One Already Saved

Unborn Babies Guarded By Electronic Monitor

Equipment At Maumee Valley Hospital Warns Doctors When Life Is Imperiled

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Unborn babies are offered a new safeguard in Maumee Valley Hospital electronic equipment that monitors an infant's heartbeat and brain activity.

Part of the apparatus, a cardiotocograph, gives physicians advance warning when a life is endangered.

Plans call for the unit to be used by Medical College of Ohio physicians in a research program that could help predict and counteract hazards arising during birth.

Already Used

The equipment already has been used to save the life of a 6-pound 9-ounce baby girl whose mother was having difficulties in labor.

The cardiotocograph is a fetal-monitoring system that gives physicians a permanent record of an unborn infant's heartbeat and the mother's uterine contractions during labor.

It consists of an electronic pickup which is strapped around the mother's abdomen, feeding impulses from the fetus' heart to an electrocardiograph.

The electrocardiograph records the fetal heartbeat as lines on a continuous sheet of graph paper. It produces an electrocardiogram (EKG) similar to that taken of heart-attack victims.

Good In Many Cases

Dr. Melvern Ayers, acting chairman of the department of obstetrics and gynecology at the medical college, said the device can be used in a number of situations to insure safe delivery of babies. It will be used particularly when a mother has had a previous history of pregnancy complications that are likely to injure her present child.

Prime examples of such complications include breech deliveries, prolonged labor, or disproportionate size of the baby in relation to the mother, Dr. Ayers said.

In such situations, the fetal monitor could warn attending physicians that the baby's condition is deteriorating so rapidly that it might not survive a normal delivery. They might then be able to save the baby's life by administering drugs or delivering the baby surgically by caesarean section.

Under other circumstances, the monitor could be used to see how drugs administered to the mother are affecting the unborn child.

This was the case last week, when the monitor was used at Maumee Valley Hospital on a young mother who had been in labor for 20 hours.

Decide To Intervene

Just before Friday noon, doctors decided they would have to intervene to save the baby. They attached the fetal monitor to the woman's abdomen and administered a drug to speed uterine contractions.

From the fetal monitor, they saw the baby's heartbeat increase from 160 to 180 and knew they would have to use a milder dose of the drug. The baby's heart held steady, and she was born five hours later.

Dr. Ayers explained that the monitor ordinarily is used just prior to delivery of a baby, but could be used several weeks earlier.

Diabetes or kidney disease often complicates circulation between mother and child before the baby is carried to term. The child thus is weakened and ill-fit to withstand stresses of a normal delivery.

Earlier Delivery

Observation of the child's condition, using the fetal monitor, could suggest that physicians deliver the child earlier than usual, eliminating further risks, Dr. Ayers said.

Monitoring of fetal heartbeats has been used for several years as an indication of the health of the unborn child.

Because he feels heartbeat gives only an indirect indication of fetal well-being, Dr. Ayers will follow a more sophisticated approach.

In addition to measuring the infant's heart, doctors also will monitor his brain waves, taking an electroencephalogram (EEG) much like those used to locate brain lesions and tumors.

The EEG also will provide a permanent record of the infant's brain activity just before and during birth.

"We plan to do long-term follow-up studies on babies delivered from the prenatal clinic at Maumee Valley," Dr. Ayers said, adding that both the recorded EKGs and EEGs will be combined with nutritional and other information and analyzed by computer in hope of isolating particular heart and brain patterns associated with pregnancy complications.

If follow-up studies five years from now show, for example, that a child has minor brain damage, physicians will be able to analyse the records of his heart and brain activity during birth, his mother's nutrition during her pregnancy, and other factors.

Using the same example, when physicians have analyzed many cases of the same kind, they may be able to pick out a certain pattern of brain or heart activity during labor that could alert them to dangers.

"Ultimately, we hope to be able to use this information to predict impending harm to an unborn infant and prevent it," Dr. Ayers said.