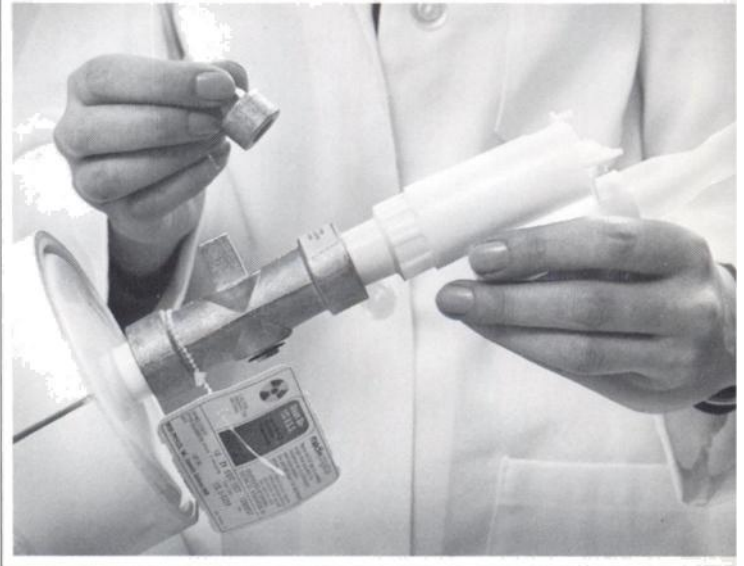


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A versatile, disposable system

Xenon 133-V.S.S. includes everything you need for a xenon Xe 133 ventilation study. The completely disposable system includes the xenon Xe 133 contained in a valve-shield, a CO₂ absorber and bag for rebreathing and collection of expired xenon Xe 133, and a mouthpiece.

One system can be used for single-breath, rebreathing and wash-out studies.

The valve-shield can deliver either a concentrated or a dispersed dose.

Safe, convenient assembly

Xenon 133-V.S.S. can be assembled in less than a minute. Radiation exposure is minimized because there is no need to dilute the xenon gas or transfer it to a delivery system. After assembly, the ventilation study may begin immediately.

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

Xenon Xe 133-V.S.S. (Ventilation Study System) Xenon Xe 133 Diagnostic

DESCRIPTION: The Xenon Xe 133-Ventilation Study System (V.S.S.) consists of a sealed plastic tube containing 10 millicuries \pm 20% of Xenon 133 gas at calibration time and date with less than 1% carrier Xenon in air.

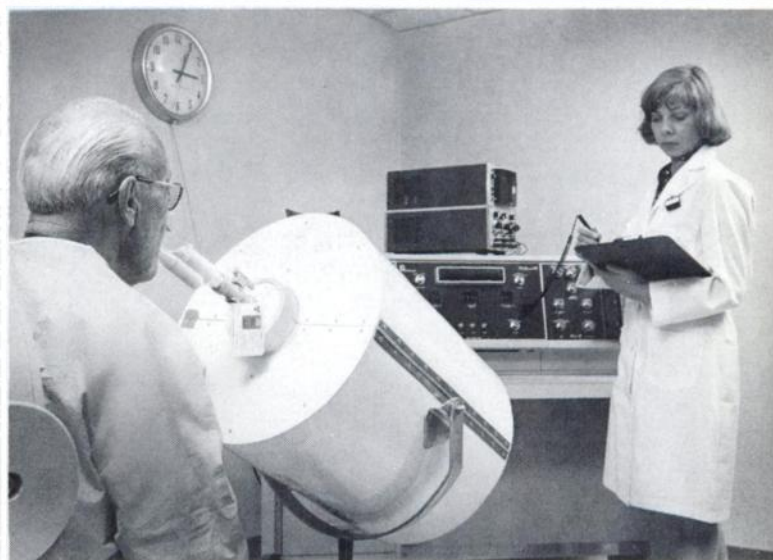
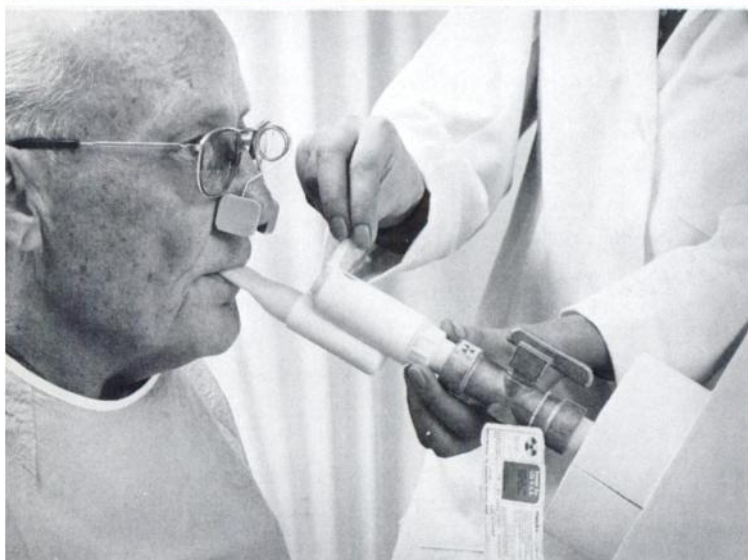
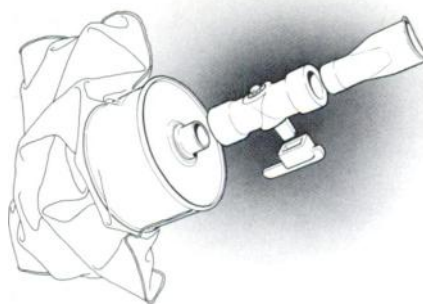
INDICATIONS AND USAGE: Study of pulmonary ventilation.

CONTRAINDICATIONS: None known.

WARNINGS: Xenon Xe 133 should not be administered to children or to patients who are pregnant, or to nursing mothers unless the benefits to be gained outweigh 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.

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. Xenon Xe 133 should be used in pregnant women only when clearly needed.

CONSIDER MPI's XENON 133-V.S.S. (VENTILATION STUDY SYSTEM) Xenon Xe 133 diagnostic



True, single-unit dose

The MPI Xenon 133-V.S.S. contains enough xenon Xe 133 for one ventilation study. You only use what you need and are not "locked into" an expensive delivery system that requires daily use to justify costs. Another advantage of single-unit dosage is that the risk of cross infection via reusable apparatus is significantly reduced.

Reduced radiation exposure

The xenon Xe 133 is supplied in a sealed plastic container. The valve-shield is designed to prevent radiation leaks during transport and use. Additionally, a shield to reduce radiation exposure to patient and attending personnel and a valve assembly to minimize the escape of exhaled xenon during washout studies are available as accessory components.

PRECAUTIONS: Xenon Xe 133 as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel and to the patients consistent with proper patient management.

Exhaled Xenon Xe 133 gas should be controlled in a manner that is in compliance with the appropriate regulations of the government agency authorized to license the use of radionuclides.

Xenon Xe 133 gas delivery systems, i.e., respirators or spirometers, and associated tubing assemblies must be leak-proof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

Xenon Xe 133 adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers for such unrecognized loss of radioactivity from the dose for administration may render the study non-diagnostic.

ADVERSE REACTIONS: Adverse reactions specifically attributable to Xenon Xe 133 have not been reported.

DOSAGE AND ADMINISTRATION: The recommended activity range for pulmonary ventilation studies in the average patient (70 kg) is 2 to 20 millicuries (0.03 to 0.3 millicuries/kg).

HOW SUPPLIED: Each Ventilation Study System (V.S.S.) contains Xenon 133 in a sealed plastic tube containing 10 millicuries $\pm 20\%$ at calibration time and date stated on the label.

The sealed plastic tube is enclosed in a metal valve-shield which is sealed with a plastic shrink band to prevent accidental loss of Xenon 133 during shipping. A key is provided to remove the end plugs of the valve-shield and to turn the valve fitting which breaks the sealed plastic tube. The V.S.S. also includes a disposable mouthpiece and a breathing-collection bag with an attached CO₂ absorber canister.

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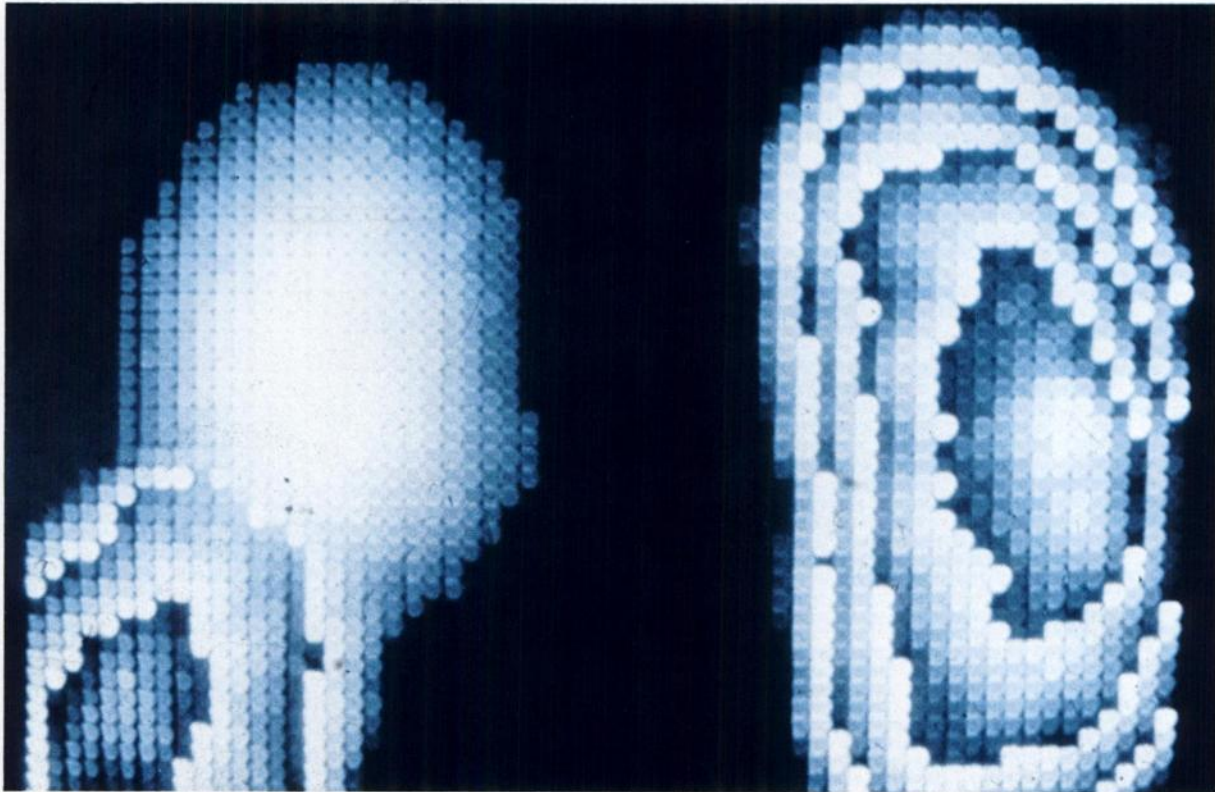
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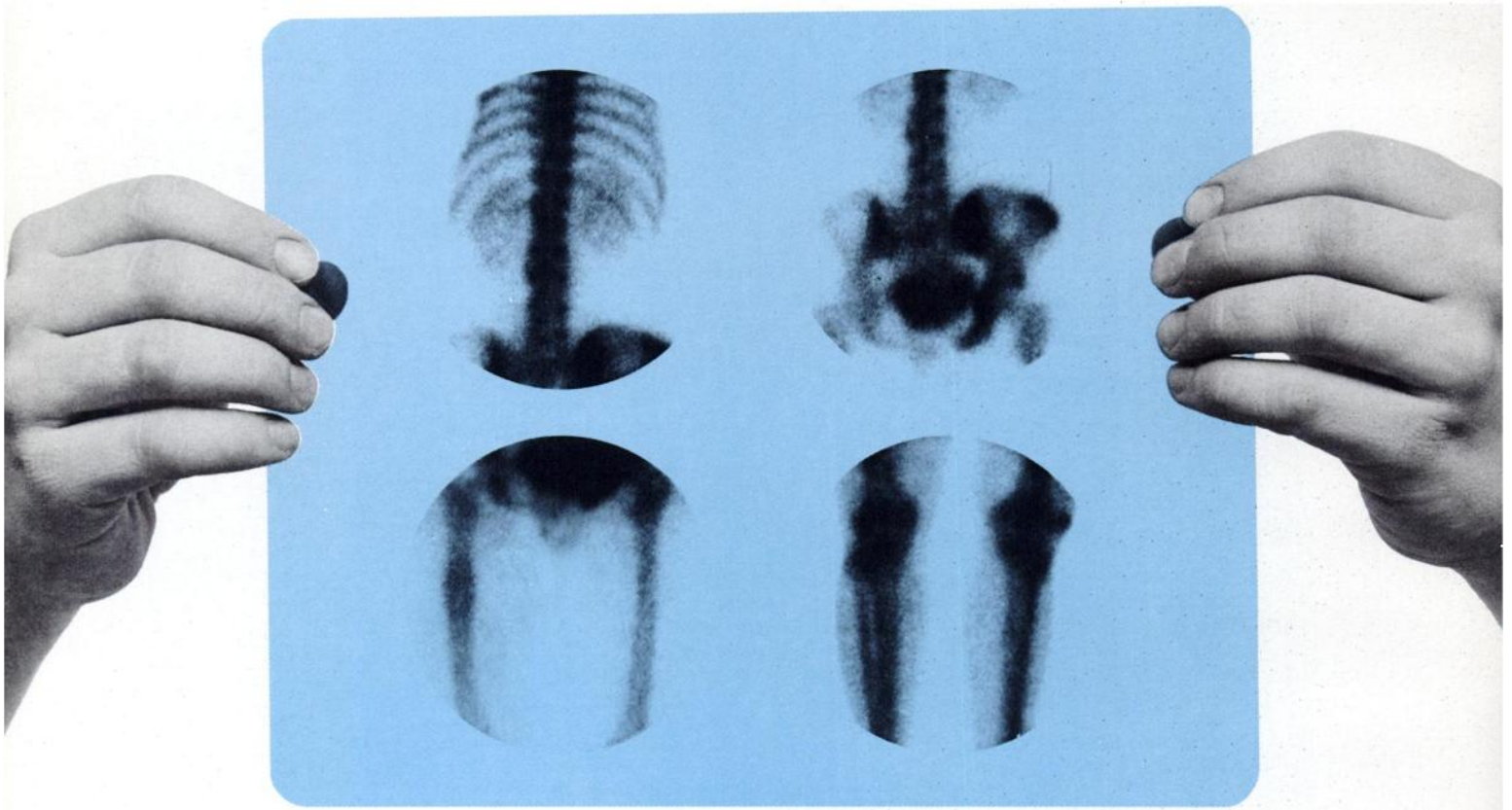
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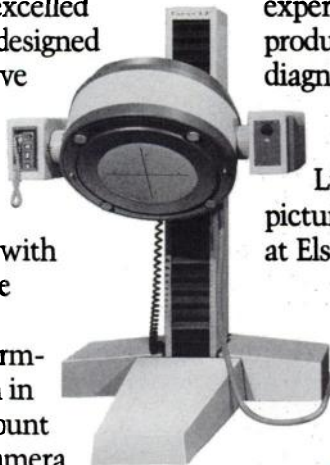


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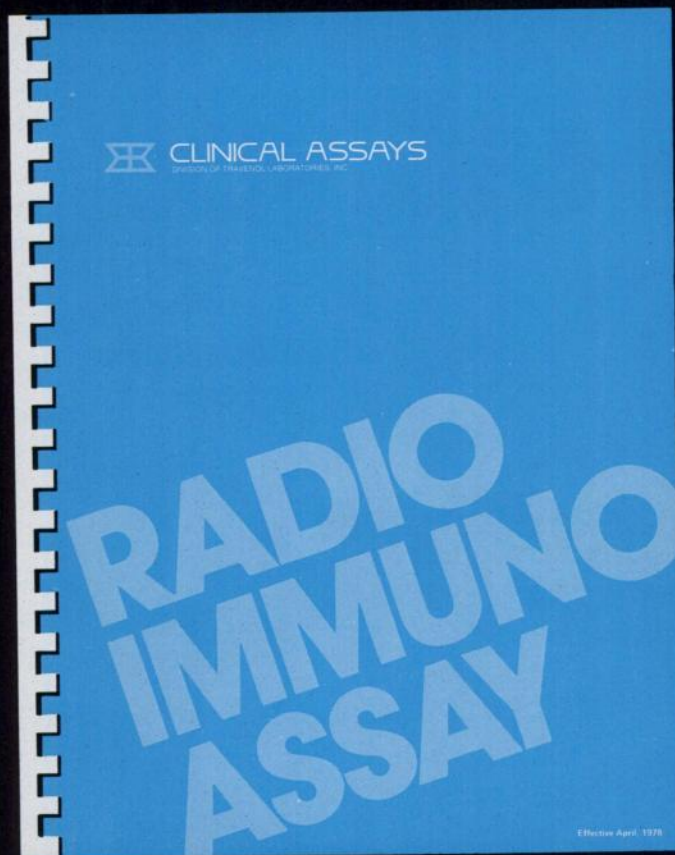


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Technetium Tc 99m Human Serum Albumin Reagent Kit

Five sterile multidose reaction vials each containing 21 mg human serum albumin and 0.23 mg stannous tartrate, lyophilized. Hydrochloric acid was added prior to lyophilization for pH adjustment.

