Long-Term Hospitalization of Nonorganic Failure-to-Thrive Infants: Patient Characteristics and Hospital Course

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ABSTRACT. Hospitalization remains an available treatment option for nonorganic failure-to-thrive (NOFT) infants, even though it separates an infant from his/her caregiver and may further weaken an already impaired caregiver-infant attachment. Long-term hospitalization as an intervention for NOFT has been noted, but not documented, in previous reports in the literature. The present study describes patient characteristics, growth in hospital, and length of stay among a group of NOFT infants referred for and treated through long-term hospitalization. The study also investigated the effects of an additional family-oriented outpatient intervention program on hospital course and discharge planning for these infants. Results of the study found that NOFT infants referred for extended hospitalization were an impoverished group, with the majority showing below average developmental functioning. One-third presented with "interational" failure-to-thrive, in which biological vulnerability coexisted with, but was not causative of, the infant's poor growth. Infants averaged 18 weeks in hospital, but lengths of stay differed depending on the presence of an outpatient treatment group and additional medical problems with both factors reliably associated with shorter lengths of stay. Infants in county welfare custody who did not receive additional outpatient intervention were also more likely to be placed outside the parental home at discharge. J Dev Behav Pediatr 8:25–31, 1987. Index terms: failure-to-thrive, hospitalization, infant development.

PURPOSE

The purpose of the present study was to examine patient characteristics and hospital treatment course in a group of nonorganic failure-to-thrive (NOFT) infants referred for extended hospitalization, a treatment option which has been mentioned, but rarely described, in the literature on NOFT. Demographic, birth, and medical factors were documented, as well as patterns of cognitive development, weight gain, and discharge disposition. The study also allowed comparisons among three naturally differing groups of NOFT infants who received long-term hospitalization as a treatment intervention, namely, NOFT infants in the custody of county welfare, NOFT infants in parental custody who received an additional family-based outpatient treatment program, and NOFT infants with or without county custody who had additional physical disease or biological vulnerability, such as prematurity or neurological disorder.

Although investigators have repeatedly advocated the need for an interdisciplinary, family-based approach to the treatment of NOFT infants,1–4 pediatric management through acute-care hospitalization continues to be the primary mode of initial assessment.5–8 In addition, placement outside the home, either through extended hospitalization, adoption or foster care, remains a frequently recommended intervention option in many reports on NOFT.7, 9–11 Surprisingly, then, documentation of the course and types of treatment in long-term hospital intervention for NOFT infants is severely limited, with most reports describing research-based intervention programs that often do not reflect usual patterns of care. Only one study4 has actually described hospital-based patterns of psychosocial care of NOFT infants, with this study focusing on a group of NOFT infants referred for acute management.

Several reports have mentioned, but not described, planned hospital treatment of longer duration. For example, Field12 noted that seven out of her sample of 17 NOFT infants were admitted to a convalescent hospital for an average of 6½ weeks after an ambiguous physical work-up in an acute care setting. However, no attempt was made to compare those NOFT infants seen only for acute-care hospitalization to those referred for convalescent care, except to observe that the latter had longer lengths of hospital stay. In the study by Droter et al.,6 20% of their sample of such infants were discharged into a long-term rehabilitation hospital because of living situations characterized by severe neglect. Again, no further information was given on those infants referred for long-term inpatient rehabilitation.

NOFT has often been conceptualized as a breakdown in the crucial reciprocal attachment process which develops in early infancy between the infant and his/her caregiver, and which underpins the emotional, physical, and cognitive development of the child.5, 14 Treatment programs for NOFT are thus aimed at repairing this mu-
tually supportive relationship so that optimal development of the infant can be maintained. Since extended hospitalization has itself been characterized as, at best, an obstacle to infant-caregiver attachment, it seems important to describe the medical and family characteristics of NOFT infants referred for long-term hospital treatment, and to document the course of growth and length of stay for those NOFT infants in extended hospitalization, as an initial step toward understanding the benefits and risks of long-term hospitalization as an intervention for NOFT.

