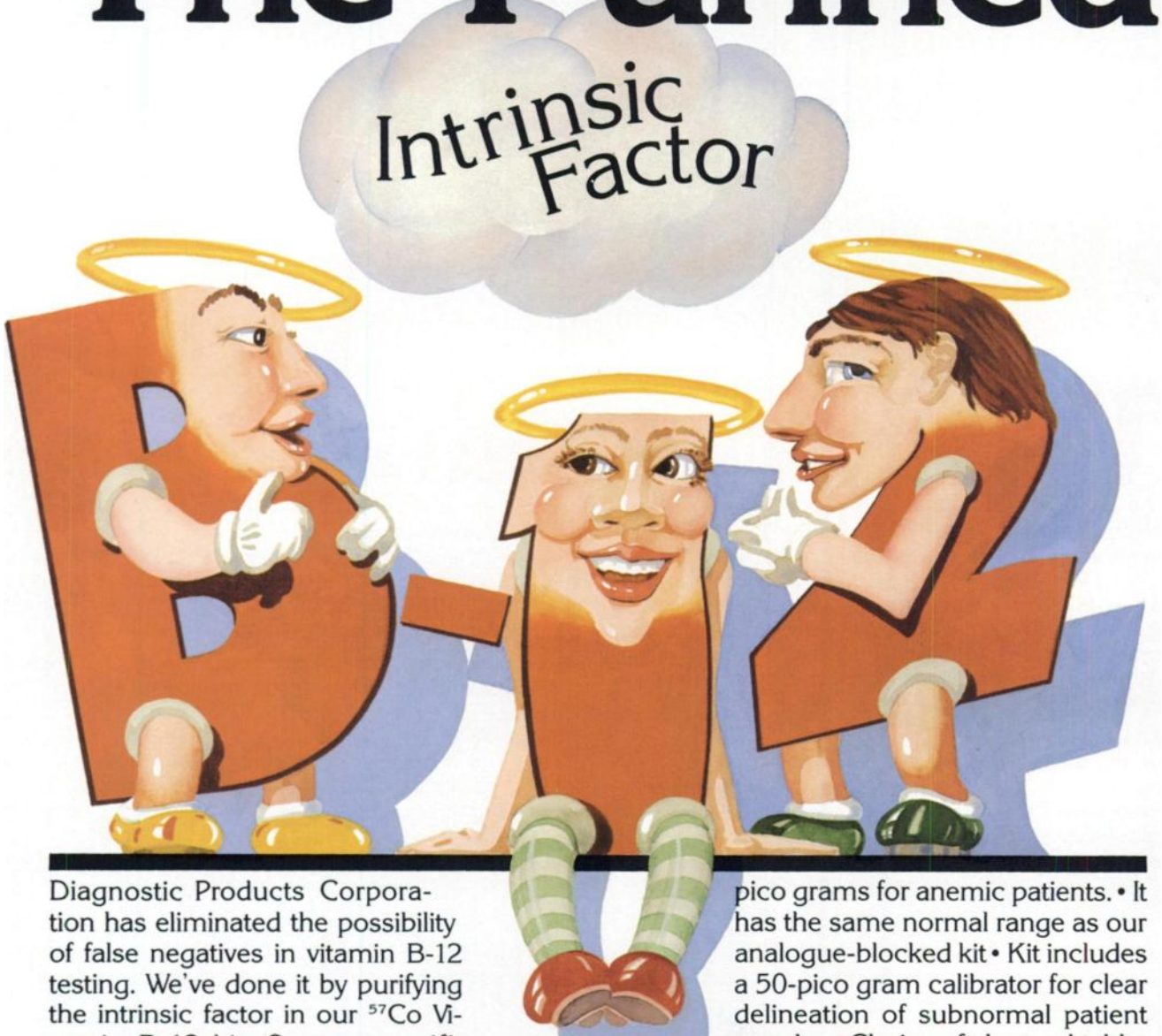

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STUDIES: MI

NUCLIDE: THALLIUM-201

FORM: Thallous Chloride SAMPLE NO. 12

LOT NO. T029496 KIT NO.

DATE: 4 APRIL 79 14:10

CONCENTRATION: 970 uCi/ml

DOSE DESIRED: 1.5 mCi

VOLUME REQUIRED: 1.54 ml

ACTIVITY MEAS'D: 1.49 mCi

TIME OF ADMINISTRATION: 2:30 AM PM

SIGNATURE(S): Jane Smith

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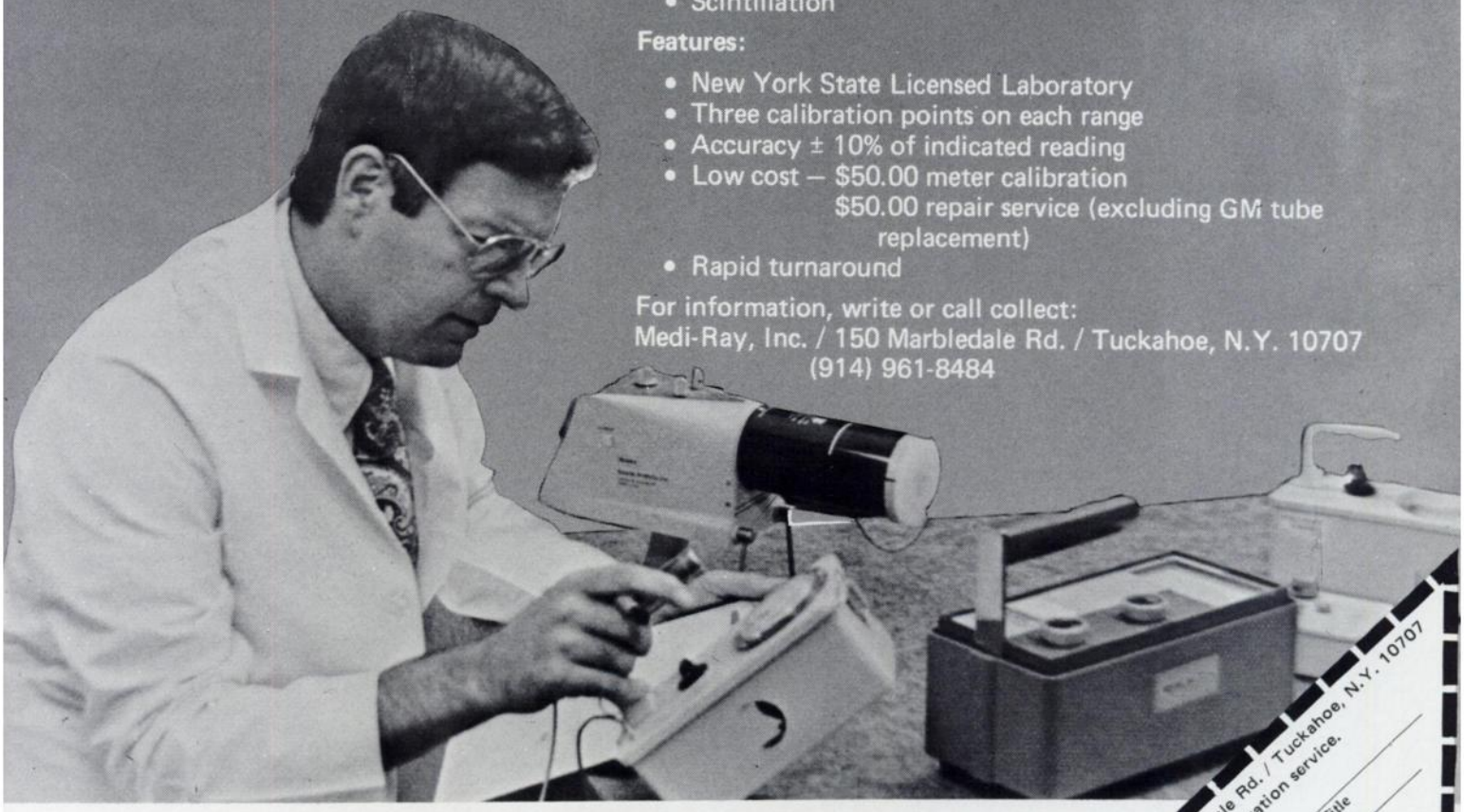

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NUCLEAR PHYSICIAN SEEKS RELOcation. Certified ABNM, ABR. Currently Chief Nuclear Medicine 500 bed hospital. Reply to Box 700, Society of Nuclear Medicine, 475 Park Ave., New York, N.Y. 10016.