REAGENT KIT FOR CARDIAC BLOOD POOL IMAGING

Maximum vial activity 100 mCi/3 ml

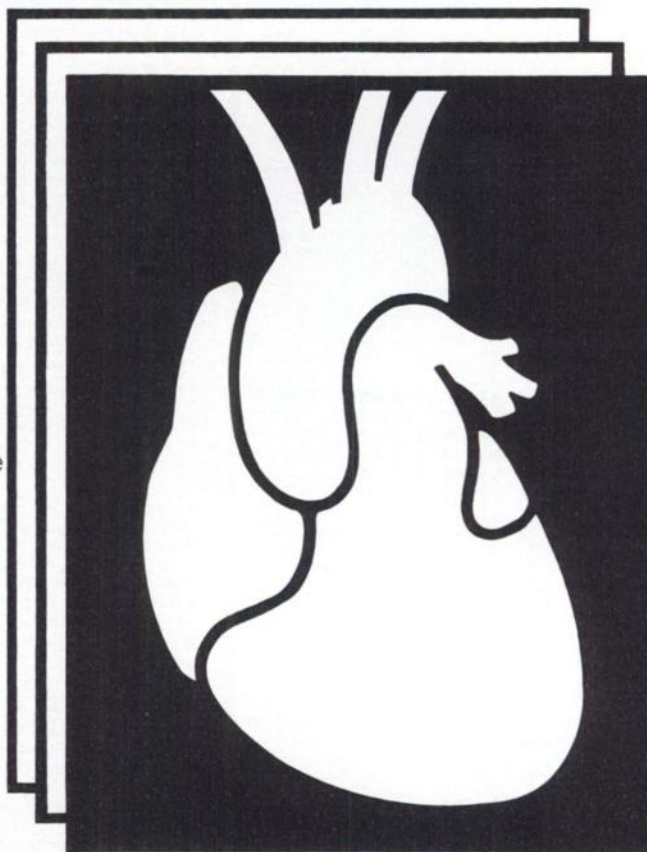
Easy to prepare (see directions): Just add sterile preservative-free water, Technetium 99m pertechnetate, then shake. Requires no electrolytic equipment or time-consuming procedures.

High blood concentrations: Approximately 60% remains in the circulation after 2 hours, approximately 45% after 4 hours (in normal patients).

Consistently high binding efficiency: Technetium binding range of 90-99% immediately after tagging.

Stable formulation: Uses stannous tartrate, which is more stable to air oxidation than stannous chloride.

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TECHNETIUM 99m

HSA Multi-dose Kit

TECHNETIUM Tc 99m

HUMAN SERUM ALBUMIN

MULTIDOSE REAGENT KIT

DIAGNOSTIC— FOR INTRAVENOUS USE

description

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. All components are sterile and pyrogen-free. When a solution of sterile and pyrogen-free Sodium Pertechnetate Tc 99m in isotonic saline is mixed with these components, following the instructions provided with the kit, Technetium Tc 99m Human Serum Albumin is formed, with a labeling efficiency of 90% or greater. The product so derived has a pH of 2.5-3 and is intended for intravenous injection. The precise structure of Technetium Tc 99m Human Serum Albumin is not known at this time. The Normal Human Serum Albumin used in this preparation was nonreactive when tested for hepatitis B surface antigen (HB_sAg) by radioimmunoassay.

physical characteristics

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.03 hours⁽¹⁾. Photons that are useful for detection and imaging studies are listed in Table I.

table I. principal radiation emission data

radiation	mean % / disintegration	mean energy (keV)
Gamma-2	87.9	140.5

⁽¹⁾Dillman, L.T. and Von der Lage, F.C., Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimation. MIRD Pamphlet No. 10, p. 62, 1975.

external radiation

The specific gamma ray constant for Technetium Tc 99m is 0.8 R/millicurie-hour at 1 cm. The first half-value thickness of lead (Pb) for Technetium Tc 99m is 0.2 mm. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from interposition of various thicknesses of Pb is shown in Table II. For example, the use of 2.7 mm of Pb will decrease the external radiation exposure by a factor of 1,000.

table II. 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

To correct for physical decay of this radionuclide, the fractions that remain at selected intervals relative to the time of calibration are shown in Table III.

table III. physical decay chart: Tc 99m, half-life 6.03 hours

hours	fraction remaining	hours	fraction remaining
0*	1.000	7	.447
1	.891	8	.399
2	.795	9	.355
3	.708	10	.317
4	.631	11	.282
5	.563	12	.252
6	.502		

* Calibration Time. (Time of Preparation)

clinical pharmacology

Normal Human Serum Albumin, being a normal component of blood, leaves the vascular space at a rate slow enough to permit imaging procedures utilizing radioactive tags. Technetium Tc 99m Human Serum Albumin does not rapidly leak from the vascular space, nor is there significant accumulation in organs other than those of excretion, the kidney and bladder. Therefore, the vascular system may be imaged with a mini-

mum of background and organ interference. In humans, a two-component blood clearance rate is observed. The T 1/2 slow component ranging from 10 to 16 hours. Twenty-four hour urine clearance averaged 39%.

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 child-bearing 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.

dosage and administration

The suggested intravenous dose used in the average patient (70 kg) is 3-5 millicuries of Technetium Tc 99m Human Serum Albumin.

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

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

radiation dosimetry

The estimated absorbed radiation doses⁽²⁾ to an average patient (70 kg) from an intravenous injection of a maximum dose of 5 millicuries of Technetium Tc 99m Human Serum Albumin are shown in Table IV.

table IV. estimated absorbed dose

tissue	absorbed radiation dose (rads / 5 mCi)
Brain	0.047
Marrow	0.076
Kidneys	0.063
Bladder	0.166
Ovaries	0.082
Testes	0.079
Total Body	0.073

⁽²⁾Method of Calculation: A Schema for Absorbed-Dose Calculations for Biologically Distributed Radionuclides. Supplement No. 1, MIRD Pamphlet No. 1, J. Nucl. Med., p. 7, 1968.

how supplied

kit contents

5 STERILE MULTIDOSE REACTION VIALS (10 cc, silver aluminum overseal), each containing 21 mg human serum albumin and 0.23 mg stannous tartrate, lyophilized. Hydrochloric acid was added prior to lyophilization for pH adjustment.

1 RADIATION SHIELD for preparation and storage of a Technetium Tc 99m Human Serum Albumin preparation.

10 PRESSURE-SENSITIVE LABELS for final Technetium Tc 99m Human Serum Albumin preparation.

1 PACKAGE INSERT.

storage

Store kit contents in refrigerator (2-8°C). Do not freeze.

disposal

The residual materials may be discarded in ordinary trash provided the vials and syringes read background with an appropriate low range survey meter. It is suggested that all identifying labels be destroyed before discarding.

directions

The following directions must be carefully followed for optimum preparation of the Technetium Tc 99m Human Serum Albumin.

1. Aseptically swab rubber septum of sterile vial containing the sterile, lyophilized human serum albumin.
2. Aseptically inject 1.0 ml of Sterile Water for injection; withdraw an equal volume of air.
3. Mix contents by swirling.
4. Place vial in radiation shield provided.
5. Aseptically swab rubber septum of shielded vial.
6. Aseptically inject up to 100 millicuries Sodium Pertechnetate Tc 99m in a maximum of 3 ml into the vial; withdraw an equal volume of air.
7. Mix contents of vial by gentle shaking for 10 seconds.
8. Affix pressure-sensitive label to shielded vial.
9. Allow to stand for 20 minutes after mixing to allow maximum tagging.
10. THE TECHNETIUM 99m HSA is ready for use.
11. Mix contents of vial (step 7) prior to withdrawing patient dose.
12. Mix contents of syringe by repeated inversion immediately prior to injection.
13. Maintain adequate shielding of the radioactive preparation.
14. Do not use the preparation after 3 hours from the time of formulation.

The radioactivity concentration of the final Technetium Tc 99m Human Serum Albumin preparation may be calculated by using the following formula:

$C = A/V$ where C equals radioactivity concentration of the preparation (millicuries/ml).

$A = Tc\ 99m$ activity added to the reaction mixture vessel (millicuries).

$V =$ Total volume in the final mixture (ml).

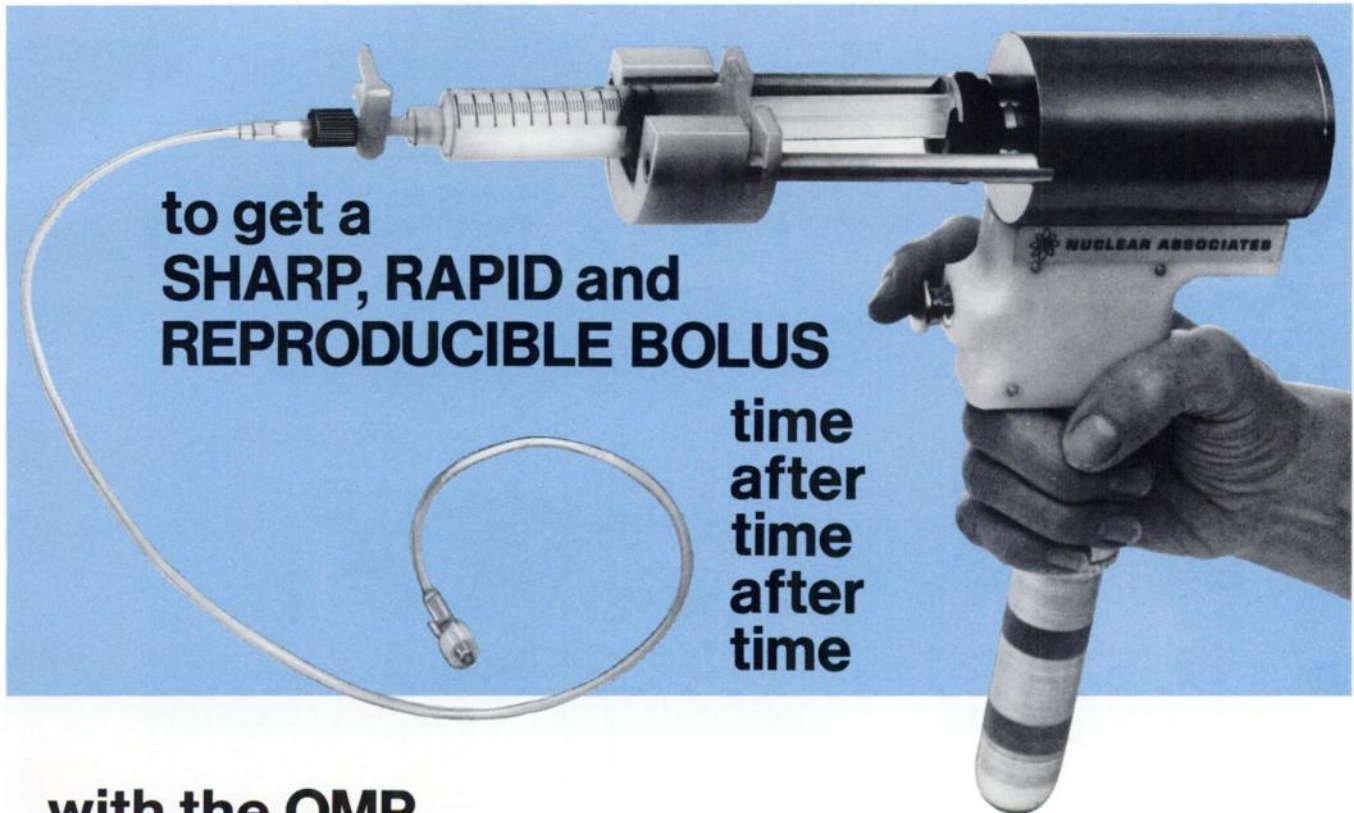
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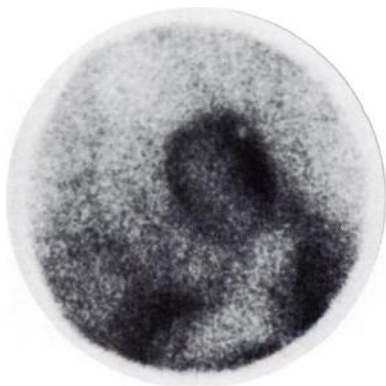
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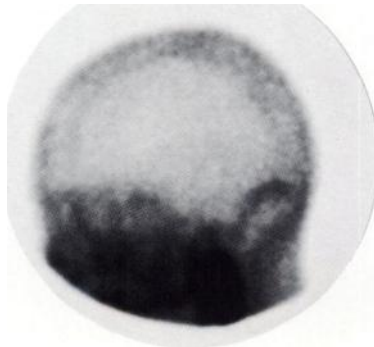
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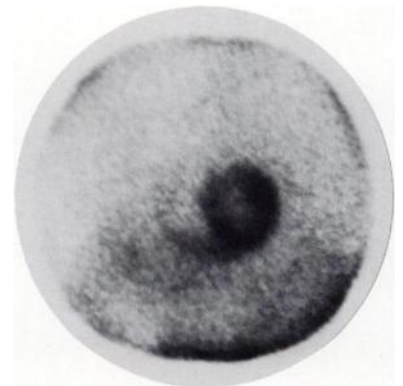
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Adult heart LAO view ²⁰¹Thallium

