

Nuclear Cardiology Nuclear Medicine

## Laboratory-Specific Procedure Protocols Crucial to Day-to-Day Practice



Frans J. Th. Wackers,  
MD, PhD

*by Frans J. Th. Wackers, MD, PhD, ICANL President, and Wendy Bruni, CNMT, Chief Technologist, Yale New Haven Hospital Cardiovascular Nuclear Imaging Laboratory*

The ICANL has reviewed the day-to-day testing practices of well over 150 imaging facilities. In general, these facilities produced good to excellent radionuclide images;

however, a consistent pattern of deficiencies has also been noted. The two most frequently encountered problems include the quality of procedure protocols and of reports. The deficiencies of reports were discussed two years ago, and the ICANL Board of Directors published templates of optimal reports to remedy the problems related to reporting. These templates are available on the ICANL Web site at [www.icanl.org/samples.htm](http://www.icanl.org/samples.htm).

### Procedure protocols

Procedure protocols are the backbone of an imaging laboratory. In order to ensure that nuclear medicine studies are of consistent quality, a laboratory must adhere to “cookbook-style” procedure protocols that are specific for the laboratory and describe in detail how procedures are performed in daily practice. Although vendors usually provide procedure manuals, they are seldom sufficiently detailed. Each imaging facility therefore tends to institute modifications and adjustments that work best to achieve a desired optimum result. These are the “laboratory-specific and camera-specific protocols.”

The following scenario may best illustrate the importance of laboratory-specific and camera-specific protocols. Suppose that over the years you have created a well-run and well-functioning stress imaging facility. By the joint effort and input of all your staff, the protocols for stress procedures, image acquisition and processing have been adapted to your laboratory’s specific environment and specifications, and have been fine-tuned to produce the best possible quality of work.

One unfortunate day, all your technologists find themselves independently wealthy since they jointly won the State Lottery jackpot of \$20,000,000. They all retire at once!

The Medical Director is now faced with the task of recreating the laboratory. How can this be done with all the accumulated expertise gone? If the director must start from scratch, this may take quite some time. That is, *unless* detailed procedure protocols exist that were written by the now retired staff and can serve as guidelines for the new staff. Such written protocols should include detailed descriptions of all procedures, describing step-by-step how they were performed on each specific piece of equipment. If such detailed protocols exist, considerable time would be saved in training new staff. Most importantly, the transition would be seamless with continuation

**See Protocols, page 2**

## Oxford Health Plans Links Reimbursement to ICANL Accreditation

*by Aaron Watkins, Communications Director*

In a May 2002 letter to its physician providers of healthcare, Oxford Health Plans announced that it will require ICANL accreditation of nuclear cardiology laboratories by February 2, 2004. The new mandate affects any laboratory that is currently a member of Oxford Health Plans in the states of Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania or Rhode Island.

The policy states that all Oxford nuclear cardiologists must also pass the Certification Board of Nuclear Cardiology (CBNC) examination by the February deadline. After this date, reimbursement claims will be honored only for laboratories that have achieved accreditation and where examinations are performed by CBNC-certified nuclear cardiologists. Claims from non-accredited laboratories will not be approved, regardless of CBNC status.

**See Oxford, page 2**

**Protocols from page 1**

of the quality of work. A less dramatic but more realistic scenario, especially given the present shortage of technologists, is the problem of integrating a traveling technologist to temporarily fill in for a sudden staff vacancy. Detailed written procedure protocols are extremely useful for the continuing operation of the laboratory under such circumstances.

According to the *ICANL Essentials and Standards*, a laboratory must have written protocols for the following:

1. Patient identification
2. Assessment for pregnancy and breast feeding
3. Diagnostic imaging procedures
4. Exercise and/or pharmacologic testing
5. Imaging and non imaging equipment quality control
6. Radiation safety and radioactive materials handling
7. General administrative protocols to include:
  - a. Informed consent
  - b. Confidentiality
  - c. Infection control
  - d. Medical emergencies
  - e. Reporting of adverse effects and medical administration errors
  - f. Staff duties and responsibilities

**Oxford, from page 1**

Sandra Katanick, Executive Director of the ICANL, commented, "I am pleased to see the positive response by Oxford Health Plans and the nuclear cardiology community to the accreditation process. The laboratory personnel that I have had the pleasure of speaking with regarding the process are committed to providing quality diagnostic testing and undergoing a stringent peer review of their work. Even though the process can be time consuming, completion of the application and successful acquisition of ICANL accreditation almost always results in better patient care."

Of particular importance are the imaging and exercise protocols. These protocols must be in compliance with accepted guidelines for exercise testing and imaging as published by the American Society of Nuclear Cardiology (ASNC), Society of Nuclear Medicine (SNM), American College of Cardiology (ACC) and American Heart Association (AHA).

The imaging protocols must include at a minimum the following elements:

1. Appropriate clinical indications
2. Patient education/instruction/preparation regarding diet and/or medications
3. Patient data such as time and content of previous drug dosages and/or diet
4. Appropriate radiopharmaceutical dosage and route of administration
5. Any non radioactive drugs used including timing and route of administration and any precautions or restrictions
6. Camera setup (collimator, energy window setting, etc)
7. Patient and camera positioning
8. Camera/computer specific acquisition protocols including timing of views, time/counts per view, number of views as well as specific parameters and filtering including orbit,

number of stops, time per stop, ECG-gating set-up etc.

