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## ABSTRACT

This document comprises two leaders' guides and two participants' guides to two inservice presentations on the speech/language professional's role in working with at-risk infants and toddlers. Videotapes are intended to accompany the materials. The needs assessment, field testing, content/design analyses, and validation studies conducted in the development of the materials are described. The first workshop focuses on providing services to infants and toddlers in their homes or at clinical centers. The leader's guide includes sections which cover: instructions for the leader; purposes and overview of the program; assessment and intervention with the infant/toddler; assessment and intervention with focus on infant-caregiver interaction; and assessment and intervention with focus on the caregiver. A bibliography of 65 items is included. The other workshop presents the professional's role in working with at-risk newborns. Sections address: instructions for the leader; purposes and overview; the neonatal intensive care unit; the infant at risk for hearing loss; and primary prevention with parents and prevention with health professionals. A bibliography of 50 items is attached. The participants' guides provide parallel information, as well as information concerning services and descriptions of infant tests. (DB)

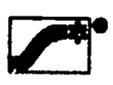
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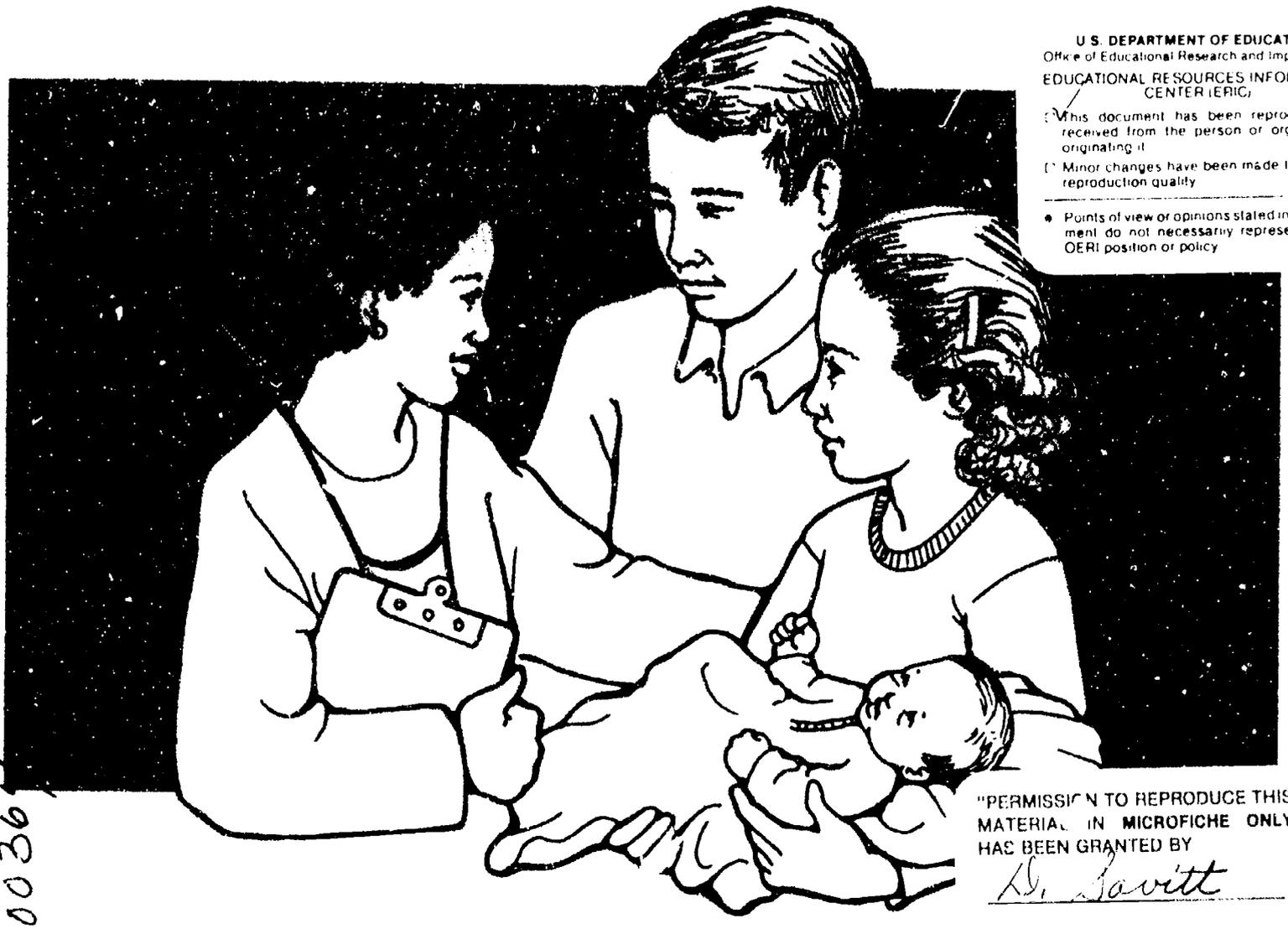
INFANTS AT RISK FOR COMMUNICATION DISORDERS

# The Professional's Role in the Home or Center

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# The Professional's Role in the Home or Center

## **LEADER'S GUIDE**

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# Preface

The manuals and accompanying videotapes were developed by the Department of Speech Pathology and Audiology at Western Michigan University. They are the main results of a project aimed at enhancing the ability of speech-language pathologists and audiologists to serve at-risk infants and their families and to work cooperatively with other professionals involved with infant care. The project was supported by The Robert Wood Johnson Foundation.

## How to Use These Materials

The manuals and tapes include two independent modules, one focusing on working with newborns, the other on working with infants and toddlers in their homes or at clinical centers. Each of these modules can stand alone as the content of an in-service program or a unit in a university course. Alternatively, since the two modules complement each other, they can be combined in a larger, more comprehensive in-service program or course unit. Both modules present actual clinical cases of infants at risk and their families.

The modules are designed for group presentations, although they can be used for individual self-instruction as well. Normally, one person will function as the leader of the presentation. This person is mainly responsible for leading the discussions after each section of videotape; discussion questions are provided in the manual, but the leader may freely supplement these. The leader also guides the participants in using the printed resources included in the manual. The best results are seen when the leader has had direct experience in working with infants and has taken time to become thoroughly familiar with the videotape(s) and manual(s).

Since these modules focus on risk for communication disorders, the leader and most of the participants are likely to be speech-language pathologists or audiologists. However, professionals from other disciplines—occupational therapy, nursing, pediatrics, developmental psychology, social work, and special education, for example—are also deeply committed to caring for infants and their families, and their knowledge and skills would be valuable resources in any presentation. The videotape shows a number of other professionals working with the infants, and the discussions should explore how the infants' interests are served by multidisciplinary cooperation.

## Formative Evaluation and Validation of These Materials

*Needs Assessment.* Early in the project a needs assessment was conducted to answer the following questions: What are the current trends in service to at-risk infants and their families? What is the current status of communication assessment and intervention with at-risk infants? What are the current roles of speech-language pathologists and audiologists in working with at-risk infants? What is the current effectiveness of practicing speech-language pathologists and audiologists who work with at-risk infants?

Answers to these questions were sought in a variety of ways: review of professional literature; review of information from the American Speech-Language-Hearing Association (ASHA); review of survey results covering the

background, training, and needs of speech-language pathologists and audiologists in a four-county area in New Jersey; review of course work and practica concerned with at-risk infants in four other Michigan universities; review of published media programs on at-risk infants; and interviews with 14 practitioners currently working with at-risk infants and their families.

The needs assessment yielded the following observations pertinent to our project:

- Only 4% of speech-language pathologists and 9% of audiologists were then providing service to at-risk infants and their families.
- Due to governmental regulations, continued growth was anticipated in programs and services designed for at-risk infants.
- There appeared to be no universally accepted definition of at-risk infants and certainly no definition of language or communication impairment in infants.
- Research results documented the effectiveness of programs for infants with various handicapping and risk conditions that can lead to communication disorders.
- Children in the 0-2 age range, who were seen as most in need of expanded and improved services, have traditionally been underreferred to speech-language pathologists and audiologists by physicians and across disciplines.
- The need for speech-language pathologists and audiologists to work with at-risk infants and families was not clearly understood, although university faculty members acknowledged the need for including instructive material in coursework and practica.
- Our videotape and manual would not duplicate known existing products.

*Field Testing and Content/Design Analyses.* Two separate but complementary modules were developed, each consisting of a videotape and accompanying leader's guide and participant's guide. One module focused on the professional's role with the newborn, and the other focused on the professional's role in the home or center. Field testing of the initial versions of the modules was conducted with three audiences: two composed of graduate students and one primarily of practicing professionals. The materials were also reviewed by our Project Advisory Board, a multidisciplinary and multi-institutional group. In addition, presentations were made to the ASHA Communicative Disorders Prevention and Epidemiology Study Group and to the pediatric care staff of Healthwin Rehabilitation Hospital, South Bend, Indiana. Both presentations yielded additional evaluation information.

Based on evaluative comments from these groups, the video scripts, participant's guides, and leader's guides were revised. The new scripts and guides were reviewed by the project staff, by the neonatal developmentalist on the Advisory Board, and by an experienced speech-language pathologist at Cook County Hospital in Chicago.

Content analyses were also conducted on the modules by two recognized experts in service delivery to infants with communication disorders: M. Diane Klein, Ph.D. (California State University at Los Angeles), and M. Jeanne Wilcox, Ph.D. (Kent State University, Ohio); and an instructional design analysis was conducted by Howard Poole, Ph.D., of the WMU Office of Instructional

Development. Minor revisions were made in the leader's and participant's guides on the basis of these professionals' advice.

*Validation.* Validation studies were designed to collect information from subjects at various field-test sites in order that recommendations could be made about the most effective uses for the modules. The following questions were of interest. For what type(s) of audience(s) (in terms of professional specialization, level of experience, and employment setting) are these modules most appropriate? In what kind(s) of program(s) (for example, university class, professional continuing education) are the modules best implemented?

Eleven field-test sites across the United States were chosen to allow collection of data in a wide variety of settings and from varied audiences. At each site, questionnaires were administered to the participants and to the leader. These instruments included questions relating to seven variables: (1) effectiveness of the modules, (2) implementation of the modules, (3) effectiveness of the leader's guide, (4) satisfaction of the participants and leaders, (5) demographic characteristics of the participants and (6) of the leaders, and (7) future application of the modules.

With few exceptions, both participants ( $n = 166$ ) and leaders ( $n = 11$ ) reported high satisfaction with the modules, regardless of their professional specialization, level of experience, and employment setting. Similarly, they found the modules to be highly effective in accomplishing their objectives and well implemented in the programs where the modules were presented. All of the leaders rated the leader's guides as highly effective and recommended that work experience with at-risk infants be specified as a prerequisite for leaders at future presentations.

In addition to the presentations made as part of the validation study, the completed modules have been subjected to professional scrutiny several other times, always with very favorable results. Module 1, *The Professional's Role with the Newborn*, was presented at the February 1988 Convention of the Illinois Speech-Language-Hearing Association to an audience of 100 speech-language pathologists and audiologists. Sparks presented Module 2, *The Professional's Role in the Home or Center*, in June 1988 to the Ministry of Public Health, Victoria Province, Vancouver, BC (75 speech-language pathologists, audiologists, and professionals from related disciplines). Oas presented Module 1 at the International Association for Infant Mental Health Conference in Providence, Rhode Island, in September 1988 to an audience of 16 psychologists, social workers, and professionals in other related disciplines.

Sparks also utilized videotapes from the modules in her role as an invited presenter at ASHA-sponsored workshops (Infants and Toddlers: Communication with a Family Focus) in 1988 in four cities: Washington, Minneapolis, Houston, and Denver. The audience total for the four workshops was more than 250, primarily speech-language pathologists and audiologists. Oas, Sparks, and Clark presented the videotapes and selected portions of the manual in a double mini-seminar at the 1988 annual convention of ASHA in Boston. In all cases the material was well received. Participant evaluations were highly positive.

# Instructions for the Leader

## Preparing for the Presentation

1. Become familiar with the materials. Play the entire tape before presenting it to participants.
2. Know the experience level of your audience. A show of hands will give you this information if the audience is not known to you. The three major types of audience for whom these materials are intended are:
  - Practicing speech-language pathologists and audiologists who have had clinical experience with infants
  - Practicing speech-language pathologists and audiologists who have had no clinical experience with infants
  - Graduate students in speech-language pathology and audiology
  - Professionals from other disciplines may also find the material useful.
3. Choose the discussion questions you will use. For presentation length of approximately one and a half hours, plan for only the Focus for Discussion questions. If more time is available, you may wish to have a longer discussion period. Additional questions therefore are provided. For a varied audience, a question from each category (factual, interpretive, evaluative) would be appropriate.

## Guidelines for Timing the Presentation

Purpose and Overview, Objectives	5 minutes
Videotape: Introduction	11 minutes
Summary, Assessment Tree, Test Comparison	5 minutes
Introduce Focus on Infant/Toddler, Objectives, Focus for Discussion	5 minutes
Videotape: Missy and Pat	6 minutes
Discussion and Questions, Summary	10 minutes
Introduce Focus on Infant-Caregiver Interaction, Objectives, Focus for Discussion	5 minutes
Videotape: David and Dawn	7 minutes
Discussion and Questions, Summary	10 minutes
Introduce Focus on Caregiver, Objectives, Focus for Discussion	5 minutes
Videotape: Ray, Cory, and Sue	9 minutes
Discussion and Questions, Summary	9 minutes
Videotape: Conclusion	3 minutes

## Alternate Procedure for Individualized Family Service Plan

Group Work	30-45 minutes
Reporting and Discussion	20 minutes

# Purposes and Overview

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**Leader: Present Purpose and Overview (*Participant's Guide* page 4).**

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## Purposes of This Program

This presentation is intended to enhance the preparation of speech-language pathologists and audiologists for service to infants at risk for communication disorders and their families in home-based or center-based programs.

## Overview

Speech-language pathologists and audiologists are professionals who have a role in early identification, assessment, intervention, and prevention with infants at risk for communication disorders. These services may currently be performed by other professionals or not at all. Targets for our assessment are the infant, the infant-caregiver interaction, and/or the caregiver. Targets of intervention are determined by assessment; they may be all or only one of the targets of assessment. Intervention is based on interaction with caregivers.

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**Leader: Explain that all materials are in the *Guide*. Participants will not need to take notes on the videotape as all points are summarized in the *Guide*. Then go on to Section 1: Introduction.**

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# Section 1: Introduction

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**Leader: Go over Objectives with the participants.**

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- Objectives**
1. To review the concept that both infant and caregiver have roles to play in interaction
  2. To introduce and explain the interaction of biological and caregiving conditions that place communication development at risk
  3. To provide an Assessment Tree for identifying targets
  4. To explain a typical sequence of activities in center-based and home-based intervention

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**Leader: Point out to participants that the categories of risk, as well as an Assessment Tree, are provided in the Guide (pages 5-14). In addition, to facilitate discussion, brief explanations of some conditions follow the categories. Start the first section of the videotape (Introduction). Stop the tape when the narrator requests. Then, at your discretion read aloud the summary (below), or allow the participants time to read it individually.**

---

**Summary** Both infant and caregiver have roles to play in interaction. Biological and caregiving conditions interact to place an infant at risk. The Assessment Tree (see page 14) may be used to identify targets for intervention: infant, caregiver-infant interaction, and/or caregiver. Behavior tested in infancy may change significantly as the infant grows, making tests in infancy nonpredictive. A typical sequence of activities in center-based intervention is arrival, group activities for a general task, small group or individual therapy, snack time, another small group or individual therapy, group activity, and closing. A typical sequence of activities in home-based intervention is arrival, discussion of the infant's weekly progress, individual work with the infant, assessment of progress, demonstration of new activity, and departure.

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**Leader: After the summary has been read, review and compare the norm-referenced and criterion-referenced tests on pages 18-20 in the *Participant's Guide*. Discuss the risk categories (pages 5-7 in the *Participant's Guide*). Your goal should be that the major concepts in these documents are clear to the participants before proceeding.**

---

## Comparison of Test Types

### *Norm-Referenced Tests*

Standardized on normal infants (correct for age if premature)  
Identify for intervention  
Standards exclude handicapped  
Measure sensorimotor performance

### *Criterion-Referenced Tests*

Not necessarily standardized  
Prescribe intervention (behavior present or absent)  
May allow for hand' caps

## Categories of Risk

The term *handicap* is defined as a disadvantage in society, due to an impairment (any loss or abnormality of psychological, physiological, or anatomical structure or function) and resulting disability (the reduced ability to meet the needs of daily living), experienced by an individual (Beukelman 1986).

1. Conditions of *known range of expectations for handicap (established risk, Tjossem, 1976)*. Risks for hearing loss; language delay; and articulation, voice, and oral-motor problems are secondary to the original disorder. Examples are:
  - Chromosomal disorders, such as Down syndrome, fragile X syndrome
  - Single gene disorders, such as Hunter/Hurler syndrome, Treacher-Collins syndrome, Cornelia de Lange syndrome, Tay-Sachs disease
  - Environmental disorders acquired prenatally, such as fetal alcohol syndrome and AIDS
2. Conditions of *unknown expectations for handicap (established risk, Tjossem 1976)*. The resulting communication handicaps may range from minimal to severe. Examples are:
  - Congenital hearing loss
  - Cerebral palsy
  - Hydrocephalus and other neural tube defects
  - Clefting
3. Conditions of birth that *may or may not result in handicap (biological risk, Tjossem 1976)*. Risk is increased for neurological sequelae: cognitive impairment, poor language development, attention deficit disorder, hearing loss.
  - Prenatal conditions
    - (1) Anoxia—placenta abnormalities
    - (2) Maternal infections—STORCH (syphilis, toxoplasmosis, other infections, rubella, cytomegalic inclusion disease, herpes)
    - (3) Maternal diabetes (includes gestational)
    - (4) Blood group incompatibility
    - (5) Maternal toxemia (eclampsia and pre-eclampsia)

- (6) Maternal alcohol and drug ingestion
- (7) Lack of prenatal care (nutrition)
- Perinatal conditions
  - (1) Prematurity—low birth weight (1500-2500 g) and very low birth weight (under 1500 g) appropriate for gestational age
  - (2) Small-for-gestational age (low birth weight in a term or a near-term neonate)
  - (3) Anoxia (acute and total or prolonged and partial), placenta abnormalities (abruptio placenta, placenta previa), breech presentation, prolonged delivery
  - (4) Intraventricular hemorrhage, grades I-IV
  - (5) Respiratory distress syndrome—bronchopulmonary dysplasia
  - (6) Hyperbilirubinemia—kernicterus
  - (7) Anesthetic intoxication
  - (8) Neonatal medications
- Postnatal conditions
  - (1) Acute or chronic disease (especially central nervous system)
  - (2) Failure to thrive (organic and nonorganic)
  - (3) Otitis media
  - (4) Seizures
  - (5) Head injury: accidents, abuse
  - (6) Neglect
  - (7) Iatrogenic disorder
  - (8) Exposure to toxic agents (lead)
- 4. Caregiving (*environmental risk*, Tjossem 1976): conditions in the family or in society with implications for inadequate nurturing and stimulation, which in turn have implications for communication development.
  - Parental factors
    - (1) Impaired parents—mentally, physical'y, or by alcohol and/or drugs
    - (2) Mother under 19
    - (3) Parents with little education
    - (4) Parents who have experienced recent loss of infant or loved one
    - (5) Parents with low self-esteem
    - (6) Parents with unrealistic expectations for infant
    - (7) Parents who abuse or neglect
    - (8) Parents for whom pregnancy was unwanted
    - (9) Single parent or parent with limited support system
    - (10) Parents experiencing grief for biological risk conditions

- Social/environmental factors
  - (1) Poverty
  - (2) High stress
  - (3) Separation of parents from infant

## Brief Descriptions of Risk Conditions\*

1. Some conditions present known expectations for handicap.
  - *Chromosomal disorders*, involving thousands of genes, are defects in one of the 46 chromosomes, a missing chromosome (45), too many chromosomes (46+), or broken or rearranged chromosomes.
  - *Single gene disorders* are altered forms of single genes (mutations).
  - *Fetal alcohol syndrome* produces a constellation of abnormalities directly related to alcohol ingestion during pregnancy, including growth retardation without catch-up, characteristic face, and central nervous system impairment.
2. Some conditions present unknown expectations for handicap.
  - *Hydrocephalus*, resulting from pressure of spinal fluid that is prevented from leaving the brain and being absorbed into the bloodstream, may cause brain damage.
  - *Other neural tube defects* are midline defects of the skin, spinal column, and spinal cord, such as spina bifida.
3. Conditions of birth may or may not result in handicap.
  - Some adverse conditions are prenatal.
    - (1) *Anoxia* is too little oxygen in the blood and tissues, which may result from an abnormality in the transfer of oxygen by the placenta.
    - (2) *STORCH* comprises various infections of the mother.
      - (a) *Syphilis* is a sexually transmitted infection caused by a bacterium. Untreated syphilis, whether contracted during pregnancy or years before, may be transmitted to the fetus.
      - (b) *Toxoplasmosis* is an infection caused by a protozoan organism, most widely carried by cats, that may pass through the placenta of an unsuspecting pregnant woman to the fetus. Affected infants may have low birth weight, a large liver and spleen, jaundice and anemia, and neural tube and brain defects.
      - (c) *Other infections* include influenza virus, chicken pox, and various other viruses that are suspected of causing damage to the fetus.
      - (d) *Rubella* is a virus commonly called German measles. The fetus is most susceptible during the first three months of gestation. Typical congenital malformations include heart defects, microcephaly, cataracts, mental retardation, diabetes, and hearing loss.

(e) *Cytomegalic inclusion disease* is most dangerous to the fetus during the mother's first infection by a common virus. Congenital defects include disease of the retina, deafness, and developmental delay.

(f) *Herpes simplex* is a virus that may be acquired during the infant's passage through the birth canal when the mother has active herpes in the genital region. The result may be a mild disease of the skin and mucous membranes of the mouth and eye; if severe, it may involve all organs of the body, including the brain.

(3) With *maternal diabetes*, kidney problems and inadequate control of blood sugar in the mother may stress the fetus, although the baby will not be born with diabetes. Infants of diabetic mothers are likely to be large, but preterm. As newborns, they are likely to have significant difficulty maintaining normal blood sugar.

(4) *Blood group incompatibility* is a condition in which fetal red blood cells are destroyed faster than they can be replaced. The mother's system may have developed an immunity to the fetus's blood, as in Rh disease, and may pass antibodies to the fetus through the placenta, resulting in severe anemia and jaundice in the newborn, which may result in CNS damage. ABO and other blood group incompatibilities may result in significant, but less severe, anemia and jaundice. The major effect of anemia is lack of energy to perform the usual developmental tasks of childhood. (Note: sickle-cell disease is a serious cause of anemia; it is transferred by genetic inheritance, not caused by incompatibility.)

(5) *Maternal toxemia* appears to affect the kidneys, resulting in varying degrees of high blood pressure, protein in the urine, and fluid retention. The early, milder stage is *pre-eclampsia*; *eclampsia* is the later, severe form characterized by grand mal seizures in the mother. High blood pressure in the mother can result in poor fetal growth as well as separation of the placenta from the uterine wall with resultant hemorrhage (see *abruptio placenta* under *perinatal anoxia* below).

(6) *Maternal alcohol and drug ingestion* can injure the fetus throughout the entire pregnancy but most severely during the first trimester when fetal organs (including the brain) are forming.

(7) *Lack of prenatal care* may result in handicap. Contact with a physician early in pregnancy can prevent complications by facilitating the detection of conditions that may adversely affect the fetus and newborn. Studies have shown a higher incidence of prematurity and complications in newborns whose mothers did not receive adequate prenatal care.

- Adverse perinatal conditions may result in handicap.

(1) *Prematurity* is less than 37 weeks gestation with birth weight appropriate for fetal age.

(2) *Small-for-gestational age* describes an infant whose weight falls below the tenth percentile of expected weight for fetal age. The SGA baby has usually suffered growth retardation in the uterus.

(3) *Anoxia* or *asphyxia* results from failure to breathe after delivery. Circumstances that may lead to anoxia include (a) compression of the umbilical cord, (b) premature separation of the placenta, (c) sustained contraction of the uterus, (d) an umbilical cord that is wrapped tightly around the neck or body, and (e) damage to the head and brain during the birth process. With *placenta previa* the placenta overlies the opening of the uterus and will hemorrhage during delivery. With *abruptio placenta* there is separation of the placenta from the uterine wall with resultant hemorrhage. Complete and total asphyxia can occur when the umbilical cord is clamped or compressed, as when the fetus is in breech position (buttocks first). Prolonged, partial asphyxia can be produced by very strong uterine contractions during delivery.

