SERVICES FOR CHILDREN WITH COMMUNICATIVE DISORDERS

A Guide for public health personnel
A Guide for
public health personnel

SERVICES FOR CHILDREN WITH
COMMUNICATIVE DISORDERS

Prepared jointly by the

Program Area Committee on Child Health of the

American Public Health Association

and the

Children's Bureau

Social and Rehabilitation Service

Department of Health, Education, and Welfare

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FOREWORD

This Guide preserves and adapts some of the excellent material in the 1956 APHA publication, SERVICES FOR CHILDREN WITH HEARING IMPAIRMENT, but it has a broader perspective of communicative disorders that includes not only hearing impairments, but also speech and language impairments.

Hearing is so necessary for early speech and language development that the child who does not hear cannot learn to speak without special help. Deprived of auditory experiences, which teach him that sounds are meaningful, he is limited in opportunities to form the concepts that become the bases for a spoken language system. Severe hearing impairment may limit his opportunities to participate in social activities, may prevent him from reaching the maximum of his intellectual capacities, and may exclude him from many vocational interests.

Hearing conservation programs have been established successfully in most of the state and local health agencies and in many of the public schools. The broadening of these programs to serve children with other types of speech and language problems is the chief recommendation of this Guide. Also to be served under these
programs are children with communicative problems associated with cleft palate and other dentofacial abnormalities, cerebral palsy and other cerebral dysfunctions, mental retardation and delay in speech development, voice disorders and stuttering.

The need for health agencies to broaden the scope of their programs to offer a communicative disorders program has been given impetus by the widespread development of (1) centers for the evaluation of children suspected of being mentally retarded, (2) PROJECT HEADSTART programs, and (3) projects providing comprehensive health services to preschool and school-age children.

A change of emphasis from a program of hearing conservation to one for communicative disorders requires a different focus on case finding, diagnostic evaluation, and treatment. The broader scope of responsibility will require the involvement of a wider range of professional persons and facilities.

Should public health and community health agencies undertake the task of providing comprehensive services for children with a wide range of communicative disorders? The answer to this question will be determined partly by the nature and severity of the handicap and partly by the age of the child. Some children with hearing, language or speech handicaps can and should be referred to school speech and hearing therapy programs. For
other children, however, diagnostic, remedial and rehabilitative services should be started earlier than the school years if they are to be effective.

While there is much to learn about the development of communicative skills, we know that they begin during infancy and continue during the preschool age and beyond. Early in life the child learns about his immediate environment — its size, shape, distance, odor, texture and sounds. He learns about objects, activities, and the attributes of his environment and how to organize and interrelate his experiences. In so doing, he develops concepts that are an integral part of the development of language. All of this appears to be basic to learning to communicate.

The twofold problem of identifying those children who will require services for a communicative disorder and of determining what kind of services should be provided becomes increasingly difficult, the younger the child. Yet it is during these very early years that the child should be helped, not only with specialized speech and hearing services but also with health services as needed.

Such a program cannot be the sole responsibility of any one agency. A child with a communicative disorder may need long-term treatment starting in the preschool and extending into the school years. Hence, there should be an effective method of coordination between the
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health agency and the school to insure the continuity of comparable services, regardless of which agency has the responsibility of serving the child.

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Section I:

NATURE AND SIZE OF THE PROBLEM

Description and Classification

The following definitions and descriptions have been selected from the Impairment Code developed by workshops on classification held under the auspices of Rehabilitation Codes, Inc.* The Impairment Code sections on Communicative Disorders, like all sections of this Code, stem from definitions of unimpaired function of voice, hearing, language and speech. Impairment is expressed in descriptions which omit the usual etiology-oriented terminology, such as “cleft palate speech,” “cerebral palsy speech,” “aphasoid speech,” and the like.

Etiology-oriented labels tend to focus upon the disease or pathology, at the expense of the child’s communication problem. A program serving people who have communicative disorders should use definitions which express a concern for the person’s communication needs, irrespective of the physical condition which may have caused the impairment.

The definitions and descriptions of impairment in Table I represent a wide range of conditions which are included within the term “communicative disorders.”

TABLE I:
Classification of Hearing, Language, and Speech Impairment

HEARING

Hearing function implies reception and recognition of sounds within appropriate environmental limits. It is a

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sensory function which provides a basis for a response to
acoustic stimuli.

—Absence of hearing function
  both ears
  right ear
  left ear
—Impairment of hearing sensitivity for speech
—Dysfunction of hearing affecting intelligibility for speech
—Impairment of sensitivity to loudness
—Loudness distortion
—Impairment of sensitivity to pitch
—Impairment of ability to localize sound
—Impairment of hearing unmeasurable in terms of hear-
ing sensitivity for speech
—Interference of continuity of hearing function

LANGUAGE

Language is a system of communication among human
beings who comprehend and use symbols possessing arbi-
trary conventional meanings.

—Impairment of prelinguistic vocal function
  Impairment of spontaneous vocal play
  Absence of vocal response to stimuli
  Limitation of vocal response to stimuli
—Impairment of language comprehension
  Absence of comprehension of
  nonverbal symbols (facial, gestural, postural, vocal)
  verbal symbols (spoken, graphic)
  numeric symbols (spoken, graphic)
  other symbol systems (formal sign language, musi-
cal notation, etc.)
  Limitation of comprehension of
  nonverbal symbols (as above)
  verbal symbols
numeric symbols
other symbol systems

—Impairment of language use
Absence of use of
  nonverbal symbols (as above)
  verbal symbols (spoken, graphic, finger spelling)
  numeric symbols (spoken, graphic, computation
   with symbolization intact)
  other symbol systems

Limitation of use of
  nonverbal symbols (as above)
  verbal symbols (spoken, graphic)
   relevant word, synonym, verbal equivalent
   correct word, word order, form/class, spelling
  numeric symbols (spoken, graphic, computation
   with symbolization intact)

SPEECH
Speech implies the vocal and verbal expression of language
appropriate to the environment of the speaker and
listener.
—Absence of speech function (articulation)
—Impairment of articulation
—Impairment of fluency
—Impairment of vocal stress
—Impairment of rate
—Impairment of concomitant audible behavior
—Impairment of concomitant visible behavior

VOICE
Voice function implies the auditory experience of phona-
tion which is culturally appropriate for human communica-
tion.
—Absence of phonation
NATURE AND SIZE OF THE PROBLEM

—Impairment of pitch level
—Impairment of loudness level
—Impairment of control
—Impairment of intonation
—Impairment of quality associated with phonation
—Impairment of quality associated with resonance

Prevalence of Communicative Disorders

Estimates of the prevalence of communicative disorders vary widely. The estimates used in this Guide represent the consensus of experts which, in turn, has been based on their assessment of clinical and school caseloads, as well as on surveys of limited populations.

About 10 per cent of the nation's children have speech, hearing and language handicaps causing sufficient deviance from what is expected of them that special efforts must be made to prevent, modify or eliminate their handicap. From 3 to 5 per cent of children have hearing impairments which are medically or educationally significant.

These estimates cannot be applied uniformly to all populations. For instance, the prevalence of communicative disorders among children who are mentally retarded is much higher than among nonretarded children. In "poverty areas" there is a higher prevalence of conditions which may lead to a communicative disorder than in areas at higher socioeconomic levels. Case finding in some of these areas will have to take into account the additional problems of bilingualism in the home, as well as the linguistic patterns of the area.

However, the significance of the problem cannot be measured solely by figures on the prevalence and severity of the disorder, for adequate communicative skills are necessary if a child is to achieve his potential.
Section II:

CASE FINDING AND PREVENTION

Reporting and Registration

The purposes of case finding are to define the extent and distribution of the problem and to locate those persons in need of specialized services.

