Hemlock Society, a euthanasia-advocacy group, was shocked by the *JAMA* account, claiming it was not euthanasia the way the group promotes it. "It's not the way to go about it," he said. "There were no checks and balances." He said Debbie's "let's get this over with" didn't sound like a request for death.

The AMA Board of Trustees, which met coincidentally in Chicago in the midst of the hullabaloo, gave Lundberg a unanimous public vote of confidence. But the board—which serves as *JAMA*'s publisher—made it clear that the AMA disapproved strongly of euthanasia. Earlier, Sammons had done the same. "It's hard to argue against the free flow of information, and this is an issue that really needs to be discussed," said Alan Nelson of Salt Lake City, the AMA's board chairman. "After talking with Lundberg, we were satisfied he met our proper review, and the board endorsed the editor's judgment." Lundberg declines to say whether recognized medical ethicists were among the Debbie reviewers.

Siegler and three other ethicists have joined in an editorial of protest, which *JAMA* accepted for publication in its 8 April issue. (The same issue will also carry a slew of letters and other articles on the Debbie affair.) Others signing the protest editorial are Leon Kass of the University of Chicago, Willard Gaylin, president of the Hastings Institute, and Edmund Pellegrino, director of Georgetown's Kennedy Institute. Pellegrino, the medical ethicist on *JAMA*'s editorial board, was not a peer-reviewer of the Debbie essay,

But two medical ethicists, Kenneth Vaux of the University of Illinois and Ronald Cranford of the Hennepen County Medical Center in Minneapolis, backed Lundberg's decision to publish.

Lundberg professes satisfaction with the uproar, indicating it was precisely what he had planned—only more so. "Though I anticipated a lot of controversy within the profession," he says, "I was surprised by the extent of controversy outside the profession and in the media. It's clear we touched raw nerves in every direction with this, and that in itself tells me our timing for such a discussion was perfect. I feel that we have performed exactly what we are supposed to perform as the leading medical journal, namely we have produced responsible discussion and debate on an extremely controversial issue that affects medical practice at a time when the debate was ready to start and needed to happen."

But critics call this rationalization, claiming that a spirited euthanasia debate was already well underway. The key to the Debbie debate, they say, is not so much over euthanasia but whether Lundberg or the AMA should shield a physician who murdered a patient—if, indeed, the events depicted actually took place.

Lundberg says readers have very different opinions. "Many have taken the view that the person was relieving pain and suffering and decreasing respiratory problems, rather than ending life," he says. Most readers, he concedes, feel the resident was trying to end Debbie's life, but they wonder whether 20 milligrams of morphine would have done it.

Lundberg says he, himself, is not sure. Yet, he claims, despite a peer review process lasting several months—"twice the usual cycle"—and fierce debate within an "evenly divided" *JAMA* editorial staff over whether to publish the essay, he never once spoke to the resident. An associate editor, Roxanne Young, handled the communications, which involved some "minor changes." She has declined all comment, and Lundberg says he has not asked her whether she did any probing. Though he believes the events took place, Lundberg says no one at *JAMA* made any independent effort to verify them.

This, however, is standard policy at refereed medical journals. Arnold S. Relman, editor of the *New England Journal of Medicine*, says the process is based on trust. "The peer reviewers start from the assumption that the author is telling you the truth when he tells you what he did and what he saw," Relman says. "You don't know he isn't telling the truth unless what he says is inherently unreasonable or improbable and doesn't add up."

With all that review, Lundberg declines to say why discrepancies remained in the account, such as the 20-milligram dose of morphine, or the use of an alcohol drip for sedation, which is not in vogue.

The dubious nature of the account—the doubt that a crime has been committed—was even used as an argument in the AMA's effort to quash the subpoena. "There is no independent evidence of any kind that the event actually occurred," said the AMA's motion. "In short, it is quite possible . . . that the story is a complete or partial fabrication and was submitted solely to stimulate professional and public debate."