(4) *Intraventricular hemorrhage*, or bleeding into the fluid-filled spaces of the brain, may result in cerebral palsy.

(5) *Respiratory distress syndrome* is a pulmonary disorder of premature infants caused by lack of surfactant in the lungs. Infants with very severe RDS, especially those on a mechanical ventilator for prolonged periods, may develop the chronic lung disorder of bronchopulmonary dysplasia.

(6) *Hyperbilirubinemia* is failure of the liver to eliminate the natural bilirubin from the blood quickly enough. High levels of bilirubin may result in damage to the basal ganglia of the brain. Such damage, called *kernicterus*, may result in athetoid cerebral palsy.

(7) *Anesthetic intoxication* is depression of the infant's breathing caused by drugs administered to the mother during labor.

(8) *Neonatal medications* are risks because some drugs place a neonate at risk for hearing loss. Such drugs include salicylates and quinine, potent diuretics, and some antibiotics (streptomycin, kanamycin, neomycin, gentamicin, and tobramycin).

- Adverse postnatal conditions may result in handicap.

(1) *Acute or chronic disease* is a risk condition to the extent that disease interrupts development. A child with optimal health is most likely to have optimal development and to benefit from learning experiences.

(2) *Failure to thrive* describes weight gain at a slower than normal rate during infancy. Organic causes include numerous disorders, especially central nervous system, cardiovascular, and digestive tract problems. Nonorganic failure is often associated with neglect, emotional disturbances, or parents who are often themselves victims of poor parenting and ongoing stresses.

(3) *Iatrogenic disorder* is caused by treatment, usually to save the life of the newborn. Lasting effects of neonatal medications, damage to the larynx from insertion of tubes, and hearing loss from noise in the intensive care unit are examples.

4. Caregiving conditions may contribute to handicaps.

- Parental factors may be adverse.

(1-9) These conditions (from Categories of Risk list) are generally accepted to be risks for nurturing and attachment, resulting in a less than optimal environment for communication development.

(10) Grief for biological risk conditions may occur if parents form expectations during pregnancy about the baby they will have. When their baby is different (sick or handicapped) they must grieve for their expected baby before they can turn their attention to the baby they have.

- Social/environmental conditions may be adverse.

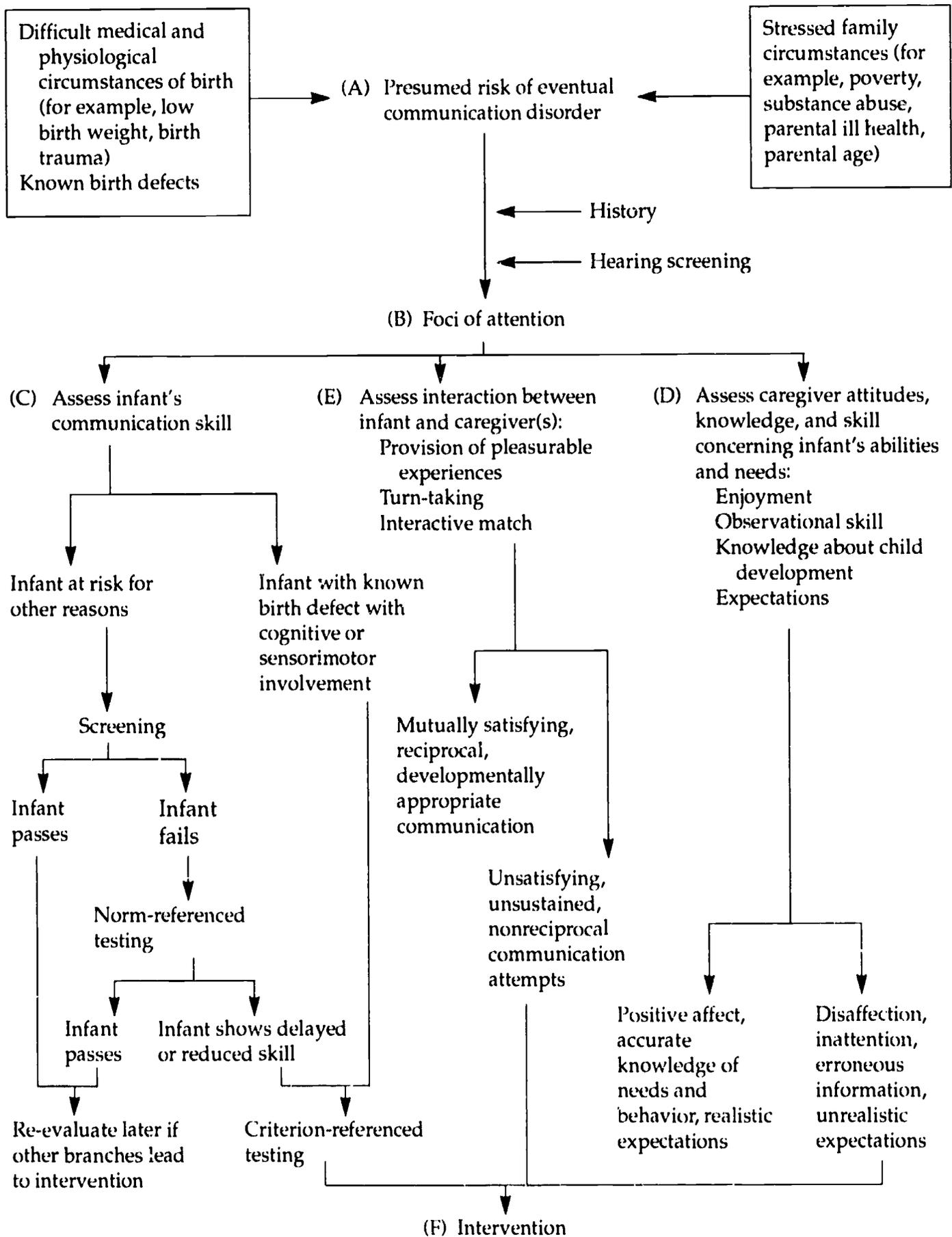
(1) and (2) refer to factors in society with implications for impairment in nurturing and stimulation, which in turn have implications for communication development.

(3) Separation of parents from infant is a risk condition. When an infant is hospitalized for established or biological risk conditions, natural bonding and appropriate language stimulation are interrupted.

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\*From Blackman 1984 and Sparks 1984

### Assessment Tree\*



\* Tree and explanation are from M. J. Clark and S. N. Sparks. 1988. Evaluation of the at-risk infant. In *Decision making in speech-language pathology*, edited by D. E. Yoder and R. D. Kent. Toronto: B. C. Decker. Reprinted by permission.

## Explanation of Assessment Tree

- (A) Different kinds of circumstances are presumed to decrease the chance that an infant will develop communication skills normally. Known birth defects often involve cognitive or sensorimotor disabilities, which predictably complicate the development of communication skills. Difficult medical and physiologic circumstances of birth do not lead with the same degree of certainty to communication disorder, but since they usually involve lengthened hospital care in a neonatal intensive care unit, they cause a disruption of the normal context of infant-parent interaction. Of equal importance are a variety of family circumstances that may interfere with parents' ability to deal with infants in a nurturing manner; these circumstances may lead to inadequate caregiving, which has consequences for communication development. The biologic and caregiving risk factors are not mutually exclusive. Biologic difficulties may precipitate familial developments that disrupt caregiving, and stressed family circumstances may contribute to the genesis of biologic difficulties. The majority of infants who are presumed to be at risk for unsatisfactory communication development are at risk for reasons of both kinds.
- (B) An infant and his or her caregiver(s) are part of a system of interaction. They affect each other mutually, in complex ways. Therefore a speech-language clinician assessing an infant's communication development must attend to this system—the individual participants and their interaction. The three branches of the tree do not represent kinds of assessment to be selected from, but rather foci of attention, all of which are necessary.
- (C) The procedures represented here deal with the infant's communication skills, particularly the ability to respond to communication signals and to initiate communication. For some children (for example, those with identified birth defects), it is virtually certain that communication skills will be delayed or limited, but for most children presumed to be at risk, delayed or limited skills are a possibility, not a certainty. For screening an infant's communication development, the Early Language Milestone (ELM) Scale (Coplan 1984) may be used; it surveys a variety of communicative behaviors (auditory receptive, vocalization-speech, and visual) that occur with some reliability in children from 0 to 36 months of age. Failure in any area calls for further assessment. The criteria for passing the screening are liberal, so failure should be taken seriously. The ELM may be administered by any health professional. In this and all other instruments that compare a child to other children of the same age, chronological age must be corrected to allow for gestational age if the infant was premature. If in-depth testing by a speech-language clinician is indicated, a variety of evaluation instruments may be used. Norm-referenced tests, which yield either age-equivalency scores or scores showing the extent of deviance from the mean performance expected for given ages, identify children who are performing significantly less well than expected and may need intervention. Scores are not predictive of future skill attainment. Since most instruments have been standardized on "normals" and do not permit compensation for impaired sensory or motor skills, using them with infants with known birth defects usually serves no useful purpose; performance is clearly deviant and intervention

is required. Criterion-referenced tests identify skill levels in various domains and are useful for guiding formulation of intervention goals. A list of infant and child assessment instruments, both norm- and criterion-referenced, is found in this guide (pages 25-28).

- (D) The procedures represented here focus on caregiver attributes. They lead to a characterization of knowledge, skills, and attitudes that may affect how the caregiver(s) approach and respond to the infant. Caregivers may be, in degrees, knowledgeable or ignorant about infants; they may or may not be able to translate their knowledge into action when dealing with their own infants; and they may be emotionally invested in their caregiving situation in helpful or harmful ways. It is important to remember that positive caregiver attributes do not depend on socioeconomic or ethnic status. Especially important here is the question of whether the caregivers make themselves available, physically and emotionally, for interaction with the infant. Another important question concerns the caregivers' expectations about the infant's eventual attainment. The caregivers may expect an unrealistically positive outcome, or they may unfairly disregard the infant's potential. A third question is how the caregiver views interaction with the infant. Caregivers coping with the birth of a handicapped child expectably make some accommodations to their child's individual ways of responding. The clinician should note whether the caregiver is highly directive in attempting to interact with the infant or, on the other hand, is responsive to the infant's communicative signals. Caregiver responsiveness is seen as an advantage in the Transactional Intervention Program (TRIP) (Mahoney and Powell 1984), which was developed for use with families with handicapped infants. A small number of observation instruments are available to guide the clinician in assessing caregiver attributes. A list of assessment instruments for use with the caregiver is found in this guide (pages 56-57).
- (E) The procedures represented here deal with the nature of the interaction between infant and caregiver(s). Observation focuses on whether the participants achieve mutually satisfying communication with each other. An infant's communication development takes place via recurring successful interaction with caregiver(s), so it is important for the clinician dealing with an infant at risk to attend to this interaction by actual observation. The assessment objective is to judge whether the interaction is reciprocal, in the sense that the participants easily take turns with each other, and mutually satisfying and enjoyable. An infant who does not participate in this kind of interaction misses a necessary learning experience for developing communication skill. For assessment of the reciprocal nature of the caregiver-infant interaction, one should observe both turn-taking and interactive match, which refers to the caregiver's ability to adapt to the infant's behavior style, interests, and abilities. [These concepts underlie the TRIP (Mahoney and Powell 1984).] Gaze, vocalization, and movement are the common content of normal infant-caregiver interaction, and the clinician should observe the patterning of these signals. How well does the caregiver read and respond to the infant's communicative signals (for example, cues of alertness and readiness for interaction versus cues of overstimulation)? How does the infant respond to the caregiver's cues of eye contact, facial expression,

and vocalizing, which indicate interest in communicating with the infant? A list of infant-parent assessment instruments is found in this guide (pages 35-36).

- (F) Several principles of intervention in infant communication development may be mentioned. First, the infant and caregiver(s) compose the critical unit; intervention focuses on the infant in interaction with the caregiver(s) rather than with the clinician. Second, intervention may need to be very extensive and intensive or, on the other hand, brief nonintensive intervention may suffice. In some cases, a caregiver may need only a brief period of developmental guidance (informing about expected infant development), while in other cases knowledge and skills may be grossly insufficient, requiring extensive help. Third, caregivers may be unable or unwilling to accept help from clinicians until their own needs are met; a nonthreatening trusting relationship with the clinician needs to develop. Fourth, intervention directed toward infants' communication skills need not be highly didactic in nature; these skills are best seen as learned through satisfying interaction with caregivers, not as taught by caregivers or clinicians. A list of intervention materials is found in this guide (pages 28-29).

## Section 2: Assessment and Intervention with Focus on the Infant/Toddler

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**Leader: Present Clinician Roles, Objectives, and Focus for Discussion (below). (Focus for Discussion orients the participants to the clinical case presented in the tape.) Discussion will take place after this section of the tape has been viewed.**

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### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess infant communication in depth (language/speech/hearing)
2. Assess infant-caregiver interaction
3. Assess caregiver
4. Recommend intervention

### Objectives

1. To demonstrate an Assessment Tree for identifying targets for intervention
2. To identify the prescriptive and natural-social models for intervention with the infant as target
3. To provide a list of instruments for assessing infant/toddler communication
4. To provide a list of materials for infant/toddler communication intervention

### *Focus for Discussion*

You are going to see a child named Missy and her stepmother, Pat.

When the videotape is stopped, this will be the focus for discussion:

Considering Missy's caregiving risks, as well as her need for remediation, what intervention setting would you recommend for Missy? Should it be a home-based or a center-based program? (Note that Missy's case information is included in your *Guide* for later reference.)

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**Leader: Start the second section of the videotape. Be prepared to stop the tape when the narrator requests. (Play videotape.)**

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**Leader: Following is material on Missy's risks, assessment, and intervention. Point this material out to participants and move to the discussion.**

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## Case Study: Missy

### *Biological risks*

- Birth weight 5 lbs. 2 oz. at 36 weeks gestation
- Oxygen deprivation from hyaline membrane disease in perinatal period
- Placed on ventilator in NICU
- Secondary risks: cognitive, motor, language, affective, hearing, and oral-motor development associated with conditions of birth

### *Caregiving risks*

- Lacked consistent caregiver for first 9 months
- Caregiver has four other children, including new baby
- Secondary risks: problems of interaction, delayed/disordered language development associated with problems of attachment

### *Assessment*

The infant's abilities were assessed by means of the Battelle Developmental Inventory, which is norm-referenced to allow comparison with age peers in order to determine eligibility for service. It is also criterion-referenced for aiding the selection and sequencing of therapy goals. Missy, age 40 months, was given all five screening tests, with performance as listed:

Screening Test	Age Equivalent	Pass/Fail
Cognitive	22-23 mos.	F
Adaptive	28-29	F
Personal-Social	31	P
Motor	36-37	P
Communication	21-22	F

The in-depth test of communication skills of the Battelle was administered, and Missy scored as listed below.

	Raw Scores	Percentile Rank
Receptive	14	1
Expressive	19	1

The interaction between Missy and Pat was assessed by means of clinical observation (as shown on the Assessment Tree), and the following characteristics were noted:

Pleasurable, mutually satisfying activities

Easy, reciprocal turn-taking

Interactive match: developmentally appropriate communication

**[Note: These concepts are developed further in the third section of the videotape.]**

Characteristics of Missy's caregiver, Pat, were assessed by means of interview and clinical observation, and the following were noted:

Enjoyment of being with Missy and positive affect toward her

Accurate observational skill

Excellent general knowledge about infant development

Realistic expectations of progress for Missy

**[Note: These concepts are developed further in the third and fourth sections of the videotape.]**

#### *Intervention*

Selection of intervention targets:

1. Primary target: infant's communication skills, especially her syntactic/semantic and phonological abilities
2. Secondary target: interaction, especially to foster Pat and Missy's growing relationship to maximize language use in normal interaction.

Consideration of *intervention models*:

1. Prescriptive intervention, or the "fix-it" model. Emphasis is remedial, so therapy treats what is wrong. Skills are taught in progressive developmental order.
2. Natural-social intervention. The environment is structured to enhance social communicative interaction. Emphasis is preventive.

Each of the models may be seen as having advantages and disadvantages. What would be their advantages and disadvantages in Missy's case?

For more about models of intervention, see the Bibliography.

## Discussion

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**Leader:** A major part of the discussion for this part of the videotape should concern clinical decisions for Missy's case. A possible way to structure this discussion for the participants is as follows:

**"On page 17 there is a space for advantages and disadvantages of a home program and a center program for Missy. Considering Missy's caregiving risks, as well as her need for remediation, write at least one advantage and one disadvantage for each type of program. Pat cannot participate with Missy in a center program; she must stay home with the new baby."**

**(Give two minutes for writing.) Ask volunteers to give a suggestion for each slot. Ask for more if time allows.**

	Home Based	Center Based
Advantages		
Disadvantages		

**Leader:** The following points should be brought out by the participants. If these points are not forthcoming, elicit or suggest them.

**Possible home program advantages:** Missy and Pat would be together to foster the bond between them. Missy would have Pat's attention.

**Possible disadvantages:** Therapy would be less frequent and concentrated if a home visitor directed the therapy and Pat did the actual intervention. Pat would need to spend structured time on goals when she is very busy with her family's needs.

**Possible center program advantages:** Therapy would be more concentrated and more frequent. Speech and language goals would probably be attained faster.

**Possible disadvantages:** Missy would be away from Pat just when attachment with Pat has begun. Missy may feel that she is removed from the home and may be jealous of the new baby.

When the advantages and disadvantages have been discussed, move into a discussion of the best clinical intervention decision for Missy. As one way of getting to this point, you may ask the following question: “With these advantages and disadvantages in mind, what would you recommend as an intervention plan for Missy?” There is no right or wrong answer. Participants may have only one option available in their setting. Point out that a combination would address advantages for both settings: In a combination, Missy would attend a center program. In addition, she and Pat would have a time alone together each day. Pat would not have specific intervention goals. The purpose would be that they enjoy their interaction—bedtime stories, talking about events, or other pleasurable activities that involve language.

Additional discussion questions, such as the following, may be considered, depending on time available and level of participants’ knowledge.

#### **Factual Questions**

1. Why was a norm-referenced test used for Missy?

To determine her need and eligibility for intervention

2. Why would a criterion-referenced test be used?

To determine goals for therapy

3. Why does the assessment of the caregiver lead to the conclusion that Pat is a good caregiver?

Refer participants to the Assessment Tree. Pat had positive affect toward Missy, accurate knowledge of Missy’s needs and behavior, and realistic expectations of her development.

Pat showed affection toward Missy (touching, kissing, holding).

4. How should we make a correction in chronological age when scoring tests for an infant whose history includes prematurity?

The infant’s age at time of test is calculated from the expected date of birth, not the actual day of birth. That is, subtract the number of weeks of prematurity from the infant’s chronological age. This kind of correction may be advisable up to the age of 24 months.

**Interpretive Questions****1. Why is Missy still at caregiving risk?**

**Her attachment to Pat was late in infancy. She may feel displaced by the new baby.**

**2. Why didn't Pat want Missy to receive intervention from the clinician who evaluated her previously?**

**Pat thought that the clinician had not considered either Missy's biological or caregiving risks. She had evaluated Missy solely on the basis of her test scores in her office. The clinician didn't gain Pat's trust. Consequently, intervention was delayed.**

**3. Why are we more likely to get optimum test scores when we assess infants in their homes?**

**The surroundings are familiar, less distracting, and nonthreatening.**

**4. The clinician referred to Pat as Missy's "language teacher." Is there a possibility that this term will affect Pat in a negative way?**

**When we attempt to train family members to function as teachers we contribute to stress and burnout. It is better to provide families with skills that will enhance the child's development (including speech and language) within the context of their family and in typical activities with the child.**

**Evaluative Questions****1. What are the major problems you have encountered with tests to assess infants?****2. Do you rely only on test scores or do you take other factors into consideration?****3. Have you used the natural-social model for intervention? Are there prescriptive (remedial) programs that you have used with good success?****4. Has anyone used both models of intervention to compare them?****5. Are you able, in your setting, to make a decision for intervention that considers caregiving risks?**

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**Leader: At your discretion, read aloud the summary of the second section, Assessment and Intervention with Focus on the Infant/Toddler, or ask participants to read it individually.**

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## Summary

The Assessment Tree (infant, infant-caregiver interaction, caregiver) led to the conclusion that in this case the infant/toddler was the primary target for intervention. Assessment of the interaction revealed pleasurable, mutually satisfying activities; easy, reciprocal turn-taking; and good interactive match with developmentally appropriate communication. Caregiving characteristics of positive affect, accurate knowledge of needs and behavior, and realistic expectations were present. One model for intervention with the infant/toddler as target is prescriptive (remedial) intervention; skills are taught in progressive developmental order. Another model is natural-social intervention; families are provided with skills that will enhance their child's development in typical activities with the child. Both models are appropriate for intervention. Caregiving risks must be considered in an intervention plan. An infant at risk for communication disorders must have an audiological assessment.

A list of infant/toddler assessment instruments and a list of intervention materials are provided on the following pages.

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**Leader: After the summary has been read, point out the lists of assessment instruments (pages 18-20) and the intervention materials (pages 21-22) in the *Participant's Guide*. Go to the next section.**

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## Assessment Instruments for Use with the Infant/Toddler

### *Screening Tests*

Coplan, J. 1984. *The Early Language Milestone Scale*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced screening test

**Age Range:** Birth to three years

**Content Areas:** Auditory expression, auditory reception, visual

**Administration Time:** 10 minutes

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory Screening Test*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to eight years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 10 to 15 minutes for children under 3 and over 5, 20 to 30 minutes for children between the ages of 3 and 5

Trembath, J. 1977. *Milani-Comparetti Motor Development Screening Test*. Omaha, NE: Meyer Children's Rehabilitation Institute University of Nebraska Medical Center.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 24 months

**Content Areas:** Screens for early evidence of neuromotor delay or deficits

**Administration Time:** 4 to 8 minutes

### *In-Depth Tests*

Bayley, N. 1969. *Bayley Scales of Infant Development*. San Antonio: The Psychological Corporation.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 36 months

**Content Areas:** Mental and psychomotor developmental indices (MDI and PDI)

**Administration Time:** 45 minutes per index

Bzoch, K. R., and R. League. 1971. *Receptive-Expressive Emergent Language (REEL) Scale*. Baltimore, MD: University Park Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Receptive and expressive language; administered by parent interview

**Administration Time:** 20 minutes

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Ziesloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Cognitive, fine motor, gross motor, expressive language, social-emotional, and self-help

**Administration Time:** 15 to 30 minutes for children up to 2; 1 hour for children over 2

Hedrick, D. L., E. M. Prather, and A. R. Tobin. 1984. *Sequenced Inventory of Communication Development (SICD)*. Seattle, WA: University of Washington Press.

**Type of Measure:** Norm-referenced, norms available 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48 months

**Age Range:** 4 months to 4 years

**Content Areas:** Receptive language: awareness, discrimination and understanding. Expressive: motor, vocal, and verbal responses

**Administration Time:** For children under 2, 30 minutes for administration, 10 minutes for scoring. For children over 2, up to 1 hour for administration, 10 minutes for scoring.

Johnson-Martin, N., K. G. Jens, and S. M. Attermeier. 1986. *The Carolina Curriculum for Handicapped Infants and Infants at Risk: Assessment Log*. Baltimore, MD: Paul H. Brookes.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 24 months developmental age

**Content Areas:** 24 skill domains

MacDonald, J. D., and D. S. Horstmeier. 1978. *Environmental Prelanguage Battery (EPB)*. San Antonio: The Psychological Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Nonverbal or minimally verbal individuals who are functioning below or at the single-word level

**Content Areas:** Verbal: sound imitation, noun imitation, noun production, action-verb production, two-word phrase production. Nonverbal: history of early sound productions; observation of preliminary skills including eye control, sitting behavior, on-task behavior, and object permanence; observation of function play with toys and objects; motor imitation; and assessment of receptive language

Morris, S. E. 1982. *Pre-Speech Assessment Scale*. Clifton, NJ: Preston.

**Type of Measure:** Rating scale

**Content Areas:** Feeding behavior, sucking, swallowing, biting and chewing, respiration, phonation, and sound play

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 1 hour or less for children under the age of 3 and over the age of 5; 1-1/2 to 2 hours for children between the ages of 3 and 5

Owens, R. E. 1982. *Program for the Acquisition of Language with the Severely Impaired*. San Antonio: The Psychological Corporation.