REPORTING is the aim of a good case-finding program. It is a process whereby children with communicative disorders, or with conditions which might lead to communicative disorders, are brought to the attention of the agency responsible for developing a treatment program. Such records permit a continuing follow-up to be made.

REGISTRATION is the process by which identifying and other pertinent data on children reported or known to the responsible agency are maintained in an orderly system.

Case finding for communicative disorders should be not only a special program, but also an activity carried on as an integral part of other health and education programs. Reports should be received from such programs as:

- maternity and infant care programs
- child health care programs (including child health conferences)
- school health services
- clinic services for physically handicapped children
- nursery schools
- day care centers
- child development programs
- HEADSTART projects
CASE FINDING AND PREVENTION

- foster care programs
- institutional programs

Monitoring

Case finding should include both monitoring and screening activities. While screening is concerned with comparing a child's responses to a standard, in order to identify whether he passed or failed, monitoring is a procedure which periodically compares the child's performance to his own past record.

Because monitoring requires a baseline, the child's health record should show his level of performance at a given time. No hard-and-fast rule can be recommended, but certainly before two years of age the record should show his reactions to sound and his status in the acquisition of speech and language. Before he is four years old, each child should have received a pure tone test of hearing to establish his threshold of acuity.

By observing progressive changes from this baseline in speech and language proficiency or in hearing function, specialists are better able to determine whether a child is progressing normally and to detect which child needs services, what kind of services seems most appropriate, and how early these services can be utilized most effectively.

Monitoring as a case-finding procedure should begin with the maternal and child health history. While there is as yet no evidence that a given health condition will always result in a communicative disorder, certain conditions have been so frequently associated with such disorders that they may serve to identify persons at special risk.

Children with these conditions should be observed at regular intervals to determine their progress in the acquisition of hearing, language and speech skills. Table II lists some of the conditions which may be related to a communicative disorder, especially hearing impairment. Children with the conditions tabulated should be of special interest to the program for communicative disorders. When a special risk register for communicative
disorders is not deemed feasible, a general high-risk register should be periodically searched for children with these conditions.

TABLE II: Special Risk Conditions For Communicative Disorders

ANTENATAL CONDITIONS

| 1 | Family history of deafness |
| 2 | Familial biochemical abnormality associated with deafness |
| 3 | Rh or other blood antigen incompatibility |
| 4 | Virus infection during early pregnancy, rubella |
| 5 | Ototoxic drugs, such as dihydrostreptomycin and kanamycin or quinine |
| 6 | Maternal syphilis or impaired kidney function |

COMPLICATIONS OF LABOR

| 1 | Premature delivery |
| 2 | Fetal distress |
| 3 | Prolonged or precipitate labor |
| 4 | Difficult delivery |

NEONATAL DIFFICULTY

| 1 | Apnea or cyanosis |
| 2 | Cerebral birth injury |
| 3 | Jaundice — hyperbilirubinemia |
| 4 | Multiple anomalies |
| 5 | Possible iatrogenic trauma, noise of incubator, drugs (i.e., dihydrostreptomycin, kanamycin) |

CONDITIONS IN EARLY CHILDHOOD

| 1 | Infections, such as meningitis, measles, middle ear infections |
| 2 | Chronic serous otitis |
| 3 | Injuries to the speech and hearing mechanism, articulators, larynx, ear, brain, etc. |
| 4 | Hypothyroidism |
| 5 | Abnormality of external ear |
| 6 | Use of ototoxic drugs |
CASE FINDING AND PREVENTION

7—Environmental factors which could result in inadequate or inappropriate stimulation and motivation

Monitoring should include continuing observation of the child’s growth and development in communication skills. These skills are the result of learning which occurs during the first three years. Any of the conditions listed in Table II may interfere with the development of normal communicative behavior.

There are certain sources of particular importance in learning about the conditions listed in Table II. Procedures should be developed by the program for communicative disorders that will utilize reports from these sources:

1. Physicians and hospitals about infants under their care
2. Birth certificate supplements identifying newborn infants with abnormal histories and findings
3. Communicable disease reports in health departments
4. Child development evaluation centers screening children who are unusually slow in development; also children who have multiple handicaps that may be associated with communicative disorders
5. Public health and welfare workers, nurses and others
6. Parents

Because the parents themselves are an important referral resource, a necessary part of a case-finding program is an intensive effort to educate them about communication disorders. A primary goal of such an effort should be to reach those parents who, for a variety of reasons, do not make use of available health services.

This educational effort should make use of
—television and radio programs which demonstrate the differences between normal and deviant communication behavior.
—pamphlets and leaflets to be distributed separately and also to be inserted into other mailings. This material can be distributed by public health and welfare workers and can be made available to medical societies and other organizations.
—presentations (speeches, filmstrips, films) to parent groups.

Screening

Monitoring should be carried out as part of a special program for communicative disorders and as part of the regular program of child health supervision. If a monitoring program could cover all children, there would be no need for a screening program for case-finding purposes. However, for a number of reasons, monitoring may have to be limited to children in a category of special risk. Periodic screening of all children is therefore necessary.

Screening programs for hearing testing have long been established in many schools. Recommendations for developing and improving such programs have been published.*

In a communicative disorders program, the referrals for diagnostic evaluations should be made just as they are in a hearing conservation program — as a result of monitoring and screening activities and by parents, physicians, nurses, teachers, or clinics and agencies responsible for the child's care.

The criteria for referral of a child for language and speech problems are not as readily standardized as those for hearing problems. For hearing, the criteria can be established on the basis of a failure to respond to specified intensities of sound at specified audio frequencies. The validity of these criteria has been challenged on several grounds, one of which is that the tests do not measure the child's ability to comprehend what he hears. Nevertheless, for a hearing screening program, criteria can be established in precise acoustic measurements.

The criteria for referral of a child for a language and speech diagnostic evaluation cannot be established so precisely. The communicative abilities expected of a four-year-old are not ex-

pected of a two-year-old. The examiner must know the developmental pattern for language acquisition and speech articulation so that he can judge whether the discrepancy between the observed speech and language proficiency and the expected proficiency is sufficiently significant to warrant referral to the next step in the case-finding program.

If the examiner is a professionally qualified speech and hearing specialist, his referral of children suspected of having communicative disorders can be a one-step procedure direct to the diagnostic evaluation. If the examiner is not professionally qualified, however, the screening procedure should be in two steps, the second step being a recheck by a qualified speech and hearing specialist in order to avoid the problems of overreferral for the complete evaluation.

High priority should be given to the testing of language, hearing and speech in PROJECT HEADSTART programs, in day care centers, nursery schools, and similar child development centers. To test the two-, three- and four-year-old children who are not enrolled in such group programs requires that testing services be made available in a designated center where parents can bring their children. These centers need not be speech and hearing clinics, but can also be local health clinics, neighborhood health centers, schools, churches or similar facilities.

Screening tests of the communicative skills of the infant and preschool child should be part of a plan for a total evaluation of the child. For young children, testing a single behavioral response may be inadequate; therefore, the examiner should correlate his observations of different kinds of responses.

The following suggestions for testing the child's communicative abilities require that the examiner be competent to make a valid interpretation of test results. While the procedures are not difficult, the interpretation of the results may be, especially if the child has multiple handicaps and is not able to respond in the usual manner.

*Newborn*

Testing the newborn's response to acoustic stimuli should be
viewed primarily as a means of noting hearing responses, not as a means of identifying hearing impairment. The sound must be loud to arouse a newborn from sleep. Moderately loud sounds may elicit a startle reflex, eye blink, eye shift, crying, or cessation of activity.

Repeated testing, with a knowledge of other behavioral responses, may permit a judgment of the newborn's responses to sounds. However, a newborn's failure to respond may bear little relationship to his later ability to hear. The validity of testing an infant's hearing is reduced by a number of factors, one of which is that some of the complications of birth (anoxia, hyperbilirubinemia, etc.) may not become evident until several days after birth. A determination that the infant hears establishes a baseline which can be important for later comparisons.