**METHODS**

**Subjects**

Subjects included all infants 12 months old or less admitted for evaluation and treatment of NOFT to a pediatric rehabilitation hospital in Cleveland, Ohio. All infants were recruited from Health Hill, a 50-bed specialty hospital for children which provides long-term care for infants with a variety of developmental problems. Since one purpose of the study was to investigate the range of infants receiving long-term hospital intervention for psychosocial growth failure, a broad definition of the condition was utilized. Thus, all infants identified through retrospective chart review who were referred to the hospital with an admission diagnosis of failure-to-thrive without documented organic etiology during a 2-year period were included for study. Infants in the present study were referred by their managing physician after prior admission to an acute-care hospital during which an initial diagnostic work-up had ruled out acute or chronic medical illness as a basis for growth failure. There were no set criteria for referral for long-term care. Each admission was decided on an individual basis. In some cases, parents were actively involved in the decision to hospitalize their infant. In the majority, County Welfare Department aid was required to initiate long-term hospitalization.

During hospitalization, all infants received specialized medical and nursing care, intensive physical and occupational therapies, and nutritional intervention. Each accessible family was assigned to a social worker for ongoing counseling and discharge planning. Outpatient rehabilitation therapies were available after discharge when needed. One-third of the sample, who were not in County Welfare Department custody, were simultaneously treated through the Infant Growth Project, a university-based research and intervention program which provided advocacy, family-centered intervention, and consistent developmental follow-up for failure-to-thrive infants prior to and after hospital admission. For these families, an Infant Growth Project worker remained involved with the family both during and after hospital treatment, providing additional supportive and therapeutic services.

Subjects were divided into three naturally occurring groups dependent on relevant medical and intervention factors in order to compare patterns of care during and after hospitalization. Group 3 consisted of all children hospitalized while simultaneously referred to the Infant Growth Project, since during and after hospital admission, these infants received specialized intervention services which are described in detail elsewhere. Admission criteria to the Infant Growth Project excluded all infants who were premature (less than 37 weeks gestational age) or small-for-gestational age at birth, who had neurological problems or physical disease, were mentally retarded, or were in the custody of the County Welfare Department. Group 2 included all infants who matched Group 3 on the medical admission criteria of the Infant Growth Project but who had not participated in the project because they were in county welfare custody. Group 1 consisted of those failure-to-thrive infants who presented with additional medical problems which were not thought to be responsible for their growth failure. Thus, two of the groups “matched” on all significant criteria which might affect outcome except for county custody and additional outpatient intervention.

**Procedures**

In order to examine hospital care patterns for the three groups of infants, information on physical status and discharge referrals was obtained from hospital records. Since infants were weighed daily in the hospital, the mean weight gain per week over the first 2 months of hospitalization was calculated as a measure of “catch-up” growth. A 2-month time period was used as a means of controlling for the varying lengths of hospital stay among infants, since growth would be expected to decelerate with longer lengths of stay. A 2-month period was also useful for ensuring the occurrence of accelerated growth with environmental change if growth could occur. Length of stay (weeks hospitalized) and the percentile for age of weight at discharge were also obtained. A variety of discharge recommendations were examined, including placement (parental, relative, foster, or adoptive home or institution), educational services, rehabilitation therapies, psychological services, and health services. Developmental assessments were done on all subjects after the first week of hospitalization using the Bayley Mental Scale of Infant Development, a standardized, normative infant assessment instrument which taps a wide range of infant sensorimotor, language, and cognitive skills. Infants who were premature were tested at ages corrected for their gestational age at birth, based on Dubowitz' evaluation.

Means or percentages of occurrence of relevant sample characteristics were compared for the three groups through either one-way analyses of variance (ANOVA) with post hoc analyses for continuous variables, or through single-sample chi-square tests for categorical data.

Pearson product-moment correlations were calculated among birth, medical, and psychosocial factors characteristic of NOFT infants in the sample in order to understand the interrelationships among these variables.

