

Evaluation and Intervention with Hearing-Impaired Children: A Multidisciplinary Approach

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The rationale for and mechanics of a multidisciplinary approach to the diagnostic evaluation of hearing-impaired children are discussed. Components of the model, primary and secondary team members, and staff interaction issues are emphasized. Central to the evaluation process is the assessment of the child's communicative competency through interdisciplinary "process analysis." This approach is discussed and then illustrated through a case study. The multidisciplinary evaluation described is a comprehensive, in-depth study of the child's strengths and weaknesses in communication, psycho-education, audiological and medical areas. Critical to the effectiveness of the team effort is involvement of the family and school in the evaluation process and follow-up stages. This paper addresses parent management issues, community interaction, and models for follow-up/habilitative procedures.

This paper discusses the rationale for and mechanics of a multidisciplinary approach to the evaluation of hearing-impaired children. The need for a multidisciplinary approach has increased in recent years with significant shifts in the etiological picture and changes in educational programming through the mandates of Public Law 94-142. The purpose of a multidisciplinary team evaluation is to gain further insights into the language and learning problems of the hearing-impaired student through an interdisciplinary effort which is coordinated within one facility. The team seeks to understand the complex, interrelated factors which affect the "total child."

COMPONENTS OF MULTIDISCIPLINARY MODEL

Multidisciplinary approaches following a medical model have been utilized successfully for a number of years. However, the approach at Boys Town Institute differs due to significant modifications which were believed to best serve the interests of hearing-impaired children. The major factors which dis-

tinguish the model from a traditional approach are:

1. Liberal time schedules are allotted for a comprehensive evaluation. Typically, the team will evaluate only two hearing-impaired students per week. The approach is a comprehensive study of each child through a test battery approach which includes both subjective and objective measurements. The liberal time schedule allows for effective use of diagnostic teaching as an evaluative device.
2. Evaluation and intervention are viewed as closely interrelated processes. Thus, the team focuses not only on differential diagnosis but also on program design, experimentation with recommendations, and eventual impact on the individual educational plan (IEP).
3. The emphasis of the evaluation across disciplines is that of a *process analysis*. Insights into the child's language learning and processing strategies are as important as the objective data.
4. The multidisciplinary teams are "self-contained" and remain stable across evaluations. This tends to encourage development of communication among team members, to build skills in interdisciplinary comparative analysis, and to build cohesion in the parent feedback process.
5. The team is committed to a routine procedure for staffing which, although complex and time-consuming, is critical to the success of the evaluation. The team members select an advocate who represents the *family* and the *child* to the team. The advocate directs the staffing procedures to assure a coordinated effort.

These major points will be discussed further through a description of the mechanics of the multidisciplinary approach. Then a case description will be used to illustrate the coordinated effort of team members.

The following is a list of the primary team members involved in a multidisciplinary evaluation of a hearing-impaired child (Matkin, Hook, & Hixson, 1978):

Primary Team Members

1. Audiologist
2. Educational Audiologist
3. Educator of Hearing-Impaired Students
4. Learning Disabilities Specialist
5. Psychologist
6. Speech Physiologist/Speech Pathologist
7. Pediatrician
8. Otologist
9. Ophthalmologist
10. Geneticist

The contribution of the medical staff in differential diagnosis is recognized as crucial. However, physicians rarely serve as advocates for the children due

to the nature of their primary concerns. Clinical and medical staff serve equally on the team, usually with a language and learning specialist or an audiologist representing the child as advocate.

Frequently, secondary evaluations are necessary depending on information gathered in the early stages of the examination. The Boys Town Institute facility is physically attached to a medical center, and the following services are often requested on a consultant basis (Matkin et al., 1978):

1. ENG
2. Brain-Stem Audiometry
3. Occupational/Physical Therapy
4. Neurology
5. Cardiology
6. Radiology
7. Craniofacial Team

COMPONENTS OF COMMUNICATION EVALUATION

The multidisciplinary evaluation is labeled a "communication evaluation" to emphasize the team's philosophy. Just as the audiologist looks beyond pure-tone findings to the hearing-impaired child's functional use of residual hearing, the multidisciplinary team looks much beyond standardized scores to the effectiveness of the child's functional communication. The team investigates the child's strategies through task and item analysis and observation of her/his cognitive tempo and approach to tasks. The child's linguistic skills in the areas of form, content, and function (Bloom & Lahey, 1978) are studied relative to her/his functional communication ability. Communication evaluation includes the following areas:

1. Cognitive Abilities
2. Receptive and Expressive Oral-Manual Language
3. Phonological Skills
4. Memory
 - Auditory
 - Visual
5. Processing
 - Auditory
 - Visual
 - Auditory/Visual Integration
6. Visual-Motor Coordination
7. Receptive and Expressive Written Language
8. Mathematics

The major diagnostic considerations are as follows:

1. What is the child's "communication competency"? If the child evidences

- a significant receptive and expressive vocabulary gap, how does this relate to other measures of language and academic performance, and what is its effect on the child's communication ability?
2. What variables are influencing this competency? The team considers memory constraints, social skills, processing strategies, etc.
 3. What are the child's comprehension strategies and are they effective? The team carefully analyzes the child's task approach strategies and examines whether these can be enhanced.
 4. What prescriptive information has been gained from the evaluation? The emphasis throughout is on discovery of the child's individual needs and the intervention strategies which best meet them.

MECHANICS OF TEAM FUNCTION

Children are referred to Boys Town Institute from throughout the country for communication evaluation. Due to the intense nature of this program, strict admissions criteria are necessary. Prior to the child being seen, the family completes a parent questionnaire, the teachers complete a teacher questionnaire and a Myklebust Pupil Rating (Myklebust, 1971), and prior evaluative information is collected. An admissions team then reviews the case and determines whether the nature and complexity of the problems warrant an in-depth study. Once the child is admitted for evaluation, s/he and her/his family come to the Institute and are housed in family living units adjoining the Language and Learning Center. The living arrangements promote constant contact between the parents and the team.

Figure 1 below illustrates the typical block schedule followed by a hearing-impaired youngster seen for an in-depth evaluation of communication. The

BLOCK SCHEDULE: MULTIDISCIPLINARY EVALUATION				
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
PRE-STAFF* ENT AUDIO	- LANGUAGE EVALUATION -			PARENT SHARING SESSIONS
PEDIATRIC PARENT INTERVIEW- CASE HISTORY	PSYCHOLOGICAL OPHTHALMO- LOGICAL MID-STAFF*	ACADEMICS & PROCESSING	POST-STAFF* GENETICS	

Figure 1. Typical block schedule for in-depth multidisciplinary evaluation.

child's fatigue is certainly an issue to be confronted during such an intense evaluation. However, liberal time blocks are assigned for the purpose of controlling for child fatigue. Time blocks are flexible and children are allowed free time in attractive play areas.

On the first day, the child is examined by the medical and audiological teams. Even though information is gathered ahead of time from the family, the child's advocate takes a comprehensive case history from the parents to clarify details and to insure that parental concerns are adequately understood. Completed early in the week, this information is used in the selection of evaluation components and helps structure the team's feedback to the family.

Three blocks are made available for communication evaluation. This provides sufficient time to complete an adequate test battery as well as for diagnostic teaching.

The child is seen by the psychologist and learning disabilities specialist during afternoon sessions, as well as by the ophthalmologist and the geneticist.

The catalyst for bringing together this complex information into a comprehensive whole is the staffing mechanism. When a number of individuals become involved in evaluation of one student, it is crucial that the information be quickly and efficiently transmitted to each team member. One advantage of the Boys Town Institute team is that all team members are housed within the same facility. However, with crowded clinic schedules, communication could easily break down. Thus, the following staffing mechanism is followed routinely to insure that inter-staff consultation takes place (Matkin et al., 1978):

1. A pre-staffing is held prior to the beginning of the evaluation. The team reviews the parent questionnaire, the teacher information, and past evaluations to determine the team composition and to sketch out initial evaluation needs.
2. Following the initial two days of evaluation, a midway staffing is held. In this staffing, the team reviews the advocate's case history, the advocate's impression of the parents' primary concern, and the evaluation results thus far. The need for additional consultative evaluation is then determined. It has been the experience of the team that this midway staffing avoids loss of evaluation time and inefficient scheduling.
3. A post-staffing is held once all of the examinations are completed. The team, along with school personnel representing the child's program, view the results as a whole and plot a profile of results (Matkin et al., 1978). The child's strengths and weaknesses and the consequent recommendations are then outlined.

Critical to the smooth operation of the staffing mechanism is the assignment of the advocate role. An advocate is assigned based upon the major

discipline involved in the primary presenting problem. The role of the advocate is complex and includes the following (Matkin et al., 1978):

1. The advocate represents the family to the team. The advocate insures that the family understands the upcoming evaluations, understands why the particular disciplines are involved, and is kept informed of team decisions and additional evaluation needs.
2. Because the family encounters a number of professionals, an advocate is needed to channel questions and problems and to serve as a long-term contact person.
3. The advocate is responsible for scheduling additional evaluations as necessary.
4. The advocate chairs the staffing sessions, keeping discussions within appropriate guidelines and assisting the team in coming to a consensus.
5. The advocate insures that reports are integrated and are mailed to appropriate agencies within a reasonable period of time.

