

since they haven't gotten the message that the test is still experimental and not widely available. "A lot of my friends and relatives misinterpreted the news reports to mean scintimammography was going to replace mammography as a screening tool," said Henkin. At the extreme, some patients now think they don't need to have a lump evaluated via a biopsy since it probably won't turn out to be cancer. Khalkhali concedes that he's received "about 5 or 6 calls from surgeons complaining that patients have been canceling biopsies as a result of this publicity."

When Patients Demand Experimental Procedures

Fielding calls from women across the country, Khalkhali has encountered the public's response to the news reports first hand. Most of his callers are scheduled for breast biopsies and want to have scintimammography instead. "I explain to them that scintimammography is still experimental, and I usually encourage them to enroll in the multicenter trials that Dupont Merck is sponsoring," Khalkhali said. However, many women are disconcerted to learn that even if they enroll in a trial and get scintimammography, they'll still have a biopsy. (The trials aren't designed to use a negative scintimammography result as a substitute for a biopsy.)

For these reasons, some callers have opted not to become research subjects and about 30 women have actually traveled to California and have paid \$600 out of their own pockets to have Khalkhali

evaluate their breast lesions with scintimammography. "If the result is positive, I tell the patient she definitely needs a biopsy. If it's negative, I spend a lot of time explaining to her that this test is experimental and that she could be taking a grave risk by delaying a biopsy. I also always send my report to the patient's surgeon and primary care physician."

As head of the breast imaging center at Harbor-UCLA Medical Center in Torrance, Khalkhali reads 40 to 50 mammograms a day and is qualified to render a judgement based on a woman's mammogram and scintimammogram results. However, many researchers are concerned that the high demand for this test generated by the press will encourage some physicians to start doing scintimammograms on their own before the trials are complete. Although insurance companies won't cover the test since it is experimental, many women (as Khalkhali can verify) are willing to pay for it themselves. "This could go the way of the renal scan," said Henry N. Wagner, Jr., MD, professor of medicine, radiology and environmental sciences at The Johns Hopkins Medical Institutions in Baltimore. "When it first was developed in the 1950's, doctors who weren't trained to do it started performing it and misinterpreting the results. For several years, the test was thought to be a failure until it was correctly administered." While nuclear physicians eagerly await the verdict on scintimammography, many hope that history won't repeat itself.

Deborah Kotz

INSTITUTE OF MEDICINE URGES CONSTRUCTION OF NEW ACCELERATOR

An influential report bolsters support for the proposed National Biomedical Tracer Facility, but downplays the need for U.S. production of molybdenum-99.

ALTHOUGH THE SUPPLY OF RADIONUCLIDES meets current commercial demand, the United States government needs to take steps to stay competitive with other

countries and to ensure that future demand doesn't outstrip supplies. This includes building and funding the year-round operation of a new particle accelerator for the production of radionuclides, concludes a long-awaited report on isotope supply released in December by the Institute of Medicine, a division of the National Academy of Sciences in Washington, DC. The report, titled *Isotopes for Medicine and the Life Sciences*, stated that the Department of Energy (DOE) should create a National Biomedical Tracer Facility (NBTF) for the production of radionuclides that are not available from commercial suppliers. It said the facility "is essential for the United States to maintain continued leadership in biomedical research using radiotracers."

HOW NBTF COMPARES WITH OTHER ACCELERATORS

The proposed National Biomedical Tracer Facility (NBTF) would surpass the production capabilities of Canada's Tri-University Meson

Facility (TRIUMF) which operates the world's largest cyclotron, and the Brookhaven Linac Isotope Producer (BLIP).

Isotope	Production (mCi) at BLIP (Upgrade)	Time Required	Production (mCi) at TRIUMF ^a	Time Required	Production (mCi) at NBTF ^b	Time Required
Strontium-82	18,900	40 days	12,000	30 days	30,000	15 days
Copper-67	7,000	100 days	7,000	180 days	8,700	40 days
Cobalt-55	75	1 day	75	1 day	75	1 minute
Beryllium-7	15	1 day	15	1 hour	15	1 minute
Yttrium-88	100	3 days	100	3 days	100	8 hours
Sodium-22	1,500	1 year	1,500	1 year	1,500	150 days

SOURCE: Institute of Medicine

^aEstimates calculated from present operating parameters.

^bAssumes 500 μ A current. NBTF could produce many other isotopes as well.

Recommendations from the Institute of Medicine

The recent report from the Institute of Medicine gave a thumbs up to the building of the National Biomedical Tracer Facility (NBTF) and a thumbs down for converting a reactor to produce ⁹⁹Mo. Here are other recommendations cited in the report.

- Continue work on the Advanced Neutron Source, a 330-megawatt reactor proposed for Oak Ridge National Laboratory, which the authors said could be an efficient, long term solution for a back-up supply of ⁹⁹Mo.
- Reverse the policy decision barring the national labs from competing for a chance to build and operate NBTF.
- Increase operating funds for isotope production at Brookhaven National Laboratory on Long Island to maintain supplies of accelerator-produced radionuclides until the NBTF accelerator comes online.
- Establish a government-industry collaboration for isotope production and research. It can be based on the Canadian government's partnership with Nordion International, sole North American supplier of ⁹⁹Mo.

A full copy of the report titled *Isotopes for Medicine and the Life Sciences* is available for \$30 plus \$4 shipping and handling; call the National Academy Press at (202) 334-3313 or (800) 624-6242.