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TECHNOLOGISTS AVAILABLE August 1979: Graduating from Mayo Foundation, Rochester, Minnesota; four-year NMT Degree Program. Contact: Michael Sinclair, NMT or Nancy Hockert, NMT, Nuclear Medicine Section, Mayo Foundation Rochester, Minnesota 55901 (507) 284-3055

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RAYTHEON MODEL 625 NUCLEAR Scanner. Dual 5 inch detector with two black and white tappers, two photo recorders, an add/subtract unit, and whole body minification system (motorized couch). Collimators: two TC100/12B, two FC100/12B, one FC70/7B Good condition - 3½ years old. Please contact Allen Pendergrass, Purchasing Agent, or Cary Brown, Purchasing Director, by calling (803) 573-6486 at Spartanburg General Hospital.

NUCLEAR MEDICINE PHYSICIAN

Challenging opportunity available for a nuclear medicine physician with experience in computerized studies and interest in pediatric nuclear medicine. Position would be as chief of the division with clinical, research, and teaching responsibilities in a 300 bed pediatric and teaching facility for the Ohio State University. The laboratory, fully equipped, has developed and applied computerized programs in every aspect of pediatric nuclear medicine. Salary commensurate with experience. Please send complete resume in confidence to:

Grant Morrow III., M.D., Medical Director
Children's Hospital
700 Children's Drive
Columbus, Ohio 43205

STANFORD UNIVERSITY

Fulltime position in Nuclear Medicine at Assistant Professor level at affiliated teaching Veterans Administration Med. Ctr. (Palo Alto).

Desired qualifications: Proven excellence in teaching and in all aspects of clinical Nuclear Medicine, plus research experience. Excellent opportunity for advancement. Stanford University is an equal opportunity employer and welcomes nominations from women and minority group members and applications from them.

Interested persons please send complete curriculum vitae including names and addresses of 5 referees to:

Joseph P. Kriss, M.D.
Nuclear Medicine - Rm. C022
Stanford University Medical Ctr.
Stanford, CA 94305

Baylor College of Medicine

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OPPORTUNITIES FOR NM PHYSICIANS, MEDICAL SCIENTISTS, SUPERVISORY AND STAFF TECHNOLOGISTS, MEDICAL WRITER

A major expansion of an established program in NM is being developed in conjunction with the opening of a total health care center. The new program has created the need for qualified physicians, medical scientists and technologists to provide NM services for a 2500-bed hospital complex that includes 2 large cardiovascular centers.

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(4) Medical writer

For information contact John A. Burdine, M.D., Chief, Nuclear Medicine Section, Departments of Internal Medicine and Radiology, 6720 Bertner Avenue, Houston, TX 77030; phone 713/521-2272.

VETERANS ADMINISTRATION MEDICAL CENTER
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Position available July 1979 for first year resident in AMA approved program. Second position available July 1980. Professional staff includes radiopharmacist and physicist offering broad opportunity for clinical and research experience. Equal Opportunity Employer. English language proficiency required (PL 95-201). Contact:

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CONTACT: Juan M. Taveras, M.D., Radiologist-in-Chief or H. William Strauss, M.D., Nuclear Medicine Division, Department of Radiology, Massachusetts General Hospital, Boston, Massachusetts 02114.

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REGISTRY REVIEW PROGRAM

A comprehensive review of the basic science and clinical aspects of Nuclear Medicine Technology to be held in Cleveland, Ohio August 27 through the 31, 1979. The program will be tailored to coincide with the make-up of the NMTCB. For information write:

PAUL J. EARLY
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Susan Young
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Canoga Park, Ca. 91306
(213) 882-1715, (213) 362-3514

RESIDENCY IN NUCLEAR MEDICINE

Sacramento Medical Center
Martinez Veterans Administration Hospital
University of California, Davis

Positions available for all levels of post-MD Nuclear Medicine training, internship and residency, beginning January or July 1980. ABNM approved program integrating classroom, clinical and research experience, with time available for additional experience in CT and ultrasound.

Gerald L. DeNardo, M.D., Director
Nuclear Medicine Department, UCDMC
4301 X Street, Sacramento, CA 95817
Phone: (916) 453-3787

PEDIATRIC NUCLEAR MEDICINE

COPLEY PLAZA HOTEL
BOSTON, MA.
SEPT. 10-12, 1979

This two and one half day postgraduate course, sponsored by the Harvard Medical School and the Children's Hospital Medical Center, will cover the fundamental aspects of pediatric nuclear medicine, including radiopharmaceuticals, instrumentation, dosimetry, technology, as well as established and newer clinical applications. It is desirable to specialists in nuclear medicine, pediatrics, pediatric surgery, or pediatric radiology.

The program will be approved for credit toward the AMA Physicians' Recognition Award under Continuing Medical Education Category I.

For further information, contact: S. Treves, M.D., Chief, Division of Nuclear Medicine, Children's Hospital Medical Center, 300 Longwood Avenue, Boston, MA 02115 - Telephone: (617) 734-6000, extension 3366.

RADIOPHARMACY SUPERVISOR

University Hospital, a 540 bed teaching medical center located in Stony Brook, New York, will open early in 1980 as a tertiary care facility offering a full range of services. The Radiopharmacy Supervisor will have major responsibility for conceptualizing and implementing radiopharmacy programs which will include compounding and dispensing radiopharmaceuticals, involvement in research and development of new preparations and participation in teaching pharmacists, technicians, and other health care professionals. A post-graduate degree in Pharmacy is preferred with a minimum of 3 years experience in an active radiopharmacy program. Eligibility for a New York State Pharmacy license is essential.

Forward resume and salary history to:

Steven J. Ciullo, Director of Pharmacy Services
University Hospital
State University of New York
Stony Brook, Long Island, New York 11794

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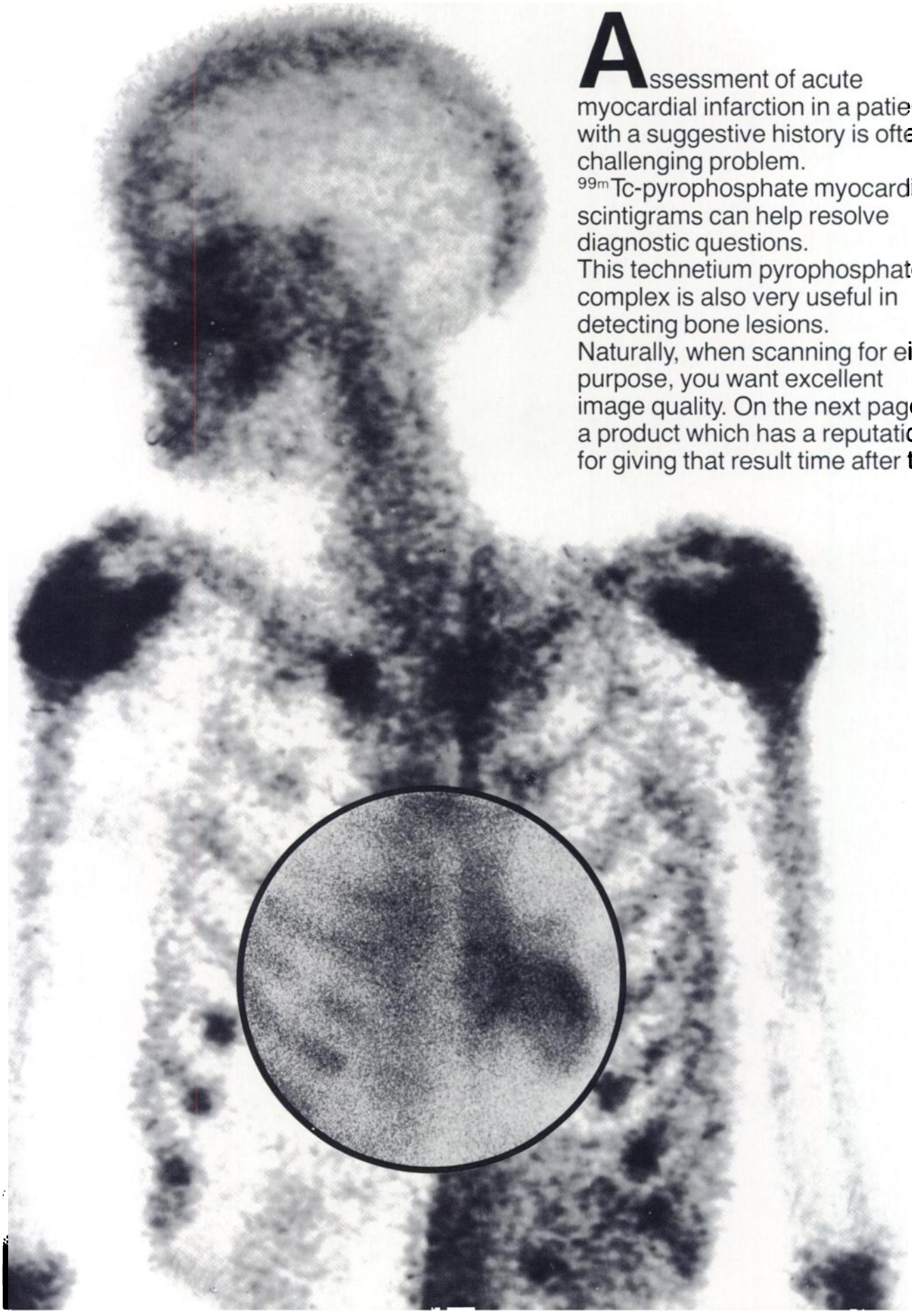