Procedures for testing neonate hearing at a screening level have not yet been firmly established. The use of battery-operated noise generators, calibrated for intensity and frequency, makes it possible to standardize the test procedures. While commercial testing instruments are available, such units can be constructed as simple amplifiers with an intensity range up to 80-90 db and a narrow frequency response range. Absolute accuracy of calibration has not been proved necessary for this kind of testing.

Four months (3 to 6 months)

Sounds at this age do not have to be loud to elicit a response, but they do have to be within the child's immediate environment, at a distance of no more than three to four feet. The baby's name, sounds like s-s-s-s and k-k-k-k, or toys and rattles can be used.

The response may be a cessation or an increase in general body movement. The infant may open his eyes or, if they are open, there may be an increase in the size of the palpebral fissure. He may smile, frown, or make sounds. On the average, at 24-26 weeks he is beginning to locate the acoustic stimuli by turning his head toward them. To test the turning response, the acoustic stimuli should be presented on a plane horizontal with the child's ear. The examiner should avoid making movements or
casting shadows which may cause the child to respond to visual stimuli.

The baby’s failure to respond does not necessarily imply that he has a hearing impairment but suggests rather that his total development needs to be evaluated.

_Eight months (7 to 12 months)_

The baby turns not only his head but his upper torso toward interesting sounds (quiet, conversational voice). He awakens when his mother talks to him, and becomes quiet at the sound of her voice. He responds to familiar sounds within the room.

His responses should be prompt — delayed reaction may indicate a possible hearing impairment or delayed mental or motor development. Persistent turning of his head to the same side, regardless of where the sound is located, suggests a hearing problem.

Testing should be at a level horizontal with the child’s ear while he is in his mother’s lap. A variety of sounds can be used. Some should be soft rustling noises, others should be quiet rattling sounds. Speech should be at a very quiet level. Movements or shadows which serve as visual cues to the onset of the acoustic stimuli must be eliminated, but the child’s attention should be attracted by visual means before and during presentation of the acoustic stimuli. However, his attention should not be so firmly engaged that he disregards an acoustic stimulus when it is presented. Testing may be conducted with two persons, one of whom focuses the child’s attention and observes his responses, while the other presents the sounds. The two-person technic is presented in a film available from the Maryland Department of Health. Testing may also be done by one person who conducts both activities.

_Twelve months (11 to 15 months)_

The baby responds to a number of different sounds, often with different reactions, and seems to recognize them as different. He jabbers in responses to a human voice, is apt to cry when there are loud frightening noises, quiets down when he hears his mother. He demonstrates understanding of some words by
pointing to or looking at familiar objects upon request, he vocalizes with jargon as he plays, tries to imitate simple words, and has a one- or two-word vocabulary.

As the child matures, he becomes better able to inhibit his reaction to external stimuli. He can be so attentive to his own interests that sounds may not distract him even though his hearing is normal. Testing should be carried out with familiar objects and by saying the word quietly, without general conversation or instruction. He may respond better to his mother's voice than to the voice of an unfamiliar tester.

Testing communicative abilities at this age requires not only a determination of hearing acuity, but also of the child's ability to comprehend or understand sounds as symbols. The absence of ability to understand speech may not be indicative of abnormality. Nevertheless, if the child does not appear to respond to speech as having meaning, further inquiry should be made, especially about the use of verbal stimulation at home, parental attitudes, expectancies, and the like.

_Eighteen months_

The child is beginning to pay attention to, and identify, sounds which come from considerable distances. The technic for hearing testing that was useful at an earlier age because the child could be distracted by a noise is no longer as useful now that the child is learning to control his reactions to environmental noises. The human voice is still the most effective stimulus.

Increasing emphasis can at this age be put on testing language and speech development. The child has greatly increased his vocabulary and the complexity of his speech. He will follow directions such as "give it to mother" and may identify his nose and other parts of his body upon request.

At this time, his production of sounds may be inaccurate, but this characteristic cannot be used diagnostically, for most children have similar difficulties. The rhythm and inflection of his voice, however, may offer significant diagnostic clues about his ability to hear. Children with severe hearing impairment or with slowly developing auditory perception do not learn to
imitate rhythm, inflection, and intonation patterns. Thus they fail to progress from random babbling to the stage where their vocalizations, even though unintelligible, sound like speech.

Two years

A normally developing child can follow verbal commands containing two components, without the aid of gestures — for example, “Pick up the block and give it to mother.” He can identify familiar objects when they are named and can name some of them himself. He initiates sentences of two or more words which are meaningful, and learns a new word with little difficulty.

Three years

Pure-tone audiometry can be used at this age, even without the special technics of play audiometry which reward the child each time he responds to a tone. Usually, it is possible to teach three-year-old children to make a hand signal when they hear the pure tone. Play audiometry, of which there are many different special technics, attempts to condition the child to respond to visual clues associated with certain sounds.

By 36 months the child should be using speech and language socially. If he jabbers and gestures, rather than using words, hearing impairment may be suspected and a complete audiological evaluation is indicated. Additional evaluation by medical specialists, psychologists, and speech pathologists may be required in order to differentiate between hearing impairment and other impairments which might be the cause of his inadequate speech.

Three to five years

At the later stage of preschool years, audiometry can be carried out in routine fashion. At this age level, the child may have difficulty in articulating some sounds accurately, but he improves rapidly in the accurate production of sounds. His language expands greatly in vocabulary and grammatical form.

At present, there are no simple screening tests for determining whether maturation will solve the child’s speech and language problems.
Section III:

DIAGNOSIS AND CAUSES

Objectives

The objectives of diagnostic evaluations for communicative disorders parallel the objectives of most diagnostic evaluations in that they determine, for each child:

1. The nature and severity of the problem (differentiating simple, slower development from pathological states).
2. The etiology of the impairment(s).
3. What measures can and should be taken to remedy the impairment or to reduce its handicapping effect.
4. The plans for treatment, care, training, management, and follow-up; the immediate and future needs for medical, psychological, social, educational, and vocational services in addition to specialized speech and hearing services.

Because the evaluation should lead to the provision of comprehensive services, it should not be limited to examinations by one professional discipline. Further, proper evaluations may require that the child be observed over a period of time in a program for "diagnostic therapy" or "prognostic therapy." If so, he should continue in this program until (1) his responses are no longer an artifact of the test situation, and (2) his ability to learn can be established.

Examination and Evaluation

Medical aspects

The medical examination and evaluation assess:

1—The child's general health
DIAGNOSIS AND CAUSES

2—The condition of the peripheral and central nervous systems and the musculoskeletal systems involved in speech, hearing and language

3—The relationship of such conditions as those listed in Table II to the communicative disorder

4—The results of any previous medical and surgical treatment related to the communicative disorder

Clearly, different medical specialties may be necessary, depending upon the nature of the problem. For instance, the child with articulation defects may have a malocclusion which requires dental evaluation and treatment before speech therapy can be successful. Or the articulation problem may be related to a dysfunction of the central nervous system, involving auditory impairment; or may be associated with other developmental delays, or with cleft lip/palate, cerebral palsy, or mental retardation. Thus the range of appropriate medical specialists who may be required is further expanded.

The medical disciplines that should be represented in a communicative disorders program are otology, pediatrics, psychiatry, neurology and surgery. If the child needs an evaluation of laryngeal function or an interpretation of brain wave activity in response to acoustic stimuli, or radiography of the movements of the articulatory mechanism, the services of additional specialists will be required.