**Type of Measure:** Caregiver interview, environmental observation, and interaction

**Age Range:** All ages

**Content Areas:** Presymbolic and symbolic skills

Schafer, D. S., and M. S. Moersch. 1981. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Perceptual/fine motor, cognition, language, social-emotional, self-care, gross motor

**Administration Time:** 30 to 60 minutes

Tanner, D. C., and W. M. Lamb. 1984. *The Cognitive, Linguistic, and Social-Communicative Scales (CLASS)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced, indirect assessment

**Age Range:** Birth to 72 months

**Content Areas:** Cognitive, linguistic, and social-communicative

**Administration Time:** 45 minutes

Uzgiris, I. C., and J. M. Hunt. 1975. *Assessment in Infancy*. Chicago: University of Illinois Press.

**Type of Measure:** Sensorimotor scales

**Age Range:** Birth to 2 years

**Content Areas:** Six Scales

I: The Development of Visual Pursuit

II: The Development of Means of Obtaining Desired Environmental Events

III: The Development of Imitation

IIIa: Vocal Imitation

IIIb: Gestural Imitation

IV: The Development of Operational Causality

V: The Construction of Object Relations in Space

VI: The Development of Schemes for Relating to Objects

## Prescriptive or Skill-Centered Intervention Materials

Clark, T. C., E. C. Morgan, and A. L. Wilson-Vlotman. 1984. *The Insite Model*. Logan, UT: Ski Hi Institute. A parent-centered, in-home, sensory interventive, training and education program for the infant with multiple impairments.

Dmitriev, V. 1982. *Time to Begin*. Milton, WA: Caring, Inc. A practical manual for guiding the development of children with Down syndrome from infancy to 2 years.

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation. Activities for the clinician based on the HELP assessment instrument.

Hanson, M. 1987. *Teaching the Infant with Down Syndrome*. 2d ed. Austin, TX: Pro-Ed, Inc. Activities for parents of infants with Down syndrome.

Johnson-Martin, N., K. G. Jens, and S. M. Altermeier. 1986. *Carolina Curriculum for Handicapped Infants and Infants at Risk*. Baltimore, MD: Paul H. Brookes. Teaching procedures and evaluation criteria to create a program for specific strengths and weaknesses of a child based on the Assessment Log.

Karnes, M. B. 1982. *You and Your Small Wonder*. Books I (0-9 mos) and II (9-18 mos). Circle Pines, MN: American Guidance Service. Activities and materials to foster physical, emotional, and intellectual growth and language.

Owens, R. E. 1982. *Program for the Acquisition of Language for the Severely Impaired*. San Antonio: The Psychological Corporation. Presymbolic and symbolic training levels have formal training mode, incidental teaching strategies, and stimulation methods.

Reidlick, C. E., and M. E. Herzfeld. 1983. *O to 3 Years—An Early Language Curriculum*. Moline, IL: Linguisystems, Inc. A series of communication activities sequenced developmentally and divided into receptive and expressive language skill areas.

Schafer, D. S., and M. S. Moersch. 1981. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press. Book 1: Assessment and Application; Book 2: Early Intervention Developmental Profile; Book 3: Stimulation Activities.

Sparling, J., and I. Lewis. 1979. *Learning Games for the First Three Years*. New York: Berkeley Publishing Group. Household activities for parents of infants from birth to 3 years.

### Natural-Social or Nondirective Intervention Materials

Gardner, A. 1986. *Talking Together*. Richmond Health Department, 6911 No. 3 Road, Richmond, British Columbia V9N7X6. A guide to speech and language development in young children for parents.

Klein, M. D., M. H. Briggs, and P. A. Huffman. 1987. *Facilitating Caregiver-Infant Communication*. Los Angeles, CA: California State University at Los Angeles, Division of Special Education, 5151 State University Drive, Los Angeles, CA 90032. A center-based program for infant-caregiver interaction.

MacDonald, J., and Y. Gillette. 1985. *Ecological Communication System (ECO System)*. San Antonio: Psychological Corp. Activities for parents and clinicians to promote interaction and language.

Mahoney, G. J., and A. Powell. 1984. *Transactional Intervention Program*. Woodhaven, MI: Woodhaven School District. A guide for clinicians to help parents improve their interactive match with their developmentally delayed infants.

Manolson, A. 1985. *It Takes Two to Talk*. Toronto: Hanen Early Language Resource Centre, 252 Bloor St. West, Suite 4-126, Toronto, Ontario M5S1V6. A program to help parents of at-risk and handicapped infants become more effective language facilitators.

## Section 3: Assessment and Intervention with Focus on Infant-Caregiver Interaction

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**Leader: Introduce this section by pointing out that it does not show an actual assessment of the infant's receptive and expressive language skills. The focus of this section is the assessment of infant-caregiver interaction (the second part of the Assessment Tree) and intervention focused on that interaction. Present Clinician Roles, Objectives, and Focus for Discussion (below). Focus for Discussion orients the participants to the clinical case presented in the tape. Discussion will occur after the third section of the tape has been viewed.**

---

### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess interaction
2. Assess caregiver
3. Provide intervention for interaction
4. Provide intervention for caregiver

### Objectives

1. To identify components of infant-caregiver interaction that are important to assess
2. To demonstrate the developmental guidance model of intervention directed toward caregiver knowledge and expectations for infant's development
3. To provide an infant developmental chart without ages
4. To demonstrate the directive model of intervention focused on infant response
5. To demonstrate the nondirective model of intervention focused on infant-caregiver interaction
6. To provide a list of instruments for assessing caregiver and infant-caregiver interaction
7. To provide a list of nondirective intervention resources

### *Focus for Discussion*

You will see a child named David and his mother, Dawn.

When the videotape is stopped, this will be the focus for discussion: Why was a developmental chart without ages chosen? What is the next step in intervention for David and Dawn? What were the positive aspects of their interaction? Are there other suggestions for improving their interaction?

---

**Leader: Play the third section of the videotape. Be prepared to stop the tape when the narrator requests. (Play videotape.)**

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**Leader: After this section of the videotape has been shown, you will be ready for the discussion. Following is material on David's risks, assessment, and intervention. Point out this material to the participants and move to the discussion.**

**Alternative Procedure: Stop the tape immediately after the segment of Dawn playing with David. Ask the participants, "What advice would you give to Dawn?" Write down the suggestions on a chalkboard. Try to elicit these suggestions: Face David at eye level; follow his lead; allow him to initiate; imitate him; think of your interaction as play. Then start the tape to observe the changes Dawn has made in response to those suggestions.**

---

## Case Study: David and Dawn

### *Biological risks*

- Established condition: Down syndrome
- Secondary risks: delay associated with Down syndrome in all development, including language and articulation disorder; significant conductive hearing loss as a result of congenital middle-ear anomalies; sensorineural hearing loss as a result of severe otitis media

### *Caregiving risks*

- David does not give the expected cues and responses. Dawn has difficulty reading them.
- Secondary risks: disrupted interaction; disordered pattern of language development associated with disrupted synchrony in addition to expected delayed pattern of language development associated with Down syndrome.

*Assessment*

The infant's abilities in receptive and expressive speech and language were tested at the center.

The assessment of the interaction between David and Dawn was done by clinical observation (as shown on the Assessment Tree). In terms of the provision of pleasurable experiences, Dawn tries, but David does not show pleasure. Their interaction is unsatisfying, unsustained. Turn-taking is nonreciprocal. David does not take a turn. Dawn calls upon David to respond, not to initiate. Dawn directs David's activities. With regard to interactive match, Dawn does not seem sensitive to David's interests.

Characteristics of David's caregiver, Dawn, were assessed by means of interview and clinical observation, and the following were noted:

- Enjoyment of being with David and positive affect toward him
- Accurate observational skill
- Basic general knowledge, obtained at David's center program, about infant development in Down syndrome
- Uncertain expectations of progress for David

*Intervention*

Selection of intervention targets:

1. Primary target: interaction, especially to structure the interaction so that David will communicate
2. Secondary target: caregiver, so that Dawn will understand David's developmental level and communication abilities

Consideration of intervention models:

1. Developmental guidance. Caregiver is given information to form appropriate expectations of infant's communications.
2. Directive. Infant imitates caregiver models and responds to cues of caregiver who teaches communication skills.
3. Nondirective. Infant-caregiver turns are balanced; infant makes things happen with communication; infant imitates some activities, caregiver imitates infant.

## Discussion      Focus for Discussion

**Leader: Ask Focus for Discussion Questions:**

1. **Why was a developmental chart without ages chosen?**

**Children with delay experience the same order of development as normal children. The chart allows the parent to see the order of development without focusing on age appropriateness.**

**2. What is the next step for Dawn and David?**

In addition to imitation of David, Dawn can begin labeling, expansions, and modeling of speech.

**3. What were the positive aspects of their interaction before the intervention?**

Dawn showed enjoyment of David and showed positive affect. She smiled and turned him toward her in babbling.

**4. Are there other suggestions for improving their interaction?**

Answers from the audience.

Additional discussion questions, such as the following, may be considered, depending on time available and level of participant's knowledge.

**Factual Questions**

**1. How do David's cues and responses differ from those of normal infants?**

Response rate is slower. Times of eye contact are shorter. He does not take turns naturally. He vocalizes less.

**2. Would you give David a norm-referenced or a criterion-referenced test? Why?**

A norm-referenced test would be used only to establish delay to be eligible for service. If eligibility is established, a criterion-referenced test is preferred to establish where David is developmentally; or the developmental chart may be used for the same purpose.

**Interpretive Questions**

**1. What would you recommend for audiologic monitoring for David?**

Down syndrome children typically have serous otitis media. Immittance testing should be done monthly. Some otologists recommend pressure equalization (p.e.) tubes very early to treat otitis media.

**2. What secondary disorders may be prevented by early intervention with David?**

Immittance testing may reduce the risk of otitis media. Complete audiologic testing may identify a significant hearing loss. Although language delay is a known expectation, delay may not be as severe as expected. Articulation and voice problems may be reduced or alleviated.

### Evaluative Questions

1. Do you do home visits for developmentally delayed infants in your setting? Why or why not?
2. How does home-based intervention compare with center-based intervention for the caregiver and the infant? For the clinician?
3. Have you used the nondirective approach for intervention? How does it compare with the directive approach in your experience?

**Leader: At your discretion, read aloud the summary of the third section (below) or allow time for the participants to read it individually.**

### Summary

Components in assessment of interaction are: provision of pleasurable experiences, balance of turns between infant and caregiver (caregiver's directiveness), and interactive match. Two intervention models for caregiver-infant interaction are directive and nondirective; nondirective is preferred. It is important to reinforce to caregivers the positive aspects of caregiver behaviors. One way of helping a parent to form appropriate expectations of the infant's communication is a developmental chart without ages. It allows caregivers to see developmental milestones without focusing on age appropriateness. Providing information to caregivers is called developmental guidance.

**Leader: After the summary has been read, point out the list of interaction assessment instruments on pages 25-26 and the list of nondirective intervention materials on pages 21-22 in the *Participant's Guide*. Note that the nondirective materials are the same as the natural-social instruments in the previous section. Go on to the next section.**

### Infant-Caregiver Interaction Assessment Instruments

Bee, H. L., K. E. Barnard, S. J. Eyres, C. A. Gray, M. A. Hammond, A. L. Spietz, C. Snyder, and B. Clark. 1982. *Nursing Child Assessment Teaching and Feeding Scales*. In Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. *Child Development* 53:1134-56.

**Type of Measure:** Behavioral checklist

**Purpose:** Assessment of parent and child behaviors during teaching and feeding as screening device and pre/post intervention

**Age Range:** 1 to 36 months

**Content Areas:** Parent's sensitivity to cues, response to distress, cognitive and socio-emotional growth fostering, and child's clarity of cues, responsiveness

**Administration Procedures:** Check behaviors observed after 3 to 5 minutes of teaching; feeding observation time varies per dyad; rating time = 15 minutes per scale; 73/76-item binary checklists

McCollum, J. A., and V. D. Stayton. 1985. Social Interaction Assessment/Intervention. In *Studies and intervention guidelines based on the SIAI model. Journal of the Division for Early Childhood* 9:125-35.

**Type of Measure:** Behavioral count

**Purpose:** Evaluation of parent-handicapped child interaction pre/post intervention to increase parent's ability to make independent adjustments to child's behavior during play

**Age Range:** Nonspecific

**Content Areas:** Communicative social interaction; individualized target behaviors for parent and child, such as imitation, vocalization, and turn-taking

**Administration Procedures:** Videotapes of 4-minute play in home; count target behaviors in 5- to 10-second intervals

Owens, R. E. 1982. *Program for the Acquisition of Language with the Severely Impaired: The Diagnostic Interaction Survey and Caregiver Interview and Observation*. San Antonio: The Psychological Corporation.

**Type of Measurement:** Informal caregiver interview and environmental observation

**Purpose:** To identify the child's communication partners and the content, behaviors, and quality of child-caregiver communication

**Age Range:** Nonspecific

Robinson, E., and S. Eyberg. Dyadic Parent-Child Interaction Coding System. In *The dyadic parent-child interaction coding system: Standardization and validation. Journal of Consulting and Clinical Psychology* 49:245-50.

**Type of Measurement:** Behavioral count

**Purpose:** Assesses degree to which parent's or child's behavior during play is deviant and evaluates effectiveness of treatment

**Age Range:** Nonspecific

**Content Areas:** Parent's directiveness, positive and negative physical contact, child's compliance

**Administration Procedures:** Count behaviors during 5 minutes of play in clinic

# Infant Development from Birth to Three Years

## Heads Up

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Expresses different needs and moods (fussy, hungry, tired, wet, wanting to be held) through variations in tone and intensity of crying</p> <p>Comforted by voice, if held closely or wrapped in a blanket</p> <p>Has own personality</p> <p>Is developing a sense of trust</p> <p style="text-align: center;">41</p>	<p>Newborn reflexes:</p> <ul style="list-style-type: none"> <li>• Startles at a sudden light or noise</li> <li>• May startle when touched unexpectedly</li> <li>• Will follow a rattle with eyes for a short distance</li> <li>• Arms, legs, and body move, wiggle, and shake at the same time</li> <li>• Turns to suck on breast or bottle nipple</li> </ul> <p>Will lift head when placed on stomach</p> <p>Looks at objects (mobile, picture, fuzzleball, etc.) placed in line of vision</p> <p>Grasps a finger when placed in infant's hand</p> <p>"Prereaches": simple reach and grasp movements exist but then fade</p> <p>Head unsteady; needs support</p> <p>Can bring fingers to mouth to suck</p>	<p>Snuggles, cuddles</p> <p>Recognizes Mom's voice</p> <p>Looks directly at a familiar adult face</p> <p>Looks away from strangers (yawn, sign of anxiety)</p> <p>Responds to rhythm of adult speech by body movements, looking alert, dozing off, etc.</p> <p>Needs the closeness of holding for stimulating and bonding</p>	<p>Tuned in to speech from birth</p> <p>Learning grows out of reflexes (for example, child first sucks air, then learns to suck food)</p> <p>Learns about objects through looking</p> <p>Looks at bright objects</p> <p>Follows a slow-moving bright object</p> <p>Will ignore something that disturbed infant the first time infant heard it</p>	<p>Cries</p> <p>Responds to sounds: ringing bell, music, dog barking, etc.</p> <p style="text-align: center;">42</p>

# Infant Development from Birth to Three Years (continued)

## The Looker

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Smiles in response to others Initiates contact by smiling Frowns Laughs Squeals Cries because infant is bored and not just hungry, tired, or wet Settles down into own pattern of eating and sleeping with minor variations</p> <p style="text-align: center;">43</p>	<p>Continues to wave arms and kick feet Follows rattle in an arc from one side to another Clasps hands together Changes posture on lap for comfort When placed on stomach, will push chest up with arms Can hold head steady Reaches toward a hanging mobile with hands or feet Sits with support Grasps and briefly holds object (rattle) placed in hand Turns head from side to side to look at pictures taped to crib Uses fingers to explore own face</p>	<p>Develops selective attention (paying attention to some people while ignoring others) Can tell whether or not parent is in good mood Acts and responds differently with different people</p>	<p>Visual Exploration:</p> <ul style="list-style-type: none"> <li>• Learns about space and objects by looking and hearing</li> <li>• Engages in repetitious looking</li> <li>• Coordinates what is seen with what is heard</li> </ul> <p>When infant accidentally causes an interesting event to occur (for example, knocking the roly poly, causing movement and ringing), will try to find out what caused the event by trying to make it happen again</p> <p>Continues to be actively curious and exploratory</p> <p>Uses sense of taste as a way of exploring the world</p> <p>Acquires certain simple habits centered about own body (for example, anticipating feeding, cooing in crib on waking)</p> <p>Repeats actions previously performed (vocal, visual, grasping)</p> <p>Notices and responds to interesting events</p>	<p>Turns toward sounds Coos and makes other random sounds May imitate simple sounds (ooh, aah) that another person makes Plays with own voice, repeating and trying out sounds Grows from knowing when infant is conversing with Mom to an awareness of their "talk" being interrupted Begins to try to enter conversation with others Begins to actively listen to sounds (for example, will turn head to listen to music box and may cry when it stops)</p> <p style="text-align: center;">44</p>

# Infant Development from Birth to Three Years (continued)

## The Crawler-Creeper

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Shows delight with self</p> <p>Gets others to "play" by actively expressing affection</p> <p>Stops eating to play</p> <p>Feeds self simple "finger food" (for example, crackers)</p> <p>Still takes everything into mouth</p> <p>Holds out arms to be held or picked up</p> <p>Discovers parts of body (puts feet into mouth)</p> <p>45</p>	<p>Balances on a lap</p> <p>Coordinates seeing and grasping: reaches and grasps for objects (likes dangling objects)</p> <p>Rolls over</p> <p>Sits in high chair</p> <p>Bears weight on legs</p> <p>Crawls, may creep</p> <p>Rakes (makes sweeping, uncoordinated reaches) to attain objects; works to get toys that are out of reach</p> <p>Sits alone</p> <p>Will hold a cube in each hand</p> <p>Practices motor skills: first sitting, then pivoting, rolling, crawling, pulling self up to knees, then standing while holding on to something</p> <p>Passes cube hand to hand</p> <p>Learns to get self into sitting position</p>	<p>Receives and shows pleasure in being with Mother</p> <p>Coos, makes sounds to get comfort, help, or people to play</p> <p>Can pick out Mom from others</p> <p>May show anxiety at strangers</p> <p>Will smile at own reflection in the mirror</p> <p>May start a game with an adult (for example, drop the rattle, tickle me, catch the object)</p>	<p>Infant's world widens; horizons expand; exploring by looking continues</p> <p>Recognizes familiar objects; can select favorite toy if placed in front of infant</p> <p>Repeats enjoyable activities and actions over and over and over</p> <p>Likes to make things happen; explores by feeling, tracing, tasting</p> <p>Experiments with objects by shaking, banging, pushing, dropping</p> <p>Shows interest in external environment by:</p> <ul style="list-style-type: none"> <li>• Searching for dropped objects</li> <li>• Recognizing partly hidden objects</li> <li>• Acting, then waiting for effect to occur</li> <li>• Trying to repeat actions accidentally discovered</li> <li>• Picking out cues that may help in recognizing a known place (Grandma's, babysitters, nursery)</li> </ul>	<p>Develops syllables (<i>b, d, m</i>)</p> <p>Recognizes own name</p> <p>Turns toward voices and sound that interest infant</p> <p>46</p>

# Infant Development from Birth to Three Years (continued)

## The Cruiser

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Beginning to sense that infant is a separate being</p> <p>Expresses feelings:</p> <ul style="list-style-type: none"> <li>• Demonstrates affection</li> <li>• Listens with pleasure to sounds</li> <li>• Has a sense of humor</li> <li>• Expresses aggression by throwing things</li> </ul>	<p>Can hold two cubes and bang them together</p> <p>Can grasp small objects (raisins, cherries) between thumb and finger</p> <p>Creeps, if hasn't before</p> <p>Holds furniture and pulls self up to stand</p> <p>Walks when led, holding on to adult's thumb</p> <p>Handles objects with more ease</p> <p>Able to coordinate eye-hand movements more easily</p> <p>Picks up small objects but will choose large over small</p> <p>Easily sits self up without support</p> <p>Enjoys emptying and filling</p> <p>Discovers genitals</p>	<p>Behaves differently with different people</p> <p>Shows separation anxiety</p> <p>Waves bye-bye</p> <p>Masters separation anxiety</p>	<p>Continues to play peek-a-boo as a way of learning things exist when they cannot be seen</p> <p>Understands that infant can get a toy that's out of reach</p> <p>Searches actively for hidden objects</p> <p>Throws, retrieves, loses, searches, finds</p> <p>Understands that something has to be done to get what infant wants</p> <p>Intentionally chooses appropriate actions to carry out with a variety of toys</p> <p>Begins to solve simple problems</p> <p>Can make things happen</p> <p>Often gets distracted when pursuing goals (for example, if intent is to use the string to pull the pull toy, infant may end up playing with the string)</p> <p>Can anticipate an immediate happening (for example, the sound of footsteps means "Mom")</p>	<p>Says "Mama" or "Dada" but doesn't understand meaning</p> <p>Imitates speech sounds</p> <p>Differentiates expressive vocalizations</p> <p>Associates "ba" with bottle, "Mama" with Mom, "Dada" with Dad, "ma" with more, etc.</p> <p>Engages in reciprocal baby talk; babbles back at parents</p> <p>Understands simple statements like "Bring me the shoe"</p>

# Infant Development from Birth to Three Years (continued)

## The Walker

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Imitates housework</p> <p>Fights diaper changing</p> <p>Expresses a variety of emotions, including much affection</p> <p>Will "make a scene" to get what is wanted; protests loudly</p> <p>Shows off</p> <p>Conveys a variety of messages with ease (shakes head for "no," points, etc.)</p> <p>Is "into everything"</p> <p>Has a firm sense of self as a separate being</p> <p style="text-align: center; font-size: 2em;">49</p>	<p>Scribbles</p> <p>Builds tower of 2 or 3 cubes</p> <p>Neat pincer grasp</p> <p>Imitates complex motor tasks (stirring, sweeping)</p> <p>Climbs stairs</p> <p>Stands alone</p> <p>Walks</p> <p>Stoops to pick up objects</p> <p>Tears papers, magazines</p> <p>Climbs: gets on top of or under tables, desks, counters, etc.</p> <p>Rocks in rocking chair</p> <p>Can get up on furniture; bounces on furniture</p> <p>Uses both hands freely, but may show preference for one hand</p> <p>Picks up small objects</p>	<p>Explores parents' hair, faces, glasses, etc.</p> <p>Runs to be picked up, cuddled</p> <p>Enjoys roughhousing, tossing games</p> <p>Will obey a "No"</p> <p>Teases</p> <p>Initiates games of give and take</p> <p>Likes to be within sight and hearing of adult</p> <p>May stop playing for a little while to make sure parent is nearby</p>	<p>Pursues new and different activities for their own sake</p> <p>Continues to be curious about objects</p> <p>Tends to experiment with different objects and things</p> <p>Expands range of explorations; empties cupboards, pokes into shelves and drawers, pulls out pots and pans</p> <p>Demonstrates skill in making things happen:</p> <ul style="list-style-type: none"> <li>• Nests toys</li> <li>• Puts in, takes out</li> <li>• Pulls, pushes</li> <li>• Rolls, rocks</li> </ul> <p>Active in trial and error exploration:</p> <p>Seeks new ways to get what she wants and to solve problems</p> <p>Identifies body parts</p> <p>Recognizes existence of objects apart from self</p>	<p>Knows a few words other than "Mama" and "Dada"</p> <p>Expresses desires verbally</p> <p>Follows verbal cues</p> <p>Knows own name and turns around when infant hears it</p> <p>Uses words and gestures to get adult's attention</p> <p>Asks "What?" or "What's that?" frequently</p> <p>May try to sing</p> <p>Enjoys rhymes and tries to join in</p> <p>Echoes important words or last words addressed to infant</p> <p>Uses first sentences</p> <p style="text-align: center; font-size: 2em;">50</p>