Although the mechanism appears to have a number of "fail safe" procedures, there are many potential problems. Frequently, it is difficult for physicians to attend the staffings. The advocate personally obtains the physician's interpretation of findings, when necessary. The advocate also reports to the medical staff regarding the input of the team.

With representatives of eight separate disciplines evaluating one youngster, the mechanics of medical record keeping are overwhelming. Frequently, the child's medical chart, when passing from discipline to discipline, becomes totally inaccessible. To circumvent this problem, a dictation-medical records room has been established where charts from multidisciplinary evaluations are made available to all clinicians. The charts may not be removed from the area. This has enhanced the interdisciplinary communication by making results immediately available.

PARENT MANAGEMENT ISSUES

Another challenge to the team is the issue of parent management. Parents are encouraged to participate closely in the evaluation. However, they are frequently overwhelmed by the number of professionals involved, the facilities, and the amount of information. The counseling relationship becomes extremely important as the parents are guided through the child's evaluation. Often we find it necessary to explain test procedures, such as basals and ceilings, in order to avoid parental frustration when observing the child successively failing items before the test is terminated. Often families given unguided observation have questioned the validity of the results, because it is difficult for them to face the child's failure. Adequate time for counseling must be assured.

Because there is so much complex information, the parent feedback mechanism is crucial. The following procedures have been somewhat helpful in meeting the challenges of parent management:

1. The advocate maintains contact with the family on a daily basis and provides a summary of the day's events. Parents are asked to comment on what they have observed.
2. Continual revision and update of the parent's major concerns is imperative.
3. Parent participation is guided.
4. In the post-staffing, the team prepares for individual information sharing with the family. Based on the team's interaction with the family and the assessment of their ability to understand the nature of the findings, several formats are available for information sharing. Members of the team are given certain responsibilities for sharing the findings and for organizing the information in a way that will meet the particular needs of each family.
5. Originally, the parent conference was labeled "feedback," indicating the team gave information to the family. The name of this session has been changed to "parent sharing session" to be more in line with the philosophy that the information goes both ways.
6. Parent input is solicited in a number of ways throughout the examination. For example, during each phase of the evaluation, slips are made available in the parent observation corridor where the parent may indicate how typical the child's behavior is at any point in time. These slips are given to the examiner to help the examiner determine the validity of the results.
7. Currently, the multidisciplinary team is conducting a survey of the effectiveness (Watson, 1980) of the parent sharing sessions as well as information reporting. In this way, the team has begun to initiate a peer review to determine what changes need to be made to be more effective in the delivery of service.
8. The staff is also exposed to in-service training in the area of counseling to continue to improve the feedback model.

One other area of concern in the delivery of information is sharing with professionals. As noted earlier, the staff from the public school or clinical environment where the child is being served participates in the post-staffing and often participates in the parent sharing session. Occasionally, methodological conflicts are faced. For example, the team may recommend, based on the objective results, that a child have her/his oral program supplemented with fingerspelling and sign language. When the philosophy of the school is opposed to the recommendation, the professionals discuss the information and attempt to achieve some form of consensus prior to sharing the information

with the parents.

At times, evaluations are mandated by the state, putting the teachers in a position of uncertainty. The team must take care in these situations to demonstrate respect for the professionals and to incorporate them in the staffing mechanism, in the evaluation, and in the design of goals. The incorporation of staff from the schools within the evaluation process is also critical so that feasible recommendations are proposed. Frequently, the staff from the school indicates to the multidisciplinary team the feasibility of certain recommendations relative to their time constraints, facility constraints, etc. This is important in avoiding conflicts between the diagnostic agency, the parent, and the school.

Finally, following this comprehensive set of procedures, a multidisciplinary report is prepared and forwarded to the appropriate agencies. The emphasis of this report is not merely on the description of objective results. Rather, the report is an attempt to integrate the information and apply it to programming within the classroom.

To further illustrate the complexity of the model and the benefit of an interdisciplinary approach, the case of 5-year-old David M. will be presented.

CASE STUDY

David was referred for communication evaluation at age 5 years, 4 months following a year of participation in a preschool language group designed to address his language delays. David's clinicians expressed concern for auditory comprehension problems; fluctuant hearing levels secondary to chronic otitis; disordered syntactic development; semantic errors; and suspected memory, retrieval, and formulation problems.