Nonmedical aspects

The audiologist and speech pathologist have a primary responsibility in the diagnostic evaluation of children with communicative disorders. Psychologist, nurse, social worker, physical therapist, occupational therapist, and educator can all make contributions to the nonmedical evaluation:

1. To assess the child's speech, hearing and language development, including his general behavioral development.
2. To determine his potentials for further development.
3. To ascertain the family and environmental influences which affect the child.
4. To determine the best treatment plan.
Diagnostic Procedures

It would not be economically feasible or professionally necessary for every child to be evaluated by every discipline. Preliminary evaluation of the child's problem and his needs should be the joint responsibility of a medical specialist and a speech and hearing specialist.

A diagnostic clinic on communicative disorders should be composed of a core group to which additional consultants are added, as needed. This core group should comprise the pediatrician, audiologist/speech pathologist, otologist, psychologist, nurse, and social worker.

Speech and language

In the diagnostic evaluation of speech and language, the examiner attempts to determine a prognosis by assessing not only the causes of the impairment, but the present status of the child's communication skills, his ability to change, and his potential for learning. Speech and language specialists use a wide variety of tests. In general, these tests have some characteristics in common:

1. Speech is observed as a spontaneous utterance and also in imitation of the examiner. A description is noted of such characteristics as
   - The amount, kind and intelligibility of speech
   - The accuracy of the phonetic elements (consonants and vowels)
   - The quality of phonation, resonance and intonation
   - The visible components accompanying speech production
   - The amount and kind of stress accompanying speech

2. An examination is made of the breathing mechanism, the larynx, pharynx, soft palate, tongue, dental structure, and lips. The purpose of this examination is to assess the structure and its functioning in the production of speech. The speech diagnostician must have a thorough knowledge of normal anatomy and physiology in order to judge the
significance of deviations which might be apparent. The findings on speech mechanism should be compared with evaluations of the child’s general sensorimotor development.

3. Language proficiency is assessed to determine:
   — The amount and kind of information the child can comprehend
   — The child’s ability to imitate linguistic and nonlinguistic patterns
   — His ability to retain verbal material in a systematic order
   — His ability to formulate verbal language

4. An evaluation is made of the amount and kind of stimulation and motivation which the child receives from his parents, siblings, peers, and others.

Hearing

One of the tasks in the evaluation of communicative behavior is to test the child’s hearing. Initial testing of infants and very young children has already been discussed. A battery of audiological tests is more likely to result in a meaningful diagnosis than is a single test. These tests are designed:

1—To find the threshold of hearing (the weakest intensity at which the child can hear specified frequencies).

2—To determine the child’s speech reception ability (how well he hears speech).

3—To establish, on the basis of responses to controlled acoustic stimuli, evidence which may help to distinguish among disorders of the middle ear, cochlea, eighth nerve, or central nervous system.

4—To establish evidence which may help to differentiate hearing impairments from other kinds of disorders.

The results of these tests can be quantified in terms of physical measurements of the acoustic characteristics of the stimuli. Thus, audiological tests can be used to evaluate the before and after effects of treatment.
Causes

The causes of hearing impairment can be identified more easily than can the causes of speech or language difficulties.

Speech (including voice) defects may be causally related to physical anomalies and deficiencies, such as cleft palate, malocclusions, endocrine dysfunctions, central nervous system dysfunctions affecting the sensory and motor systems, and developmental delays. However, these conditions, and others, may be present without significant effect on speech production. Conversely, speech may be defective without other observable disorders.

Language problems may be associated with autism and other psychiatric disorders. Emotional problems, even at less than a severe level, can be a barrier to normal language development. Mental retardation, inappropriate stimulation, and inadequate motivation also contribute to language impairment. Children with multiple handicaps, including deafness, may be deprived of normal opportunities for learning language.

Some speech and language problems appear to be causally related to those environmental factors frequently referred to as "cultural disadvantages." If the child's speech and language problem can be identified as part of the speech and language pattern indigenous to his area, a remedial approach is required that will take into account not only the individual, but also the group within which he functions.
Section IV:

PREVENTION, TREATMENT,
AND TRAINING

Prevention of Communicative Disorders

The primary phase of any comprehensive health program is the protection of the individual before illness strikes or damage occurs. The following measures can help to reduce the occurrence of conditions that are frequently causally related to communicative disorders.

1. Good maternity care to reduce the incidence and the consequences of complications of pregnancy. Of particular importance are the avoidance of infections in the mother during the first trimester of pregnancy, especially syphilis and rubella; early recognition of fetal-maternal blood factor incompatibility; the prevention of conditions causing or predisposing to premature birth, and the avoidance of ototoxic drugs during pregnancy.

2. Good medical and nursing attention during labor — at the time of delivery and during the neonatal period.

3. A comprehensive program of health services for children throughout infancy, the preschool and school-age periods to detect, diagnose and treat those diseases and conditions which could lead to hearing, language and speech impairments.

The prevention of conditions which could lead to communicative disorders requires that case finding, diagnosis, and treatment for language, hearing, and speech disorders be conducted at early preschool ages. A preventive program requires that the child’s performance be evaluated repeatedly over a period of
time, to determine whether his rate of progress is within normal expectations.

The secondary stage of prevention, to limit or overcome the handicap, calls for (1) successful diagnosis and medical treatment of the disease or condition related to the impairment of hearing, language, or speech, and (2) provision of special training and rehabilitative measures for the child at home as well as in preschool and school programs.

General Health Supervision and Guidance

Children with communicative disorders have the same general health needs as other children. Therefore, general health supervision should be provided by the child's physician, in child health conferences, by school health services, hospital clinics, or other community resources. To keep children well and to promote desirable attitudes toward personal health calls for a systematic plan incorporating these elements:

—Periodic health appraisal, including a medical and developmental history and physical examination.
—Preventive health measures, including immunizations.
—Consultation with the parents and the child about health problems.
—Treatment and follow-up for illnesses or poor health conditions.

Specialized Medical Supervision and Treatment

1. Hearing impairment — Medical treatment of a hearing problem has two chief objectives: (a) to eliminate and prevent ear disease or conditions leading to hearing impairment, and (b) to preserve hearing while controlling or arresting the progress of an ear condition.

While many ear conditions subside with a minimum of medical treatment, others require the specialized medical care of qualified otologists with well-equipped clinical and surgical facilities. Middle ear surgery is both a preventive and a treat-
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ment measure. Reconstruction of the conductive mechanism, surgical treatment of diseased tissue in the tympanic cavity and the mastoid, and repair of the tympanic membrane are procedures which have made "conservation of hearing" a meaningful health program.

2. Other conditions — The specialized medical services for children with problems such as cleft lip/palate and cerebral palsy are discussed in Guides published by the American Public Health Association covering these conditions.

The medical component needed in the treatment of children who stutter is not always easily recognized. For some, but not for all, psychiatric treatment is indicated. Speech therapy for the very young child who stutters is rarely carried on directly with the child, but is generally conducted with, and through, the family. Medical consultation with the family is therefore an important part of the child's total health assessment.

Children with voice disorders may have nodules, polyps or other conditions affecting the function of the larynx. A laryngological examination should be required before speech therapy is given. Whether or not surgical treatment is provided, there should be medical consultation with respect to the therapy plan, including an evaluation of the result of the nonmedical treatment on the basis of repeated observations of the condition of the larynx.

Training for Communicative Skills

In many respects the case finding, diagnoses, medical treatment, and organization and administration of resources for communicative disorders are not significantly different from those for other handicapping conditions. Indeed, diagnostic clinics for communicative disorders might well be set up as a special part of a broad program for the diagnostic evaluation of children with multiple handicaps.

The program of providing training in communicative skills should be coordinated whenever possible with treatment programs conducted by other disciplines, especially physical therapy and
occupational therapy. Such cooperation requires discussion of the goals for each child and a mutual understanding of the ways in which each discipline can contribute toward such goals.

