A Method of Predicting Crisis Outcome for Mothers of Premature Babies

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MEDICINE traditionally tries to prevent a disease even before it knows how to cure it completely. In psychiatry, a growing interest in prevention stimulates the search for the means of identifying those persons most likely to develop mental ill health so that preventive efforts can be applied most efficiently.

Psychiatric attention is gradually being focused on certain hazardous situations (*1*) which seem to increase the risk of emotional disturbances. At the Harvard School of Public Health the factors of behavior linked with successful response to crises are being investigated. Caplan (*2*) has defined a "crisis" as a temporary disequilibrium in an individual facing a difficult and important problem, transitional phase, or accident for which he has no ready solution. This disequilibrium is severe enough to last several days and is followed by a resolution representing a level of mental health which is higher, the same, or lower than the initial level. During the disequilibrium, when the subject is searching for a way to resolve the crisis, he is considered more prone to accept help, and a smaller amount of professional assistance at that time has a greater beneficial effect than when he is not in crisis.

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Dr. Mason was the interviewer in the study and Dr. Lenin A. Baler, assistant professor of mental health, Harvard School of Public Health, was the independent judge.

Premature Delivery

One hazardous situation studied for several years by the group in the Community Mental Health Program at the Harvard School of Public Health is the reaction of families to the premature delivery of a baby (*3–5*). The relative severity of this crisis compared with others has not yet been documented, but such families represent a significant public health problem because of their number and the extent of services in their behalf. Such families are readily identified, and the potential for influencing their mental health makes them a worthy target for investigation.

Mothers who had delivered prematurely were therefore studied during the immediate post-hospital period. The interview material, including a retrospective investigation of the mother's hospital experience, enabled close examination of the coping patterns of these families. Certain factors began to emerge as belonging to the healthier responses to this stress. These results suggested that the mother's reaction during the stress situation might be used as a predictor of the adequacy of the subsequent mother-child relationship.

Design of Study

The study reported here was designed to explore the earlier suggestions in a prospective manner. Two sets of data were required: (*a*)

direct observations of the mothers during their hospital stay, and (*b*) subsequent evaluations of the mother-child interaction.

The population studied consisted of 26 married women who gave birth to babies weighing between 3 and 4½ pounds at Boston City Hospital. The mothers were interviewed on the maternity ward within 24 hours following delivery. There were usually three interviews during the lying-in period, and each lasted about 40 minutes.

The interviewer introduced himself as a "public health doctor" who was visiting mothers of premature babies to learn more about the impact of this event and to obtain suggestions for improvements of health services. The more immediate benefit of talking about the events was also suggested. As a mother described her immediate experiences and gave information about the baby, she was encouraged to report her feelings, and her behavior and attitudes were noted. No structured interviewing took place, but certain topics which the previous study had indicated were significant were covered with each mother. These included the initial reaction to the baby, amount and kind of anxiety present, emotional impact of the unexpected hospitalization, and evidence of the mother's manner of coping with the events. When possible, in about one-third of the cases, the husband and wife were interviewed together.

Variables such as the mother's age, parity, social class, and complications of prematurity in the infant were recorded, but no controls for these dimensions were imposed on the sample other than those which resulted from the restrictions on birth weight and marital status. On inspection, these variables showed no relation to outcome, although the sample was too small to allow evaluation by significance tests. Furthermore, the subjects represented a relatively homogeneous sample from a lower socioeconomic class hospital population.

At the conclusion of each hospital case study the investigator attempted to predict the quality of the early mother-child relationship. Using a global clinical judgment, he forced his predictions into one of two categories: good and poor. The following case summaries illustrate these categories.

Mrs. R, 19 years old, delivered her first child, a 4-pound boy, at 6½ months' gestation. Four months earlier she had hemorrhaged and "almost lost the baby." Although premature delivery had been predicted and was a pattern in her family, Mrs. R was surprised, scared, and felt unprepared. During delivery she was eager to watch, naively tried to follow her mother's instructions to relax and not to cry, and was appreciative of the doctor's skills and reassuring intructions.

Mrs. R considered the baby "tiny" and "messy." She was afraid he was dying because of the strange noises he made, and she was openly and greatly concerned about his "chances" for many days. She had seen a resemblance to her husband in the baby and spoke warmly of wanting it home. Eager to see and have news about the baby, she made active but unsure efforts to visit the nursery with her husband. She was preoccupied more with the welfare of the baby and her husband than her own. Her husband concealed much of his concern by handing out cigars immediately and reassuring her, although at home he was unable to sleep. Mrs. R's mother was especially confident and supportive. The investigator felt that despite her youthful dependency and naiveté, Mrs. R would have a good outcome.