9. Camera/computer specific processing and reconstruction protocols, including standards for filtering
10. Camera/computer specific display protocols
11. Appropriate image labeling including name, patient identification, date and type of study, time interval as appropriate, view or projection and anatomical markers as appropriate

The exercise protocols must contain at a minimum the following elements:

1. Indication for stress procedure and contraindications
2. Patient preparation
3. Detailed description of graded stress protocols (e.g. Bruce, Naughton, etc.) or infusion of pharmacological stress agents
4. Frequency and timing of assessing symptoms, heart rate, blood pressure and electrocardiographic tracings
5. Definition of exercise/testing end points
6. Radiopharmaceutical injection criteria
7. Post stress monitoring
8. Treatment of adverse reactions

**Sample protocols**

Several sample protocols are provided in this newsletter. These examples provide only a general outline of what the ICANL sees as minimal requirements for procedure protocols and were obtained with permission from the author(s) at the Yale New Haven Hospital Cardiovascular Nuclear Imaging Laboratory and Mary Rutan Hospital Nuclear Cardiology Laboratory in Bellefontaine, Ohio. These protocols are valid for nuclear cardiology facilities using unit doses. They can and should be individualized to suit a particular facility's operation and needs. The sample protocols begin on the following page.

In the days immediately following the announcement by Oxford Health Plans, the ICANL experienced a dramatic increase in orders for the *Essentials and Standards* and the Application for Accreditation. These documents are the foundation for the accreditation process and can be ordered on the ICANL Web site. Additional information regarding this policy, ICANL accreditation and links to the web sites of Oxford Health Plans and CBNC are posted on the ICANL Web site. The ICANL staff is available to answer questions at 410-872-0100. The ICANL Web site is [www.icanl.org](http://www.icanl.org).

## Sample 1: Patient Pregnancy Assessment

- Nuclear technologists will ask all female patients under 50 years of age if they are, or might be pregnant or breast feeding.
- If the patient answers No, it must be recorded on the worksheet for documentation. For example: “Patient states not being pregnant/breast feeding.” Initial and date the statement.
- A pregnancy test will be administered if patient states that she doesn’t know or might be pregnant. Negative results will be recorded on the worksheet for documentation. For example: “Patient given urine pregnancy test and a negative result was obtained.” Initial and date the statement.

### To administer a urine pregnancy test:

- Have the patient urinate into a paper cup.
- Open a pregnancy kit and fill the dropper with urine.
- Fill the corner hole on the kit with urine from the dropper until the paper becomes saturated.
- Wait approximately 60 seconds or until the display hole turns completely pink. If a – sign appears the patient is not pregnant. If a + sign appears the patient is pregnant.
- Technologist will inform the cardiology fellow if patient is pregnant.
- Cardiology fellow will contact the referring physician and the nuclear cardiology attending of the day to consult in the decision to proceed with the exam, limit the exam, or cancel the exam.
- If a decision is made to proceed with imaging, the cardiology fellow will discuss with the patient the risk vs. benefits of the procedure so that they can make an informed decision.
- All exams performed on pregnant patients will be documented on the requisition, and the pregnancy will be dictated in the report by the cardiologist.

Revised: 12/01  
Reviewed: 4/02

## Sample 2: Radioactive Spill Protocol

Radiation Safety Officer: S. Photon, PhD

Phone Number: 555-555-5555

**Minor Spill Procedure** - Note: Minor radioactive spills are defined as spills of diagnostic doses, or less, of any material unless radioiodines (I-123, I-125, or I-131) are involved.

- Isolate the area immediately, and inform persons in the area and the chief technologist that a spill has occurred.
- Cover the spill with absorbent materials to prevent the spread of contamination.
- Gather the materials, such as disposable gloves, plastic bags, paper towels, decontamination agents and other necessary items for the cleanup effort so they will be easily available.
- Wear gloves during the decontamination procedure, changing them as needed. Clean into the spill to prevent spread of contamination. Carefully place the contaminated items into a plastic bag for transfer to the radioactive waste storage. Wash hands after removal of gloves.
- Survey the area with GM survey meter. Check the area around the spill to ensure that the spill was contained in the area. Also survey the hands, clothes and shoes of involved personnel for contamination. Perform a wipe test of the area.
- After decontamination, if the radiation survey exceeds 2 mR/hr at 1 inch from the spill site or the wipe test indicates greater than 2,000 dpm/100 sq. cm, notify the RSO or his designee. If the survey does not exceed these limits fill out a radioactive contamination and spill report and file it for the RSO review.
- If RSO notification is necessary, the RSO will complete the contamination and spill report and determine if further decontamination steps are necessary or will isolate the area for decay, if appropriate.

Revised: 12/01  
Reviewed: 4/02

### Sample 3: Spect Acquisition Protocol

#### **Indication:**

The clinical indications for myocardial perfusion imaging can be found in the ACC/AHA task force report called Guidelines for Clinical use of Cardiac Radionuclide Imaging. A copy of the guidelines is located in each procedure room and in the stress laboratory. For dosing and imaging time information, refer to the Protocol section of the manual.

#### **Patient Setup for SPECT:**

- Explain to patient the importance of lying still and how much time the image acquisition will take.
- Patient goes into the gantry “feet first.”
- Place patient’s arms above the head; support with cushions and velcro straps.
- On handset press TORSO then both i’ loks.
- Move ALL heads within one to two inches of patient.
- Move table in or out to center heart in field of view.
- Press MARK on handset.
- Move only Head 2 to within 2 inches of patient.
- Press MARK.

#### **Acquisition Station (CAB) Setup for SPECT:**

- ACQUISITION.
- Select protocol (use arrow keys or type in the letter).
- Enter PATIENT INFO (Patient name and ID number).
- NEXT SCREEN button. Note: If a previous study of the same patient is in the computer (i.e., rest in morning, returning for stress) the F8 BUTTON will bring up a list of patient names; select correct patient and return.
- The Parameter page is now visible. Modify the protocol, if necessary. Note: The preset may be modified to change the time per stop depending on the patient’s size and from gated to ungated. Remember to change labels appropriately.
- Use arrow keys to bring cursor to Do Command box, toggle space bar until DO TEST ORBIT.
- DO key.
- Y to proceed with test orbit.
- RESUME (on handset).
- START button.
- Do Command box will be at PROCEED.
- DO key.
- RESUME (on handset).
- START button.

