

Nuclear medicine searches out disease

By Joanna Maliszewski
staff writer

No doubt about it. The words nuclear medicine bring ominous images to most people's minds.

Once patients are past their awe of the sophisticated procedures, however, they quickly find the tests to be far less traumatic and cumbersome than most tests patients apprehensively face.

"Patients ask a lot of questions about what it is," said Marquette Nowitzke, chief technologist for Botsford General Hospital's nuclear medicine department.

"We talk to them about the type of radiation it is. We assure them the radiation dose is minimal."

In fact, Nowitzke said, a patient is exposed to much less radiation in a nuclear medicine procedure than with the traditional X-ray.

The procedure begins with an injection of a radioactive isotope. The particular isotope used depends on which organ of the body is to be examined and what type of information is desired, she said.

"We have a certain type of isotope for each organ," she added.

IN MOST cases, however, the isotope technician is used because it lends itself to creating many nuclear compounds needed for the procedures.

For example, she said, when technologists want to do a bone scan, a technetium compound that is high in phosphates is used.

Once the isotope is injected, a patient must wait for an equilibrium to occur. That means time is needed for the isotope to circulate through a patient's vascular system and then concentrate itself into the particular organ to be examined.

In preparing for a liver scan, for example, "everytime it goes through the vascular system, a little bit more goes into the liver," said Dr. Stephan Morse, a Botsford radiologist who has a subspecialty in nuclear medicine.

When equilibrium is attained, the fully clothed patient is placed in front of a gamma camera which takes pictures of the radiation emitted from the organ. An important part of the camera is the

collimator which allows only the radiation coming from a specific organ to be detected.

"The gamma camera which is not a camera in the traditional sense counts the nuclear emissions from the organ being studied," Dr. Morse said. "The camera actually is a detection system."

TECHNOLOGISTS ALSO use a computer for additional data gathered about the function and structure of the patient's organ. Together, both the pictures and computer data provide a total diagnosis of the organ.

Depending on what a patient's problem is, the pictures taken with the gamma camera will show hot or cold spots of radiation.

A hot spot occurs when the nuclear compound localizes in an abnormal area of, say, the brain or bones. A cold spot occurs when the compound localizes in the normal tissue of an organ, which in turn shows that the abnormal sections of the organ are not functioning.

While radioactive isotopes are being used, patients have little to worry about, Nowitzke said. They will not glow in the dark.

"There are no aftereffects at all," Nowitzke said. "The injection doesn't cause difficulties. They (isotopes) are not drugs. They are chemicals but don't cause any problems. The patient can walk out the door and drive home."

In fact, the radioactive isotope does not remain in the patient's body. That's why technologists prefer using technetium because it has a "short half-life," Nowitzke said.

THE HALF-LIFE of a radioactive isotope is the length of time it takes half the material to decay. Technetium's six-hour half-life is considered short, Nowitzke said.

"Radioactivity is an unstable state," she said. "It's stable when the material is no longer radioactive. In a patient's body, it usually takes 24 hours and it's out of their body. It's excreted through the kidneys. So most times it's eliminated within 24 hours."

Although the detection of cancer was originally nuclear medicine's primary

task, the diagnostic tool has taken on "more and more applications," Nowitzke said.

What physicians love about the tool is its versatility and its low percentage of error in diagnosis.

"We can image almost any organ," she said, referring, for example, to the brain, liver, spleen, heart, kidneys, thyroid and skeleton. In addition, nuclear medicine can be used in blood flow studies (of how the blood travels) through the brain, legs, pelvis and bones.

Other tests also include checking

hormonal levels which can be done by withdrawing blood from a patient and putting a radioactive isotope into the blood. That prevents the need of injecting the isotope into the patient.

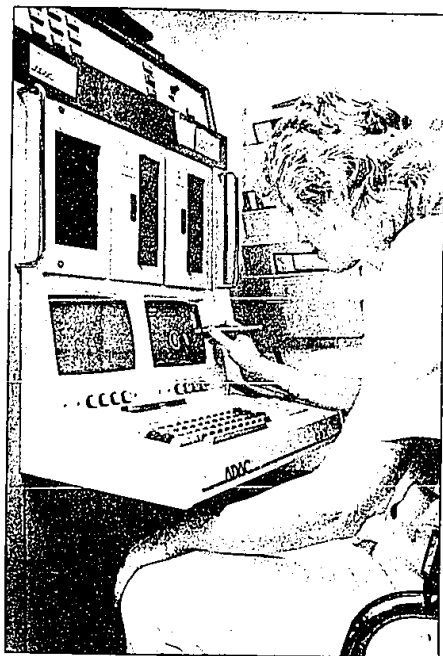
But the diagnostic tool has expanded its uses even more to include checking for trauma, such as when a patient is brought in with what emergency room physicians may guess to be a ruptured spleen.

RATHER THAN spending perhaps

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Doctor Stephan Morse adjusts the picture that is formed by low level radition emitted from the patient's organ which has been injected with the isotope.



Grace Waner examines the image of a patient's kidneys.

INSIDE ANGLES

Know someone doing something notable? Let us know. Write: Inside Angles, Farmington Observer, 23352 Farmington Road, Farmington 46024.

