An Evaluation of the Effectiveness of a Children and Youth Project

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THE MATERNAL and Child Health Service, Department of Health, Education, and Welfare, in spring 1970, invited personnel of Children and Youth Projects to participate in the testing of a self-evaluation manual. The manual, which had been prepared by the Health Systems Department of Westinghouse Electric Corporation in conjunction with the Johns Hopkins University School of Medicine, was designed for use by clinic administrators in the systematic evaluation of their programs. The Montefiore-Morrisania Comprehensive Child Care Project (*1*) was 1 of 16 Children and Youth Projects that participated. The study was initiated in August 1970 and completed in June 1971.

Most of the evaluation was performed according to the manual's instructions. In a few instances, however, we found that our particular situation warranted modification, deletion, or extension of analysis procedures as outlined in the manual. Furthermore, the self-evaluation study (*2, 3*) as we performed it consisted of two distinct components.

One component was the investigation of internal clinic procedures and methods of operation, which included analysis of clinic documentation, patient flow, time utilization, and the information system. This component in effect provided a comprehensive description of the project as an operational system and thus established a context within which an evaluation of the project's effectiveness could be a basis for action. This evalua-

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This study was supported under contract No. H–235–10 from the Maternal and Child Health Service, Health Services and Mental Health Administration, Department of Health, Education, and Welfare.

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tion of project effectiveness (effectivity analysis) comprised the second component of the self-evaluation study, and it is the subject of this article.

Method of Analysis

The evaluation unit basically consisted of a program manager, an assistant manager, and a data collector. The program director, who is also the clinic project director, allowed the unit to work independently in carrying out the study. Her function, in addition to monitoring the progress of the study and providing general guidance, was primarily to open channels of communication between the evaluation unit and the clinic staff and to expedite implementation of the unit's recommendations.

The first stage of the study involved determining the precise nature of the clinic's objectives. We could have taken several routes in making this determination—the simplest would have been to ask the project administrators to spell out the objectives as they saw them. However, because the project has many persons performing different tasks toward common goals, these goals could be best and most fairly expressed through a consensus of the entire staff. Thus, all personnel participated in a series of meetings that resulted in establishment of a set of four prime objectives and a series of subordinate goals, which further defined each primary objective and facilitated the measurement phase of the study.

The prime objectives in order of descending importance were:

1. To shift the direction of health care from episodic emergency room treatment to preventive health care
2. To provide the walk-in patient with the same quality and content of medical care as that provided to scheduled patients.
3. To provide, through the clinic's own mental health unit, quality backup services to the medical, nursing, and family health workers.
4. To provide personalized medical care to a segment of society which in the past has been unable to afford such care.

When each primary objective was determined and broken down into subordinate goals, 39 criteria were established to measure the effectiveness of the project in reaching these goals. Measuring these 39 criteria required many different kinds of information, much of which we obtained through random sampling of patients' charts. The critical documents reviewed were the ambulatory care summary, preventive services form, medical notes, and followup care summary. We consulted several other sources for cumulative data, including the diagnosed care index, appointment schedule, registry of hospitalized patients, and referral schedule. While these sources provided most of the required information, certain critical information was not available from existing clinic documents. Hence, we conducted two supplementary studies to obtain the needed information. One was a patient-flow analysis and the other a patient-attitude survey.

Results and Analysis

Prime objective 1. The first prime objective of the clinic was to shift the direction of health care from episodic emergency room treatment to preventive health care. This was broken down into the following five subobjectivies.

Subobjective 1: parent education
Patient's knowledge of service

Subobjective 2: immunization program
Age at immunization
Percent receiving first immunizations before 3 months
Percent fully immunized before 30 months

Subobjective 3: accident and disease prevention
Percent decrease in episodic emergency room treatment
Hospital rate

Subobjective 4: lead poisoning and prevention
Percent followup of patients with diagnosed cases
Percent of patients visited at home
Normal blood level after treatment
Use of urine test for diagnosis
Use of X-rays for diagnosis
Availability of test results
Entrance of test results in medical notes
Availability of laboratory slips
Evaluation of home hazards

Subobjective 5: continuity of health care
Broken appointment rate
On-time arrival rate
Followup of chronic illnesses
Followup of defects
Followup of hospitalizations

To measure parent education we sent a questionnaire to all families enrolled in the child care project, and we obtained a 30 percent return. The responses showed that many parents were not aware of all the services offered by the project. On the average, respondents were familiar with 5.1 of 9 available services. Also, certain specific services were significantly less known than others, as shown in the following table. As a consequence

of these findings, it was agreed that the physicians and family health workers would increase their efforts to inform parents about clinic services.