Assessment of acute myocardial infarction in a patient with a suggestive history is often a challenging problem. ^{99m}Tc-pyrophosphate myocardial scintigrams can help resolve diagnostic questions. This technetium pyrophosphate complex is also very useful in detecting bone lesions. Naturally, when scanning for either purpose, you want excellent image quality. On the next page is a product which has a reputation for giving that result time after time.

If you want images as good as these–

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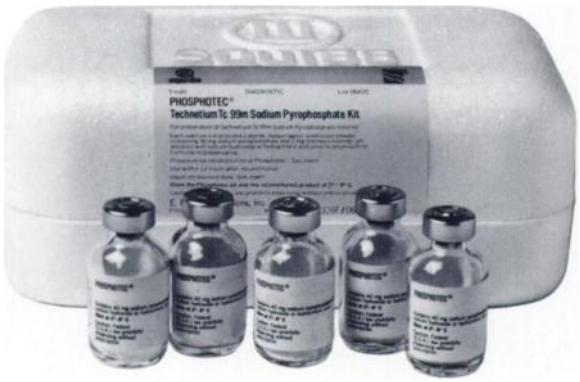
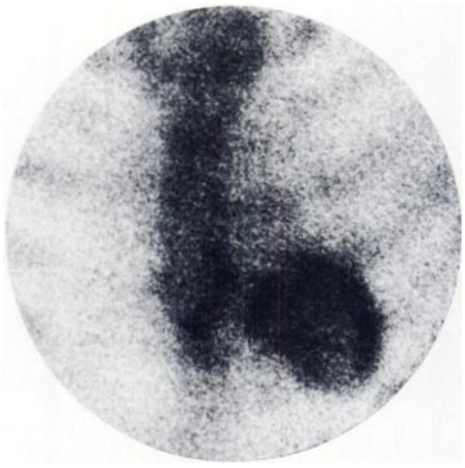
Technetium Tc 99m Sodium Pyrophosphate Kit

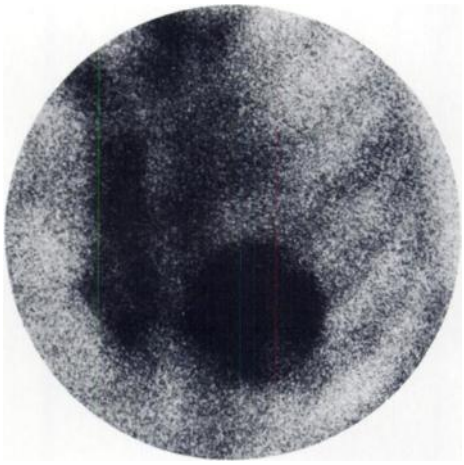


Imaging with ^{99m}Tc-pyrophosphate is an extremely sensitive technique, useful as an adjunct in determining the presence, location and extent of acute myocardial infarctions.

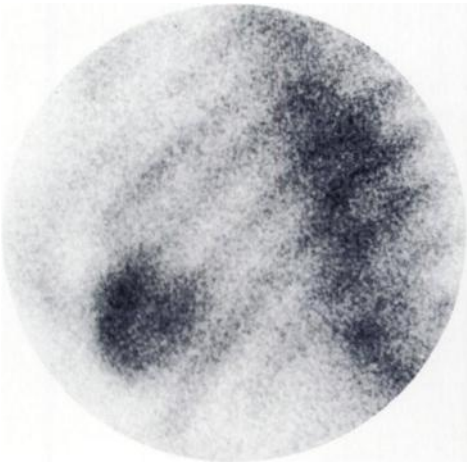
- ☐ Particularly useful in detecting recent infarcts when ECG's are equivocal when imaging is performed within 24 hours to 6 days after onset of suggestive symptoms.
- ☐ Myocardial scintigrams can help confirm the presence of infarction in cases where ECG's and serum enzymes are not specifically diagnostic.
- ☐ Cardiac imaging can be performed 45-60 minutes postinjection.



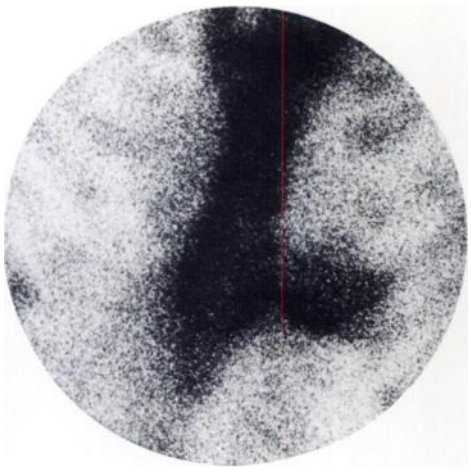
41-year-old male. Scans reveal marked abnormality of the anterior, inferior and posterior walls. Above: anterior.



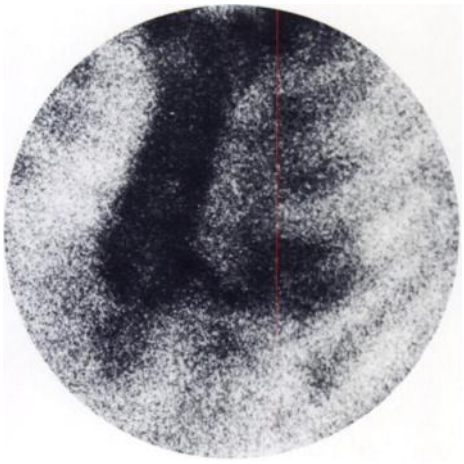
Left anterior oblique.



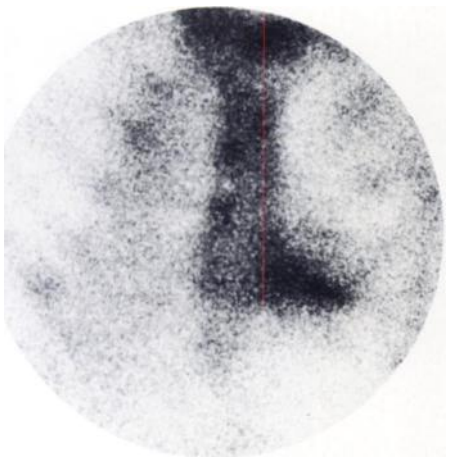
Left lateral.