## Sample 4: Dipyridamole Thallium Protocol

### I. Purpose

A. IV Persantine (Dipyridamole) is indicated as an alternative to physical exercise with Thallium myocardial perfusion imaging for the evaluation of coronary artery disease.

### II. Principle

A. Dipyridamole is a potent coronary vasodilator that increases coronary blood flow by at least threefold. The effect may result from inactivation of adenosine deaminase, the enzyme responsible for the degradation of adenosine and from an increase in coronary artery sensitivity to adenosine. It reduces coronary vascular resistance. After the injection of thallium, in the absence of significant coronary lesions, a homogeneous distribution of thallium would indicate normal coronary arteries. In the presence of a significant coronary lesion, a heterogeneous flow would create perfusion defects. This underperfused area may indicate ischemia or damaged tissue.

### III. Policy

A. Procedure is to be performed by a cardiologist, a nuclear medicine technologist, and a RN and/or a second nuclear medicine technologist.

### IV. Indications

- A. Refer to Thallium Stress Test
- B. Any condition that precludes maximal exercise
- C. Neuromuscular disorders
- D. Amputation of lower extremities
- E. Peripheral vascular disease
- F. Reduced cardiopulmonary reserve

### V. Contraindications

- A. Known sensitivity to dipyridamole
- B. Known sensitivity to aminophyllin
- C. Use of medications containing methylxanthine (see attached sheet)
- D. Unstable angina
- E. Acute myocardial infarction
- F. Severe asthma or broncho spasm
- G. Hypotension
- H. Caffeine within 12-24 hours
- I. Refer to contraindications under Treadmill Stress Testing

## **VI. Indications for Termination**

- A. A drop in systolic blood pressure to below 80 mmHg systolic
- B. Progressive worsening of anginal pain
- C. Signs of poor perfusion (pallor, cyanosis, cold skin)
- D. Serious dysrhythmias
- E. Technical problems with monitoring equipment
- F. Development of prolonged 3rd degree AV block
- G. Patient's request to stop
- H. Wheezing
- I. Marked ECG changes (e.g. more than 3 mm of horizontal or downsloping ST segment depression from baseline)

## **VII. Equipment**

- A. Marquette Mac Vu ECG / Stress cart
- B. Stress electrodes
- C. Crash cart with LifePak 9P
- D. Proper electrical wiring and grounding for all equipment
- E. IV supplies
- F. Blood pressure monitor
- G. SMV camera/computer
- H. 500 cc .9% NaCl with IV tubing
- I. Stopcock tubing
- J. Dipyridamole dose according to patient's weight, and aminophyllin ordered through the Pharmacy department
- K. Thallium dose according to patient's weight

## **VIII. Procedure**

- A. Test will be scheduled through the Cardiology department
- B. A negative serum pregnancy test must be obtained the same morning of the study for all pre-menopausal female patients, and the results must be negative OR a signed refusal form for the HCG must be obtained
- C. Serum potassium and hemoglobin levels obtained and the results must be within normal limits (potassium less than 3.7 must be supplemented)
- D. If patient is taking Theophylline products, hold for 48 hours prior to test
- E. Patient must be fasting at least 3 hours prior to scheduled exam
- F. Patient must be caffeine-free for 24 hours prior to exam
- G. Explanation of the procedure and a signed consent must be obtained before moving ahead

- H. A keep open IV is established in the right arm. (Refer to procedure)
- I. A resting ECG must be obtained prior to stress
- J. A resting blood pressure must be obtained prior to stress
- K. Thallium is to be transported in a lead lined container from Radiology to Cardiology by a nuclear medicine technologist
- L. Order Dipyridamole through the Pharmacy department according to the patient's weight. (0.56 mg/kg), and the standard 75 mg Aminophyllin
- M. Obtain an accurate clinical history
- N. Apply stress electrodes and connect lead wires
- O. Select Dipyridamole protocol on Mac Vu cart
- P. Select EXERCISE START on Mac Vu cart
- Q. Physician to inject the total calculated dose of Dipyridamole over 4 minutes as a slow push
- R. Serial EKG's and BP's obtained every minute once procedure has started
- S. Beginning minute eight, the Thallium is injected by a nuclear medicine technologist and followed by a 10 cc .9% saline flush
- T. Continue monitoring the patient through minute thirteen or absence of symptoms
- U. At the end of the procedure, select TEST END on the Mac Vu cart
- V. Remove all but 3 electrodes and the IV
- W. Patient is to be escorted to the scanning room
- X. Patient is positioned and images acquired according to the SMV operator's manual
- Y. Patient may leave the hospital and then return 4 hours later for repeat images
- Z. Patient may need to be given one additional millicurie of Thallium after the redistribution images and:
  - 1. Return the next morning for reimaging, or
  - 2. Re-image 30 minutes after the additional millicurie was givenEither of these two options should be taken only under the following condition:
  - a) unknown perfusion defect which persists after the 4 hour redistribution images at the interpreting physician's request
- AA. Patient is to be escorted to their room, if an inpatient, and a report given to the nurse
- BB. Test is to be interpreted and dictated by the cardiologist
- CC. After interpretation/dictation, the test is typed by the cardiology transcriptionist on the appropriate form or the data entry person is to key data from the interpretative nuclear medicine worksheet
- DD. A summary is to be sent to each physician caring for the patient

Written: 11/91

Revised: 1/97; 4/99; 5/02

Reviewed: 7/92; 5/93; 2/94; 6/95; 3/99; 4/02

## Sample 5: Exercise Protocol

### Pre-Exercise Assessment

- Explain procedure to patient.
- Obtain patient history, ascertain indication for test.
- Are there contraindications?
- Obtain IV access.
  