At a time when Republicans and Democrats are trying to outdo each other at trimming federal spending, the ringing endorsement for the NBTF could provide the clout needed to persuade Congress and the Clinton Administration to delegate the money to start construction of the proposed accelerator. "I think it's pretty good news," said the chairman of the Society of Nuclear Medicine's committee on isotope supply, Wynn A. Volkert, PhD, a research scientist and professor at the University of Missouri in Columbia. "The Institute of Medicine is supporting the view that we've

held all along about the importance of the NBTF," Volkert said.

The Institute of Medicine undertook the isotope study a year ago at the request of DOE officials who wanted detailed advice on the need for the proposed tracer facility. The nuclear medicine community held their breath while the Institute's panel of physicists, chemists, biologists and nuclear medicine physicians decided the future fate of radionuclides. They breathed a collective sigh of relief when the panel issued its report urging the U.S. government to build the new accelerator.

Nuclear medicine experts, since 1988, have been urging the DOE to give top priority to the building of a particle accelerator dedicated to the production of radionuclides used in medicine and research. In 1991, the Society of Nuclear Medicine (SNM) and the American College of Nuclear Physicians (ACNP) began drafting plans for a medical isotope production and training facility. The project was initiated to solve the chronic radioisotope supply problems that continue to impede biomedical researchers. A promising array of radionuclides with important medical applications, especially as agents for cancer therapy, are available only intermittently and in meager amounts from government-run national labs.

Despite the need for a new accelerator, progress toward building one has been glacial: The DOE hasn't chosen a site, allocated construction fund-

“The Institute of Medicine is supporting the view that we’ve held all along about the importance of the NBTF.”

ing or even firmly estimated the cost of the facility. Advocates of NBTF hope the new report will speed things up. “It’s the first time a panel of experts without a vested interest in medical isotope production has come out saying this facility is necessary,” said David Nichols, a government relations spokesman for SNM and ACNP.

DOE Urged to Drop Molybdenum Plans

While the authors of the report cited the need for a new accelerator, they also recommended that the government drop plans for producing ⁹⁹Mo, the “parent” of the reactor-produced ^{99m}Tc radiopharmaceutical. All U.S. hospitals rely on a single source for molybdenum: a reactor operated by the Canadian government. The emergency shut-down and narrowly averted strike that occurred a few years ago at the Canadian reactor in Chalk River, Ontario, have stirred unease among nuclear medicine physicians. They question the wisdom of relying on a sole supplier for a product vital to their practices.

But the Institute’s panel came to a different conclusion after interviewing representatives of the leading radiopharmaceutical firms in the U.S. In the report, they stated they were convinced that the molybdenum situation “is no longer precarious.” More specifically, they concluded that production of reactor-produced radionuclides, including ⁹⁹Mo, is sufficient at least in the short term. “Radiopharmaceutical companies state that the present domestic and foreign suppliers are reliable and have or will soon sign long-term supply contracts with existing producers,” the report stated.

As it stands now, the Institute of Medicine’s experts estimated that the DOE’s Office of Isotope Production and Distribution would need between \$10 million and \$20 million to outfit a reactor at Sandia National Laboratory as a back-up supplier of molybdenum. The panel stated flatly that the money would be better spent on beefing up university research reactors to ensure the supply of reactor produced radionuclides other than molyb-

denum. The University of Missouri Research Reactor Center (MURR) earned special mention in the report. Of all the university research reactors, the authors noted that only MURR currently makes substantial quantities of radionuclides for research on medical diagnostic and therapy agents.

Despite these recommendations, Owen Lowe, the director of DOE’s isotope production program, said the government may yet produce ⁹⁹Mo again. “The Institute of Medicine report has a different view of the need for a back-up source for molybdenum than those in the medical community who have expressed their concern to us,” Lowe said. “We have to take [the Institute of Medicine’s] recommendations seriously into consideration and explore the basis for that recommendation. In the meantime, we will go ahead with the project.” Current DOE plans call for producing molybdenum at a research reactor at the Sandia National Laboratories. DOE officials have estimated they’ll need about \$11.4 million (on the lower end of the panel’s estimates) to modify Sandia’s Annular Core Research Reactor for medical isotope production.

Next Hurdle: Budget Politics

Just days after the Institute’s report was released, the Clinton Administration announced plans to squeeze \$10 billion out of the Energy Department. The news has some nuclear medicine experts concerned that—despite all the logical arguments to be made—the NBTF and other radioisotope production plans could die under the budget ax. Nichols said a lot will depend on future estimates of what the NBTF will cost. Nichols said he sees no indication that the DOE’s medical applications and medical isotope production are more vulnerable than other DOE programs. Still, he acknowledges that gaining funds for an ambitious new facility won’t be easy. “It’s one thing to have a report endorsing radionuclides from the Institute of Medicine, but it’s quite another to get a strong endorsement from Capitol Hill.”

J. Rojas-Burke

NUCLEAR RENAL SCAN OFFERS HOPE TO TRANSPLANT PATIENT

RANDALL CURLEE SUFFERED FROM advanced diabetes for years and knew the day would come when he would need a new kidney. The 46-year-old marketing director’s malfunctioning kidneys already contributed to his heart disease, circulatory problems and extreme

fatigue. His doctors told him a new kidney would help control many of his medical problems and that he could die without one.

Curlee is just one of thousands of patients in this country who need kidney transplants. But his story made national news when doctors discovered that