

## Preventing sudden infant deaths

During the past several years, research into the cause or causes of unexplained sudden infant deaths has intensified. Although investigators have come up with a lot of leads, no final answers have yet emerged. However, two scientists in England are making substantial progress in identifying risk factors associated with the sudden infant death syndrome and in using those factors to prevent deaths.

In 1972, a panel convened by the U.S. National Institute of Child Health and Human Development discussed the possibility of conducting a study to see whether certain factors might be used to predict which infants would succumb to sudden infant death and which would not. However, the panel doubted whether it would be possible to identify any risk factors in the first place. In contrast, R. G. Carpenter of the London School of Hygiene and Tropical Medicine and J. L. Emery of The Children's Hospital in Sheffield, England, were optimistic about identifying such risk factors and in using them to predict sudden infant deaths, and they set out to do so.

First, they conducted a study to identify risk factors. They obtained detailed obstetrical and prenatal histories for 119 infants who had died suddenly, and also for 135 infants born in the same hospitals who had not died. From this information they derived 40 possible risk factors for sudden infant death. For instance, it looked as if infants would be more likely to die suddenly if their mothers were younger rather than older and if they were further along in birth order rather than the first or second child. It also looked as if infants would be more likely to die suddenly if their mothers' blood groups were O, B or AB rather than A; if their mothers had urinary tract infections during pregnancy; if they were born premature rather than full term, and if they were bottled fed rather than breast fed.

Carpenter and Emery then set up a study in 1973 to see whether they could use these proposed risk factors to predict which infants would die suddenly and which would not. They scored some 6,000 newborns for the risk factors, and as they reported in *NATURE* (250:729, 74), those babies with the highest scores tended to die at a rate six times as high as that of babies with lower scores.

Since 1974 Carpenter and Emery have extended their research, further confirming that their risk scoring system is effective in predicting which infants are prone to sudden death. Even more crucial is their discovery that their scoring system can be used to increase surveillance of high risk infants and, hence, prevent their deaths. Some 11,000 infants were scored for the risk factors. Those infants identified as high risk—15.7 percent—were then put in non-observation or in observation groups. Those in the observation group were

reviewed clinically and received visits from a nurse at home. If they were found to be doing poorly, they were taken to the hospital, or the nurse helped their mothers make up bottle formulas correctly. Those in the nonobservation group received no medical help.

Generally, those infants identified as high risk were found to be six times more susceptible to the sudden death syndrome than infants identified as low risk, once again emphasizing the effectiveness of the scoring system. But there were differences in susceptibility depending on which subgroup the high risk infants were in. Those receiving medical attention had a death rate only twice as high as low risk infants, whereas those not receiving attention had a death rate nine times as high as low risk infants.

Therefore, infants with an increased risk of unexplained sudden death can be identified at birth, and such deaths may be prevented by medical surveillance, Carpenter and Emery conclude in the Aug. 25 *NATURE*. □

## Torque test for schizophrenia

Schizophrenia, an enigma to behavioral scientists for decades, is still not fully understood. But the results of several studies in recent years indicate that the illness has both environmental and genetic roots. Moreover, advances in brain-related research are finding clues to possible biological and neurochemical causes of schizophrenia.

Among current research, one of the most intriguing findings links schizophrenia to a phenomenon called "torque"—a tendency among youngsters, primarily left-handers, to draw circles in a clockwise direction. Theodore R. Blau of Tampa, Fla., outgoing president of the American Psychological Association, first identified the tendency 20 years ago and has since done extensive work comparing the behavioral characteristics of torque and "normal" children, who tend to draw circles in a counter-clockwise direction (SN: 10/5/74, p. 220).

Blau's latest findings, presented last week at the APA's annual meeting in San Francisco, suggest that torque may indicate a brain defect that contributes to the development of schizophrenia. The results, which Blau calls "startling," "indicate quite clearly that children who exhibit torque during their developmental years are more likely to reach early maturity with a higher incidence of the clinical symptoms of schizophrenia than a similar group of children . . . who did not exhibit torque during the early years."

Blau tested 155 children averaging just under 10 years of age, between 1963 and

1969. This year he has done a follow-up survey of 106 members of the original sample. After interviews with parents and professionals who have treated the youngsters, Blau reports that among persons who exhibited no torque as children, less than 2 percent brought for help during their developmental years were diagnosed as schizophrenics. But among those youngsters who did exhibit torque, 21 percent were diagnosed as schizophrenic by the time they reached 21 years of age. It was further found that in overall measures of emotional stability, among subjects who displayed "good-to-fair" adjustment in 1977, 36 percent displayed torque originally. For those who demonstrated "poor-to-bad" adjustment, torque was found in 77 percent of the original assessments.

Blau hypothesizes that torque indicates a "neural integrative defect" in the corpus callosum, the thick bundle of fibers that connects the right and left cerebral hemispheres. It is believed that the bundle transfers information between the two brain halves. Blau suggests that torque, after five years of age, may indicate a malfunctioning of the corpus callosum. (Most children exhibit some torque before age five, Blau says.) "Such a neural integrative defect might possibly underlie a variety of cognitive, language, behavior and learning problems found among children," he says.

The psychologist cautions that his hypothesis is still "highly speculative." He further notes that "some of the children in the torque group achieved excellent levels of adjustment." For those people, "support and success experiences in the environment may tend to decrease the probability of the clinical symptoms," he says. "It is possible that circumstances which compensate for the defect may lead to unusually creative and successful lifestyles at maturity. The difference between schizophrenia and eccentricity may be the degree to which society approves or admires the observed behavior." Blau concludes it would be important to study the apparent environmental factors that enable some torque-displaying youngsters to develop more successfully as compared with others.

Finally, Blau suggests study into the possibility that an "hereditary link" may be involved in transmitting the proposed defects in the corpus callosum from one generation to another. He says that despite the tentativeness of his findings, the data are still strong enough to suggest "the etiology of schizophrenia may arise out of the effects of neural integrative deficiency which prevent sufficient and/or appropriate language, cognition, skill acquisition and socialization during the crucial developmental years.

"Patterning, reeducation, support, graduated success experiences and responsive environments may all be ways that might divert, detorque, untorque the child at risk from dismal adult adjustment to competence, or even eminence." □