- Get baseline 12-lead ECG, extremities and trunk.
- Diagram lead placement.
- Record heart rate (HR), blood pressure (BP) (standing or sitting).
- Check heart and lung sounds (any murmur must be checked by a MD).
  
- Determine which protocol is most suitable for the patient: Bruce, modified Bruce, Naughton (see table), or that patient is better suited for pharmacological stress.

### During Exercise

- 2 ECG's, BP and HR are recorded during each 3-min stage.
- Continuously monitor ECG changes and symptoms (chest pain, lightheadedness, etc.).
- Record and print ECG and type in BP during each stage.
- Use BORG scale to gauge patient's perception of workload.

### Endpoints

- Severe chest pain, reproduction of symptoms
- Severe fatigue
- Hypotension (decrease BP > 20 mmHg)
- Dizziness, nausea
- Unsteady gait
- >3 mm asymptomatic ST-segment depression
- Ventricular arrhythmias
- Equipment failure

Note: For exercise testing with imaging, the patient should reach at least target HR ( $220 - \text{Age} \times 0.85$ ) prior to injection of radiotracer, or one of the listed exercise end points. A patient may not reach target if he/she is on a beta-blocking medication. The test is then completed as a symptom-limited test.

### Post Exercise

- Monitor patient's BP, HR, and ECG for 6 minutes post exercise.
- Print complete ECG report.
- Continue to monitor a patient if chest pain occurred, or if significant ECG changes occurred.
- Obtain post-imaging ECG, and/or have patient monitored during images, if necessary.

Revised: 5/01  
Reviewed: 5/02

# ICANL Accredited Laboratories

The following list of accredited labs is intended for general information purposes only. While every effort is made to ensure the accuracy of the information provided, errors can and do occasionally occur. Individuals consulting this list should not rely upon the list alone as formal indication of a laboratory's accreditation status. Formal inquiries regarding the accreditation status of a particular laboratory may be requested by phone or in writing to the ICANL. The following list includes all currently accredited laboratories that achieved accreditation prior to April 24, 2002. Areas of accreditation are denoted as follows.

RMPI: Myocardial Perfusion Imaging

ERNA: Equilibrium Radionuclide Angiography

PET: Positron Emission Tomography

GNM: General Nuclear Medicine

## Alabama

The Heart Center, PC  
1215 Seventh Street SE  
Suite #120  
Decatur, AL  
RMPI ERNA

The Heart Center, PC  
930 Franklin Street  
Huntsville, AL  
RMPI ERNA

## California

Cardiology Consultants of Napa Valley  
3443 Villa Lane  
Suite 2  
Napa, CA  
RMPI ERNA

Mission Internal Medical Group  
Nuclear Cardiology Laboratory  
26732 Crown Valley Parkway,  
Suite 151  
Mission Viejo, CA  
RMPI ERNA

O'Connor Hospital Nuclear Medicine  
2105 Forest Avenue  
San Jose, CA  
RMPI ERNA GNM

San Francisco General Hospital  
Medicine Hospital Department of  
Nuclear Medicine  
1001 Potrero Avenue  
Nuclear Medicine Building, NH  
Room G100  
San Francisco, CA  
RMPI ERNA GNM

## Colorado

Cardiodiagnostics of Colorado Springs,  
Inc.  
1633 Medical Center Point, #143  
Colorado Springs, CO  
RMPI

Penrose - St. Francis Healthcare  
2215 North Cascade  
Colorado Springs, CO  
RMPI ERNA GNM

South Denver Cardiology Associates  
2535 S. Downing Street  
#140  
Denver, CO  
RMPI

## Connecticut

Cardiac Specialists of Fairfield, PC  
1305 Post Road  
Suite 105  
Fairfield, CT  
RMPI ERNA

Connecticut Heart Group, P.C.  
46 Prince Street, Suite 301  
New Haven, CT  
RMPI ERNA

Grove Hill Nuclear Cardiology  
Laboratory  
1 Lake Street  
New Britain, CT  
RMPI ERNA

Middlesex Cardiology Associates, PC  
Nuclear Cardiology Laboratory  
51 Main Street  
Old Saybrook, CT  
RMPI ERNA

Middlesex Cardiology Associates, PC  
Nuclear Cardiology Laboratory  
520 Saybrook Road  
Middletown, CT  
RMPI ERNA

Nuclear Cardiology Laboratory  
Hartford Hospital  
80 Seymour Street  
Hartford, CT  
RMPI ERNA

Saint Francis Hospital and Medical  
Center  
114 Woodland Street  
Hartford, CT  
RMPI ERNA

The Cardiology Group, P.C.  
60 Temple Street, Suite 6C  
New Haven, CT  
RMPI ERNA

Yale Cardiovascular Nuclear Imaging  
Laboratory  
20 York Street  
CB343  
New Haven, CT  
RMPI ERNA

## Delaware

Cardiology Consultants P.A.  
Cardiac Diagnostic Center  
3521 Silverside Road  
Quillen Building - Suite 1-A  
Wilmington, DE  
RMPI ERNA

Cardiology Consultants P.A.  
Cardiac Diagnostic Center  
3105 Limestone Road  
Suite 202  
Wilmington, DE  
RMPI ERNA

Delaware Diagnostic Services, Inc.  
Community Imaging Center  
1941 Limestone Road, Suite 214  
Wilmington, DE  
RMPI ERNA

Nuclear Cardiology Laboratories  
Christiana Care Health System  
4755 Ogletown-Stanton Road  
Newark, DE  
RMPI ERNA