**RESULTS**

**Patient Characteristics**

Demographic and medical characteristics for the total sample (n = 35) are given in Table 1. Infants tended to come from impoverished homes (mean Hollingshead...
TABLE 1. Sample Characteristics of Infants Hospitalized Long Term for Nonorganic Failure-to-Thrive

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± 50</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal education (yr)</td>
<td>10.2 ± 1.9</td>
<td>7–16</td>
</tr>
<tr>
<td>Socioeconomic status (Hollingshead)</td>
<td>4.7 ± 0.6</td>
<td>3–5</td>
</tr>
<tr>
<td>Age at hospital admission (mo)</td>
<td>5.9 ± 2.9</td>
<td>1–12</td>
</tr>
<tr>
<td>Gestational age at birth (wk)</td>
<td>38.2 ± 3.7</td>
<td>24–40</td>
</tr>
<tr>
<td>Percentile of wt for age at admission</td>
<td>6.6 ± 9.5</td>
<td>1–50</td>
</tr>
<tr>
<td>Hospital Bayley score (MDI)</td>
<td>85.1 ± 17.5</td>
<td>50–129</td>
</tr>
<tr>
<td>Marital status</td>
<td>37% married; 54% single; 9% other</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>34% white; 63% black; 3% Hispanic</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>60% male; 40% female</td>
<td></td>
</tr>
<tr>
<td>Abuse</td>
<td>83% no; 17% questionable</td>
<td></td>
</tr>
<tr>
<td>CNS problems</td>
<td>83% no; 17% yes</td>
<td></td>
</tr>
<tr>
<td>County Welfare custody</td>
<td>66% in custody</td>
<td></td>
</tr>
<tr>
<td>Prematurity (gestation, less than 37 wk)</td>
<td>20% premature</td>
<td></td>
</tr>
</tbody>
</table>

index = 4.7, SD = 0.6), with all but two families supported through public assistance. Most mothers had not graduated from high school (mean educational level = 10.2 years, SD = 1.9) and a significant number were either mentally retarded or with severe psychiatric disturbance (15%). Although information on fathers was not reliable for all infants, at least 12% were noted to be imprisoned at time of hospitalization. Approximately half the sample came from single-parent homes (54%). Sixty-three percent of the infants were black, 34% white, and 3% were Hispanic. Males comprised 60% of the sample. At admission (mean age = 5.9 months, SD = 2.9), most infants (66%) were in temporary or permanent custody of the County Welfare Department.

In terms of physical status, the mean percentile of weight for age for the group at admission was 6.6 (SD = 9.5, range = 1–50). Variation in degree of growth failure at time of admission was due to the fact that all infants had been previously hospitalized in an acute-care hospital where, for most children, catch-up weight gain was established. For 83% of the sample, physical abuse had been ruled out; for 17%, it was questionable but not evident. Mean gestational age at birth was 38.2 weeks (SD = 3.7), with 20% of the sample premature. Seventeen percent of the group had some identifiable neurological abnormality (e.g., mental retardation as evidenced by moderate to severe developmental delays, abnormal C-T scan, seizures) which was not thought to account for their growth difficulties.

Table 2 lists the Pearson correlations among birth, medical and psychosocial factors, illustrating reliable intercorrelations.

Significant intercorrelations among birth and admission factors indicated that black infants were more likely to be admitted with a history of lower birth weight. Most infants with neurological problems were white and were also more likely to have a history of questionable abuse. Premature infants, regardless of race, tended to be of higher socioeconomic status.

Results from analyses of variance indicated that Group 1 differed from Groups 2 and 3 only on the variables designated in group selection, i.e., Group 1 having lowered gestational age at birth ($F = 6.2, df = 2.32, p < 0.005$), and presenting with more neurological problems ($F = 12.2, df = 2.32, p < 0.002$). Group 3, which received additional intervention through the Infant Growth Project, differed from the other two groups on the basis of County Welfare custody ($X^2 = 30.9, df = 2.32, p < 0.001$), since no infants in the Project were under county custody at time of admission, whereas all infants in Groups 1 and 2 were in custody. Based on data from hospital records, and on other factors which might reasonably affect care patterns, there were no differences among the three groups, including years of maternal education, Hollingshead's index of socioeconomic status, age at hospital admission, birth weight, admission weight, hospital Bayley Mental Scale standard score, parental marital status, race, or occurrence of previous abuse.