Birth history was significant since the mother was a diabetic who was hospitalized during the entire third trimester of pregnancy. Delivery was by Cesarean section. Medical history is also positive for chronic otitis media since birth. David was struck by a car at age 4 and suffered a left temporal bone fracture and concussion. For seven weeks following the accident, the mother reported David's attentional difficulties and reduced participation in activities.

The multi-team evaluation began with medical/audiological testing. The results revealed (Figure 2) an anacusic right ear and a mild-to-moderate mixed loss for the left ear.

Auditory discrimination skills in the good ear were fair to good, with 100% WIPI (Ross & Lerman, 1971) recognition under earphones and 80% in sound field (50 dB HL). In sharp contrast, however, was David's recognition of familiar vocabulary in noise. With a competing background noise (+6 S/N) presented to the better ear, David's score dropped to 40%. This has obvious implications for classroom learning. Paired with the history of fluctuant

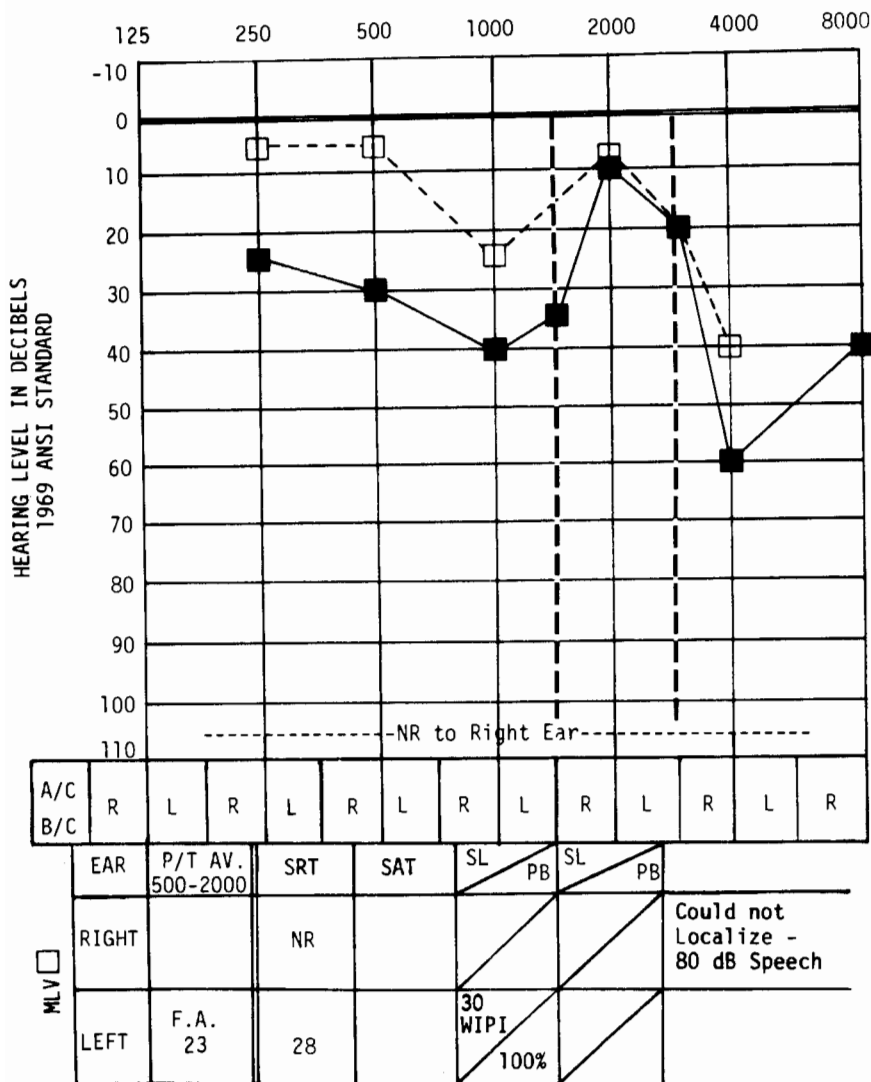


Figure 2. Audiological results for David.

hearing levels, one wonders how much stimulation David has "missed" in his intervention program. The team attempted to gain insight into the impact of the auditory problems on David's language learning and to determine if problems beyond "reduced hearing sensitivity" existed.

Figure 3 presents David's test results on a summary profile. The profile (Matkin et al., 1978) has been used by the team to concretely visualize the relative strengths and weaknesses of the child and to clarify interrelationships. Scores are plotted along the normal distribution (bell curve) to reflect standard deviation from the mean. Age scores are converted to standard scores and percentiles and are compared to normative findings for normal-hearing and hearing-impaired children (where norms are available). Subjective analysis is coded with an "x" rather than a closed circle "●", which is used to represent objective or standardized procedures (Matkin et al., 1978).

