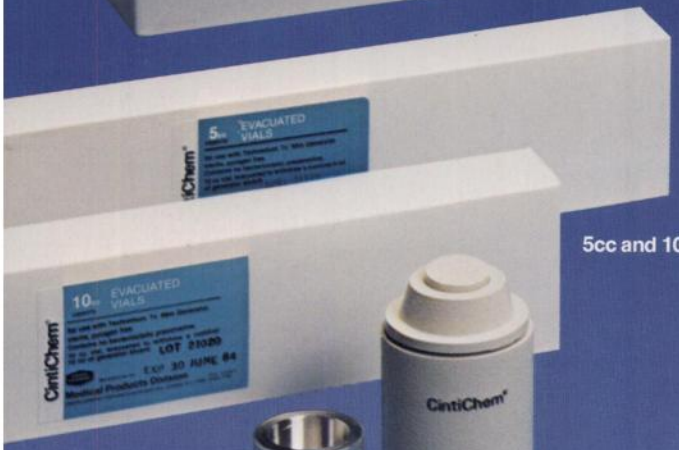
ROCHE®

medi+physics®

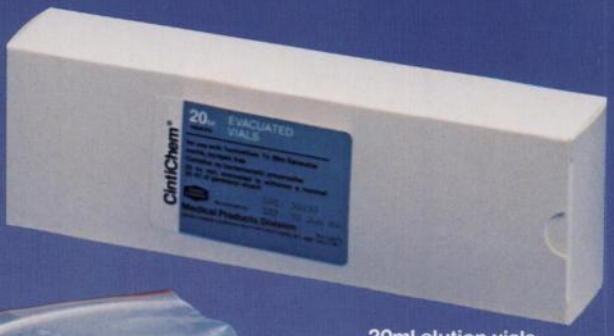
MEDI-PHYSICS, INC., RICHMOND, CALIF. 94806
SUBSIDIARY OF HOFFMANN-LA ROCHE INC.

Technetium Tc 99m Generator

Secondary shield to further reduce radiation



5cc and 10cc elution vials



20ml elution vials available on request

Elution vial shield

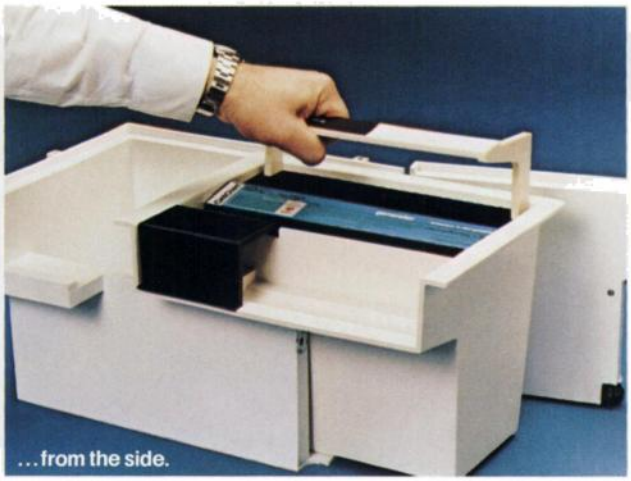
Adaptors for various elution vials

Sterile needle pack and labels furnished with each generator

TECHNETIUM 99m

GENERATORS

Technetium Tc 99m Generators for the Production of Sodium Pertechnetate Tc 99m



Featuring:

- Indicated for use in adults and children for urinary bladder imaging (direct isotopic cystography).
- The only Generator with an "open/closed" valve to eliminate possible leakage, both during shipment and in your hot lab.
- Unique horizontal elution procedure increases ease of use and eliminates needle-vial alignment problems.
- A new sterile needle is utilized for each elution, reducing the chances of a septic or pyrogenic situation occurring in routine clinical usage. This method is superior to competitive dry column systems where the same needle assembly is used for the life of the product.
- Fission product molybdenum 99 is used in the Technetium 99m Generator to provide Sodium Pertechnetate Tc99m activity concentrations sufficient for bolus injections.
- Internal saline reservoir eliminates the need to stock saline vials.
- Evacuated elution vials are available in 5cc, 10cc, and 20cc volumes, allowing you to optimize the elution concentration to meet your needs.
- Optimum shielding design minimizes radiation to personnel in work areas, providing maximum protection.
- Generator is compact, providing for optimum maneuverability. Generator handle and shipping carton provide for ease in handling and lifting.

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MEDI-PHYSICS, INC., RICHMOND, CALIF. 94806
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TECHNETIUM Tc 99m GENERATOR for the Production of Sodium Pertechnetate Tc 99m

DESCRIPTION: The Technetium Tc 99m Generator is prepared with fission produced Molybdenum Mo 99 absorbed on alumina in a lead-shielded column and provides a means for obtaining sterile pyrogen-free solutions of Sodium Pertechnetate Tc 99m in sodium chloride injection. The eluate should be crystal clear. With a pH of 4.5–7.5, hydrochloric acid and/or sodium hydroxide may have been used for pH adjustment. Over the life of the generator, an elution will contain a yield of 80% to 100% of the theoretical amount of Technetium Tc 99m available from the Molybdenum Mo 99 on the generator column.

Each eluate of the generator should not contain more than 0.15 microcurie of the Molybdenum Mo 99 per millicurie Technetium Tc 99m per administered dose at the time of administration, and not more than 10 micrograms of aluminum per milliliter of the generator eluate, both of which must be determined by the user before administration.

INDICATIONS AND USAGE: Sodium Pertechnetate Tc 99m is used IN ADULTS as an agent for: brain imaging including cerebral radionuclide angiography; thyroid imaging; salivary gland imaging; placenta localization; blood pool imaging including radionuclide angiography; and urinary bladder imaging (direct isotopic cystography) for detection of vesico-ureteral reflux.

Sodium Pertechnetate Tc 99m is used IN CHILDREN as an agent for: brain imaging including cerebral radionuclide angiography; thyroid imaging; blood pool imaging including radionuclide angiography; and urinary bladder imaging (direct isotopic cystography) for the detection of vesico-ureteral reflux.

CONTRAINDICATIONS: None known.

WARNINGS: Radiation risks associated with the use of Sodium Pertechnetate Tc 99m are greater in children than in adults. In general, the younger the child the greater the risk owing to greater absorbed radiation doses and longer life expectancy. These greater risks should be taken firmly into account in all benefit-risk assessments involving children.

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

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m may affect fertility in males or females.

Pregnancy Category C

Animal reproductive studies have not been conducted with Technetium Tc 99m. It is also not known whether Technetium Tc 99m can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m should be given to a pregnant woman only if the expected benefits to be gained clearly 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.

Nursing Mothers

Technetium Tc 99m is excreted in human milk during lactation, and therefore formula feedings should be substituted for breast feedings.

Pediatric Use

See **Indications and Usage, dosage** and administration. See also description of additional risk under **warnings.**

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.

The generator should not be used after 16 days from the date and time of calibration.

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

ADVERSE REACTIONS: Allergic reactions including anaphylaxis have been reported infrequently following the administration of Sodium Pertechnetate Tc 99m.

HOW SUPPLIED: Sodium Pertechnetate Tc 99m is supplied as a Molybdenum Mo 99/Technetium Tc 99m generator in sizes from 830 millicuries up to 16,600 millicuries (in approximately 830 millicurie increments) of Molybdenum Mo 99 as of 10:00 P.M. Eastern Time of the day of calibration. The TECHNETIUM Tc 99m GENERATOR consists of:

1) sterile generator, 2) Sodium Chloride Injection source, 3) 10 cc sterile evacuated vials, 4) sterile needles, 5) elution vial shield* 6) finished drug labels. Elution vials in 5 cc and 20 cc sizes are available upon request.

*initial order only

The TECHNETIUM Tc 99m GENERATOR should not be used after sixteen (16) days from the date and time of calibration.

Jointly manufactured by:
CINTICHEM, INC.
Tuxedo, N.Y. 10987

and

UNION CARBIDE CORPORATION
Tuxedo, N.Y. 10987

June, 1983

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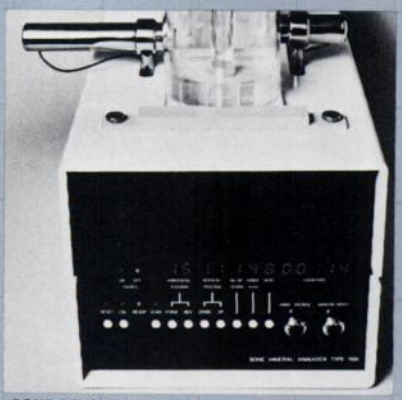

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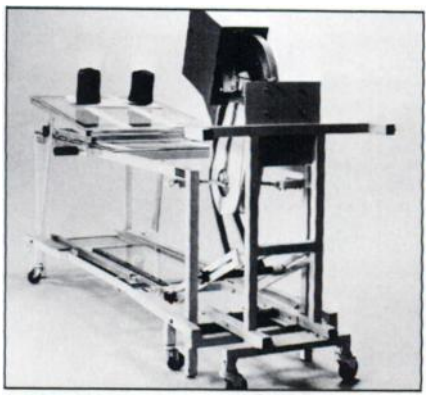

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*CAP Basic Ligand Survey Set K-C, 1982

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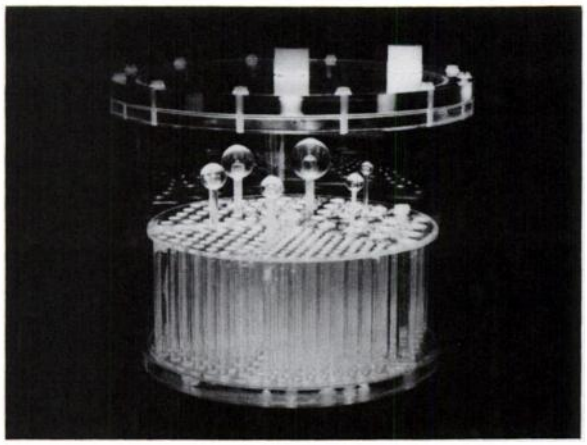

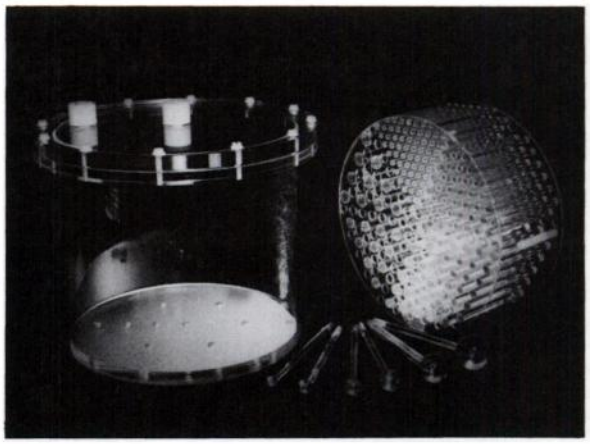

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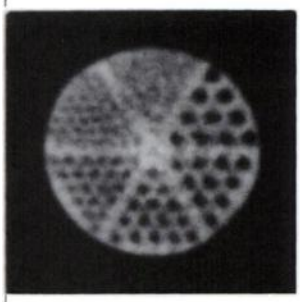
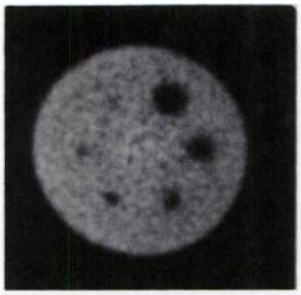
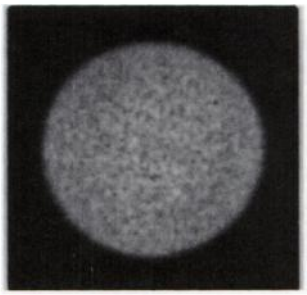


Rods



Spheres



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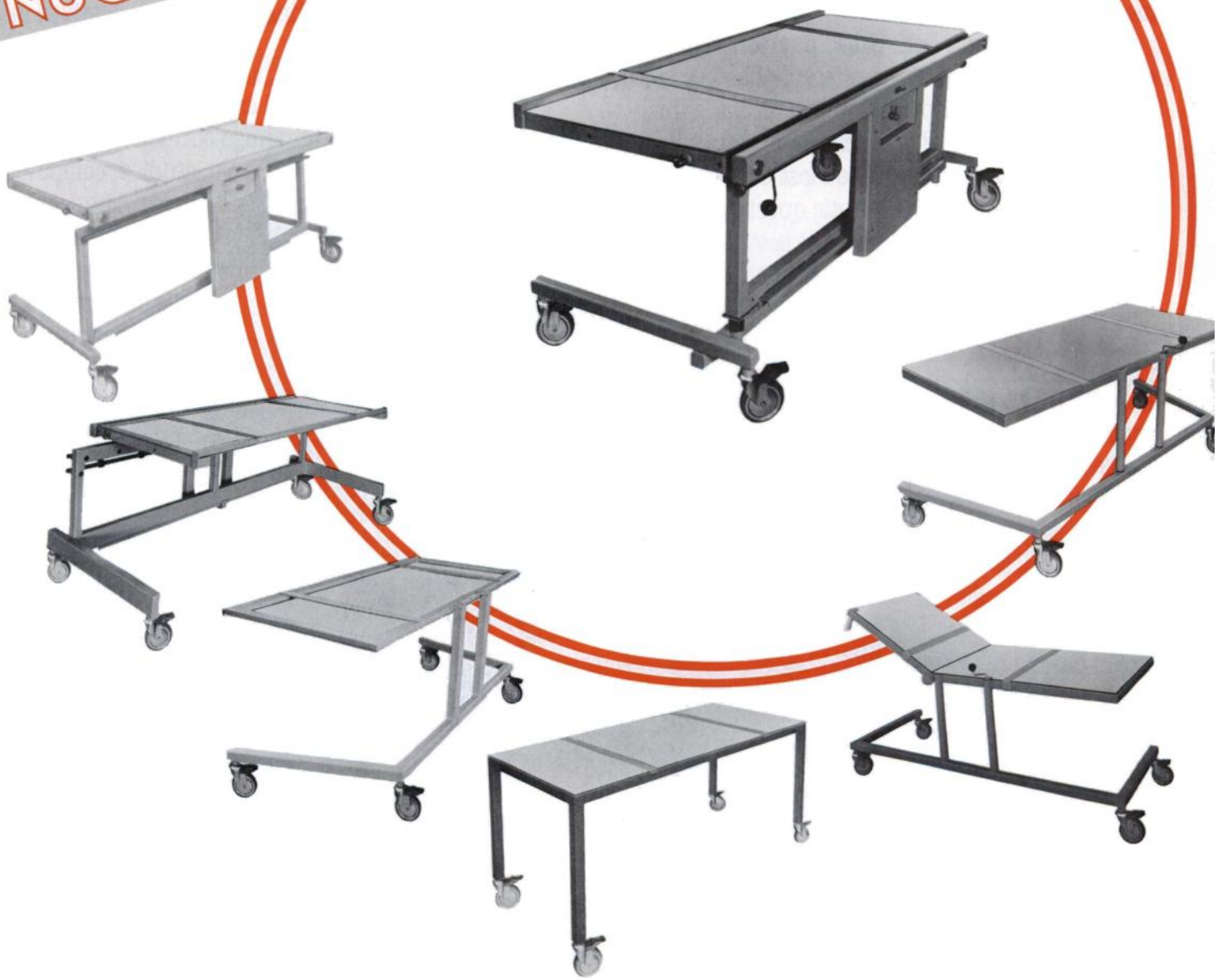


ADC

FOR MORE INFORMATION CALL OR WRITE:

Making The Case For Nuclear Medicine

The most important instrument in your department may be the telephone. Unless it rings–unless clinicians refer patients for studies–there is no nuclear medicine practice.

Under today's DRG-based payment systems, obtaining and maintaining referrals has become even more important. Hospitals are encouraging their clinicians to minimize the number of tests they order, selecting those that are most definitive, that answer the diagnostic question in the shortest time, at the lowest cost.

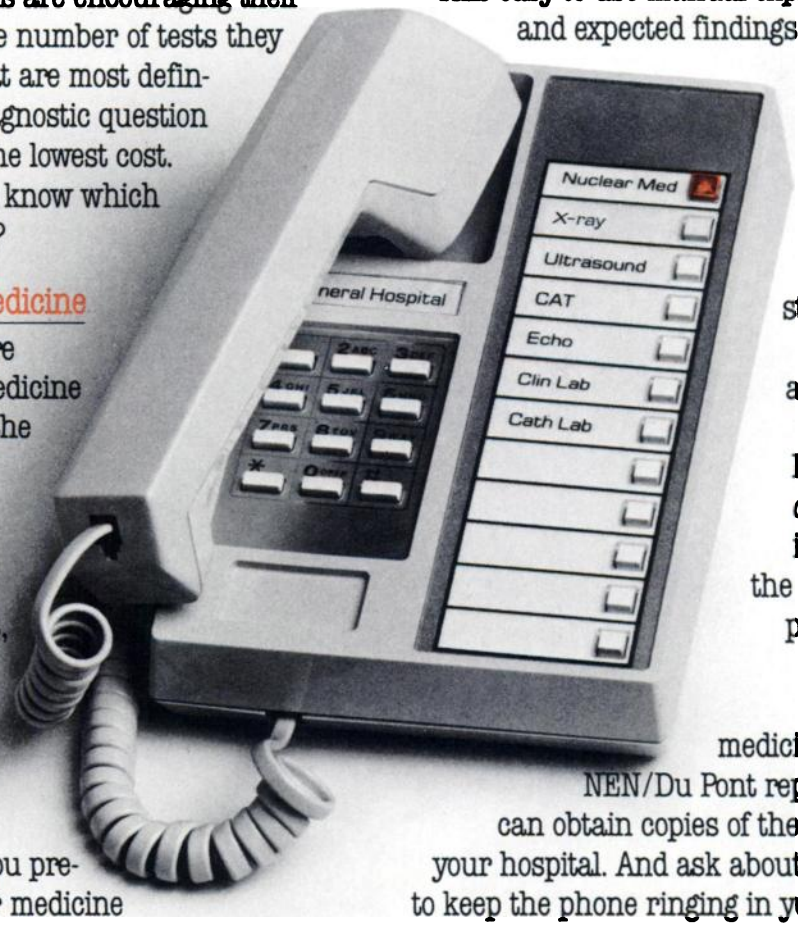
How can clinicians know which tests meet these criteria?

Supporting Nuclear Medicine

At NEN/Du Pont we share your belief in nuclear medicine studies. We understand the contributions these non-invasive studies make to quality medical care. We know which studies can serve as low-cost screens, which can be performed easily on an outpatient basis, which offer physicians the procedure of choice they seek.

And we can help you present the case for nuclear medicine to your administrators and referring clinicians.

For many years, NEN/Du Pont has supported nuclear medicine with teaching programs and exhibits directed to the clinicians who order your studies. Now, we've developed a *Clinician's Guide to Nuclear Medicine Procedures*...to help you build referrals with key clinicians at your institution.