TABLE 2. Significant Pearson Correlations among Birth, Medical, and Psychosocial Factors of Nonorganic Failure-to-Thrive Infants Admitted for Extended Hospitalization (n = 35)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Race</th>
<th>SES</th>
<th>Birth Weight</th>
<th>GA</th>
<th>CNS</th>
<th>Questionable</th>
<th>Abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth order</td>
<td>-</td>
<td>-</td>
<td>-0.42</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
<tr>
<td>Race</td>
<td>-</td>
<td>-</td>
<td>-0.35</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
<tr>
<td>Socioeconomic status (SES)</td>
<td>-</td>
<td>-</td>
<td>-0.35</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
<tr>
<td>Birth weight</td>
<td>-</td>
<td>-</td>
<td>0.35</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
<tr>
<td>Gestational age (GA)</td>
<td>-</td>
<td>-</td>
<td>0.73</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
<tr>
<td>CNS problems</td>
<td>-</td>
<td>-</td>
<td>0.40</td>
<td>-</td>
<td>-</td>
<td>-0.31</td>
<td>-</td>
</tr>
</tbody>
</table>

($p < 0.009$)
TABLE 3. Means, Standard Deviations, Percentages and Tests of Significance for Sample Characteristics of Subgroups of Failure-to-Thrive Infants

<table>
<thead>
<tr>
<th></th>
<th>Group 1a</th>
<th></th>
<th>Group 2b</th>
<th></th>
<th>Group 3b</th>
<th></th>
<th>F or χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal education (yr)</td>
<td>10.7</td>
<td>2.6</td>
<td>10.1</td>
<td>1.5</td>
<td>9.7</td>
<td>1.5</td>
<td>0.64</td>
</tr>
<tr>
<td>SES (Holingshead)</td>
<td>4.5</td>
<td>0.78</td>
<td>4.9</td>
<td>0.32</td>
<td>4.8</td>
<td>0.40</td>
<td>1.35</td>
</tr>
<tr>
<td>Age of hospital admission (mo)</td>
<td>5.9</td>
<td>2.9</td>
<td>6.7</td>
<td>3.3</td>
<td>4.9</td>
<td>2.6</td>
<td>1.02</td>
</tr>
<tr>
<td>Gestational age at birth (wk)</td>
<td>35.7</td>
<td>5.2</td>
<td>38.9</td>
<td>0.60</td>
<td>39.5</td>
<td>1.0</td>
<td>6.2b</td>
</tr>
<tr>
<td>Birth weight (g)</td>
<td>2593</td>
<td>1102</td>
<td>2903</td>
<td>730</td>
<td>2956</td>
<td>655</td>
<td>0.65</td>
</tr>
<tr>
<td>Admission weight (percentile for age)</td>
<td>7.7</td>
<td>7.4</td>
<td>7.9</td>
<td>15.1</td>
<td>3.9</td>
<td>3.5</td>
<td>0.61</td>
</tr>
<tr>
<td>Admission Bayley score (MDI)</td>
<td>74.6</td>
<td>21.8</td>
<td>90.3</td>
<td>11.1</td>
<td>89.4</td>
<td>15.4</td>
<td>2.5</td>
</tr>
<tr>
<td>Marital status (% married)</td>
<td></td>
<td></td>
<td>46%</td>
<td></td>
<td>46%</td>
<td></td>
<td>18%</td>
</tr>
<tr>
<td>Race (% minority)</td>
<td>54%</td>
<td></td>
<td>73%</td>
<td></td>
<td>64%</td>
<td></td>
<td>3.3</td>
</tr>
<tr>
<td>Abuse (% abused)</td>
<td>0%</td>
<td></td>
<td>0%</td>
<td></td>
<td>0%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Presence of CNS problems</td>
<td>46%</td>
<td></td>
<td>0%</td>
<td></td>
<td>0%</td>
<td></td>
<td>12.2c</td>
</tr>
<tr>
<td>County Welfare custody</td>
<td>100%</td>
<td></td>
<td>100%</td>
<td></td>
<td>0%</td>
<td></td>
<td>30.9b</td>
</tr>
</tbody>
</table>

*p = 13.
*b = 11.
*p = 0.005.
*p = 0.002.
*p = 0.001.