Service	*Percent who know of service*
Dentist	79
Psychologist	21
Family health worker	65
Public health nurse	65
Social worker	58
Speech and hearing	42
Family planning	59
Psychiatrist	20
Nutritionist	44

We measured the effectiveness of the clinic's immunization program by three criteria. The first criterion was the mean age at which patients receive each of the immunizations. As shown in the following table, in every category the mean age fell within the proper timespan, as determined from the physicians before the estimates were made.

Immunization	*Mean age (months)*	*Standard deviation*	*Number in sample*
1st polio and DTP	2.6	1.2	40
2d polio and DTP	4.5	2.0	39
3d polio and DTP	7.2	3.0	36
Measles	12.5	4.7	32
Smallpox	16.2	6.9	30
DTP booster	21.8	6.3	32
Polio booster	24.1	7.9	27

The second criterion was the percentage of patients who received their first poliomyelitis and DTP immunizations before the age of 3 months. We drew a random sample of 42 patients who had been registered as "newborns," and we found that 86 percent of these had received their initial immunization before the age of 3 months. The final criterion under this subobjective was the percentage of patients fully immunized before the age of 30 months. Full immunization was defined as including each of the immunizations listed in the preceding table. Again we drew a sample of 42 patients who had been registered as newborns and who had been enrolled for at least 30 months. We found that 76 percent of these had been fully immunized before the age of 30 months. From what little comparative information is available, these results reflect outstanding clinic performance.

For the third subobjective, accident and illness prevention, we measured the percentage decrease in acute episodes (or illness visits to the clinic) from the first to the second year of enrollment, using samples of patients of about the same age in both categories. First-year episodes were computed from a random sample of 47 children enrolled between the ages of 12 and 24 months, and second-year episodes were computed from a random sample of 45 children enrolled between the ages of 0 and 11 months.

We found a 35 percent decrease. As a further measure of this objective we computed the number of hospitalization days per registrant for 1968 (the clinic's second year) and for 1971. We found that in 1968 the rate was 0.360 days of hospitalization per registrant and that by 1971 this figure had decreased to 0.102 days of hospitalization per registrant. These results indicated good clinic performance in the area of accident and illness prevention.

The fourth subobjective was lead poisoning prevention. The potentially devastating consequences of lead poisoning and its high incidence rate in our area prompted us to make a thorough survey of the clinic performance in relation to this condition. Our major finding was that 100 percent of the children with diagnosed lead poisoning had been followed up with at least one examination after the initial diagnosis. However, we also found that improvement was needed in the recording of laboratory results and of evaluations of home environments with regard to lead poisoning hazards. These deficiencies were subsequently discussed with persons in the appropriate disciplines and improvements have been made.

For the fifth subobjective, providing for continuity of health care, we measured broken appointment rate, on-time arrival rate, and followup of patients with chronic illnesses or defects and hospitalized patients. The broken appointment rate (31 percent) was computed on the basis of all appointments made over a 14-month period. The on-time arrival rate (21 percent), computed on the basis of a random sample of 120 patients, reflects the percentage of patients arriving within 10 minutes (early or late) of the appointment time. Both these results were considered acceptable, since the clinic is far from the residences of the target population (*4*). A patient with a chronic illness or defect was considered to have been followed up if he or she made a return visit to the clinic within 2 months of the original diagnosis. In the case of a hospitalized patient, a followup meant that the patient visited the clinic

within 2 months subsequent to hospital discharge. The following results for the three categories of followup treatment revealed that the clinic is performing well in the followup of patients with chronic conditions and defects but less satisfactorily for hospitalized patients.

Followup category	*Percent return for followup*
Chronic illnesses	81
Defects	78
Hospitalized patients	61

The result for hospitalized patients apparently reflects that hospitals prefer to perform their own followups on "good cases"—that is, patients with documented medical histories—and they do not regularly refer patients back to the clinic. In response to our finding in this area, the clinic administration is seeking to establish better procedural relationships with the hospitals.

Prime objective 2. The second prime objective was to provide the walk-in patient with the same quality and content of medical care as that provided to scheduled patients. This was broken down into the following three subobjectives.

Subobjective 1: physical examination for walk-in patients
Complete entries in medical notes
Walk-in patients seen by own physicians

Subobjective 2: appointment scheduling procedures
Reliability of scheduling appointments

Subobjective 3: followup of walk-in patients
Percent of walk-in patients returning for followup

To measure the clinic's performance in direct services, we considered the following three aspects of the treatment of emergency walk-in patients: (*a*) the nature of the physical examination, (*b*) the effectiveness of scheduling procedures for these patients, and (*c*) the extent of followup.