Helping Clinicians Choose

This easy-to-use manual explains the indications and expected findings of nuclear medicine studies, compares them to other diagnostic modalities, and helps referring clinicians select the most appropriate studies. Unnecessary tests are reduced and the patient's stay can be shortened. In addition, the *Clinician's Guide* contains information useful to the nursing staff in preparing and managing patients before and after their nuclear medicine studies. Ask your NEN/Du Pont representative how you can obtain copies of the *Clinician's Guide* for your hospital. And ask about our other programs to keep the phone ringing in your department. Our goal is Imaging Excellence: enhancing the image of your department while improving the images in your department.

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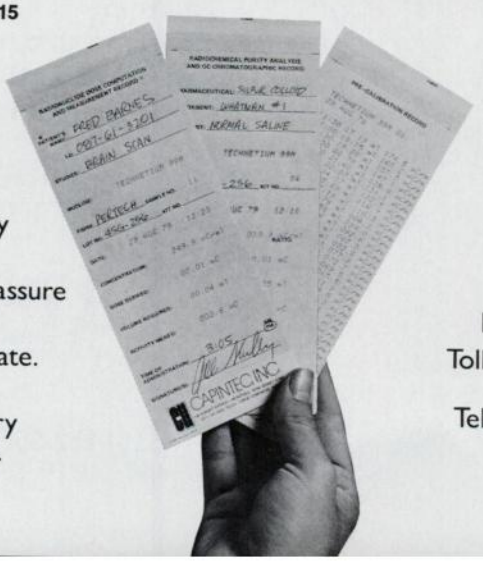
The CRC-30 calibrates and computes, analyzes radiochemical purity, and puts it all in print.

Computes radiopharmaceutical dose to assure that activity is exactly as prescribed.

Analyzes imaging preparations to assure radiochemical purity.

Prints permanent records in triplicate. Gives molybdenum assay printout.

Simplifies compliance with regulatory and hospital accreditation standards.



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Now indicated for gated cardiac blood pool imaging

Phosphotec®

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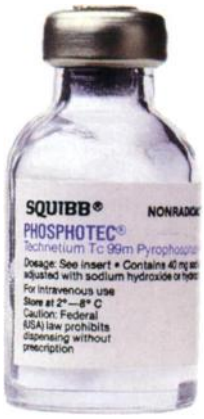
Technetium Tc 99m Pyrophosphate Kit



Unit-dose convenience

■ One reaction vial supplies suggested dose of 41 mg ■ Low tin formulation. Each 5 ml reaction vial contains 40 mg sodium pyrophosphate and 1 mg stannous fluoride ■ Kit of 10 reaction vials ■ Also indicated for bone imaging and as an adjunct in the diagnosis of acute myocardial infarction.

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See next page for brief summary.

PHOSPHOTEC®
Technetium Tc 99m Pyrophosphate Kit
For Diagnostic Use

DESCRIPTION: Each reaction vial contains 40 mg sodium pyrophosphate (equivalent to 23.9 mg anhydrous sodium pyrophosphate) and 0.4 mg stannous fluoride (minimum) and 0.9 mg total tin (maximum) as stannous fluoride; the product does not contain a preservative. The pH of the product is adjusted with sodium hydroxide or hydrochloric acid prior to lyophilization. At the time of manufacture, the air in the vial is replaced with a nitrogen gas atmosphere. When sterile, nonpyrogenic sodium pertechnetate Tc 99m solution is added to the vial, a diagnostic agent, technetium Tc 99m pyrophosphate, is formed for intravenous administration; the structure of this radiolabeled complex is unknown.

The product as supplied is sterile and nonpyrogenic.

INDICATIONS AND USAGE: Bone Imaging
Phosphotec (Technetium Tc 99m Pyrophosphate Kit) may be used as a bone imaging agent to delineate areas of altered osteogenesis.

Cardiac Imaging
Phosphotec is a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction. The infarction is best visualized one to six days after onset of symptoms. False-negative images can occur if imaging is done too early in the evolutionary phase of the infarct or too late in the resolution phase. The incidence of false-positives may range from 5 to 9 percent and of false-negatives from 6 to 9 percent but may vary even more depending on selection criteria of patient populations.

Blood Pool Imaging
Phosphotec is also a blood pool imaging agent which may be used for gated cardiac blood pool imaging.

CONTRAINDICATIONS: None known.

WARNINGS: Preliminary reports indicate impairment of brain scans using sodium pertechnetate Tc 99m injection which have been preceded by a bone scan using an agent containing stannous ions. The impairment may result in false-positive or false-negative brain scans. It is recommended, where feasible, that brain scans precede bone imaging procedures. Alternatively, a brain-imaging agent such as technetium Tc 99m pentetate may be employed.

PRECAUTIONS: General
The lyophilized contents of the Phosphotec reaction vial are to be administered to the patient only as an intravenous solution.

Any sodium pertechnetate Tc 99m solution which contains an oxidizing agent is **not** suitable for use with Phosphotec (Technetium Tc 99m Pyrophosphate Kit).

When reconstituted with sodium pertechnetate Tc 99m, Phosphotec must be used within 6 hours. **When reconstituted with Sodium Chloride Injection USP** for blood pool imaging, use the solution within 30 minutes.

Technetium Tc 99m pyrophosphate as well as other radioactive drugs must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patient and occupational workers consistent with proper patient management.

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.

Bone Imaging
Both prior to and following administration of the technetium Tc 99m pyrophosphate, 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.

Cardiac Imaging
The patient's cardiac condition should be stable before beginning the cardiac imaging procedure. If not contraindicated by the patient's cardiac status, patients should be encouraged to drink fluids and to void as often as possible in order to reduce unnecessary radiation exposure to the bladder. Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing the three recommended projections. 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.

Blood Pool Imaging
The reconstituted agent should be injected by direct venipuncture. Heparinized catheter systems should be avoided, as interference with red blood cell tagging will result.

Carcinogenesis, Mutagenesis, Impairment of Fertility
No long-term animal studies have been performed to determine any carcinogenic potential or impairment of fertility in males or females.

Teratogenic Effects: Pregnancy Category C
Animal reproduction studies have not been conducted with technetium Tc 99m pyrophosphate. It is also not known whether technetium Tc 99m pyrophosphate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc 99m pyrophosphate should be administered to a pregnant woman only if clearly needed.

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.

Nursing Mothers
Caution should be exercised when technetium Tc 99m pyrophosphate is administered to a nursing woman. Technetium Tc 99m is excreted in human milk during lactation; therefore, formula-feedings should be substituted for breast-feedings.

Pediatric Use
Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: Some hypersensitivity reactions have been associated with pyrophosphate use.

HOW SUPPLIED: Phosphotec (Technetium Tc 99m Pyrophosphate Kit) is supplied in a kit containing 10 reaction vials (5 ml size).

For full prescribing information, consult package insert.

SQUIBB®

 603-501 Issued: Sept. 1983

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AccuSync

The finest R-wave Triggering device available for computerized gated cardiac studies.

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MODEL	FEATURES
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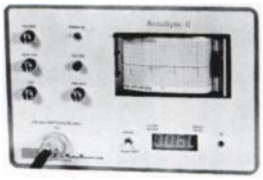
AccuSync-2	All **AccuSync-IR** features incorporated into a Module designed to fit into certain Mobile cameras.
AccuSync-3	All **AccuSync-IR** features with the exception of the Strip Chart Recorder and Playback Mode.
AccuSync-4	All **AccuSync-3** features with the exception of the Heart Rate/R-R int. display.



AMR **A**dvanced **M**edical **R**esearch Corp./301 Brewster Road/P.O. Box 3094
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Now you can perform a ventilation study immediately after a perfusion study with no interference from technetium Tc 99m radiation.

XENON 127

Xenon Xe 127 Gas—Exclusively from Mallinckrodt

Photon energies higher than technetium Tc 99m permit perfusion/ventilation study sequence not practical with Xenon Xe 133.

"The 140-keV gamma photon from ^{99m}Tc has a Compton scatter peak at about 80 keV [which] cannot be distinguished from the [81 keV] photopeak of ^{133}Xe."[1] Xenon 127's higher photon energies (172 and 203-keV) give you optimal visualization without potential image degradation from technetium Tc 99m. You can perform the perfusion study first and select the best view for the ventilation study.

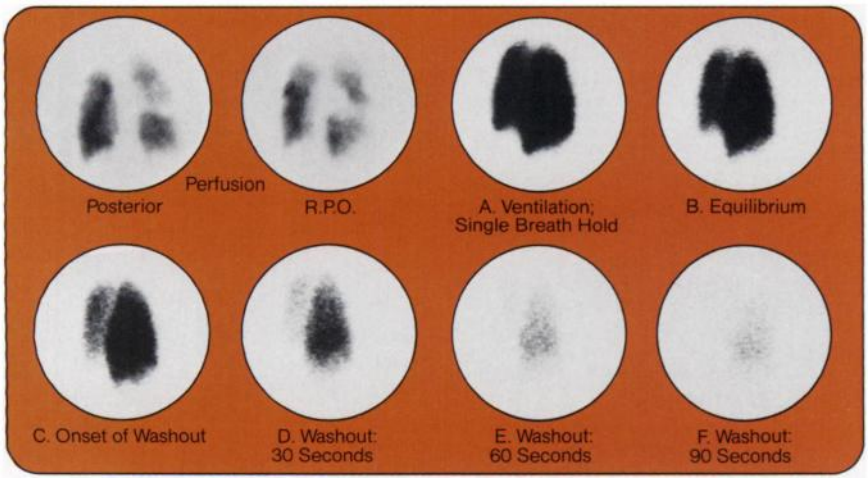
Higher usable photon yield than Xenon Xe 133 gives you diagnostic information you need with substantially lower millicurie dosage administered to the patient.

The lung radiation dose from Xenon Xe 127 is approximately 1/6 that of Xenon Xe 133 for equal information densities.[2] Studies report excellent images with Xenon Xe 127 gas.[1,2] "The clearer washout images...are probably due to better penetration through the chest wall with an improved lung-to-background ratio."[2]

Longer shelf-life than Xenon Xe 133 Gas and Krypton Kr 81m Gas means Xenon Xe 127 Gas can always be at hand when you need it.

Krypton Kr 81m Gas generators must be ordered for the day needed; Xenon Xe 133 Gas must be ordered weekly. Xenon Xe 127 Gas, however, can be ordered monthly. It is available for delivery the first of each month, calibrated for the fifteenth day of the month.

Lung Perfusion Study with Technetium Tc 99m Albumin Aggregated (MAA) and Ventilation Study with Xenon Xe 127 Gas



Patient:
A 26-year old male paraplegic with recent history of chest pain.

Perfusion Study:
3.0 mCi Technetium Tc 99m MAA.

Interpretation: Perfusion defect in superior segment of lower right lobe; smaller perfusion defects noted in left mid-lung and left upper lung field.

Ventilation Study:
5.0 mCi Xenon Xe 127 Gas. Performed immediately after perfusion study with patient in right posterior oblique position.

Interpretation: Xenon Xe 127 Gas uniformly distributed in both lungs; normal clearance and washout (Scintiphotos A-F). Specifically, the area of the perfusion defect demonstrates normal ventilation.

Conclusion:
Probable pulmonary embolism.

Case study and scintiphotos courtesy of Section of Nuclear Medicine, Bowman Gray School of Medicine, Winston-Salem, N.C.

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Please see next page for Xenon 127 prescribing information.

XENON Xe 127 GAS

Diagnostic

DESCRIPTION

Xenon Xe 127 Gas is for diagnostic inhalation use only. It is supplied in vials containing either 5 or 10 millicuries of Xenon Xe 127 Gas in 2 milliliters of carrier Xenon and atmospheric air. Xenon-127 is produced by the proton bombardment of Cesium Cs 133. It contains less than 10% Xenon Xe 129m and less than 10% Xenon Xe 131m on date of release with 99% total radioactivity as radioxenon.

Xenon Xe 127 Gas is chemically and physiologically similar to elemental xenon, a non-radioactive gas which is physiologically inert except for anesthetic properties at high doses.

Physical Characteristics

Xenon Xe 127, with a physical half-life of 36.41 days[1] decays by electron capture to Iodine I 127. Photons that are useful for detection and imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data of Xenon Xe 127

Radiation	*Mean Percent Per Disintegration*	*Energy (keV)*
Gamma-2	4.2	145.2
Gamma-3	24.7	172.1
Gamma-4	68.1	202.8
Gamma-5	17.4	375.9
K x-rays	87.9	Mean: 29.7

Xenon Xe 129m, with a physical half-life of 8.89 days[2] decays by isomeric transistion to Xenon Xe 129. The principal photons are listed in Table 2.

Table 2. Principal Radiation Emission Data of Xenon Xe 129m.

Radiation	*Mean Percent Per Disintegration*	*Energy (keV)*
Gamma-1	7.5	39.6
Gamma-2	4.7	196.6
K x-rays	126.9	Mean: 30.4

Xenon Xe 131m, with a physical half-life of 11.84 days[2] decays by isomeric transition to Xenon Xe 131. The principal photons are listed in Table 3.

Table 3. Principal Radiation Emission Data of Xenon Xe 131m.

Radiation	*Mean Percent Per Disintegration*	*Energy (keV)*
Gamma-1	2.0	163.9
K x-rays	54.4	Mean: 30.4

External Radiation

The specific gamma ray constant for Xenon Xe 127 is 2.2 R/mCi-hr at 1 cm. The first half-value thickness of lead (Pb) is 0.023 cm.

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 4. For example, the use of 1.7 cm of Pb will decrease the external radiation exposure by a factor of about 1000.

Table 4. Radiation Attenuation by Lead Shielding

Shield Thickness (Pb) cm	*Coefficient of Attenuation*
0.023	0.5
0.26	10^{-1}
0.95	10^{-2}
1.7	10^{-3}
2.4	10^{-4}

To correct for physical decay of this radionuclide, the fractions that remain at selected time intervals after the day of calibration are shown in Table 5.

Table 5. Physical Decay Chart; Xenon Xe 127, Half-Life 36.41 Days[3]

Days	*Fraction Remaining*	*Days*	*Fraction Remaining*
0*	1.000	20	0.683
1	0.981	22	0.658
2	0.963	24	0.634
3	0.945	26	0.610
4	0.927	28	0.587
5	0.909	30	0.565
6	0.892	32	0.544
7	0.875	34	0.524
8	0.859	36	0.504
10	0.827	38	0.485
12	0.796	40	0.467
14	0.766	45	0.425
16	0.737	50	0.386
18	0.710		

*Calibration day

CLINICAL PHARMACOLOGY

Xenon Xe 127 (and other radioxenons) is a readily diffusible gas which is neither utilized nor produced by the body. It passes through cell membranes, freely exchanges between blood and tissue, and tends to concentrate more in body fat than in blood, plasma, water or protein solutions. In the concentrations recommended for diagnostic studies, it is physiologically inactive. Inhaled **Xenon Xe 127** gas will enter the alveolar wall and enter the pulmonary venous circulation via capillaries. Most of the **Xenon Xe 127** gas that enters the circulation from a single breath is returned to the lungs and exhaled after a single pass through the peripheral circulation.

INDICATIONS AND USAGE

Xenon Xe 127 gas has been shown to be valuable for diagnostic inhalation studies for the evaluation of pulmonary function and for imaging the lungs.

CONTRAINDICATIONS

None known.

WARNINGS

Xenon Xe 127 gas delivery systems, i.e., respirators or spirometers, and associated tubing assemblies must be leakproof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

Xenon Xe 127 gas adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers. Loss of radioactivity due to such adherence may render the study nondiagnostic.

PRECAUTIONS

General

Xenon Xe 127 gas 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. Also, care should be taken to minimize radiation exposure to the patient consistent with proper patient management.

The higher energy and long half-life of Xenon Xe 127 may complicate disposal after use. Exhaled **Xenon Xe 127** 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.

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.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential, mutagenic potential or whether this drug affects fertility in males or females.

Pregnancy Category C

Animal reproduction studies have not been conducted with **Xenon Xe 127** gas. It is also not known whether **Xenon Xe 127** gas can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. **Xenon Xe 127** gas should be given to a pregnant woman only if clearly needed.

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.

Nursing Mothers

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when **Xenon Xe 127** gas is administered to a nursing woman.

Pediatric Use

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

None known.

DOSAGE AND ADMINISTRATION

Xenon Xe 127 Gas is administered by inhalation from a closed respirator system or spirometer. The final patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

The recommended activity range employed for inhalation by the average patient (70 kg) is:

Pulmonary function including imaging: 5 to 10 millicuries.

This may be administered as a bolus into the tubing near the patient's mouthpiece or mask after the completion of a tidal exhalation or after rebreathing for a period of approximately 5 minutes of the Xenon Xe 127 gas in equilibrium with the air contained in the closed system at concentrations of the radionuclide that may vary from 0.5 to 2.0 millicuries per liter.

Radiation Dosimetry

The estimated absorbed radiation doses to an average patient (70 kg) for inhalation studies from a maximum dose of 10 millicuries of **Xenon Xe 127** in 5, 7.5, and 10 liters of air are shown in Table 6. They are based on 80% total activity as Xenon Xe 127 with 10% activity as Xenon Xe 129m and 10% activity as Xenon Xe 131m. The values are the maximum absorbed dose that could be anticipated under the given conditions.

Table 6. Radiation Dose Estimates of Xenon Xe 127:[4] Absorbed Dose/10mCi Xenon Xe 127 Administered by Inhalation

Tissue	*Spirometer Volume (liters)*		
	5.0	*7.5*	*10.0*
	Rad/10mCi Xenon Xe 127[5]		
Lung	0.064	0.048	0.038
Red Marrow	0.015	0.013	0.010
Ovaries	0.014	0.011	0.008
Testes	0.011	0.009	0.007
Total Body	0.014	0.011	0.008

Directions for Dispensing

Transfer the appropriate Xenon Xe 127 Gas dose from the Xenon Xe 127 Gas unit dose vial(s) to the breathing device or spirometer using an adequately shielded transfer device such as the Mallinckrodt, Inc. Xenomatic II™ Xenon Gas Dispenser, Catalog No. 036. Directions for use of this gas dispenser are as follows:

1. If required, attach needle or other appropriate connector[6] to the Luer-Lok fitting of the Xenomatic II Xenon Gas Dispenser.
2. Remove lead filled plastic cap from Xenon Xe 127 Gas unit dose shield to expose the top of the 2.0 milliliter vial.
3. With vial in shield, insert into handle of the Xenomatic II Xenon Gas Dispenser, impaling the vial on the needles and engaging the latch holding the shield and vial in position.
4. Connect the Xenomatic II Xenon Gas Dispenser to the breathing device or spirometer.
5. Squeeze the trigger *firmly and completely* one or more times to transfer the gas from the vial into the breathing device.[7]
6. After transfer, press shield release latch in the handle and remove the shield.
7. Pull the exhausted vial from the needles, place back into shield, replace plastic cap, and discard in compliance with established requirements for the disposal of radioactive waste.
8. Place an empty shield into the handle of the Xenomatic II Gas Dispenser, engaging the latch. This will prevent possible injury from unprotected impaling needles.
9. To clean the Xenomatic II Xenon Gas Dispenser, simply wipe with mild detergent. DO NOT IMMERSE IN WATER.

Xenon Xe 127 Gas should not be used after 120 days from the date of calibration stated on the label.

Radioactivity Measurements

Calibrate a suitable commercial ionization chamber dose calibrator according to the manufacturer's instructions for that particular instrument. An instrument that gives direct radioactivity readouts is recommended.