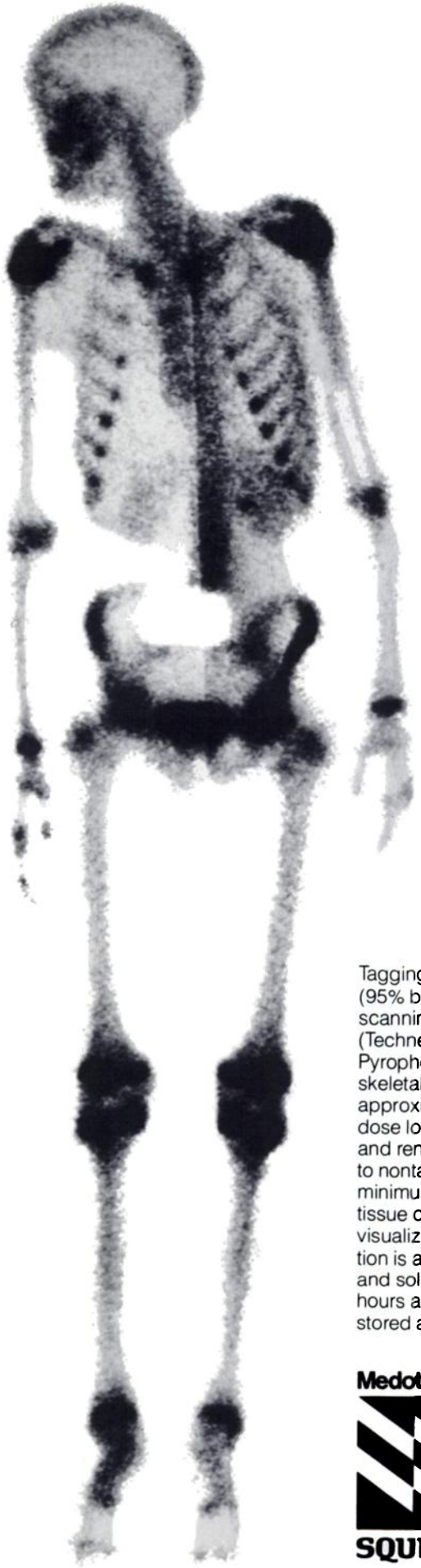
58-year-old male. Scans indicate inferior and posterior damage.
Above: Anterior.



Left anterior oblique.



Right anterior oblique.



Tagging efficiency is excellent (95% bound at optimum time for scanning) when Phosphotec (Technetium Tc 99m Sodium Pyrophosphate Kit) is used for skeletal imaging. After two hours, approximately 55% of injected dose localizes in the bone; blood and renal clearance is rapid. Target to nontarget ratio is high, with a minimum amount of uptake in soft-tissue organs and little urinary tract visualization. Preparation of solution is a simple, two-step procedure, and solution may be used up to 12 hours after reconstitution when stored at 2°-8°C.

Medotopes®

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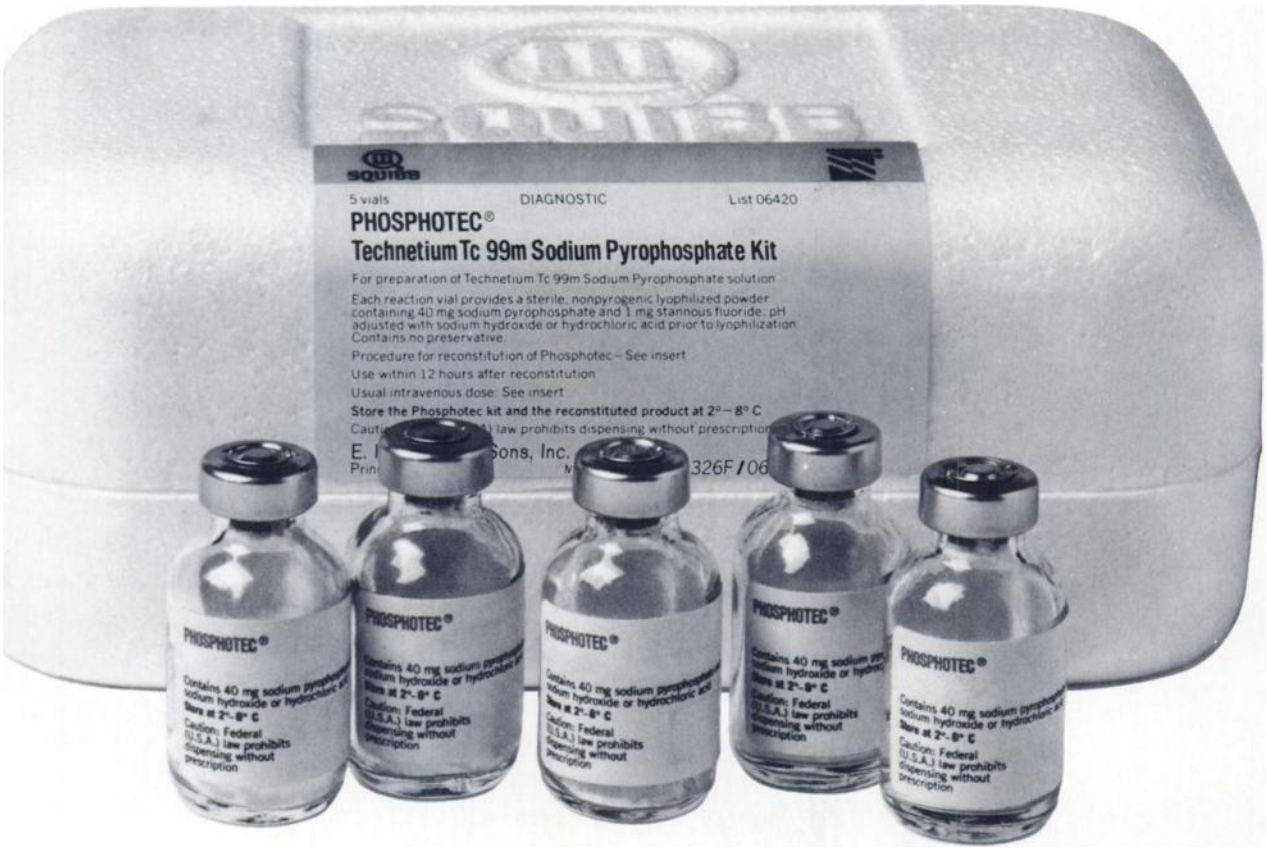
See next page for brief summary.



PHOSPHOTEC®
Technetium Tc 99m Sodium Pyrophosphate Kit

DESCRIPTION: Phosphotec provides all the nonradioactive components required to prepare a sterile, nonpyrogenic technetated (^{99m}Tc) pyrophosphate-tin complex. Each reaction vial contains 40 mg sodium pyrophosphate (equivalent to 23.9 mg anhydrous sodium pyrophosphate) and 1 mg stannous fluoride; the product does not contain a preservative. When sterile, nonpyrogenic sodium pertechnetate Tc 99m is added to the reaction vial, a technetated (^{99m}Tc) pyrophosphate-tin complex is formed.

INDICATIONS AND USAGE: Technetated (^{99m}Tc) pyrophosphate-tin complex may be used as a bone imaging agent to delineate areas of altered osteogenesis. It is also a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction.

CONTRAINDICATIONS: None known.

WARNINGS: This product should not be administered to patients who are pregnant or to nursing mothers unless the benefit 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 (approx. 10) days following the onset of menses.

It has been reported that false-positive or false-negative brain scans may result when brain scans using sodium pertechnetate Tc 99m are performed after a bone scan has been done using an agent containing stannous ions, e.g., a pyrophosphate bone agent. This is thought to be due to the interaction of Tc 99m with stannous ions inside red blood cells. Therefore, in those cases where brain scans are indicated along with imaging of bone or myocardial imaging, the brain scan should be performed first, if feasible. Alternatively, another brain imaging agent, such as Tc 99m DTPA, may be employed. False-positive and false-negative myocardial scans may occur; therefore, the diagnosis of acute myocardial infarction depends on the overall assessment of laboratory and clinical findings.