If that is so, noted the *Chicago Tribune* editorial, and all that ran was "a fictional essay designed to focus attention on an ethical dilemma in the medical profession, it is a serious breach of journalistic ethics. Separating fact from fiction is hard enough in this business without somebody deliberately confusing the two." ■ MARK BLOOM

*Mark Bloom is managing editor of* Physician's Weekly *in New York.*

# NTIS: Up for Grabs Again?

Despite strong congressional opposition, the Office of Management and Budget (OMB) is again trying to move the operation of the 43-year-old National Technical Information Service (NTIS) out of the government. The Department of Commerce is about to solicit proposals from companies to operate NTIS and may try to award the contract 30 days thereafter.

"The objective is to improve the service to the large number of constituent groups which now receive the benefits of the NTIS program," according to Robert A. Welch, deputy director of procurement at Commerce. But opponents of the move worry that turning the operation of NTIS over to a private firm will result in higher prices and reduced access to scientific and technical publications from around the world. While the government would retain ownership of the NTIS archive, the operating contractor would control it.

NTIS now operates as a nonprofit, self-supporting branch of the Commerce Department. Sales in 1987 totaled $22 million. Its charge is to archive technical documents provided to it by various federal agencies and foreign governments and to sell them.

Officials at the departments of Energy and Defense have indicated previously that they would cease sending NTIS some types of documents if a contractor operates the organization. Their concern is that care would not be taken to assure that restrictions on distribution to Eastern Bloc countries, for example, would be adhered to. Japanese government officials also indicate that they might withhold technical literature from NTIS if it is operated by a private contractor.

Commerce officials, however, say that the Administration will instruct federal agencies to continue sending documents to NTIS. They also argue that agreements with foreign countries regarding access and distribution of technical literature can be maintained, since Commerce will retain a core management group to oversee NTIS.

The advantage of having a private company operate the agency, Commerce says, is that it will produce "value-added products" such as reports and indexes in various fields. "We feel that this type of service can be improved by an injection of private sector capital and private sector know-how," Welch told attendees at a department briefing. "It is really as simple as that."

But moving NTIS into the private sector has proved to be anything but simple. First

hatched in 1981 by OMB Deputy Director Joseph Wright when he was at Commerce, the privatization idea has been batted down four times. The plan, moreover, failed to pass OMB's own litmus test—to demonstrate that industry can perform the function at less cost (*Science*, 10 April 1987, p. 140).

The Administration now says that NTIS is a model candidate for its never-tried "Fed Co-Op" plan. The Federal Employee Direct Corporate Ownership Opportunity Plan, as it is officially called, would give NTIS employees a stake in the company that took over operation of the agency through a stock ownership plan. But it is not clear what would happen to NTIS if the contractor defaulted sometime in the future.

"If you're losing the game, change the rules. . . .," comments Representative Sherwood Boehlert (R–NY), ranking Republican on the House subcommittee on science research and technology. In a 24 February hearing, he and other members of the subcommittee expressed dismay at the Administration's latest actions. House and Senate committees last year passed bills (H.R. 3 and S. 907) to keep NTIS at Commerce. The legislation is attached to the massive trade bill that Congress is expected to take up this month.

Meanwhile, it appears that OMB and Commerce may try to award a contract before Congress can act. Noting that the legislation is not yet law, Welch told attendees at a 29 January briefing that "this procurement is on a fast track. We intend to proceed with all diligence." But that may be hard, say aides to the subcommittee on science research and technology, since the legislative history shows that Congress wanted NTIS kept in Commerce.

Administration witnesses are expected to appear before the subcommittee to explain their actions on 15 March. But some members have already sized up the situation. Says Boehlert, "The moral of this tale is that ideology can make people blind to the facts." ■ **MARK CRAWFORD**

# U.S. Science Students Near Foot of Class

U.S. students made a poor showing in a new study comparing science achievement in schools in 17 countries. In testing done at three age levels, American 10-year-olds placed in the middle of the pack, and their compatriots finished further back in the 14 and 17 age categories.

Not only were American students' average scores far from impressive, but results from different U.S. schools within the sample tested ranged widely, suggesting inequality in the education provided. The report* noted that the U.S. pattern conformed to that of developing countries where sharp contrasts between elite schools and others are common.