Use a National Bureau of Standards (NBS) Xenon Xe 127 standard (or a standard that is traceable to an NBS standard) for the initial calibration. Also establish a secondary standard, such as Barium Ba 133, at that time for subsequent routine use. Other suitable radionuclides may also be used. Determine the effective readout of the secondary standard compared to the Xenon Xe 127 standard over the range of activities expected for routine measurements. Determine the radioactivity of the dose for administration as follows:

1. Check the dose calibrator for proper response with the secondary standard.
2. Insert the Xenon Xe 127 Gas unit dose vial in the dose calibrator and measure the apparent radioactivity of the Xenon Xe 127.
3. Correct for decay as necessary.

The radioactivity determined by this method is within 25% of the true value. This degree of accuracy includes variations attributed to small differences in geometry.

HOW SUPPLIED

Xenon Xe 127 Gas is available in 2ml vials with color-coded labels in 5 millicurie (Code 130) and 10 millicurie (Code 131) sizes. Both sizes are packaged in individual lead shields.

Storage

Xenon Xe 127 Gas should be stored at 15°C to 30°C.

Storage and disposal of **Xenon Xe 127** 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 this radionuclide.

[1] Atkins, Harold L., et al., *Estimates of Radiation Absorbed Doses from Radioxenons in Lung Imaging*, Task Group of the Medical Internal Radiation Dose Committee, Society of Nuclear Medicine, J. Nucl. Med. 21:459-465, 1980.

[2] Kocher, David C., Radioactive Decay Data Tables, DOE/TIC-11026, 128-134 (1981.)

[3] Preparations of Xenon Xe 127 Gas may contain up to 10% of Xenon Xe 129m and up to 10% Xenon Xe 131m which will slightly reduce the fraction remaining.

[4] Atkins, Harold L., et al., *Estimates of Radiation Absorbed Doses from Radioxenons in Lung Imaging*, Task Group of the Medical Internal Radiation Dose Committee, Society of Nuclear Medicine, J. Nucl. Med., 21:459-465, 1980.

[5] Values based on 80% total activity as Xenon Xe 127 with 10% activity as Xenon Xe 129m and 10% activity as Xenon Xe 131m.

[6] An adaptor is available from Mallinckrodt for use with breathing devices or spirometers that have a recessed xenon injection port.

[7] One complete squeeze of the trigger delivers 99+% of the available Xenon Xe 127 gas from the vial.

REFERENCES

1. Coates G, Nahmias C: Xenon-127, A Comparison with Xenon-133 for Ventilation Studies. *J Nucl Med* 18:221-225, 1977.

2. Atkins HL, Susskind H, Klopper JF, et al: A Clinical Comparison of Xe-127 and Xe-133 for Ventilation Studies. *J Nucl Med* 18:653-659, 1977.

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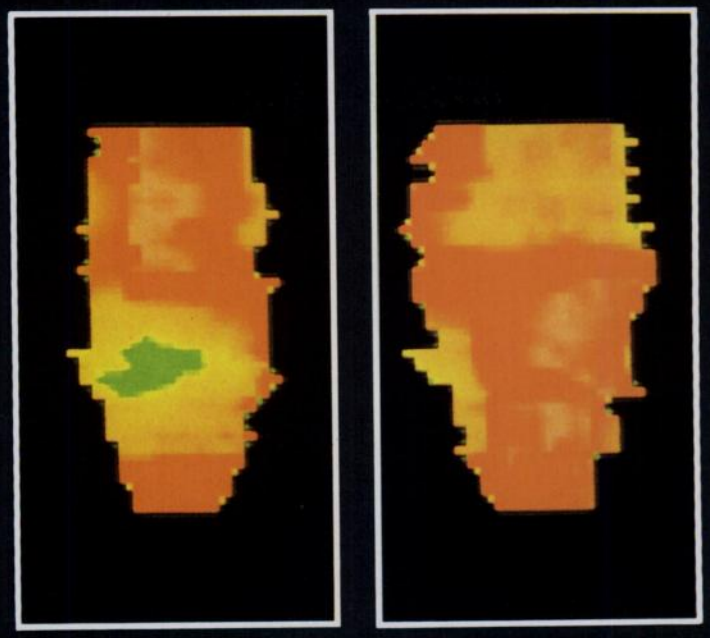

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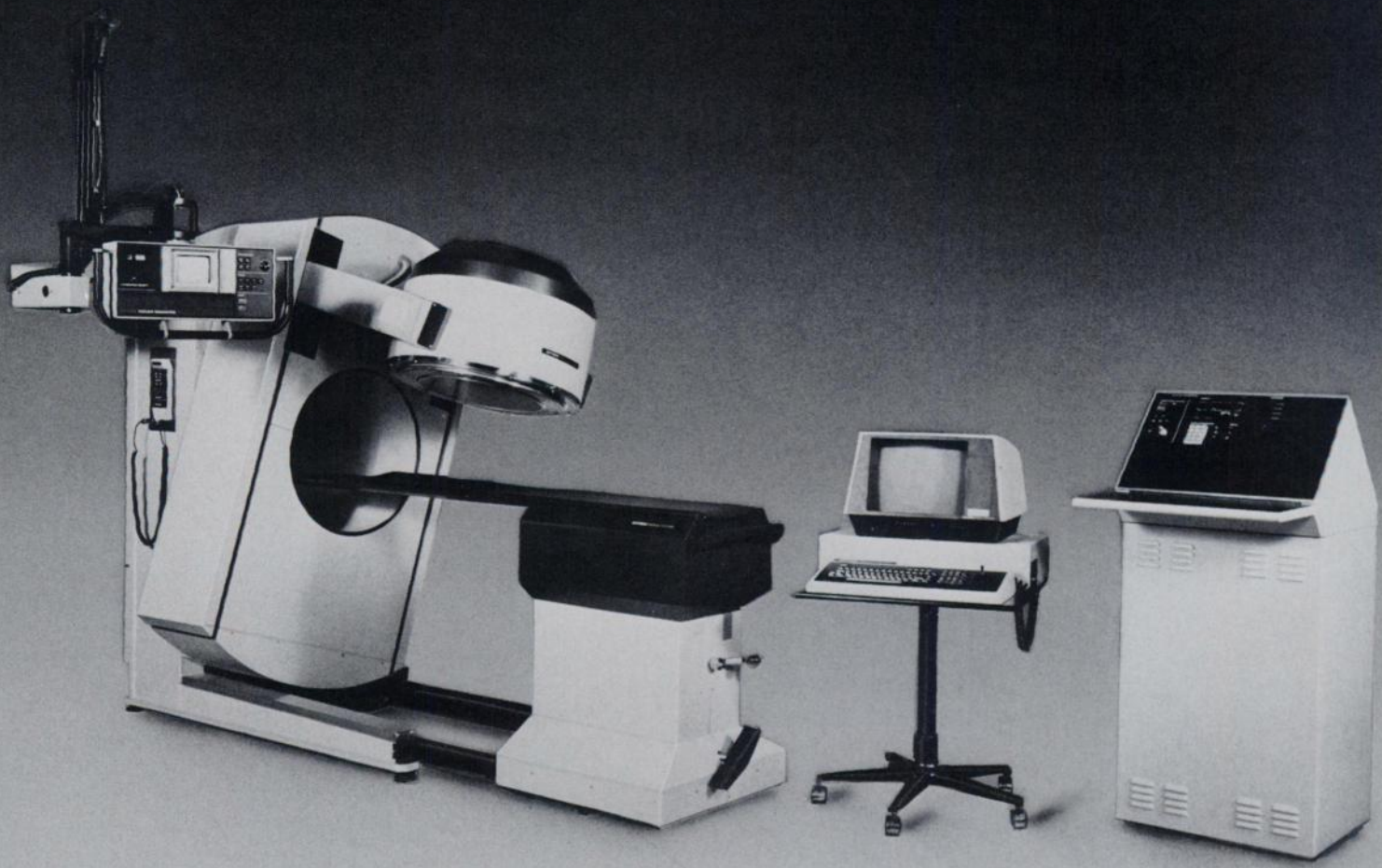

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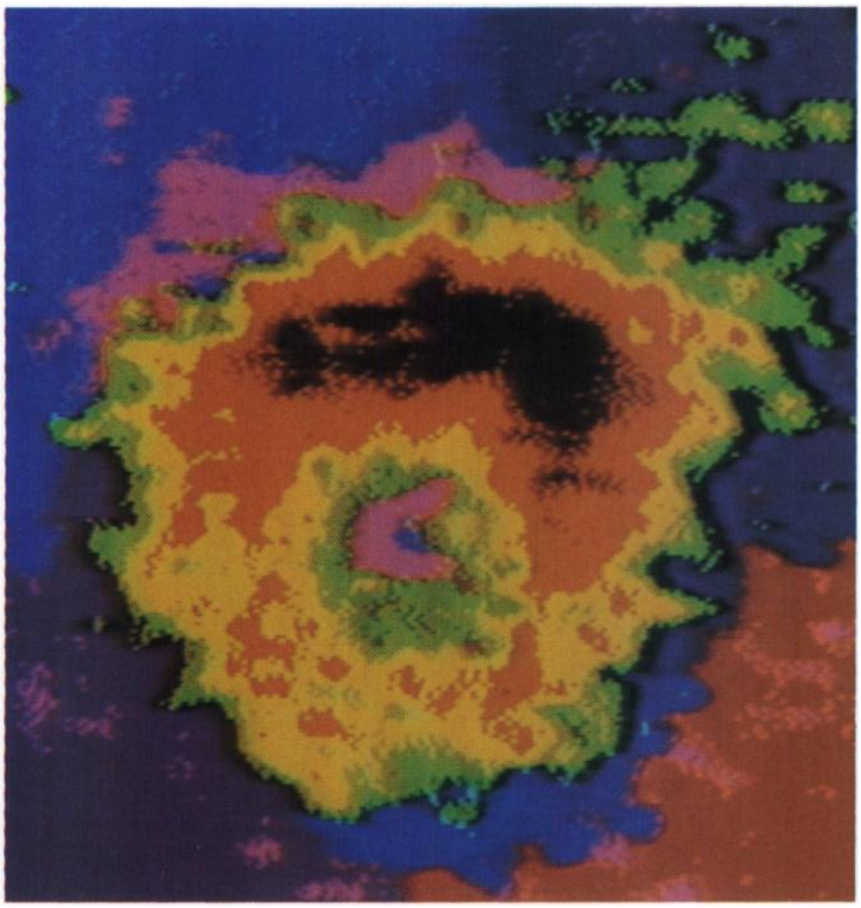

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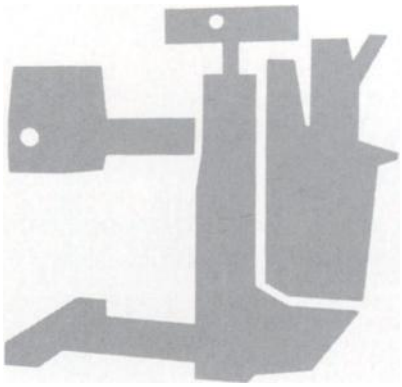

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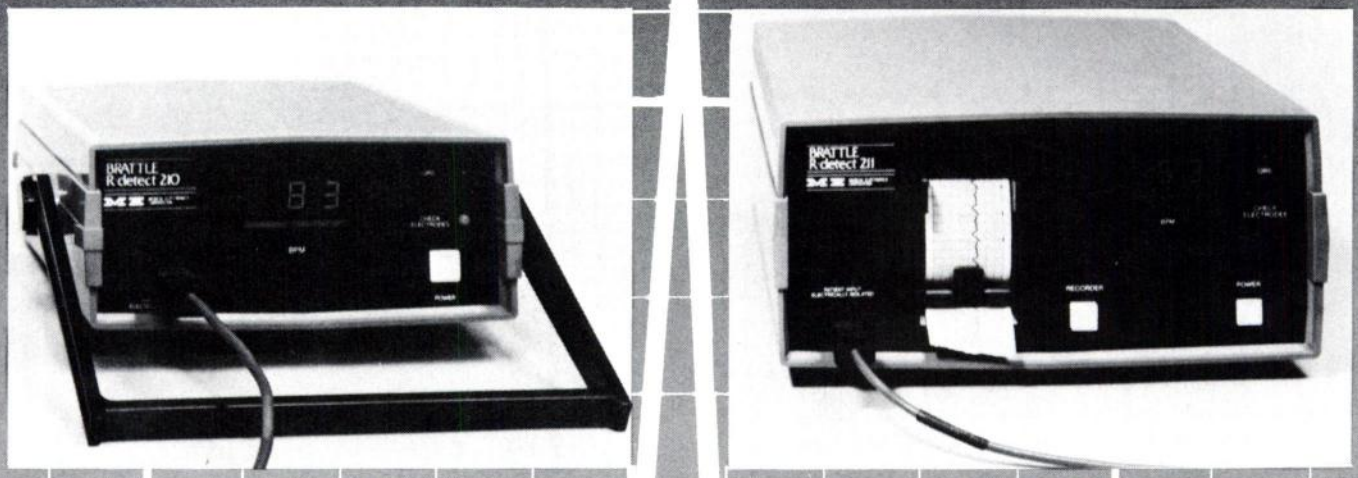

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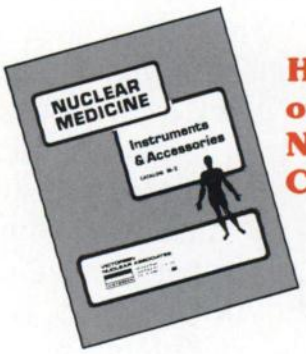

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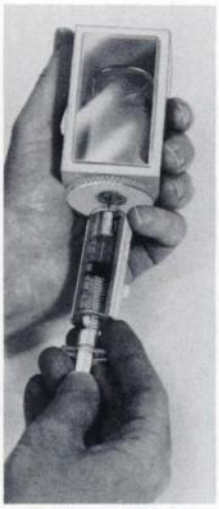

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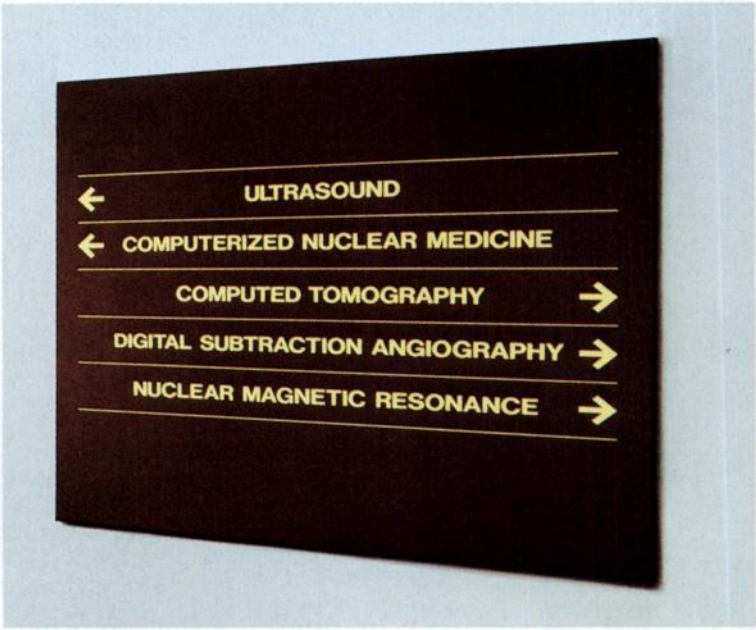

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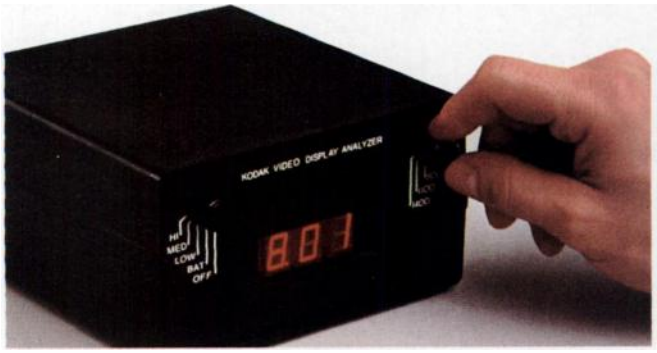

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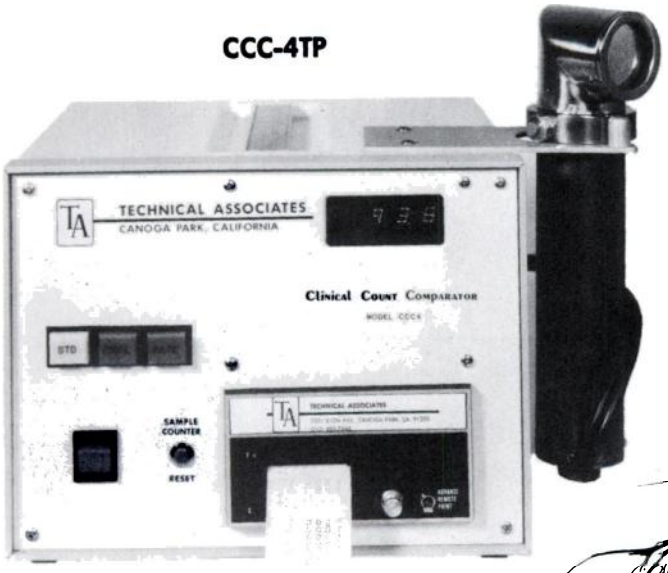
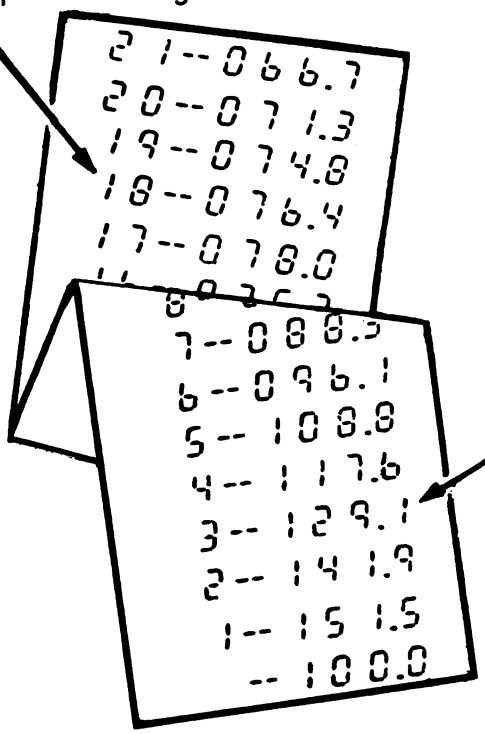


position on leg



percent uptake

Print Out
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- Direct **digital percent** readout
- Printout **saves time**
- Bedside operation
- Right angle probe minimizes patient disturbance
- Controls are on probe
- Operator **error protection**
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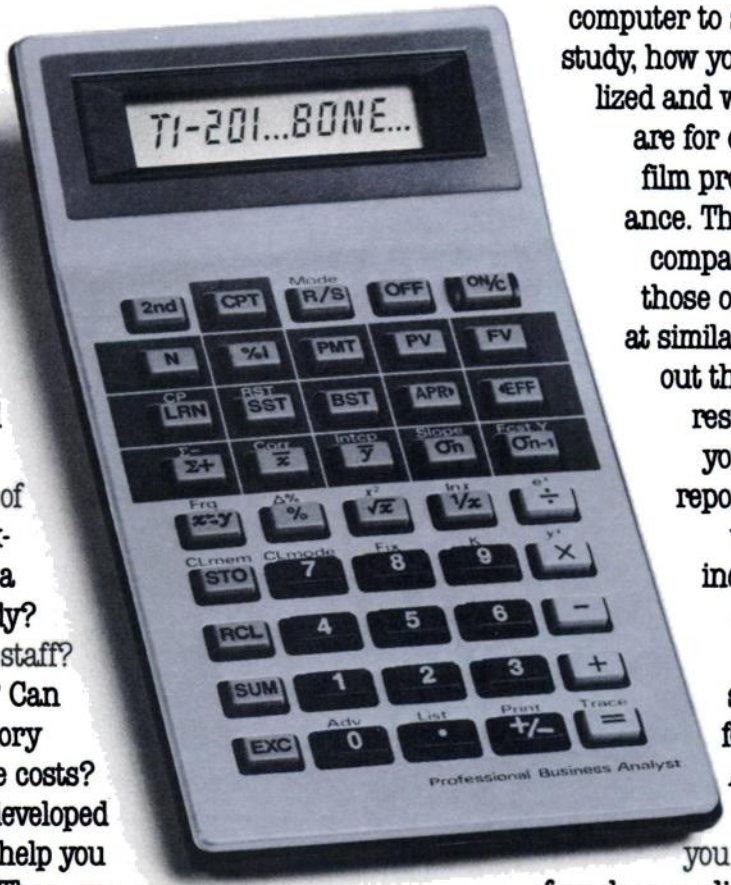
This means that you are being asked to become more of a businessman, adding terms like "efficiency" and "productivity" to your medical vocabulary. Now you have to know the real operating costs of your department. What, for example, does it cost to perform a bone scan? Or a thallium study? Are most costs attributable to staff? To equipment? Or to supplies? Can changes in scheduling, inventory or procedure mix reduce these costs?