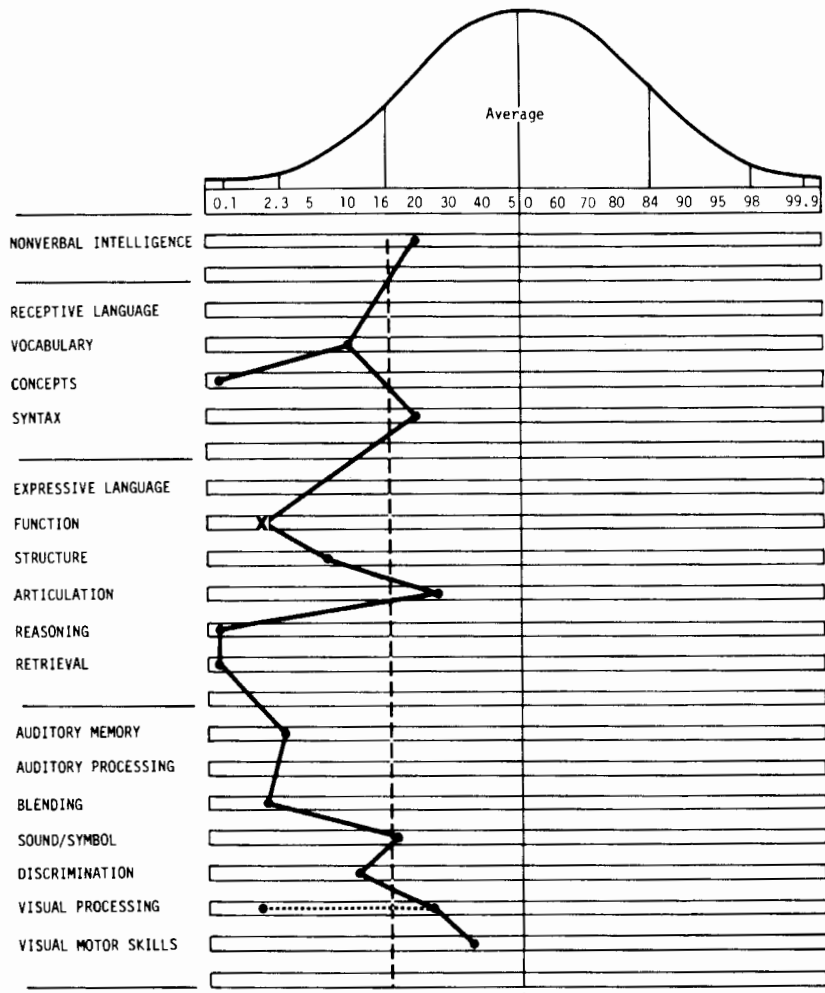


Figure 3. Communication Skills Profile for David.

Major findings were shared and integrated by the team to determine implications for David's program. The psychologist reported nonverbal intellectual abilities in the low-average range, which influenced interpretation of "degree of delay" in other areas. The psychologist observed several behaviors which were believed to be interfering with language learning and which are not reflected in the IQ score:

1. Considerable difficulty with picture associating. David failed to attend to the relevant stimulus dimension.
2. Visual attention span was reduced. David failed to use verbal mediation strategies to remember.
3. David was impulsive and unorganized in his task approach.

David's disorganization; his lack of reflective, cognitive style; and his problems focusing on relevant relationships would be expected to interfere significantly in language learning. Obviously, his learning strategies must be addressed if he is to benefit from intervention.

Communication and processing evaluation revealed a number of relative strengths and weaknesses, which are listed in the Appendix. David demonstrated relative strengths in comprehension and production of form (syntax). David's speech was intelligible. Visual processing and visual-motor skills were average relative to mental age. However, the wide scatter in David's abilities, as indicated on the profile, is suspect.

David's language comprehension strategies were influenced by information processing problems:

1. Restricted auditory memory forced David to rely on a "key word" strategy. He attended only to *key* ideas, some of which were not relevant to meaning. He was able to attend to only three key ideas in one utterance.
2. Auditory comprehension of stories or connected discourse on the TAC was significantly reduced by attentional difficulties and interference of David's prior learning (Hoverston, 1978).
3. Although auditory discrimination skills were sufficient for understanding in quiet, problems in sequencing auditory information disrupted comprehension of syntactic rules.
4. David's lack of focus on the relevant relationships in the situation or language exchange interfered with concept learning. It was suspected that unstable hearing thresholds made it difficult for David to consistently receive linguistic input which would help him generalize relationships verbally.
5. David's problems in sequencing and auditory closure pose a threat academically.