# Infant Development from Birth to Three Years (continued)

## The Doer

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Strives for autonomy; wants to do things on own:</p> <ul style="list-style-type: none"> <li>• Takes off clothing</li> <li>• Helps with simple household tasks</li> <li>• Begins to clean up</li> <li>• Shows independent streak ("do it myself"; often refuses help with dressing, bathing, etc.)</li> <li>• Acts possessive (me, mine)</li> <li>• Can be negative ("No, no"); has temper tantrums</li> <li>• Becomes aware of who infant is by mastering skills, opposing people and situations, asserting self, making choices, protesting and cooperating</li> <li>• Demands sameness of routine yet dislikes pressure that training places on infant</li> </ul>	<p>Actively exploring as large and small muscle skills and eye-hand coordination are mastered and fine tuned:</p> <ul style="list-style-type: none"> <li>• Builds towers of 3 to 5 blocks, then knocks them down, rebuilds, etc.</li> <li>• Dumps items from containers</li> <li>• Kicks large ball</li> <li>• Throws ball</li> <li>• Opens and closes containers</li> <li>• Tries hopping, somersaults, walking backwards</li> <li>• Carries several toys at once</li> <li>• May be ready for toilet training</li> <li>• Climbs on furniture to look out window, get to counter, etc.</li> <li>• Will spontaneously make circular scribbles and dots when given paper and crayon (will do this on walls—watch out!)</li> </ul>	<p>Plays near other children, not with them</p> <p>Pats and hugs house pets affectionately, though can be rough</p> <p>Punches, slaps</p> <p>Imitates parents</p> <p>Bossy—gives orders</p> <p>Increases range and frequency of interaction with adults</p> <p>Resists demands of adults either playfully or seriously</p>	<p>Learns to master many aspects of the environment through observation, exploring, trial and-error testing, problem-solving</p> <p>Combines toys in more complex ways</p> <p>Has favorite toys, foods, books; makes selections</p> <p>Struggles; gets frustrated when learning new skills</p> <p>Invents new ways to solve problems</p> <p>Memory develops: holds images (for example, parental pictures) in mind; begins to use these images</p> <p>Understands that infant or another person can "picture" what has to be done to cause something to happen</p> <p>Firmly grasps concept of object permanence (understands objects exist when they cannot be seen)</p> <p>Watches and understands TV shows</p> <p>Begins to engage in "make-believe" activities</p>	<p>Uses 2 or 3 different words in sentences</p> <p>Points to and names body parts with help</p> <p>Names familiar items (ball, cat, truck) in pictures</p> <p>Follows simple directions: "Show me your nose," "Get your coat"</p> <p>Likes to listen to stories; pages through magazines with adults</p> <p>"Talks" on phone</p> <p>Imitates animal sounds, cat noise, etc.</p> <p>Hums; may sing</p> <p>Understands more words and ideas than can be expressed</p> <p>Is taken with the power of words:</p> <ul style="list-style-type: none"> <li>• Refers to self by name</li> <li>• Asks names of objects over and over</li> <li>• Talks to self during play</li> </ul>

# Infant Development from Birth to Three Years (continued)

## The Tester

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Begins to gain a sense of self as a small individual who can do things independently:</p> <ul style="list-style-type: none"> <li>• Develops self-help skills (washing hands, using toilet, undressing self)</li> <li>• Has favorite foods and other preferences</li> <li>• Continues to demand independence</li> <li>• Feels part of the family; does not want to be left out—puts off going to bed</li> <li>• Develops sense of humor</li> </ul> <p style="text-align: center;">53</p>	<p>Continues to master motor skills:</p> <ul style="list-style-type: none"> <li>• Stacks/builds towers with cubes or blocks</li> <li>• Puts in, takes out, puts together, takes apart</li> <li>• Can copy simple shapes</li> <li>• Can throw a ball</li> <li>• Jumps, rides a trike</li> <li>• Runs (lopsided)</li> <li>• Climbs</li> <li>• Walks down stairs</li> <li>• Feeds self (may be messy, awkward)</li> <li>• Sleeps less—is usually awake for most of the day</li> <li>• Tries to work zippers, snaps, buttons, etc.</li> <li>• Begins to master slides and swings</li> <li>• Begins to coordinate complex hand and eye movements (for example, can work a 4- or 5-piece puzzle)</li> <li>• Inserts shapes into shape box, pegs into pegboard, strings large beads</li> </ul>	<p>Relies on routines (likes things arranged and done same way every day)</p> <p>May get upset if Mother stays away overnight</p> <p>Has flashes of temper</p> <p>Imitates adult activities (dusting, sweeping, drinking coffee, etc.)</p> <p>Has difficulty sharing</p> <p>Will play by self</p> <p>Shows achievements to parents</p> <p>Likes running errands ("go get a spoon, please")</p> <p>Enjoys roughhousing</p> <p>Likes to watch others play</p> <p>Gradually is able to separate from parent</p> <p>Likes chances to do for self and others</p>	<p>Continues to be naturally and actively curious</p> <p>Continues to learn about people and things and to organize own findings</p> <p>Uses words with pictures</p> <p>Associates people with certain places; knows where neighbors live, etc.</p> <p>Knows names of body parts</p> <p>Begins thinking and expressing thoughts about things not directly involved with</p> <p>Can name, identify, ask for, and describe objects, people</p> <p>Begins to identify size relationships (for example, which ball is bigger?)</p> <p>Can represent the world through mental images</p> <p>Can recognize similarity and differences in objects</p> <p>Can classify objects (put the puzzles on the shelf and the truck under the table)</p> <p>Makes choices</p> <p>Has beginning understanding of time concepts ("After your nap, we'll go outside.")</p> <p>Shows animistic thinking</p> <p>Sees objects in terms of one or two prominent features</p> <p>Learning is situation-bound</p>	<p>Improves language skills rapidly</p> <p>Uses plurals</p> <p>Understands more than infant can say</p> <p>Sings songs</p> <p>Uses phrases, simple sentences ("He go car." "Me want milk.")</p> <p>Counts ("one, two")</p> <p>Enjoys rhymes, chants</p> <p>Understands and uses concept words (hot, cold, high, down, soft, no, hard)</p> <p>Talks about events (trip to store, a book, spilled milk, etc.)</p> <p>Follows a series of directions</p> <p>Can express wants and needs ("more milk," "want candy")</p> <p>Likes to talk and work with parent</p> <p>Responds to questions, simple statements</p> <p>Can be engaged in simple conversations</p> <p>Asks "why?"</p> <p style="text-align: center;">54</p>

# Speech and Language Development of the Infant and Young Child

Stages of Speech and Language Development	Developmental Stages	How to Stimulate Speech and Language Development
Sounds	Heads Up The Looker The Crawler/Creeper The Cruiser	Look at the baby (eye contact) Smile at the baby/make faces Touch the baby—the whole body receives messages Sing Encourage imitation games such as peek-a-boo Imitate the baby's speech sounds Encourage the baby to imitate new sounds Read books with the baby
Single Words	The Walker	Name objects for the baby Read books with the baby Recite nursery rhymes Imitate the baby's movements and vocalizations Encourage imitation games such as peek-a-boo Talk to the baby about what you are doing when you are together
2- or 3- Word Utterances	The Doer	Be a good speech model Repeat new words over and over Talk about what you are doing when you are together Read books with the child Listen to the child when he/she is talking to you Carry on conversations with the child
Sentences	The Tester	Use words the child has trouble with frequently in your speech Talk about relationships of words, objects, and ideas Talk about similarities or differences between things Encourage the child to tell stories using books and pictures Allow the child time to play with other children Pay attention to the child when he/she is talking, remembering that repeating words and sounds is normal during this period of growth Extend the child's conversation

## Section 4: Assessment and Intervention with Focus on the Caregiver

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**Leader: Present Clinician Roles, Objectives, and Focus for Discussion (below). (Focus for Discussion orients participants to the clinical case presented in the tape.) The Discussion will occur after this section of the tape has been viewed.**

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### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess infant/toddler language by in-depth test
2. Assess infant-caregiver interaction
3. Assess caregiver
4. Recommend intervention to supervisor and team
5. Build trust with caregiver through listening
6. Provide intervention for the infant through caregiver
7. Refer to other professionals

### Objectives

1. To present problems of clinician's communication with unresponsive caregiver
2. To identify important components of a caregiver assessment
3. To identify the developmental guidance and active listening models of intervention
4. To provide aids to active listening
5. To identify barriers that hamper a caregiver's acceptance of developmental guidance and acceptance of referral
6. To provide a list of assessment instruments for the caregiver
7. To provide a list of family assessment instruments
8. To provide a list of possible community resources for client referral

### *Focus for Discussion*

You will see Sue with her two children, Cory and Ray. Ray, the older child, is at risk. When the videotape is stopped, this will be the focus for discussion:

What are the obstacles that prevent intervention from being effective at this time? Referral to what other professionals might be considered? What should the clinician recommend to her supervisor and the center team? What should the clinician do if Sue rejects referral to another professional?

**Leader: A transcript of the dialogue between Sue and the clinician is provided for your reference (below). Play fourth section of the videotape. Be prepared to stop the tape when the narrator requests.**

**Leader: After this section of the videotape has been shown, you will be ready for the discussion. Following is material on Ray's risks, assessments, and intervention. Point out this material to participants (pages 36-37 in *Participant's Guide*). Then move on to the discussion.**

#### **Transcript of Clinician's Visit with Sue**

**C = Clinician**

**S = Sue (mother)**

**C: Can you tell me a little bit about that, Sue?**

**S: About when he was sick? Okay. He weighed 4 pounds and 4 ounces when he was born, so he had to stay an extra week for that.**

**C: Was he premature?**

**S: No. I mean, he was a low birth-weight baby, but he was on time.**

**C: He was a low birth-weight baby, but he was born on time. He was only 4 pounds and 4 ounces.**

**S: Uh huh. Two months later, he had salmonella and a hernia, so he was in about a month for that. He hasn't been in since then, but he's had quite a few ear infections. And he had the flu last week.**

**C: Now, when he went back to the hospital—was he gaining weight when he went back to the hospital?**

**S: (Shakes head no.)**

- C:** He was staying small? And when he went back to the hospital what happened? Was he gaining weight?
- S:** He gained a little bit of weight, but he never really . . . See he wouldn't eat his formula neither.
- C:** Yeah.
- S:** The doctors could not figure out why he would not drink formula, so finally I had to put cereal in his formula and he started eating it then.
- (Narrator discusses the case.)
- C:** Did you get to touch Ray?
- S:** Yeah.
- C:** And hold him?
- S:** Um, I, I, . . . you talking about when he went in?
- C:** Uh huh.
- S:** Yeah, I got to hold him and everything. Well, he had an I.V. for quite a long time, but I got to hold him every day.
- C:** Uh huh, yeah. How did he respond to you when you held him then? Was he cuddly? Was he a cuddly baby?
- S:** No, he wasn't. They—the doctors—said that there was something else wrong with him because he'd just sit and he wasn't cuddly baby or nothing.
- C:** Was he ever a cuddly baby?
- S:** No.
- C:** Even at the very, very beginning when you first . . .
- S:** Yeah, he was a little bit but not really because he was only about two months when he went into the hospital. So he wasn't very old and . . .
- C:** Is Cory a cuddly baby?
- S:** Yeah.
- C:** Cory's cuddly? So you can comfort Cory? Then how do you comfort Ray if you can't cuddle him?
- S:** Well, he's well, now—you can just now start hugging him and stuff, but that's all.
- C:** Oh good. So you know that you can cuddle Ray now and you can hold him and even though . . .

**S: Yeah, but there are still times he will push away, you know. He wants to be all by hisself.**

**(Narrator discusses the case.)**

**S: Ray. No . . . Ray. (Ray continues crying and begins to throw things off the table onto the floor).**

**S: Ray. (Sue pulls Ray away from the table).**

**S: Ray. (Ray reaches for a can on the table. Sue takes it away and places it out of his reach.)**

**C: Sue, what do you think he wants?**

**S: He wants this.**

**C: He wants this, but he can't have it.**

**S: It's been on the floor.**

**C: What do you think would happen if you picked him up now?**

**S: He'd kick me and hit me.**

**C: Try it.**

**(Narrator discusses the case.)**

**C: One of the ways that will help Ray to be more sociable is to talk better. It must be very frustrating for Ray to not make his wants known. Think about how you'd feel if you couldn't say anything. How would you let anybody know that you wanted beans instead of peas or milk instead of orange juice or whatever? When you do "which thing is it, this or this?"—it must be very frustrating.**

**S: Uh huh.**

**(Narrator discusses the case.)**

**S: He wanted my mom.**

**C: He wanted your mom?**

**S: When he was two weeks old, he wanted my mom.**

**C: Now how did that work? How did you know that he wanted your mom?**

**S: Bec' . . ., like, I would hold him and he would still kick and scream and, like, I thought that he could touch, but you know I had all these problems. Then I'd go to my mom and he would be really quiet and shut up.**

**C: So when you held him, he was tense, and when she held him, he would relax.**

**S: Yeah. That's when I had a lot on my mind, so I used to figure it's just, you know, he could feel I had all this on my mind.**

**C: You were worried about him.**

**S: Yeah.**

**C: And you had other things on your mind, too. You were worried about Raymond.**

**S: Yeah.**

**C: You were worried about how you were going to make it.**

**S: Yeah.**

---

## Case Study: Ray, Cory, and Sue

### *Biological risks*

- Small-for-gestational age; birth weight 4 lb. 4 oz.; hospitalized at 2 mos. for salmonella and hernia; failed to thrive; chronic ear infections
- Secondary risks: delays in all areas of development, including language; hearing loss associated with otitis media

### *Caregiving risks*

- Teen mother; lack of social support; poverty; attachment difficulties dating from Ray's one-month hospitalization; Sue feels that Ray prefers his grandmother to her
- Secondary risks: delayed/disordered language; social-affective disorder associated with separation; problems of attachment and interaction

### *Assessment*

The child's abilities were assessed by means of the Early Language Milestones Screening Test, a norm-referenced test. If either auditory expression or auditory reception is failed, in-depth testing should be done. Ray's chronological age was 21 months.

Auditory expression: failed at age level

Auditory reception: passed

Screening failed

The in-depth test of the Mental Scale of the Bayley Scales of Infant Development was administered when Ray's chronological age was 23 months, and Ray scored as listed:

Raw score 124

Developmental index 66

Mental age 17-18 months

The interaction between Sue and Ray was assessed by means of clinician observation, and the following characteristics were noted:

Provision of pleasurable experiences: unsatisfying

Turn-taking: nonreciprocal; Sue withdraws from interaction

Interactive match: not tuned to his interests, negative

Characteristics of Ray's caregiver, Sue, were assessed by means of interview and clinical observation, and the following were noted:

Enjoyment: disaffection

Observational skills: inattention

Knowledge about infant development: very limited

Expectations: unrealistic

### *Intervention*

Selection of intervention targets:

1. Primary target for intervention: caregiver, to help Sue be consistent, establish attachment, and change her behavior toward Ray to create an environment for language to develop.
2. Secondary targets for intervention: interaction, to establish interaction between Ray and Sue; child's communication skills, to remediate Ray's expressive language and monitor his hearing.

Consideration of intervention models:

1. Developmental guidance. Instruct caregiver on ways to help language develop and ways to parent effectively.
2. Counseling, active listening. Help caregiver overcome obstacles to attachment to infant. Help caregiver find other resources to solve problems.

## Discussion      Focus for Discussion

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**Leader: Ask Focus For Discussion questions:**

- 1. What are the obstacles that prevent intervention from being effective at this time?**

**Sue has priorities other than Ray's development (poverty conditions, survival, feeling of being trapped).**

**Sue has problems of attachment with Ray while attachment has taken place with Cory. Sue is unresponsive to Ray due to her own needs.**

- 2. Referral to what other professionals might be considered?**

**Social worker or mental health professional to raise Sue's self-esteem and help her meet her emotional and economic needs.**

**3. What should the clinician recommend to her supervisor and center team?**

**Possible answers:**

- a. Have Ray attend a center-based program without Sue and Cory**
- b. Ray, Cory, and Sue attend a center-based program**
- c. Intervention for Sue only**
- d. Home-based intervention**
- e. Social services in addition to therapy**
- f. Health care for Ray and Cory**
- g. Hearing monitoring for Ray**

**4. What should the clinician do if Sue rejects referral to other professionals?**

**Continue in home-based intervention as long as possible using counseling and active listening with Sue and intervention with Ray.**

**The following additional questions can be used depending on time and audience.**

**Factual Questions**

**1. Ray was born on time but had low birth weight. What is the condition called?**

**Small-for-gestational age.**

**2. What are possible causes for small-for-gestational age?**

**Interference with nutrients reaching the fetus; poor maternal nutrition; poor prenatal care; maternal alcohol abuse; maternal smoking.**

**Interpretive Questions**

**1. What are some of the emotional stresses and unresolved conflicts that may be a barrier to Sue's attachment to Ray?**

**Relationship to grandmother; role of Ray's father; unwanted pregnancy; some characteristics of Ray's (his reaction to Sue, not being cuddly).**

**2. What are some causes of non-organic failure to thrive in infants?**

**Inadequate nutrient intake; environmental stress; emotional deprivation; abuse and neglect**

3. Did you think that the clinician was judgmental with Sue? Did she impose her own values on Sue?

Participants may answer that the clinician's remark of "oh good" was judgmental. Others may see it as reinforcement. A discussion of how clinicians may reinforce without seeming judgmental may follow.

#### Evaluative Questions

1. Who and what are your support systems as you work with caregivers like Sue?
2. What agencies and referral sources do you find helpful in these cases?

### Alternative Procedure for Focus on the Individual Family Service Plan

After the segment on Sue, Cory, and Ray, direct participants' attention to the IFSP forms and information (pages 54-55). Divide participants into small working groups of no more than five members each. (If several disciplines are represented, each group should be as multidisciplinary as possible.)

Direct all the groups to:

1. List the strengths of this family
2. List the needs of this family
3. List the outcomes for intervention (the first should concern Ray's "tantrums")
4. List the outcomes on the Outcomes Form and write in the processes to achieve the outcomes

#### Examples

**Strengths:** Sue and Raymond are an intact family unit; they have support from an extended family; they receive some community services (parenting classes, financial support); they have time to devote to their children.

**Needs:** Help with parenting skills; assessment of needs for community resources (respite care, day care, preschool, nutrition, vocational education, family planning); help with communication and interaction with Ray and Cory.

**Outcomes: Reduce/eliminate tantrums; improve communication with Ray; improve Ray's communication skills; Monitor Ray's hearing; access community resources.**

**(Note that in the IFSP procedure, the intervenor must discuss strengths and needs with the family. That list may or may not agree with the perceptions of the intervenor(s), but the family's list must be considered as primary when the outcomes are determined jointly by the intervenor(s) and the family.)**

**Processes: For an outcome of "reduce tantrums": Help Sue to observe what happens and describe what happens before, during, and after a tantrum; help Sue to think of tantrums as a communication and to define what Ray is communicating; help Sue to use distal language with Ray; help Sue make eye contact and distract Ray when she observes that a tantrum is coming; decide with Sue what acceptable cue Ray may use to communicate his wants; help Sue reinforce that cue by her response.**

**Have each group report first their list of strengths, then their needs, as you write them on the chalkboard. Assist participants in using the family's strengths to offset their needs (for example, they have time to explore parenting and community resources).**

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## Components of the Individual Family Service Plan for P.L. 99-457

The IFSP must be developed by a multidisciplinary team and must contain:

1. A statement of the child's present levels of development (cognitive, speech/language, psychosocial, motor, and self-help)
2. A statement of the family's strengths and needs related to enhancing the child's development
3. A statement of major outcomes expected to be achieved for the child and the family
4. The criteria, procedures, and timelines for determining progress
5. The specific intervention services necessary to meet the unique needs of the child and family, including the method, frequency, and intensity of services
6. The projected dates for the initiation of services and expected duration
7. The name of the case manager
8. The procedures for transition from early intervention into the preschool program

The IFSP must be evaluated at least once a year and must be reviewed every six months or more often where appropriate.

## Individual Family Service Plan

A. Present Status

B. Family Strengths:

Family Concerns:

C. Major Needs

1.

2.

3.

4.

5.

D. Early Intervention Services to Meet Needs:

frequency

intensity

method of delivery of service

E. Dates

F. Case Manager

G. Steps Taken to Go to Part B (Preschool)

# Outcomes

Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
<p>Reduce Tantrums</p> <ol style="list-style-type: none"> <li>1. Help Sue observe what happens before, during, and after Ray's tantrums</li> <li>2. Help Sue think of tantrums as a communication</li> <li>3. Help Sue make eye contact with and distract Ray when she observes a tantrum</li> <li>4. Decide with Sue what acceptable cue Ray may use to communicate, and help Sue respond and reinforce</li> <li>5. Help Sue to use language to communicate with the children</li> </ol>				

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**Leader: At your discretion, read aloud the summary of the fourth section or allow participants time to read it individually.**

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**Summary** Problems of communication may arise between a caregiver and clinician as a result of differing socioeconomic status and cultural values. Components in the caregiver assessment are attitudes, knowledge, and skill concerning the child's abilities and needs.

Two models for caregiver intervention are developmental guidance and counseling/active listening.

Barriers that hamper a caregiver's acceptance of developmental guidance are emotional stress and unresolved conflicts.

Barriers to acceptance of referral are lack of transportation, sense of loss of control, and differing values. A clinician in the unfamiliar role of counselor should have a supervisor and other members of a team as resources.

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**Leader: Point out caregiver assessment instruments on pages 40-41, family assessment instruments on page 41, aids for active listening on page 41, and assisting parents in prioritizing their problems on page 42 in the *Participant's Guide*.**

**Point out list of consultation and referral services on page 44 in the *Participant's Guide*.**

**Refer participants to the Bibliography for more information on family-focused intervention.**

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## Assessment Instruments for Use with the Caregiver

Bromwich, R. M., E. Khokha, L. S. Fust, E. Baxter, D. Burge, and E. W. Kass. 1978. Parent Behavior Progression. In *Working with parents and infants: An interactional approach*, edited by R. Bromwich, 1981. Baltimore: University Park Press.

**Type of Measurement:** Behavior checklist

**Purpose:** Assess infant-related maternal behaviors in order to develop short-term goals aimed at changing maternal attitudes and behavior to enhance maternal-infant interaction

**Age Range:** Two forms: birth to 9 months, 9 to 39 months

**Content Areas:** Parent-infant relationship

**Administration:** For use by practitioners familiar with family being assessed. Establish rapport, observe spontaneous interaction, talk informally about activities with infant; after session with parent check behaviors on PBP if evident from observation or parent report

Field, R. M., J. R. Dempsey, N. H. Hallock, and H. H. Shuman. 1978. The Mother's assessment of the behavior of her infant. *Infant Behavior and Development* 1:156-157.

**Type of Measurement:** Behavioral checklist

**Purpose:** Nonspecific

**Age Range:** To discern parental attitudes toward infant

**Content Areas:** Infant reactions to parental behaviors, crying, motor activities, physical characteristics

**Administration:** Questions to parent about characteristics of infant

Klein, M. D., and M. H. Briggs. 1987. Observation of Communicative Interaction (OCI). In *Facilitating mother-infant communicative interactions in mothers of high-risk infants*. *Journal of Communication Disorders* 10(2):95-106.

**Type of Measurement:** Checklist

**Purpose:** Evaluation of caregiver attributes

**Content Areas:** Provides tactile stimulation; pleasure, responses, positions, cues, modifications

**Administration:** Observation of parent in interaction with infant

Mahoney, G., I. Finger, and A. Powell. 1985. Maternal Behavior Rating Scale. In *Relationship of maternal behavioral style to the development of organically impaired mentally retarded infants*. *American Journal of Mental Deficiency* 90:296-302.

**Type of Measurement:** Rating scale

**Purpose:** Assess quality of maternal interactive behavior during play with young mentally retarded children for use in program evaluation

**Content Areas:** Parent's expressiveness, warmth, sensitivity to child state, achievement orientation, social stimulation, effectiveness, directiveness; child's activity level, attention span, enjoyment, expressiveness

**Administration:** Rate after viewing 10-minute videotape of dyadic free play in home with standard set of toys; two raters

## Family Assessment

Bailey, D. B., and R. J. Simeonsson. 1988. Family Needs Survey. In *Family assessment in early intervention*, edited by D. B. Bailey and R. J. Simeonsson. Columbus: Merrill.

**Type of Measurement:** Checklist

**Purpose:** Parents' perceptions of their needs

**Content Areas:** Need for information, support, explaining to others, community services, financial help, family functioning assistance

**Administration:** Parents fill out checklists

Caldwell, B. M., and R. H. Bradley. 1984. *Home observation for measurement of the environment inventory*. Little Rock, AK: University of Arkansas at Little Rock.

