Does Practice Make Perfect?

The benefits of busy hospitals

By DAMARIS CHRISTENSEN

Your chest hurts and pains shoot down your left arm. You are having trouble breathing and feel lightheaded. You realize that you are having a heart attack.

Quick treatment is crucial, so you call 911. An ambulance arrives, the paramedics ease you onto a stretcher, and away you go, with siren wailing.

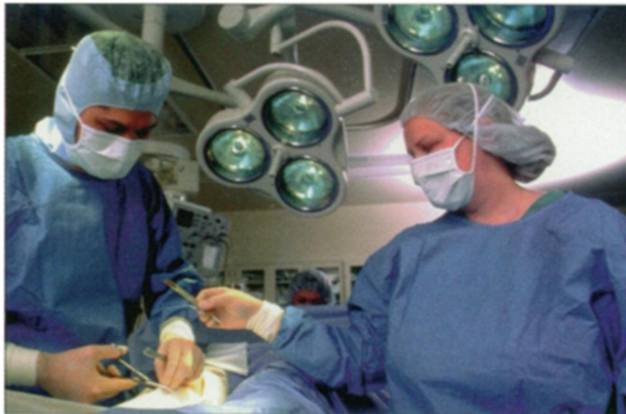
With all the expensive equipment on that ambulance, one of the most important devices may be its turn signal. At least in busy urban areas, the driver's choice of which hospital to head for may affect your chance of survival: The odds seem best if the hospital's cardiac-care unit is a busy place.

A recent study of almost 99,000 Medicare patients who were treated for heart attacks at nearly 4,000 hospitals nationwide found that patients at the hospitals receiving the most heart attack patients were 15 percent more likely to survive than patients treated at the hospitals getting the fewest.

This study, published in the May 27 New England Journal of Medicine (NEJM)—and others over the past few years—suggests that practice may indeed make perfect. According to the research, patients suffering from ailments ranging from heart attacks to AIDS fare better when they are treated at hospitals that care for many patients with that particular disease.

David R. Thiemann of Johns Hopkins University in Baltimore, lead author of the recent NEJM study, and his colleagues defined high-volume hospitals as those treating at least 4.4 Medicare patients for heart attacks per week, and low-volume hospitals as those treating 1.4 or fewer of these cardiac patients weekly.

The researchers took into account patients' ages, previous heart disease, other diseases, severity of heart attack, and elapsed time from the onset of symptoms to the beginning of treatment. About one-third of the difference in survival was explained by the observation that doctors in high-volume hospitals were slightly more likely to attempt to open clogged arteries with angioplasty and to give patients aspirin and other drugs to stave off future heart attacks, Thiemann says.



A given surgical procedure is more likely to be successful in hospitals that perform many such operations, according to recent studies.

"The rest is probably the intangible we call experience. Medicine is really as much art as science, and experience—not just of the physician, but of the entire health care team—matters," Thiemann says. "No study can measure the nuances of good medical care, but it seems that judgment and experience matter more than the availability of a technology."

Studies by others have suggested that specialist physicians may treat ailments ranging from heart disease to stroke more effectively than general practitioners and family physicians, who together are called generalists.

In the era of managed care, access to specialist care has become an important aspect of so-called patients' rights legislation. The issue is not simple, however. Teasing the importance of doctors' training and experience from the overall effect of hospital size and the quality of other staff is difficult (see sidebar).

Thiemann, for example, found no evidence to suggest that the number of patients treated by the individual physician had any relationship to the chances of survival for those patients. The benefits of specialist care were too intertwined with hospital volume and patient characteristics to allow any hard-and-fast conclusions, he says.

While Thiemann's study is one of the first to suggest that heart-attack patients may fare better at busier centers, work over the past decade examining surgical procedures has suggested a relationship between high volume and favorable outcome. In the early 1990s, several studies suggested that heart-bypass surgery is more successful at busier centers. These findings prompted New York and Pennsylvania to make public their information on the number of bypass surgeries performed by surgeons and hospitals and the overall survival rates.

Cancer patients also seem to do better at large treatment centers. As is the case for heart disease, the evidence in favor of cancer specialists over generalists is limited. However, the demonstrated benefits of having cancer surgery at hospitals busy with cancer patients has triggered national advisory bodies to say that some complicated procedures should be done only at facilities already performing many such surgeries.

In a report released in April, the National Cancer Policy Board, an independent federal advisory agency, recommended "high-volume" hospitals for patients who need surgery for pancreatic cancer, lung cancer, esophageal cancer, and cancer of the pelvic organs such as the ovaries. A relatively large share of high-risk surgery takes place today in low-volume settings.

Complicated chemotherapy regimens are also more successful at larger, busier centers, according to the report.

Some of the studies that the board considered gave striking results. One followed the survival of more than 5,000 Medicare patients after cancer surgery. Among patients undergoing surgery to remove cancer of the esophagus, 17.3 percent of patients at low-volume hospitals died within a month, compared with just 3.4 percent of people treated at the highest-volume centers.

The researchers, led by Colin B. Begg of the Memorial-Sloan Kettering Cancer Center in New York, found similar results among patients with cancers of the pancreas, the liver, or the pelvic organs. The busiest hospitals performed from four to six times as many of these high-risk procedures as the low-volume hospitals did.

In another study, a team of Europeans reported that people with serious testicular cancer fared better in institutions that treat-

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *Science News*. www.jstor.org

ed five or more patients over 4 years than in institutions that treated fewer patients. There were no differences in survival between patients seen at hospitals that treated 5 patients and those that treated more than 20 over the 4 years of the study, the researchers reported in the May 19 JOURNAL OF THE NATIONAL CANCER INSTITUTE.

