



Detecting deafness early

A pilot program is evaluating methods to detect infant hearing defects

by Hadassah Gillon

Throughout the world, millions of children are born with hearing disorders. In the United States alone, there are three million deaf children.

Many of these individuals can be helped. Surgery can restore hearing to persons deafened by abnormal bony growths in the ear or by punctured eardrums. Though nerve deafness cannot be cured, some rehabilitation is possible through auditory training and hearing aids.

Parents are urged to make their own tests of their children's hearing by observing an infant's response to loud hand clapping, pots banging, or a rattle, outside the range of vision. If there appears to be no response, a careful hearing examination by a physician is in order.

A key problem in dealing with the disorder is detecting deafness as close to the day of birth as possible, because remnants of hearing are present in most congenitally deaf children. If hearing loss is established in time, a child as young as six months can be fitted with a hearing aid. Moreover, a positive program to enable parents to teach the child to communicate by using this residual hearing can be initiated at this early age.

The child with normal hearing develops speech by continuous auditory stimulation, and by the time he is 18 months old, 60 percent of his basic language habits have been implanted. Therefore, much of the misery of deafness can be offset by a positive program in the first years of a child's life.

At the Hadassah-Hebrew University Medical Center, a research program for detecting deafness in infants and in early childhood has been in progress for the past three years, and is to continue for another two years. This program is being conducted by a team in the Ear, Nose and Throat Department, consisting of Prof. M. Feinmesser and Mrs. Lilly Tell, with the aid of a grant of \$200,000 from the U.S. Department of Health, Education and Welfare's Bureau of Disease Prevention and Environmental Control.

Among the methods being used by the team for detecting deafness in infants are those evolved by Prof. Marion Downs of the University of Colorado and Dr. G. M. Sterrit, who invented an instrument known as the Vicon Apriton. This instrument, with a speaker placed about four inches from the ear, produces two acoustic signals used for testing a newborn baby's response to noise.

The exact responses of the infants are recorded during the testing. The eyeblink response consists of either a slight or very exaggerated drawing of the baby's lids together. It may be accompanied by a complete facial grimace. Occasionally, the eyes will widen noticeably, particularly if they are in a drooping state. If the infant is very active and the limbs are flailing and the head is turning about, the signal may cause a momentary cessation of all movements; if the infant is sleeping or in a drowsy state, the sound may produce a fluttering or raising of the limbs, most noticeable in the hands. More often than might be expected, the infant gives a head turn, either toward or away from the sound. Sucking activity is elicited occasionally, especially from a background of light sleep. General body movements, such as shoulder shrugging, stirring from sleep, or stretching of the head and neck, are sometimes observed. Then there is the classic response, in which the entire body jerks and the limbs are drawn toward the midline in a sort of paroxysm.

Other methods are used by the Hadassah team to check babies at six months and upwards, such as responses to simple stimuli like the ringing of a bell.

Israel is an ideal country for conducting a large-scale program to investigate the hearing of babies and very young children because of the comprehensive health care provided from birth onward through the Ministry of Health and other health agencies. The Hadassah research project involves a complete screening of all infants born in Jerusalem during a period of five years. The babies are checked at birth, in the fifth or sixth month, in the seventh to ninth month, at 18 to 20 months and again at three years. In the course of a year, 5,600 newborn infants were tested, and deafness was detected in 1.1 percent of them. The team is evaluating the different methods of detecting hearing impediments in these very young children.

After a recent visit to Hadassah, Prof. Downs commented: "When this project is completed, Jerusalem will have pioneered the way to a model hearing conservation program starting at birth. Heretofore unavailable information will evolve from the project. . . . In their good fortune to receive care for their hearing, the children of Israel are indeed the chosen children."