Hospital Course

Differences among the three groups of failure-to-thrive infants in terms of hospital course and discharge planning are illustrated in Table 4. A series of one-way analyses of variance with post hoc comparisons were run to compare differences in treatment outcome for the three groups. Groups did not differ on either rate of catch-up weight gain during the initial phase of hospitalization or on the percentile of weight for age attained by time of discharge from the hospital. All groups had substantial catch-up growth in the hospital, gaining, on the average, almost a half pound a week during the first 2 months of hospitalization. By discharge, the groups averaged a weight for age percentile of approximately 25 as opposed to a mean percentile of weight for age at admission of 6.6. The only reliable difference among groups in terms of hospital course related to length of admission (F = 9.5, df = 2,32, p < 0.0006). Infants who received additional ongoing intervention services through the Infant Growth Project had the shortest length of stay (mean = 9.5 weeks, SD = 7.1). Group 1 infants, who presented with known organic vulnerability, had comparable lengths of stay (mean = 13.2 weeks, SD = 10.2). Surprisingly, both groups had significantly lower lengths of stay than did Group 2 (mean = 31 weeks, SD = 18), which was comprised of infants without additional medical problems and which matched Group 3 on all admission characteris-

TABLE 4. Hospital Course and Discharge Plans (n = 35)

<table>
<thead>
<tr>
<th></th>
<th>Group 1a</th>
<th></th>
<th>Group 2b</th>
<th></th>
<th>Group 3b</th>
<th></th>
<th>F or χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean wt gain per wk over first 2 mo of hospitalization (g)</td>
<td>202</td>
<td>63</td>
<td>186</td>
<td>106</td>
<td>223</td>
<td>78</td>
<td>0.53</td>
</tr>
<tr>
<td>Discharge wt (percentile for age)</td>
<td>26.6</td>
<td>23.1</td>
<td>34.4</td>
<td>35</td>
<td>16.8</td>
<td>22.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Length of (wk) hospitalization</td>
<td>13.2</td>
<td>10.2</td>
<td>31.0</td>
<td>18</td>
<td>9.5</td>
<td>7.1</td>
<td>9.5b</td>
</tr>
<tr>
<td>Discharge placement</td>
<td>62% parental home</td>
<td>62% parental home</td>
<td>62% parental home</td>
<td>62% parental home</td>
<td>100% parental home</td>
<td>100% parental home</td>
<td>100% parental home</td>
</tr>
<tr>
<td>Educational referral</td>
<td>70% none</td>
<td>30% Cty Bd Mental Retardation</td>
<td>70% none</td>
<td>30% Cty Bd Mental Retardation</td>
<td>100% none</td>
<td>100% none</td>
<td>7.6b</td>
</tr>
<tr>
<td>Therapy referral</td>
<td>77% none</td>
<td>23% OT/PTc</td>
<td>64% none</td>
<td>36% OT/PTc</td>
<td>36% none</td>
<td>64% OT/PTc</td>
<td>NS</td>
</tr>
<tr>
<td>Visiting Nurse</td>
<td>70% no</td>
<td>30% yes</td>
<td>82% no</td>
<td>18% yes</td>
<td>100% no</td>
<td>NS</td>
<td></td>
</tr>
</tbody>
</table>

*p = 13.
*b = 11.
*c = 0.0001.
*d = 0.001.
*e = 0.002.
tics with the exceptions of County Welfare custody and outpatient intervention.

Groups also differed in terms of placement at discharge (chi-squared = 16.8, df = 2.32, p < 0.01), and post-hospital referrals. All infants who received outpatient intervention (Group 3) returned to the care of their own parents after hospitalization. In contrast, only 18% of a comparable group of infants (Group 2) returned to parental custody. Forty-six percent of infants in Group 2 were placed with relatives, and 36% were discharged into a foster home or institution. For those infants with mixed etiology, Group 1, 62% were placed with their parents, 31% were placed with relatives, and 7% were admitted to a foster home.