At NEN/Du Pont we've developed a computer-based program to help you determine and analyze costs. Then, you can use the results to increase productivity in your department. It's called Financial Management Analysis (FMA) and it's available to all our customers.



FMA—A Management Program For You

Here's how it works. Your NEN/Du Pont representative will help you collect such data as costs for personnel, supplies and instrumentation, the number and kind of studies you perform and the time the studies take. Then, this input will be analyzed by the computer to show your costs per study, how your staff is being utilized and what your total costs are for every category, from film processing to maintenance. The program can even compare your figures with those of other departments at similar hospitals throughout the country. Your representative will present your FMA in a written report, and will review it with you to help you increase the efficiency of your department.

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What is a Digital Gamma Camera?

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What is a Digital Gamma Camera?

A Digital Camera—

—is operated and controlled by state-of-the-art microprocessor arrays;

—has digital circuitry which enables it to acquire data at count rates as high as 500,000 cps, while maintaining clinical resolution;

—has correction circuits which create close to perfect performance —such as 2% uniformity and 0.1% linearity;

—stores data it acquires on its own Winchester hard disk drive and floppy diskettes;

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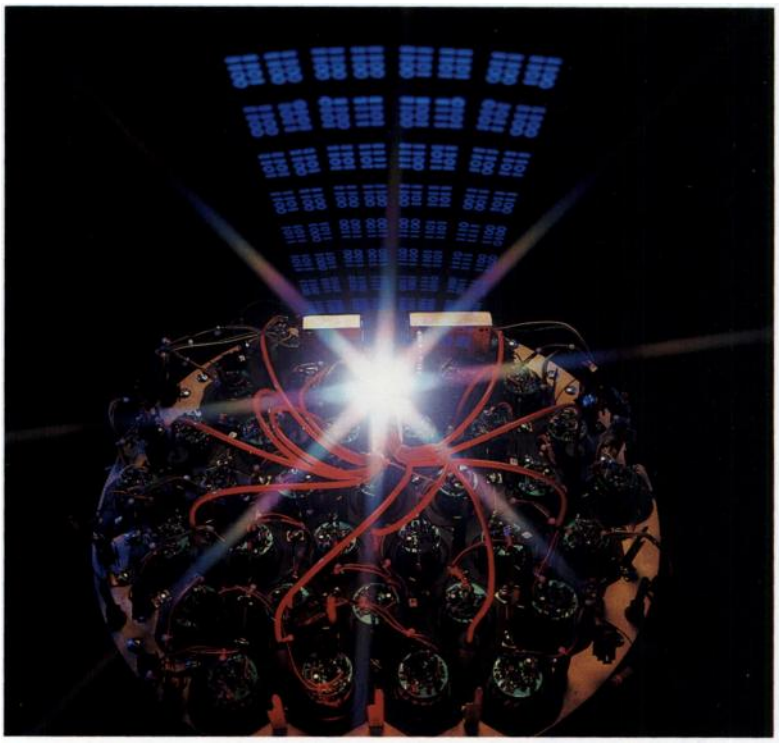
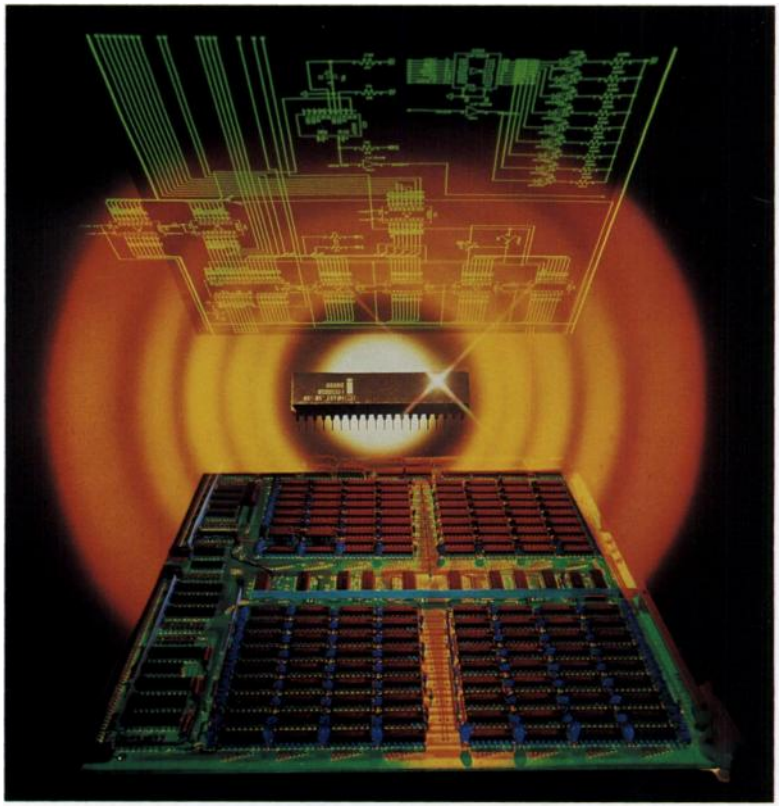
—self-tunes.

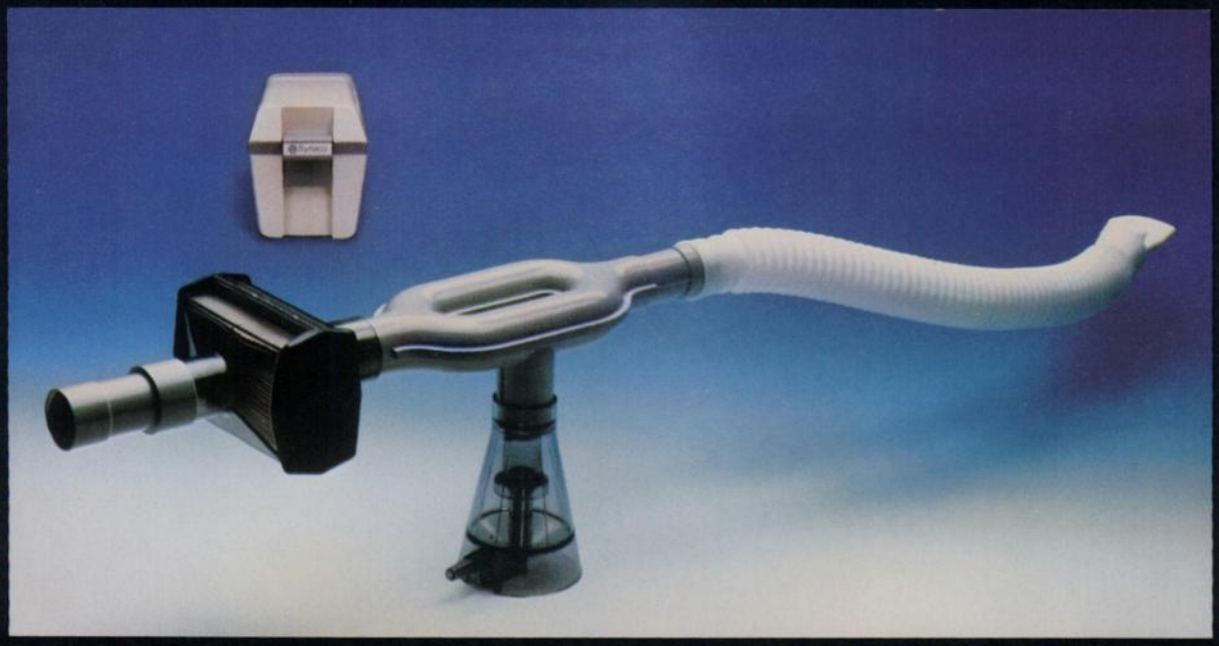
All of the above are typical ingredients of a true Digital Gamma Camera.

Therefore, a Digital Camera may cost a little more than an analog or quasi-digital camera of the type used in the past. Yet it is cost effective.





Ventilation scanning



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DuPont's Video Imaging the image quality you

Specialists: Giving you want, time after time.

To help you cope with the imaging revolution, Du Pont developed special films that faithfully reproduce CRT images. Just as important, we trained over 100 specialists in the CRT imaging expertise you need. No other company has anywhere near as many.

We schooled our specialists in delivering the hard copy quality you want—time after time, no matter what the modality.

Here's what our Video Imaging Specialists are well-prepared to do when you use Du Pont film:

1. Defining the image you want.

Du Pont MRF-31 and MRF-32 are high-contrast, single-emulsion films, providing optimum definition of CRT images.

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3. Optimizing your processing conditions.

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At the lowest price ever. And it's mobile.

A million counts per second. Honest.

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An honest million. No buts, no maybes, no ifs. No kidding.

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Or more accurately, on its wheels. The mobile camera is an intelligent detector with its own interactive array processor built in. All corrections for isotope decay, uniformity, energy deadtime and background are done on the fly, without data loss during acquisition.

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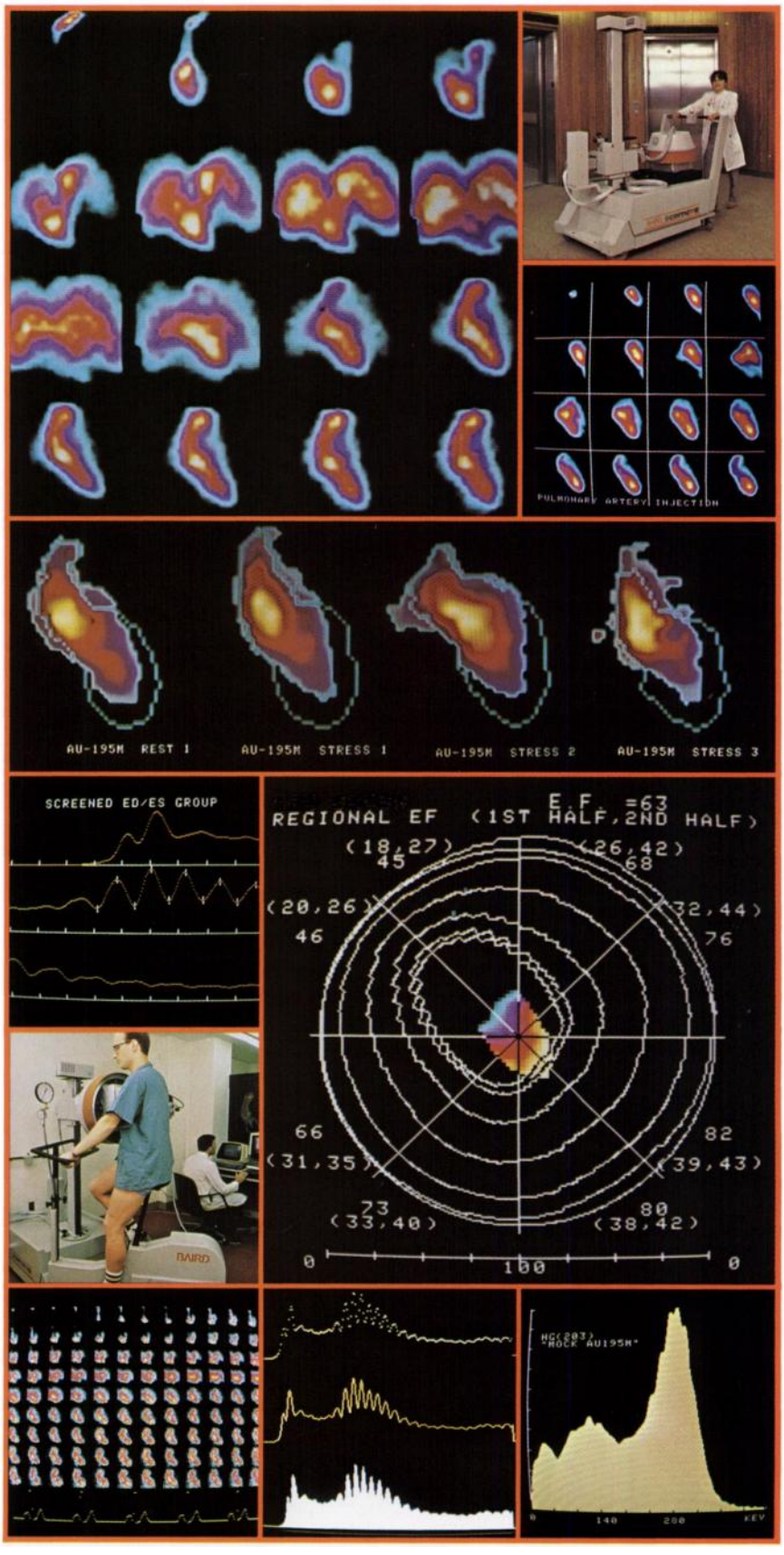
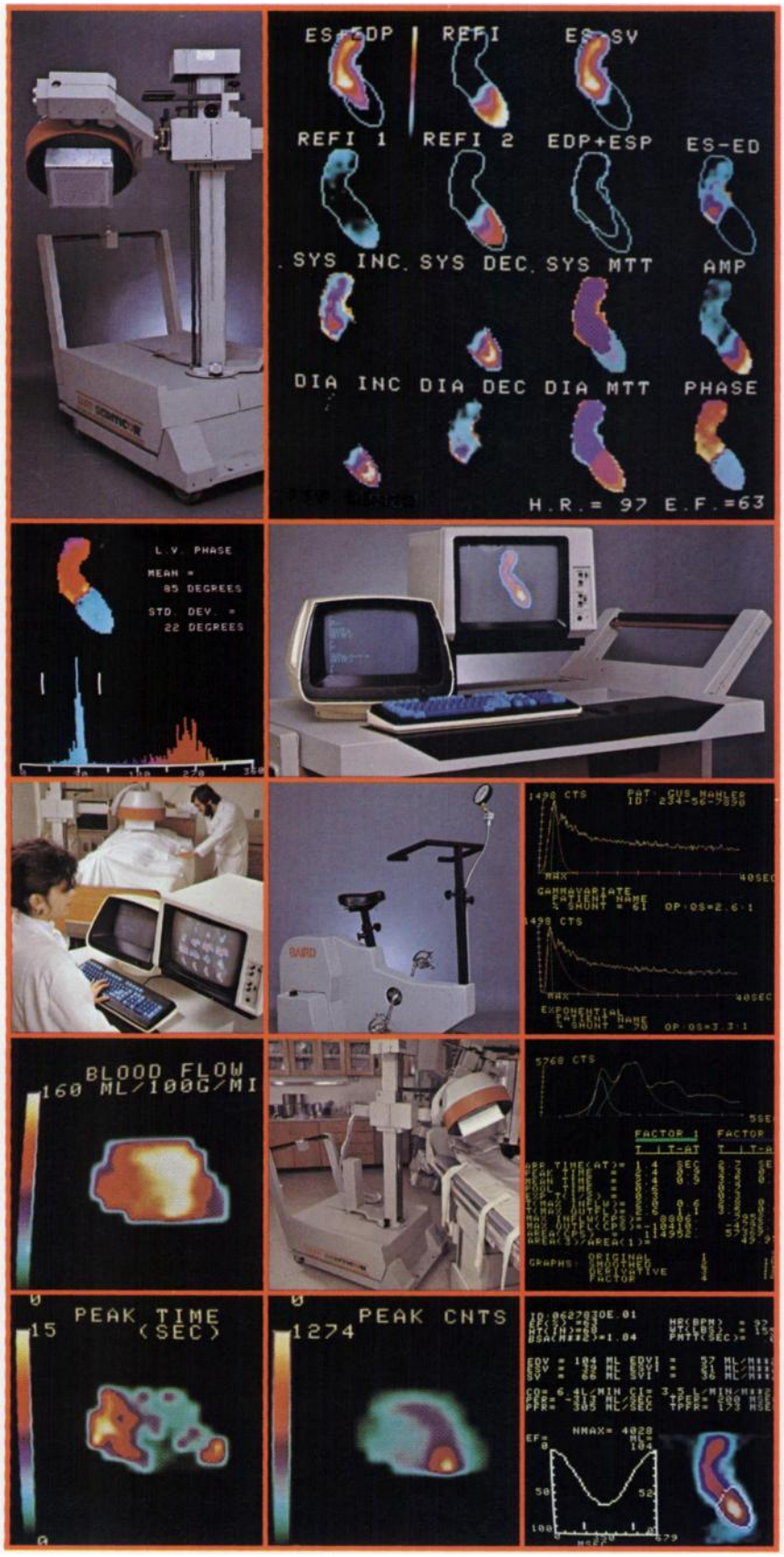


It's not just another pretty image.



And, from acquisition to print out, total processing time is a fraction of any competing nuclear system.

Push us around.

The mobile camera and computer consoles are connected by a high speed fibre optic cable, and may be operated up to 100 meters apart. Measure cardiac function with equal ease at the patient's bedside, in the stress lab, cath lab, ICU, CCU, emergency room or in the nuclear medicine department.

All in all, it's the best nuclear cardiology system ever.