## Florida

Bay Area Heart Center  
5398 Park Street North  
St. Petersburg, FL  
RMPI ERNA

Clearwater Cardiovascular  
455 Pineallas Street  
Suite 400  
Clearwater, FL  
RMPI ERNA GNM

Interventional Cardiologists of  
Gainesville  
1131 NW 64th Terrace  
Gainesville, FL  
RMPI

Morton Plant Hospital  
323 Jeffords Street  
Clearwater, FL  
RMPI ERNA

Nuclear Cardiology Department West  
Florida Hospital  
8383 North Davis Highway  
Pensacola, FL  
RMPI ERNA

Nuclear Medicine of Naples  
671 Goodlette Road, N., Suite 140  
Naples, FL  
RMPI ERNA

Orlando Heart Center  
60 West Gore Street  
Orlando, FL  
RMPI

Oscar R. Guerra, M.D., F.A.C.C.,  
F.A.C.P., PA  
2151 LeJeune Road, Suite 309  
Carol Gables, FL  
RMPI

St. Augustine Specialty Group  
3100 U.S. 1 South, Suite 3  
St. Augustine, FL  
RMPI ERNA

Tallahassee Heart Associates  
2626 Care Drive, Suite 100  
Tallahassee, FL  
RMPI

The Heart and Vascular Institute of  
Florida  
603 7th Street South  
Suite 400  
St. Petersburg, FL  
RMPI

The Heart and Vascular Institute of  
Florida  
1615 Pasadena Avenue, South  
Suite 300  
St. Petersburg, FL  
RMPI

## Georgia

Cardiac Disease Specialists of Atlanta,  
P.C.  
285 Boulevard N.E., Suite 435  
Atlanta, GA  
RMPI

Savannah Cardiology, P.C.  
6301 Abercorn Street  
Savannah, GA  
RMPI

## Hawaii

Tripler Army Hospital  
1 Jarrett White Road  
Honolulu, HI  
RMPI ERNA GNM

## Iowa

Cardiologists, PC  
1002 4th Avenue, SE  
Cedar Rapids, IA  
RMPI ERNA

## Idaho

Idaho Heart Institute  
2985 Cortez Avenue  
Idaho Falls, ID  
RMPI

## Illinois

Illinois Heart and Lung Associates  
Nuclear Medicine  
1302 Franklin Avenue  
Suite 4500  
Normal, IL  
RMPI ERNA

Northwestern Memorial Hospital  
Section of Nuclear Cardiology  
201 East Huron, Galter Room 8-148  
Chicago, IL  
RMPI ERNA

Nuclear Cardiology Laboratory of the  
Central Illinois Heart and Lung  
Institute at Decatur Memorial  
Hospital  
2300 N. Edward Street  
Decatur, IL  
RMPI

Prairie Cardiovascular Consultants,  
Ltd.  
619 East Mason  
Springfield, IL  
RMPI ERNA

## Indiana

Associated Physicians & Surgeons,  
LLC Department of Nuclear Medicine  
221 South 6th Street  
Terre Haute, IN  
RMPI

Nuclear Cardiology Laboratory  
Elkhart Office  
500 Arcade Boulevard  
Suite 400  
Elkhart, IN  
RMPI

Nuclear Cardiology Laboratory  
Midwest Medical Group, LLC  
837 East Cedar Street, Suite 420  
South Bend, IN  
RMPI

St. Joseph Hospital & Health Center  
Nuclear Medicine Department  
2907 West Sycamore  
Kokomo, IN  
RMPI ERNA

## Kansas

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
9119 W. 74th Street  
Suite 350  
Shawnee Mission, KS  
RMPI ERNA

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
330 Arkansas  
Suite 202  
Lawrence, KS  
RMPI ERNA

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
12300 Metcalf Avenue  
Suite 280  
Overland Park, KS  
RMPI ERNA

Midwest Cardiology Associates, PC  
10550 Quivira Road  
Suite 510  
Overland Park, KS  
RMPI

**Kentucky**

Cardiology Associates, P.S.C.  
900 Medical Village Drive  
Edgewood, KY  
RMPI

Cardiovascular Associates Nuclear  
Cardiology  
6420 Dutchman's Pkwy  
Suite 200  
Louisville, KY  
RMPI ERNA

Louisville Cardiology Medical Group  
PSC  
4003 Kresge Way, Suite 300  
Louisville, KY  
RMPI ERNA

**Louisiana**

Our Lady of the Lake Regional  
Medical Center  
5000 Hennessy Boulevard  
Baton Rouge, LA  
RMPI ERNA PET GNM

**Massachusetts**

Internal Medicine and Cardiology  
Associates  
1565 North Main Street  
Fall River, MA  
RMPI

New England PET Imaging System  
70 East Street  
Methuen, MA  
PET

**Maryland**

Capitol Nuclear Cardiology Subsidiary  
of Capitol Cardiology Associates, P.A.  
8100 Good Luck Road, #302  
Lanham, MD  
RMPI ERNA

Hagerstown Heart, P.A.  
249 Mill Street  
Hagerstown, MD  
RMPI

Prince Georges Hospital Center  
3001 Hospital Drive  
Cheverly, MD  
GNM

**Maine**

Maine Cardiology Associates  
66 Bramhall Street  
Portland, ME  
RMPI

Maine General Medical Center  
149 North Street  
Waterville, ME  
RMPI ERNA

**Michigan**

Advanced Cardiac Healthcare, P.C.  
601 John Street, Suite M124  
Kalamazoo, MI  
RMPI

Bloomfield Cardiology Marc S.  
Brodsky, M.D., F.A.C.C.  
6450 Farmington Road  
Suite 200  
West Bloomfield, MI  
RMPI ERNA

Cardiology Associates of Birmingham,  
P.C.  
32270 Telegraph Road, Suite 100  
Bingham Farms, MI  
RMPI ERNA

