

By consensus, MRI receives high marks

One of the more stunning recent developments in medical technology is magnetic resonance imaging (MRI), which can see tumors and other abnormalities inside the living body. Since scientists first used it in the early 1970s to examine animal tissue, the technique has attracted the eager attention of both clinicians and researchers. An estimated 1.5 million to 2 million MRI scans are done on U.S. patients each year. Along with the excitement over MRI's possibilities, however, have come questions about its efficacy, cost and safety.

The National Institutes of Health in Bethesda, Md., recently convened a consensus development conference to address these questions. The conference panel concluded in its preliminary report that MRI "has proved to be unusually rewarding" in studies of the central nervous, musculoskeletal and cardiovascular systems. At present, nearly all of the patients using MRI have suspected abnormalities of the spine or central nervous system. The technique is considered by many to be the best method of finding brain lesions associated with multiple sclerosis. The panel found that MRI is as good as or better than existing imaging tools in the evaluation of some other abnormalities as well. In diagnosing knee-joint problems, for example, MRI may be preferable to the more invasive techniques now used. Because there are few controlled studies directly comparing MRI to other diagnostic techniques, some of those presenting expert testimony at the conference said that it is too premature to label MRI tests superior in certain body systems.

In terms of biological risks, MRI seems to have an edge over older imaging methods. Based on the movement of the body's hydrogen nuclei when exposed to magnetic fields, MRI—unlike earlier imaging technologies like the X-ray—does not use potentially harmful ionizing radiation. This is an obvious advantage over previously developed techniques like computed tomography (CT), say scientists. With MRI, "we simply don't have to think, as we do with CT, about how many exposures a patient should have," says Graeme M. Bydder of London's Royal Postgraduate Medical School.

The primary hazard is thought to be "the projectile effect," by which metal objects like pens, paper clips and even oxygen cylinders are rapidly pulled onto the powerful MRI magnets. Anyone standing nearby can be seriously injured by the flying objects, and such items must be carefully removed before the instrument is started. This metal-to-magnet reaction remains a potential problem with patients carrying metal items, such as shrapnel or implants. The panel recommends that MRI not be used on patients with cardiac pacemakers and that caution be taken with those on life-support systems.

Although the current MRI procedure "appears to be relatively innocuous" to patients and medical personnel in clinical practice, the panel also cautions that more studies must be done on the long-term biological effects of magnetic fields as MRI equipment becomes more powerful. There are scattered reports of abnormal development in laboratory cells and animals exposed to magnetic fields. The panel thus concludes that MRI should not be used during the first trimester of pregnancy, unless "it offers a definite advantage over other tests." In addition, say the panelists, care must be taken with patients who for some reason cannot release body heat normally, as MRI scanning can cause some localized temperature increases in tissues.

In presenting the panel's conclusions, panel chairman Herbert L. Abrams of Stanford University School of Medicine emphasized that MRI technology is still developing. The new cine MRI, which provides a sequence of pictures rather than one image, can follow heart movement, for example. No contrast-enhancing dyes are used with MRI in the United States, but dyes made of gadolinium have been tested experi-

mentally and are being considered by the Food and Drug Administration. Injecting such agents will broaden the usefulness of MRI imaging. And, says Abrams, advances in computer software and superconducting materials will continue to push MRI technology.

Opening the conference, National Institutes of Health Medical Director John L. Decker called MRI "clearly the most exciting advance in radiology in 20 years." Having an innovative technique, however, does not imply automatic acceptance. Although conference participants looked at the technique's safety and relative usefulness, they did not address its high cost and its unavailability in some areas. There currently are about 650 MRI units operating in the United States, a figure expected to increase rapidly. But the equipment, along with special facilities needed to operate the system, can cost as much as \$2 million. A single scan costs patients between \$500 and \$1,000, says Abrams. Pressured by both rising medical costs and the goal of "best possible care," health officials still must decide whether using MRI is a wise investment.

Smallpox-free for 10 years

Health officials in the United States and abroad celebrated a landmark in medical history last month: It has been 10 years since the world's last naturally occurring case of smallpox was reported. Scientists are discussing the fate of smallpox viruses still stored at the Centers for Disease Control in Atlanta and in a Moscow laboratory—the only known survivors of the global battle against smallpox. Some are calling for destruction of the viruses, while others want to maintain reference samples.

Caveat-laden, the copper IUD returns

In early 1988—two years after the last copper intrauterine device (IUD) was sold in the United States—the birth control method will make a commercial comeback. But physicians recommending the new IUD must provide manufacturers with written statements that they understand any questions or concerns associated with the device.

Although IUDs as a group have received bad publicity in recent years, more than 60 million women worldwide use them, according to the World Health Organization (WHO). A WHO-appointed panel of reproduction experts, formed in response to safety concerns, has just released its report on copper- and hormone-releasing IUDs. The devices were judged to be safe and "probably the most effective and reliable reversible method of fertility regulation available to women." In a statement from the health agency, the panel also concludes that the IUD apparently prevents fertilization of the egg by sperm, rather than preventing the uterine implantation of an already fertilized egg. This is contrary to what is generally thought, and the panel suggests it may resolve some religious and personal objections voiced against using IUDs.

Litigation over infertility associated with the plastic Dalkon Shield IUD had led U.S. manufacturers to discontinue their production of all copper IUDs; the Copper 7 and Tatum T types were pulled from market shelves in January 1986.

But GynoMed Pharmaceutical Inc. of Somerville, N.J., has agreed to market the Copper T 380A, developed by The Population Council, an international, nonprofit research group based in New York.

In announcing the agreement late last month, council officials said that about 5 million of the IUDs have been used in other countries. Despite Food and Drug Administration approval in 1984, however, fear of lawsuits kept companies from selling the product in the United States. Package inserts with the new IUD will explain in detail possible risks and cases in which the device should not be used.