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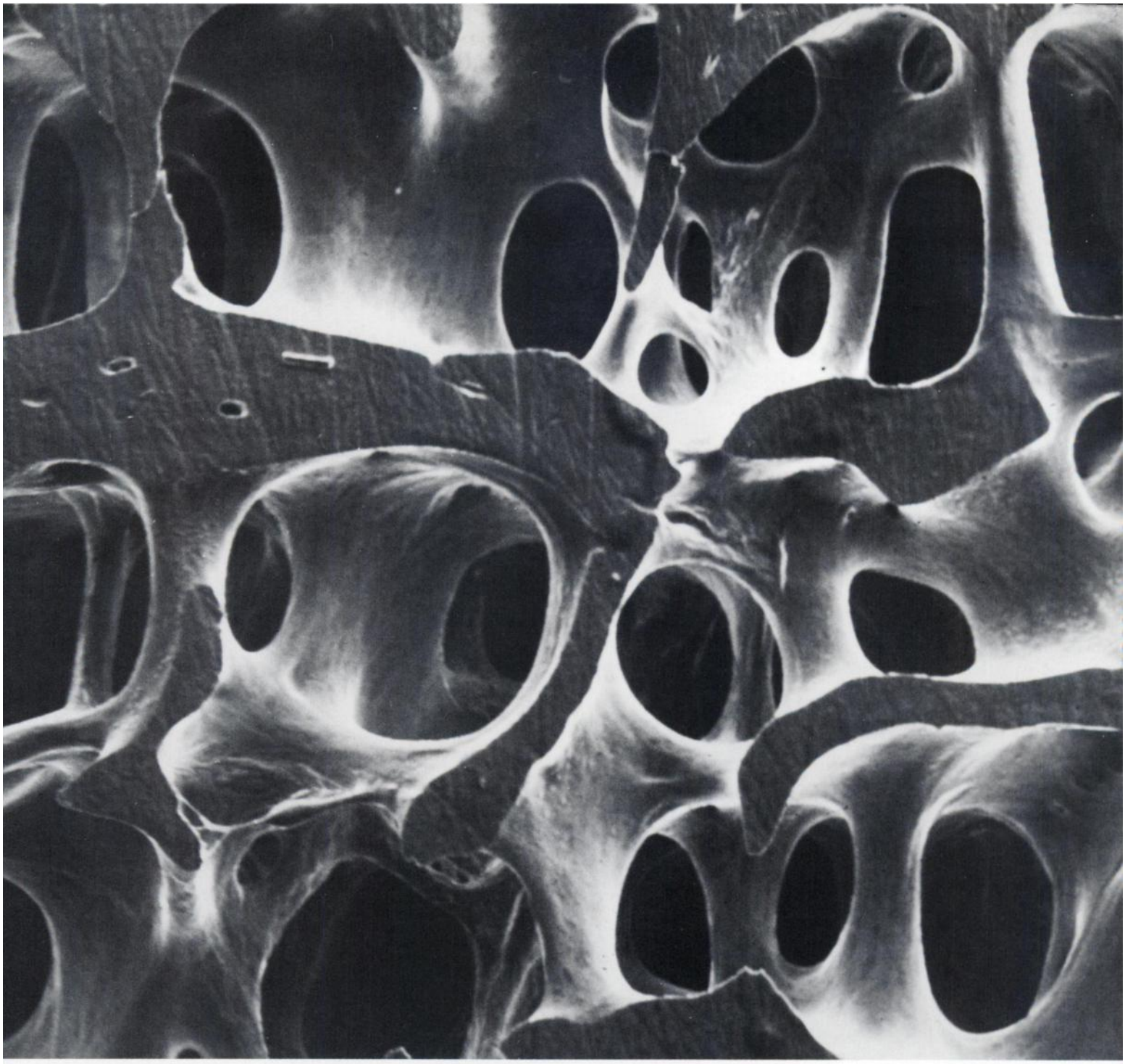

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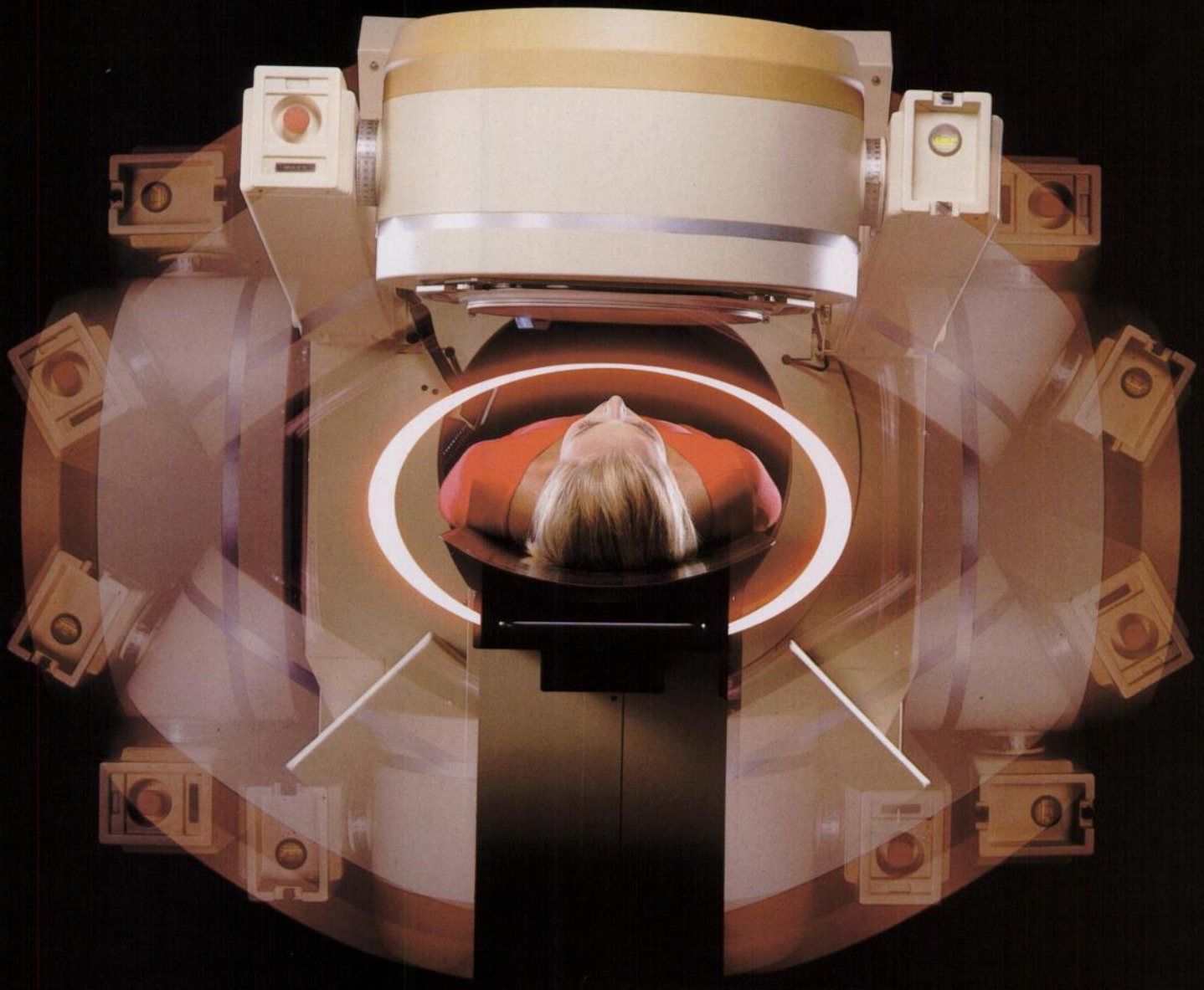

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A new approach to thallium-201 quantitation

David A. Chesler, ScD
Principal Research Associate in Radiology, Harvard Medical School
Physics Research Group, Massachusetts General Hospital

Gerald M. Pohost, MD
Director, Division of Cardiovascular Disease, and Professor of Medicine and Radiology, University of Alabama at Birmingham

Charles A. Boucher, MD
Assistant Professor of Medicine, Harvard Medical School
Director of Nuclear Cardiology, Massachusetts General Hospital

Robert D. Okada, MD
Assistant Professor of Medicine, Harvard Medical School
Assistant in Medicine, Massachusetts General Hospital

Michael V. Yester, PhD
Associate Professor of Diagnostic Radiology, University of Alabama at Birmingham

Many studies have demonstrated that computer quantification and analysis may significantly increase the sensitivity and specificity of thallium-201 imaging, enhance the consistency of interpretation and, by providing information on regional clearance not obtainable from visual interpretation alone, better define the extent of ischemia in patients being evaluated for coronary artery disease.

We have developed a computer program for quantification and analysis of thallium-201 imaging data, which differs from other available programs in its assumptions about left ventricular geometry and its approach to such critical areas as image alignment for comparison of different regions over time and background subtraction. In addition, the program provides certain unique display features, such as a functional image, that facilitate communication between the performer of the study and the referring clinician.

The ventricular ellipse

In contrast to other programs, our program takes into account the essentially ellipsoid shape of the left ventricle and the fact that the myocardial wall has thickness. The operator establishes the angle and length of the long axis of the ventricular ellipse, and excludes the basal part of the image that represents the valve plane. Then the computer automatically defines the region of interest for each view as the area bounded by an outer ellipse corresponding to the epicardial surface of the ventricle and an inner ellipse representing the ventricular cavity. The operator determines the thickness of this region of interest by specifying the number of pixels to move in from the outer ellipse.

Next, the program automatically divides the area between the inner and outer ellipses into five segments, corresponding to the segments conventionally analyzed on coronary angiography: apex, inferior, inferobasal, anterobasal and anterolateral. The boundaries between segments are established by dividing the outer ellipse into five equidistant lengths, then dropping perpendiculars to the tangents at those five points.

We believe that using an elliptical instead of a circular region of interest and defining the segments based on that ellipse more accurately reflects the true shape of the left ventricle and accommodates the wide range of normal geometric variability in the population.

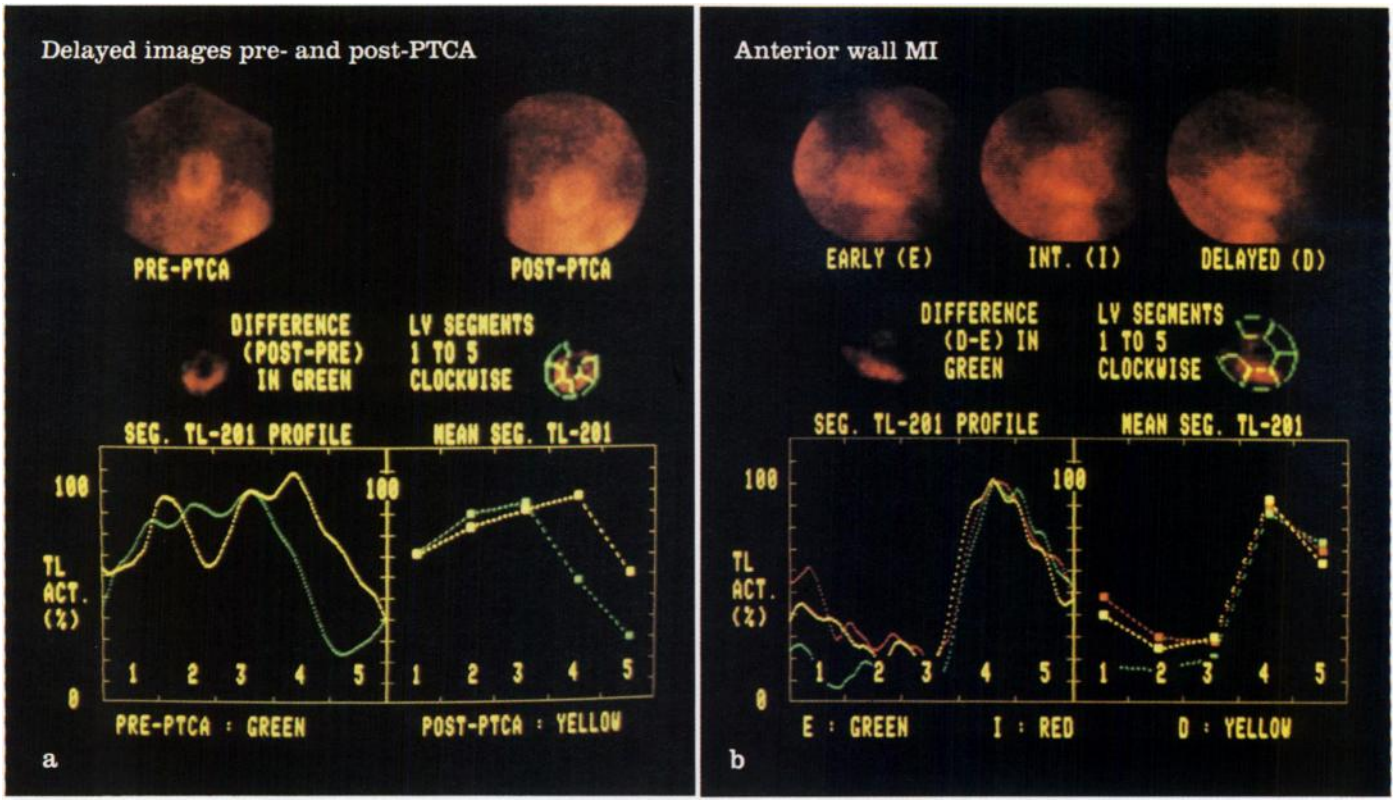
Automatic realignment

In order to compare initial with delayed images, or images made before and after some therapeutic intervention, the program automatically realigns subsequent images in each view by using a maximum-correlation analysis to obtain a best fit with the initial image. We believe that this feature of the program should lead to improved consistency of interpretation by eliminating a potential cause of inter- and intraobserver disagreement.

Background subtraction is performed after the automatic realignment. The computer subtracts background from every single pixel within the region of interest individually, based on the relation of each pixel to every single point just outside the outer ellipse—instead of determining an average background based on the extrapolation of a limited number of points.

Transmural activity

The program determines the count profile for each image by dropping a perpendicular from the tangent at 128 points around the outer ellipse. It then looks at activity along that perpendicular pixel by pixel and takes the mean of the three (or more, at the discretion of the operator) hottest consecutive pixels. Thus, instead of reflecting peak pixel activity around the myocardium or in horizontal cuts across the myocardium, the count profiles incorporate transmural change in activity across the thickness of the myocardium. The plotted profiles express these mean values for each image as a percentage of the hottest value and display the data both as continuous curves and as averages of each of the five individual segments. Delayed image data are normalized on the count profiles so that the same pixels that read 100 on the initial image read 100 on the delayed.



Quantitative thallium-201 studies demonstrating (a) pre- and post-PTCA findings and (b) anterior MI. In study (a), comparison of the delayed 45° LAO images pre- and postangioplasty shows improved septal perfusion (shown as green on the functional, or difference, image). Note that the program automatically realigned the studies, even though they were performed at different times *and* on different cameras. Study (b) demonstrates some redistribution in segment 1 (green on the functional image) in a patient with an anterior wall MI.

Information on regional thallium clearance is plotted and displayed separately from the count profiles. Using raw (nonnormalized) data, the program calculates the clearance time for each segment based on three time points in each segment. The computer automatically fits these three points to the best-fit monoexponential curve and shows the clearance time ($T½$) in hours from peak activity.

Functional image

In addition to the processed images and count and clearance profiles, the program displays a three-color functional image for each view of the study. Normal segments—those that show no change between initial and delayed images—are displayed in red. Abnormal segments that demonstrate redistribution over time are shown in green, and segments with persistent defect are in black. We believe this functional image provides a succinct and graphic means of communicating the results of the study from the interpreter to the clinician who has ordered the study.

Preliminary results

We have already utilized this program in assessing the thallium studies of over 600 patients and are now beginning to publish our results.[1-3] Our preliminary data suggest that the program compares favorably with other quantitative approaches to thallium imaging in providing accurate results and greater interobserver agreement, and in identifying ischemic regions on the basis of abnormal thallium clearance.

The advantages of the program are those we hoped to achieve in developing it: a region of interest that more accurately corresponds to the shape of the left ventricle; quantification of activity that accounts for the thickness of the myocardium; a more realistic approach to background subtraction; automatic image alignment; and a display that facilitates understanding of the data. We have obtained these advantages with no increase in required operator intervention.

The following are references to abstracts presented before the American College of Cardiology, 33rd Annual Scientific Session, March 25-29, 1984, Dallas, Texas.
1. Ruddy TD, Okada RD, Boucher CA, Strauss HW, Pohost GM: Quantitative analysis of serial thallium images after dipyridamole infusion.
2. Liu P, Kiess MC, Okada RD, Boucher CA, Block PC, Strauss HW, Pohost GM: Normalization of persistent defects on thallium scans after myocardial revascularization: Scar or ischemia? 3. Liu P, Kiess M, Bendersky R, Okada RO, Boucher CA, Block PC, Pohost GM, Strauss HW: Exercise-induced increase in left ventricular filling pressures in isolated left anterior descending (LAD) coronary disease.

Please see following page for brief summary of prescribing information.

Thallous Chloride TI 201

INDICATIONS AND USAGE: Thallous Chloride TI 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.

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 TI 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 TI 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.

Carcinogenesis, Mutagenesis, Impairment of Fertility. No long-term animal studies have been performed to evaluate carcinogenic potential or whether Thallous Chloride TI 201 affects fertility in males or females.

Pregnancy Category C. Animal reproductive studies have not been conducted with Thallous Chloride TI 201. It is also not known whether Thallous Chloride TI 201 can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Thallous Chloride TI 201 should be given to a pregnant woman only if clearly needed.

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.

Nursing Mothers. 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.

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

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.

The expiration date for Thallous Chloride TI 201 is a maximum of five days post-calibration.

ADVERSE REACTIONS: A single adverse reaction to the administration of Thallous Chloride TI 201 has been reported consisting of hypotension accompanied by pruritus and a diffuse rash which responded to antihistamines and steroids within one hour.

DOSAGE AND ADMINISTRATION: The recommended adult (70kg) dose of Thallous Chloride TI 201 is 1–1.5mCi. Thallous Chloride TI 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.

HOW SUPPLIED: Thallous Chloride TI 201 for intravenous administration is supplied as a sterile, non-pyrogenic solution containing at calibration time, 1mCi/ml of Thallous TI 201, 9mg/ml sodium chloride, and 9mg/ml of benzyl alcohol. The pH is adjusted to between 5-7 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 2.2, 4.4 and 6.6 millicuries of Thallous TI 201.

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

Catalog Number NRP-427 511485 January 1982

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Novo BMC-LAB 22a

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Loss of bone mineral, and fractures associated with the axial skeleton, are closely associated with metabolic bone disease. Trabecular bone, predominantly present in the axial skeleton, notably the lumbar vertebrae, is affected to a larger extent than cortical bone present in the peripheral skeleton. BMC measurements in potential fracture sites in the axial skeleton provide the most reliable indication of fracture risk.
The Novo BMC-LAB 22a measures BMC in the lumbar spine, the femoral neck and other parts of the skeleton.

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A large number of drugs and regimens influence the calcium balance. BMC measurement is a cost-effective and direct means of monitoring patients in haemodialysis, during nutrient supplementation, exercise and drug administration programs.
Ease of operation and low radiation dose make the Novo BMC-LAB 22a ideal for routine monitoring and screening of patients.