Cardiovascular Clinical Associates  
29877 Telegraph Road, Suite 400  
Southfield, MI  
RMPI ERNA

Cardiovascular Clinical Associates,  
Midwest Division  
30626 Ford Road  
Garden City, MI  
RMPI ERNA

Cardiovascular Consultants, P.C.  
37771 Schoenherr, Suite 101  
Sterling Heights, MI  
RMPI ERNA

Cardiovascular Specialists, P.C  
29645 Fourteen Mile Road, #200  
Farmington Hills, MI  
RMPI ERNA

Dearborn Cardiology Associates  
22060 Beech  
Dearborn, MI  
RMPI

Henry Ford Hospital  
2799 West Grand Boulevard  
Detroit, MI  
RMPI ERNA GNM

Michigan Cardiology, P.C.  
G-1386 South Linden Road  
Flint, MI  
RMPI

Michigan Heart  
5325 Elliott Drive, Suite 202  
Ann Arbor, MI  
RMPI

Mohammad Rabbani, MD, P.C.  
820 Byron Road  
Suite 300  
Howell, MI  
RMPI ERNA GNM

VA Ann Arbor Healthcare System  
Nuclear Medicine Service  
2215 Fuller Road  
Ann Arbor, MI  
RMPI

West Michigan Heart, P.C.  
3310 Eagle Park Drive, Suite 102  
Grand Rapids, MI  
RMPI

Woods Cardiovascular Pulmonary  
Associates, P.C.  
27550 Schoenherr, Suite 200  
Warren, MI  
RMPI

**Minnesota**

St. Paul Heart Clinic Nuclear  
Cardiology Lab  
255 North Smith Avenue, Suite 100  
St. Paul, MN  
RMPI ERNA

**Missouri**

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
407 East Russell Road  
Building C  
Warrensburg, MO  
RMPI ERNA

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
4330 Wornall Road  
Suite 2000  
Kansas City, MO  
RMPI ERNA

Cardiovascular Consultants, P.C.  
Nuclear Cardiology  
5844 NW Barry Road  
Suite 230  
Kansas City, MO  
RMPI ERNA

Heart Care and Surgical Associates,  
P.C.  
2817 McClelland Boulevard, Suite 229  
Joplin, MO  
RMPI

Missouri Heart Center  
1605 E. Broadway  
Suite 300  
Columbia, MO  
RMPI

**North Carolina**

Cornerstone Cardiology  
721 N. Elm Street, Suite 101  
High Point, NC  
RMPI ERNA

Eagle Cardiology  
Wendover Medical Center  
301 East Wendover Avenue - Suite  
301  
Greensboro, NC  
RMPI

The Sanger Clinic, P.A.  
1001 Blythe Blvd  
Suite 300  
Charlotte, NC  
RMPI

Wake Heart Associates  
4325 Lake Boone Trail  
Suite 315  
Raleigh, NC  
RMPI

**New Jersey**

Cardiac Nuclear Diagnostic Center of  
Ocean County  
81 Route 37 West  
Toms River, NJ  
RMPI

Cardiology Associates of New  
Brunswick, PA Nuclear Cardiology  
Laboratory  
31 River Road  
Highland Park, NJ  
RMPI ERNA

Hamilton Cardiology Associates  
2073 Klockner Road  
Hamilton, NJ  
RMPI

Metuchen Heart Associates  
481 Memorial Parkway  
Metuchen, NJ  
RMPI

Mid-Atlantic Cardiology, P.A.  
211 Mountain Avenue  
Springfield, NJ  
RMPI ERNA

Monmouth Cardiology Associates,  
LLC  
215 Brighton Avenue  
Long Branch, NJ  
RMPI

Monmouth Cardiology Associates,  
LLC  
301 Bingham Avenue  
Suite C  
Ocean, NJ  
RMPI

Nuclear Cardiology Diagnostics  
4 Ethel Road, Suite 406A  
Edison, NJ  
RMPI ERNA

Saint Barnabas Medical Center Nuclear  
Medicine Department  
94 Old Short Hills Road  
Livingston, NJ  
PET

Saint Barnabas Ambulatory Care  
Center Nuclear Medicine Department  
200 South Orange Avenue  
Livingston, NJ  
RMPI ERNA GNM PET

The Heart Group, PA  
161 Millburn Avenue  
Millburn, NJ  
RMPI ERNA

The Heart Group, PA Bayonne Office  
654 Broadway  
Bayonne, NJ  
RMPI ERNA

Toms River Cardiac Diagnostic Center  
9 Hospital Drive, Suite #7  
Toms River, NJ  
RMPI

**New York**

Capital Cardiology Associates  
7 Southwoods Boulevard  
Albany, NY  
RMPI ERNA

Cardiovascular Group of Syracuse  
5100 West Taft Road, Suite 2J  
Liverpool, NY  
RMPI

Cardiovascular Medical Associates,  
P.C.  
975 Stewart Avenue  
Garden City, NY  
RMPI ERNA

Heart Diagnostic Imaging/Martin H.  
Handler, MD, FACC/Anthony  
Moschetto, DO, FACC  
38 Northern Boulevard  
Great Neck, NY  
RMPI ERNA

Long Island Cardiovascular Imaging,  
P.C.  
277 Northern Boulevard, Suite 304  
Great Neck, NY  
RMPI ERNA

North Shore Cardiac Imaging, P.C.  
2035 Lakeville Road  
New Hyde Park, NY  
RMPI ERNA

Rochester Cardiopulmonary Group  
Nuclear Cardiology  
1415 Portland Avenue  
Suite 210  
Rochester, NY  
RMPI ERNA

Rochester Cardiopulmonary Group  
Clinton Office  
1815 South Clinton Avenue  
Suite 520  
Rochester, NY  
RMPI ERNA