Mrs. C, 18 years old, delivered her first child, a 4-pound 6-ounce girl, at 8 months' gestation. She had "told everybody" the baby would be early, yet she was not prepared. Although she considered the baby "tiny," she denied any anxiety about its dying or being abnormal. "My birth weight was 4 pounds 12 ounces, the baby looked all right, no one had a worried expression, so I don't worry." The next day she was frightened about a note she saw on the chart, but she quickly reassured herself rather than ask anyone. She was not really aware that the baby wouldn't go home when she did, and had her husband bring in baby clothes. "She's so tiny, I could put her in my pocket and carry her home."

Mrs. C claimed to be eager to see her baby, but made no effort to do so. She felt "useless," slept through feeding times, and wished she had her own baby to feed. Maintaining a childlike cheerfulness, she admitted that "having a preemie hits you in a funny way." This mother was predicted as likely to have

a poor outcome. She covered up her anxiety, made no effort to get information, had minimal support and interaction with her husband, and seemed nonchalantly unaware of the baby's needs.

Contact with each mother was continued following discharge through periodic home visits by several colleagues who had no knowledge of the interviewer's predictions. Three babies died and four families refused sufficient study to permit outcome ratings. Therefore, both sets of data were available for only 19 of the 26 mothers.

Findings

The investigator predicted that 11 subjects (58 percent) would fall in the good and 8 (42 percent) would fall in the poor mother-child relationship.

Outcome evaluations were made by an independent judge who rated the quality of the early mother-child relationship after reviewing the records of interviews which were held between 6 and 10 weeks after the baby came home. In the good outcome category were the cases in which the mother tried to meet the baby's physical and emotional needs with at least moderate success, the baby gained weight, or the family as a whole seemed proud. In the poor outcomes were the cases in which the mother neglected the baby, showed unusual hostility, irritability, impatience, or lack of warmth, the baby was lethargic or ill, or where there was a severe interruption in the family cohesiveness. The cases were judged without knowledge of the investigator's predictions, their distribution, or the data on which they were based.

The predictions were found to agree with the outcome ratings in 17 of 19 (90 percent) cases. That is, of the 11 good outcome cases, 10 were predicted, and of the 8 poor outcome cases, 7 were predicted. This association is significant beyond the 0.01 level (Fisher exact test).

After completing the predictions, the investigator re-examined the data for those aspects of each case which had entered into his predictions. The following five characteristics were mentioned most frequently: anxiety, activity level, maternal qualities, supportive relationships, and previous experience with prematurity. No single characteristic was predictive by itself. Usually both positive and negative characteristics were noted in each case, but in quantity one occurred more frequently than the other. As would be expected, the good predictions had the greater number of positives within each characteristic.

Good Outcomes

In reviewing those cases with good outcomes, the following types of data relating to the mothers' coping patterns appeared significant as predictive clues.

The mother's anxiety level was moderate to high, it was openly evident, and it was acknowledged. She worried about the baby's chances of surviving, about possible abnormality, and about her competency.

A mother who actively sought information about her baby's condition and who tried to get opinions about its course and prognosis was likely to have a good prediction. Some of these mothers were fairly aggressive in their efforts to hear about and see the baby. One even stood in the corridor, blocking the pediatrician's exit, until she could ask about her baby.

Even when these mothers had not seen or could not hold their babies, strong maternal feelings were often apparent. If they showed qualities of warmth, devotion to family, inclusiveness, objection to the separation from infant, or confidence in their motherliness, they were likely to have a good outcome.

A fourth factor in the prediction was the degree of supportive behavior on the part of the husband and the mutuality of the husband-wife relationship. Occasionally the support was derived from another person such as the wife's mother.

Finally, previous successful experience with a premature baby was often a factor in a prediction for a good outcome. It might have been also a younger sibling or the baby of a relative which enabled the mother to feel experienced and realistically confident.

Poor Outcomes

In predictions of poor mother-child relationships, observations at the negative pole of the above characteristics were noted.

The mother's anxiety level was generally low and her anxiety was denied or displaced to worries other than the infant's health. Occasionally it was suppressed by conscious agreement between parents, and sometimes converted into hostility against the hospital. For example, signing out of the hospital against advice appeared to be a significant predictor of poor outcome.

Activity level was low. These women tended to react passively on the ward, resigning themselves to hearing whatever news someone might bring to them, or leaving everything up to fate. They were less verbal and made less effort to visit the nursery.

Maternal feelings were not so evident. These mothers had a naive or flippant attitude; they tended to be impatient, sullen, or immature. They often seemed unaware of a baby's needs, reported little desire during pregnancy to have a child, and they were more likely to express disappointment about the sex of the baby.