CHRIS ZIELGER of Farmington Hills has been cited at Madonna College for 10 years of service. Sister Mary Francine, CSSF, awarded the President's Citation to Zielger for his work as admissions counselor, director of admissions, director of the career resource center and as current director of financial aid.

MARK GROVER, son of Mr. and Mrs. Ned Grover of Northville and a 1982 graduate of Farmington High School, is a member of 1984 men's swim team at Albion College. His best effort, against Alma College, was swimming the 100-yard butterfly in a time of 58.29. Albion, a charter Michigan Intercollegiate Athletic Association member, is coached by Jeff Deikeme. Albion's Dean Aquatic Center will be the host site for the 1984 MIAA Championship Swim Meet.

KATHERINE A. HEWES, daughter of Mr. and Mrs. Thomas Hewes of Farmington Hills, was named to the dean's list at Albion College. Katherine is presently studying in Madrid in a program through Albion College's affiliation with New York University in Spain. She is a junior majoring in Spanish and communications.

GEORGE AND MARY Bowman, frequent visitors to Japan, will team up to present the program for Farmington Men's Club this month. He will speak on "Life and Culture of the Japanese People." Her accompanying exhibit will be comprised of the Zen Art known as Sumi-E. The event begins at noon Thursday, Feb. 16, in Farmington Community Center. Reservations are necessary and may be made by calling the center, 477-8404.

INTERNATIONAL INSTITUTE is looking for women handy with needle and thread to help sew ethnic costumes for dolls that will be displayed in the institute's 1984 Hall of Nations showcase. The sewing bee is set for Saturday, March 17, when half-finished dolls and costumes will be waiting for the volunteers' finishing stitches and creativity. Judith Kiefer will spell out the details. She can be reached at 871-8600.

VOLUNTEERS who enjoy meeting the public are needed to help the American Red Cross in the collection of blood in Oakland County. The Red Cross collects, processes and distributes blood and blood components for hospitals in Oakland, Wayne, Macomb, Washtenaw and St. Clair counties. More than 100 volunteers are needed every day of the year except Christmas and New Year's to help Red

Cross collect the 900 to 1,000 units of blood required to meet the community's blood needs. Volunteer activities include registering blood donors, labeling blood collection bags, and assisting donors following the donation. Volunteers are needed to assist for a minimum of six hours a day, one to three times a month on bloodmobiles at various locations, and at the Red Cross donor center at 25900 Greenfield in Oak Park. To volunteer, or for more information, call 988-2255.

IN RECOGNITION of Children's Dental Month, Dr. Robert Coleman of Farmington Dental Center, 33409 Grand River, is sponsoring a dental health awareness program free for kindergarten age children during February. The program will include a cleaning and examination of the child's teeth and instruction of proper toothbrush technique, with emphasis on identifying plaque and its removal. Toothbrush kits will be given to each child.

Parents may call Rena Swanson, program coordinator, at 478-6749 Monday through Friday between 9 a.m. and 12 p.m. and 2-5 p.m. to make appointment reservations for their children. Office tours for nursery and preschool classes are also available upon request.

LAURA SOBRAN, daughter of John and Carole Sobran of Farmington Hills, has been initiated into the Alpha Beta chapter of Alpha Gamma Sorority at the University of Michigan.

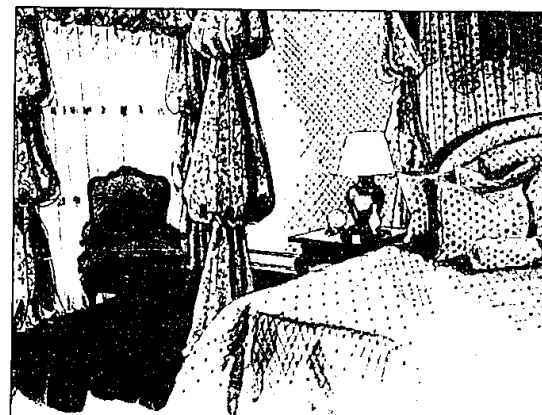
CONGRATULATIONS to Jeri Corell of Farmington Hills on her recent promotion. Jeri is now secretary to Robert Stemple, the new director of GM's Buick, Cadillac and Oldsmobile Group. Her promotion entailed a move from the General Motors Building to the Renaissance Building.

PAULA INMAN of Farmington Hills was awarded resident standing in the jumper class of the Michigan Horse Show Association's annual awards banquet. The banquet, held at the Stratford Oaks in Novi, honored many of Michigan's most skilled horsemen. Award recipients received distinctive goblets, medals or trophies and, of course, the warm congratulations of their peers. For more than 50 years the MHSA has served as a foundation for the Michigan horse show industry.

MARY CLANCY of Farmington was recently recognized by the American Red Cross, Southeastern Michigan Chapter, for her volunteer service. She is one of the top six volunteers in southeastern Michigan honored by Red Cross for her hours of service during 1983. She joined Red Cross as an "open heart caller," which was someone who solicited blood donations for open heart surgery patients. Mary is currently the blood center staffing chairman for the Northwest Regional Office in Livonia and also works with that region's Red Cross youth volunteers. Before joining Red Cross as a volunteer, she worked for five years as a volunteer in the emergency room of Beaumont Hospital in Royal Oak.

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