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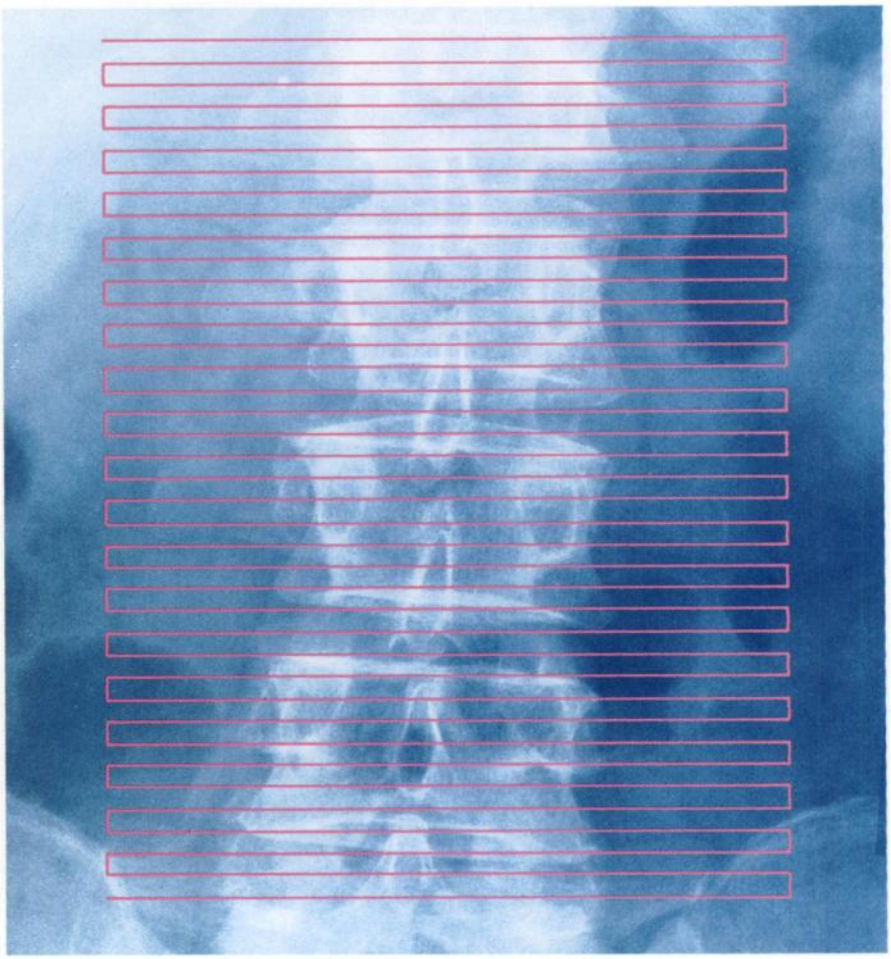
The Novo BMC-LAB 22a is a dual-photon bone densitometer. The technique obviates the need for soft tissue equivalent materials, without sacrificing the excellent precision of the proven single-photon method.

Safety, Flexibility and Ease of Operation

Advanced software guides the user through the measurements and prompts the operator in case of error. Extensive interactive capabilities provide extremely flexible selection of regions of interest.



The Novo BMC-LAB 22a features three dedicated programs: for COLUMNA, and for right and left COLLUM FEMORIS. A fourth OPTIONAL program is included to meet individual requirements.

For further information please contact:

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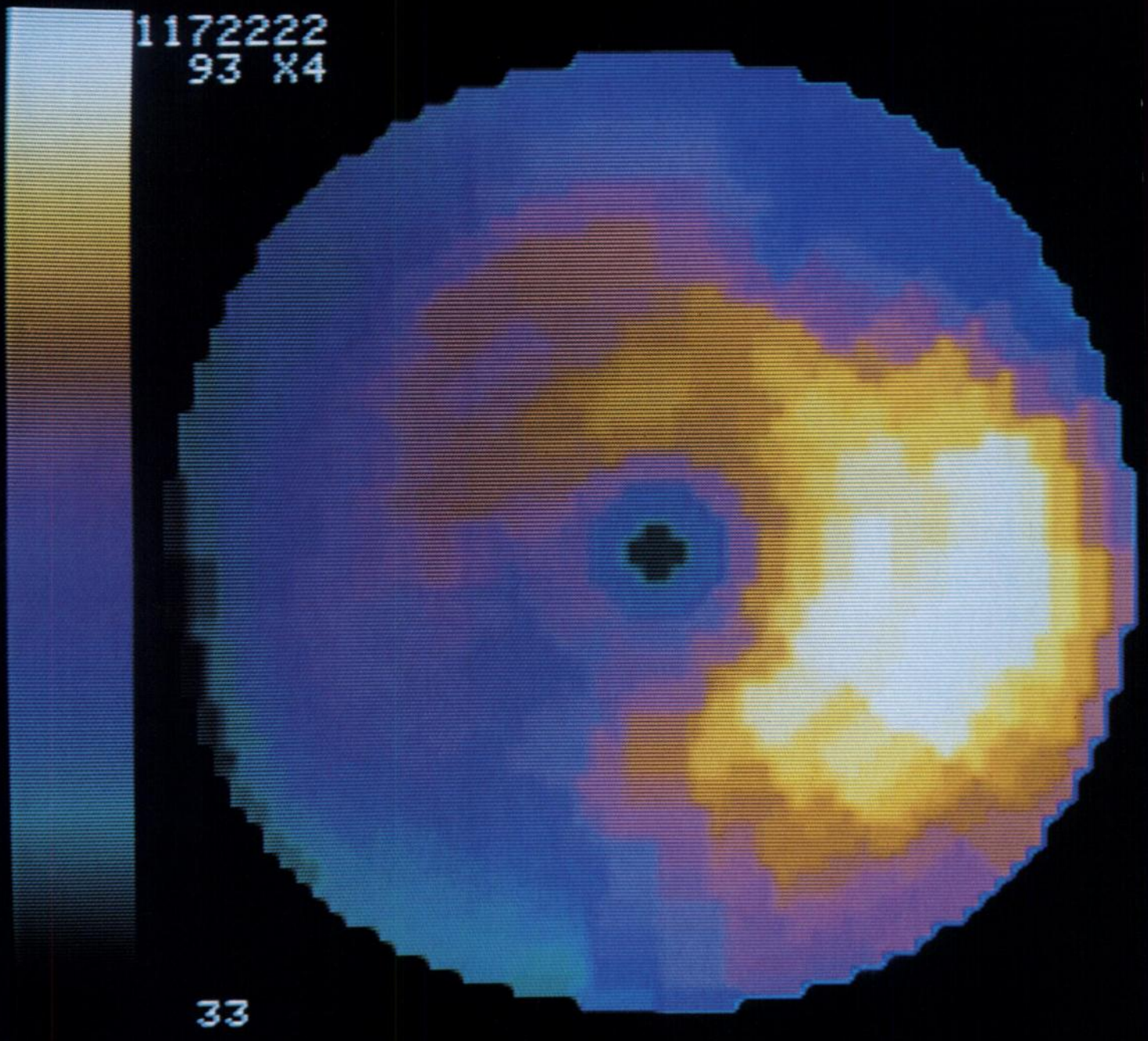
Bull's-eye



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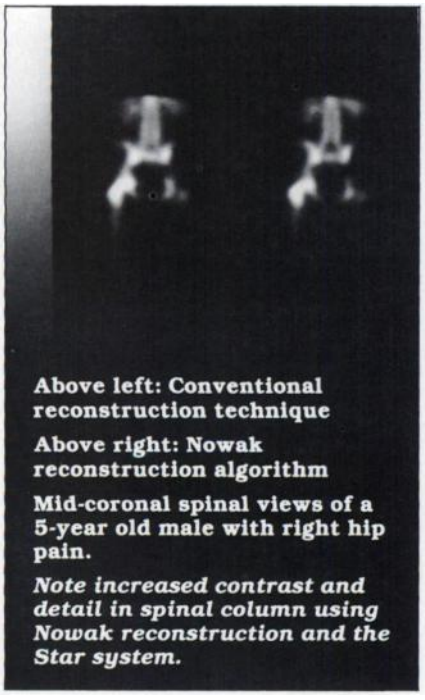
You need a way to view multiple short axis slices of the heart to get a complete, accurate picture of cardiac perfusion. General Electric, together with clinical research sites throughout the country, has developed a program to put detection of myocardial perfusion defects on target: the Bull's-eye plot. Now you can view multiple slices of the entire myocardium in a single image...so you can target areas of decreased perfusion quickly and accurately.



Above left: Conventional reconstruction technique

Above right: Nowak reconstruction algorithm

Mid-coronal spinal views of a 5-year old male with right hip pain.

Note increased contrast and detail in spinal column using Nowak reconstruction and the Star system.

Head-on cardiac imaging...
When it comes to three-dimensional imaging, our emission computed tomography software provides unmatched visualization of the ventricular walls...and with GE's oblique angle "off-axis" reconstruction technique, you view the myocardium head-on, in relation to the heart's axis.

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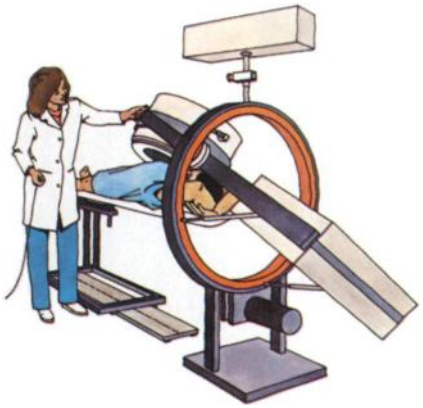

Images are reconstructed rapidly. The Star™ system data processor reconstructs data in just 15 seconds (the optional GE array processor cuts that to under 2 seconds).

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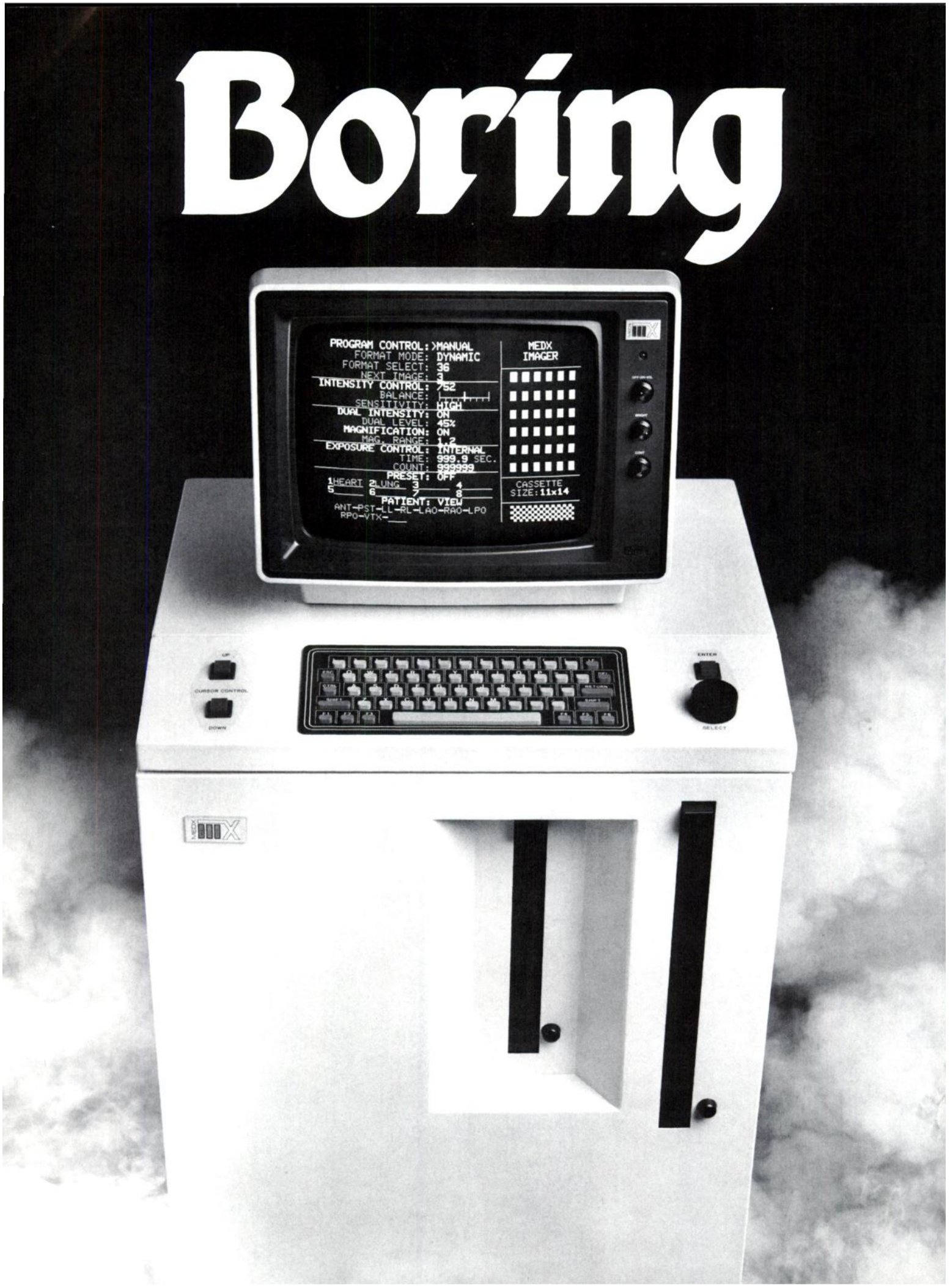
PROGRAM CONTROL: >MANUAL
FORMAT MODE: DYNAMIC
FORMAT SELECT: 36
NEXT IMAGE: 3
INTENSITY CONTROL: 752
BALANCE:
SENSITIVITY: HIGH
DUAL INTENSITY: ON
DUAL LEVEL: 45%
MAGNIFICATION: ON
MAG. RANGE: 1.2
EXPOSURE CONTROL: INTERNAL
TIME: 999.9 SEC.
COUNT: 999999
PRESET: OFF
1 HEART 2 LUNG 3 4
5 6 7 8
PATIENT: VIEW
ANT-PST-LL-RL-LAO-RAO-LPO
RPO-VTX-
MEDX IMAGER
CASSETTE SIZE: 11x14
UP
CURSOR CONTROL
DOWN
ENTER
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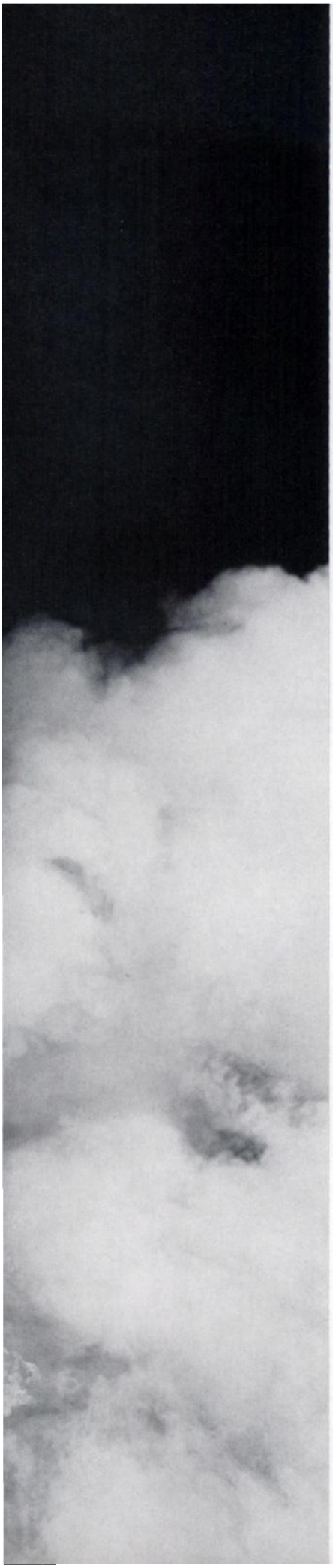

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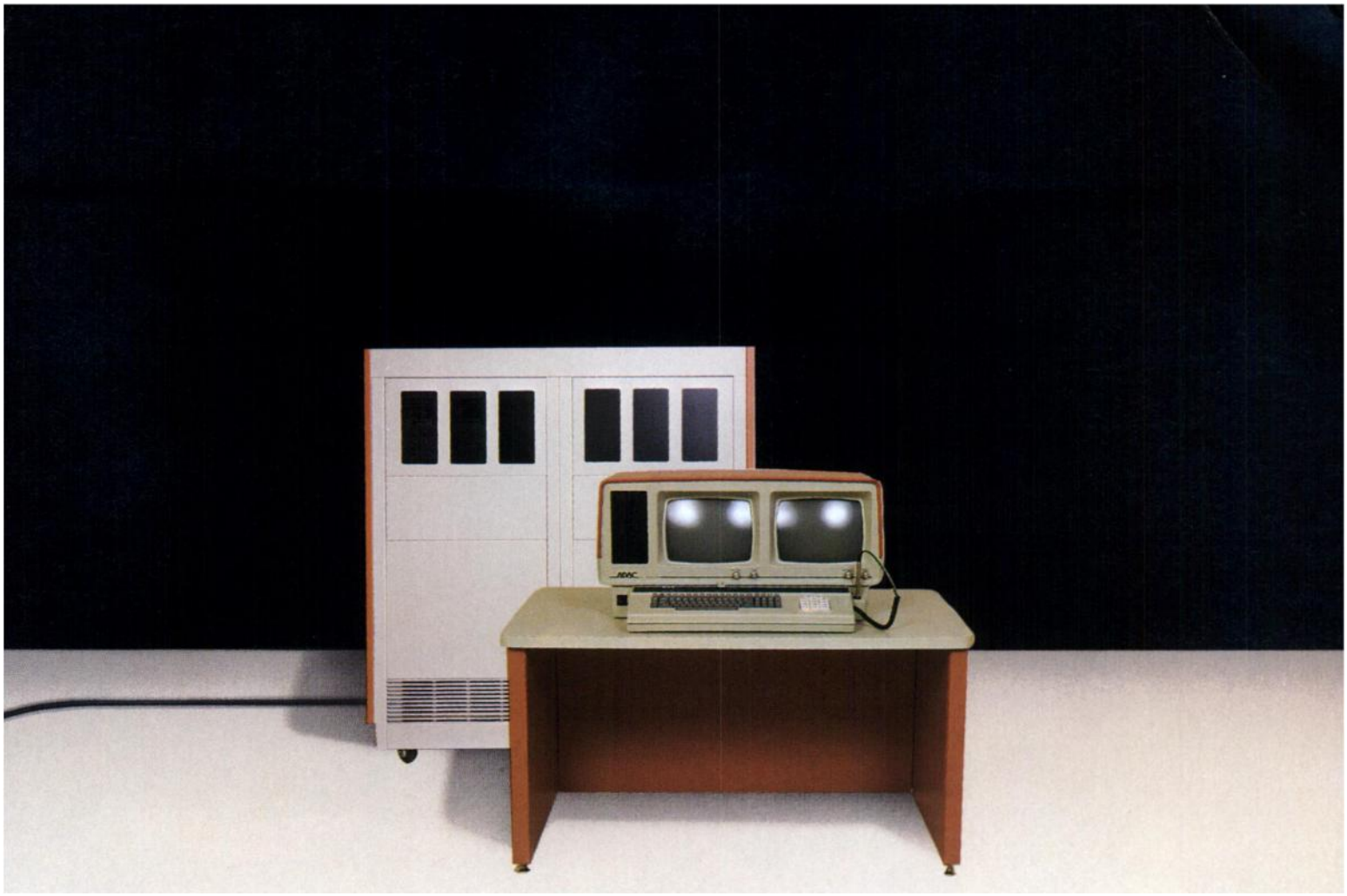