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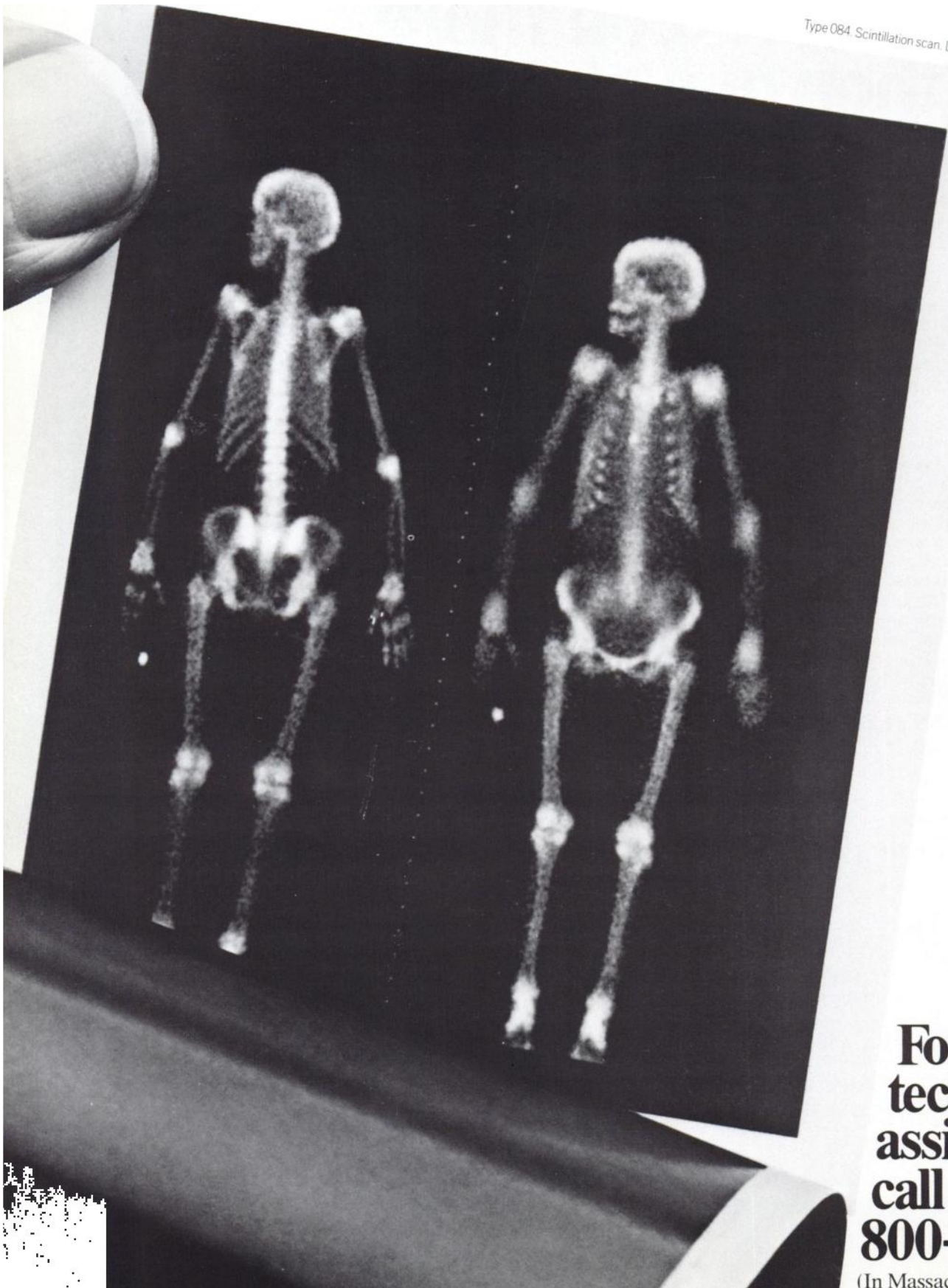
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The UNION CARBIDE Large Field Gamma Camera: **The Critical Difference in Diagnostic Power.**

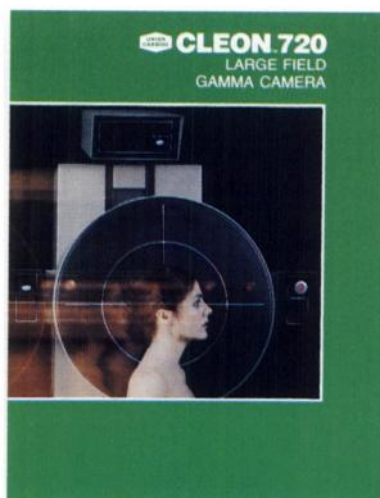


The CLEON 720 Large Field Gamma Camera is a high resolution imaging system designed for exacting, contemporary clinical nuclear medicine.

It can be installed as a stand-alone camera or connected to the CLEON 110 Image Processor as an integrated imaging and data processing system.

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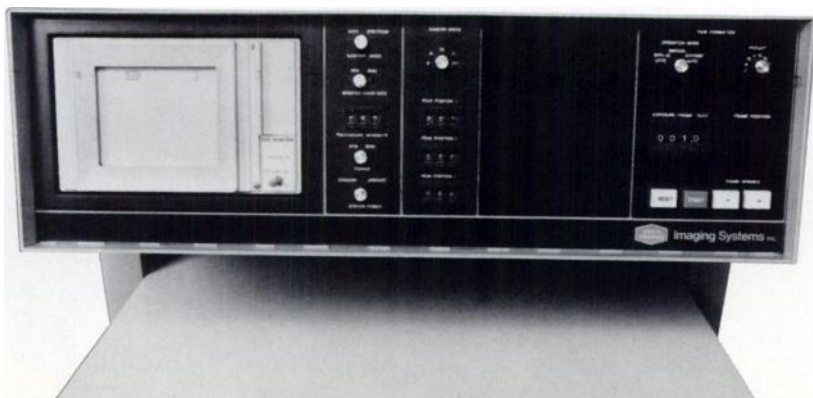
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*Davis, A and Jones, A.G., Seminars in Nuclear Medicine, Vol. 6, No. 1 (Jan. 1976)

**Subramanian, G. et al., Journal of Nuclear Medicine, Vol. 16, No. 8 (Aug. 1975)

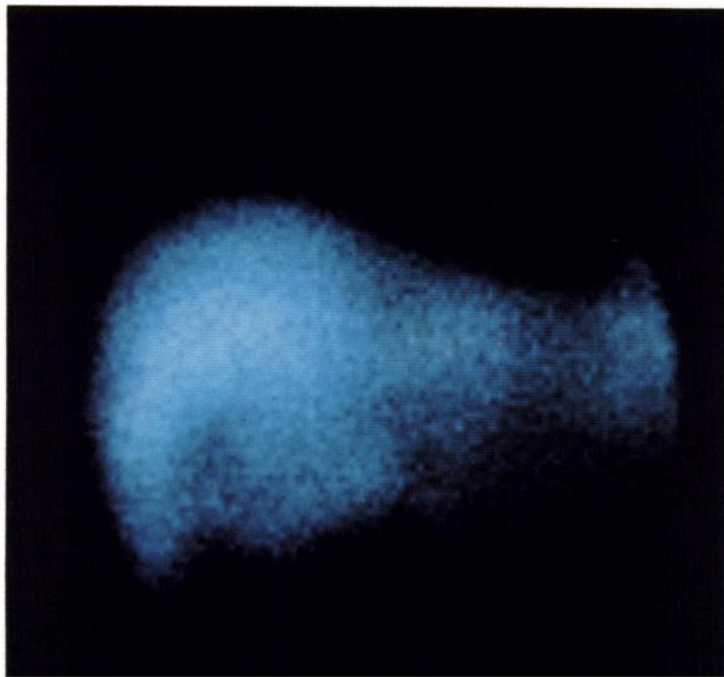


**New England Nuclear
Radiopharmaceutical Division**

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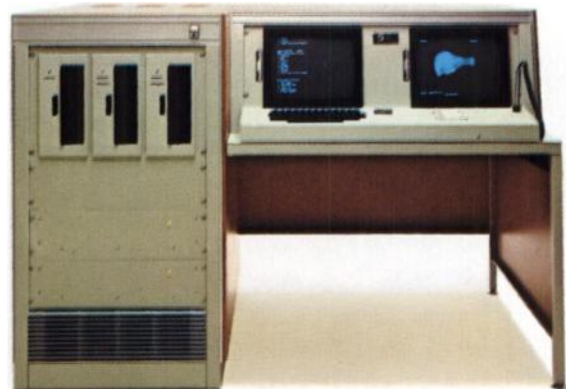
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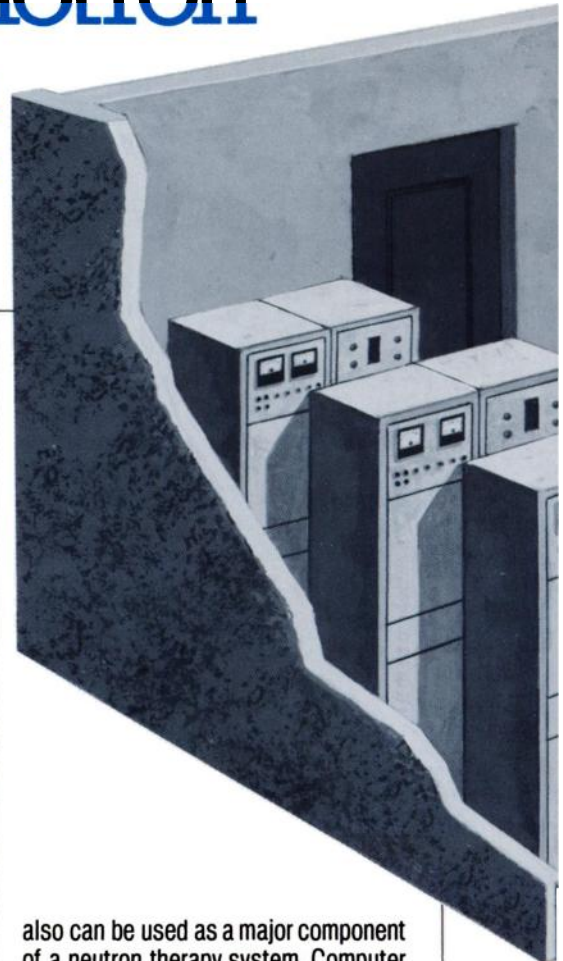
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Complete directions for use are provided with each product.
These directions should be read and understood before use. Particular attention
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The Clinical Cyclotron™

A new dimension in nuclear medicine



Designed by The Cyclotron Corporation specifically for installation in a hospital's nuclear medical department, the Model CP-16 Clinical Cyclotron™ produces the short-lived, positron emitting ^{15}O , ^{13}N , ^{11}C and ^{18}F plus other medically useful isotopes. Multicurie quantities of the positron emitters are produced, making possible labelling of organic compounds in addition to on-line applications.

Among the many new innovative design features incorporated in the Clinical Cyclotron™ is the ability to extract the beam from the machine at more than one location. Furthermore, two radioisotopes can be made simultaneously. It is now possible to make full use of the beam at multiple target locations without the requirement for an external beam transport system.

As the name suggests, the Clinical Cyclotron™ is remarkably easy to operate. In a few weeks a senior hospital technician can be trained in all phases of its use. Production of radioisotopes with the Model CP-16 can be simplified further by selection of the computer control option. In this configuration, start up, operation and shut down of the Clinical Cyclotron™ are handled automatically after the operator has entered the required data.

Another potentially valuable option is complete self-shielding. This can

be of particular advantage when it is necessary to make use of existing facilities because of budgetary or other constraints on new construction. As the artist's illustration reveals, this feature permits locating the controls and the Model CP-16 Cyclotron in the same room under "controlled area" conditions.

The standard Clinical Cyclotron™ produces the desired radioisotopes utilizing selected (p,n), (p,xn), and (p,α) reactions shown in the accompanying table. Should a user prefer to employ some or all of the listed (d,n) or (d,α) reactions, this capability is available as an option. Likewise, the ability to vary the energy of the particles accelerated by the Model CP-16 Cyclotron is an optional feature. The energy range applicable to protons is 4-16 MeV; for deuterons, 3-8 MeV.

Drawing on the extensive experience gained in building over 20 cyclotron systems and the advice and counsel of users of these systems, The Cyclotron Corporation also has developed the Model CP-30 Cyclotron. This machine is designed for those users who want to have the ability to produce the full range of medically useful isotopes in the hospital. With the Model CP-30, virtually all of the longer half-life isotopes can be produced in commercial quantities. This cyclotron

also can be used as a major component of a neutron therapy system. Computer control and variable energy are standard features of the Model CP-30 Cyclotron. Like the Clinical Cyclotron™ this machine produces protons but the energy range is 8-30 MeV; for optional deuterons, 4-15 MeV.

The Cyclotron Corporation also can provide target and beam transport systems plus complete laboratories including hot cells. Experienced personnel are available to assist the users' architects and engineers in designing a new or remodeled facility.

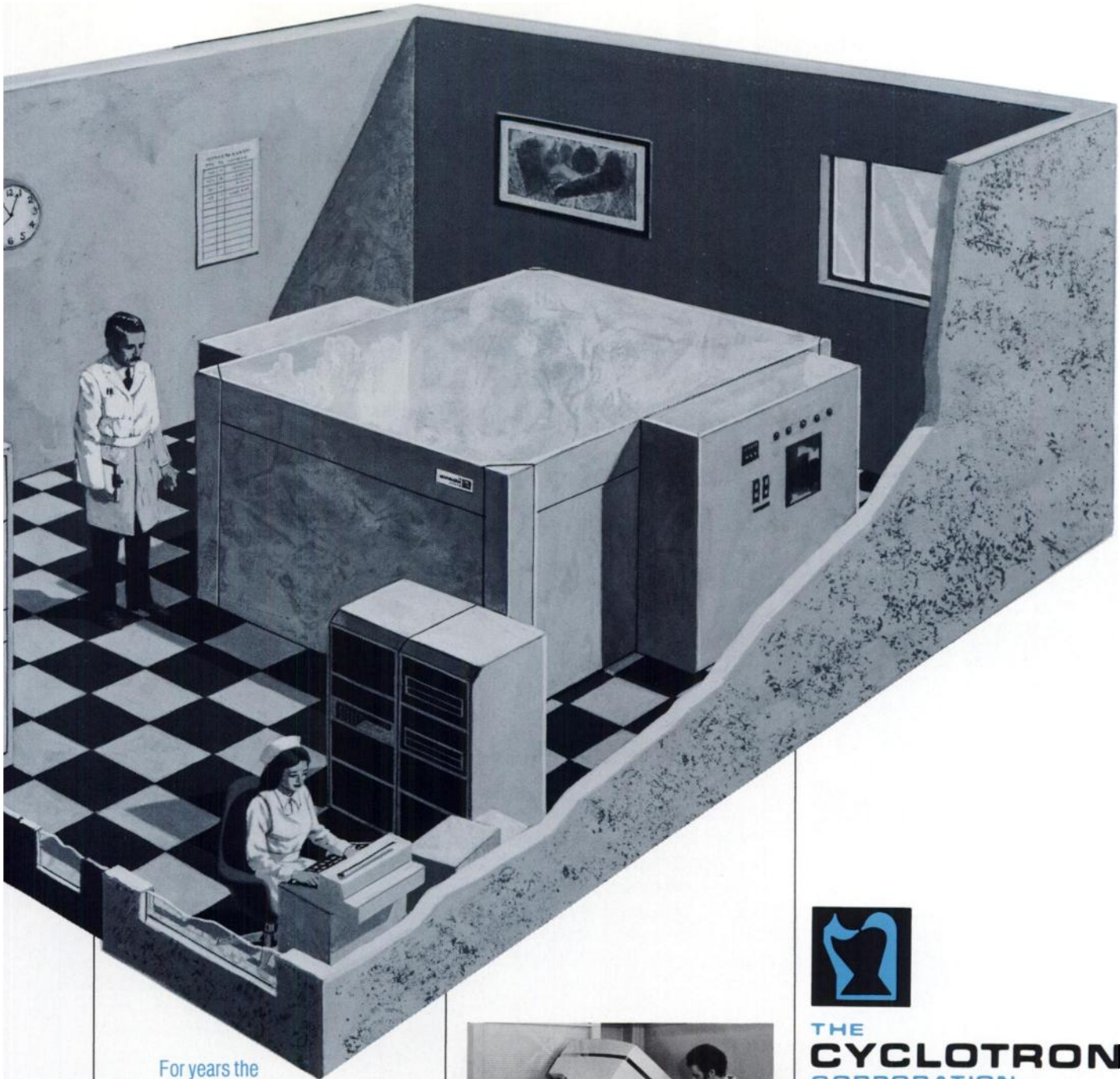
PRODUCTION OF ISOTOPES IN CURRENT USE*

Isotope	^{11}C	^{13}N	^{15}O	^{18}F	$^{81}\text{Kr} \leftarrow ^{81}\text{Rb}$	^{123}I	^{67}Ga	^{111}In	^{68}Ge	$^{201}\text{Tl} \leftarrow ^{201}\text{Pb}$
Reaction										
CP-16**	$^{14}\text{N}(p,\alpha)$	$^{16}\text{O}(p,\alpha)$ $^{12}\text{C}(d,n)$	$^{15}\text{N}(p,n)$ $^{14}\text{N}(d,n)$	$^{18}\text{O}(p,n)$ $^{20}\text{Ne}(d,\alpha)$		$^{123}\text{Te}(p,n)$	$\text{Zn}(p,xn)$ $^{66}\text{Zn}(d,n)$	$\text{Cd}(p,xn)$ $^{111}\text{Cd}(p,n)$		
CP-30**	$^{14}\text{N}(p,\alpha)$	$^{16}\text{O}(p,\alpha)$ $^{12}\text{C}(d,n)$	$^{15}\text{N}(p,n)$ $^{14}\text{N}(d,n)$ $^{16}\text{O}(p,pn)$	$^{18}\text{O}(p,n)$ $^{20}\text{Ne}(d,\alpha)$	$^{82}\text{Kr}(p,2n)$	$^{123}\text{Te}(p,n)$ $^{124}\text{Te}(p,2n)$	$\text{Zn}(p,xn)$ $^{66}\text{Zn}(d,n)$ $^{68}\text{Zn}(p,2n)$	$\text{Cd}(p,xn)$ $^{111}\text{Cd}(p,n)$ $^{112}\text{Cd}(p,2n)$	$^{69}\text{Ga}(p,2n)$	$^{203}\text{Tl}(p,3n)$

NOTE: *Where current use data indicates reaction is possible only with Model CP-30 or significantly higher yields are obtained using CP-30, the reaction is printed in blue.