**Type of Measurement:** Observation/interview checklist

**Purpose:** Prediction of academic success

**Age Range:** Birth to three years

**Content Areas:** Social, emotional, and cognitive support available to a young child in the home

**Administration:** Observation and interview of the parent in the home

### Active Listening\*

You Are Not Listening to Me, and You Do Not Care about Me When:

- You say you understand before you know me well enough.
- You have an answer for my problem before I've finished telling you what my problem is.
- You cut me off before I finish speaking.
- You feel critical of my vocabulary, grammar, or accent.
- You are dying to tell me something.
- You are communicating to someone else in the room.
- You tell me about your experience, making mine seem unimportant.

You Are Listening to Me When:

- You come quietly into my private world and let me be me.
- You really try to understand me even if I'm not making much sense.
- You grasp my point of view even when it's against your own sincere convictions.
- You realize that the hour I took from you has left you a bit tired and drained.
- You allow me the dignity of making my own decisions even though you may think they may be wrong.
- You do not take my problem from me, but allow me to deal with it in my own way.
- You hold back your desire to give me good advice.
- You do not offer me religious solace when you sense I am not ready for it.
- You give me enough room to discover for myself what is really going on.
- You accept my gift of gratitude by telling me how good it makes you feel to know you have been helpful.

### Assisting Parents in Prioritizing Their Problems\*

It is easy to become overwhelmed when parents begin sharing their needs, desires, and concerns. It is also too easy to get bogged down in attempting to solve all the problems they present to a home visitor/family advocate.

Questions home visitors/family advocates ask regarding this situation are:

1. How do you deal with these issues and get on with other parts of the home visit?
2. What responsibility does the home visitor/family advocate take concerning families' needs?

The home visitor/family advocate's main role is to assist the family in sorting out and prioritizing the problems they present. Once this is done, more often than not the home visit can proceed and focus is placed on the child. The following method is recommended for sorting and prioritizing with parents:

1. Affirm the parent's feelings

Yes, I agree. You do have some real (concerns, problems, needs).

I can see that it is making you (upset, frustrated, angry).

I understand and know it's hard to think about anything else.

2. Offer moral support

I would be (or have been) upset, too, over these problems.

We can sit down and try to sort this situation out together.

I find it helps if someone else helps me think of things to do.

3. Begin demonstrating how to take positive action

Let's start listing these things on paper so we can look at each one and think about what we can do.

Which one of these do you think needs to be taken care of right away?

Which ones can wait for awhile?

What should we do first? Second?

I can do this.

You can do this.

4. Affirm your commitment to the family

I'm going back to my (center, office, agency) and start to work on this right away.

I will contact you on \_\_\_\_\_ to let you know what I've done and check on what you've gotten done.

5. Reinforce their sense of gaining some control

Now you can feel better with some things put in order, and we will continue to work on this list so you will continue to see results in solving these problems.

6. Take this information to program supervisor and continue to follow through, following the supervisor's direction.

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\*Home Visitor Training Materials provided by High/Scope Educational Research Foundation Family Programs Department, Ypsilanti, MI.

## Consultation and Referral Services

Most communities have a variety of agencies, service organizations, and interest groups that are oriented toward infants, young children, and their families. Speech-language pathologists and audiologists who serve infants at risk for communication disorders need to know about their services. Some communities have a directory of local services to refer to, such as the one from which the following examples are excerpted, which was compiled by the Calhoun County (Michigan) Association for Infant Mental Health. Often, in addition to local addresses, telephone numbers, and contact people, such a directory includes (800) telephone numbers for national organizations. If clinicians do not have access to a service directory, they can rely on an informal network of social service, educational, religious, and medical professionals to arrange consultation and referral.

### Birthright

*Services:* Clothes and furniture for new baby

### Community Mental Health

*Services:* (1) Respite care, foster care, support services, (2) Case management, (3) Family support subsidy, (4) Classes for parents, (5) Resource library

*Eligibility:* (1) Developmentally delayed child, (2) County resident, (3) School classification of SMI, SXI, AI, age 0 to 18

### County Department of Public Health

*Services:* (1) Hope program: prenatal care and postnatal follow-up for one year, (2) Immunization program, (3) Well baby clinic, (4) Screening programs: vision, hearing, Medicaid eligibility, (5) WIC program: pregnant mothers or children under 5 at nutritional risk

### County Department of Social Services

*Services:* (1) Child protection—alleged abuse or neglect, (2) Foster care—court order placement, (3) Hard to place adoptions—court order placements, (4) Financial aid (ADC), based on income and situation, (5) Food stamps, based on income and situation

### Child Guidance Center

*Services:* (1) Evaluate and treat emotional problems of children/families, (2) Intelligence and psychological testing

### Cleft Palate Association

*Services:* (1) Hotline: 1-800-24-CLEFT, (2) Information and referral

### Community Hospital

*Services:* (1) Apnea/monitoring program—previous apnea/SIDS in family, (2) Teaching literature available, (3) CPR for parents

### Coping Parents Support Group

*Services:* Support for parents who have suffered an infant loss

### Down Syndrome Awareness Group

*Services:* (1) Information and referral, (2) Parent support group, (3) Advocacy

**Easter Seal Society**

*Services:* (1) Hotline: 1-800-292-2729, (2) Information and referral, (3) Advocacy, (4) Financial assistance for medical equipment

**Family and Children's Services of County**

*Services:* (1) Adoption, (2) Infant mental health: identification and case management, (3) Specialized foster care, (4) Family counseling

**Friends/Parents of Children with Cancer**

*Services:* Emotional and financial support to parents of children with cancer

**Genetics Clinic**

*Services:* (1) Diagnostic evaluation for children with birth defects, (2) Counseling for families, (3) Information and referral

**Crippled Children Services**

*Services:* (1) Financial assistance, (2) Family assessment and referral services, (3) Case management

*Eligibility:* Must have severe physically handicapping conditions from birth

**Muscular Dystrophy Association**

*Services:* (1) Diagnostic and treatment clinic, (2) Provides medical equipment, (3) Genetic testing and counseling

**National Sudden Infant Death Association**

*Services:* (1) Information and referral, (2) Parent counseling, (3) Education

**Oral Cleft Clinic**

*Services:* Evaluation and referral for hypernasal speech and clefts

**Organization Against Domestic Violence**

*Function:* Domestic violence services to spouse abuse victims and their children (crisis oriented)

*Services:* (1) Protection/housing for victims of domestic violence and their children, (2) Structured day activities program, (3) Child care assistance, (4) Informal support groups for children

*Eligibility:* Must be victims of physical, mental, or emotional abuse and their children

**Parents of Premature and High Risk Infants International, Inc.**

*Function:* Provide information, referrals, and other services to parent support groups, families, and professionals concerned with infants who require special care at birth

*Location:* 33 W. 42nd St., New York, NY 10036, (212) 840-1259

**School District**

*Services:* (1) Project Find: Information and referral regarding special education programs/services, (2) Pre-primary program (birth to 3): developmental evaluation, home-based intervention, child and parent group meetings

**Special Neighborhood Activities Program**

*Services:* (1) Child care (0 to 3), (2) Preschool program (3 and 4 yrs.), (3) After-school program (5 yrs.), (4) Parent support group, (5) Summer activities program, (6) Clothing shop, (7) Infant stimulation

**Spina Bifida Association**

*Services:* (1) Information and referral for spina bifida and neural tube disorders, (2) Parent support group, (3) Parent-to-parent hospital contact, (4) Referral for financial assistance

**United Cerebral Palsy Association**

*Services:* (1) Advocacy, (2) Information and referral

**Visiting Nurse Service**

*Services:* (1) Occupational, speech, and physical therapy, (2) Pediatric care, (3) Family assessment, (4) Referral to other agencies

## Section 5: Conclusion

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**Leader: You may introduce the conclusion by saying, "We've seen examples of targets for assessment and intervention. The last part of the presentation is the conclusion." Play the rest of the videotape. Ask for questions or reactions to the presentation.**

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#### **Oral-Motor Behavior**

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INFANTS AT RISK FOR COMMUNICATION DISORDERS

# The Professional's Role with the Newborn

Shirley N. Sparks, M.S., CCC-SLP  
Michael J. Clark, Ph.D., CCC-SLP  
Robert L. Erickson, Ph.D., CCC-SLP  
Donna B. Oas, M.A., CCC-SLP



Department of Speech Pathology and Audiology  
Western Michigan University  
Kalamazoo, Michigan



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# The Professional's Role with the Newborn

## LEADER'S GUIDE

Shirley N. Sparks, M.S., CCC-SLP  
Michael J. Clark, Ph.D., CCC-SLP  
Robert L. Erickson, Ph.D., CCC-SLP  
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# Preface

The manuals and accompanying videotapes were developed by the Department of Speech Pathology and Audiology at Western Michigan University. They are the main results of a project aimed at enhancing the ability of speech-language pathologists and audiologists to serve at-risk infants and their families and to work cooperatively with other professionals involved with infant care. The project was supported by The Robert Wood Johnson Foundation.

## How to Use These Materials

The manuals and tapes include two independent modules, one focusing on working with newborns, the other on working with infants and toddlers in their homes or at clinical centers. Each of these modules can stand alone as the content of an in-service program or a unit in a university course. Alternatively, since the two modules complement each other, they can be combined in a larger, more comprehensive in-service program or course unit. Both modules present actual clinical cases of infants at risk and their families.

The modules are designed for group presentations, although they can be used for individual self-instruction as well. Normally, one person will function as the leader of the presentation. This person is mainly responsible for leading the discussions after each section of videotape; discussion questions are provided in the manual, but the leader may freely supplement these. The leader also guides the participants in using the printed resources included in the manual. The best results are seen when the leader has had direct experience in working with infants and has taken time to become thoroughly familiar with the videotape(s) and manual(s).

Since these modules focus on risk for communication disorders, the leader and most of the participants are likely to be speech-language pathologists or audiologists. However, professionals from other disciplines—occupational therapy, nursing, pediatrics, developmental psychology, social work, and special education, for example—are also deeply committed to caring for infants and their families, and their knowledge and skills would be valuable resources in any presentation. The videotape shows a number of other professionals working with the infants, and the discussions should explore how the infants' interests are served by multidisciplinary cooperation.

## Formative Evaluation and Validation of These Materials

*Needs Assessment.* Early in the project a needs assessment was conducted to answer the following questions: What are the current trends in service to at-risk infants and their families? What is the current status of communication assessment and intervention with at-risk infants? What are the current roles of speech-language pathologists and audiologists in working with at-risk infants? What is the current effectiveness of practicing speech-language pathologists and audiologists who work with at-risk infants?

Answers to these questions were sought in a variety of ways: review of professional literature; review of information from the American Speech-Language-Hearing Association (ASHA); review of survey results covering the

background, training, and needs of speech-language pathologists and audiologists in a four-county area in New Jersey; review of course work and practica concerned with at-risk infants in four other Michigan universities; review of published media programs on at-risk infants; and interviews with 14 practitioners currently working with at-risk infants and their families.

The needs assessment yielded the following observations pertinent to our project:

- Only 4% of speech-language pathologists and 9% of audiologists were then providing service to at-risk infants and their families.
- Due to governmental regulations, continued growth was anticipated in programs and services designed for at-risk infants.
- There appeared to be no universally accepted definition of at-risk infants and certainly no definition of language or communication impairment in infants.
- Research results documented the effectiveness of programs for infants with various handicapping and risk conditions that can lead to communication disorders.
- Children in the 0-2 age range, who were seen as most in need of expanded and improved services, have traditionally been underreferred to speech-language pathologists and audiologists by physicians and across disciplines.
- The need for speech-language pathologists and audiologists to work with at-risk infants and families was not clearly understood, although university faculty members acknowledged the need for including instructive material in coursework and practica.
- Our videotape and manual would not duplicate known existing products.

*Field Testing and Content/Design Analyses.* Two separate but complementary modules were developed, each consisting of a videotape and accompanying leader's guide and participant's guide. One module focused on the professional's role with the newborn, and the other focused on the professional's role in the home or center. Field testing of the initial versions of the modules was conducted with three audiences: two composed of graduate students and one primarily of practicing professionals. The materials were also reviewed by our Project Advisory Board, a multidisciplinary and multi-institutional group. In addition, presentations were made to the ASHA Communicative Disorders Prevention and Epidemiology Study Group and to the pediatric care staff of Healthwin Rehabilitation Hospital, South Bend, Indiana. Both presentations yielded additional evaluation information.

Based on evaluative comments from these groups, the video scripts, participant's guides, and leader's guides were revised. The new scripts and guides were reviewed by the project staff, by the neonatal developmentalist on the Advisory Board, and by an experienced speech-language pathologist at Cook County Hospital in Chicago.

Content analyses were also conducted on the modules by two recognized experts in service delivery to infants with communication disorders: M. Diane Klein, Ph.D. (California State University at Los Angeles), and Jeanne Wilcox, Ph.D. (Kent State University, Ohio); and an instructional design analysis was conducted by Howard Poole, Ph.D., of the VMU Office of Instructional

Development. Minor revisions were made in the leader's and participant's guides on the basis of these professionals' advice.

*Validation.* Validation studies were designed to collect information from subjects at various field-test sites in order that recommendations could be made about the most effective uses for the modules. The following questions were of interest. For what type(s) of audience(s) (in terms of professional specialization, level of experience, and employment setting) are these modules most appropriate? In what kind(s) of program(s) (for example, university class, professional continuing education) are the modules best implemented?

Eleven field-test sites across the United States were chosen to allow collection of data in a wide variety of settings and from varied audiences. At each site, questionnaires were administered to the participants and to the leader. These instruments included questions relating to seven variables: (1) effectiveness of the modules, (2) implementation of the modules, (3) effectiveness of the leader's guide, (4) satisfaction of the participants and leaders, (5) demographic characteristics of the participants and (6) of the leaders, and (7) future application of the modules.

With few exceptions, both participants ( $n = 166$ ) and leaders ( $n = 11$ ) reported high satisfaction with the modules, regardless of their professional specialization, level of experience, and employment setting. Similarly, they found the modules to be highly effective in accomplishing their objectives and well implemented in the programs where the modules were presented. All of the leaders rated the leader's guides as highly effective and recommended that work experience with at-risk infants be specified as a prerequisite for leaders at future presentations.

In addition to the presentations made as part of the validation study, the completed modules have been subjected to professional scrutiny several other times, always with very favorable results. Module 1, *The Professional's Role with the Newborn*, was presented at the February 1988 Convention of the Illinois Speech-Language-Hearing Association to an audience of 100 speech-language pathologists and audiologists. Sparks presented Module 2, *The Professional's Role in the Home or Center*, in June 1988 to the Ministry of Public Health, Victoria Province, Vancouver, BC (75 speech-language pathologists, audiologists, and professionals from related disciplines). Oas presented Module 1 at the International Association for Infant Mental Health Conference in Providence, Rhode Island, in September 1988 to an audience of 16 psychologists, social workers, and professionals in other related disciplines.

Sparks also utilized videotapes from the modules in her role as an invited presenter at ASHA-sponsored workshops (*Infants and Toddlers: Communication with a Family Focus*) in 1988 in four cities: Washington, Minneapolis, Houston, and Denver. The audience total for the four workshops was more than 250, primarily speech-language pathologists and audiologists. Oas, Sparks, and Clark presented the videotapes and selected portions of the manual in a double mini-seminar at the 1988 annual convention of ASHA in Boston. In all cases the material was well received. Participant evaluations were highly positive.

# Instructions for the Leader

## Preparing for the Presentation

1. Become familiar with the materials. Play the entire tape before presenting it to participants.
2. Know the experience level of your audience. A show of hands will give you this information if the audience is not known to you. The three major types of audience for whom these materials are intended are:
  - Practicing speech-language pathologists and audiologists who have had clinical experience with infants
  - Practicing speech-language pathologists and audiologists who have had no clinical experience with infants
  - Graduate students in speech-language pathology and audiology
  - Professionals from other disciplines may also find the material useful.
3. Choose the discussion questions you will use. For presentation length of approximately one and a half hours, plan for only the Focus for Discussion questions. If more time is available, you may wish to have a longer discussion period. Additional questions are therefore provided. For a varied audience, a question from each category (factual, interpretive, evaluative) would be appropriate.

## Guidelines for Timing the Presentation

Purposes; Overview; Objectives	1 minute
Videotape: Introduction	14 minutes
Summary, Categories of Risk	5 minutes
Introduce NICU, Focus for Discussion	3 minutes
Videotape: NICU	17 minutes
Discussion, Questions, Summary	9 minutes
Introduce Infant at Risk for Hearing Loss, Focus for Discussion	3 minutes
Videotape: Infant at Risk for Hearing Loss	5 minutes
Discussion, Questions, Summary	9 minutes
Introduce Prevention, Focus for Discussion	3 minutes
Videotape: Prevention	8 minutes
Discussion, Questions, Summary	9 minutes
Videotape: Conclusion	4 minutes
Total	90 minutes

# Purposes and Overview

---

**Leader: Present the Purposes and Overview (*Participant's Guide* page 4).**

---

## Purposes of This Program

1. To enhance the preparation of speech-language pathologists and audiologists for service to newborns at risk for communication disorders and their families.
2. To offer answers that fall within federal and state guidelines to these questions:
  - (a) How are infants identified as at risk for communication disorders?
  - (b) What assessment and intervention services do we provide to newborns and their families?
  - (c) What is our role in the prevention of communication disorders for at-risk newborns?

## Overview

Speech-language pathologists and audiologists are professionals who can have a role (usually as members of a team of professionals) in identification, assessment, intervention, and prevention with newborns at risk for communication disorders. These services may currently be performed by other professionals or not at all.

---

**Leader: Explain that all materials are in the manual. Participants will not need to take notes on the videotape as all points are summarized in the *Guide*. Then go on to Section 1, Introduction.**

---

# Section 1: Introduction

---

**Leader: Review Objectives with the participants.**

---

- Objectives
1. To establish that the clinician can have a role on the health care team
  2. To introduce and explain the interaction of biological and caregiving conditions that place communication development at risk
  3. To explain principles of assessment
  4. To explain principles of intervention
  5. To introduce prevention as a role for clinicians

---

**Leader: Point out to participants that the categories of risk are provided in the *Guide* (pages 5-7). In addition, to facilitate discussion, brief explanations of some conditions follow the categories. Start the first section of the videotape (Introduction). Stop the tape when the narrator requests. Then, at your discretion, read aloud the following summary of the introduction or allow the participants time to read it individually.**

---

Summary

Clinicians can have a role on the health care team with at-risk newborns. Normal newborns give communication cues of eye contact, crying, and quieting. They respond by attending to faces and voices and with body movement. Infant-caregiver interactions that are in communicative synchrony have long-term effects on cognitive, social, and linguistic skills. Biological and caregiving risks interact to place a newborn at risk. (The manual provides a list of categories of risk conditions.) Our clinical roles include identification, assessment, intervention, and prevention. Assessment includes describing the dimensions of the original risk condition plus risks for secondary disorders. Principles of intervention are to minimize and alleviate communication problems, promote normal interaction, and promote normal development.

---

**Leader: After the summary has been read, review and discuss to your satisfaction the list of risk categories (*Leader's Guide* pages 8-13, *Participant's Guide* pages 8-10) and the material covered thus far. Note that the risk conditions apply to risk groups that fall under most state guidelines for P.L. 99-457. Go on to next section.**

---

## Categories of Risk

The term *handicap* is defined as a disadvantage in society, due to an impairment (any loss or abnormality of psychological, physiological, or anatomical structure or function) and resulting disability (the reduced ability to meet the needs of daily living), experienced by an individual (Beukelman 1986).

1. Conditions of *known range of expectations for handicap (established risk, Tjossem, 1976)*. Risks for hearing loss; language delay; and articulation, voice, and oral-motor problems are secondary to the original disorder. Examples are:
  - Chromosomal disorders, such as Down syndrome, fragile X syndrome
  - Single gene disorders, such as Hunter/Hurler syndrome, Treacher-Collins syndrome, Cornelia de Lange syndrome, Tay-Sachs disease
  - Environmental disorders acquired prenatally, such as fetal alcohol syndrome and AIDS
2. Conditions of *unknown expectations for handicap (established risk, Tjossem 1976)*. The resulting communication handicaps may range from minimal to severe. Examples are:
  - Congenital hearing loss
  - Cerebral palsy
  - Hydrocephalus and other neural tube defects
  - Clefting
3. Conditions of birth that *may or may not result in handicap (biological risk, Tjossem 1976)*. Risk is increased for neurological sequelae: cognitive impairment, poor language development, attention deficit disorder, hearing loss.
  - Prenatal conditions
    - (1) Anoxia—placenta abnormalities
    - (2) Maternal infections—STORCH (syphilis, toxoplasmosis, other infections, rubella, cytomegalic inclusion disease, herpes)
    - (3) Maternal diabetes (includes gestational)
    - (4) Blood group incompatibility
    - (5) Maternal toxemia (eclampsia and pre-eclampsia)
    - (6) Maternal alcohol and drug ingestion
    - (7) Lack of prenatal care (nutrition)
  - Perinatal conditions
    - (1) Prematurity—low birth weight (1500-2500 g) and very low birth weight (under 1500 g) appropriate for gestational age
    - (2) Small-for-gestational age (low birth weight in a term or a near-term neonate)

- (3) Anoxia (acute and total or prolonged and partial), placenta abnormalities (abruptio placenta, placenta previa), breech presentation, prolonged delivery
- (4) Intraventricular hemorrhage, grades I-IV
- (5) Respiratory distress syndrome—bronchopulmonary dysplasia
- (6) Hyperbilirubinemia—kernicterus
- (7) Anesthetic intoxication
- (8) Neonatal medications
- Postnatal conditions
  - (1) Acute or chronic disease (especially central nervous system)
  - (2) Failure to thrive (organic and nonorganic)
  - (3) Otitis media
  - (4) Seizures
  - (5) Head injury: accidents, abuse
  - (6) Neglect
  - (7) Iatrogenic disorder
  - (8) Exposure to toxic agents (lead)
4. Caregiving (*environmental risk*, Tjossem 1976): conditions in the family or in society with implications for inadequate nurturing and stimulation, which in turn have implications for communication development.
  - Parental factors
    - (1) Impaired parents—mentally, physically, or by alcohol and/or drugs
    - (2) Mother under 19
    - (3) Parents with little education
    - (4) Parents who have experienced recent loss of infant or loved one
    - (5) Parents with low self-esteem
    - (6) Parents with unrealistic expectations for infant
    - (7) Parents who abuse or neglect
    - (8) Parents for whom pregnancy was unwanted
    - (9) Single parent or parent with limited support system
    - (10) Parents experiencing grief for biological risk conditions
  - Social/environmental factors
    - (1) Poverty
    - (2) High stress
    - (3) Separation of parents from infant

## Brief Descriptions of Risk Conditions\*

1. Some conditions present known expectations for handicap.
  - *Chromosomal disorders*, involving thousands of genes, are defects in one of the 46 chromosomes, a missing chromosome (45), too many chromosomes (46+), or broken or rearranged chromosomes.
  - *Single gene disorders* are altered forms of single genes (mutations).
  - *Fetal alcohol syndrome* produces a constellation of abnormalities directly related to alcohol ingestion during pregnancy, including growth retardation without catch-up, characteristic face, and central nervous system impairment.
2. Some conditions present unknown expectations for handicap.
  - *Hydrocephalus*, resulting from pressure of spinal fluid that is prevented from leaving the brain and being absorbed into the bloodstream, may cause brain damage.
  - *Other neural tube defects* are midline defects of the skin, spinal column, and spinal cord, such as spina bifida.
3. Conditions of birth may or may not result in handicap.
  - Some adverse conditions are prenatal.
    - (1) *Anoxia* is too little oxygen in the blood and tissues, which may result from an abnormality in the transfer of oxygen by the placenta.
    - (2) *STORCH* comprises various infections of the mother.
      - (a) *Syphilis* is a sexually transmitted infection caused by a bacterium. Untreated syphilis, whether contracted during pregnancy or years before, may be transmitted to the fetus.
      - (b) *Toxoplasmosis* is an infection caused by a protozoan organism, most widely carried by cats, that may pass through the placenta of an unsuspecting pregnant woman to the fetus. Affected infants may have low birth weight, a large liver and spleen, jaundice and anemia, and neural tube and brain defects.
      - (c) *Other infections* include influenza virus, chicken pox, and various other viruses that are suspected of causing damage to the fetus.
      - (d) *Rubella* is a virus commonly called German measles. The fetus is most susceptible during the first three months of gestation. Typical congenital malformations include heart defects, microcephaly, cataracts, mental retardation, diabetes, and hearing loss.
      - (e) *Cytomegalic inclusion disease* is most dangerous to the fetus during the mother's first infection by a common virus. Congenital defects include disease of the retina, deafness, and developmental delay.