These women had less support from relatives. Occasionally husband-wife tension was apparent in their bickering or in the husband's refusals to visit. Relatives were often either hypercritical or gave exaggerated reassurance. These poor outcome mothers did not take advantage of the opportunity to use the interviewer as a sounding board or as a messenger. They seemed unaware or unconcerned about communication difficulties.

Discussion

The results of this study reinforce the impression that it is possible to predict from observations of coping behavior during a crisis a person's level of mental health following its resolution. Further studies will be necessary to verify the assumed relationship between short-term and long-term levels of mental health. It also remains to be seen whether the clinical judgments made in this study will require a highly specialized clinical judge.

At present, it appears that the combination of optimal levels of anxiety and activity in the mother is highly related to a good outcome, and other studies tend to support this finding. Abram and Gill (*6*) have studied their ability to predict the psychological outcome in surgical cases and found that the patients' expectations, their use of denial as a major defense, and the degree of pre-operative anxiety were significant factors. Janis (*7*) pointed to the level of anxiety as a significant indicator of stress outcome. Caplan (*3*), in analyzing 10 exploratory study cases of premature delivery, found that the response patterns in mothers with healthy and unhealthy outcomes differed according to their cognitive grasp of the situation, their handling of feelings, and the availability and use of assistance. The finding that a certain level of anxiety is linked with the healthy responses has important implications for the optimal management of persons under stress.

It is difficult in predictive studies to insure that the behaviors at two points in time are completely independent. In this study, data were collected and ratings of coping behavior were made independently, although by staff members with similar theoretical biases. Beyond this potential contaminant it is also true that a factor such as maternal quality normally has continuity across time. For example, in 9 of the 10 study cases in which maternal quality was considered a factor in the prediction, its type coincided with the type of outcome rating.

Maternal quality cannot be relied on as the only predictor, however, because as Rubin said, "Maternal behavior is a learned behavior, evolving and changing, largely dependent on the nature and kinds of intimate interpersonal experiences and on the individual mother's evolving self-concept" (*8*).

Oppé (*9*) and Rubin stressed the importance of success in the initial mothering performance for subsequent satisfactory performance. The die is not unalterably cast in either direction by the fifth postpartum day. Nor has it been determined exclusively by pre-crisis factors such as personality, socioeconomic status, or educational level. These are certainly important, but they are not so available for treatment or alteration as are the factors within the crisis situation itself.

We must use any factors which will enable us to assess easily and reliably the type of outcome of persons already under observation in hazardous situations. It will then become feasible to intervene where a poor outcome is pre-

dicted. The real challenge for preventive psychiatry will be in changing a significant number of poor outcomes to good ones. Efforts in that direction for mothers of premature babies would seem to lie in such directions as helping the mother to be aware of and to use constructively her anxiety, to encourage or facilitate communication and general activity, and specifically to increase the interaction between the mother and her premature baby.

Summary

In unstructured interviews with 26 mothers of premature babies during their hospital stay, data were collected on their coping patterns. Based on these data, predictions were made of the mothers' subsequent mother-child relationships. The predictions were 90 percent accurate when compared with outcome ratings based on observations of mother-child behavior 2 months after the baby was discharged.

Factors which appeared significant in determining the predictions were the amount of anxiety the mother felt about her baby, whether she actively sought information about the baby, the supportive relationships she had, and her previous experience with a premature baby.

The results of the study indicated that the ability to select persons in hazardous situations who are most vulnerable to emotional difficulties would make possible efficient application of intervention techniques.

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Changes in Public Health Service Staff

Dr. Harald M. Graning is the new chief of the Public Health Service's Division of Hospital and Medical Facilities. His responsibilities entail administration of the Hill-Burton Hospital Construction Program, which over the past 15 years has been instrumental in increasing the nation's supply of hospital and other health facilities. Since June 1958 Graning has been health director of Health, Education, and Welfare Region II in New York City.

Dr. Jack C. Haldeman, retiring chief of the division and closely associated with the Hill-Burton program from its inception, has accepted the presidency of the Hospital Review and Planning Council of Southern New York.

Dr. Harry Heimann, long associated with State, national, and international activities in industrial health, has been appointed chief of the Division of Occupational Health. He replaces Dr. W. Clark Cooper, who retired from the Public Health Service on August 31, 1963. Heimann joined the Service in 1943 and served most recently as assistant chief of the Division of Air Pollution.

Dr. Marion Ferguson is the newly appointed chief of the Public Health Nursing Branch of the Division of Nursing. Formerly nursing consultant with the division, she succeeds Zella Bryant, who retired June 1, 1963.