Referrals for educational referral also differed by group (chi-squared = 7.6, p < 0.02) with, as expected from the original groupings, those infants with mixed etiology referred more frequently for educational programs since those infants originally presented with neurodevelopmental problems. Specifically, one-third of these infants were referred for services to the County Board of Mental Retardation. Groups did not differ on the basis of referral for therapy or visiting nurse services.

Table 5 documents the relationship between birth, medical, psychosocial, and treatment factors and the hospital course of the NOFT infants in the sample. Few biological or demographic variables were related to an infant's hospital course as measured by length of stay, physical recovery through weight gain, cognitive development at discharge, and eventual placement disposition. Later-born infants from large families tended to be admitted for long-term hospitalization at older ages and made greater initial "catch-up" weight gains (r = 0.30, 0.28, p < 0.05). Neither prematurity nor socioeconomic status bore any relationship to hospital course or eventual disposition. Infants who showed positive neurologic findings demonstrated more delayed developmental status on Bayley Mental test findings (r = -0.69, p < 0.001). Only the presence of an outpatient treatment group directly related to hospital progress and disposition, with those infants who received the additional services of the Infant Growth Project having reliably shorter lengths of stay (r = -0.37, p < 0.02) and a greater tendency to return to the care of their families of origin (r = -0.48, p < 0.002).

**DISCUSSION**

The present study examined medical and psychosocial characteristics, hospital course, and their relationships in a group of infants admitted to a convalescent hospital for treatment of nonorganic failure-to-thrive after initial diagnostic evaluation in an acute-care hospital. Because a subset of infants simultaneously participated in a research intervention program, the Infant Growth Project, a comparison of the effects of an intensive outpatient intervention on hospital course discharge referrals and initial developmental outcome could also be made.

In this sample, NOFT infants referred for long-term hospitalization were an overwhelmingly impoverished group, with only one family of middle-class status based on Hollingshead's classification. Since the hospital from which patients were recruited is the only pediatric rehabilitation facility available in the state, the present sample probably accurately reflects characteristics of failure-to-thrive infants who receive extended hospitalization in the geographic region served by this hospital. Although failure-to-thrive occurs in all social classes, it is disproportionately reported in poor families. The percentage (97%) of patients from the lowest socioeconomic class in this sample is high, even in comparison to most other failure-to-thrive samples, and suggests that infants from the most deprived families may be more likely to be referred for long-term hospitalization and subsequently placed into County Welfare custody (two-thirds of this sample).

Of some note is the substantial percentage of infants (35%) in this sample who presented with mixed etiology and who did not fit strictly into conventional criteria for NOFT. These infants presented with poor weight gain in the context of other overt physical disorders, including mental retardation, extreme prematurity and seizures. Whereas these medical problems were not solely causative of the infants' growth failure, as evidenced by their weight

| TABLE 5. Significant Pearson Correlations between Birth, Medical, and Psychosocial Factors and Hospital Course in Nonorganic Failure-to-Thrive Infants Admitted for Extended Hospitalization (N = 35) |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| Factors                                         | Age admission  | Wk hospitalized | Initial wt gain per wk | Hospital Bayley MDI | Discharge Placement Outside Home |
| Birth order                                     | 0.30 (p < 0.04)| 0.28 (p < 0.05) |                 |                 |                              |
| Race                                            |                 |                 |                 | 0.31 (p < 0.05) |                              |
| Socioeconomic status                            |                 |                 |                 |                 |                              |
| Prematurity (birth wt or gestational age)       |                 |                 |                 |                 |                              |
| CNS problems                                    |                 |                 |                 | -0.69 (p < 0.001) |                              |
| Questionable abuse                              |                 |                 |                 |                 |                              |
| Presence of outpatient treatment group          |                 |                 | -0.37 (p < 0.02) |                 | -0.48 (p < 0.002)             |
gain in the hospital, they are typical of biological factors which often induce physicians to ignore the psychosocial environment of the infant as a component contributing to poor growth.\textsuperscript{22} In contrast, the "catch-up" weight gain achieved by this group during hospitalization would suggest that the occurrence of "interactional" failure-to-thrive\textsuperscript{13} may be high in selected populations, and emphasizes the need to consider the coexistence of psychosocial issues along with biological influences in the diagnosis and treatment of failure-to-thrive.\textsuperscript{1}