**Acceleration of deuterons is available as an option.

\square Denotes enriched isotope.



For years the Profession has been considering the potential value of the short-lived positron emitting nuclides in the diagnostic process, particularly ^{15}O , ^{13}N and ^{11}C . Until recently, the interest had to be relatively academic in the absence of effective positron imaging devices. With the development of The Cyclotron Corporation's versatile Model 4200 Positron Camera System (pictured) and EG&G Ortec's Ecat™ this void has been filled. Since the early sixties compact cyclotrons have been used to produce the short-lived radioisotopes in medical research centers. However, in the opinion of some, such machines are considered too complicated or for other



reasons somewhat less than ideal for installation in the typical nuclear medical department. The advent of the Clinical Cyclotron™ removes the last obstacle blocking full exploitation of this exciting new field.



**THE
CYCLOTRON
CORPORATION**

950 Gilman St.
Berkeley, California 94710, U.S.A.
Cable "Cyclotron Berkeley"
Tel. (415) 524-8670, Telex 910-366-716

Please send me more information on:

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- Model CP-30 Cyclotron
- Model 4200 Positron Camera System
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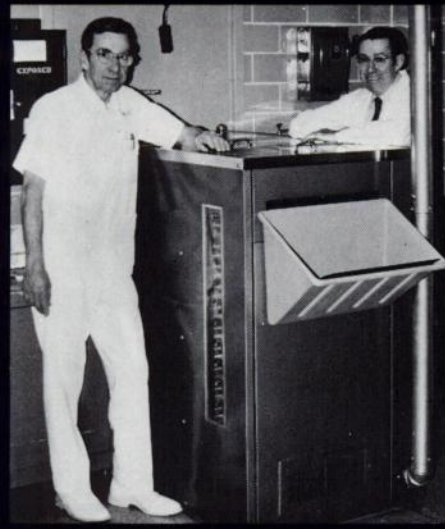
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THE UP-TIME

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For more about this example of cost effectiveness and information on new developments in Up-time Processors from Kodak, read on.



Dr. Willard Smullen, right, and John LaFond, RT(R), FASRT, with the KODAK X-OMAT Processor, Model M3, which served St. Mary's Hospital in Decatur, Illinois, for 14 years with a total of 2 days out for service. It processed 1.3 million sheets of film and 61 miles of 70-mm and 16-mm film.

When you buy a processor, it may be years before you know the true cost. It all depends on how many hours of trouble-free service the processor gives you. That may be one reason KODAK *RP* X-OMAT Processors

are virtually unmatched in performance. When you're considering processors, you'll discover there's a dependable KODAK Up-time Processor to fit your needs.

90-second processing: You're familiar with the Model M6A-N, which provides consistent high-quality, 90-second processing. Now you can get the *same* dependability in a new 90-second processor that uses an *ambient water wash* (40-90°F). Called the Model M6AW, it occupies only 5 square feet of floor space and can save you money on initial plumbing and subsequent water-heating costs.

150-second processing: The Model M7A also provides for an ambient water wash (40 to 87°F). In addition, it features an automatic standby control to decrease wear and power consumption when the processor must be left on but no films are being processed. For an even greater saving, you can order the KODAK *RP* X-OMAT Water

Saving Kit, Model M7. This accessory turns off the water flow *completely* when the processor is not in use.

For special procedure radiography: The Model SP Processor is specifically designed to meet the high-volume needs of the angiographer and neuroradiologist. You have a choice of 200-second or 150-second processing. The shorter cycle can be used with all KODAK X-OMAT Films. The longer cycle extends automatic processing to include such films as KODAK BLUE BRAND Film. Film throughput speed is comparable to that of any KODAK *RP* X-OMAT Processor.

If you've been using Kodak processors, you probably have a reliability example of your own. If you'd like to know more about Kodak processors, just ask your Kodak representative. Or contact your dealer in Kodak x-ray products. Either will be glad to show you why we call them the Up-time Processors.

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INTO IMAGES**



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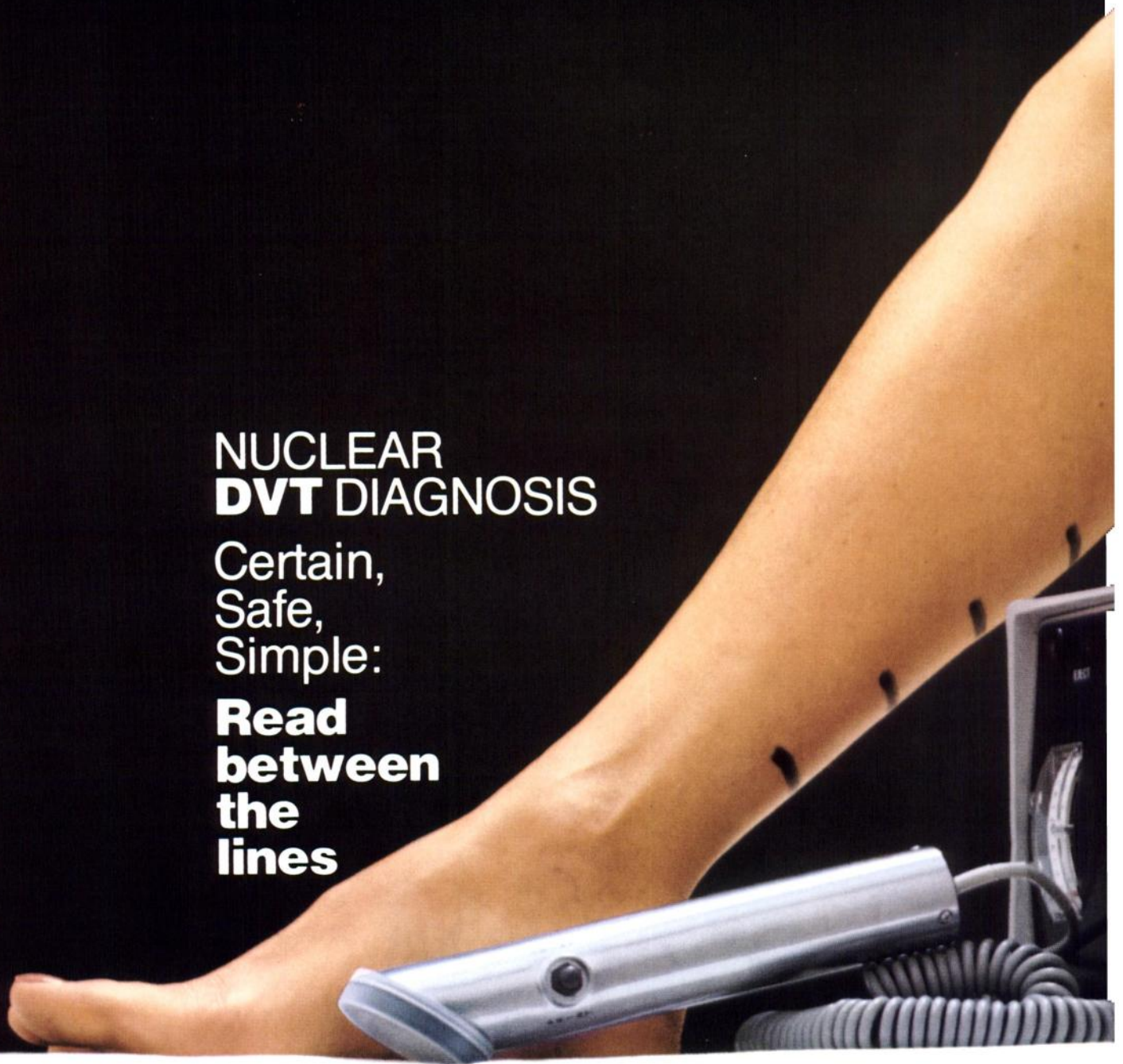
PROCESSORS.



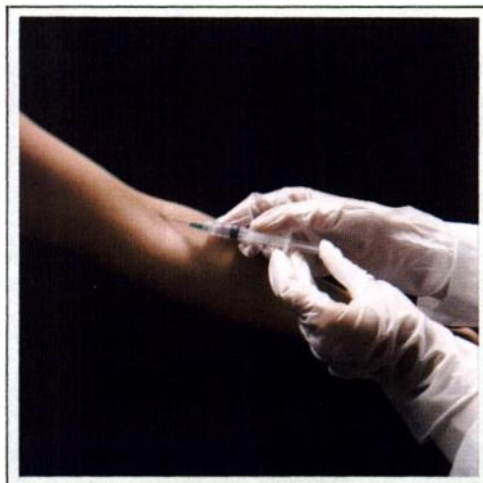
NUCLEAR DVT DIAGNOSIS

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Safe,
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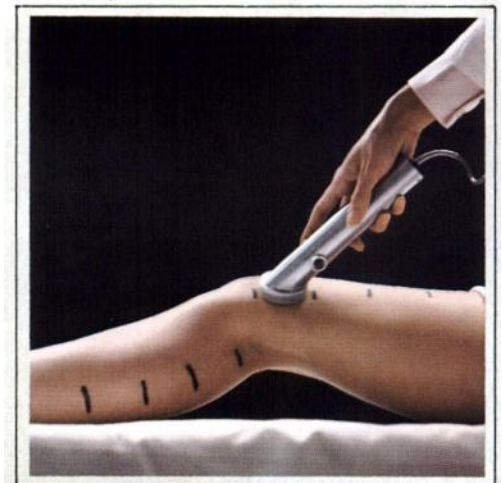
**Read
between
the
lines**



Inject



Inspect



The

IBRIN

IBRIN[®]
Radionuclide-Labeled
(¹²⁵I) Fibrinogen (Human)
IBRINATOR[™]
Portable Radioisotope Monitor

System

CERTAIN The diagnostic accuracy of IBRIN for the detection of deep-vein thrombosis (DVT) has been confirmed in over 100 studies which show a 92% correlation with venography. IBRIN actively participates in thrombus physiology; its consistent clottability insures bioactivity and allows accurate detection of both forming and established thrombi.

SAFE DVT monitoring with the IBRIN System can be performed on medical, surgical and orthopedic patients. There is no need to move the patient to a special procedure area. The IBRIN System of DVT detection reduces the need to subject the patient to radiopaque venography.

SIMPLE IBRIN has a long *in-vivo* half-life, permitting monitoring for up to seven days without additional injections. Serial monitoring allows constant updating of the patient's status. IBRIN emits low energy radiation enabling the use of a lightweight isotope monitor such as the IBRINATOR for rapid testing of a large number of patients. Monitoring can begin within three hours after injection and results can be confirmed within twenty-four hours.

INJECT IBRIN, a Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human), is supplied freeze-dried for convenient storage and extended stability. It is reconstituted immediately prior to injection. The patient is intravenously injected with 100 μ Ci of IBRIN prior to testing.

INSPECT Initial monitoring can be performed three hours after the IBRIN injection. The IBRINATOR is specifically designed and built for detecting DVT. Sophisticated electronic design assures reliable accumulation of statistically valid data and eliminates most operator error. The IBRINATOR has a continuous stage design that requires all the correct data in the correct order before giving results. A digital data display and built-in printout insure ease and accuracy of data collection. Push button controls on the detector probe are provided for quick, accurate testing. The probe design includes an angled detector head to facilitate positioning for maximum operator convenience and patient comfort. The IBRINATOR is powered by rechargeable Ni-Cd batteries. A source is provided for calibration convenience and the complete unit weighs less than eight pounds.

DETECT The IBRIN System includes a patient data sheet which provides a convenient display of printout tape and graphical representation of data for the physician's interpretation and diagnosis.

We will be glad to help you explain the benefits of the IBRIN System to your surgical staff. Write or phone Amersham for complete details.

See following page for brief summary of package insert.

Detect



Amersham

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The

IBRIN System

IBRIN[®]
Radionuclide-Labeled
(¹²⁵I) Fibrinogen (Human)
IBRINTOR[™]
Portable Radioisotope Monitor

INDICATIONS

IBRIN is indicated for use in prospective studies for the early detection and subsequent monitoring of developing deep-vein thrombosis and in diagnostic studies for the detection of established thrombosis in the legs.

- A. The IBRIN (Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human)) test is indicated in patients with signs and/or symptoms suggestive of deep-vein thrombosis with or without associated pulmonary embolism or in patients with pulmonary embolism, with or without evidence of peripheral deep-vein thrombosis. In patients with established, old or "inactive" thrombi, the test will be positive only if radionuclide-labeled fibrin deposition occurs in a sufficient quantity to allow detection. Its use is not contraindicated in patients on anticoagulants.
- B. The IBRIN (Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human)) test is indicated for the detection of thrombus formation in patients undergoing major orthopedic or other surgical procedures, myocardial infarction, pulmonary disease, malignant disease and other medical conditions known to predispose to thromboembolism.

CONTRAINDICATIONS

There are no known contraindications to the use of IBRIN. However, it should be noted that the iodides given to block the uptake of ¹²⁵I by the thyroid gland are contraindicated in patients with a known sensitivity to the iodides.

WARNINGS

This radiopharmaceutical should not be administered to patients under 18 years of age, to patients who are pregnant, or to patients who are lactating, unless the information to be gained outweighs the potential risk.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of child bearing capability should be performed during the first few (approximately 10) days following the onset of menses. Nursing mothers should substitute formula feeding after the administration of Fibrinogen ¹²⁵I.

Extraordinary precautions have been taken in the preparation of IBRIN (Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human)) to eliminate the possible transmission of hepatitis. Nevertheless, the remote risk of hepatitis associated with the administration of Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human) cannot be entirely eliminated. The finding of viral hepatitis in any patient up to six months after the administration of IBRIN should be reported to Amersham for further evaluation, since there are numerous possible sources of hepatitis infection.

PRECAUTIONS

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.