We found that 71 percent of the emergency walk-in patients are seen by their own physicians. To determine if these patients were receiving complete examinations, as do patients making scheduled visits, we examined five elements in the physicians' reports on patients' visits: reason for visit, pertinent physical examination, interval history, diagnosis, and disposition. We sampled the reports on emergency walk-in patients to determine the percentage of these patients for whom each of the five elements had been entered. Four elements had been entered for 100 percent of the patients. The fifth element, interval history, had been entered for 80 percent of the patients.

Concerning scheduling procedures for emergency patients, there was an 86 percent agreement between the return visit date in the medical notes and the date entered in the appointment schedule. Also, 73 percent of these patients returned for followup examination. These results indicated that the project is providing quality care for emergency walk-in patients.

Prime objective 3. The third prime objective was to provide, through the clinic's own mental health unit, quality backup services to the medical, nursing, and family health workers. The clinic's mental health unit comprises a psychologist, an audiologist, a nutritionist, and social workers. This objective was broken down into the following two subobjectives.

Subobjective 1: referral followup
Percent of referrals seen

Subobjective 2: prompt referral service
Average time lag
Cumulative distribution of time lags

To measure performance of the clinic in relation to this objective, we determined the percentage of patients referred to the mental health unit who were seen by staff in the appropriate discipline and the average time interval between the date of referral and the patient's visit. We found that 71 percent of the patients referred were seen and that the average time interval was 32.2 days, as shown in the following table.

Staff member	*Percent of patients referred and seen*	*Average number of days between referral and treatment*
Psychologist	79	29.5
Social worker	64	32.1
Audiologist	59	37.8
Nutritionist	70	37.2
Average (all disciplines)	..	32.2

Because these results reflected less than satisfactory performance, further inquiries were made and several possible explanations emerged. The staff members to whom referrals were made claimed a high rate of broken appointments by patients. Also, the greatest delay seemed to occur between referral and treatment when parents found the regimen inconvenient or considered it nonessential to their children's medical treatment. For instance, we found that parents of infants tended to break appointments with the audiologist because the test for hearing disorders in newborns takes only 10 minutes, and thus they believed that it did not merit a special trip to the clinic. These

appointments are now being scheduled with regular well-baby visits.

Another explanation of the unsatisfactory results was the failure of the staff in the mental health unit to record all visits; they were asked to do so in the future. Also, the physicians were asked to make the parents more aware of the importance of keeping referral appointments.

Prime objective 4. The fourth prime objective was to provide personalized medical care to a segment of society that in the past had been unable to afford such care. More specifically the intent here was to take into account the patient's lifestyle, values, and priorities and to establish continuity of personal relationships between staff and patients. The subobjectives were as follows:

Subobjective 1: attitudes toward clinic
View of home visits
Areas of assistance
View of home visitor
Physician attention
View of health team
General satisfaction
Prefer private physician
Waiting time

Subobjective 2: personalized service
Know physician's name
Seen by own physician
Visited in home
Understand physician's instructions
Know home visitor's name

As a measure of clinic performance in relation to objective 4, we conducted a survey of patients' attitudes by means of a questionnaire sent to all enrolled families. We obtained a 30 percent return. The results of this survey were overwhelmingly favorable to the clinic. For example:

1. Ninety-five percent of the respondents said they always, or almost always, see their own physician at the clinic.

2. Ninety-four percent of the respondents who had home visits stated that the nurse or family worker cared about their family's welfare.

3. Only 1 percent of the respondents said their children do not receive enough time and attention from clinic physicians.

4. Only 3 percent of the respondents were dissatisified with one or more members of their clinic team.

5. Only 1 parent of 299 respondents was generally dissatisified with the clinic.

6. Only 4 percent of the respondents said that waiting time for service is excessive.

A followup study of the nonrespondents to the questionnaire was conducted to test the validity of the survey results. This was accomplished by sending interviewers to the homes of a random sample of the nonrespondents. The results of this followup study coincided closely with those of the initial survey.

Conclusion

The study described here was successful on several counts. In addition to isolating areas where improvements were needed while highlighting instances of successful performance, the juxtaposition of various performance indices with the relevant objectives provided a valuable perspective on the significance of specific results. Also, the provision of a mechanism for total involvement in the establishment of clinic goals had some unforeseen effects which might well prove to be of greater long-term value than any other single aspect of the study. The mechanism appeared to exert a strong cohesive influence among staff and to induce in them an enhanced sense of identity with the clinic. As a result, the staff felt less threatened by the prospect of evaluation. The staff also manifested an active interest in the process and results of the study and a commitment to personal and collective involvement in a continuing effort to make the program structure and operations increasingly effective.

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