In terms of degree of growth failure, admission development assessment, racial and sex characteristics, and rate of prematurity, the present sample compares favorably with most other groups of failure-to-thrive infants described in the literature.\textsuperscript{24-26}

### Hospital Course and Discharge Plans

All three groups of failure-to-thrive infants made similar "catch-up" weight gains in the initial phases of their long-term hospitalization, despite differences in the availability of outpatient services and the presence of other physical disorders among groups. For many of the infants, the growth spurts achieved in extended care were a continuation of the reversal of malnutrition already begun in an acute-care setting. By discharge, weight for age for all groups of infants was also comparable.

Differences among the groups in terms of length of hospitalization and patterns of discharge placement were striking, however. Failure-to-thrive infants concurrently treated with additional family-based outpatient intervention, and those infants with associated physical problems averaged 2-3 months of hospital stay compared to a mean length of stay of 8 months for failure-to-thrive infants in county custody who exhibited no other medical problems. In contrast, Field\textsuperscript{12} reported that a similar group of NOFT infants in her sample averaged 1.5 months of stay in a rehabilitation hospital. Given the extreme length of time of infants' separation from their caregivers involved, the long duration of institutionalization, and the staggering medical costs ($63,000 average per child in 1984 dollars) incurred, it seems important to evaluate the factors related to such lengthy hospitalization. Since all infant groups were comparable as to socioeconomic status, education, unemployment and abuse, those factors cannot be considered responsible for the differences in duration of hospitalization. In this study, medical illness, which intrinsically might be expected to relate to longer hospitalization, was, in fact, associated with a shorter length of stay. Both a need for further medical work-up, and lack of family involvement have been cited in previous studies\textsuperscript{12} as precipitants of a recommendation for extended hospitalization for failure-to-thrive infants.

It is possible, for example, in the present study, that infants in Group 1 were referred because of the physician's perception of a need for further medical care, whereas those in Group 2 may have been seen as primarily social problems, which are more difficult to treat. The finding that infants who received an outpatient family-oriented intervention had shorter lengths of stay and significantly higher likelihood of return to their own families suggests a need for further investigation into the factors predisposing a NOFT infant's referral for foster care. Other studies of infants and children referred for foster care have shown that factors unrelated to an infant's status or family's organization, such as availability of resources in a community or changes in caseworker, may be most highly predictive of disposition to foster care.\textsuperscript{27} Thus, the availability of the Infant Growth Project as an outpatient resource may have mitigated against prolonged hospitalization for NOFT infants in extended care in the present study, since those failure-to-thrive infants who participated in an outpatient intervention program also had a significantly lower rate of referral for foster care and institutional placement. The fact that only a small percentage of the NOFT infants who presented without additional medical problems returned to their parental home documents that prolonged hospitalization, even with the extensive social service support provided by the hospital and County Welfare Department, had little impact in ameliorating family dysfunction and preventing eventual separation of the infant from his or her family of origin. Further studies are needed to investigate prospectively the determinants of referral for long-term hospitalization and the later developmental outcome of NOFT infants receiving this unusual form of treatment.

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Portions of this paper have been published previously.\textsuperscript{28}

### REFERENCES

Announcement

The SOCIETY FOR BEHAVIORAL PEDIATRICS will hold its Fifth Annual Meeting in Anaheim, California, on April 26–27, 1987, in conjunction with the SPR/APS/APA meetings at the Disneyland Hotel.

For further information and registration forms, contact Ms. Noreen Spota (215) 248-9168 or Dr. Candace Erickson (212) 305-9862.