
Science & Technology

CT scanner cuts total medical costs

by Vin Berg

CT or computerized tomography scanners are a highly sophisticated X-ray device that can take a 360 degree picture of the human body. Where in use, they have permitted dramatic improvements in diagnostic therapy because, with far more accuracy than other methods, they can reveal physical conditions previously impossible to detect without complex, expensive tests or invasive exploratory surgery.

But at \$835,000 per device (for the latest model), the CT scanner has become the subject of a campaign by the "cost efficiency" experts at Health and Welfare, at Hugh Carey's New York and other health service agencies, and the health insurance industry.

In fact, since it is rather easily demonstrated that CT scanning is a net profitmaker from the standpoint of the savings that result in terms of diagnostic accuracy, diagnostic speed, avoided tests, and cancelled surgeries, the cost accountants' attack on CT is utterly incompetent, even in their own terms. CT scanning exemplifies the way new technology in medicine works toward making all health care more efficient and less expensive.

Computerized tomography scanners "cut" the cranium or body like a surgeon's instrument. A single slice can reveal the pancreas, aorta, inferior vena cava, retroperitoneum, lower liver, and upper kidney poles together, in great anatomical and visceral detail. CT device X-rays are passed through the body or the head at many different angles, representing different views within a single cross-sectional plane. This "slice" of the body is photographed around 360 degrees, with computerized computation presenting a recognizable image.

X-rays may be absorbed, deflected, or left relatively unaffected by various bodily tissues. The image is a matter of differentiations in brightness of portions of the body, in turn a function of the degree of X-ray absorption. These variations are recorded by scintillation detectors or an ionization chamber, much more sensitive than

X-ray film, permitting lower duration and intensity of radiation. The electrical signal or current is amplified, the data digitized by computer and transformed into an image by a series of complex equations.

Within only a few years, CT scans have progressed from an average of 4 to 5 minutes per "slice" to 1 to 2 seconds in the latest generation machine. At the point that this is reduced to one-tenth of a second or less, it will be possible to CT scan the constantly moving heart—a major breakthrough. Most estimates are that within five years, CT scanners will be capable of generating images in mere thousands of a second.

A CT scanner can detect density differences of no more than 0.5 percent, with image accuracy in the 90 to 98 percent range for most organs and conditions. By comparison, conventional X-rays can detect differentiations in bodily tissue density of 5 to 10 percent.

For example, the CT scanner can discriminate between a brain tumor and an infarct (damaged or dead tissue). It is particularly effective for intracranial hemorrhage diagnoses—for which exploratory surgery is extremely costly. In one hospital employing CT, the result was a 94 percent reduction in craniotomies for head trauma.

CT body scans, meanwhile, are highly accurate for the lungs and pleura, the liver, gallbladder and biliary tract, the pancreas, the urinary tract, the adrenal glands, lymph nodes, bone mineral content, pelvis, and the aorta and other major vessels. One recent report indicated that operations were cancelled as a result of CT scans in 27 percent of the patients for whom surgical procedures were scheduled. Moreover, in 20 percent of patients undergoing diagnosis for neurological disorders, a CT scan led to complete change in treatment strategies in 15 percent, and partial changes in treatment and medication in another 20 percent.

A CT scan is without parallel in revealing how advanced cancer is or how effective radiation therapy or chemotherapy have been.

At present, however, there are only 1,300 to 1,400 CT scanners in use in the entire country. Fortunately, while HW, and health services agencies subject to HW "cost effectiveness" guidelines, can prevent any hospital, public or private, from installing a CT scanner through a complicated proof-of-need statement, they lack the power to prevent doctors in private practice from purchasing the new device. Over 70 percent of new orders for CT scanners reported by major manufacturers like Pfizer have come from private-practice physicians and radiologists. In fact, many hospital doctors have formed their own private partnerships to purchase CT scanners—solely in order to "rent" scans to their own and other hospitals that have been denied the technology by government "rationing."