(f) *Herpes simplex* is a virus that may be acquired during the infant's passage through the birth canal when the mother has active herpes in the genital region. The result may be a mild disease of the skin and mucous membranes of the mouth and eye; if severe, it may involve all organs of the body, including the brain.

(3) With *maternal diabetes*, kidney problems and inadequate control of blood sugar in the mother may stress the fetus, although the baby will not be born with diabetes. Infants of diabetic mothers are likely to be large, but preterm. As newborns, they are likely to have significant difficulty maintaining normal blood sugar.

(4) *Blood group incompatibility* is a condition in which fetal red blood cells are destroyed faster than they can be replaced. The mother's system may have developed an immunity to the fetus's blood, as in Rh disease, and may pass antibodies to the fetus through the placenta, resulting in severe anemia and jaundice in the newborn, which may result in CNS damage. ABO and other blood group incompatibilities may result in significant, but less severe, anemia and jaundice. The major effect of anemia is lack of energy to perform the usual developmental tasks of childhood. (Note: sickle-cell disease is a serious cause of anemia; it is transferred by genetic inheritance, not caused by incompatibility.)

(5) *Maternal toxemia* appears to affect the kidneys, resulting in varying degrees of high blood pressure, protein in the urine, and fluid retention. The early, milder stage is *pre-eclampsia*; *eclampsia* is the later, severe form characterized by grand mal seizures in the mother. High blood pressure in the mother can result in poor fetal growth as well as separation of the placenta from the uterine wall with resultant hemorrhage (see *abruptio placenta* under *perinatal anoxia* below).

(6) *Maternal alcohol and drug ingestion* can injure the fetus throughout the entire pregnancy but most severely during the first trimester when fetal organs (including the brain) are forming.

(7) *Lack of prenatal care* may result in handicap. Contact with a physician early in pregnancy can prevent complications by facilitating the detection of conditions that may adversely affect the fetus and newborn. Studies have shown a higher incidence of prematurity and complications in newborns whose mothers did not receive adequate prenatal care.

- Adverse perinatal conditions may result in handicap.

(1) *Prematurity* is less than 37 weeks gestation with birth weight appropriate for fetal age.

(2) *Small-for-gestational age* describes an infant whose weight falls below the tenth percentile of expected weight for fetal age. The SGA baby has usually suffered growth retardation in the uterus.

(3) *Anoxia* or *asphyxia* results from failure to breathe after delivery. Circumstances that may lead to anoxia include (a) compression of the umbilical cord, (b) premature separation of the placenta, (c) sustained

contraction of the uterus, (d) an umbilical cord that is wrapped tightly around the neck or body, and (e) damage to the head and brain during the birth process. With *placenta previa* the placenta overlies the opening of the uterus and will hemorrhage during delivery. With *abruptio placenta* there is separation of the placenta from the uterine wall with resultant hemorrhage. Complete and total asphyxia can occur when the umbilical cord is clamped or compressed, as when the fetus is in breech position (buttocks first). Prolonged, partial asphyxia can be produced by very strong uterine contractions during delivery.

(4) *Intraventricular hemorrhage*, or bleeding into the fluid-filled spaces of the brain, may result in cerebral palsy.

(5) *Respiratory distress syndrome* is a pulmonary disorder of premature infants caused by lack of surfactant in the lungs. Infants with very severe RDS, especially those on a mechanical ventilator for prolonged periods, may develop the chronic lung disorder of bronchopulmonary dysplasia.

(6) *Hyperbilirubinemia* is failure of the liver to eliminate the natural bilirubin from the blood quickly enough. High levels of bilirubin may result in damage to the basal ganglia of the brain. Such damage, called *kernicterus*, may result in athetoid cerebral palsy.

(7) *Anesthetic intoxication* is depression of the infant's breathing caused by drugs administered to the mother during labor.

(8) *Neonatal medications* are risks because some drugs place a neonate at risk for hearing loss. Such drugs include salicylates and quinine, potent diuretics, and some antibiotics (streptomycin, kanamycin, neomycin, gentamicin, and tobramycin).

- Adverse postnatal conditions may result in handicap.

(1) *Acute or chronic disease* is a risk condition to the extent that disease interrupts development. A child with optimal health is most likely to have optimal development and to benefit from learning experiences.

(2) *Failure to thrive* describes weight gain at a slower than normal rate during infancy. Organic causes include numerous disorders, especially central nervous system, cardiovascular, and digestive tract problems. Nonorganic failure is often associated with neglect, emotional disturbances, or parents who are often themselves victims of poor parenting and ongoing stresses.

(3) *Iatrogenic disorder* is caused by treatment, usually to save the life of the newborn. Lasting effects of neonatal medications, damage to the larynx from insertion of tubes, and hearing loss from noise in the intensive care unit are examples.

#### 4. Caregiving conditions may contribute to handicaps.

- Parental factors may be adverse.

(1-9) These conditions (from Categories of Risk list) are generally accepted to be risks for nurturing and attachment, resulting in a less than optimal environment for communication development.

(10) Grief for biological risk conditions may occur if parents form expectations during pregnancy about the baby they will have. When their baby is different (sick or handicapped) they must grieve for their expected baby before they can turn their attention to the baby they have.

- Social/environmental conditions may be adverse.

(1) and (2) refer to factors in society with implications for impairment in nurturing and stimulation, which in turn have implications for communication development.

(3) Separation of parents from infant is a risk condition. When an infant is hospitalized for established or biological risk conditions, natural bonding and appropriate language stimulation are interrupted.

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\*From Blackman 1984 and Sparks 1984

## Section 2: Neonatal Intensive Care Unit

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**Leader: Present *Clinician Roles, Objectives, and Focus for Discussion* (below). (*Focus for Discussion* orients participants to the clinical case presented in the tape.) Discussion will take place after the second section of the tape has been viewed.**

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### *Clinician Roles*

The following clinician roles can be observed in the second section of the videotape.

1. Assess
2. Promote appropriate interaction between newborn and caregivers
3. Minimize and alleviate oral-motor problems
4. Support parents

Other clinician roles in the NICU:

1. Assess risk for hearing loss
2. Refer to audiologist for screening or hearing evaluation

### Objectives

1. To describe various roles of the clinician in the NICU
2. To explain assessment procedures for primary and secondary disorders
3. To explain ways to become team participants in the NICU
4. To present support groups as an aid to parents

### *Focus for Discussion*

When the videotape is stopped, this will be the focus for discussion:

Hope's mother seems unsure of her abilities to fulfill Hope's special needs. What can the clinician do to support her in her new responsibilities? (Note that Hope's case information is given below for later reference.)

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**Leader: Play the second section of the videotape, Neonatal Intensive Care Unit. Be prepared to stop the tape when the narrator requests. (Play videotape.)**

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**Leader: After this section of the videotape has been shown, you will begin the discussion. Following is information on Hope's risks. Point out this information to participants (on pages 11-12 in their guides) and move to the discussion.**

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## Case Study: Hope

### *Biological risks*

- Birth weight 1 lb. 15 oz. at 27 weeks gestation
- BPD (bronchopulmonary dysplasia), on ventilator for 3 months
- Tube fed since birth
- Secondary risks: Cognitive, motor, language, hearing, and affective disorders associated with conditions of birth and immature central nervous system; oral-motor problems associated with tube feeding

### *Caregiving risks*

- NICU experience interferes with normal attachment and communicative behaviors for both infant and caregivers. Immature central nervous system functioning may be reflected in hyperirritability, exaggerated reflexes, unpredictability in sleep/wake cycles, difficulty modulating state transitions, and information processing problems. NICU experience creates stress in the family.
- Secondary risks include interruption of language development associated with problems of attachment and problems of maintaining homeostasis.

## Discussion      Focus for Discussion

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**Leader: Ask *Focus for Discussion* question:**

**Hope's mother seems unsure of her abilities to fulfill Hope's special needs. What can the clinician do to support her in her new responsibilities?**

**Listen to her concerns**

**Offer to be called when she needs advice or support**

**Arrange a follow-up visit**

**Put her in touch with a support group**

**Arrange for a community follow-up such as Visiting Nurse Service**

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**Leader:** Additional questions, such as the following, may be considered, depending on time available and level of participants' knowledge.

**Factual Questions**

1. Why would a long hospitalization put Hope at caregiving risk?

An infant who is separated from parents in the first few months of life is deprived of normal interaction and the bonding and attachment associated with interaction.

2. Why did Hope react so negatively to oral-motor stimulation?

She has been tube fed and has not experienced oral-motor stimulation. Some hospital procedures that involved her mouth were unpleasant ones.

**Interpretive Question**

Why could Hope tolerate only minimal stimulation and handling by nurses and parents?

Very premature and low birth weight infants do not respond to tactile handling and stimulation as term infants do. They are unable to shut out stimuli and have difficulty maintaining homeostasis because of an immature central nervous system.

**Evaluative Questions for Clinicians Who Practice with Infants**

1. How are you able to counsel parents about their infant's communication cues and responses in the NICU?
  2. How important is your role in the NICU?
  3. How do you take part in feeding evaluations and oral-motor intervention with infants in your setting?
  4. How do you do your evaluations? What are the best instruments available to us?
- 
- 

**Leader:** At your discretion, read aloud the summary of the second section, Neonatal Intensive Care Unit, or ask participants to read it individually (*Participant's Guide*, page 12).

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**Summary**

There is no standard protocol for assessment due to a wide range of ages and risk conditions. Assessment procedures may include obtaining a diagnosis of the infant's medical condition from the medical chart, evaluating

communicative behavior through standardized and informal instruments, and determining possible secondary disorders.

Oral-motor assessment includes reflexes and other oral behavior, which varies with the infant's age, state, and status. Intervention decisions are based on degree of oral-motor difficulty: appropriate oral-motor behaviors call for no intervention; minor aberrations call for consultation to caregivers (for example, repositioning to facilitate feeding); and aberrations severe enough to interfere with feeding call for treatment.

Clinicians promote appropriate interactions between the newborn and the caregivers, both parents and nurses. Nurses may be counseled on ways to interact with the infants, but listening to their concerns and modeling may be the best technique. Five ways that premature infants communicate are by spreading fingers, yawning, grunting, averting gaze, and arching the back. Caregivers should allow the infant to take a "time-out," then interact again when the infant returns gaze. Intervention techniques for oral feeding with tube-fed infants include introducing the pacifier when tube feeding takes place, placing the infant's hand beside the mouth, using firm and gentle touch, touching with cloth, placing formula on gauze, and thickening formula.

Speech-language pathologists in NICUs may work with a multidisciplinary team. Team members who also have a role with feeding are occupational therapists, physicians, nurses, and dieticians. A multidisciplinary team may also include a social worker and may be involved with discharge planning. The team must address such matters as equipment needed in the home and how to obtain it, follow-up appointments, transportation to various resources and follow-up clinics, and other home problems that affect the infant's environment. To participate on the health care team, clinicians must be willing to establish credibility by studying medical conditions, gain expertise by working with pediatric patients, be willing to commit time, and be able to assist with feeding. Clinicians may help parents get in touch with other parents through support groups.

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**Leader: After the summary has been read, point out the lists of assessment instruments (pages 13-15) and intervention materials (pages 15-16) in Participant's Guide. Go on to the next section.**

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## Assessment Instruments for Use with the Newborn

### *Screening Tests*

Coplan, J. 1984. *The Early Language Milestone Scale (ELM Scale)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced screening test

**Age Range:** Birth to 3 years

**Content Areas:** Auditory expression, auditory reception, visual

**Administration Time:** 10 minutes

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory Screening Test*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition.

**Administration Time:** 10 to 15 minutes for children under 3

***In-Depth Tests: Newborn***

Als, H. 1984. *Assessment of Premature Infant Behavior (APIB)*. Boston: The Children's Hospital of Boston.

**Type of Measure:** Behavioral evaluation scale (adaptation and expansion of the "Brazelton" for premature infants)

**Age Range:** Neonatal, from medically stable to time of reaction to environment similar to full-term infant

**Content Areas:** Visual, auditory, tactile, organization, socialization, reflexes

Bee, H. L., K. E. Barnard, S. J. Eyres, C. A. Gray, M. A. Hammond, A. L. Spietz, C. Snyder, and B. Clark. 1982. Nursing Child Assessment Teaching and Feeding Scales. (In Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. *Child Development* 53:1134-56.)

**Type of Measure:** Behavioral checklist

**Purpose:** Assessment of parent and child behaviors during teaching and feeding as screening device and pre/post intervention

**Age Range:** 1 to 36 months

**Content Areas:** Parent's sensitivity to cues, response to distress, and cognitive and socio-emotional growth fostering, and child's clarity of cues, responsiveness

**Administration Procedures:** Check behaviors observed after 3 to 5 minutes of teaching; feeding observation time varies per dyad; rating time = 15 minutes per scale; 73/76-item binary checklists

Brazelton, T. B. 1984. *Neonatal Behavioral Assessment Scale*. Philadelphia: J. B. Lippincott Co.

**Type of Measure:** Behavioral evaluation scale

**Age Range:** Neonatal period

**Content Areas:** Visual, auditory, tactile, organization, motor maturity, and reflexes

**Administration Time:** 30 to 60 minutes

Wallen, P. B., W. B. Elder, and S. N. Hastings. 1982. *EMI Scale (Education for Multihandicapped Infants)*. Charlottesville, VA: Department of Pediatrics, University of Virginia Medical Center.

**Type of Instrument:** Behavior scale

**Age Range:** Birth to 2 years

**Content Areas:** Gross motor skills, fine motor skills, socialization, cognition, and language

***In-Depth Tests: Infant***

Bayley, N. 1969. *Bayley Scales of Infant Development*. San Antonio: The Psychological Corporation.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 36 months

**Content Areas:** Mental and psychomotor developmental indices (MDI and PDI)

**Administration Time:** 45 minutes per index

Bzoch, K. R., and R. League. 1971. *Receptive-Expressive Emergent Language (REEL) Scale*. Baltimore, MD: University Park Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Receptive and expressive language administered by parent interview

**Administration Time:** 20 minutes

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Cognitive, fine motor, gross motor, expressive language, social-emotional, and self-help

**Administration Time:** 15 to 30 minutes for children up to 2

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 1 hour or less for children under the age of 3

Schafer, D. S., and M. S. Moersch, eds. 1971. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Perceptual/fine motor, cognition, language, social-emotional, self-care, and gross motor

**Administration Time:** 30 to 60 minutes

Tanner, D. C., and W. M. Lamb. 1984. *The Cognitive, Linguistic and Social-Communicative Scales (CLASS)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced, indirect assessment

**Age Range:** Birth to 72 months

**Content Areas:** Cognitive, linguistic, and social-communicative

**Administration Time:** 45 minutes

Uzgiris, I. C., and J. M. Hunt. 1975. *Assessment in Infancy*. Chicago: University of Illinois Press.

**Type of Measure:** Sensorimotor scales

**Age Range:** Birth to 2 years

**Content Areas:** Six scales

I: The Development of Visual Pursuit

II: The Development of Means of Obtaining Desired Environmental Events

III: The Development of Imitation

IIIa: Vocal Imitation

IIIb: Gestural Imitation

IV: The Development of Operational Causality

V: The Construction of Object Relations in Space

VI: The Development of Schemes for Relating to Objects.

## Intervention Materials for Use with the Newborn

Clark, T. C., E. C. Morgan, and A. L. Wilson-Vlotman. 1984. *The Insite Model*. Logan, UT: Ski Hi Institute. A parent-centered, in-home, sensory interventive, training and educational program for the newborn with multiple impairments.

Dmitriev, V. 1982. *Time to Begin*. Milton, WA: Caring, Inc. A practical manual for guiding the development of children with Down syndrome from infancy to 2 years.

Elder, W. B., and J. N. Swift. 1975. *Education for Multihandicapped Infants Curriculum Pool*. Charlottesville, VA: University of Virginia Medical Center. Materials are intended for use by professionals and paraprofessionals in the field of infant development and interaction and may be used in planning activities for both at-risk and handicapped infants and newborns.

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, E. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation. Activities for the clinician based on the HELP assessment instrument.

Hanson, M. 1987. *Teaching the Infant with Down Syndrome*. 2d ed. Austin, TX: Pro-Ed, Inc. Activities for parents of infants with Down syndrome.

Harrison, H. 1983. *The Premature Baby Book*. New York: St. Martin's Press. A parent's guide to coping and caring in the first years.

Karnes, M. B. 1982. *You and Your Small Wonder*. Book 1 (0 to 9 mos.) Circle Pines, MN: American Guidance Service. Activities and materials foster physical, emotional, and intellectual growth and language development.

Reidlich, C. E., and M. E. Herzfeld. 1983. *0 to 3 Years—An Early Language Curriculum*. Moline, IL: Linguisticsystems, Inc. A series of communication activities sequenced developmentally and divided into receptive and expressive language skill areas.

Sparling, J., and I. Lewis. 1979. *Learning Games for the First Three Years*. New York: Berkley Publishing Group. Household activities for parents of infants up to 3 years old.

## Section 3: Infant at Risk for Hearing Loss

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**Leader: Present Clinician Roles, Objectives, and Focus for Discussion (below). (Focus for Discussion orients participants to the clinical case presented in the tape.) Discussion will take place after the third section of the tape has been viewed.**

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### *Clinician Roles*

The following audiology clinician roles can be observed in this section of the videotape:

1. Assess
  - (a) Auditory brainstem response (ABR) audiometry
  - (b) Behavioral audiometry
  - (c) Immittance testing
2. Provide intervention
3. Assess for secondary problems
4. Provide hearing screening

### Objectives

1. To present the High Risk Register as a method for identifying infants to be evaluated
2. To demonstrate various ways to evaluate infant hearing
3. To present hearing screening as the responsibility of the audiologist
4. To present referral for hearing screening as the responsibility of the speech-language pathologist

### *Focus for Discussion*

When the videotape is stopped, this will be the focus for discussion:

**Why did the threat of a handicap put Kasey at risk for caregiving problems?**

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**Leader: Play the third section of the videotape. Be prepared to stop the tape when the narrator requests. (Play the videotape.)**

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**Leader: After the third section of the videotape has been shown, you will begin the discussion. Following is material on Kasey's risks. Point out this material to participants (pages 17-18 in *Participant's Guide*) and move on to the discussion.**

---

## Case Study: Kasey

### *Biological risks*

- Meningitis at 8 days; at risk for profound hearing loss.
- Secondary risks: cognitive, language, and social-affective delays associated with hearing loss

### *Caregiving risks*

- The family's interactions with Kasey changed due to worry about his hearing loss. Instead of normal interactions, they focused on evaluation of his hearing status.
- Secondary risks include interruption of language development associated with problems of interaction.

## Discussion      Focus for Discussion

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**Leader: Point out that behavioral audiometry may be reliable with infants beginning at birth. In Kasey's case, however, behavioral audiometry was not considered to be reliable.**

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**Leader: Ask Focus for Discussion question:**

**Why did the threat of a handicap put Kasey at risk for caregiving problems?**

**The threat of a handicap caused stress in the family, and Kasey's parents began to treat him differently. They concentrated on trying to get hearing responses from him instead of participating in normal interaction with him.**

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**Leader:** Additional questions, such as the following, may be considered, depending on time available and level of participants' knowledge.

**Factual Question**

**Why does the clinician want to continue to monitor Kasey's hearing?**

**The ABR test results indicate that Kasey's auditory mechanism is intact. It does not indicate how Kasey perceives sound. Behavioral testing with infants may not rule out unilateral or high-frequency hearing loss. Kasey could have a progressive loss that would require repeated observations. Hearing is likely to fluctuate after meningitis.**

**Interpretive Questions**

- 1. If he did not have a hearing loss, why did Kasey appear to have a hearing loss after his illness?**

**When infants are very sick they may withdraw and fail to respond to maintain their homeostasis. This is called "shut-down."**

- 2. Do you think the clinician saying that Kasey's hearing is okay today is unnecessarily frightening for parents? Could the point that his hearing should be monitored be made another way?**

**The discussion may focus on ways to tell parents what they must know without frightening them. Hearing can change dramatically in the months following meningitis. Kasey's parents should be told what auditory milestones he will go through in the next few months.**

**Evaluative Questions for Clinicians Who Practice with Infants**

- 1. Does your setting provide hearing screening for all newborns? For at-risk newborns?**
  - 2. Do you use the High Risk Register? What do you think of it? Do you have another way to screen?**
- 
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**Leader:** At your discretion, read aloud the summary of the third section or ask participants to read it individually (*Participant's Guide*, page 18).

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## Summary

The High Risk Register is a method for identifying infants to be evaluated for hearing loss. The High Risk Register does not identify all deaf infants. Hearing may be tested at any age. Ways of testing infant hearing are behavioral audiometry and auditory brainstem response (ABR) audiometry. Behavioral testing of infants may not rule out unilateral hearing loss, very mild hearing loss, or high-frequency loss. Repeated testing is necessary to rule out progressive loss. ABR is a test of the integrity of the auditory mechanism. It is not a test of hearing perception. Behavioral testing should always accompany ABR in a hearing evaluation but not necessarily in a hearing screening. Immittance testing, to check for middle-ear problems, is necessary whether ABR or behavioral audiometry is chosen. An infant at risk for hearing loss should be screened for secondary disorders such as cognitive, language, or social-affective delays. Ideally, all infants would be screened for hearing loss, but certainly those at risk for communication problems must be.

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**Leader: After the summary has been read, point out the High Risk Register on page 18 and the list of early intervention materials on page 19 in the *Participant's Guide*. Go to the next section.**

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## High Risk Register

**Suggested High Risk Criteria from the American Academy of Pediatrics Joint Committee on Infant Hearing Position Statement 1982**  
(*Pediatrics*, vol. 70, no. 3)

1. A family history of childhood hearing impairment.
2. Congenital perinatal infection (e.g., cytomegalovirus, rubella, herpes, toxoplasmosis, syphilis).
3. Anatomic malformations involving the head or neck (e.g., dysmorphic appearance, including syndromal and nonsyndromal abnormalities, overt or submucous cleft palate, morphologic abnormalities of the pinna).
4. Birth weight less than 1500 grams.
5. Hyperbilirubinemia at levels exceeding indications for exchange transfusion.
6. Bacterial meningitis, especially H. influenza.
7. Severe asphyxia, which may include infants with APGAR scores of 0 to 3 who fail to institute spontaneous respiration by 10 minutes and those with hypotonia persisting to 2 hours of age.

## Hearing Loss Intervention Materials

### ***Organizations for Parents***

Alexander Graham Bell Association for the Deaf, 3417 Volta Place N.W.,  
Washington, DC 20007

John Tracy Clinic, 806 West Adams Boulevard, Los Angeles, CA 90007

### ***Materials for Parents and Professionals***

Clark, T. C., and S. Watkins. 1978. *The Ski-Hi model*. Logan, UT: Utah State University. A comprehensive model for identification, language facilitation, and family support for children with hearing handicaps through home management, ages birth to 6.

John Tracy Clinic. 1983. *Parents of pre-schoolers*. 1979. *Parents of babies*. 1988. *Parents of blind/deaf*. Correspondence courses (revised). Educational Materials Department, John Tracy Clinic, 806 West Adams Boulevard, Los Angeles, CA 90007

Schuyler, V. S., N. Rushmer, R. Arpan, A. Melum, J. Sowers, and N. Kennedy. 1985. *Parent-infant communication*. Portland, OR: Infant Hearing Resource. A program of clinical and home training for parents and infants with hearing impairments.

Simmons-Martin, A. 1975. *Chats with Johnny's parents*. Alexander Graham Bell Association for the Deaf, 3417 Volta Place N.W., Washington DC 20007

Watkins, S. 1983. *Developing cognition in young hearing impaired children*. Logan, UT: Ski Hi Institute, Utah State University. A program to help parents of young children with hearing impairments stimulate the development of thinking skills in their children.

## Section 4: Primary Prevention with Parents and Prevention with Health Professionals

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**Leader:** The format for this section differs from the other sections in that two parts are presented before the videotape is stopped. Before starting the videotape, present the Clinician Roles, Objectives, and Focus for Discussion, below. (Focus for Discussion orients participants to the clinical cases presented in the tape.) Also, point out the Primary Prevention Program (pages 23-24 in Participant's Guide.) Discussion will take place after this section of the tape has been viewed.

---

### *Clinician Roles*

#### **A. Primary Prevention with Parents**

The following clinician roles can be observed in this section of the videotape:

1. Informally assess mother and infant
2. Prevent occurrence of communication disorder

Other clinician roles in the prevention program:

1. Follow-up at home
2. Refer or begin traditional intervention

#### **B. Prevention with Health Professionals**

The following clinician roles can be observed:

1. Identify sources of iatrogenic communication disorders with the health care team
2. Participate with other members of the health care team to minimize any potentially harmful effects of treatment on the infant's communication system.