The benefits of high-volume centers appear to stretch beyond heart disease and cancer treatments. In Maryland, people undergoing complex gastrointestinal surgery were three times more likely to die of complications in the 46 hospitals that performed 20 or fewer such surgeries each year than in the hospital that performed more than 200 surgeries each year.

People undergoing gastrointestinal surgery at the four hospitals that performed between 21 and 50 such operations each year fared slightly better than those at the lowest-volume centers, according to a report in the July JOURNAL OF THE AMERICAN COLLEGE OF SURGEONS. About 13 percent of patients died after their surgery at the least-busy centers.

Likewise, in the December 1998 HEALTH SERVICES RESEARCH, researchers reported that elderly patients undergoing total knee replacement surgery at hospitals that performed at least 50 of these operations a year were less likely to suffer complications than people treated at lower-volume centers.

Several studies have indicated that patients with AIDS-related conditions do better in hospitals that treat more AIDS patients, says Mari M. Kitahata of the University of Washington in Seattle.

Given all these studies, should patients always try to go to the biggest, busiest hospitals? Not necessarily, say health policy experts. A heart attack victim should worry first about getting to an emergency room quickly, says Thiemann. No medical group has yet certified specific hospitals as heart-attack treatment centers. Hospital choice should be left to the emergency medical personnel, he says.

The problem is that "findings regarding the relation between volume and outcome tend to be true only on average," cautions Edward L. Hannan of the University of Albany School of Public Health in Rensselaer, N.Y.

"Even when a significant relation between volume and outcome is identified in a study, some high-volume centers in the study are likely to have had average or poor outcomes. There are almost always numerous low-volume centers with average or exceptional outcomes," he says.

"One of the puzzlers between volume and outcome is that the number of procedures that constitute 'high volume' varies tremendously from procedure to procedure," says National Cancer Policy Board member Diana Petitti of the Kaiser Permanente Medical Care Program in Pasadena, Calif. While high-volume centers for heart surgery may see hundreds of patients each year, some high-volume cancer centers may operate on just a few patients with a particular cancer each year, she says.

Carolyn Clancy of the Agency for Health Care Policy and Research in Rockville, Md., speculates that the high-volume benefit may result from trained health care teams, not just physicians, who can monitor and educate patients about their diseases.

Petitti agrees that it remains to be seen whether the beneficial effects of high-volume medical centers are due to better nursing care, better systems of care, or simply surgeons and health care teams that are used to dealing with higher numbers of cancer patients.

"From a health policy point of view, these are intensely important questions about quality and the benefits of specialty care and experience," says Harlan M. Krumholz of Yale University. "This is, however, an enormously difficult area to study."

The people who study health care do have some practical advice to offer. "For elective procedures or issues in which you can take time to plan ahead, it does make sense to do a little comparative shopping," says Ira S. Nash of the Mount Sinai Medical Center in New York. "But the areas in which good quality data to base your decisions on are available are vanishingly small."

Patients should make sure that the hospitals they consider have procedures in place to monitor the quality of their care, says Krumholz. "What you want to know is that you are getting a hospital that is always trying to get better," he says. He cautions, however, that widely available hospital "report cards" have not yet received the approval of most medical organizations.

Clancy agrees. "The big tension is to get quality care and still have coordinated care. We need more information about how we get it right, not who does it right. And we need to translate what we already know into practice." □

Is specialist care superior?

It seems intuitive that going to a specialist physician will result in more thorough and up-to-date care for whatever ails you. In fact, many studies support this idea—but health-care researchers caution that they may not tell the whole story.

The first question is, Whose patients are sicker? Specialists tend to treat more complicated forms of disease, but generalists—family physicians and general practitioners—are more likely to treat patients with several coexisting diseases.

A second question is, What counts as the most valuable treatment? Specialists are more familiar with standards of care for the diseases they treat regularly, says Harlan M. Krumholz of Yale University. On the other hand, a generalist may do a better job of coordinating a patient's care and keeping an eye on a person's overall health, says Martin T. Donohoe of the Oregon Health Sciences University in Portland.

To further complicate comparisons, many generalists will consult with specialists on complicated cases, but medical records do not always show that, says Carolyn Clancy of the Agency for Health Care Policy and Research in Rockville, Md.

That said, stroke patients treated by neurologists are more likely to survive than stroke patients treated by generalists, according to a report published in the November 1998 STROKE. Among about 38,000 stroke sufferers nationwide, 16.1 percent of those treated by a neurologist died within 3 months, compared with 25.3 percent of those treated by family physicians.

Several studies have shown that people with heart disease fare better when they are treated by cardiologists, says Ira S. Nash of the Mount Sinai Medical Center in New York, but it's hard to figure out exactly why.

"Physician specialty, in addition to being a measure of formal training in the field, is also a proxy for clinical experience," he says. "It's very difficult to separate out the overlapping concepts: one, that practice makes perfect; two, [the effect of the] educational and time investments in a clinical problem the physician is simply interested in; and three, the issue of formal training."

Differences between specialist care and generalist care, however, pale in comparison with the finding that both specialists and generalists often fail to put the latest knowledge into practice, contend both Donohoe and Clancy. A December 1998 report by the U.S. General Accounting Office documented that heart attack survivors who saw cardiologists regularly were more likely to take cholesterol-lowering drugs and beta blockers—which reduce heart rate and blood pressure—than those who received care from a generalist. Even so, these life-prolonging drugs were not prescribed to many patients who appeared to be eligible for them, implying that both generalists and specialists could do better.

"Maybe we are focusing too much energy on the differences between generalist and specialist care," says Donohoe. Perhaps, he adds, "we should focus more intently on improving the quality of communication and cooperation between generalists and specialists and on developing and promoting practice guidelines that might have a much bigger effect on the overall health of Americans." —*D.C.* .