Training procedures differ for each kind of communicative disorder, as well as for each child, and it is not possible to discuss treatment in detail in this Guide. There are, however, some general statements which can be applied to the different disorders.

1. **Parent education** — Parent understanding and cooperation are vital to the success of the rehabilitation program. Parent counseling, demonstrations of therapy procedures, and supervision of the parents' efforts to aid their child in communicative skills should be undertaken. A program of parent education may be carried out using the material produced by the John Tracy Clinic* that was designed especially for use with children who are just developing language and speech. This material, when incorporated as part of a planned program, can be the focus of continuing consultation with parents. For children with severe hearing impairments, the John Tracy Clinic continues to make available a Home Correspondence Course.

2. For the very young child, training must be concerned with improving his perceptual abilities. He must be helped to become aware of stimuli, to discriminate among them, and to respond appropriately to them. Parents should talk to him in short, meaningful sentences about those characteristics which identify his environment — its size, shape, color, temperature, distance, texture, sounds, and so on.

3. Stimulation should be given to all senses, but during specific training of the auditory sense, care should be taken that stimulation of other senses does not interfere with his learning to respond to auditory stimuli. *Auditory stimulation,* of course, should be afforded in such a way that the child attaches meaning to what he hears.

4. **Speech training** for the very young child includes helping him gain voluntary control of his speech mechanism. Activities

* 806 West Adams Boulevard, Los Angeles, Calif.
such as sucking, swallowing, chewing and blowing involve the same muscles and structures that are involved in speech. Children who lack proficiency in these activities are not likely to succeed with therapy procedures aimed solely at speech production.

Speech training for those who can hear consists primarily of auditory stimulation. The child is encouraged to imitate a model and to compare his own speech production with what he hears. For those who do not hear, both speech and language training are far more difficult. The deaf child must learn to use visual and tactile clues to help him in producing speech. If he is able to use the amplification of a hearing aid, he will have less difficulty achieving phonetic accuracy and reproducing the normal intonation and rhythm of speech.

5. Sound amplification may be obtained by the wearable hearing aid or the table model aid. Children can wear hearing aids almost as soon as their impairment is discovered, and medical specialists have determined that there is no contraindication to their use. Some audiologists recommend aids for children at six months of age. Deciding whether a hearing aid will help an infant or very young child and which aid will be most appropriate must be left to a professionally qualified audiologist who observes and evaluates the child’s behavior during trials with different hearing aids.

When the child is old enough to make voluntary responses, a hearing aid can be selected on the basis of clinical tests which determine, among other parameters, how well speech is heard and comprehended under conditions of controlled noise levels.

Air conduction hearing aids require individual ear molds for the ear in which the receiver is to be worn. A properly fitted ear mold is needed during the time that different aids are being tried. For small children, a foam type is recommended. The material is strong but soft, keeps its shape, does not break, and will not cut or injure the ear during active play. Ear molds should not be fitted in an ear which is infected or discharging.

Instruction for the family in the use and care of the hearing aid is essential to insure its successful use. Orientation for all
new users and their parents should offer specific instructions on how to wear the aid; how to prolong its life and performance by proper care; when to use it, and how to get the most satisfaction and enjoyment from it. Auditory training, often preceding actual selection of the hearing aid, plays an important part in making the device a good investment.

In addition to hearing aids worn by the individual, another source of amplification is the table model amplifier. Most of these table models have better acoustic response characteristics than wearable hearing aids. Such high fidelity instruments permit maximum utilization of residual hearing during auditory training and formalized language training periods.

6. Auditory training — Even with a hearing aid, the child must be trained to recognize sounds if he is to get the most out of the residual hearing he may have. Early auditory training exposes him to different kinds of sounds, such as the characteristic noises of the home or street, musical sounds and rhythms, and speech sounds in stories and conversations. This helps the child to recognize, interpret, and distinguish among them.

Auditory training should be simple at first; gradually, more complicated conversations and group discussions, mixed sounds, and unexpected sound situations may be introduced. Much auditory training can be and should be done informally from the very earliest months by the child's family at home. Professional guidance and supervision are available to the family from speech and hearing clinics in universities, hospitals, community centers, or through health and educational agencies.

7. Children with hearing impairments should learn to make use of the visual clues to meaning that may be afforded by the speaker's facial expressions, lip movements, and gestures. Speech reading, or lip reading, as it is frequently called, is a skill learned more quickly by some persons than by others. Special training in special reading is justified, even though some persons become adept with very little, if any, instruction.

8. Language skills are particularly difficult for children who are deaf to acquire. They need specialized help in developing
vocabulary, learning grammar and syntax, differentiating between applications of words with more than one meaning, and understanding and using verbal abstractions. Children with handicaps other than hearing impairment may be deficient in language skills, but the problems of teaching them are less complicated.

Children who have a central nervous system dysfunction which results in language impairments also pose special problems. Such children need a total educational program, rather than an approach to communication skills limited to improving the production of speech.

The management of a training program for communicative disorders and the implementation of program procedures should be the responsibility of persons with professional training and experience in speech pathology and audiology. Specialists with professional training in programs for the preschool deaf should be utilized in the program for early language development. These persons may be considered language development specialists and thus could be employed in a personnel category different from that for “teachers of the deaf.” The latter category may suggest incorrectly an overlap between the responsibility of health agencies and educational agencies.

If the educational agency conducts a program for preschool deaf, the health agency should provide those aspects of treatment not covered by the educational program.

Training programs for communicative disorders may be a part of other training or care programs, such as PROJECT HEAD-START, day care centers, nursery schools, and the like. For such programs, the speech and hearing specialists should provide professional assistance and consultation to the teacher of the group. They would offer advice on how to adapt group and individual activities to achieve and reinforce communicative skills, providing special materials and equipment for this purpose. They would also conduct inservice training of the leadership.

While there are few programs that provide home training, there is general agreement that hearing and speech training should be carried out in the home when the child is very young.
Parents must be instructed, motivated, and given emotional support, which will involve personnel who are acquainted with the family and are accepted within the family’s social and cultural milieu. Public health workers (nurses, social workers, aides, or neighborhood health workers) who may already be visiting in the home can be delegated to carry out parts of this program, although the planning for periodic review and evaluation of the child’s progress should be the responsibility of a person professionally qualified in speech pathology and/or audiology. The use of other personnel to accomplish some program tasks is encouraged provided that such use is not a substitute for the services provided by professionally qualified specialists.

Mental Health, Guidance, and Social Services

The emotional and adjustment problems which children with communicative disorders may face are varied. Many of them will require surgery, extended medical treatment, hearing aids, or other types of special services. The ability of a child to make successful adjustments to his problem will depend to a great extent on his family’s attitude about it. The severity of his handicap may depend more on his feelings about it than on the nature or degree of the handicap itself, and the most important single factor determining these feelings is likely to be the attitude of his parents. When parents come to recognize possibilities for the child, their resourcefulness in carrying through a constructive program can be greatly increased.

The establishment of healthy individual and family attitudes may be approached in various ways. Parents need an understanding of normal growth and development and some insight into how growth and development will be affected by their handicapped child’s special problems. Individual conferences of professional workers with parents, parent group discussions with professional leadership, or informal home visits by professional workers are all helpful ways of giving needed support and guidance. The warm, ongoing interest of professional people in whom the family has confidence (physician, speech and hearing
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specialist, public health nurse, social worker, teacher) is a major factor in successful rehabilitation.

Social, financial and environmental difficulties may present serious problems to some families. Social services, acting as liaison between the family and the other agencies whose services are needed, can help maintain continuity of care and treatment for the child. They can exert a stabilizing influence by interpreting these services to the child’s family and by helping them to arrive at satisfactory and acceptable solutions to many of their problems.

