

# SOUTHWESTERN NEWS

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**EMBARGOED UNTIL 4 P.M. CST FEB. 14, 2001**

## **UT SOUTHWESTERN RESEARCHERS REAFFIRM USE OF APGAR AS ACCURATE PREDICTOR OF NEWBORNS' EARLY SURVIVAL RATE**

DALLAS – Feb. 15, 2001 – Researchers at UT Southwestern Medical Center at Dallas have reaffirmed the value of the nearly 50-year-old Apgar score as a quick and easy predictor of 28-day neonatal survival.

The research, published in today's *New England Journal of Medicine*, was conducted at Parkland Memorial Hospital, the primary teaching hospital for UT Southwestern faculty physicians, which has a level III neonatal intensive care unit. More than 150,000 infants born at 26 weeks or later over an 11-year period were evaluated.

The Apgar test, developed by Dr. Virginia Apgar, an anesthesiologist, in 1953, is used throughout the world at one and five minutes after birth to evaluate heart rate, respiratory effort, muscle tone, reflex irritability and color. Recently some have suggested that the Apgar score is outdated and have added an umbilical-artery blood test, which measures pH, partial pressure of carbon dioxide, partial pressure of oxygen, bicarbonate concentration and base deficit, as a means of assessing the health of infants at birth. UT Southwestern researchers say that using the tests together gives the most accurate prognosis.

"However, if only one test is to be used, it should always be the Apgar," said Dr. Brian Casey, assistant professor of obstetrics and gynecology and the principal investigator. "The Apgar score proved in some cases as much as eight times superior to using the pH of the umbilical artery blood taken at birth as an early-death predictor in newborns."

The Committee on Obstetric Practice of the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics have issued a joint opinion, titled "Use and Abuse of the Apgar Score," emphasizing the limitations of the Apgar system in identifying birth asphyxia and predicting neurological outcome.

"The use of the Apgar score to identify birth asphyxia [lack of oxygen] is a misapplication, since such conditions as congenital anomalies, preterm birth and administration of drugs to the mother can result in low scores that are not reflective of asphyxia," Casey said.

(MORE)

## **APGAR- 2**

Casey said the Apgar test assigns a value of from 0 to 2 for each of the five characteristics evaluated by the test. A score of 7 or higher indicates the baby's condition is good to excellent. The study showed that the five-minute test was shown to be more accurate than the one-minute scores, both of which are done at Parkland. Intervention, which may include such procedures as treating the newborn with oxygen, intubation or transporting to the intensive-care nursery, can be initiated at either interval.

Casey and his associates reviewed computerized records of 151,891 women who gave birth to single infants from January 1988 to December 1998. Paired Apgar scores with umbilical artery-blood gas values were available for 145,627 infants, of whom 13,399 were delivered before term and 132,228 were delivered at term. Fifty-eight percent of the infants in the study were Hispanic; 26 percent were black; 13 percent were white; and 3 percent were of other racial or ethnic backgrounds. The mean maternal age was 24. Thirty-nine percent of the mothers were delivering their first child.

Results of the study showed that the incidence of neonatal death within the first 28 days after birth was 315 per 1,000 for preterm infants with Apgar scores of 0 to 3 at five minutes, while only five per 1,000 preterm infants with five-minute Apgar scores of 7 or greater died during that period. Seventy-two per 1,000 preterm infants with five-minute Apgar scores of 4 to 6 died.

The researchers also analyzed similar data for infants delivered at term. The incidence of neonatal death in infants delivered on or after 37 weeks with five-minute Apgar scores of 0 to 3 was 244 per 1,000, and the incidence in term infants with scores of 7 or more was 0.2 per 1,000.

"In our view, it should not be surprising that features of vital activity, such as pulse, respiration, color and movement, reflect the prognosis for neonatal survival even in premature infants," Casey said.

Other authors on the study were Dr. Kenneth Leveno, professor of obstetrics and gynecology, and Dr. Donald McIntire, assistant professor of obstetrics and gynecology.

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