David's expressive language skills reflected retrieval and formulation prob-

lems beyond that accounted for by a mild-to-moderate fluctuating hearing loss. For example:

1. In naming familiar pictures, David exhibited time latencies of over 20 seconds as he tried to retrieve the specific label. David frequently made in-class or related substitutions in expressing himself (tennis racket, shoe), suggesting problems retrieving appropriate labels.
2. David demonstrated problems in long-term memory of sequence and content of phrases used often: "I don't care" for "I don't know;" "What do we do with the scissors?" Response: "Cut it with the page."
3. David's formulation problems often contributed to comments totally inappropriate to the social context and thus could not be understood: "Can I play something else so I get grow up?"
4. David had significant difficulty solving verbal reasoning problems at varied levels of abstraction. This was related to problems in *seeing*, understanding, and verbalizing important semantic relationships. It was crucial to note that David apparently did not even *see* the relationships. This was suggested by his inability to find absurdity in pictures and problems with visual and auditory association tasks. David's focus was often perseverative; if he was mentally regarding "color" relationships, for example, he could not shift his focus to a functional relationship.

Thus, David's problems in memory, sequencing, cognitive style, retrieval, and formulation are suggestive of learning disabilities beyond the moderate hearing loss. Often, educational "labels" preclude considering a hearing-impaired child from services as a "learning-disabled" youngster. Clearly, revision in such educational planning must be sought. For David, the team recommended primary programming as a learning-disabled child, with support services from an educational specialist in audiology/education of the hearing-impaired students. It was also recommended, in view of the long-standing conductive hearing loss which had not been resolved medically, that David return for an amplification needs assessment.

Importantly, the integration of findings led the examiners to recommend specific approaches to David's language *learning* needs, such as:

1. A recognition-to-recall approach to prompt retrieval.
2. A cognitively oriented program which emphasizes nonverbal as well as verbal problem solving and reasoning.
3. An auditory/linguistic training focus.
4. Training in impulsivity control and ability to rehearse and use verbal mediation in learning.

Thus, with David M., major emphasis of the team effort for the hearing-impaired child has been:

1. To integrate the diagnostic findings,

2. To view the child's learning process, and
3. To provide concrete input in the child's individualized educational plan.

This input is usually in the form of a lengthy and complex report. If we stopped with the mailing of this document, the evaluation would have less impact; and we would certainly have little understanding of our effectiveness. At this juncture, the follow-up/habilitative procedures which are an integral part of each comprehensive communication evaluation are presented.

MODELS FOR FOLLOW-UP

A major shortcoming of diagnostic centers is often that the report *is* the follow-up. The report must communicate the multi-team findings to parents and school personnel. Frequently this communication is not effective. It can break down in several ways.

1. There may be so much information in the report that the teacher, social worker, or parent feels overwhelmed.
2. The report may not be process oriented and well integrated between disciplines. Ineffective reports list a succession of individual findings and opinions, which may be repetitive, contradictory, or both.
3. The language of the report may be "professional" to the point of obscurity—simply written from one professional to another—audiologist to audiologist, speech clinician to speech clinician, psychologist to psychologist.
4. The report may include complex analysis and theories unfamiliar to the reader. The writer may not provide many clues for practical application of such data, yet these pragmatic considerations are frequently the greatest need of the child's direct care-givers and are certainly the reason that the multi-team evaluation was originally sought.

The post-staffing and parent sharing sessions should serve as a first step towards remediation rather than the final step of an evaluation. Four basic types of follow-up have been designed to insure that the information has been understood and that the results will be implemented:

1. Report Appendices

To supplement the report, relevant references and team constructed materials are often included to illustrate techniques recommended for use in the child's home and school. Sometimes entire learning units are developed as examples of practical application of the report's recommendations. This may include accompanying videotapes of diagnostic teaching sessions with the child where effective strategies are demonstrated.

Although all report recipients are encouraged to call with questions

the report did not answer, it has been our experience that telephone follow-up by itself is very unsatisfactory, and therefore, other follow-up media are utilized.

