

Heart surgery safer thanks to 16-year-old

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electrocardiogram to the point where it is unintelligible, much like a vacuum cleaner can blur a television picture.

This distortion, unofficially referred to as "noise" or "garbage," is frequently due to what engineers call abnormally high electrode impedance.

"It's not just an easy matter of changing the electrode," Burton said. "You've got all the surgeons there operating, and the patient is covered with sterile sheets and other things."

Messenger became technician

What was required, he said, was a simple device that could test impedance quickly before operations and not be in the way later. Commercial impedance testers are too complicated to be practical for open heart surgery, and electrical engineers in the anesthesiology department had more pressing concerns.

"John, whose father is an anesthesiologist here, came to work for us as a messenger last summer," Burton said. "When some of our technicians left for other jobs and we were caught short-handed, we gave him a technician job because he had already demonstrated his competence."

For the rest of the summer, John arrived at the hospital at 5:30 a.m. to check out monitoring equipment before surgery, to repair instruments back in the laboratory and to be on call in case of equipment failure during an operation.

"He pulled his weight the whole way and did the same work we would expect from a senior engineering student in college," Burton said.

Green light means go

After returning to school, the young man, who was familiar with the impedance problem, began designing and building an instrument to test it.

"He came in one day in December with an apparatus that was all ready to go," the scientist said. "The workmanship was remarkably good, and it does exactly what we want it to do in less than 30 seconds."

The device works by passing a faint electric current through the patient and



YOUTHFUL INVENTOR — Sixteen-year-old John Karis of Durham has designed and constructed a device that has been used almost every day since Christmas in the open heart surgery rooms at the medical center. The instrument, shown here with the young man in the Anesthesia

Electronics Shop, assures physicians that electrical interference caused by faulty electrode connections will not disrupt heart monitoring during operations. John is the son of Dr. Joannes H. Karis, professor of anesthesiology. (Photo by Thad Sparks)

between the various electrodes. The current is 100,000 times weaker than that in a common light socket.

If an electrode is satisfactory, a green light comes on. When the impedance is too high, a red light flashes so that the bad electrode can be replaced.

Can be matter of life and death

"Having a good, clean electrocardiogram can literally be a matter of life and death when surgeons have to use a balloon pump," Burton said. "If a patient's heart isn't pumping blood as well as it

should after coming off the heart lung machine, the balloon pump assists it until it gets stronger."

Since the electrocardiogram triggers the pump to work in unison with the heart, he explained, the pump cannot function optimally when the electrocardiogram is garbled.

Burton said his department is so pleased with the impedance tester that it plans to build more of them. He would like to have John work in anesthesiology again this summer.

But the young man, a solid "A" student in science, said he doesn't know yet what he is going to do during vacation. He has already had invitations to three summer science camps, and he is considering the one at North Carolina State University.

His device narrowly missed winning first place in the 1978 North Carolina Junior Science and Humanities symposium, and John also has been invited to attend the National Junior Science and Humanities Symposium in New Jersey in May.



SAYING THANKS — Hospital administration said thank you to the auxiliary April 3 by honoring them with a reception followed by a dinner in the courtyard cafeteria. Dr. Roscoe R. (Ike) Robinson, associate vice president for health affairs and chief executive officer of the hospital, spoke at the dinner, which also featured a slide show about Duke Hospital North. Shown at left is auxiliary member Sarah Hobbs. Below, left to right, are Ort Busse, auxiliary president; Dr. William G. Anlyan, vice president for health affairs; Robinson; and Mattie Belle Powell, recording secretary of the auxiliary. (Photos by Parker Herring)



Ambulatory nursing workshop set

A workshop on continuity of ambulatory nursing care is being offered by the hospital to health care personnel from across the state.

The one-day program, which is being coordinated by Ambulatory Nursing Services, will focus on effective utilization of services and improving working relationships and communications.

It will be held in the Hospital Amphitheater (yellow zone, first floor) Saturday, April 29. The registration deadline is April 15.

Duke nurses who will be speaking are Judy Carlson, head nurse, Urology Clinic; Rebecca Herbstreith, head nurse, Medical Outpatient Clinic; Jacqueline Holland,

nurse clinician, Psychiatric Clinic; Ann Johnson, head nurse, Surgical Outpatient Clinic; Barbara Leathers, head nurse, ENT Clinic; Jane Reed, registration supervisor, Outpatient Business Office; Onzelle Riley, head nurse, Women's Clinic; Jane Sharpe, head nurse, Pediatric Clinic; Susie Wheelis, head nurse, Emergency Room; and Vernice Wright, staff nurse, Surgical Outpatient Clinic.

For more information, contact Ambulatory Nursing Services, 684-3126.

Symposium looks at nervous system

"Organizational Principles in the Nervous System" will be the topic of a neuroscience symposium to be presented by Duke's Ganglion Society next Friday (April 21).

Dr. Irving T. Diamond, James B. Duke Professor of psychology, and Dr. Lorne M. Mendell, associate professor of physiology, will be among those giving individual presentations between 8:30 a.m. and 5 p.m.

Guest speakers include Prof. J. Z. Young, Wellcome Institute, London; Drs. Maxwell Cowan and Viktor Hamburger, Washington University; and Dr. Bruce McEwen, Rockefeller University.

Registration is limited. For further information, contact Mario Orlandi, 684-4366, or Claude Hughes, 684-5572.

Memorial lecture

Members of the Department of Microbiology and Immunology have announced the establishment of the "Jim McGinnis Memorial Lecture," in memory of the graduate student who drowned in a canoeing accident last month.

The lecture will be delivered annually by a speaker selected by the graduate students of the department.

Memorial contributions to help support the lecture may be directed to Bob Ziegler, Box 3020.