### **Objectives**

1. To demonstrate a method for primary prevention with an at-risk mother
2. To demonstrate an interactive approach to informing other members of the health care team about the causes and effects of iatrogenic communication disorders

### *Focus for Discussion*

When the videotape is stopped, the following will be the focus of discussion.

- A. Alecia seemed receptive to the clinician's counseling. What should the clinician do if the mother is not receptive? What resources should she call upon for help? What can she do to follow up with Alecia and Joseph when they leave the hospital?
- B. The clinician led a discussion with a group of nurses. What are other ways she might have presented the information? What do you think is the most effective way? The discussion centered on causes of communication disorders. What solutions can be found to prevent the occurrence of those disorders?

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**Leader: Play the fourth section of the videotape. Be prepared to stop the tape when the narrator requests. (Play videotape.)**

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**Leader: After this section of the videotape has been shown, you will begin the discussion. Following is material on Joseph's risks. Point out this material to participants (page 22 in *Participant's Guide*) and move to the discussion.**

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### Case Study: Alecia and Joseph

#### *Biological risks*

- None at birth
- Secondary risks: failure to thrive associated with problems of attachment

#### *Caregiving risks*

- Mother is at high risk; she is adolescent and single. She lives with her own mother and has a low socioeconomic status.
- Secondary risk is language delay associated with problems of attachment and interaction.

### Risks for NICU Infants

#### *Biological risks*

- Hearing loss from high noise levels and ototoxic drugs, laryngeal damage from ventilator tube

- Secondary risks: language delay associated with hearing loss, voice disorders associated with laryngeal injury

*Caregiving risks*

- Low appropriate language stimulation, overstimulation from constant light and sound
- Secondary risks: interference with language development associated with understimulation and overstimulation

Discussion    Focus for Discussion

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**Leader: Ask Focus for Discussion questions:**

- 1. Alecia seemed receptive to the clinician's counseling. What should the clinician do if the mother is not receptive?**

**Discuss Alecia's situation with the other members of the team or with the nurses if there is no team. Decide together if other services may be appropriate (for example, social work, Visiting Nurse Service, or other agencies).**

- 2. What can the clinician do to follow up with Alecia and Joseph after they leave the hospital?**

**Phone calls (if there is a phone), home visit, coordination with any other agency that visits the home or has contact with Alecia.**

**Be present or available when Alecia brings Joseph in for a follow-up health visit.**

- 3. The perinatal protocol that the clinician used primarily required Joseph to respond to Alecia. What could the clinician do to call Alecia's attention to responding to Joseph?**

**Ask Alecia what she thinks Joseph is communicating with his cries and body movements.**

- 4. The clinician led a discussion with a group of nurses. What are other ways she might have presented the information? What do you think is the most effective way?**

**She could have given a lecture to the nurses. The most effective way is to do it in an interactive discussion. The clinician is on nursing turf in the NICU and must be a welcome member of the team in order to stay.**

- 5. The discussion centered on causes of communication disorders. What solutions can be found to prevent the occurrence of those disorders?**

**Hearing loss from noise: Cut down on people noises (radios, talking, telephones, banging on the isolettes).**

**Hearing loss from ototoxic drugs: Careful administration. The drugs will be given if necessary for survival.**

**Vocal fold damage from intubation: Avoidance of unnecessary changing of tubes; anchor tubes so they do not move around.**

**Lack of stimulating vocal sounds: Vocal sounds should be appropriate and not overstimulating. Encourage appropriate vocal sounds from parents and nurses.**

**Leader: At your discretion, read the summary of the fourth section or ask participants to read it individually.**

## Summary

Primary prevention is prevention of the occurrence of a communication disorder. A program of primary prevention with an at-risk mother is to show the mother her infant's cues and responses in order to facilitate their interactive synchrony. The same program allows the clinician to observe both the infant's responses and the mother's developing attachment with her infant. Effective prevention includes following up after the infant and parent leave the hospital. If secondary problems appear, the clinician may begin intervention or make an appropriate community referral.

(Your *Guide* provides a primary prevention protocol. Please note that it is not intended for use with NICU infants. A list of suggested referral sources is also provided on the following pages.)

Four iatrogenic communication disorders associated with treatment in the NICU are of primary importance to speech-language pathologists and audiologists: hearing loss from noise, hearing loss from ototoxic drugs, vocal fold damage from intubation, and lack of stimulating vocal sounds. Clinicians must inform other members of the health care team of the causes and effects of iatrogenic communication disorders. Clinicians must respect the roles of other members of the team when communicating that information.

**Leader: After the summary has been read, point out the primary prevention program and the list of services (pages 23-30 in *Participant's Guide*). Then go to the next section.**

## Primary Prevention Program\*

Perinatal Phase—Protocol for Presentation of 5 stimuli

Time Frame—15 to 20 minutes

Infant Age—The best age is 2 or 3 days old while the infant is between feedings

Equipment—A soft rattle, bell, black-and-white face and the words, "Can you turn this way when I talk to you?"

*Introduce yourself.*

Explain: I want to talk with you about some of the things your baby can do now and show you some of the ways he/she communicates with you. What is your baby's name?

Baby should be in the hospital bassinet. If asleep, begin with 1; if awake, go to 3, or 8(c) if appropriate. Although several of the following items note examiner presentation of stimuli, the ultimate goal is to have the mother present the stimulus and gain a response from her baby.

1. *Response to rattle.* You wish to break through sleeping and create a startle response. The stimuli should be brief. Shake the rattle 5 seconds after each response to the last shake. Do this for 10 trials or until the baby makes no response to two consecutive stimuli. Notice general startle, eye blinking, and respiratory changes. Explain that the baby can shut out certain stimuli.
2. *Response to bell.* As above.
3. *Response to visual stimulus (black-and-white face).* You wish to demonstrate the baby's ability to watch and follow the face. The stimulus should be presented and then slowly moved vertically, horizontally, and in a circle. Notice and point out if the baby focuses on the face, follows it, exhibits facial expressions, exhibits eye widening, etc. If baby does not attend while lying down, try propping baby up or holding baby on your lap.
4. *Response to auditory stimulus (soft bell or rattle).* You wish to demonstrate baby's ability to hear and respond to sound. The stimuli should be presented to each side and out of sight (6" to 12" away). Alerting and brightening should be noticed and pointed out to baby's mother. Baby may turn head in the direction of the sound source.
5. *Response to animate visual stimulus (examiner's face).* You wish to demonstrate baby's ability to see and respond positively to the human face. This might be a nice time to comment on baby's preference for the human face over other objects. Examiner should move her face into baby's line of vision, move in lateral and vertical arcs until baby stops following and notice alerting, brightening, and movement of the face to follow examiner's.
6. *Response to animate auditory stimulus (mother's voice).* You wish to demonstrate baby's ability to hear and respond to the human voice. This is an appropriate time to mention baby's preference for the human voice over other sound. The mother should remove her face from the baby's line of vision and speak from one side at 6" to 12" from baby's ear. Continuous, soft, high-pitched speech is the best. Notice and point out alerting, turning of the head and eyes, respiratory changes, and brightening.

7. *Response to animate visual and auditory stimulus* (examiner's face and voice). The examiner's continuous voice is used to reinforce the face as it moves slowly across baby's line of vision. Look for alerting and brightening as before. Try this while the infant is lying in the bassinet and then while infant is being held.
8. *Baby's imitation of examiner's mouth movements* (for example, mouth open or tongue out). Demonstrate these states whenever the situation arises.
  - (a) *Alertness*—Point out this state is a good time to communicate and play with the baby. Encourage the mother to be attentive to baby's cues, which tell us when he/she needs a rest and that we should stop interaction. Guide the mother to notice respirations, widened eyes, facial expressions, body activity, etc.
  - (b) *Cuddliness*—Demonstrate the infant's response to being held. Mention individuality and watching for baby's cues as to type and amount of holding baby prefers. Discuss being in rhythm with the baby. Notice if baby resists holding, lies passively, molds and relaxes, nestles, clings, etc.
  - (c) *Consolability*—Demonstrate baby's ability to be consoled when upset. Again, mention individuality. Try examiner's face first, then face and voice, touching infant's belly, hand on belly and restraint of both arms, picking up and holding, holding and rocking, pacifier while holding and rocking. Baby should be fussing for 15 seconds before these are tried.

## Summary

A conversation takes place between you and your baby. Watch for baby's "comments" and respond to what baby is "saying." The plan is not to teach mothers to do given tasks with their babies but to foster interactional skills by demonstrating the baby's communicative abilities at a vulnerable point for learning. A similar rationale is supported by Bromwich and Parmelee (1979).

### Perinatal Phase

Mother's Name: \_\_\_\_\_ Rater: \_\_\_\_\_  
 Mother's Age: \_\_\_\_\_ Race: \_\_\_\_\_  
 Marital Status: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Date: \_\_\_\_\_ First Baby: \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ #  
 Baby's Name: \_\_\_\_\_ Baby's Age in Hours: \_\_\_\_\_

#### Rating of Mother/Father (Do a rating for each present)

1	2	3	4	5
Eye contact very limited; continued to watch TV, no facial expressions to evidence responsiveness to information presented.	Maintained sporadic eye contact with presenters.	Smiled and nodded head in indication of responsiveness to information presented.	Asked questions about content presented.	Commented spontaneously re: How would integrate suggestions at home.

Comments on Mother's Reactions/Questions/Physical Condition: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

#### Rating of Baby

Stimulus	Response
1. Bell/Rattle—Asleep	1. _____
2. Presenter's/Mother's Voice—Asleep or Awake	2. _____
3. Black-and-White Face	3. _____
4. Presenter's/Mother's Face	4. _____
5. Tracking of Presenter's/Mother's Face and Voice	5. _____
6. Tongue Imitation	6. _____
7. Bell/Rattle—Awake	7. _____

1	2	3	4	5
No response—Baby asleep or crying.	Responded to 1 stimulus.	Responded to 2 different stimuli.	Responded to 3 different stimuli.	Responded to 4 different stimuli presented.

Description of Baby's State/Responses \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Nurse's Comments re: Mother/Baby Dyad: \_\_\_\_\_  
 \_\_\_\_\_

## Postnatal Phase Follow-Up Call

Mother's Name: \_\_\_\_\_ Date of Call: \_\_\_\_\_

Baby's Name: \_\_\_\_\_ Interviewer: \_\_\_\_\_

1. How are you? \_\_\_\_\_

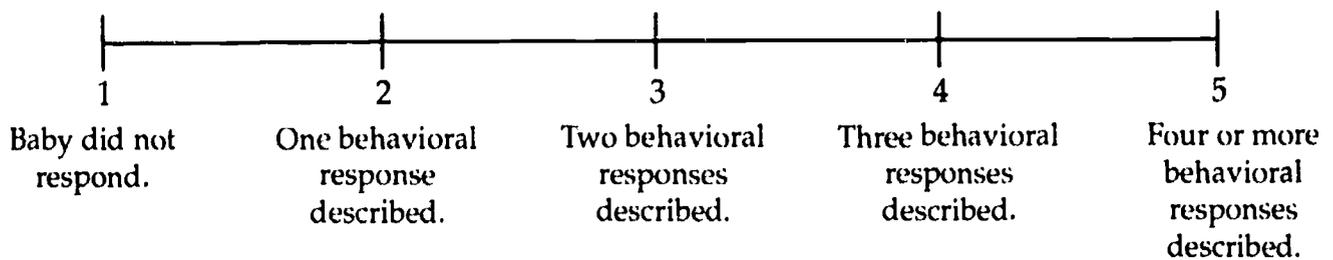
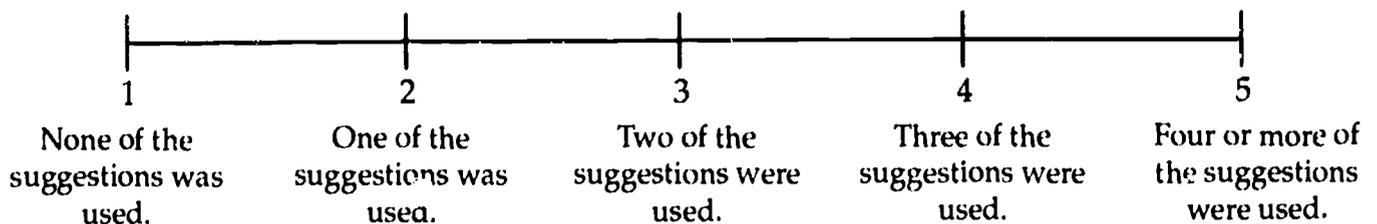
2. How is baby? \_\_\_\_\_

3. Of the things that we talked with you about in the hospital was there anything that was totally new? \_\_\_\_\_  
\_\_\_\_\_

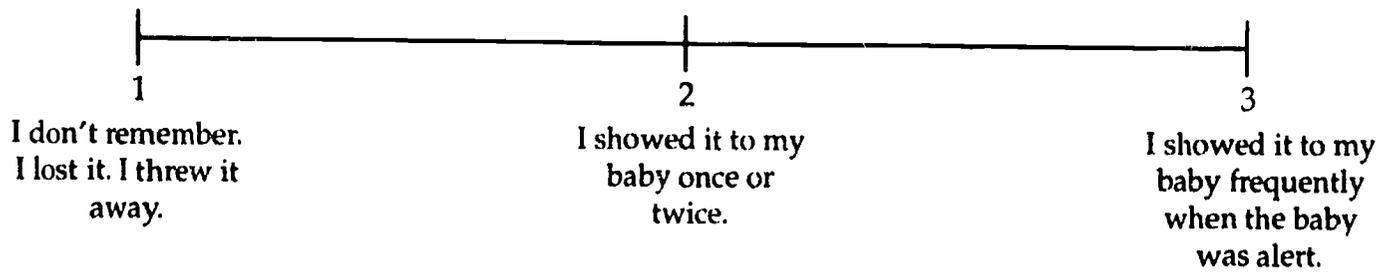
4. Of the suggestions given to you, which ones are you using with your baby? \_\_\_\_\_  
\_\_\_\_\_

5. How did your baby respond?

Described		Suggestion	Response
Spontaneously	With Probe		
_____	_____	A. Bell/Rattle—Asleep	1. _____
_____	_____	B. Presenter's/Mother's Voice Asleep or Awake	2. _____
_____	_____	C. Black-and-White Face	3. _____
_____	_____	D. Mother's Face	4. _____
_____	_____	E. Tracking of Mother's Face and Voice	5. _____
_____	_____	F. Tongue Imitation	6. _____
_____	_____	G. Bell/Rattle—Awake	7. _____



6. What did you do with the face we gave you?



7. Reminders given:

8. Do you have any questions?

9. Should this project be continued for other people?

Why?

Why not?

\*Harlan, N. T., T. M. Metropoulos, J. Connors, and S. Nails. 1984. Prince George's County Health Department, 6490 Landover Road, Suite E., Landover, MD 20785

## Consultation and Referral Services

Most communities have a variety of agencies, service organizations, and interest groups that are oriented toward infants, young children, and their families. Speech-language pathologists and audiologists who serve infants at risk for communication disorders need to know about their services. Some communities have a directory of local services to refer to, such as the one from which the following examples are excerpted, which was compiled by the Calhoun County (Michigan) Association for Infant Mental Health. Often, in addition to local addresses, telephone numbers, and contact people, such a directory includes (800) telephone numbers for national organizations. If clinicians do not have access to a service directory, they can rely on an informal network of social service, educational, religious, and medical professionals to arrange consultation and referral.

### Birthright

*Services:* Clothes and furniture for new baby

### Community Mental Health

*Services:* (1) Respite care, foster care, support services, (2) Case management, (3) Family support subsidy, (4) Classes for parents, (5) Resource library

*Eligibility:* (1) Developmentally delayed child, (2) County resident, (3) School classification of SMI, SXI, AI, age 0 to 18

### County Department of Public Health

*Services:* (1) Hope program: prenatal care and postnatal follow-up for one year, (2) Immunization program, (3) Well baby clinic, (4) Screening programs: vision, hearing, Medicaid eligibility, (5) WIC program: pregnant mothers or children under 5 at nutritional risk

### County Department of Social Services

*Services:* (1) Child protection—alleged abuse or neglect, (2) Foster care—court order placement, (3) Hard to place adoptions—court order placements, (4) Financial aid (ADC), based on income and situation, (5) Food stamps, based on income and situation

### Child Guidance Center

*Services:* (1) Evaluate and treat emotional problems of children/families, (2) Intelligence and psychological testing

### Cleft Palate Association

*Services:* (1) Hotline: 1-800-24-CLEFT, (2) Information and referral

### Community Hospital

*Services:* (1) Apnea/monitoring program—previous apnea/SIDS in family, (2) Teaching literature available, (3) CPR for parents

### Coping Parents Support Group

*Services:* Support for parents who have suffered an infant loss

### Down Syndrome Awareness Group

*Services:* (1) Information and referral, (2) Parent support group, (3) Advocacy

**Easter Seal Society**

*Services:* (1) Hotline: 1-800-292-2729, (2) Information and referral, (3) Advocacy, (4) Financial assistance for medical equipment

**Family and Children's Services of County**

*Services:* (1) Adoption, (2) Infant mental health: identification and case management, (3) Specialized foster care, (4) Family counseling

**Friends/Parents of Children with Cancer**

*Services:* Emotional and financial support to parents of children with cancer

**Genetics Clinic**

*Services:* (1) Diagnostic evaluation for children with birth defects, (2) Counseling for families, (3) Information and referral

**Crippled Children Services**

*Services:* (1) Financial assistance, (2) Family assessment and referral services, (3) Case management

*Eligibility:* Must have severe physically handicapping conditions from birth

**Muscular Dystrophy Association**

*Services:* (1) Diagnostic and treatment clinic, (2) Provides medical equipment, (3) Genetic testing and counseling

**National Sudden Infant Death Association**

*Services:* (1) Information and referral, (2) Parent counseling, (3) Education

**Oral Cleft Clinic**

*Services:* Evaluation and referral for hypernasal speech and clefts

**Organization Against Domestic Violence**

*Function:* Domestic violence services to spouse abuse victims and their children (crisis oriented)

*Services:* (1) Protection/housing for victims of domestic violence and their children, (2) Structured day activities program, (3) Child care assistance, (4) Informal support groups for children

*Eligibility:* Must be victims of physical, mental, or emotional abuse and their children

**Parents of Premature and High Risk Infants International, Inc.**

*Function:* Provide information, referrals, and other services to parent support groups, families, and professionals concerned with infants who require special care at birth

*Location:* 33 W. 42nd St., New York, NY 10036, (212) 840-1259

**School District**

*Services:* (1) Project Find: Information and referral regarding special education programs/services, (2) Pre-primary program (birth to 3): developmental evaluation, home-based intervention, child and parent group meetings

**Special Neighborhood Activities Program**

*Services:* (1) Child care (0 to 5), (2) Preschool program (3 and 4 yrs.), (3) After-school program (5 yrs.), (4) Parent support group, (5) Summer activities program, (6) Clothing shop, (7) Infant stimulation

**Spina Bifida Association**

*Services:* (1) Information and referral for spina bifida and neural tube disorders, (2) Parent support group, (3) Parent-to-parent hospital contact, (4) Referral for financial assistance

**United Cerebral Palsy Association**

*Services:* (1) Advocacy, (2) Information and referral

**Visiting Nurse Service**

*Services:* (1) Occupational, speech, and physical therapy, (2) Pediatric care, (3) Family assessment, (4) Referral to other agencies

## Section 5: Conclusion

---

**Leader: You may introduce the conclusion by saying, "The presentation has addressed the following questions from the beginning." You may read aloud the questions and answers or allow participants to read them individually.**

---

### Review Questions

1. **How are newborns identified as being at risk?**
    - Biological conditions
    - Caregiving conditions
    - Both biological and caregiving conditions
  
  2. **What assessment and intervention services do we provide to newborn infants and their families?**
    - Principles of assessment:  
Assess dimensions of the conditions  
Assess risks of secondary disorders
  
    - Principles of intervention:  
Minimize and alleviate communication problems  
Promote appropriate interaction  
Promote normal development
  
  3. **What is our role in prevention with at-risk newborns?**
    - Primary prevention before symptoms
    - Prevent secondary disorders
    - Prevent iatrogenic disorders
- 

**Leader: When the questions have been read, start the fifth section of the videotape. This segment will play through the credits. (Play videotape.)**

---

**Leader: If there are no more questions or discussion, state that the presentation is concluded.**

---

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## **PARTICIPANT'S GUIDE**

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# Preface

The manuals and accompanying videotapes were developed by the Department of Speech Pathology and Audiology at Western Michigan University. They are the main results of a project aimed at enhancing the ability of speech-language pathologists and audiologists to serve at-risk infants and their families and to work cooperatively with other professionals involved with infant care. The project was supported by The Robert Wood Johnson Foundation.

## How to Use These Materials

The manuals and tapes include two independent modules, one focusing on working with newborns, the other on working with infants and toddlers in their homes or at clinical centers. Each of these modules can stand alone as the content of an in-service program or a unit in a university course. Alternatively, since the two modules complement each other, they can be combined in a larger, more comprehensive in-service program or course unit. Both modules present actual clinical cases of infants at risk and their families.

The modules are designed for group presentations, although they can be used for individual self-instruction as well. Normally, one person will function as the leader of the presentation. This person is mainly responsible for leading the discussions after each section of videotape; discussion questions are provided in the manual, but the leader may freely supplement these. The leader also guides the participants in using the printed resources included in the manual. The best results are seen when the leader has had direct experience in working with infants and has taken time to become thoroughly familiar with the videotape(s) and manual(s).

Since these modules focus on risk for communication disorders, the leader and most of the participants are likely to be speech-language pathologists or audiologists. However, professionals from other disciplines—occupational therapy, nursing, pediatrics, developmental psychology, social work, and special education, for example—are also deeply committed to caring for infants and their families, and their knowledge and skills would be valuable resources in any presentation. The videotape shows a number of other professionals working with the infants, and the discussions should explore how the infants' interests are served by multidisciplinary cooperation.

## Formative Evaluation and Validation of These Materials

*Needs Assessment.* Early in the project a needs assessment was conducted to answer the following questions: What are the current trends in service to at-risk infants and their families? What is the current status of communication assessment and intervention with at-risk infants? What are the current roles of speech-language pathologists and audiologists in working with at-risk infants? What is the current effectiveness of practicing speech-language pathologists and audiologists who work with at-risk infants?

Answers to these questions were sought in a variety of ways: review of professional literature; review of information from the American Speech-Language-Hearing Association (ASHA); review of survey results covering the

background, training, and needs of speech-language pathologists and audiologists in a four-county area in New Jersey; review of course work and practica concerned with at-risk infants in four other Michigan universities; review of published media programs on at-risk infants; and interviews with 14 practitioners currently working with at-risk infants and their families.

The needs assessment yielded the following observations pertinent to our project:

- Only 4% of speech-language pathologists and 9% of audiologists were then providing service to at-risk infants and their families.
- Due to governmental regulations, continued growth was anticipated in programs and services designed for at-risk infants.
- There appeared to be no universally accepted definition of at-risk infants and certainly no definition of language or communication impairment in infants.
- Research results documented the effectiveness of programs for infants with various handicapping and risk conditions that can lead to communication disorders.
- Children in the 0-2 age range, who were seen as most in need of expanded and improved services, have traditionally been underreferred to speech-language pathologists and audiologists by physicians and across disciplines.
- The need for speech-language pathologists and audiologists to work with at-risk infants and families was not clearly understood, although university faculty members acknowledged the need for including instructive material in coursework and practica.
- Our videotape and manual would not duplicate known existing products.

*Field Testing and Content/Design Analyses.* Two separate but complementary modules were developed, each consisting of a videotape and accompanying leader's guide and participant's guide. One module focused on the professional's role with the newborn, and the other focused on the professional's role in the home or center. Field testing of the initial versions of the modules was conducted with three audiences: two composed of graduate students and one primarily of practicing professionals. The materials were also reviewed by our Project Advisory Board, a multidisciplinary and multi-institutional group. In addition, presentations were made to the ASHA Communicative Disorders Prevention and Epidemiology Study Group and to the pediatric care staff of Healthwin Rehabilitation Hospital, South Bend, Indiana. Both presentations yielded additional evaluation information.

Based on evaluative comments from these groups, the video scripts, participant's guides, and leader's guides were revised. The new scripts and guides were reviewed by the project staff, by the neonatal developmentalist on the Advisory Board, and by an experienced speech-language pathologist at Cook County Hospital in Chicago.