This drug contains radioactive materials which must be handled only by qualified personnel in conformity with Nuclear Regulatory Commission, agreement state, or other appropriate government regulations. Care must be taken to avoid excessive exposure to its radiation. Shielding or equivalent radiation protective measures must be used.

This product is prepared from units of human plasma which have been tested using RIA methods and found non-reactive for Hepatitis B surface antigen. Approved detection methods are not sensitive enough to detect all infectious units of blood or all possible cases of hepatitis. However, IBRIN has been prepared from single donor plasma and has been injected into recipients without incidence of fibrinogen related Hepatitis B as evidenced by periodic physical examination and laboratory testing (liver profile, CBC, and Hepatitis B surface antigen and antibody by radioimmunoassay) of the recipients.

There are a number of clinical circumstances requiring consideration in the interpretation of the test results. (See complete Package Insert.)

Fibrinogen ¹²⁵I scanning should preferably be performed prior to venography if both procedures are contemplated, since venography may cause increases in count rate making interpretation of post-venography monitoring data difficult.

Adequate reproduction studies on animals have not been performed to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Radionuclide-Labeled (¹²⁵I) Fibrinogen (Human) should be used in pregnant women only when clearly needed.

ADVERSE REACTIONS

There has been no reported incidence of allergic or anaphylactic reactions following the intravenous administration of IBRIN.



Amersham

AMERSHAM CORPORATION:
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CITROTEIN provides over 50% of the RDA for protein and all known essential vitamins and minerals in three servings.

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CITROTEIN is available in 12 oz cans and 1.18 oz individual serving packets.

NUTRITION INFORMATION

3 Servings (3.53 oz Powder in 18 fl oz Water)

protein	23 g	biotin	0.36 mg
carbohydrate	70 g	pantothenic acid	12.0 mg
fat	1 g	calcium	0.6 g
Calories	380	phosphorus	0.6 g
		iodine	90 mcg
vitamin A	3000 IU	iron	21.6 mg
vitamin D	240 IU	magnesium	240 mg
vitamin E	18 IU	copper	1.2 mg
vitamin C	135 mg	zinc	9.0 mg
folic acid	0.48 mg	choline	20 mg
thiamin	1.80 mg	potassium	0.4 g
riboflavin	2.04 mg	sodium	0.4 g
niacin	24 mg	chloride	0.54 g
vitamin B ₆	2.4 mg	manganese	3.0 mg
vitamin B ₁₂	7.2 mcg		

COMPOSITION: Sugar, pasteurized egg white solids, maltodextrin, calcium glycerophosphate, citric acid, natural and artificial flavors, mono and diglycerides, magnesium oxide, ammonium phosphate, vegetable oil, ascorbic acid, ferrous sulfate, choline bitartrate, artificial color, niacin, zinc sulfate, alpha tocopheryl acetate, calcium pantothenate, manganese sulfate, copper gluconate, pyridoxine hydrochloride, thiamin hydrochloride, vitamin A palmitate, riboflavin, folic acid, d-biotin, potassium iodide, cyanocobalamin, vitamin D₂.



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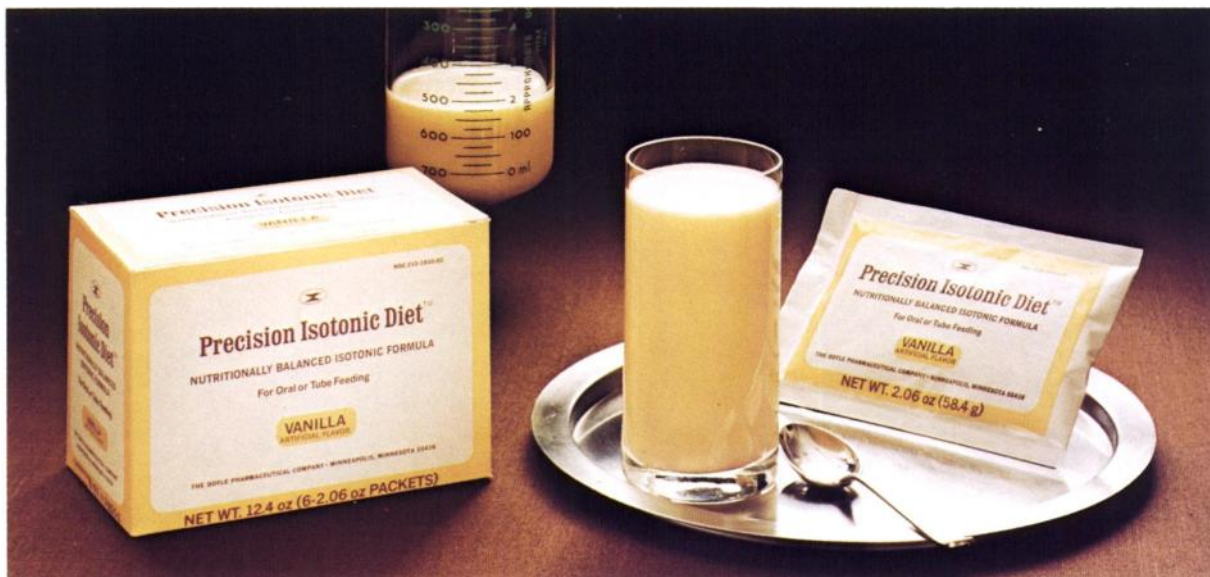
PRECISION ISOTONIC DIET is available in 2.06 oz individual serving packets in delicious VANILLA Flavor.

NUTRITION INFORMATION

6 Servings (12.36 oz Powder in 48 fl oz Water)

protein	45	g	biotin	0.30	mg
carbohydrate	225	g	pantothenic acid	10	mg
fat	47	g	calcium	1.0	g
Calories	1500		phosphorus	1.0	g
			iodine	150	mcg
vitamin A	5000	IU	iron	18	mg
vitamin D	400	IU	magnesium	400	mg
vitamin E	30	IU	copper	2.0	mg
vitamin C	90	mg	zinc	15	mg
folic acid	0.40	mg	vitamin K	100	mcg
thiamin	2.25	mg	choline	100	mg
riboflavin	2.6	mg	potassium	1.5	g
niacin	20	mg	sodium	1.2	g
vitamin B ₆	3.0	mg	chloride	1.6	g
vitamin B ₁₂	6.0	mcg	manganese	4.0	mg

COMPOSITION: Glucose oligosaccharides, pasteurized egg white solids, vegetable oil, sucrose, natural and artificial flavor, sodium caseinate, potassium phosphate, calcium phosphate, citric acid, xanthan gum, mono and diglycerides, magnesium oxide, choline bitartrate, carra-geenan, sodium iron pyrophosphate, ascorbic acid, zinc sulfate, artificial color, alpha tocopheryl acetate, niacin, copper gluconate, manganese sulfate, d-calcium pantothenate, vitamin A palmitate, pyridoxine hydrochloride, thiamin hydrochloride, riboflavin, folic acid, d-biotin, potassium iodide, phytanadione (vitamin K₁), vitamin D₂, cyanocobalamin.



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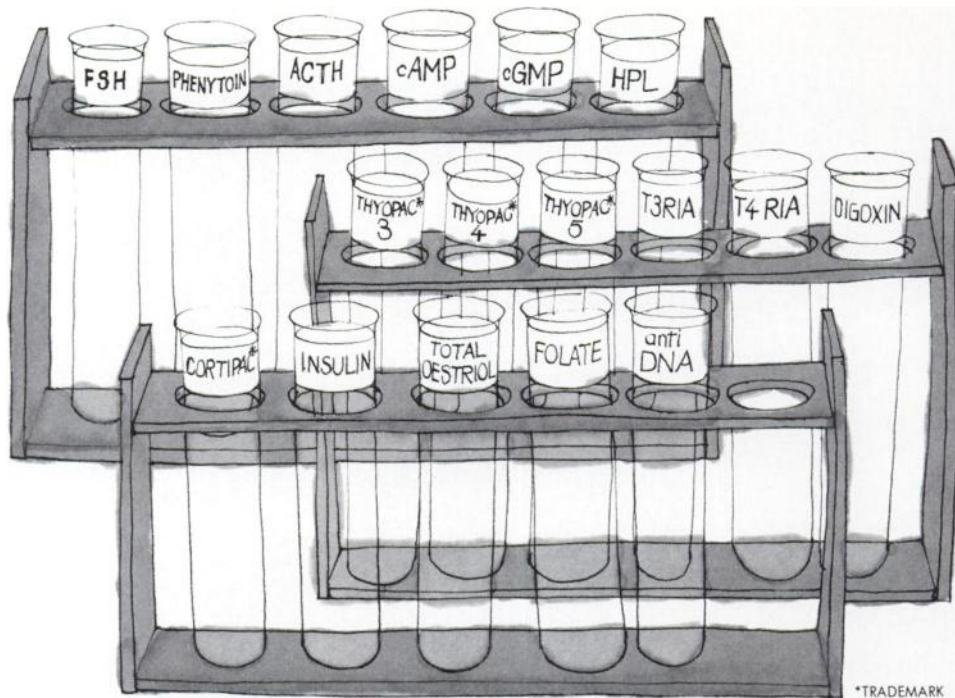
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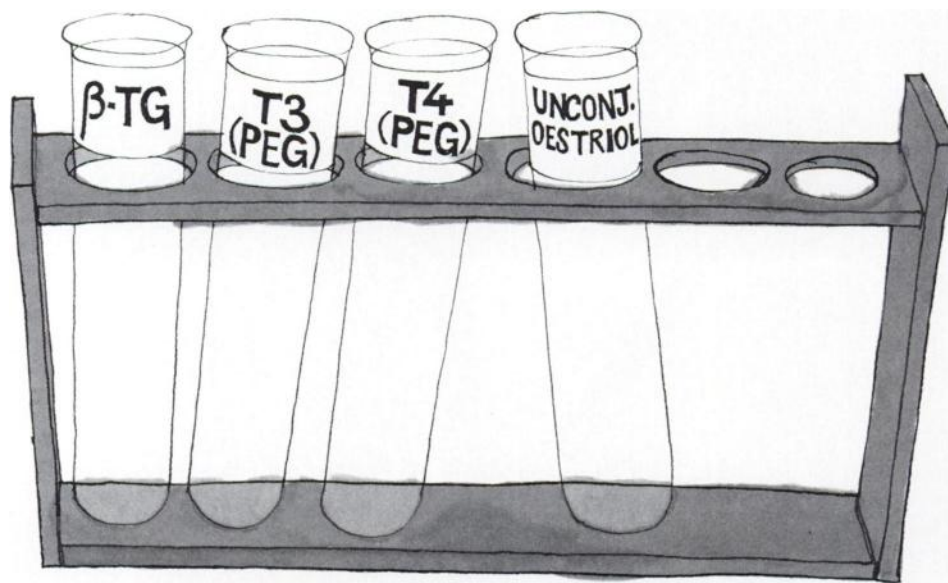
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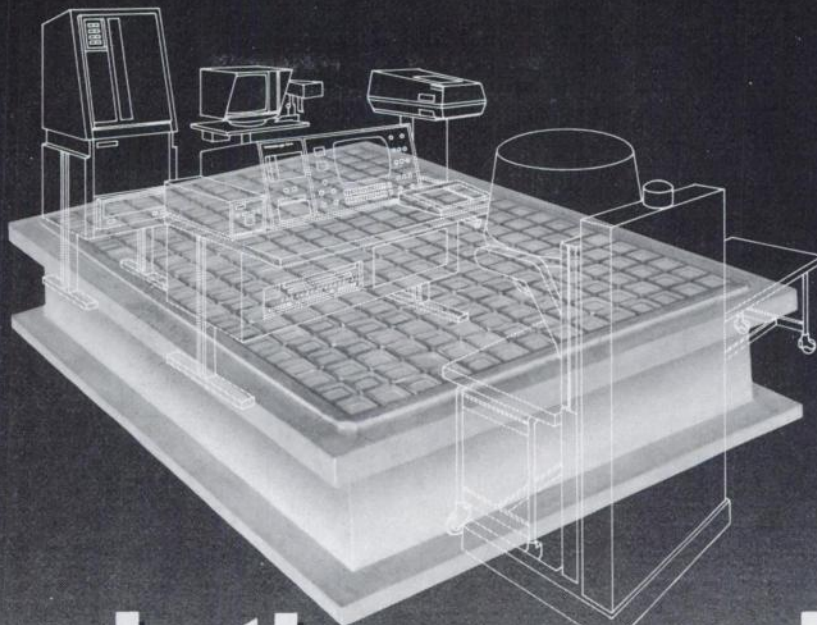
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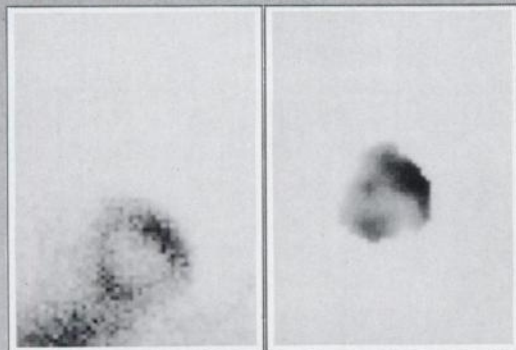
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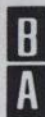
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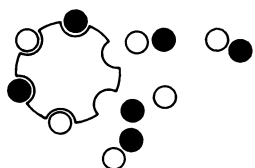
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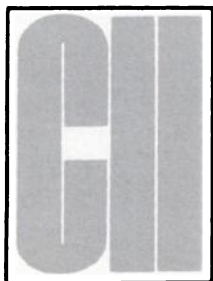