In the report's summary observations on each country's results, the authors included the restrained comment on the U.S. performance that, "For a technologically advanced country, it would appear that a re-examination of how science is represented and studied is required."

The survey was conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA), an association of research centers. The group has been conducting multinational educational surveys for a quarter century. The school science achievement study was internationally sponsored, with the National Science Foundation (NSF) as U.S. backer. In a comment accompanying release of the report here, NSF director Erich Bloch said, "These findings emphasize again the troubled state of science education in the United States."

Results for the age 14 group were tagged in the report as particularly revealing since 14 is the school-leaving age in many countries. Achievement levels then are thought to be an indicator of the scientific literacy of the general public and the work force. A U.S. coordinator for the study, Richard N. Wolf of Teachers College, Columbia University, called the drop in U.S. students' relative scores from the 5th to the 9th grades, "one of the more disturbing things in the survey."

Wolf warned that results for 12th grade students have to be interpreted with care because of differences in student retention rates among countries in the study and because in countries like England some students concentrate almost exclusively on science subjects in the later years of secondary school. Wolf noted, however, that the U.S. 12th graders tested were all enrolled in second-year biology, chemistry, or physics classes. Since these students are regarded "as the cream of the crop," said Wolf, "our kids don't look so good."

In general, the survey showed boys scored higher than girls. In U.S. results, the discrepancy increased with grade level.

Japanese students scored first in the 5th-grade and second in the 9th-grade tests, but at the 12th-grade level slipped to fourth place in chemistry and physics and tenth place in biology. Results for students in grades 5 and 9 showed little variation among schools in Japan, but results for the 12th grade showed a very high spread. The report suggests that the explanation may be that substantial numbers of students in the final years of secondary education enroll in private schools where standards are assumed to be higher.

Of the two Eastern European countries that participated in the study, Hungary ranked with the top performers and Poland improved its position at the 9th- and 12th-grade levels to place in the top half. Both countries, however, showed wide differences in scores among schools tested, whereas a small difference is thought to be an indicator of equal opportunity.

The tests were prepared in an arduous international effort aimed at identifying elements that representatives of all countries participating would accept as fair. The result, according to Wolf, were tests regarded as "equally unfair for everyone."

The report is described as preliminary and will be followed by two other volumes. One will provide a detailed comparison of an earlier IEA test of science achievement reported in 1970. The other, expected next, will offer a full analysis of data for a total of 24 countries and information on school organization, curriculum, and teacher qualifications and an attempt to assess home and society influences on results, all in the hope of providing clues on how to improve science education. ■ **JOHN WALSH**

Rank Order of Countries for Achievement at Each Level

| | 10 yr olds Grade 4/5 | 14 yr. olds Grade 8/9 | Grade 12/13 Science Students | | |
|---|---|---|---|---|---|
| | | | Biology | Chemistry | Physics |
| Australia | 9 | 10 | 9 | 6 | 8 |
| Canada (Eng) | 6 | 4 | 11 | 12 | 11 |
| England | 12 | 11 | 2 | 2 | 2 |
| Finland | 3 | 5 | 7 | 13 | 12 |
| Hong Kong | 13 | 16 | 5 | 1 | 1 |
| Hungary | 5 | 1 | 3 | 5 | 3 |
| Italy | 7 | 11 | 12 | 10 | 13 |
| Japan | 1 | 2 | 10 | 4 | 4 |
| Korea | 1 | 7 | – | – | – |
| Netherlands | – | 3 | – | – | – |
| Norway | 10 | 9 | 6 | 8 | 6 |
| Philippines | 15 | 17 | – | – | – |
| Poland | 11 | 7 | 4 | 7 | 7 |
| Singapore | 13 | 14 | 1 | 3 | 5 |
| Sweden | 4 | 6 | 8 | 9 | 10 |
| Thailand | – | 14 | – | – | – |
| U.S.A. | 8 | 14 | 13 | 11 | 9 |
| Total no. of countries | 15 | 17 | 13 | 13 | 13 |

**Science Achievement in Seventeen Countries: A preliminary Report*, Pergamon, New York, 1988.