Education

Whenever possible, children with communicative disorders should be educated in their own communities with other children who do not have such handicaps. However, children with severe hearing impairment whose speech and language is very deficient may require more intensive training than that available in regular classrooms. Placement in a special class, in a special day school or residential school, may be necessary to give them the maximum benefit of specialized training and care. The decision about school placement is one which can best be made by a team of health and educational specialists who have evaluated the child, his problem, and his potentials.

Preschool children with communicative disorders should be given learning experiences both at home and in groups such as nursery schools, child development centers, day care centers, and PROJECT HEADSTART programs. Joint planning on the part of the health and education agencies can insure that the preschool and school programs complement each other in providing therapy that is continuous and is progressively adapted to the child’s abilities.

The educational problems of multihandicapped children — for example, those who are deaf-mentally retarded or deaf-blind, or whose language problems are related to other handicaps due to cerebral dysfunction — are so complicated that few specialists are prepared to cope with them. In some states, the program for
special education in the state educational agency can provide a special tutor or may send the child to another state for training not otherwise available.

Congress has established a National Technical Institute for the Deaf to provide technical training at a level beyond the secondary school. This institute, part of the Rochester Institute of Technology, was established in an attempt to provide young persons who are deaf with special educational opportunities not previously available anywhere in the United States.

Vocational Aspects

Prevocational counseling should be available to every child. Prevocational education involves, on the part of the child, learning good work habits and the meaning of time, developing the power of concentration, and gaining some experience in competition. During the early school years, the child's special talents should be discovered and developed and his limitations recognized. Before the high school years, a preview of vocational possibilities and interests should be discussed with him and appropriate adjustments should be made, where possible, to direct his talents toward a satisfying vocation.

During the prevocational years, close touch should be maintained between school personnel and vocational guidance services. Trained vocational guidance counselors are provided by many special schools, some regular schools, and certain official and voluntary agencies and employment services. The state vocational rehabilitation agencies will provide help to children with handicaps in communicative abilities, especially to those with severe hearing impairment.

Summer Programs

A summer program is one in which all the child's activities are related to the main objective of helping him become effective in communicative skills. The program can also use this ideal time for accomplishing needed medical and dental treatment which requires follow-up observation and care. Summer pro-
grams may be recreational, but recreation should not be the sole objective for children with communicative disorders. The summer program may be concerned with the training of parents to help their children. When associated with a university, it provides opportunities for training students in speech pathology and audiology. A summer program for handicapped teenage youth held on a university campus affords an excellent opportunity to encourage class members to consider attending college.

As yet, no one type of summer program has been shown, in a cost-benefits analysis, to be superior to others. Prevailing types include both day classes and residential programs. Children may live at home or in foster homes while participating in day classes or in an enriched program conducted at a clinical center; or they may be housed in dormitories or enrolled in a special camp.

In selecting children for the summer program, a number of factors seem significant. One of these concerns the degree to which the parent or school or another program will take responsibility for transferring the achievements at the camp into the child's daily communicative behavior. A summer program is but a part of the child's learning experience, one that must be integrated with his other experiences if he is to obtain full benefit from the summer program.

Selection of candidates should be made on the recommendation of professional speech and hearing specialists, who will consider, among other factors, the nature and severity of the handicap and the kind of therapy required.
ORGANIZATION AND ADMINISTRATION

Guiding Principles in Program Planning

Certain guiding principles are generally applicable to the development of services, without regard to the source of funds, administrative direction or scope of the plan, or diagnostic category of the handicap. Some of the more important principles may be summarized:

—Planning must be based on a reasonably accurate knowledge of the extent, distribution and nature of the handicapping condition in the community.

—Existing agencies, facilities and services should be fully used in the implementation of special program activities. There should exist, or be established, sound programs in health services, education, social work and vocational guidance.

—Qualified professional leadership should set reasonable standards for personnel, facilities and services; and should select the type of program that best suits the local situation and has the greatest potential for public benefit.

—The program should focus on persons rather than on handicaps and should be so organized that the basic as well as the special needs of the children are adequately met.

—The program should meet the needs of both rural and urban communities.

—Provision for demonstration and for evaluation of the results should be an integral part of the service program.
The following discussion illustrates how some of these general principles apply to the special problems of organizing services for children with communication problems:

1. Determining community needs

A first step in setting up a program for communicative disorders should be to determine community needs and resources. Reasonable figures for the prevalence of communicative disorders might be estimated for the school children in a given area. However, the effect of the rubella epidemic of 1964-1965 may distort the prevalence figure for a given area.

An estimate of the speech and language disorders in preschool children should be higher than that for school children. If the estimate covers a "poverty area," the choice of criteria for language disorders — as different from dialectal problems — will be a significant factor.

For a community to assess its needs, it should take an inventory of what kinds of services are available for children with communicative disorders and what additional services are already being planned. A determination should be made as to (1) which of the various services that constitute a comprehensive health and rehabilitation program are actually available to the community; (2) which services must be supplemented; and (3) which services may be made available on a regional or central basis.

A special survey to obtain information of this sort may be necessary, although considerable information may be obtained from a study of the reports and records of existing community services. Information on the following items would be of particular importance in pointing up areas of unmet needs:

—Difference between the number of known cases of children with speech, language and hearing impairments and the estimated prevalence

—Average age of first diagnosis of the communicative disorder compared with the estimated age of onset

—Severity of impairment at the time of first recognition
—Number of children found to have a speech, hearing or language problem on entry into school which had not been recognized or treated in the preschool years
—Number of school children who have failed audiometric screening tests compared to the number receiving follow-up care and treatment
—Occurrence of preventable types of hearing impairment
—Number of children who need, but have not been provided with, hearing aids or sound amplification
—Estimated number of children who need special services compared with the number actually receiving them
—The number of children receiving existing services in relation to the number of professional personnel
—The eligibility requirements for services currently available

2. Integrating and coordinating community services

A special program of services should be integrated with existing health, education and related services for overall child care, for example:
—A local public health program with its maternity, infant, preschool, and school health services
—Hospital facilities and clinics
—Mental retardation and child development evaluation centers
—Day care centers, nursery schools, PROJECT HEADSTART programs
—School programs for children with special needs
—Community groups and organizations, both official and voluntary, with interests in social, educational, health, or vocational problems of children

Where it is not feasible to develop a comprehensive communicative disorders program locally, several communities should cooperate on a county, regional, or state basis. Persons working for community coordination will have to decide which services
can be organized effectively on a regional basis, and which can be made available locally. Services for the program, to be of greatest use to the child, may be grouped as follows:

**SHOULD BE LOCAL**
- Case finding, including screening programs
- Education
- General health supervision
- Recreation
- School health and counseling services
- Social work and mental health guidance
- Speech, language, and hearing therapy
- Vocational guidance

**MAY BE REGIONAL OR STATEWIDE**
- Comprehensive diagnostic services
- Professional and inservice training
- Research
- Residential education
- Specialized otologist and audiologic services
- Speech and hearing consultation

Where several agencies or groups are concerned directly or indirectly with providing services for children with communication problems, their varied interests deserve full recognition. Cooperative arrangements among them are essential. In the planning and administration of a local communicative disorders program, one agency should accept the responsibility for coordinating community resources, professional disciplines, and special services into an integrated though loosely affiliated whole.