The Cardiovascular Medical Center  
325 West Park Avenue  
Long Beach, NY  
RMPI ERNA

The Huntington Heart Center  
96 East Main Street  
Huntington, NY  
RMPI ERNA

**Ohio**

Advanced Cardiology, Inc.  
905 Sahara Trail  
Poland, OH  
RMPI

Central Ohio Cardiovascular  
Consultants, Inc.  
1335 Dublin Road, Suite 106-A  
Columbus, OH  
RMPI

Heart Specialists of Ohio, Inc.  
500 Thomas Lane, Suite 2A  
Columbus, OH  
RMPI

Mary Rutan Hospital Nuclear  
Cardiology Lab  
205 Palmer Avenue  
Bellefontaine, OH  
RMPI ERNA

Middletown Regional Hospital  
Nuclear Cardiology  
105 McKnight Drive  
Middletown, OH  
RMPI

MidOhio Cardiology Consultants  
Nuclear Imaging Laboratories  
3400 Olentangy River Road, Suite 250  
Columbus, OH  
RMPI

North Ohio Heart Center Inc.  
125 East Broad Street  
Suite 305  
Elyria, OH  
RMPI ERNA

North Ohio Heart Center Inc.  
703 Tyler Street  
Suite 250  
Sandusky, OH  
RMPI ERNA

North Ohio Heart Center Inc.  
3600 Kolbe Road  
Suite 127  
Lorain, OH  
RMPI ERNA

North Ohio Heart Center Inc./Ohio  
Medical Group  
29325 Health Campus Drive #3  
Westlake, OH  
RMPI ERNA

Riverside Medical of Ohio  
401 Market Street, Suite 1100  
Steubenville, OH  
RMPI

The Dayton Heart Center  
1530 Needmore Road  
Suite 300  
Dayton, OH  
RMPI ERNA

The Heart Center of Northeastern  
Ohio  
Southwoods Commons  
250 DeBartolo Place  
Youngstown, OH  
RMPI

The Ohio Heart Health Center  
Nuclear Cardiology Laboratory  
2450 Kipling Avenue, Suite 207  
Cincinnati, OH  
RMPI ERNA

**Oklahoma**  
Oklahoma Heart Institute, Inc.  
9228 South Mingo, Suite 200  
Tulsa, OK  
RMPI

Oklahoma Heart Institute, Inc.  
Cardiovascular Assessment Center  
1265 S. Utica Avenue - Suite 300  
Tulsa, OK  
RMPI

**Ontario**  
University of Ottawa Heart Institute  
Nuclear Cardiology Department  
40 Ruskin Street  
Ottawa, On  
RMPI ERNA

**Oregon**  
Nuclear Medicine Consulting Services,  
Inc. dba Bend Memorial Clinic  
1501 NE Medical Center Drive  
Bend, OR  
RMPI

Nuclear Medicine Consulting Services,  
Inc.  
507 NE 47th  
Portland, OR  
RMPI

Portland Cardiovascular Institute  
2222 NW Lovejoy  
Suite 606  
Portland, OR  
RMPI

St. Vincent Hospital  
9205 Southwest Barnes Road  
Portland, OR  
RMPI ERNA GNM

**Pennsylvania**  
Associated Cardiologists, P.C.  
Nuclear Cardiology  
East Shore Department  
2808 Old Post Road  
Harrisburg, PA  
RMPI

Associated Cardiologists, P.C.  
Nuclear Cardiology  
West Shore Department  
856 Century Drive, Suite D  
Mechanicsburg, PA  
RMPI

Cardiology Internal Medicine, Ltd.  
5750 Centre Avenue, Suite 510  
Pittsburgh, PA  
RMPI

Cardiovascular Diagnostic Center, a  
Division of Cardiovascular Associates  
of Southeastern Pennsylvania  
233 East Lancaster Avenue, Suite 300  
Ardmore, PA  
RMPI

Consultants In Cardiology, Inc.  
311 West 24th Street, Suite 401  
Erie, PA  
RMPI

Great Valley Cardiology  
746 Jefferson Avenue, Suite 305  
Scranton, PA  
RMPI

Nuclear Cardiology Department  
UPMC - Presbyterian  
200 Lothrop Street  
Pittsburgh, PA  
RMPI ERNA

Pottstown Medical Specialists, Inc.  
1591 Medical Drive  
Pottstown, PA  
RMPI

Subbiah Cardiology Associates, Ltd.  
122 South Washington Street  
Butler, PA  
RMPI

UPMC St. Margaret  
Nuclear Cardiology  
815 Freeport Road  
Pittsburgh, PA  
RMPI ERNA

**Rhode Island**  
Cardiovascular Associates of Rhode  
Island  
1076 North Main Street  
Providence, RI  
RMPI

The Miriam Hospital Nuclear  
Cardiology Laboratory  
164 Summit Avenue  
Providence, RI  
RMPI ERNA

**South Carolina**  
Cardiology/Gastroenterology  
Associates of Myrtle Beach, P.A.  
945 82nd Parkway, Suite 3  
Myrtle Beach, SC  
RMPI

Cardiovascular Associates  
105 Doctors Drive  
Greenville, SC  
RMPI

Carolina Cardiology Consultants, P.A.  
877 B West Faris Road  
Greenville, SC  
RMPI

Medical University of South Carolina  
Nuclear Medicine Department  
171 Ashley Avenue  
Charleston, SC  
RMPI ERNA

Palmetto Cardiology Associates  
Nuclear Cardiology Laboratory  
1301 Taylor Street, Suite 10A  
Columbia, SC  
RMPI

Pee Dee Cardiology Associates, P.A.  
Nuclear Medicine  
1268 S. Fourth Street, Suite C  
Hartsville, SC  
RMPI