The contents of the Phosphotec reaction vial are intended to be used only for preparation of the I.V. solution and are **not** to be directly administered to the patient. Any sodium pertechnetate ^{99m}Tc solution which contains an oxidizing agent is **not** suitable for use with Technetium Tc 99m Sodium Pyrophosphate Kit. The contents of the kit are not radioactive. However, after sodium pertechnetate ^{99m}Tc is added, adequate shielding of the final preparation must be maintained. Technetated (^{99m}Tc) pyrophosphate-tin complex must be used within 12 hours after reconstitution.

PRECAUTIONS: In the use of any radioactive material, care should be taken to minimize radiation exposure to the patient and occupational workers consistent with proper patient management. Both prior to and following administration of the technetated (^{99m}Tc) preparation, the patient should be encouraged to drink fluids and to void as often as possible thereafter to minimize radiation exposure to the bladder and background interference during imaging if not contraindicated by the patient's cardiac status. The patient's cardiac condition should be stable before beginning the cardiac imaging procedure. Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing three projections (e.g., anterior, lateral, and left anterior oblique).

Adequate reproductive studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. This drug should be used in pregnant women only when clearly needed. It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken while a patient is on the drug since many drugs are excreted in human milk. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of this radiopharmaceutical have been reported.

For full prescribing information, see package insert.

HOW SUPPLIED: In a kit containing five reaction vials (5 ml size).

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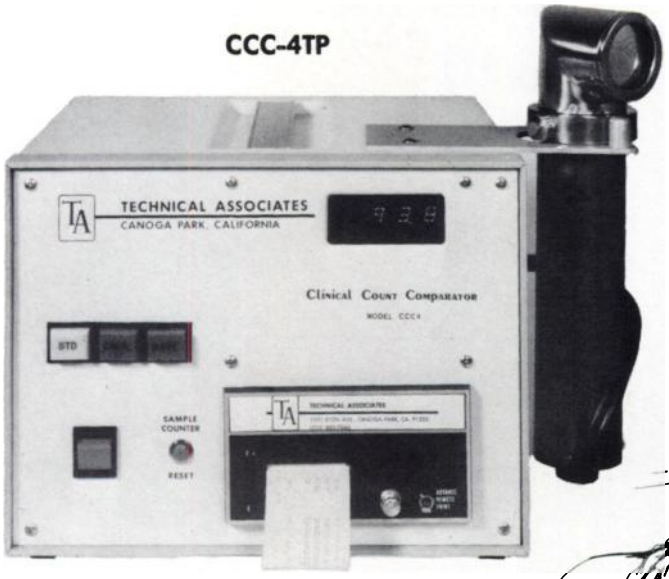
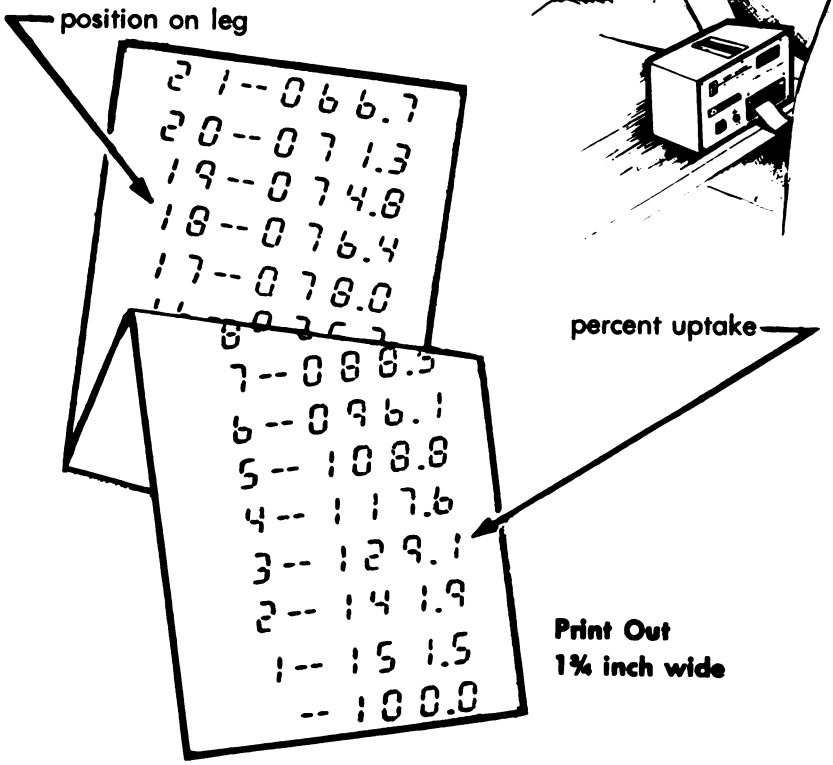
thrombosis

detection of DVT using I-125 fibrinogen





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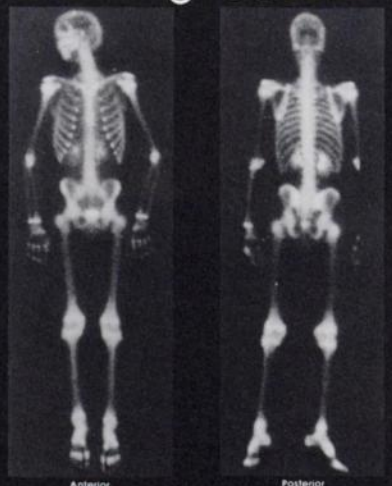
Radioisotope Bone Imagin

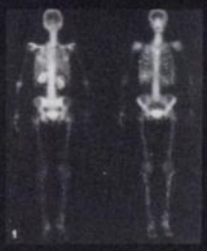
Normal and Benign Osseous Variants



Anterior

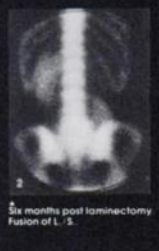
Posterior

Normal anterior and posterior studies in a young male adult.



1

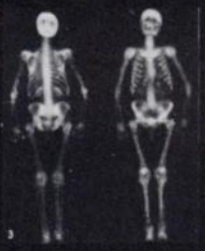
Post radiation therapy to thorax. Bone uptake is decreased due to bone marrow destruction and decreased blood flow.



2

Six months post laminectomy. Fusion of L-5.

Primary hyperparathyroidism. Note the increased calvarial uptake.



3

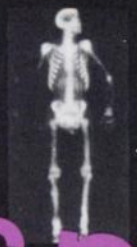
4

Secondary hyperparathyroidism in patient with history of renal transplant and steroid medication.

(3,4)

Primary sites of osteitis associated with increased parathyroid hormone production include the skull, ends of the clavicles, and hands. Sy and Mittal have reported that bone scans in renal patients with secondary hyperparathyroidism typically show increased activity in the calvaria, mandible, acromioclavicular area, sternum, vertebrae, distal thirds of long bones, and the phalanges and metacarpals.

5

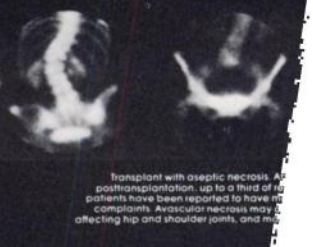


6

Stress fractures in young male jogger showing increased uptake in lower third of left tibia and midportion of right fibula.

7

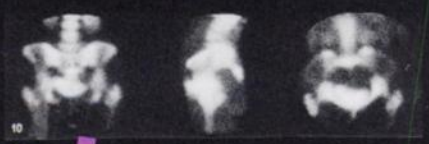
Scoliosis of thoracolumbar spine. Increased activity in lower thoracic and upper lumbosacral spine represents degenerative changes secondary to scoliosis. Kyphoscoliosis is most commonly due to osteoporosis, but may be one of the "neurogenic kyphoscolioses" associated with poliomyelitis, syringomyelia, Friedreich's ataxia or neurofibromatosis.



Transplant with aseptic necrosis. A... posttransplantation, up to a third of r... patients have been reported to have m... complaints. Avascular necrosis may ... affecting hip and shoulder joints, and m...

8

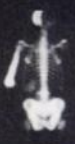
9



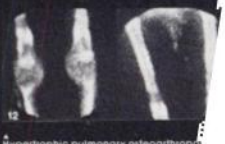
10

Coccygeal tr... a, no fracture.