2. Advocate-Patient Follow-up

In this procedure, frequently used when the patient is from the local area but sometimes necessary even for patients who live long distances from the clinic, one member of the multi-team, usually the advocate, directly enters the patient's home and learning environments. Depending on the specific needs of the case, the advocate may offer a variety of services:

a. Observation

In order to offer realistic follow-up, the advocate must become familiar with the actual environments in which the student and care-givers are functioning.

b. Conferences

The advocate may wish to share observations and suggestions with the professionals and/or parents in a familiar setting. This is also a time to entertain questions arising from the report and to either answer them or convey them to the appropriate team member at the clinic for additional response.

c. Demonstrating Teaching

Often, carrying diagnostic teaching findings into the actual classroom, shop, or home is the best way to convey the exact meaning of report recommendations.

d. Creation of an Integrated Service Model

A major shortcoming in programs for the hearing-impaired, particularly in the public schools, is fragmentation of services. This has been amply documented by Davis (1977).

By observing the client's present service model and interacting with the professionals involved in providing it, the advocate can often assist in the creation of an integrated team approach to remediation where objectives, findings, and difficulties are easily communicated between team members.

For this type of follow-up, we have found that a teacher of hearing-impaired students can be an invaluable team member. Not only does such a person lend credibility to the diagnostic team in the eyes of the school, s/he also serves to translate team findings into specific practical objectives and activities for the classroom.

This approach proved very satisfactory in the case of M.M., a female, 10 years of age, diagnosed early as a case of Pierre Robin syndrome. She presented with severe neuromuscular involvement of the speech mechanism which totally prevented oral communication, and

a tentative diagnosis was made of moderate mental retardation. She was referred to Boys Town Institute by school personnel who requested input regarding appropriate programming in the area of communication. Sign language was being used to some degree, and the agent asked for specific guidance on continuing its use and structuring the child's learning experiences to maximize its value.

Initial evaluation indicated a moderate, conductive loss bilaterally, which has persisted to the present time. Communication evaluation found the girl's receptive language age of approximately 5 years on a variety of measures to be very close to expectations, given her presumed mental age. Psychological evaluation, recommended by the multi-team, confirmed findings of moderate mental retardation.

M.M.'s major weakness at the time of her evaluation was believed to be an almost total lack of expressive communication attempts. Although she arrived at her present school with a small lexicon of expressive signs, few of the teachers, aides, and clinicians working with her understood them. Expectations for her, as a result, were set artificially low, and she received no reinforcement for expressive communication. It was further noted that different signs were being used in the home and school due to the use of a variety of sign language manuals.

During the course of M.M.'s evaluation, an aide with signing experience was hired by the school and began to spend at least 50% of each day in the child's classroom.

In addition to the parent sharing session, a separate school conference held at the institute with the teacher, speech clinician, and principal concentrated on establishing a well-integrated set of objectives. A school visit by the Boys Town Institute advocate was arranged for a later time to provide further relevant input based on observation of M.M.'s daily program.

Our report recommendations to the school and the family were:

- a. Coordination of M. M.'s program among all professionals involved in her daily schedule.
- b. Use of Total Communication throughout M. M.'s day to allow her to process sign language receptively before being asked to use it expressively.
- c. Consistent encouragement by school and home to expand her use of expressive communication into all appropriate situations.
- d. Development of a vehicle for communicating any sign adaptations made for the student to all team members.

The follow-up observation, done approximately one month after the conference, confirmed that the school had, in fact, integrated M. M.'s program well and that close communication existed between all

involved professionals. the clinician was able to reinforce the efforts of the school, note M. M.'s progress, answer a number of questions, and make additional recommendations on the basis of the follow-up visit.

3. Direct Diagnostic Therapy

There are times when a single week of evaluation of a client yields more questions than answers. If the child is within reasonable communicating distance, a regular therapy program may be instituted, the main thrust of which is a short-term effort to determine the methods and objectives most appropriate to the client over time.

The evaluation has addressed the needs of the total child, and intervention should do the same. Diagnostic therapy sessions allow the clinician to use a variety of strategies and to report their effectiveness to outside professionals involved in the case. On-going discussion of the child's progress can result in the eventual assumption of a child's intervention program in her/his own environment.

D. is an 18-year-old profoundly deaf male. He is a ward of the state and attends a state school for the deaf. He resides at Father Flanagan's Boys' Home. D. was seen for evaluation to determine the appropriateness of his career goals, which included college attendance and entrance into the legal profession.

D. presented with a severe-to-profound sensorineural loss bilaterally and severe English language delay although he demonstrated good communication skills in interaction with people who sign *well*. Academically, he did not meet criteria for entrance into Gallaudet, his college of choice. Short-term therapy was undertaken to determine whether direct remediation of his English language deficits would significantly improve his reading performance. Another question to be answered was whether he would be able to make sufficient progress over a two-year period to realize his goals.