Pee Dee Cardiology Associates, P.A.  
901 E. Cheves Street, Suite 600  
Florence, SC  
RMPI

**South Dakota**  
Nuclear Imaging, Ltd. PET Imaging,  
LLC  
109 S. Petro  
Sioux Falls, SD  
PET

**Tennessee**  
The Nuclear Medicine Department  
Chattanooga Heart Institute  
2501 Citico Avenue  
Chattanooga, TN  
RMPI ERNA

**Texas**  
Brooke Army Medical Center  
3851 Roger Brooke Drive  
Fort Sam Houston, TX  
GNM

Providence Health Center Cardiology  
Department  
6901 Medical Parkway  
Waco, TX  
RMPI

Scott and White Memorial Hospital  
and Clinic  
2401 South 31st Street  
Temple, TX  
RMPI ERNA GNM

Texas Cardiology Consultants  
305 N. Highland Avenue  
Sherman, TX  
RMPI

Texas Cardiology Consultants  
712 North Washington Avenue  
Suite 300  
Dallas, TX  
RMPI

Texas Cardiology Consultants  
621 Clara Barton Boulevard  
Suite 102  
Garland, TX  
RMPI

Texas Cardiology Consultants  
6701 Heritage Parkway  
Suite 130  
Rockwall, TX  
RMPI

**Virginia**  
Mary Washington Hospital  
1001 Sam Perry Boulevard  
Fredericksburg, VA  
RMPI

Nuclear Cardiology Laboratory of  
Cardiology Associates of Virginia  
102 Highland Avenue, Suite 101  
Roanoke, VA  
RMPI

Virginia Cardiovascular Specialists  
7401 Beaufont Springs Drive,  
Suite 100  
Richmond, VA  
RMPI ERNA

Virginia Cardiovascular Specialists  
7605 Forest Avenue  
Suite 303  
Richmond, VA  
RMPI

**Washington**  
Stevens Cardiology Group/Swedish  
Heart Institute  
21701 76th Avenue W  
#100  
Edmonds, WA  
RMPI ERNA

**Wisconsin**  
Milwaukee Diagnostic Services, SC  
Diagnostic Imaging  
2315 North Lake Drive, Suite 613  
Milwaukee, WI  
RMPI

Milwaukee Heart Institute-Sinai  
Samaritan Medical Center Nuclear/  
Stress Cardiology Laboratory  
960 N. 12th Street  
Milwaukee, WI  
RMPI ERNA

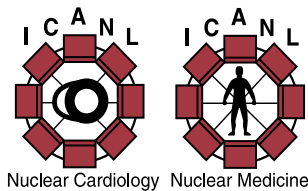
**West Virginia**  
Charleston Cardiology Group, PLLC  
3100 MacCorkle Avenue SE  
Suite 709  
Charleston, WV  
RMPI

Heart Imaging  
2345 Chesterfield Avenue  
Suite 201  
Charleston, WV  
RMPI

Wake Heart Associates  
4325 Lake Boone Trail  
Suite 315  
Raleigh, NC  
RMPI

Milwaukee Diagnostic Services,  
SC Diagnostic Imaging  
2315 North Lake Drive, Suite 613  
Milwaukee, WI  
RMPI

Milwaukee Heart Institute-Sinai  
Samaritan Medical Center Nuclear/  
Stress Cardiology Laboratory  
960 N. 12th Street  
Milwaukee, WI  
RMPI ERNA



# ICANL *Newsletter*

Nuclear Cardiology, Nuclear Medicine, PET Accreditation

## SPONSORING ORGANIZATIONS AND BOARD OF DIRECTORS

### Academy of Molecular Imaging

Kathy Hunter, CNMT

### American College of Cardiology

Timothy M. Bateman, MD, Grady H. Hendrix, MD

### American College of Nuclear Physicians

Sue Abreu, MD, Terence Beven, MD

### American Society of Nuclear Cardiology

Manuel D. Cerqueira, MD, Kevin G. Kett, MD  
 Frans J. Th. Wackers, MD (President)

### Society of Nuclear Medicine

Gary V. Heller, MD (Secretary), Richard E. Stewart, MD

### Society of Nuclear Medicine Technologist Section

Jim Bietendorf, CNMT (Treasurer),  
 Paul E. Christian, CNMT, Richard Tetrault, CNMT

### Consultant Physicist

George Zubal, PhD

### Executive Director

Sandra Katanick

## INSIDE THIS ISSUE

<b>Laboratory-Specific Procedure Protocols</b>	<b>1</b>
.....	
<b>Patient Pregnancy Assessment</b> .....	<b>3</b>
<b>Radioactive Spill</b> .....	<b>3</b>
<b>Spect Aquisition</b> .....	<b>4</b>
<b>Dipyridamole Thallium</b> .....	<b>5</b>
<b>Exercise Protocol</b> .....	<b>8</b>
<b>Oxford Health Plans Links to Accreditation</b>	<b>1</b>
.....	
<b>ICANL Accredited Laboratories</b> .....	<b>9</b>

The *Newsletter* is published regularly to provide information on the latest policies and procedures of the ICANL and to recognize accredited laboratories. Comments should be addressed to Aaron Watkins, Editor, ICANL, 8840 Stanford Boulevard, Suite 4900, Columbia, MD 21045



The ICANL is a member of the Intersocietal Accreditation Commission (IAC) along with the Intersocietal Commission for the Accreditation of Vascular Laboratories (ICAVL) and the Intersocietal Commission for the Accreditation of Echocardiography Laboratories (ICAEL). For information on any of these organizations, visit our Web sites: [www.icanl.org](http://www.icanl.org), [www.icavl.org](http://www.icavl.org), [www.icael.org](http://www.icael.org), or contact the IAC office at 410-872-0100.