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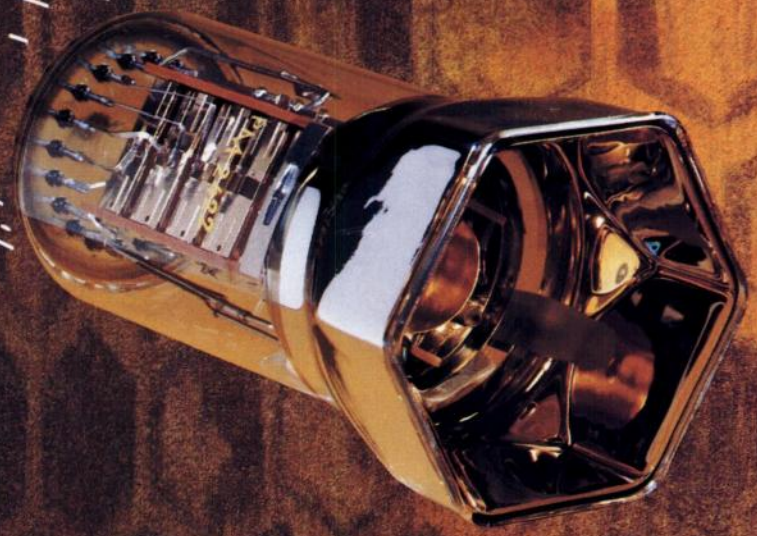

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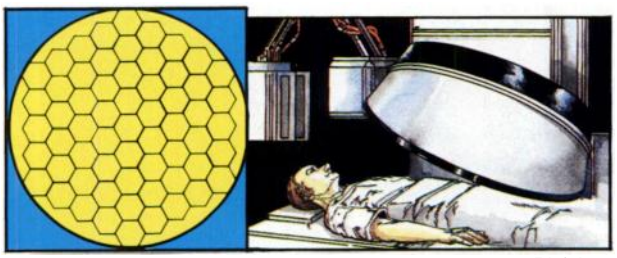

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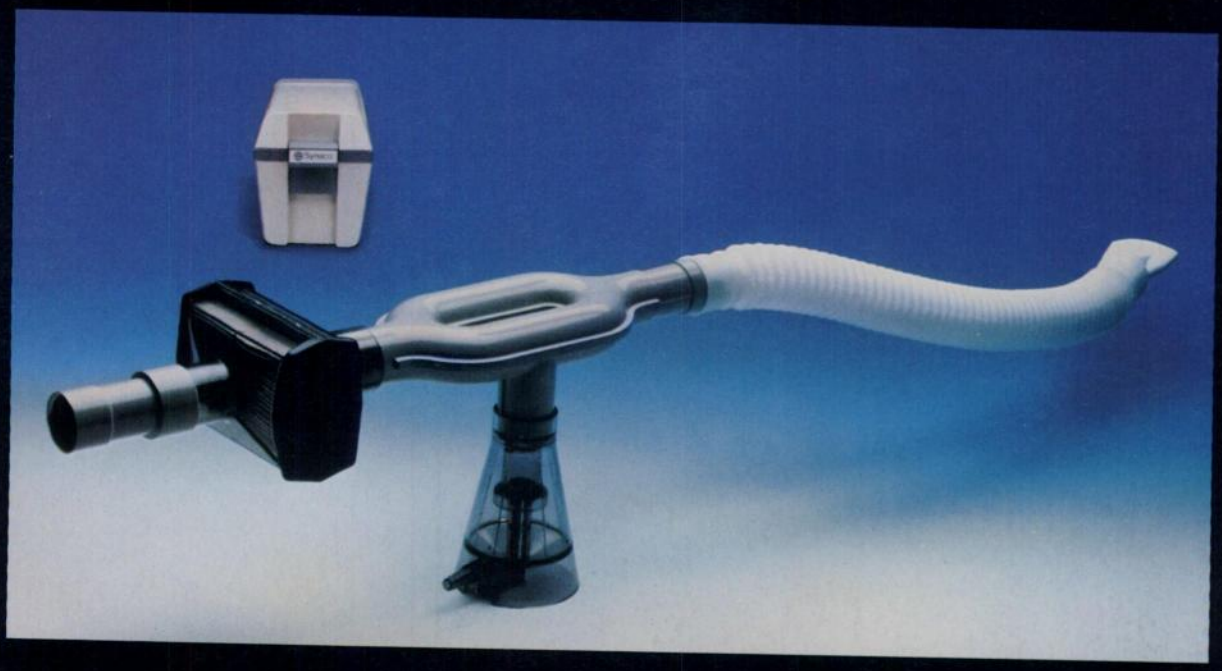

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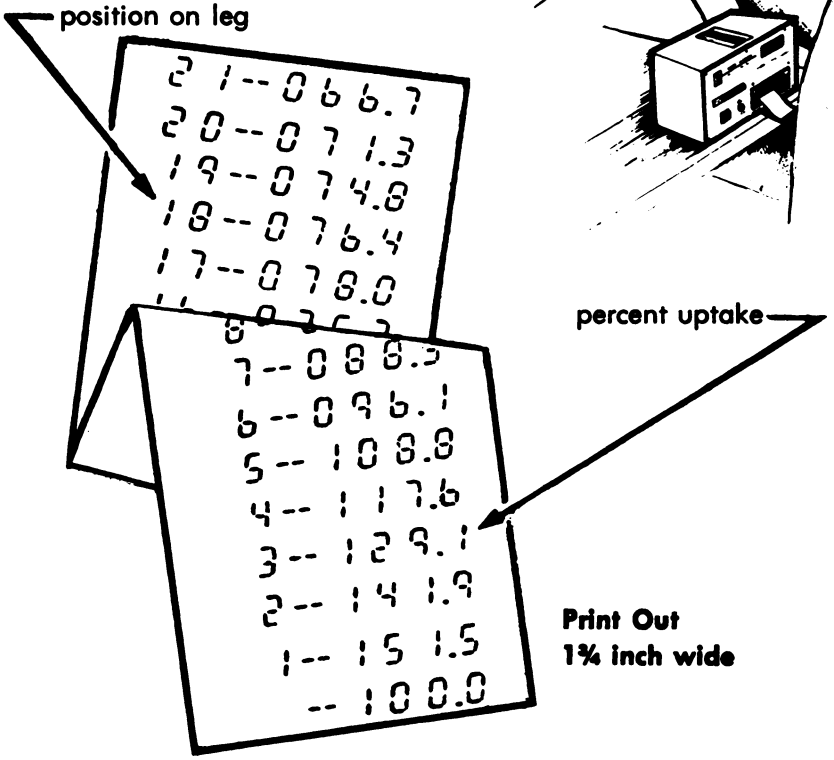

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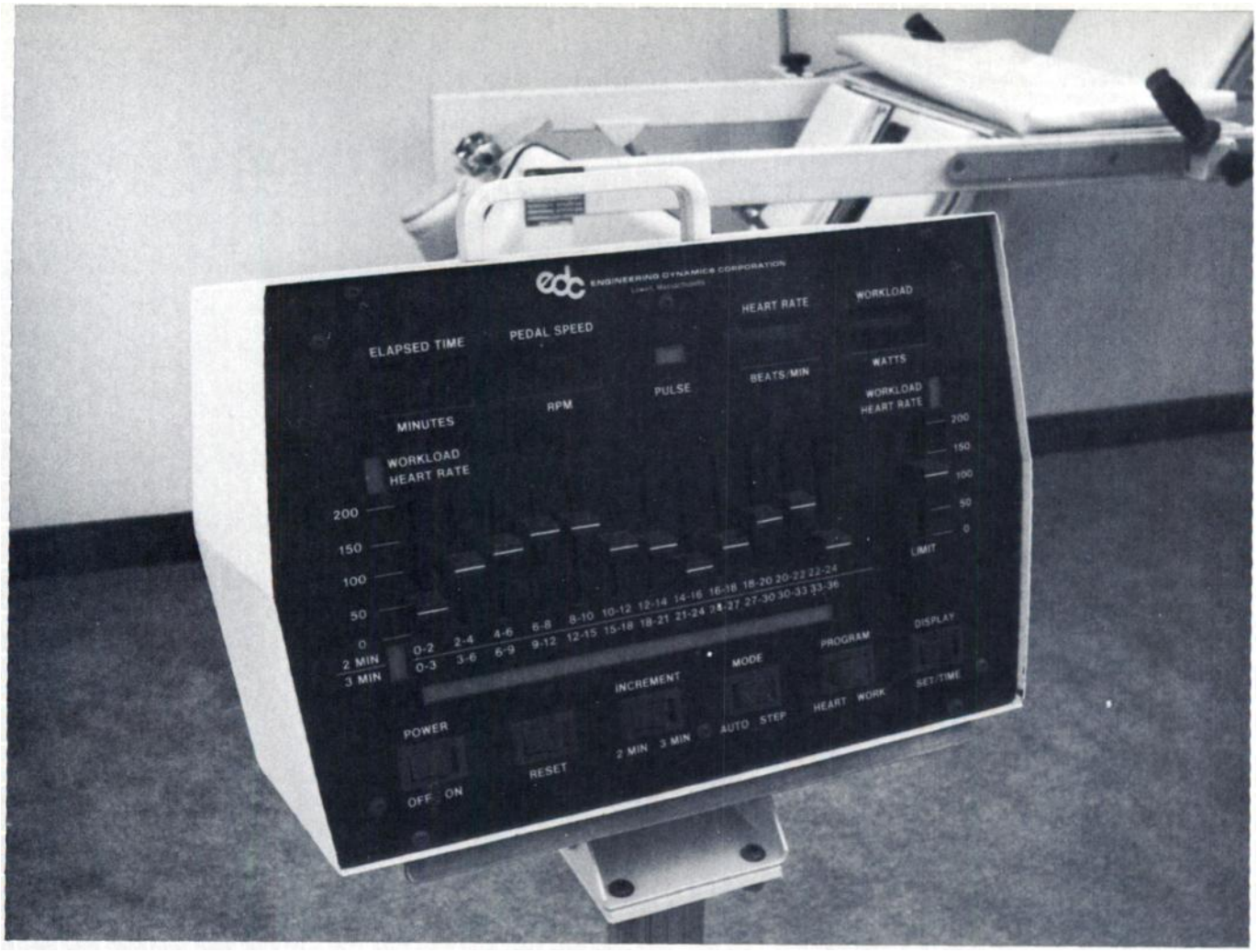

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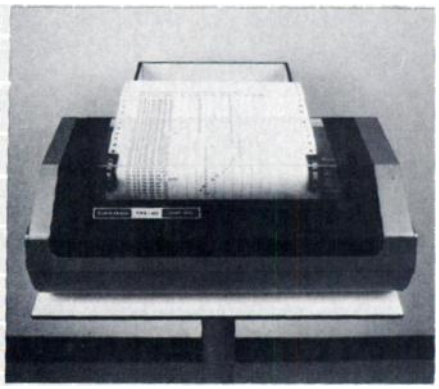

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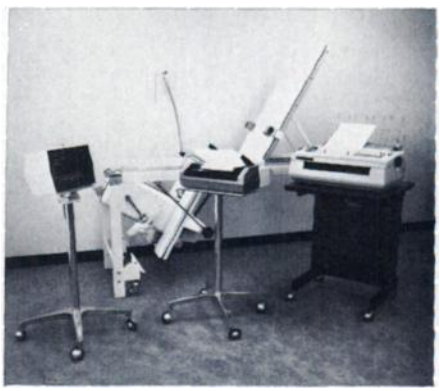

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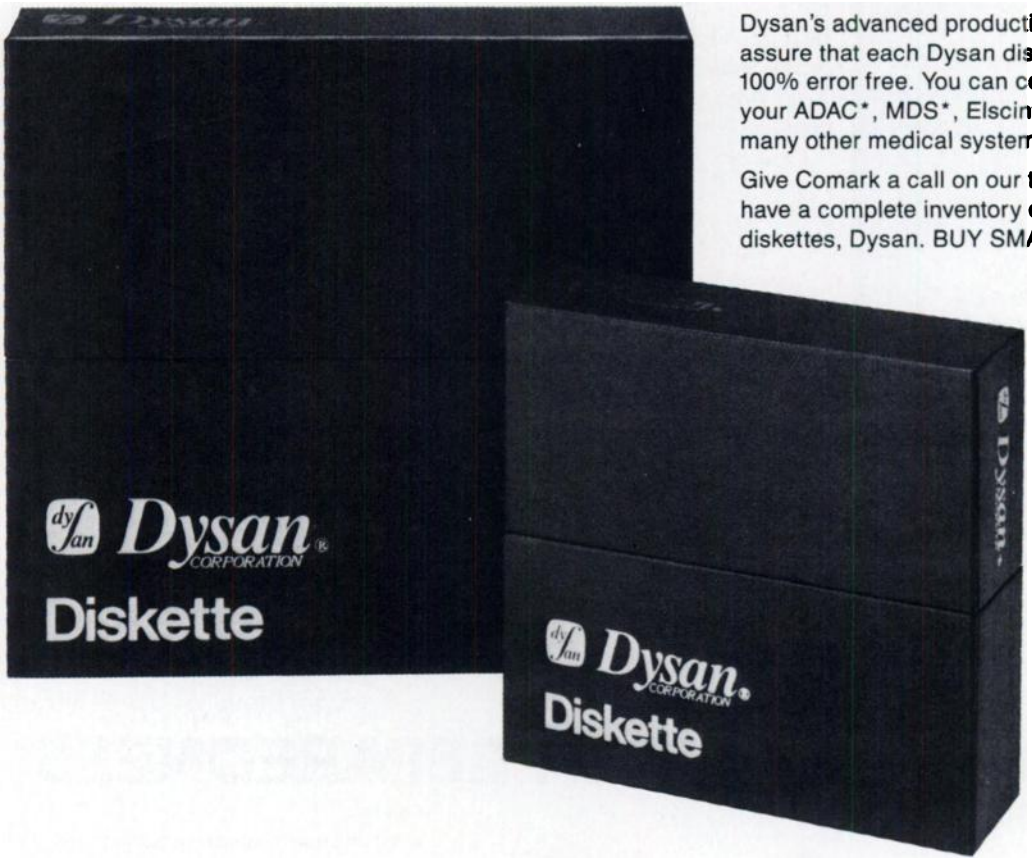

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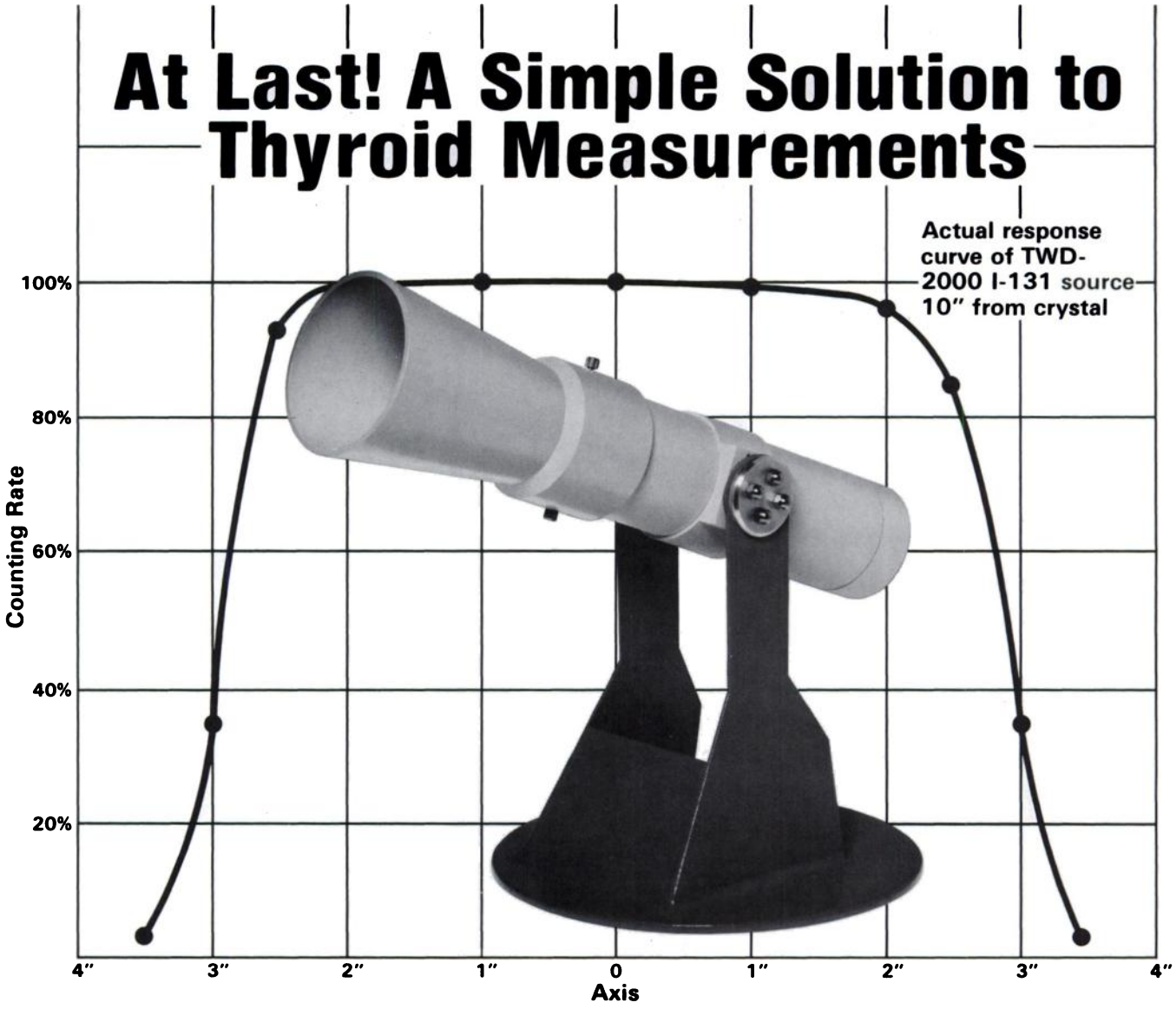

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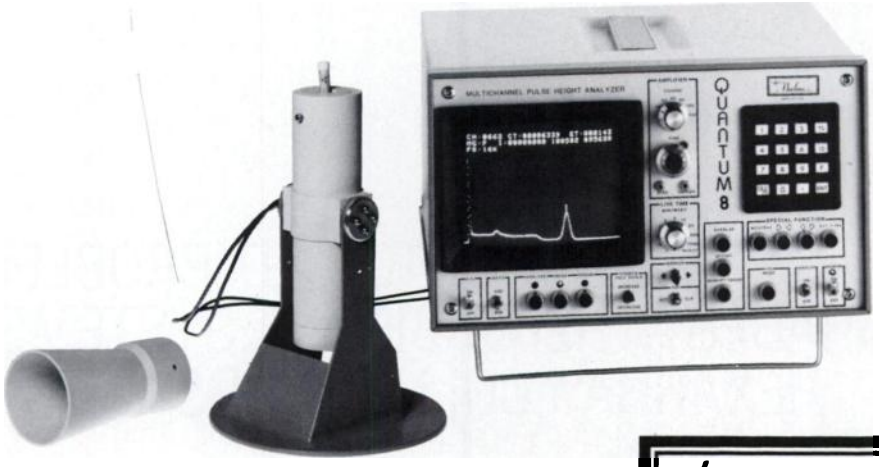

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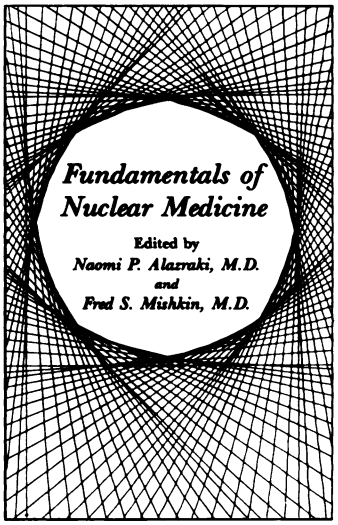

Edited by
Naomi P. Alazraki, MD, and Fred S. Mishkin, MD

Other Contributors: Manuel L. Brown, MD, Frederick L. Datz, MD, Leon S. Malmud, MD, Isaac C. Reese, PhD, Barry A. Siegel, MD, James A. Sorenson, PhD, Leroy A. Sugarman, MD, Andrew T. Taylor, Jr., MD, Heidi S. Weissmann, MD, Henry N. Wellman, MD

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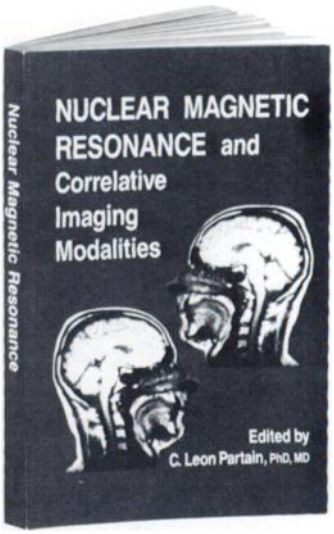

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This multi-authored book contains state-of-the-art summaries on ultrasound, x-ray, computed tomography, and digital radiography in addition to NMR. The correlative aspects of each modality with nuclear medicine are investigated. Material devoted to NMR covers topics such as basic principles and instrumentation; considerations of site preparation; safety and quality control; pulse sequences and tissue contrast; and the current clinical results at certain hospital installations. Facts on the economic, legal, and political aspects of NMR are also included.