3. **Developing a plan**

The agency assuming responsibility should, after joint planning meetings, write a specific plan for the program, to be approved by participating groups and individuals. This plan should describe

- The purpose and objectives of the program
- The scope of the program, geographic area, age range, and services to be provided
Estimated number of children to be served, and the kinds of communication problems they may be expected to have

Procedures to be followed for providing services and for insuring integration with existing services provided children with other handicaps

Sources of funds, and proposed budgets

Methods of establishing eligibility, fees and rates

Administration of the program, including channels of authority, table of organization, and procedures for inter-agency coordination

Role of advisory committees, participating agencies, and parent groups

Role of each kind of specialist involved

Existing services, facilities, and programs, and the requirements for their expansion

Numbers, types, and qualifications of personnel needed

Provisions for professional and inservice training

Methods of record-keeping, program evaluation, and reporting

Research studies and methods of carrying them out

Geographic Factors in Organizing Services

In some programs it will be necessary to bring children to a central clinic, even when travel distances are great. The use of mobile units, fully equipped with testing instruments and accompanied by competent professional staff, may be necessary to take services to the child. For some rural areas itinerant clinics, staffed by professional personnel from a regional or state center, will be required. A satellite speech and hearing center may be established, with less than comprehensive services but with a close professional and administrative relationship to a main center which meets all the qualifications for comprehensive diagnosis and treatment.

After children have been referred to the main center for diagnosis and specialized treatment, a mobile unit, or an itinerant team of specialists who make periodic visits to the satellite
center, can provide follow-up consultation. Much of the responsibility for continuing medical treatment and speech and hearing therapy will have to be carried by local physicians, local speech and hearing specialists, classroom teachers, public health nurses, and parents under the supervision and guidance of specialists at the main center.

For very young children a home training program should be developed. This program should provide instruction for the parents, so that they can be more effective in helping their child. Workshops for parents should be supplemented by visits from speech and hearing specialists, or from other public health workers who participate in the communicative disorders program. Literature, correspondence course material, and audiovisual equipment should be made available to the family.

Educational planning will depend to a great extent on where the child lives. Usually, special classes and day schools, as well as residential schools, are more easily accessible to children who live in urban areas than to those who live in rural areas. Children with mild or marginal hearing loss may be able to adjust to the regular school program, particularly when the teacher is given proper guidance and equipment. For children with more severe disability in hearing, language or speech, admission to special facilities in a regional or metropolitan school is sometimes possible. However, this type of placement becomes difficult and less desirable when foster care away from home is necessary. Residential education for the child with severe hearing impairment may be the best resource.

In some states, camps or other summer training facilities have been established for children who can benefit from intensive special help. Here, qualified teachers and trained therapists work with selected children on an intensive basis. Such intensive short-term programs are especially useful for children living in areas where speech and hearing services may be limited.

Advisory Committees

Advisory committees can make a significant contribution to a
program in guiding its establishment and operation. One desirable pattern establishes a single general advisory committee relating to programs for all handicapped children, regardless of diagnosis, with a special advisory or professional subcommittee for each diagnostic category.

A general advisory committee is often particularly helpful in putting professional recommendations into action. Membership should be broadly representative of agency and community interests, comprised of leaders and key persons designated by business groups, professional societies, parent and lay organizations, official agencies, and universities. This committee might contribute significantly to the program, particularly by

- Assisting in the integration and coordination of activities of the various state and community agencies and professional groups interested in children with communication problems
- Developing methods of public education that will encourage a wholesome interest in the program
- Mobilizing support in obtaining needed legislation and in meeting budgetary requests

Membership in the special advisory subcommittee for communicative disorders should be drawn from persons of demonstrated knowledge, ability and judgment in their fields who will give the time required for this work. One or more representatives might be selected from each of several professional backgrounds, such as

- Audiology-speech pathology
- Nursing
- Otology
- Pediatrics
- Psychology
- Social work
- Special education
- Vocational rehabilitation

The functions of this subcommittee may be outlined as follows:
ORGANIZATION AND ADMINISTRATION

—Defining standards for case finding and for clinical services
—Establishing criteria for such services as admission to clinics or placement in special classes
—Coordinating existing and proposed programs in the state
—Developing a local professional training program
—Establishing the minimum qualifications for program personnel
—Evaluating program effectiveness
—Developing research studies

Community Education

Community support for a program may take several forms. It may take the form of giving help or advice in developing a good plan of organization; participating directly in giving service; or providing financial assistance. In order to channel community interests into constructive projects and services, there should be a plan for community education which goes beyond the educational effort related to case finding referred to previously herein:

—Use material currently available in pamphlet, leaflet, poster, film and filmstrip form. State departments of health and education, the Children's Bureau, national voluntary agencies, and certain commercial groups prepare such information.

—Make a continuing coverage of local activities and special occasions for distribution or placement of appropriate educational material. For example, exhibits can be displayed in local libraries and county fairs; posters for fund-raising campaigns can be prominently displayed in public places and official buildings; editorials and articles, even advertisements, can be placed in local newspapers; pamphlets and fillers can be submitted for distribution at clinic sessions, meetings of parent-teacher associations, service organizations, church clubs, and the like.

—Invite active participation in program activities by community groups and leaders. Solicit the aid of young people who can provide assistance in the care of handicapped
children. In this connection, information about an organization, TAMS (Teen-Age Monitors), is available from the Children’s Rehabilitation Unit, University of Kansas Medical Center.

Personnel

A communicative disorders program requires the services of the several disciplines listed previously, each discipline providing the services for which it has a professional responsibility. Each of the persons from these disciplines who is involved in the program should meet the established standards for professional qualification in his own field. The range of specialists needed precludes a detailed discussion of the role and qualifications of each.

Specialists in speech pathology and audiology have a key role in the development and extension of services for children with communicative disorders. To meet the established standards of their professional association, speech pathologists and audiologists must have a master's degree in a prescribed curriculum, including clinical experience. They must also pass a qualifying examination and complete a year of successful employment. Certification is made by the American Speech and Hearing Association to the individual so qualified upon application. This Association is now in the process of accrediting training programs in colleges and universities. State departments of education vary in their requirements, but most of them have adopted equally high standards or are striving to meet professional certification standards. State departments of health have uniformly required that their speech pathologists and audiologists be eligible for professional certification.

The number of speech and hearing specialists to be employed in a local program will be determined in part by the availability of comprehensive services from other health, welfare and educational agencies. The determination should be based, too, upon the recognition that speech and hearing specialists are not only an integral part of the total health service program, but they also have a responsibility in all phases of the special program.
These speech and hearing specialists develop standards and procedures for case finding, train personnel for screening and other case-finding procedures, interpret the results, and make professional judgments concerning future directions and approaches to case finding. They participate in the evaluation of the developmental status of children served by the agency, in addition to conducting the speech and hearing diagnostic evaluations of handicapped children; they provide specialized follow-up therapy and training for each child’s communicative disorder; they participate with other disciplines in providing these services; they evaluate the program and conduct studies and training to improve its cost effectiveness. The scope of their activities emphasizes the fact that a simple ratio of the number of handicapped children to the number of therapists is not an adequate measure of specialist personnel requirements.

In addition to making effective use of other professional personnel in providing services for children with communicative disorders, the program may use nonprofessional persons. These persons may be delegated tasks which do not require professional training, but they should not be used as substitutes for professionally qualified specialists in any field.

One of the most effective placements of nonprofessional persons has been in hearing conservation programs, where screening tests are conducted by audiometric technicians who function in accordance with procedures established by a qualified audiologist. Nonprofessional persons have been successful in testing school-age children. For preschool-age children, too, experience would indicate that subprofessionals can conduct screening tests successfully. Considerable doubt exists, however, about the value of training such persons to conduct screening tests on the newborn and on infants. Such testing may be more effectively carried out by professional persons as part of a pediatric or developmental evaluation.

As yet there is insufficient evidence from studies to assess the value of nonprofessionals for conducting screening tests for speech and language. However, the fact that even untrained parents are able to perceive that their child “doesn’t talk like others” offers
one argument that the nonprofessional may administer such screening tests effectively. In geographic areas where cultural differences are reflected in speech and language, it may be imperative to train nonprofessional persons for case finding. Whatever use is made of these workers, they must be under the supervision of a professionally qualified specialist.

Extensive use should be made in communicative disorders programs of students who are planning to be speech pathologists or audiologists. These students can be employed as speech and hearing assistants or as trainees under the supervision of a qualified professional person. In such positions they will be able to practice their skills within a total health service program.

