

News

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*****Expert on hospital-acquired infections
heads new Epidemiology Unit at UTHSCD.

DALLAS -- The very technology that saves patients' lives now sets them up for infection. Nosocomial (hospital-acquired) infections are a costly result of modern medicine, says Dr. Robert Haley, head of the new Epidemiology and Preventive Medicine Unit at The University of Texas Health Science Center at Dallas.

"The smarter we get in hospitals, the bigger the price we pay in infection," says the epidemiologist. He defines epidemiology as "the study of disease within the population," and his area of special interest is disease in hospitals.

"Technology is a beneficial thing," he says. "Ten years ago many of these patients would have died, but the techniques that save them bring a risk of infection. We have more burn units, more ICUs, more catheters, more respirators. Every piece of equipment, every invasive technique provides the opportunity for infection to develop."

In addition, antibiotic-resistant organisms have developed. "About the time the price of an antibiotic comes down, the bacterium becomes resistant to it," he says.

One of the biggest problems in nosocomial infections is Staphylococcus aureus, commonly found in boils and recently implicated in toxic shock syndrome. This staph bacterium is found everywhere. But until recently methicillin was very effective against it. (Methicillin had been used since 1961 when Staph. aureus became resistant to penicillin.)

Now vancomycin is the only other drug available, and it is "probably the most expensive antibiotic made," says Haley. "It was intended for relatively rare use -- in patients with allergy to other antibiotics. Now vancomycin becomes the first line drug against staph infection, and it can wreck a hospital's financial system."

With new Medicare/Medicaid regulations for "prospective reimbursement," hospitals will be paid the average cost of hospitalization for the illness for which the patient is admitted. The cost of treatment for hospital-acquired infections cannot be passed on to Medicare/Medicaid, and "it's just a matter of time before the insurance companies jump on the bandwagon," says Haley.

It now becomes financially critical for hospitals to deal with the problem of nosocomial infection.

Haley has just come to the health science center from the Centers for Disease Control in Atlanta where he has studied hospital-acquired infection for the last 10 years. He was director of the SENIC (Study on the Efficacy of Nosocomial Infection Control) Project from 1974 until he left. Results of this major study will soon be published.

"When I got into it, the study was impossible," says Haley. Ten to 15 percent of the hospitals, including Parkland Memorial Hospital, had Infection Surveillance and Control Programs (ISCPs) as recommended by the CDC. These programs involved at least one infection

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control nurse, identification of all nosocomial infections, statistical analysis and devising measures to prevent further infection.

"Everybody thought that the ISCPs were preventing infection and that they were a good idea. But it hadn't been scientifically proven. That was the main reason hospitals weren't setting them up. It was costly and not proven. And hospitals didn't want to pay for full-time nurses and training courses. You can't charge a patient \$300 for prevention of infection during surgery — although it would probably be the best bargain you could get."

Haley spent two years determining how to do the study. The problem was: the control hospitals did not measure infection, so how could researchers compare their situation with those that did?

He worked out a technique of measuring infection by studying patients' charts long after their hospitalization. The SENIC group tested the technique in four hospitals by following 8,000 patients while they were hospitalized. Another group came back later and studied the charts. The technique worked.

They then studied 330 hospitals selected at random from all U.S. hospitals. The hospitals spanned the scale from those doing nothing about infection to those that were quite effective at infection control.

Epidemiology is a combination of medical science and military science, says Haley. He sent out his field staff of 150, eventually increasing to 300, to check medical records all over the country. The staff, consisting mostly of medical records professionals (registered record administrators), were known as "Haley's Raiders."

Travel expense was great, "and we were always running out of money," says Haley. "David Sencer (then assistant Surgeon General and director of the CDC) called us his 'Tin Cup Operation.'"

In each hospital the group reviewed 500 patients' charts from 1970 and 500 from 1976. Charts were randomly selected.

SENIC learned that hospitals with ISCPs reduced their infection rate by about one-third. In hospitals without ISCPs, the infection rate went up slightly.

"The figures showed that in the absence of surveillance and control, infections in U.S. hospitals could be expected to increase by 20 percent per decade," says Haley.

In a separate study that Haley did on staph infections in a nursery at a large city/county hospital, he found that the most important factor in infection was the ratio of babies to nurses. When the number of babies per nurse increased, infections also increased.

Nurses are supposed to wash their hands before each baby. "Washing your hands 95 times a day is difficult, but it can be done. But when you have 15 babies, some critical, instead of six babies, what goes first? Hand-washing. You don't have time," says Haley.

With studies proving scientifically what steps cut down on infection, hospital administrations are willing to tackle the problems.

Haley's major research interest currently is methicillin-resistant Staphylococcus aureus (MRSA). The organism developed in Britain in the late '60s, then swept Europe and Australia. It reached the United States in the late '70s, and by 1980 there were hospital epidemics all over the country.

MRSA epidemics are occurring almost exclusively in city/county hospitals with more than 500 beds and in the sickest patients. The organism has been transmitted around the country by patients and house staff. A patient may have a car accident on vacation and be admitted to the hospital. Then when he is well enough, he is transferred back to his home hospital.

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"This was the first time we have been able to trace how a new organism spreads all over the country," says Haley.

He is pleased about "the opportunity to establish an epidemiology research program in a medical school that is strong in research. We will have the opportunity to combine basic and clinical research and go out and study in the community." He hopes to collaborate with other researchers on problems such as genetic studies in families with diabetes or the causes of coronary heart disease.

"The new challenge of the 1980s is to develop more precise tools of measurement that can be applied to a population. It's one thing to measure an antibody in a hospital patient or in a rat. But a lot of important things can't be studied in the hospital or lab."

Before going to the CDC in 1973, Haley did his residency in Internal Medicine at Parkland. He received his M.D. at Southwestern and his B.A. at Southern Methodist University. At Southwestern he received the Pfizer Scholarship Award and the Dallas County Medical Society Scholarship Award for outstanding academic achievement. He also won first place for student research on virology after working as a student assistant in Dr. James Luby's virology lab.

While a freshman at Southwestern, Haley taught "Introduction to Ethics" and "Epistemology and Philosophy" at SMU.

From 1974 till 1976 he did a residency in preventive medicine at CDC. He advanced to the position of director of the Hospital Infections Program there before returning to Dallas.

In 1976 he received the U.S. Public Health Service Commissioned Officer Commendation Medal. He received two national awards for the development of the training system for the SENIC Project with the CDC Bureau of Training: the 1978 Outstanding Instructional Development Award from the National Society for Performance and Instruction and the 1977 Human Resources Development Award from the American Society for Training and Development.

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