Paget's disease with markedly increased activity in the entire left humerus – conforming to the bone shape – occiput, thoracic and lumbar spine, and pelvis. Proceeding from an early osteoporotic phase dominated by bone resorption and hypervascularity, Paget's lesions progress to hard, dense sclerotic formations. Involved bone shows enlargement, irregularly widened cortex and increased density. The pelvic bones are most commonly involved, followed by the femur, skull and tibia.

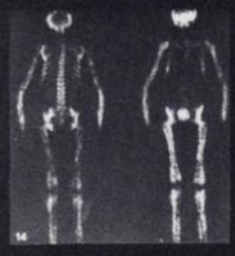


11



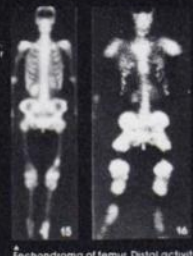
12

Hypertrophic pulmonary osteoarthropa... showing symmetric, increased uptake ... long bones. Hypertrophic osteoarthro... is normally characterized by periosteal ... inflammation, new bone formation and ... digital clubbing. This disorder may also ... affect the distal ends of long bones ... wrists and ankles and the distal ends ... metacarpals or metatarsals. It may b... associated with primary lung cance... chronic suppurative pulmonary dise... cyanotic cardiac disease.



14

Fibrous dysplasia. In this disorder, monostotic involvement usually affects craniofacial bones and ribs. Polyostotic lesions may occur in any bone, with frequent involvement of the lower extremities. The typical radiologic appearance is that of a radiolucent area with smooth borders and focal cortical thinning.



15

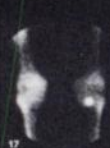
16

Maffucci's syndrome – multiple enchondromatosis.

(15, 16)

In enchondromatosis the failure to absorb hypertrophic growth plate cartilage results in disorderly masses of cartilage located in the metaphyses of long bones and the pelvis. Ribs, sternum and skull are rarely involved. The association of enchondromatosis and cavernous hemangiomas in soft tissue is known as Maffucci's syndrome.

Enchondroma of femur. Distal activity represents increased blood flow secondary to primary.



17

18

Urine artifact.

Osteoid osteoma of left tibia. Osteoid osteoma commonly occurs in the long bones of children and young adults. The x-ray characteristically shows peripheral hypertrophic bone surrounding a small area of relative radiolucency. The central lesion consists of a small nodule of highly vascular connective tissue in which varying amounts of osteoid have been deposited.

...this new wall chart

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- **lowest soft tissue activity**[1,2]
- **highest target-to-background differential**[3]
- **convenient storage and preparation**

New England Nuclear can provide you with a giant (24 x 37 inch) wall chart that shows your referring physicians the clinical appearance of OSTEOLITE images in patients with commonly seen normal and benign osseous variants. This wall chart, compiled from OSTEOLITE images provided by leading practitioners, clearly illustrates a wide range of findings, with a brief discussion of each condition.

To find out how you may receive your copy of this attractive and educational wall chart, just fill out and mail the reply card below, or ask your NEN representative on his next visit.

And to keep getting outstanding bone images, keep using OSTEOLITE!

References:
1. Subramanian G et al: *J Nucl Med* **16:**744, 1975
2. Forstrom L et al: Data on file at New England Nuclear, Medical Diagnostics Division, North Billerica, MA
3. Davis MA, Jones AG: *Sem Nucl Med* **6:**19, 1976

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Technetium Tc 99m Medronate Sodium Kit (MDP)

NEN New England Nuclear®

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Please see following page for full prescribing information.

OSTEOLITE™

October 1977

Technetium Tc 99m Medronate Sodium Kit (Formerly Known as MDP)

DESCRIPTION: New England Nuclear's OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit (formerly known as MDP), is supplied sterile and non-pyrogenic in lyophilized kit form suitable for reconstitution with sodium pertechnetate Tc 99m to form a diagnostic skeletal imaging agent for intravenous administration. Each vial contains 10mg medronate disodium and 0.85mg stannous chloride dihydrate; pH is adjusted to between 7.0–7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial are lyophilized and stored under nitrogen.

PHYSICAL CHARACTERISTICS

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.02 hours. (SOURCE: Martin, M. J. Nuclear Data Project, Oak Ridge National Laboratory, March, 1976.) Photons that are useful for imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data—Technetium Tc 99m

Radiation	Mean %/ Disintegration	Mean Energy (keV)
Gamma-2	88.96	140.5

To facilitate correction for physical decay of Technetium Tc 99m, the fractions of initial activity that remain at selected intervals after the time of calibration are shown in Table 2.

Table 2. Physical Decay Chart: Technetium Tc 99m Half-Life 6.02 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining
0*	1.000	8	.398
1	.891	9	.355
2	.794	10	.316
3	.708	11	.282
4	.631	12	.251
5	.562	18	.126
6	.501	24	.063
7	.447		

*Calibration Time

EXTERNAL RADIATION

The specific gamma ray constant for Technetium Tc 99m is 0.8R/mCi-hr. at 1cm. The half value layer is 0.2mm of Pb. To facilitate control of radiation exposure from millicurie amounts of Technetium Tc 99m, the use of a 6.35mm thick standard radiation elution lead shield will attenuate the radiation emitted by a factor greater than 10^{-6}.

Table 3. Radiation Attenuation By Lead Shielding

Shield Thickness (Pb)mm	Coefficient of Attenuation
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}
5.4	10^{-6}
6.3	10^{-7}

CLINICAL PHARMACOLOGY: Upon intravenous injection, Technetium Tc 99m OSTEOLITE exhibits a specific affinity for areas of altered osteogenesis. In humans, blood levels fall to 4-10% of the injected dose by two hours post-injection and to 3-5% by three hours. During the first 24 hours following its administration in patients with normal renal function, 50-75% of the radioactivity is excreted into the urine and less than 2% of the injected dose remains in the vascular system.

Uptake of the Technetium Tc 99m in bone appears to be related to osteogenic activity and to skeletal blood perfusion. The deposition in the skeleton is bilaterally symmetrical, with increased accumulation in the axial structure as compared to the appendicular skeleton. There is increased activity in the distal aspect of long bones as compared to the diaphyses. In pediatric patients, in whom the epiphyseal centers are still open, there is more marked accumulation of the radiopharmaceutical in the distal aspects of long bones than is seen in adults in whom the epiphyseal centers are closed. Localized areas of abnormal accumulation of the radiopharmaceutical may be seen in primary skeletal malignancies, metastatic malignancies to bone, acute or chronic osteomyelitis, arthritides, recent fractures, areas of ectopic calcification, Paget's disease, regional migratory osteoporosis, areas of aseptic necrosis and, in general, any pathological situation involving bone in which there is increased osteogenic activity or localized increased osseous blood perfusion. Since increased osteogenic activity and localized increased osseous blood perfusion are not usually present in chronic bone diseases, bone imaging agents, in general, are not effective in detecting such diseases. Localized areas of decreased accumulation of the radiopharmaceutical may be noted in areas of bone which have received localized fields of external radiation or to which blood flow has been interrupted. OSTEOLITE has also been noted to accumulate in areas of acute myocardial infarction from one to fourteen days after the pathologic event.

INDICATIONS AND USAGE: Technetium Tc 99m OSTEOLITE may be used as a bone imaging agent to delineate areas of altered osteogenesis.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the OSTEOLITE vial are intended only for use in the preparation of Technetium Tc 99m medronate sodium and are NOT to be directly administered to the patient.

Ideally, examinations using radiopharmaceuticals—especially those elective in nature—of women of childbearing capability should be performed during the first ten days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered Technetium Tc 99m medronate sodium is essential in order to accurately interpret pathologic studies.

Technetium Tc 99m medronate sodium, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m medronate sodium depends on the maintenance of tin in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m medronate sodium should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: None reported.

DOSAGE AND ADMINISTRATION: The recommended dose for the average 70kg adult patient is 15mCi with a range of 10-20mCi. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

Optimal imaging results are obtained within one to four hours after administration.

OSTEOLITE should be used within six hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimum results this time should be minimized.

The vial contains no bacteriostat.

Radiopharmaceuticals should be used by persons 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 governmental agencies authorized to license the use of radionuclides.