A number of weaknesses not evident during the initial evaluation appeared during this time, making it highly unlikely that a career as a lawyer was a realistic goal for him.

The objectives and findings of this therapy were communicated to his psychological counselor, his family teachers, and his school. The psychologist utilized the information from diagnostic teaching to counsel D. and assist him in bringing his goals into a more realistic perspective.

Therapy data indicated that continued language tutoring was appropriate. Therapy was gradually transferred to the family teachers, one of whom is an experienced speech and language clinician, and to tutors at Father Flanagan's Boys' Home.

4. Teacher Inservice Model

A very serious need is felt in smaller school districts struggling to provide services without effective on-going supervision. To meet this need, a model was developed in which focus was directed at an entire program rather than a single child, and curriculum support was offered through a multi-team effort (Moeller, Matkin, Kroese, & Hook, 1979). Teachers, clinicians, students, and parents were brought directly in touch with the multi-team for both evaluation and follow-up.

The model in Figure 4 illustrates the components of an individualized approach to in-service and curricular modification:

- Phase I: Evaluation of all children to establish individualized, prioritized goals.
- Phase II: Program planning. Guidance of teachers in incorporation of diagnostically based goals with the curriculum for the class as a whole.
- Phase III: Intervention. Includes teacher participation in diagnostic teaching, videotape demonstrations, and lecture series.
- Phase IV: Comprehensive follow-up. Monitoring by team members of effectiveness of curricular change through direct observation, re-evaluation, telephone, and videotape contacts.

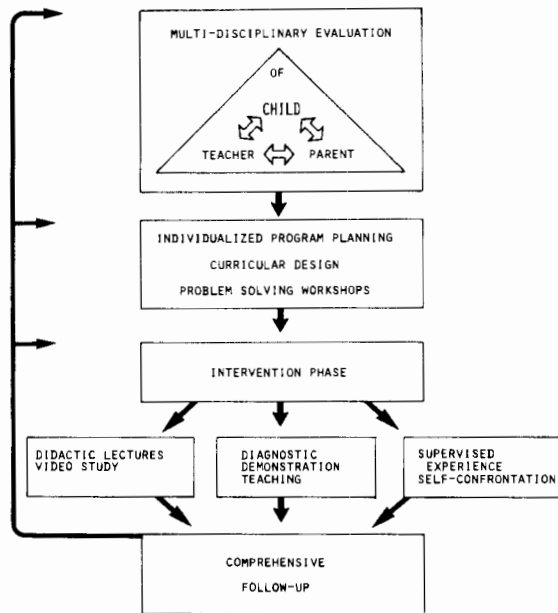


Figure 4. Individualized Teacher In-Service Model.

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APPENDIX

SUMMARY OF COMMUNICATION ASSESSMENT

Patient: David
C.A.: 5 y, 4 m

Strengths:

1. David was friendly and cooperative throughout the evaluation.
2. The syntactic structure of David's expressive language has improved, although functioning continues to be below average.
3. David's comprehension of syntax was within the average range when a closed-set response was utilized.
4. David's phonological skills were adequate.
5. David was able to learn sound-symbol associations at an age-appropriate rate.
6. For several tasks, David's visual processing skills appeared to be within the average range.
7. Nonverbal intellectual skills were within the low-average range.
8. Visual-motor skills appeared to be within the low-average range.

Weaknesses:

1. David has a profound, sensorineural hearing loss in the right ear with a mild-to-moderate, fluctuant conductive loss in the left ear. Auditory discrimination was reduced.
2. David manifested several characteristics of learning disability, including auditory memory deficits, difficulty focusing on relevant stimulus dimensions, and word retrieval problems. For the purposes of educational programming, he should be treated as a learning disabled child.
3. Comprehension of single word vocabulary items and linguistic concepts was below average.
4. David's ability to formulate and express ideas so that a listener could understand was below average.

5. David's ability to solve verbal reasoning problems was reduced.
6. During both visual and auditory tasks, David appeared to have difficulty identifying relevant stimuli.
7. David exhibited difficulty blending and closing auditory stimuli.
8. Though some strategies aided David's performance on tasks, he did not use them consistently.
9. David exhibited difficulty sequencing verbal and nonverbal stimuli.

General Recommendations:

1. It was recommended that David receive educational programming as a learning-disabled child.
2. It was recommended that for the remainder of the school year, he continue to be enrolled in a preschool program for language-disordered children.
3. Therapy should focus primarily on providing David with strategies for organizing input and systematically arriving at solutions to problems.
4. The benefits David could receive from amplification should be explored.
5. David should receive a learning disabilities evaluation in the Summer, 1980, to further define his educational needs.