Program Evaluation

Evaluation of a communicative disorders program is a process by which resources, efforts, and accomplishments are measured. Evaluation can take various forms — whether a study made by professional leaders, an appraisal by citizen groups, or a self-study by the staff. Because communities vary so greatly from one to another, no one method of evaluation would be universally applicable to all community programs. Nevertheless certain basic principles of program evaluation can be said to apply to any program, regardless of its size or scope.

The following discussion points up some of the principles and facts which are necessary as a basis for sound program evaluation:

1. Plans should be made during the early stages of program development for demonstrating its effectiveness. The scope and objectives of the program must be made clear, and the methods of reporting and recording that will be used to evaluate the effectiveness of the program must be related to these objectives.

2. The criteria of success must be valid and specific. Some program activities lend themselves to direct measurement — for example, the number and age distribution of children, cost of services, or clinic caseload, by kind of impairment. A measure of the quality or accomplishments of a service usually must be arrived at indirectly. Evidence comparing before-and-after performance will be significant.
3. To find such evidence, the overall program may be viewed in small units, each of which makes a specific contribution (diagnostic services, school or preschool screening program, audiology center, special training, community education, remedial programs, etc.). Goals and criteria of success can be made more specific for each unit than for the program as a whole. Moreover, each unit may require a different approach for effective evaluation.

4. The comparison of baseline information with that collected at periodic intervals will give evidence on individual, group, and program gains. Basic data of particular significance are:

- Numbers and ages of children with different kinds of communication problems in the community.
- Type, extent and severity of the condition as found upon diagnostic study; where and by whom the diagnostic appraisal was made, in each case.
- Type of treatment, training and school placement recommended after diagnostic appraisal.
- Estimated cost of specific program activities, such as average cost of diagnostic study or average cost of special services.
- Availability and use of other community resources for specialized help.

5. Precise measures should be used in the evaluation wherever possible; the degree of precision, however, will vary with the factor being measured. Where precise measures are not possible, subjective evaluation of facilities, services, personnel, and program development should be made. This evaluation might best be made by a professional leader not on the staff.

6. A sound evaluation attempts to determine not only the extent of program effectiveness but also the reasons behind successes and failures.

7. A systematic study of individual case records may give a more reliable picture of the actual accomplishments and end results of the program than a statistical report of average data.


Section VI:

RESEARCH

Nature and Scope of Activities

Research laboratories and university centers have conducted considerable research related to the development and the disorders of speech, language and hearing. Some of the studies have had a direct influence on services; others have become part of the accumulating body of knowledge on which the professional person bases his judgments.

Public health agencies, and others primarily responsible for providing services, should assume a responsibility for research related to their services. In assuming such a responsibility, the agency should:

— determine the nature and scope of its research endeavors,
— organize a staff to carry on the research,
— allocate a portion of its budget for research,
— seek funds for supporting research from federal and other agencies.

The nature and scope of the research activities which are well suited to a public health, education, or community agency may be divided into several groups:

— Studies based on large numbers of children, such as studies of trends in incidence and prevalence of communicative disorders related to epidemics and other health conditions, including environmental conditions, or studies of ways of preventing impairment or its resultant handicaps.
— Studies based on longitudinal measurement, such as studies of the results of treatment, studies of the related
needs of children, studies following children who did not receive treatment because of the lack of resources, the existence of eligibility or other administrative barriers to service, or the interdependency of one handicapping condition upon the other.

—Studies of cost benefits — for example, studies of the effectiveness of different specific procedures for case finding, diagnosis, treatment or therapy; studies of the performance of different administrative patterns in providing services; studies of the appropriateness of recommended treatment, including educational placement, vocational training, and such recreational activities as summer camps.

—Studies of manpower utilization, such as a comparison or an analysis of job tasks and the competencies and training required; studies of the use of subprofessional and nonprofessional workers; studies of the community's resources and needs for additional services.

Organization of Staff

The organization of a staff pattern to carry on research is based on the employment of personnel with research competencies and providing for the inservice and professional training of the staff members. In order to insure that the results of the research will be translated into action in the service program, research personnel should be closely related, administratively, to the person responsible for the service program.

Proposals should be encouraged from program service specialists and technical assistance should be made available to them in designing presentations of research proposals.

Allocation of Budget

Allocation of part of the program budget for research is made with recognition of the fact that providing services to children is not enough. There must be some way of insuring that these services are the best possible. Funds should thus be allocated for
research projects which are likely to improve the delivery of services.

Funds for research in communicative disorders are available from a number of federal agencies: the Social and Rehabilitation Service, the Office of Education, and the Public Health Service. Each of these agencies provides technical assistance from speech and hearing specialists.
APPENDIX

NATIONAL ORGANIZATIONS
WITH SPECIAL INTEREST IN
PROBLEMS OF HEARING AND SPEECH

The following list is not exhaustive but is offered as a guide for those who wish further information on existing services, recent developments, standards, and future planning in the field of communicative disorders of speech, hearing and language.

American Academy of Ophthalmology and Otolaryngology
15 Second Street, S. W.
Rochester, Minnesota
A professional association of medical specialists concerned with the eye, ear, nose and throat. Committees are active in promoting the conservation of hearing in industry, public education and public health.

National Society for Crippled Children and Adults, Inc.
11 South LaSalle Street
Chicago, Illinois
A voluntary agency with affiliated local chapters which organizes and promotes community services for many types of handicapping conditions. Provides educational material for parents and professional workers upon request.

Alexander Graham Bell Association for the Deaf, Inc.
(known also as the Volta Bureau)
1537 Thirty-fifth Street, N. W.
Washington, D. C.
Information on deafness, and on the teaching of speech and lip reading to the deaf, is available from this organization through its library and from its reprints of articles in the Volta Review. It provides guidance and leadership to affiliated organizations of deaf adults and parents of deaf children.

American Academy of Cerebral Palsy
1520 Louisiana Avenue
New Orleans, Louisiana
A professional association of specialists from several disciplines whose interest is to correlate work for the welfare of those affected by cerebral palsy.

American Association for Cleft Palate Rehabilitation
College of Health Related Professions
University of Florida
Gainsville, Florida 32003
A professional association of specialists from several disciplines whose interest is to promote the development of improved service for those with cleft palate and associated anomalies.

John Tracy Clinic
826 West Adams Boulevard
Los Angeles, California 90007
Offers a correspondence course to parents of preschool deaf and hard-of-hearing children. Also offers a home training course to parents or agencies for use in programs for children with language impairments.

Department of Health, Education, and Welfare
Washington, D. C. 20201
The constituent agencies listed below provide professional consultation, technical assistance, publica-

Provided by the Maternal and Child Health Library, Georgetown University
tions, and financial support for
services, training and research:
Office of Education
Public Health Service
   National Institutes of Health
Social and Rehabilitation Service
   Children's Bureau
Rehabilitation Services Admin-
istration
Council for Exceptional Children
1201 Sixteenth Street, N. W.
Washington, D.C. 20006
An association of different profes-
sional disciplines interested in the
education and welfare of children
who require special instructions
and special services.

American Speech and Hearing
Association
9020 Old Georgetown Road
Washington, D.C. 20014
A professional association of speech
pathologists and audiologists con-
cerned with the extension and im-
provement of services for children
with communicative disorders of
speech, hearing and language.

National Association of
Hearing and Speech Agencies
919 Eighteenth Street, N. W.
Washington, D.C. 20006
A federation of member agencies
each of which provides services to
the communicatively handicapped
at the community level.
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MUNICIPATION. Brain 87:121-140 (Mar.), 1964.


McWilliams, Betty June. The Language Handicapped Child and Education. Exceptional Children 32:4:221 (Dec.), 1962.


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