RADIATION DOSIMETRY

The estimated absorbed radiation dose to an average patient (70kg) from an intravenous injection of a maximum dose of 20 millicuries of Technetium Tc 99m OSTEOLITE is shown in Table 4.

Table 4. Absorbed Radiation Dose

Organ	Technetium Tc 99m Medronate Sodium (rads/20mCi)
Total Body	0.13
Bone Total	0.70
Red Marrow	0.56
Kidneys	0.62
Liver	0.16
Bladder Wall 2 hr void	2.60
Bladder Wall 4.8 hr void	6.20
Ovaries 2 hr void	0.24
Ovaries 4.8 hr void	0.34
Testes 2 hr void	0.16
Testes 4.8 hr void	0.22

Method of calculation: A Schema for Absorbed-Dose Calculations For Biologically Distributed Radionuclides, Supplement No. 1, MIRD Pamphlet No. 1, p. 7, 1968.

HOW SUPPLIED: NEN's OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each nitrogen-flushed vial contains in lyophilized form:

Medronate Disodium—10mg
Stannous Chloride Dihydrate—0.85mg

The pH is adjusted to between 7.0–7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial were lyophilized under nitrogen. Store at room temperature (15°-30° C). Included in each five (5) vial kit is one (1) package insert and six (6) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and thirty-six (36) radiation labels.

INSTRUCTIONS FOR PREPARATION OF TECHNETIUM Tc 99m OSTEOLITE: Aseptically inject 2 to 8ml of sodium pertechnetate Tc 99m (pertechnetate in isotonic saline without a bacteriostat) into the supplied vial of OSTEOLITE enclosed by a radiation shield. Swirl for at least ten seconds to dissolve completely. Label appropriately. Suitable labels have been supplied with each OSTEOLITE Kit. Use within six hours after reconstitution. For optimum results, this time should be minimized.

Using proper shielding, the vial containing the reconstituted solution should be visually inspected to insure that it is clear and free of particulate matter.

The contents of the kit vials are not radioactive; however, **after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling precautions must be maintained.**

Do not use if there is a vacuum in the immediate drug container or if air is injected into the container when the dose is withdrawn.

Catalog Number NRP-420 (5 vial kit)
Catalog Number NRP-420C (30 vial kit)

NEN New England Nuclear®

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 etidronate disodium, 0.16 mg stannous chloride and 0.56 mg sodium ascorbate as active ingredients. Upon addition of ADDITIVE-FREE sodium pertechnetate Tc99m the etidronate disodium and stannous chloride combine with Tc99m to form a stable soluble complex.

Clinical pharmacology: When injected intravenously, Tc99m-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 Tc99m-labeled OSTEOSCAN. Three hours after intravenous injection of Tc99m-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 Tc99m-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques. Tc99m-labeled OSTEOSCAN is also taken up in areas of necrosis and severely injured myocardial cells. Approximately 1.5 hours following intravenous injection 0.01-0.02 percent of the administered dose per gram of tissue is taken up by an acutely infarcted myocardium.

Indications: OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis and a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction. When used as an adjunct in the diagnosis of myocardial infarction the incidence of false negatives has been found to be approximately 14% and false positives about 16%. False negatives may result from failure to observe temporal requirements for good myocardial imaging; false positives may be related to coronary heart disease, left ventricular aneurysms, trauma, repeated cardioversion following coronary by-pass surgery or old myocardial infarcts.

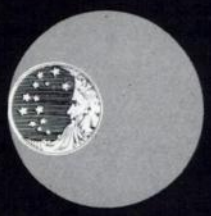
Contraindications: None known.

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. The technetium used to tag the product should be routinely tested for molybdenum and aluminum; if an unacceptable level of either is found, the technetium should not be used. 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.

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. Bone Imaging: Both prior to and following Tc99m-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the Tc99m-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation. Cardiac Imaging: Patient's cardiac condition should be stable before beginning the cardiac imaging procedure. If not contraindicated by the cardiac status, patients should be encouraged to ingest fluids and to void frequently in order to reduce unnecessary radiation exposure. Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing the three recommended projections.

Adverse reactions: None known.

Dosage and administration: The recommended adult dose of Tc99m-labeled OSTEOSCAN is 10-15 mCi. The activity of each dose should be measured by a suitable radiation calibration system just prior to administration. The dose should be given intravenously by slow injection. For optimal results bone imaging should be done 2-4 hours post injection and cardiac imaging 1-1½ hours post injection. The acute myocardial infarct can be visualized from 1-9 days following onset of symptoms with maximum uptake at 2-3 days. It is recommended that three projections of the heart be made (anterior, left anterior oblique and left lateral).



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OSTEOSCAN®

Technetium Tc99m etidronate sodium kit

exceeds MDP in tumor-to-normal-bone ratio

"...in clinical practice tumor visualization is paramount. For this purpose the agent with the highest tumor-to-normal-bone ratio may well be superior."[1]

In a recently completed clinical study comparing Osteoscan and MDP in the same patients, Osteoscan provided a significantly higher tumor-to-normal-bone ratio than MDP.[1] Kinetic studies have shown that Osteoscan is released from normal bone into the blood, permitting good differentiation between tumor and normal bone, whereas MDP remains bound to the normal bone longer.[2,3]

Osteoscan is also useful as an adjunct in the diagnosis of acute myocardial infarction.

For additional information, call or write Procter & Gamble, Professional Services, P.O. Box 85507, Cincinnati, Ohio 45201, (513) 977-5547.

References:
1. Fogelman, I. et al: J. Nucl. Med. 20:98, 1979.
2. Khedkar, N. et al: Presented at the 1978 Annual Meeting, SNM, Southeastern chapter.
3. Arnold, J. S.: Kinetic Analysis of Bone Imaging Agents, Proceedings of First International Symposium on Radiopharmacology, Innsbruck, Austria, 1978 (to be published).

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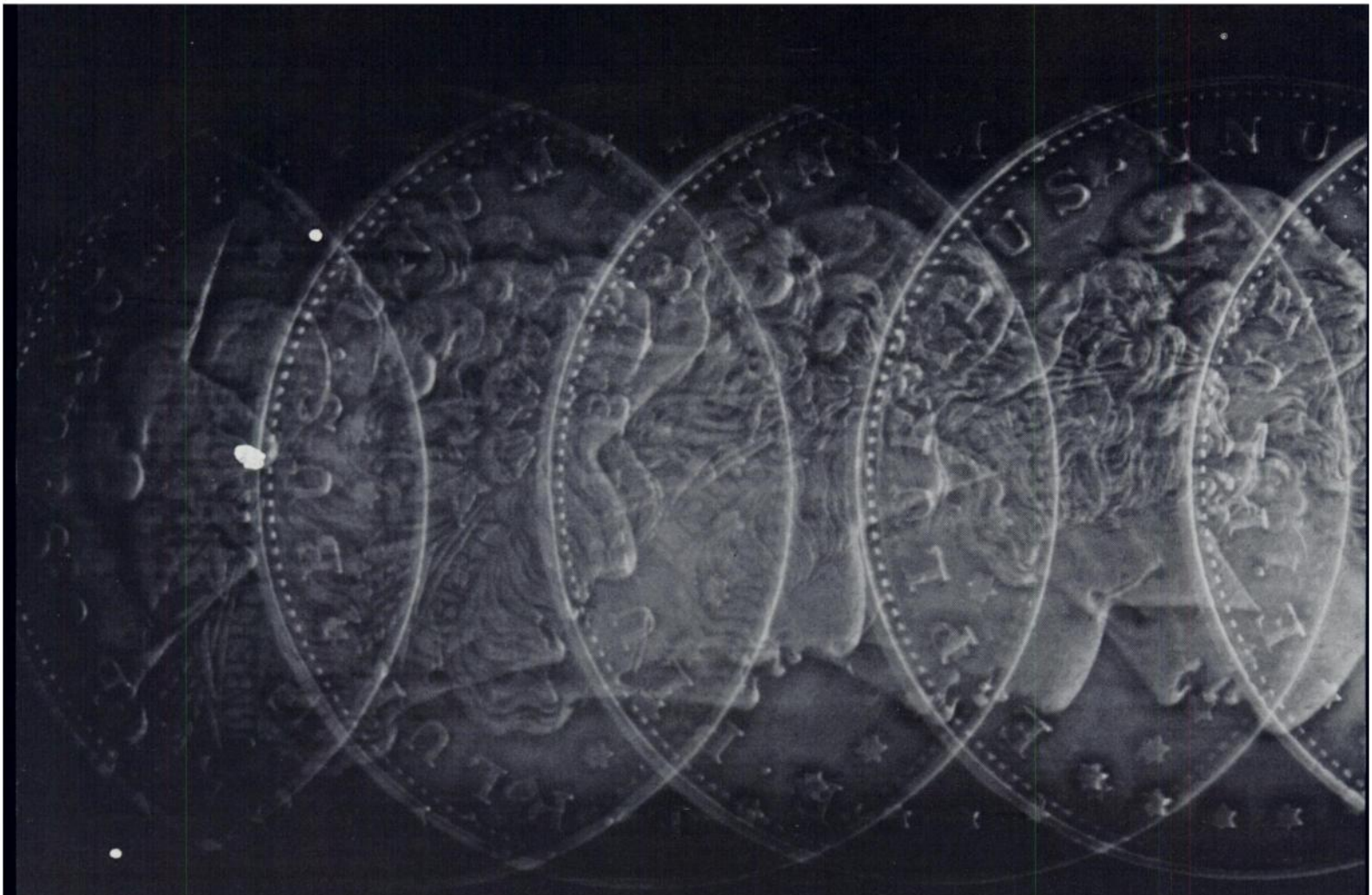