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By Philip J. Robbins

To provide up-to-date information about the most accurate procedures for ensuring quality control of radiopharmaceuticals, The Society of Nuclear Medicine presents *Chromatography of Technetium-99m Radiopharmaceuticals—A Practical Guide.*

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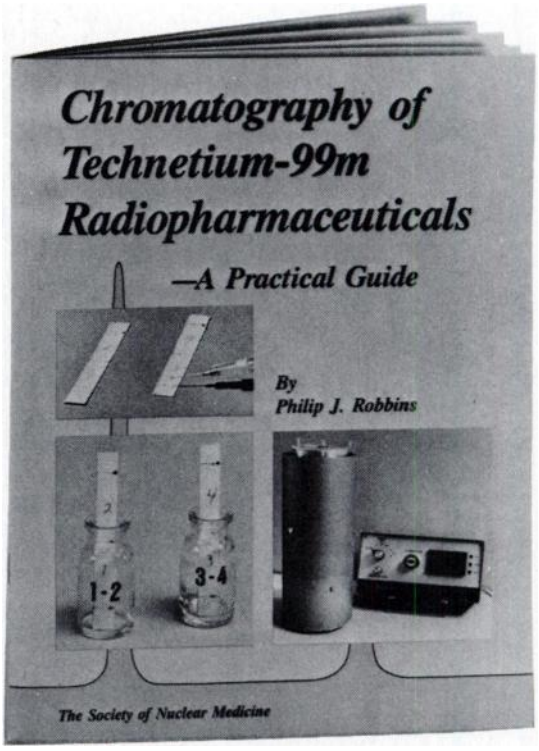
Topics covered include the nature and source of impurities, principles and classic techniques of chromatography, methods for counting miniature chromatographic strips, and pitfalls of miniature methods and how to avoid them. Also contained herein is a listing of each radiopharmaceutical with the USP criteria for radiochemical purity, typical scans of impure products, and standards and interlaboratory comparisons for miniaturized systems.

Prepared to aid nuclear medicine personnel in implementing voluntary quality-assurance programs, the material may also be used as a training resource for individuals preparing for professional licensure and certification.



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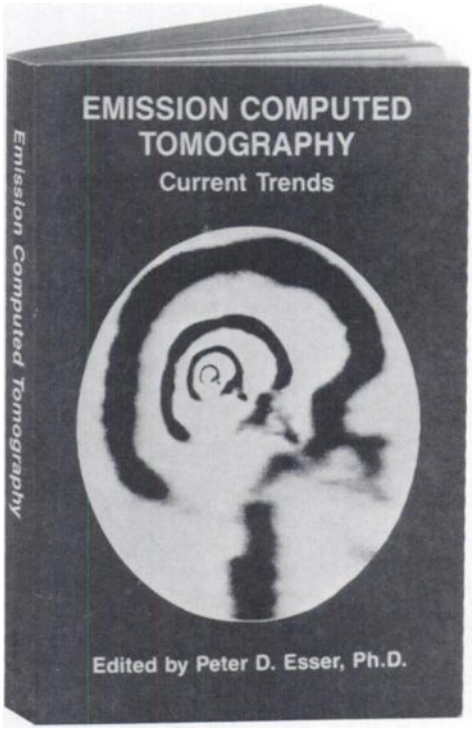

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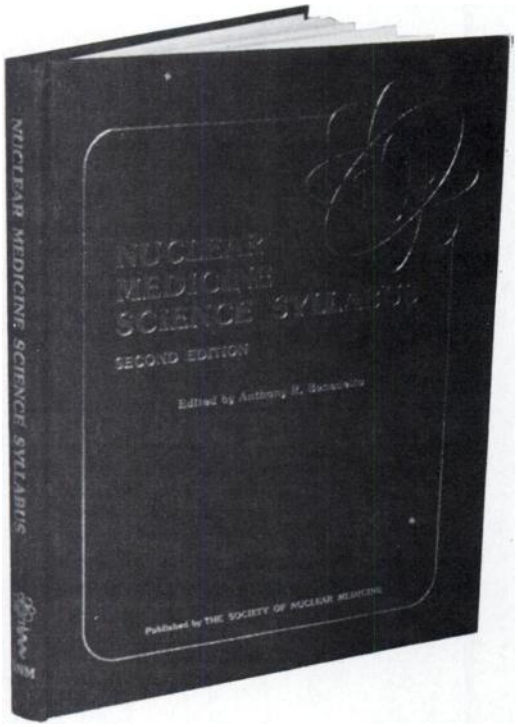
NUCLEAR MEDICINE SCIENCE SYLLABUS



8½ x 11″ hardcover; 280 pages
ISBN 0-932004-15-6; $30.50

This enlarged and updated edition presents a comprehensive, but carefully screened, bibliography of the current literature available in the field of nuclear medicine science.

Arranged in outline form, the book contains references chosen for clarity, depth, and availability. General references provide a broad overview of each topic and additional references deal with subjects in greater depth or provide historical insight.

The new edition addresses exciting new areas in the field such as emission computed tomography and nuclear magnetic resonance. Expanded sections include chapters dealing with clinical imaging and nonimaging procedures.

This book provides a valuable reference source for radiopharmacists, radiochemists, physicists, health physicists, clinicians, electronic engineers, computer engineers, and laboratory specialists working or studying in the field.

Book Reviews of the First Edition

"The book is strongly recommended to all engaged in training personnel for work in nuclear medicine, whether the course concerned is aimed at medical, scientific, or radiography staff."—*The British Journal of Radiology*

"This book attempts to catalog and categorize in outline form the more pertinent journal articles and book chapters relating to the extensive field of nuclear medicine science. The result is surprisingly detailed, complete, well-organized, and clear."—*Medical Ultrasound*

"The Syllabus appears to be a sound investment for any nuclear medicine department actively involved in the teaching of students."—*American Journal of Roentgenology*

Ordering Information: $30.50 plus $2.50 postage and handling for each book ordered. Pre-payment required in U.S. funds drawn on U.S. banks only. No foreign funds accepted. For payments made in U.S. dollars, but drawn on a foreign bank, add a bank processing fee of $1.50 for Canadian bank drafts or $35.00 for all other foreign bank drafts. Check or purchase order must accompany all orders. Make checks payable to: The Society of Nuclear Medicine. *Prices are subject to change without notice.*

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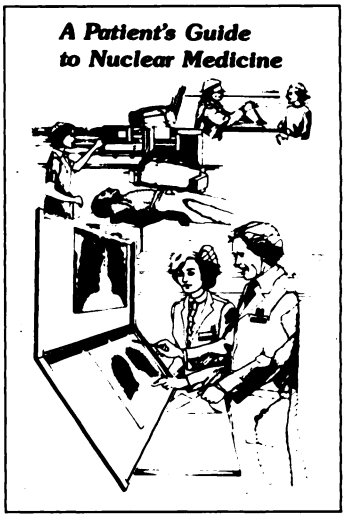
2 New Patient Information Pamphlets

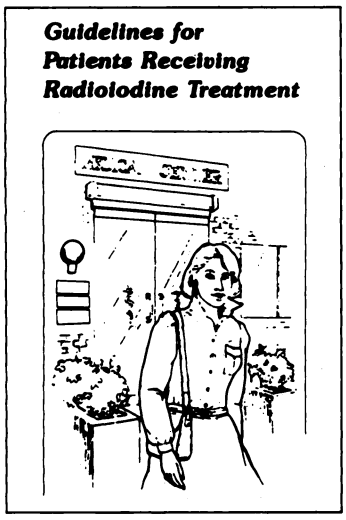
A Patient's Guide to Nuclear Medicine



Well illustrated, this 16-page pamphlet explains what nuclear medicine is, how the procedures are performed, and how they can help in the early detection of disease.

Divided into 3 sections, the guide opens with a general overview of nuclear medicine. A question-and-answer section follows, addressing such topics as safety, the benefits of nuclear medicine procedures, pre- and post-instructions, and testing of pregnant women and children. The third section explains some of the more commonly performed procedures such as bone, liver, lung, heart, and thyroid uptake scans.

16 pp; 5½ × 8½; in 2 colors;
20¢ per pamphlet; minimum order: 100 copies



Guidelines for Patients Receiving Radioiodine Treatment

Prepared in collaboration with the U.S. Nuclear Regulatory Commission, this 8-page pamphlet answers patients' questions about home care after receiving radioiodine treatment for thyroid conditions.

Easy-to-read language outlines important precautions patients can follow to help reduce radiation exposure to others. It also contains a checklist that physicians can review with their patients to determine which guidelines are appropriate for them and how they should be followed.

8 pp; 5½ × 8½; in 2 colors;
30¢ per pamphlet; minimum order: 25 copies

Healthcare professionals in private practice, hospitals, and clinics will find that these pamphlets provide a brief, attractive, and inexpensive way to educate patients and their families about the importance of proper health care.

ORDERING INFORMATION

Single copies are available for review at $1.50 each. All prices include postage and handling. Prepayment required in U.S. funds drawn on U.S. banks only. Make checks payable to: The Society of Nuclear Medicine. *Prices are in U.S. dollars and subject to change without notice.*

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Continuing Education Lectures

The Society of Nuclear Medicine is pleased to announce the CEL series of audiovisual programs. Each presentation was recorded at the Society's Annual Meeting in June, 1983, and contains the most up-to-date information available, presented by some of our discipline's most prominent researchers and clinicians. Each program features 35mm slides and the author's lecture on cassette tape, for use in any manual or automatic projector/tape player.

As an organization accredited by the AMA, the Society of Nuclear Medicine certifies that the medical education programs listed here meet the criteria for credit hours in Category I, provided they are used and completed as designed.

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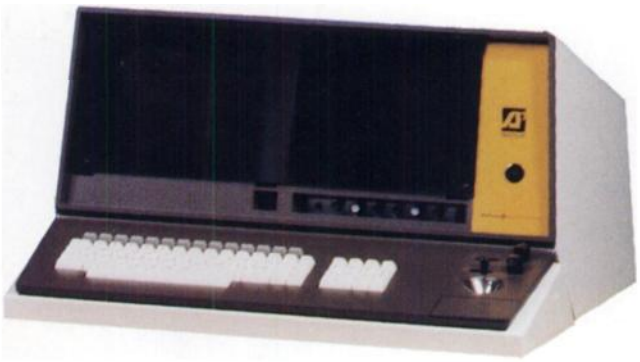

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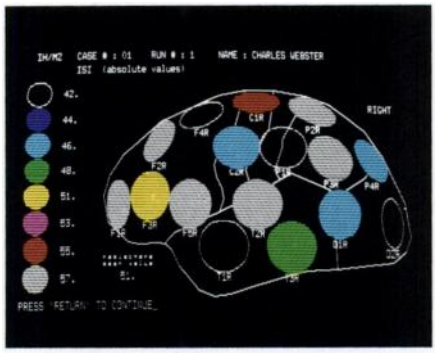

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For further information contact: Ms. Mary Farrell-Batista—(212)650-7888.

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BID DEADLINE: Written bids must be received no later than August 1, 1984.

Interested parties may request Invitation to Bid instructions on or before August 1, 1984 from: Mallinckrodt, Inc., 675 McDonnell Blvd., St. Louis, MO 63134, Attention: D.H. Groetz, purchasing manager; or telephone (314) 895-2755; or telex 209-897 MALKT UR; or telecopy (314)895-2979.

An information conference for prospective bidders shall be held at the above address on June 11, 1984 at 9 a.m.

TERMS: Cash or equivalent, or pre-approved credit. Cyclotron system will be sold as a unit or as component parts, as more fully set forth in the Invitation to Bid.

The cyclotron system is being offered subject to rejecting any and all bids, and subject to withdrawal from sale.

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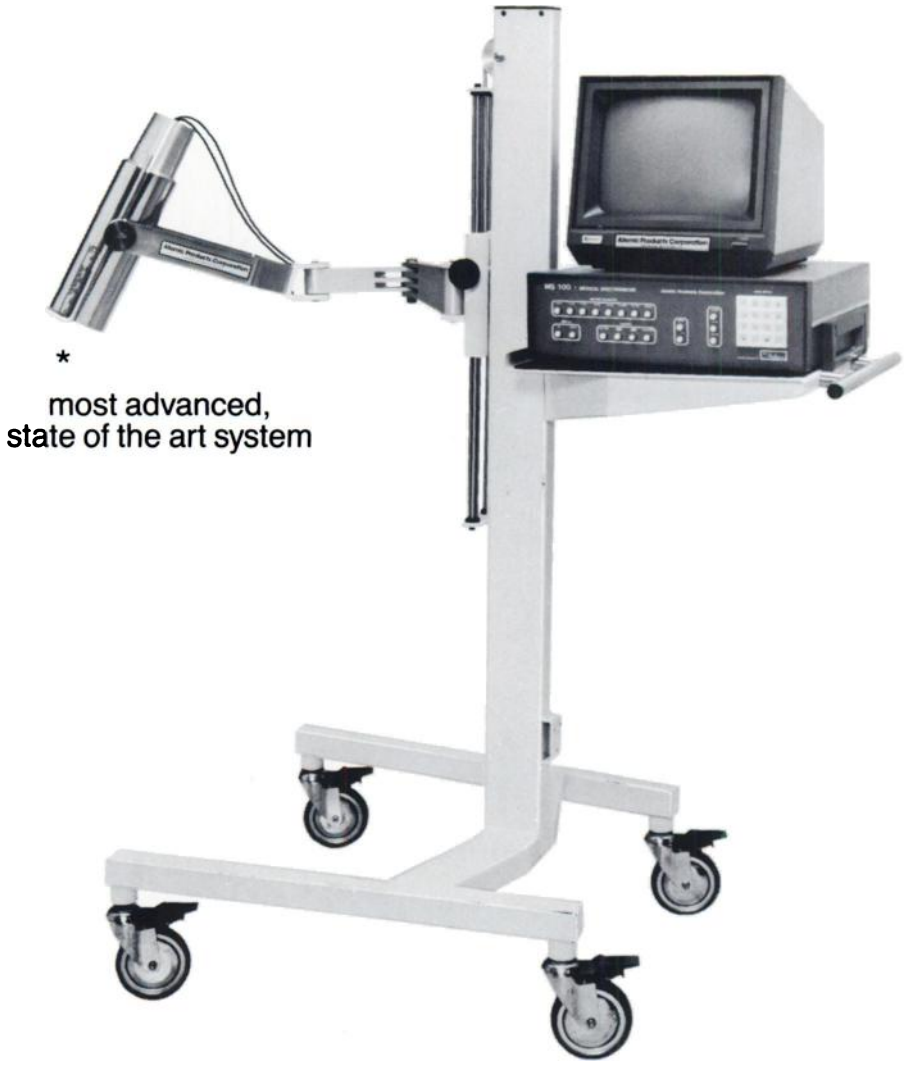

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MPI DMSA Kidney Reagent (Technetium Tc 99m Succimer Kit)

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

DESCRIPTION: Each reagent ampul of the kit contains 2.2 ml of a sterile, pyrogen free aqueous solution containing 1.2 mg of succimer and 0.42 mg of anhydrous stannous chloride in aqueous solution under a nitrogen gas atmosphere. When sterile, oxidant-free, pyrogen-free sodium pertechnetate Tc 99m in isotonic saline is combined with the reagent, following the instructions provided with the kit, a complex is formed. Administration is by intravenous injection for diagnostic use.

The succimer component of MPI Kidney Reagent consists of more than 90% meso isomer and less than 10% d,l isomer.

INDICATIONS AND USAGE: MPI DMSA Kidney Reagent is to be used as an aid in the scintigraphic evaluation of renal parenchymal disorders.

CONTRAINDICATIONS: None known.

WARNINGS: None.

PRECAUTIONS: General

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

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY: No long-term animal studies have been performed to evaluate carcinogenesis potential or whether Technetium Tc 99m Succimer affects fertility in males or females.

PREGNANCY CATEGORY C: Animal reproduction studies have not been conducted with the MPI DMSA Kidney Reagent either with or without Tc 99m.

It is also not known whether Technetium Tc 99m alone or with Succimer can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m should be administered to a pregnant woman only if clearly needed. 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.

NURSING MOTHERS: Technetium Tc 99m is excreted in human milk during lactation, therefore, formula feedings should be substituted for breast-feedings.

PEDIATRIC USE: Safety and effectiveness in children have not been established.

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.

MPI DMSA Kidney Reagent should be formulated within 30 minutes prior to clinical use.

The product must be used within 30 minutes after preparation. Any unused portion should be discarded after that time.

Some patients with advanced renal failure may exhibit poor renal intake of Tc 99m DMSA. It has been reported that satisfactory images may be obtained in some of these patients by delaying imaging for up to 24 hours.

ADVERSE REACTIONS: Rare instances of syncope, fever, nausea and maculopapular skin rash have been reported.

HOW SUPPLIED: Each kit package contains the following components:

(1) Five sealed glass reagent ampuls, each containing 2.2 ml of a sterile, pyrogen-free aqueous solution of 1.2 mg succimer and 0.42 mg anhydrous stannous chloride. The solution is under a nitrogen gas atmosphere.
(2) Five sterile and pyrogen-free mixing vials (10 ml).
(3) Five mixing vial labels.
(4) Five courtesy record labels.
(5) One package insert.

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