CRC-20

FEATURE	MODEL NUMBER								
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RADIATION EXPOSURE MONITOR			●	●			●	●	
AUTO-RANGING					●	●	●	●	●
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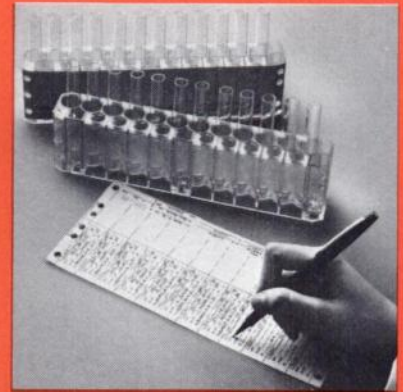
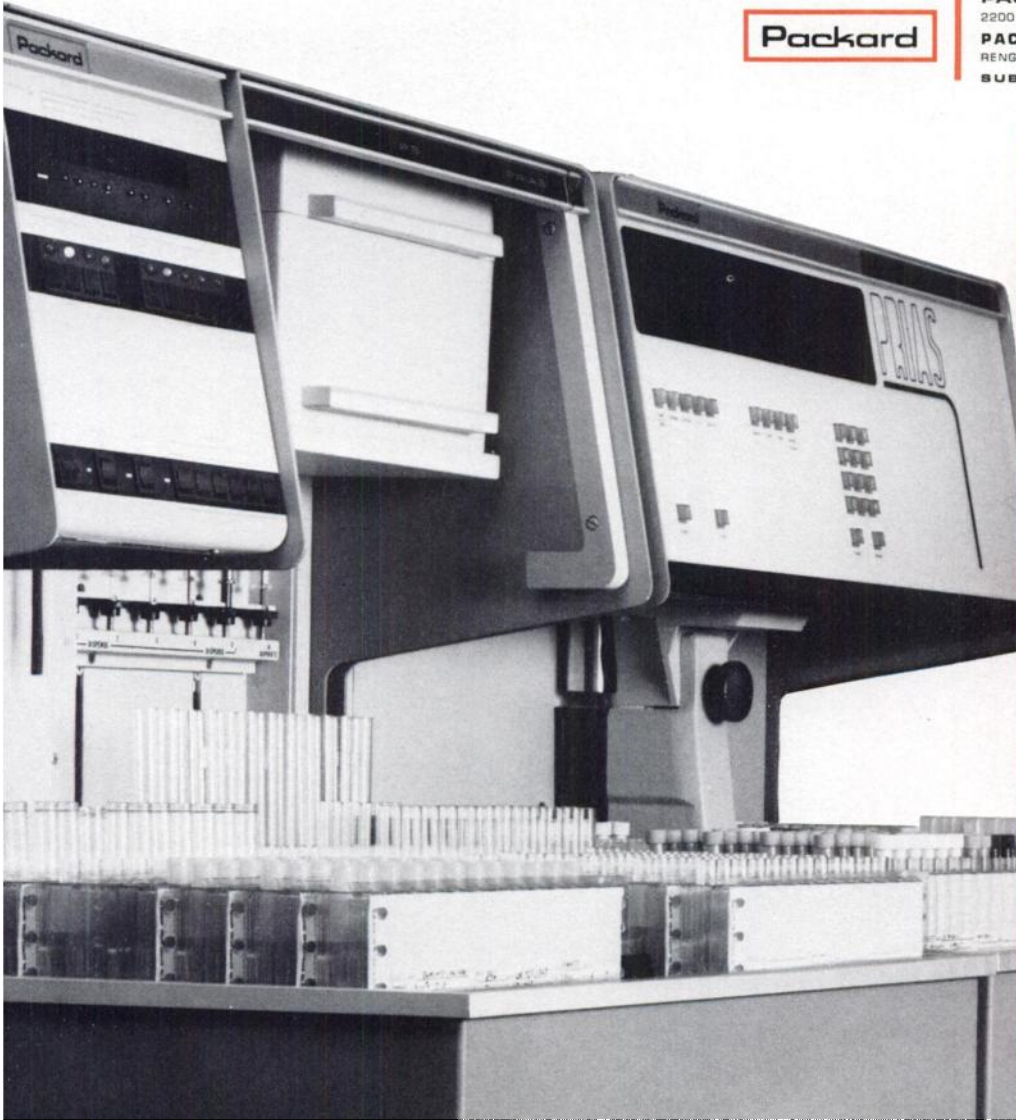
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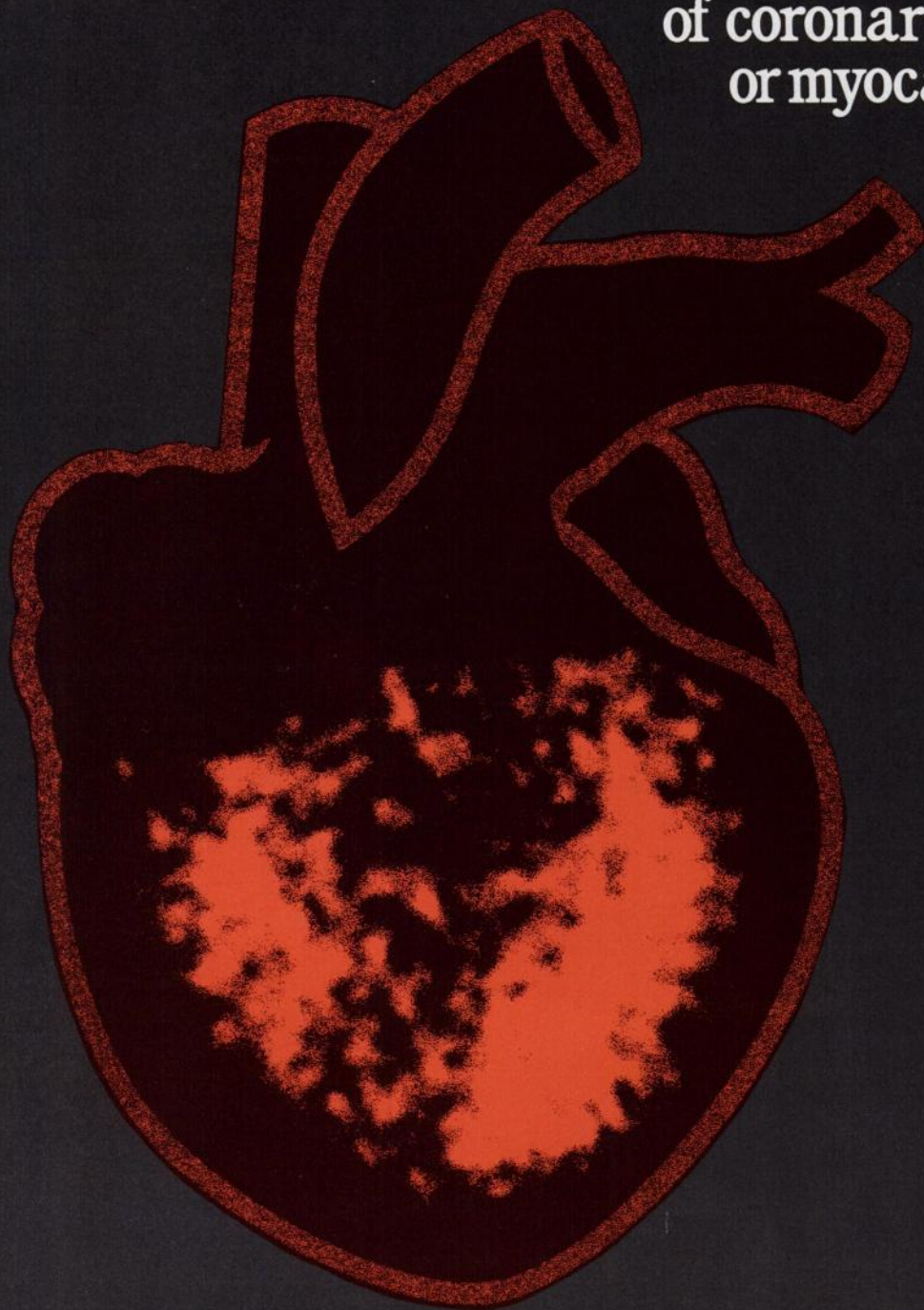


Assays Handled by Batch

Now available for routine use
in cardiovascular nuclear medicine:

Thallous Chloride Tl 201 For Myocardial Perfusion Imaging

A simple, fast and non-invasive procedure
used as an adjunct in the diagnosis
of coronary artery disease
or myocardial infarction.



Thallous Chloride Tl 201 For Diagnostic Use

November 1977

Indications and Usage: Thallous Chloride Tl 201 may be useful in myocardial perfusion imaging for the diagnosis and localization of myocardial infarction.

It may also be useful in conjunction with exercise stress testing as an adjunct in the diagnosis of ischemic heart disease (atherosclerotic coronary artery disease).

Contraindications: None known.

Warnings: In studying patients in whom myocardial infarction or ischemia is known or suspected, care should be taken to assure continuous clinical monitoring and treatment in accordance with safe, accepted procedure. Exercise stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

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

Precautions: Data are not available concerning the effect of marked alterations in blood glucose, insulin, or pH (such as is found in diabetes mellitus) on the quality of thallium Tl 201 scans. Attention is directed to the fact that thallium is a potassium analog, and since the transport of potassium is affected by these factors, the possibility exists that the thallium may likewise be affected.

Thallous Chloride Tl 201, as all radioactive materials, must be handled with care and used with appropriate safety measures 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. 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. Thallous Chloride Tl 201 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: Adverse reactions related to use of this agent have not been reported to date.

Dosage and Administration: The recommended adult (70kg) dose of Thallous Chloride Tl 201 is 1-1.5mCi. Thallous Chloride Tl 201 is intended for intravenous administration only.

For patients undergoing resting thallium studies, imaging is optimally begun within 10-20 minutes after injection. Several investigators have reported improved myocardial-to-background ratios when patients are injected in the fasting state, in an upright posture, or after briefly ambulating.

Best results with thallium imaging performed in conjunction with exercise stress testing appear to be obtained if the thallium is administered when the patient reaches maximum stress and when the stress is continued for 30 seconds to one minute after injection. Imaging should begin within ten minutes post-injection since target-to-background ratio is optimum by that time. Several investigators have reported significant decreases in the target-to-background ratios of lesions attributable to transient ischemia by two hours after the completion of stress testing.

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

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 government agencies authorized to license the use of radionuclides.

How Supplied: Thallous Chloride Tl 201 for intravenous administration is supplied as a sterile, non-pyrogenic solution containing at calibration time, 1mCi/ml of Thallous Tl 201, 9mg/ml sodium chloride, and 9mg/ml of benzyl alcohol. The pH is adjusted to between 4.5-6.5 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 1.5, 3.0, 4.5, 6.0, and 9.0 millicuries of Thallous Tl 201.

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

Catalog Number NRP-427



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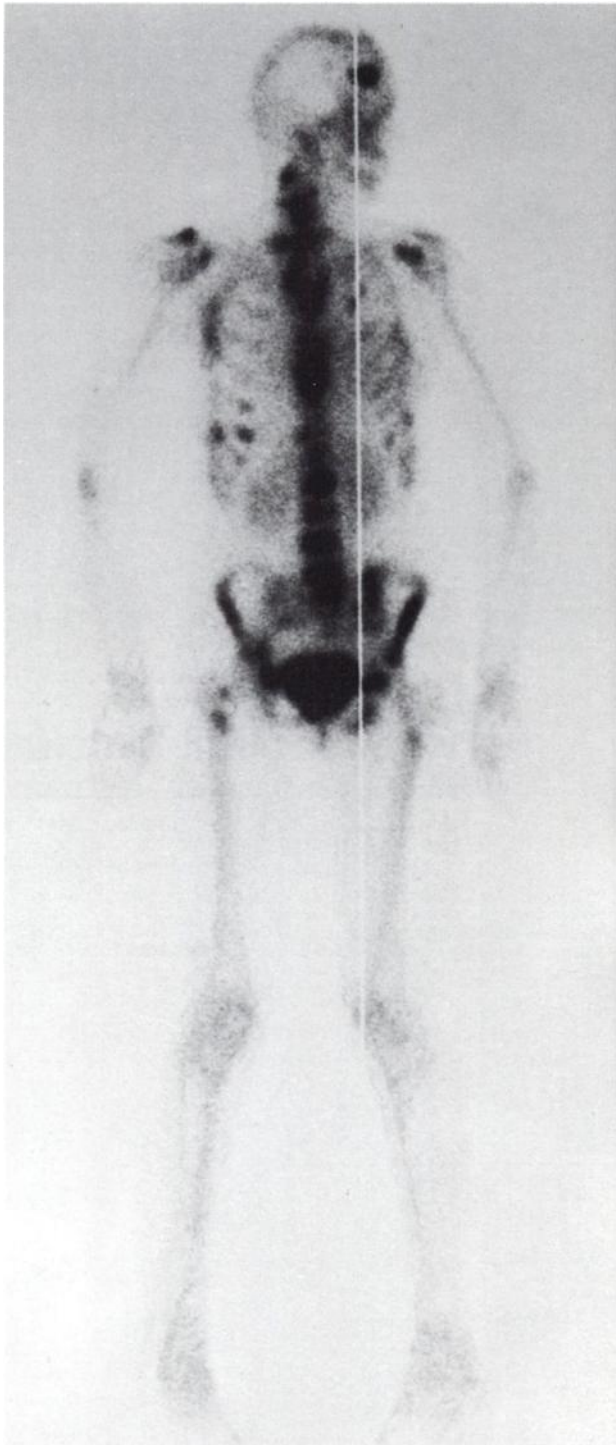
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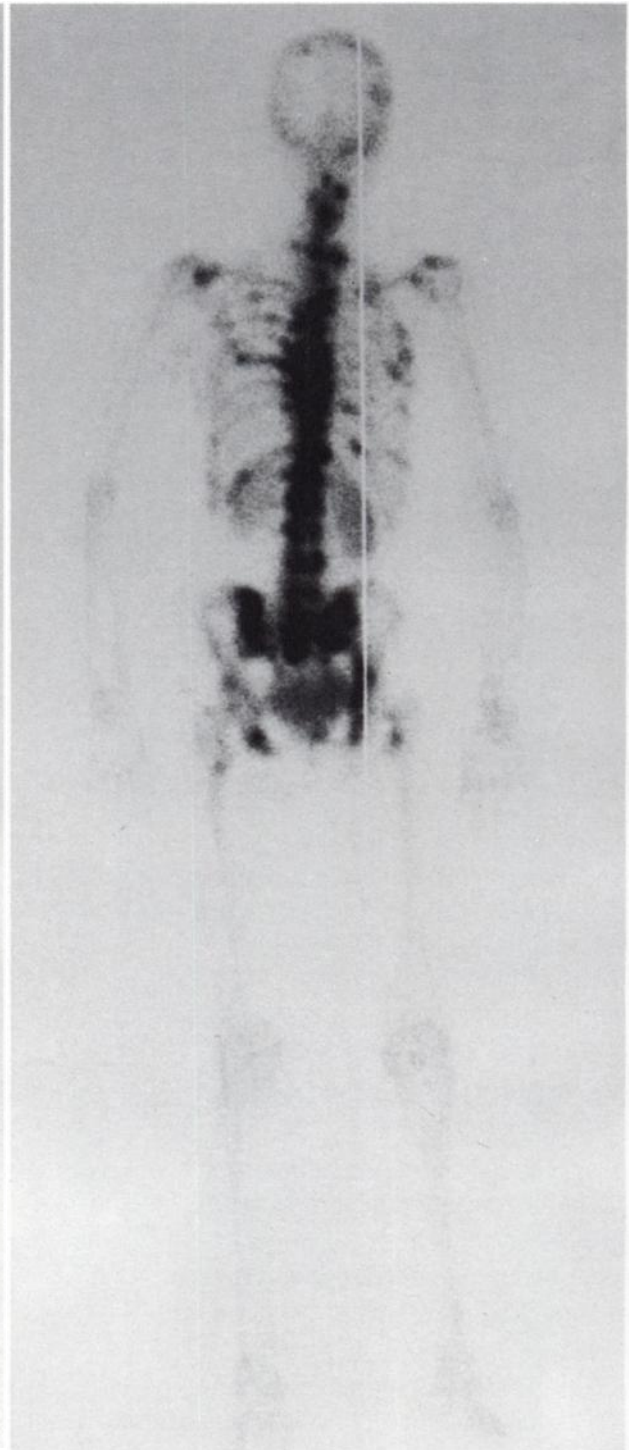
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SKELETAL IMAGING AGENT

Excellent in vitro stability

Greater than 98% labeling efficiency 8 hours after preparation. Osteoscan contains sodium ascorbate, an antioxidant that inhibits action of radiolysis by-products and oxidants capable of causing complex breakdown and resultant soft tissue visualization.

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Delivers consistently high-quality scans, using either instant or generator technetium.

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- very low tin level to minimize potential for liver visualization and for interference with subsequent brain scans
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- high target-to-nontarget ratio
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For further information about Osteoscan, please contact: Arnold Austin, Technical Manager, Professional Services Division, Procter & Gamble (513) 977-5547.

In Europe, contact: Philips-Duphar B.V., Cyclotron and Isotope Laboratories, Petten, Holland.

See following page for a brief summary of package insert.



PROCTER & GAMBLE

OSTEOSCAN[®]

(5.9MG DISODIUM ETIDRONATE, 0.16MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT



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

DESCRIPTION

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

ACTIONS (CLINICAL PHARMACOLOGY)

When injected intravenously, ^{99m}Tc-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 ^{99m}Tc-labeled OSTEOSCAN.

Three hours after intravenous injection of 1 ml ^{99m}Tc-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 ^{99m}Tc-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques.

INDICATIONS

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

CONTRAINDICATIONS

None.

WARNINGS

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

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

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

The ^{99m}Tc-generator should be tested routinely for molybdenum breakthrough and aluminum. If either is detected, the eluate should not be used.