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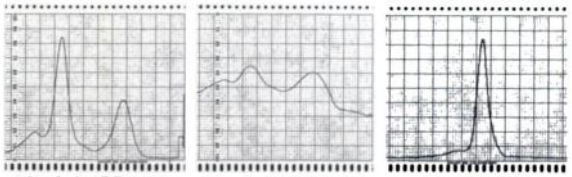
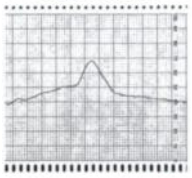


Mock I-125 LIN | Mock I-125 LOG | Co-57 LIN

Co-57 LOG



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gaḿ·mȧ·flō, *n.*

1. A totally automated RIA system that requires no operator intervention from the time samples and standards are loaded until tabulated results are collected.
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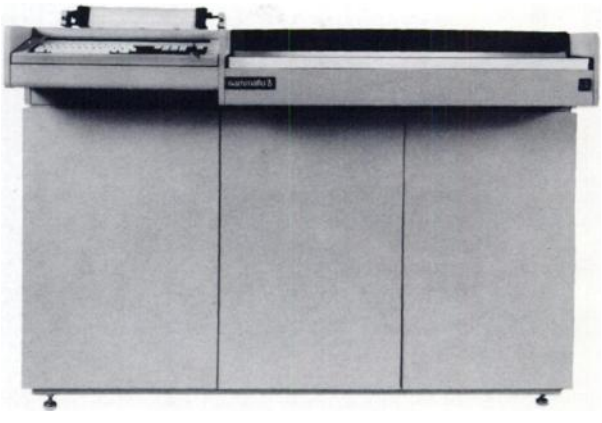
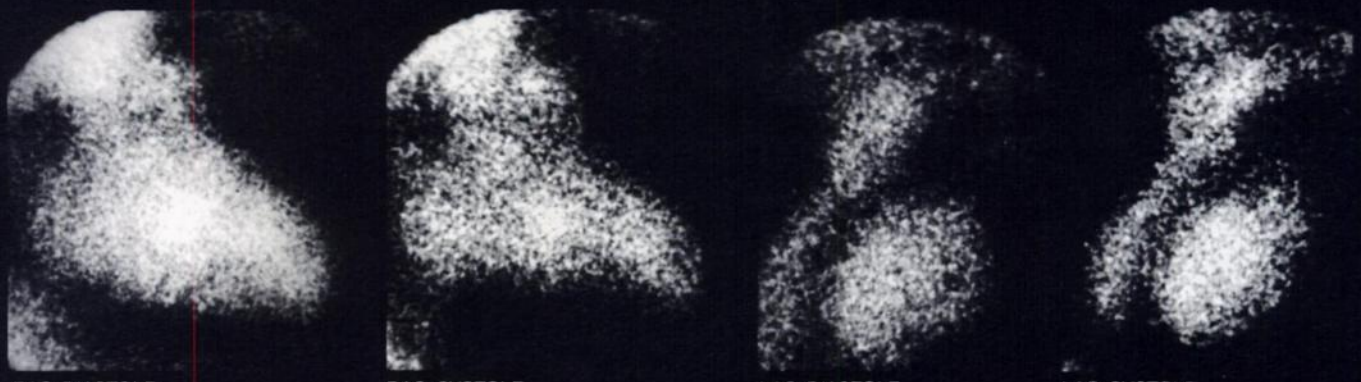


SQUIBB®

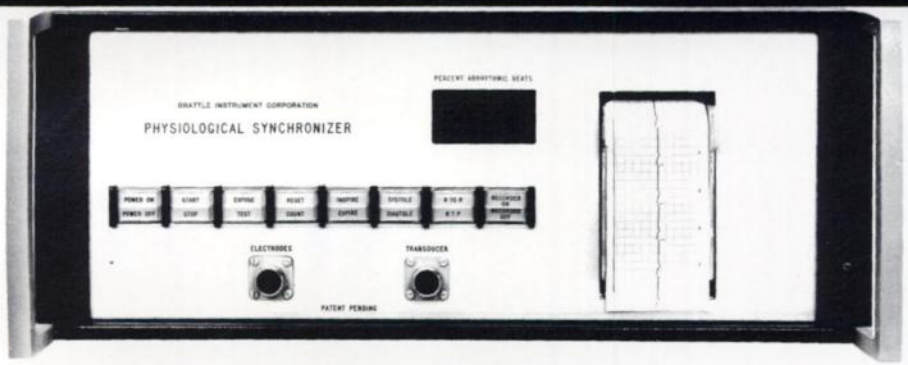
For further definitions, see page 19A

Help your cardiologist study heart kinetics non-invasively with Brattle-gated scintiphotos.



RAO. DIASTOLE | RAO. SYSTOLE | LAO. DIASTOLE | LAO. SYSTOLE

The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contraction posteriorly and akinesis of the septal aspect of the chamber. Patient was injected IV with 20mCi of ^{99m}Tc-labelled Human Serum Albumin. The agent was prepared using the New England Nuclear Electrolysis Kit for labelling HSA. Write or call for a portfolio of Brattle-gated lung, liver and heart studies.



No knobs, no meters, no errors
The spartan panel above tells the second-best part of our story. If you want to photograph peak systole, press the SYSTOLE button. If, say, you want systole only at full expiration, press the EXPIRATION button as well. If only breathing is relevant, don't press the heart button.

The Brattle is connected to the patient and to your gamma (or x-ray or ultrasonic) camera. Whenever the patient is in the selected phase, both the scope and the scaler on your gamma camera are gated ON, and film is exposed. Otherwise, they are OFF.

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It doesn't matter if the patient's heart rate and breathing depth change while he's under the collimator because we stay right with him. Brattles contain an ECG to track heart, a plethysmograph to track respiration, and a tiny computer to deduce systole and diastole times from the heart signal. And because it's all built in, your operator need not be a physiologist.

We don't cover our tracks—we print them
The panel lights flash whenever the patient reaches the selected phases; and pushing the RECORDER-ON button gets you an ECG tracing marked with breathing and camera-on times. You can verify function before, during and after exposure.

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More than half of our instruments are in community hospitals and the list is growing rapidly. Upon request, we'll supply names of happy users in your area.

What's the next step? Get in touch
Ask your NEN man about Brattles and HSA Kits. He can show you a portfolio of clinical pictures and arrange to have one of our people give you a demo. Or write or call us direct. We'll send you brochures on this and other models, and will give you your own set of clinical pictures and a bibliography on gated scintigraphy. If you wish, we'll even make you a Brattle owner. (This is the best part of our story.)

Brattle Instrument Corporation

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