PRECAUTIONS

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

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

ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

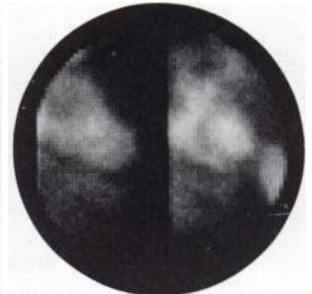
The recommended adult dose of ^{99m}Tc-labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. ^{99m}Tc-labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within eight (8) hours after its preparation. Optimum scanning time is 3-4 hours postinjection.

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

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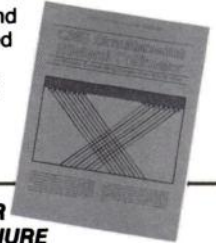


END SYSTOLE



END DIASTOLE

Simultaneous, dual, end systolic and end diastolic multiple gated images. Selected from a sequence of eleven intervals. Study courtesy of S.M. Spies, M.D. and J.L. Quinn III, M.D., Northwestern Memorial Hospital.



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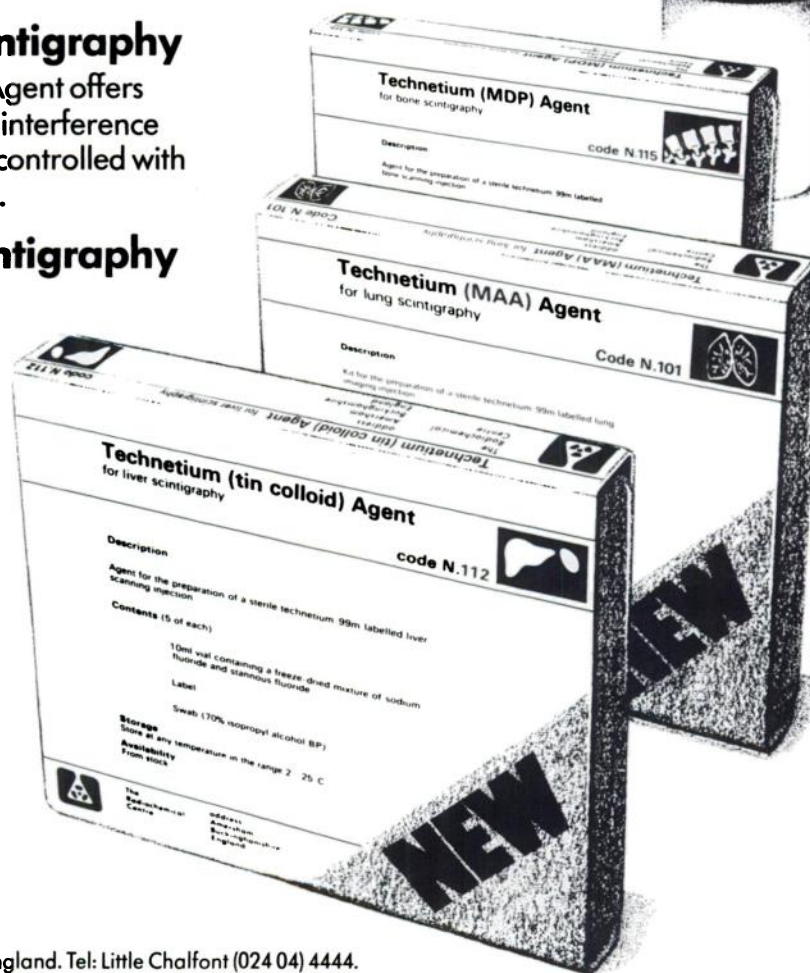
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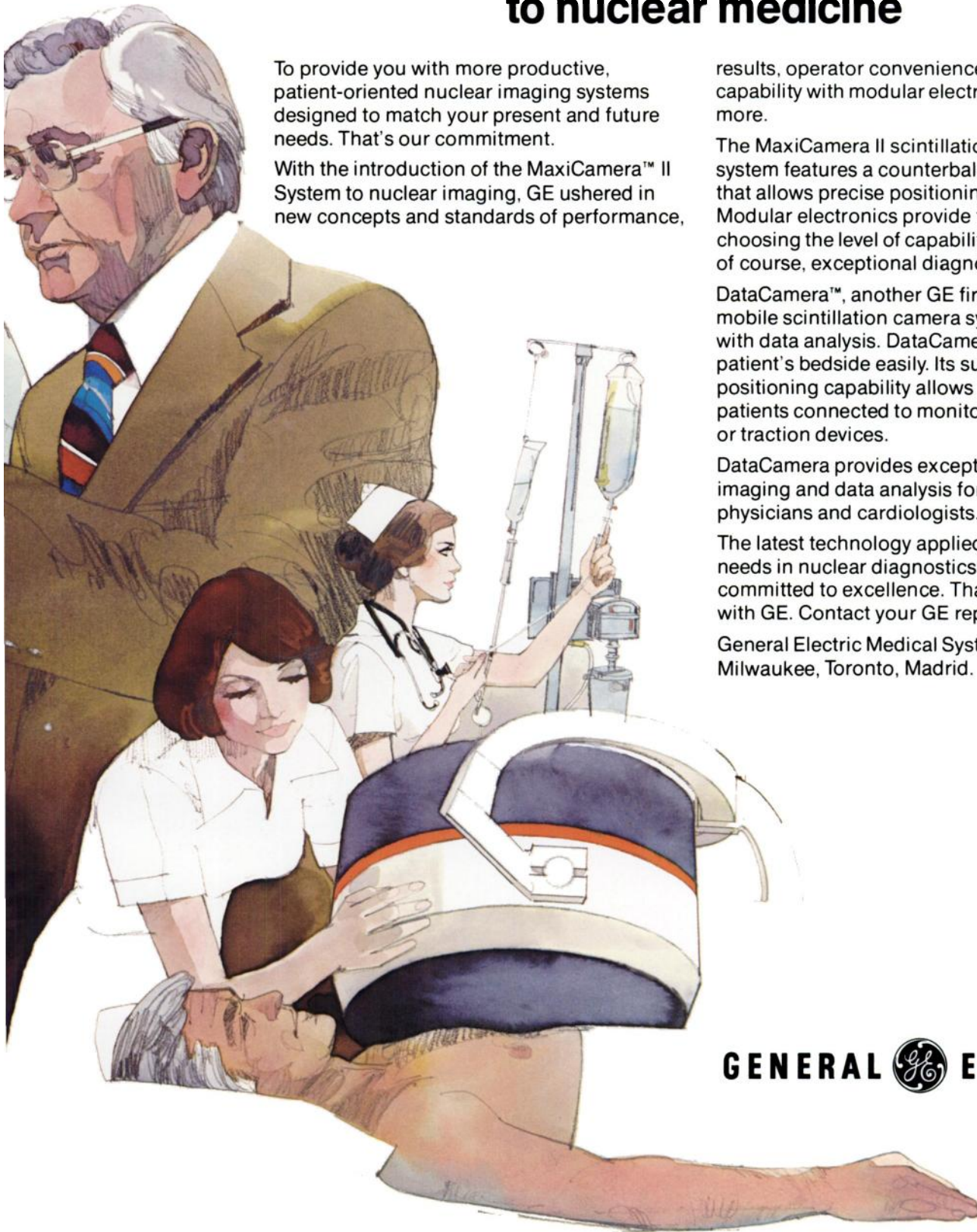
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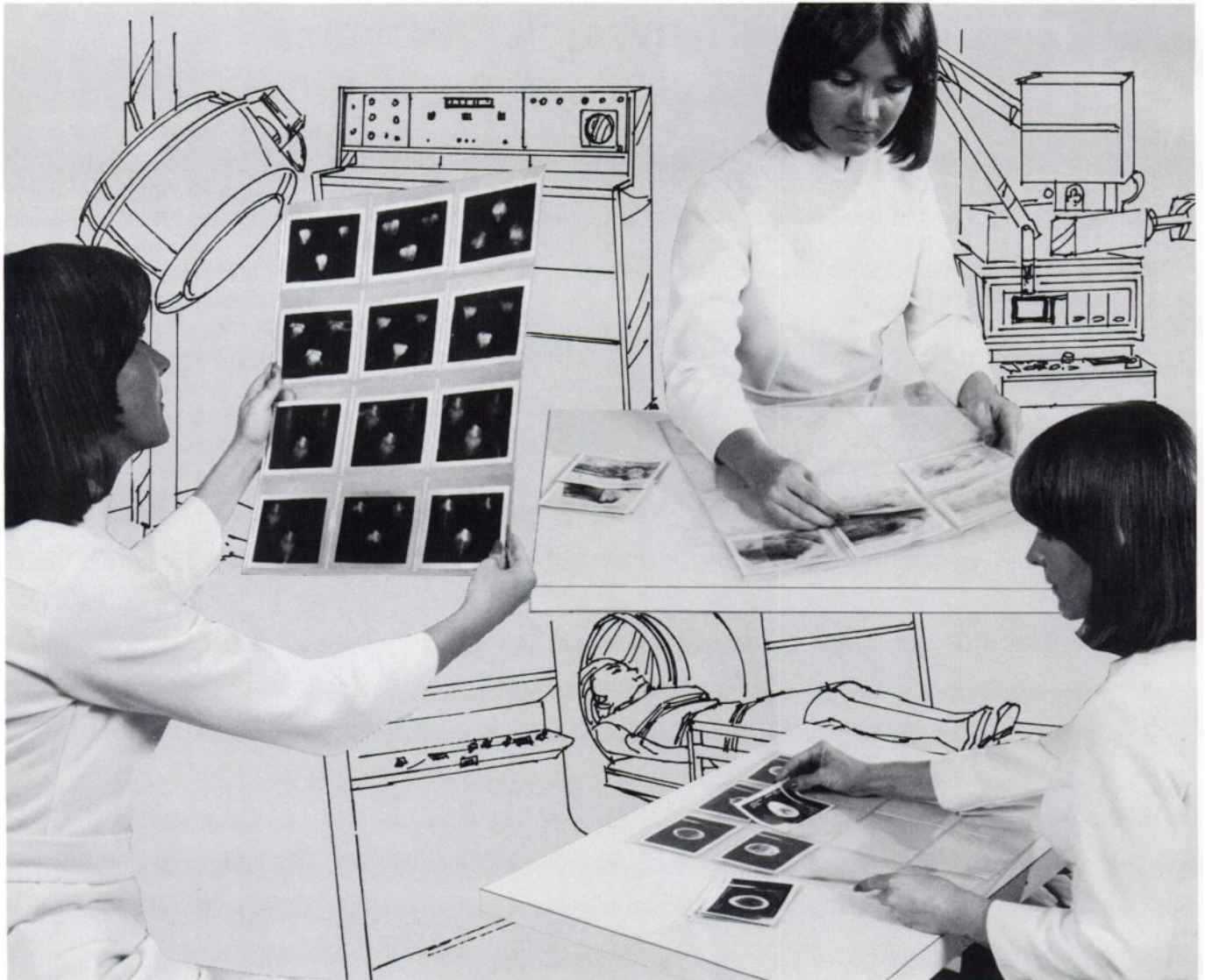
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*Walter D. Obrist, et al. STROKE,
Vol. 6, May-June, 1975, pp. 245-256.

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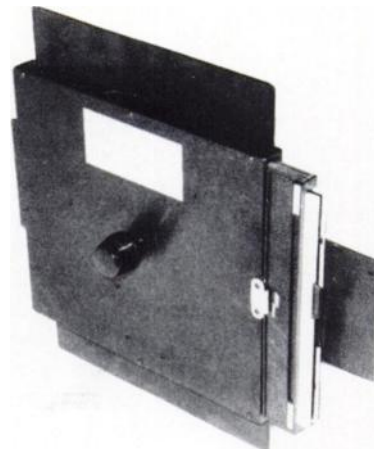
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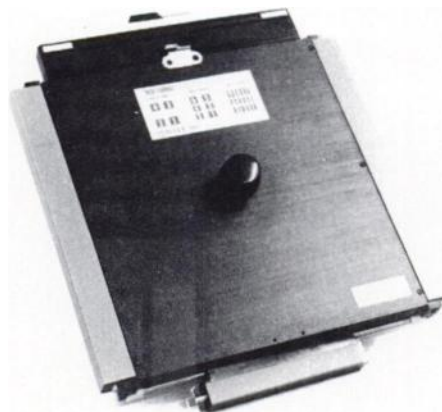
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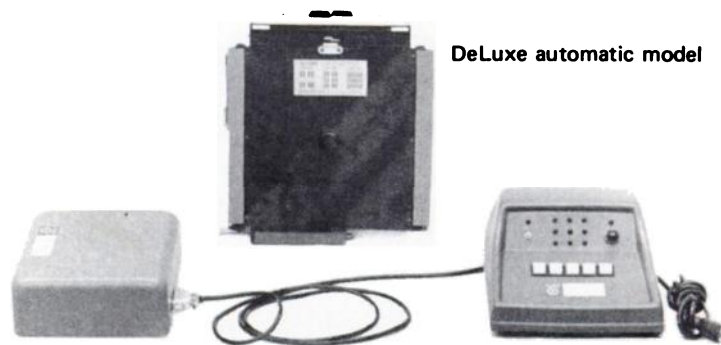
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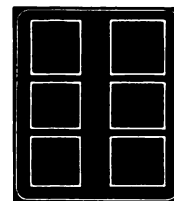


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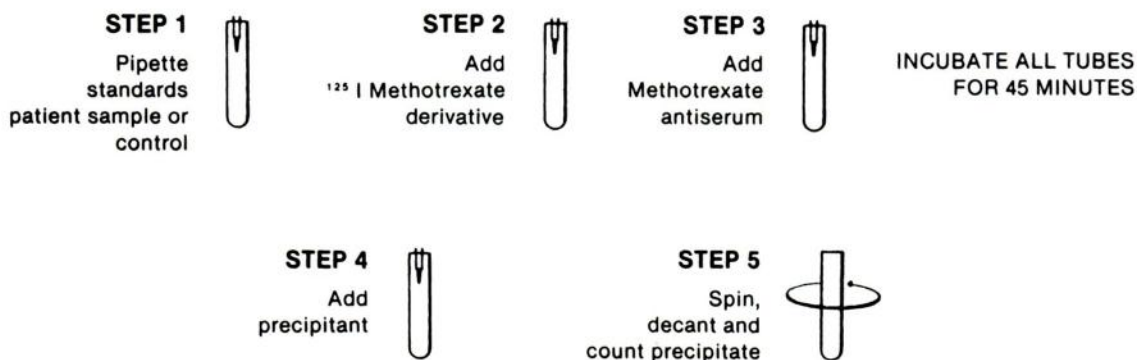
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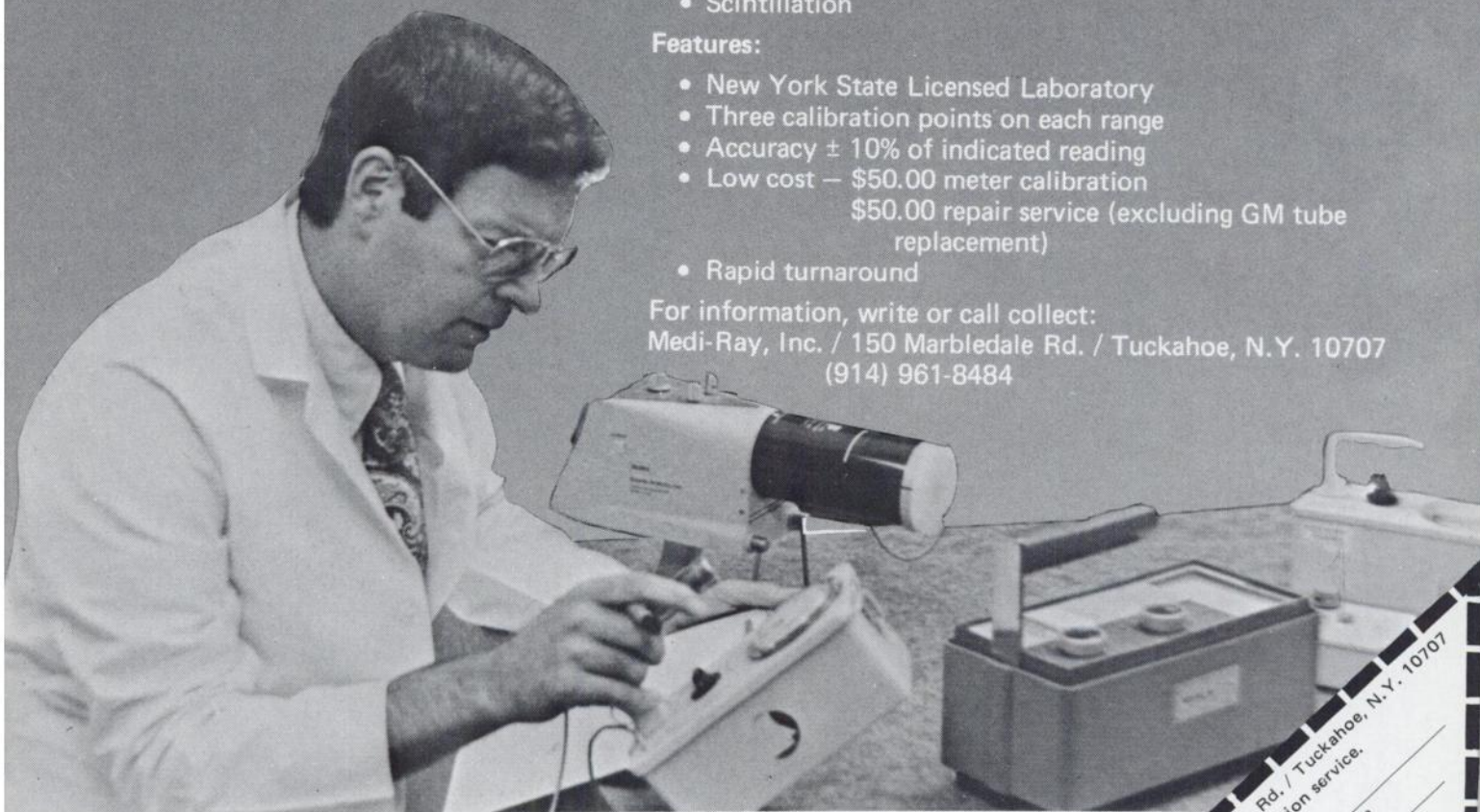
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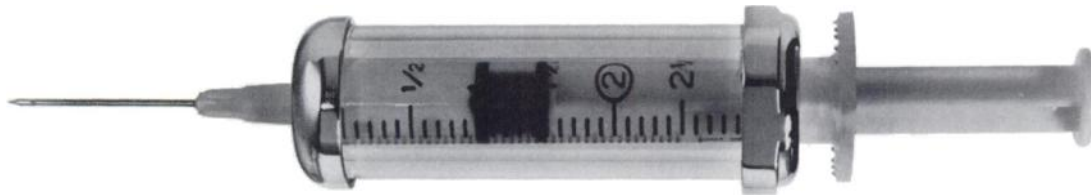
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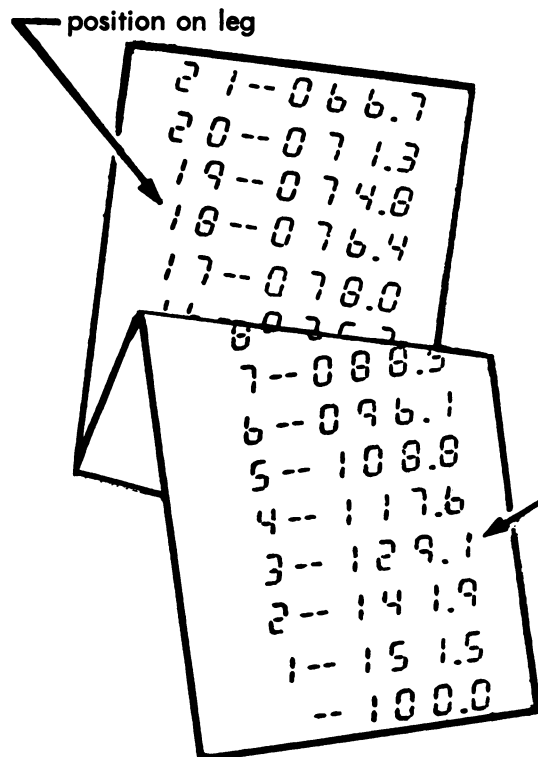
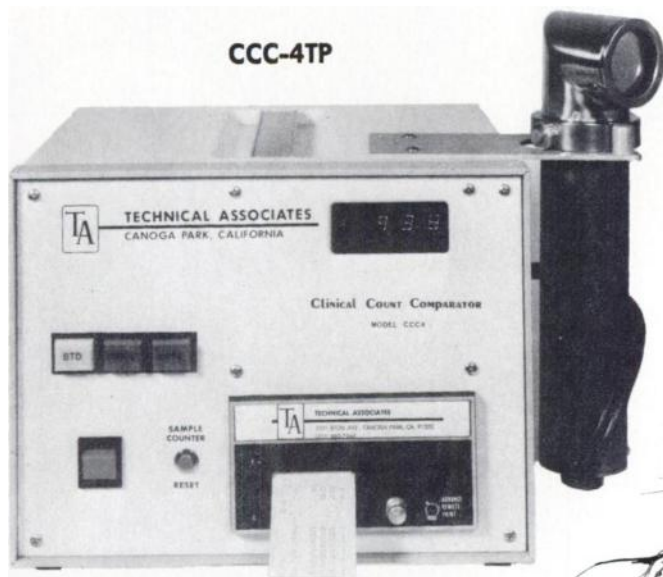
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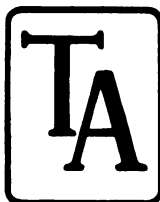
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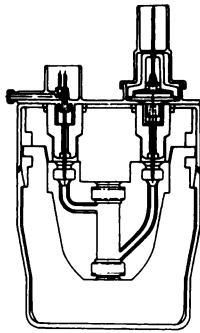


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Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to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

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

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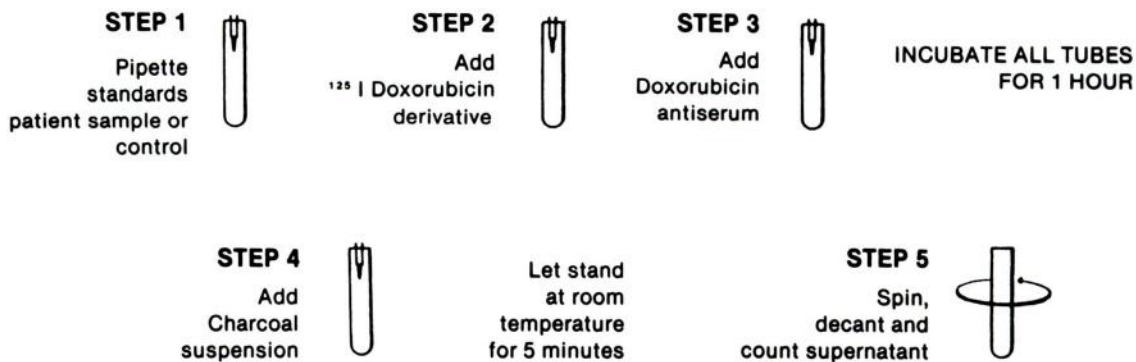
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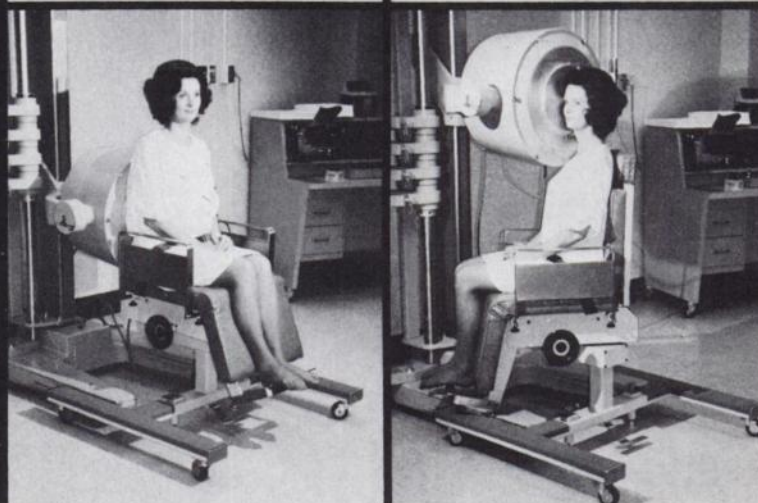
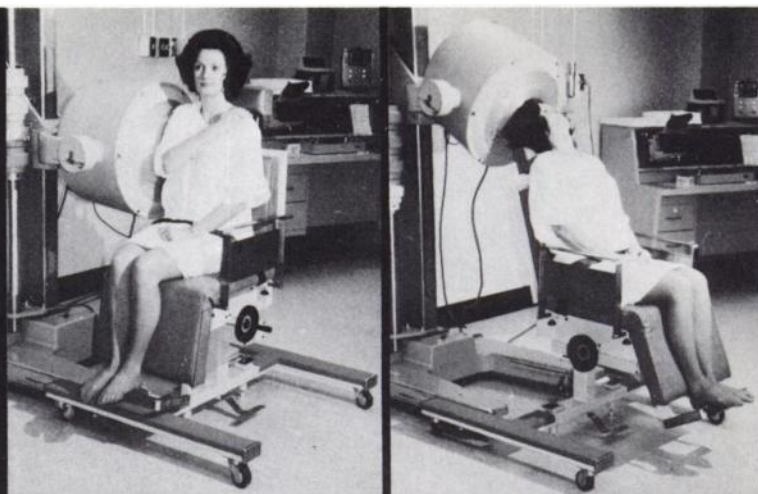
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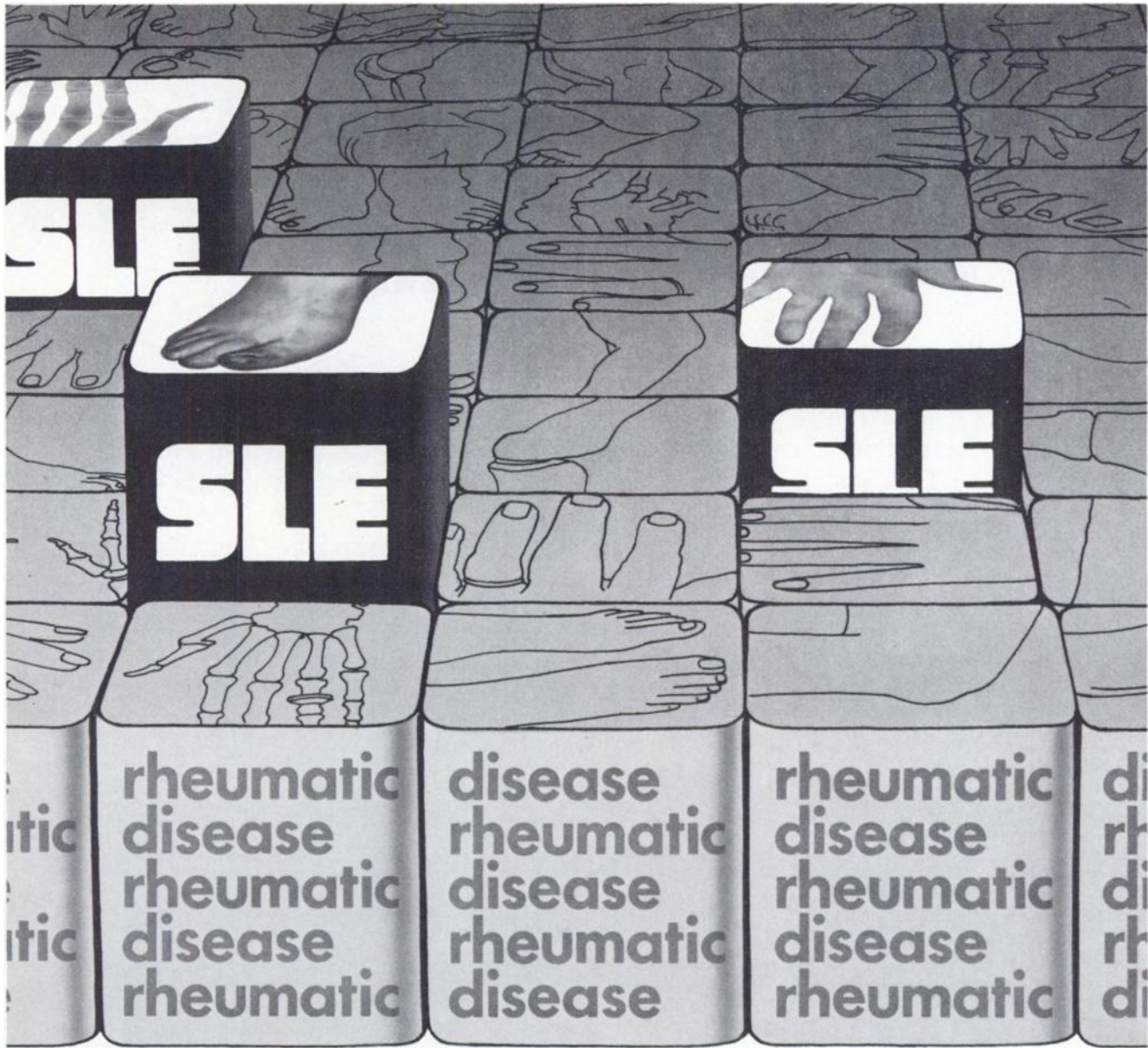
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FELLOWSHIP AND RESIDENCY PROGRAM, 1978-79**

Residency and fellowship positions are available in an AMA approved residency program which includes training in two large nuclear medicine laboratories; 1) St. Luke's Episcopal-Texas Children's Hospitals and The Texas Heart Institute joint facilities and 2) Ben Taub General Hospital.

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Requests for further information should be directed to John A. Burdine, M.D., Chief, Nuclear Medicine Section, or Paul H. Murphy, Ph.D., Residency and Fellowship Coordinator, Department of Radiology, Baylor College of Medicine, Houston, Texas 77030.



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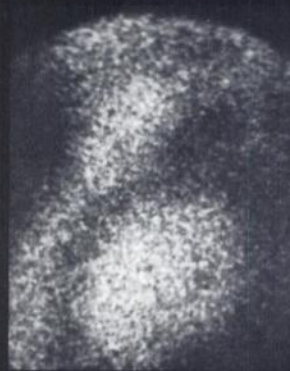
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RAO, DIASTOLE



RAO, SYSTOLE



LAO, DIASTOLE

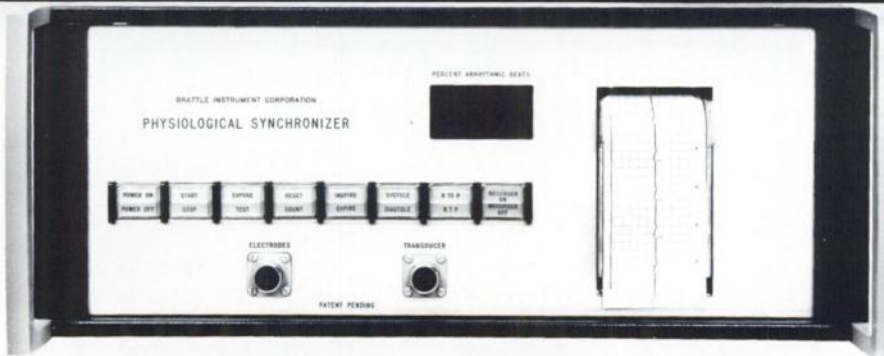


LAO, SYSTOLE

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 contrac-

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