Content analyses were also conducted on the modules by two recognized experts in service delivery to infants with communication disorders: M. Diane Klein, Ph.D. (California State University at Los Angeles), and M. Jeanne Wilcox, Ph.D. (Kent State University, Ohio); and an instructional design analysis was conducted by Howard Poole, Ph.D., of the WMU Office of Instructional

**Development.** Minor revisions were made in the leader's and participant's guides on the basis of these professionals' advice.

**Validation.** Validation studies were designed to collect information from subjects at various field-test sites in order that recommendations could be made about the most effective uses for the modules. The following questions were of interest. For what type(s) of audience(s) (in terms of professional specialization, level of experience, and employment setting) are these modules most appropriate? In what kind(s) of program(s) (for example, university class, professional continuing education) are the modules best implemented?

Eleven field-test sites across the United States were chosen to allow collection of data in a wide variety of settings and from varied audiences. At each site, questionnaires were administered to the participants and to the leader. These instruments included questions relating to seven variables: (1) effectiveness of the modules, (2) implementation of the modules, (3) effectiveness of the leader's guide, (4) satisfaction of the participants and leaders, (5) demographic characteristics of the participants and (6) of the leaders, and (7) future application of the modules.

With few exceptions, both participants ( $n = 166$ ) and leaders ( $n = 11$ ) reported high satisfaction with the modules, regardless of their professional specialization, level of experience, and employment setting. Similarly, they found the modules to be highly effective in accomplishing their objectives and well implemented in the programs where the modules were presented. All of the leaders rated the leader's guides as highly effective and recommended that work experience with at-risk infants be specified as a prerequisite for leaders at future presentations.

In addition to the presentations made as part of the validation study, the completed modules have been subjected to professional scrutiny several other times, always with very favorable results. Module 1, *The Professional's Role with the Newborn*, was presented at the February 1988 Convention of the Illinois Speech-Language-Hearing Association to an audience of 100 speech-language pathologists and audiologists. Sparks presented Module 2, *The Professional's Role in the Home or Center*, in June 1988 to the Ministry of Public Health, Victoria Province, Vancouver, BC (75 speech-language pathologists, audiologists, and professionals from related disciplines). Oas presented Module 1 at the International Association for Infant Mental Health Conference in Providence, Rhode Island, in September 1988 to an audience of 16 psychologists, social workers, and professionals in other related disciplines.

Sparks also utilized videotapes from the modules in her role as an invited presenter at ASHA-sponsored workshops (Infants and Toddlers: Communication with a Family Focus) in 1988 in four cities: Washington, Minneapolis, Houston, and Denver. The audience total for the four workshops was more than 250, primarily speech-language pathologists and audiologists. Oas, Sparks, and Clark presented the videotapes and selected portions of the manual in a double mini-seminar at the 1988 annual convention of ASHA in Boston. In all cases the material was well received. Participant evaluations were highly positive.

# Purposes and Overview

## Purposes of This Program

1. To enhance the preparation of speech-language pathologists and audiologists for service to newborns at risk for communication disorders and their families.
2. To offer answers that fall within federal and state guidelines to these questions:
  - (a) How are infants identified as at risk for communication disorders?
  - (b) What assessment and intervention services do we provide to newborns and their families?
  - (c) What is our role in the prevention of communication disorders for at-risk newborns?

## Overview

Speech-language pathologists and audiologists are professionals who can have a role (usually as members of a team of professionals) in identification, assessment, intervention, and prevention with newborns at risk for communication disorders. These services may currently be performed by other professionals or not at all.

# Section 1: Introduction

- Objectives**
1. To establish that the clinician can have a role on the health care team
  2. To introduce and explain the interaction of biological and caregiving conditions that place communication development at risk
  3. To explain principles of assessment
  4. To explain principles of intervention
  5. To introduce prevention as a role for clinicians

**Summary** Clinicians can have a role on the health care team with at-risk newborns. Normal newborns give communication cues of eye contact, crying, and quieting. They respond by attending to faces and voices and with body movement. Infant-caregiver interactions that are in communicative synchrony have long-term effects on cognitive, social, and linguistic skills. Biological and caregiving risks interact to place a newborn at risk. (The manual provides a list of categories of risk conditions.) Our clinical roles include identification, assessment, intervention, and prevention. Assessment includes describing the dimensions of the original risk condition plus risks for secondary disorders. Principles of intervention are to minimize and alleviate communication problems, promote normal interaction, and promote normal development.

## Categories of Risk

The term *handicap* is defined as a disadvantage in society, due to an impairment (any loss or abnormality of psychological, physiological, or anatomical structure or function) and resulting disability (the reduced ability to meet the needs of daily living), experienced by an individual (Beukelman 1986).

1. Conditions of *known range of expectations for handicap (established risk, Tjossem, 1976)*. Risks for hearing loss; language delay; and articulation, voice, and oral-motor problems are secondary to the original disorder. Examples are:
  - Chromosomal disorders, such as Down syndrome, fragile X syndrome
  - Single gene disorders, such as Hunter/Hurler syndrome, Treacher-Collins syndrome, Cornelia de Lange syndrome, Tay-Sachs disease
  - Environmental disorders acquired prenatally, such as fetal alcohol syndrome and AIDS
2. Conditions of *unknown expectations for handicap (established risk, Tjossem 1976)*. The resulting communication handicaps may range from minimal to severe. Examples are:
  - Congenital hearing loss
  - Cerebral palsy

- Hydrocephalus and other neural tube defects
  - Clefting
3. Conditions of birth that *may or may not result in handicap* (biological risk, Tjossem 1976). Risk is increased for neurological sequelae: cognitive impairment, poor language development, attention deficit disorders, hearing loss.
- Prenatal conditions
    - (1) Anoxia—placenta abnormalities
    - (2) Maternal infections—STORCH (syphilis, toxoplasmosis, other infections, rubella, cytomegalic inclusion disease, herpes)
    - (3) Maternal diabetes (includes gestational)
    - (4) Blood group incompatibility
    - (5) Maternal toxemia (eclampsia and pre-eclampsia)
    - (6) Maternal alcohol and drug ingestion
    - (7) Lack of prenatal care (nutrition)
  - Perinatal conditions
    - (1) Prematurity—low birth weight (1500-2500 g) and very low birth weight (under 1500 g) appropriate for gestational age
    - (2) Small-for-gestational age (low birth weight in a term or a near-term neonate)
    - (3) Anoxia (acute and total or prolonged and partial), placenta abnormalities (abruptio placenta, placenta previa), breech presentation, prolonged delivery
    - (4) Intraventricular hemorrhage, grades I-IV
    - (5) Respiratory distress syndrome—bronchopulmonary dysplasia
    - (6) Hyperbilirubinemia—kernicterus
    - (7) Anesthetic intoxication
    - (8) Neonatal medications
  - Postnatal conditions
    - (1) Acute or chronic disease (especially central nervous system)
    - (2) Failure to thrive (organic and nonorganic)
    - (3) Otitis media
    - (4) Seizures
    - (5) Head injury: accidents, abuse
    - (6) Neglect
    - (7) Iatrogenic disorder
    - (8) Exposure to toxic agents (lead)

4. Caregiving (*environmental risk*, Tjossem 1976): conditions in the family or in society with implications for inadequate nurturing and stimulation, which in turn have implications for communication development.
  - Parental factors
    - (1) Impaired parents—mentally, physically, or by alcohol and/or drugs
    - (2) Mother under 19
    - (3) Parents with little education
    - (4) Parents who have experienced recent loss of infant or loved one
    - (5) Parents with low self-esteem
    - (6) Parents with unrealistic expectations for infant
    - (7) Parents who abuse or neglect
    - (8) Parents for whom pregnancy was unwanted
    - (9) Single parent or parent with limited support system
    - (10) Parents experiencing grief for biological risk conditions
  - Social/environmental factors
    - (1) Poverty
    - (2) High stress
    - (3) Separation of parents from infant

### Brief Descriptions of Risk Conditions\*

1. Some conditions present known expectations for handicap.
  - *Chromosomal disorders*, involving thousands of genes, are defects in one of the 46 chromosomes, a missing chromosome (45), too many chromosomes (46+), or broken or rearranged chromosomes.
  - *Single gene disorders* are altered forms of single genes (mutations).
  - *Fetal alcohol syndrome* produces a constellation of abnormalities directly related to alcohol ingestion during pregnancy, including growth retardation without catch-up, characteristic face, and central nervous system impairment.
2. Some conditions present unknown expectations for handicap.
  - *Hydrocephalus*, resulting from pressure of spinal fluid that is prevented from leaving the brain and being absorbed into the bloodstream, may cause brain damage.
  - *Other neural tube defects* are midline defects of the skin, spinal column, and spinal cord, such as spina bifida.
3. Conditions of birth may or may not result in handicap.
  - Some adverse conditions are prenatal.
    - (1) *Anoxia* is too little oxygen in the blood and tissues, which may result from an abnormality in the transfer of oxygen by the placenta.

(2) *STORCH* comprises various infections of the mother.

(a) *Syphilis* is a sexually transmitted infection caused by a bacterium. Untreated syphilis, whether contracted during pregnancy or years before, may be transmitted to the fetus.

(b) *Toxoplasmosis* is an infection caused by a protozoan organism, most widely carried by cats, that may pass through the placenta of an unsuspecting pregnant woman to the fetus. Affected infants may have low birth weight, a large liver and spleen, jaundice and anemia, and neural tube and brain defects.

(c) *Other infections* include influenza virus, chicken pox, and various other viruses that are suspected of causing damage to the fetus.

(d) *Rubella* is a virus commonly called German measles. The fetus is most susceptible during the first three months of gestation. Typical congenital malformations include heart defects, microcephaly, cataracts, mental retardation, diabetes, and hearing loss.

(e) *Cytomegalic inclusion disease* is most dangerous to the fetus during the mother's first infection by a common virus. Congenital defects include disease of the retina, deafness, and developmental delay.

(f) *Herpes simplex* is a virus that may be acquired during the infant's passage through the birth canal when the mother has active herpes in the genital region. The result may be a mild disease of the skin and mucous membranes of the mouth and eye; if severe, it may involve all organs of the body, including the brain.

(3) With *maternal diabetes*, kidney problems and inadequate control of blood sugar in the mother may stress the fetus, although the baby will not be born with diabetes. Infants of diabetic mothers are likely to be large, but preterm. As newborns, they are likely to have significant difficulty maintaining normal blood sugar.

(4) *Blood group incompatibility* is a condition in which fetal red blood cells are destroyed faster than they can be replaced. The mother's system may have developed an immunity to the fetus's blood, as in Rh disease, and may pass antibodies to the fetus through the placenta, resulting in severe anemia and jaundice in the newborn, which may result in CNS damage. ABO and other blood group incompatibilities may result in significant, but less severe, anemia and jaundice. The major effect of anemia is lack of energy to perform the usual developmental tasks of childhood. (Note: sickle-cell disease is a serious cause of anemia; it is transferred by genetic inheritance, not caused by incompatibility.)

(5) *Maternal toxemia* appears to affect the kidneys, resulting in varying degrees of high blood pressure, protein in the urine, and fluid retention. The early, milder stage is *pre-eclampsia*; *eclampsia* is the later, severe form characterized by grand mal seizures in the mother. High blood pressure in the mother can result in poor fetal growth as well as separation of the placenta from the uterine wall with resultant hemorrhage (see *abruptio placenta* under *perinatal anoxia* below).

(6) *Maternal alcohol and drug ingestion* can injure the fetus throughout the entire pregnancy but most severely during the first trimester when fetal organs (including the brain) are forming.

(7) *Lack of prenatal care* may result in handicap. Contact with a physician early in pregnancy can prevent complications by facilitating the detection of conditions that may adversely affect the fetus and newborn. Studies have shown a higher incidence of prematurity and complications in newborns whose mothers did not receive adequate prenatal care.

- Adverse perinatal conditions may result in handicap.

(1) *Prematurity* is less than 37 weeks gestation with birth weight appropriate for fetal age.

(2) *Small-for-gestational age* describes an infant whose weight falls below the tenth percentile of expected weight for fetal age. The SGA baby has usually suffered growth retardation in the uterus.

(3) *Anoxia* or *asphyxia* results from failure to breathe after delivery. Circumstances that may lead to anoxia include (a) compression of the umbilical cord, (b) premature separation of the placenta, (c) sustained contraction of the uterus, (d) an umbilical cord that is wrapped tightly around the neck or body, and (e) damage to the head and brain during the birth process. With *placenta previa* the placenta overlies the opening of the uterus and will hemorrhage during delivery. With *abruptio placenta* there is separation of the placenta from the uterine wall with resultant hemorrhage. Complete and total asphyxia can occur when the umbilical cord is clamped or compressed, as when the fetus is in breech position (buttocks first). Prolonged, partial asphyxia can be produced by very strong uterine contractions during delivery.

(4) *Intraventricular hemorrhage*, or bleeding into the fluid-filled spaces of the brain, may result in cerebral palsy.

(5) *Respiratory distress syndrome* is a pulmonary disorder of premature infants caused by lack of surfactant in the lungs. Infants with very severe RDS, especially those on a mechanical ventilator for prolonged periods, may develop the chronic lung disorder of bronchopulmonary dysplasia.

(6) *Hyperbilirubinemia* is failure of the liver to eliminate the natural bilirubin from the blood quickly enough. High levels of bilirubin may result in damage to the basal ganglia of the brain. Such damage, called *kernicterus*, may result in athetoid cerebral palsy.

(7) *Anesthetic intoxication* is depression of the infant's breathing caused by drugs administered to the mother during labor.

(8) *Neonatal medications* are risks because some drugs place a neonate at risk for hearing loss. Such drugs include salicylates and quinine, potent diuretics, and some antibiotics (streptomycin, kanamycin, neomycin, gentamicin, and tobramycin).

- Adverse postnatal conditions may result in handicap.
  - (1) *Acute or chronic disease* is a risk condition to the extent that disease interrupts development. A child with optimal health is most likely to have optimal development and to benefit from learning experiences.
  - (2) *Failure to thrive* describes weight gain at a slower than normal rate during infancy. Organic causes include numerous disorders, especially central nervous system, cardiovascular, and digestive tract problems. Nonorganic failure is often associated with neglect, emotional disturbances, or parents who are often themselves victims of poor parenting and ongoing stresses.
  - (3) *Iatrogenic disorder* is caused by treatment, usually to save the life of the newborn. Lasting effects of neonatal medications, damage to the larynx from insertion of tubes, and hearing loss from noise in the intensive care unit are examples.
- 4. Caregiving conditions may contribute to handicaps.
  - Parental factors may be adverse.
    - (1-9) These conditions (from Categories of Risk list) are generally accepted to be risks for nurturing and attachment, resulting in a less than optimal environment for communication development.
    - (10) Grief for biological risk conditions may occur if parents form expectations during pregnancy about the baby they will have. When their baby is different (sick or handicapped) they must grieve for their expected baby before they can turn their attention to the baby they have.
  - Social/environmental conditions may be adverse.
    - (1) and (2) refer to factors in society with implications for impairment in nurturing and stimulation, which in turn have implications for communication development.
    - (3) Separation of parents from infant is a risk condition. When an infant is hospitalized for established or biological risk conditions, natural bonding and appropriate language stimulation are interrupted.

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\*From Blackman 1984 and Sparks 1984

## Section 2: Neonatal Intensive Care Unit

### *Clinician Roles*

The following clinician roles can be observed in the second section of the videotape.

1. Assess
2. Promote appropriate interaction between newborn and caregivers
3. Minimize and alleviate oral-motor problems
4. Support parents

Other clinician roles in the NICU:

1. Assess risk for hearing loss
2. Refer to audiologist for screening or hearing evaluation

### Objectives

1. To describe various roles of the clinician in the NICU
2. To explain assessment procedures for primary and secondary disorders
3. To explain ways to become team participants in the NICU
4. To present support groups as an aid to parents

### *Focus for Discussion*

When the videotape is stopped, this will be the focus for discussion:

**Hope's mother seems unsure of her abilities to fulfill Hope's special needs. What can the clinician do to support her in her new responsibilities? (Note that Hope's case information is given below for later reference.)**

### Case Study: Hope

#### *Biological risks*

- Birth weight 1 lb. 15 oz. at 27 weeks gestation
- BPD (bronchopulmonary dysplasia), on ventilator for 3 months
- Tube fed since birth

- Secondary risks: Cognitive, motor, language, hearing, and affective disorders associated with conditions of birth and immature central nervous system; oral-motor problems associated with tube feeding

#### *Caregiving risks*

- NICU experience interferes with normal attachment and communicative behaviors for both infant and caregivers. Immature central nervous system functioning may be reflected in hyperirritability, exaggerated reflexes, unpredictability in sleep/wake cycles, difficulty modulating state transitions, and information processing problems. NICU experience creates stress in the family.
- Secondary risks include interruption of language development associated with problems of attachment and problems of maintaining homeostasis.

## Summary

There is no standard protocol for assessment due to a wide range of ages and risk conditions. Assessment procedures may include obtaining a diagnosis of the infant's medical condition from the medical chart, evaluating communicative behavior through standardized and informal instruments, and determining possible secondary disorders.

Oral-motor assessment includes reflexes and other oral behavior, which varies with the infant's age, state, and status. Intervention decisions are based on degree of oral-motor difficulty: appropriate oral-motor behaviors call for no intervention; minor aberrations call for consultation to caregivers (for example, repositioning to facilitate feeding); and aberrations severe enough to interfere with feeding call for treatment.

Clinicians promote appropriate interactions between the newborn and the caregivers, both parents and nurses. Nurses may be counseled on ways to interact with the infants, but listening to their concerns and modeling may be the best technique. Five ways that premature infants communicate are by spreading fingers, yawning, grunting, averting gaze, and arching the back. Caregivers should allow the infant to take a "time-out," then interact again when the infant returns gaze. Intervention techniques for oral feeding with tube-fed infants include introducing the pacifier when tube feeding takes place, placing the infant's hand beside the mouth, using firm and gentle touch, touching with cloth, placing formula on gauze, and thickening formula.

Speech-language pathologists in NICUs may work with a multidisciplinary team. Team members who also have a role with feeding are occupational therapists, physicians, nurses, and dieticians. A multidisciplinary team may also include a social worker and may be involved with discharge planning. The team must address such matters as equipment needed in the home and how to obtain it, follow-up appointments, transportation to various resources and follow-up clinics, and other home problems that affect the infant's environment. To participate on the health care team, clinicians must be willing to establish credibility by studying medical conditions, gain expertise by working with pediatric patients, be willing to commit time, and be able to assist with feeding. Clinicians may help parents get in touch with other parents through support groups.

## Assessment Instruments for Use with the Newborn

### Screening Tests

Coplan, J. 1984. *The Early Language Milestone Scale (ELM Scale)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced screening test

**Age Range:** Birth to 3 years

**Content Areas:** Auditory expression, auditory reception, visual

**Administration Time:** 10 minutes

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory Screening Test*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition.

**Administration Time:** 10 to 15 minutes for children under 3

### In-Depth Tests: Newborn

Als, H. 1984. *Assessment of Premature Infant Behavior (APIB)*. Boston: The Children's Hospital of Boston.

**Type of Measure:** Behavioral evaluation scale (adaptation and expansion of the "Brazelton" for premature infants)

**Age Range:** Neonatal, from medically stable to time of reaction to environment similar to full-term infant

**Content Areas:** Visual, auditory, tactile, organization, socialization, reflexes

Bee, H. L., K. E. Barnard, S. J. Eyres, C. A. Gray, M. A. Hammond, A. L. Spietz, C. Snyder, and B. Clark. 1982. Nursing Child Assessment Teaching and Feeding Scales. (In Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. *Child Development* 53:1134-56.)

**Type of Measure:** Behavioral checklist

**Purpose:** Assessment of parent and child behaviors during teaching and feeding as screening device and pre/post intervention

**Age Range:** 1 to 36 months

**Content Areas:** Parent's sensitivity to cues, response to distress, and cognitive and socio-emotional growth fostering, and child's clarity of cues, responsiveness

**Administration Procedures:** Check behaviors observed after 3 to 5 minutes of teaching; feeding observation time varies per dyad; rating time = 15 minutes per scale; 73/76-item binary checklists

Brazelton, T. B. 1984. *Neonatal Behavioral Assessment Scale*. Philadelphia: J. B. Lippincott Co.

**Type of Measure:** Behavioral evaluation scale

**Age Range:** Neonatal period

**Content Areas:** Visual, auditory, tactile, organization, motor maturity, and reflexes

**Administration Time:** 30 to 60 minutes

Wallen, P. B., W. B. Elder, and S. N. Hastings. 1982. *EMI Scale (Education for Multihandicapped Infants)*. Charlottesville, VA: Department of Pediatrics, University of Virginia Medical Center.

**Type of Instrument:** Behavior scale

**Age Range:** Birth to 2 years

**Content Areas:** Gross motor skills, fine motor skills, socialization, cognition, and language

***In-Depth Tests: Infant***

Bayley, N. 1969. *Bayley Scales of Infant Development*. San Antonio: The Psychological Corporation.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 36 months

**Content Areas:** Mental and psychomotor developmental indices (MDI and PDI)

**Administration Time:** 45 minutes per index

Bzoch, K. R., and R. League. 1971. *Receptive-Expressive Emergent Language (REEL) Scale*. Baltimore, MD: University Park Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Receptive and expressive language administered by parent interview

**Administration Time:** 20 minutes

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Cognitive, fine motor, gross motor, expressive language, social-emotional, and self-help

**Administration Time:** 15 to 30 minutes for children up to 2

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 1 hour or less for children under the age of 3

Schafer, D. S., and M. S. Moersch, eds. 1981. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Perceptual/fine motor, cognition, language, social-emotional, self-care, and gross motor

**Administration Time:** 30 to 60 minutes

Tanner, D. C., and W. M. Lamb. 1984. *The Cognitive, Linguistic and Social-Communicative Scales (CLASS)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced, indirect assessment

**Age Range:** Birth to 72 months

**Content Areas:** Cognitive, linguistic, and social-communicative

**Administration Time:** 45 minutes

Uzgiris, I. C., and J. M. Hunt. 1975. *Assessment in Infancy*. Chicago: University of Illinois Press.

**Type of Measure:** Sensorimotor scales

**Age Range:** Birth to 2 years

**Content Areas:** Six scales

I: The Development of Visual Pursuit

II: The Development of Means of Obtaining Desired Environmental Events

III: The Development of Imitation

IIIa: Vocal Imitation

IIIb: Gestural Imitation

IV: The Development of Operational Causality

V: The Construction of Object Relations in Space

VI: The Development of Schemes for Relating to Objects.

## Intervention Materials for Use with the Newborn

Clark, T. C., E. C. Morgan, and A. L. Wilson-Vlotman. 1984. *The Insite Model*. Logan, UT: Ski Hi Institute. A parent-centered, in-home, sensory interventive training and educational program for the newborn with multiple impairments.

Dmitriev, V. 1982. *Time to Begin*. Milton, WA: Caring, Inc. A practical manual for guiding the development of children with Down syndrome from infancy to 2 years.

Elder, W. B., and J. N. Swift. 1975. *Education for Multihandicapped Infants Curriculum Pool*. Charlottesville, VA: University of Virginia Medical Center. Materials are intended for use by professionals and paraprofessionals in the

field of infant development and interaction and may be used in planning activities for both at-risk and handicapped infants and newborns.

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation. Activities for the clinician based on the HELP assessment instrument.

Hanson, M. 1987. *Teaching the Infant with Down Syndrome*. 2d ed. Austin, TX: Pro-Ed, Inc. Activities for parents of infants with Down syndrome.

Harrison, H. 1983. *The Premature Baby Book*. New York: St. Martin's Press. A parent's guide to coping and caring in the first years.

Karnes, M. B. 1982. *You and Your Small Wonder*. Book 1 (0 to 9 mos.) Circle Pines, MN: American Guidance Service. Activities and materials foster physical, emotional, and intellectual growth and language development.

Reidlich, C. E., and M. E. Herzfeld. 1983. *0 to 3 Years—An Early Language Curriculum*. Moline, IL: Linguisystems, Inc. A series of communication activities sequenced developmentally and divided into receptive and expressive language skill areas.

Sparling, J., and I. Lewis. 1979. *Learning Games for the First Three Years*. New York: Berkley Publishing Group. Household activities for parents of infants up to 3 years old.

## Section 3: Infant at Risk for Hearing Loss

### *Clinician Roles*

The following audiology clinician roles can be observed in this section of the videotape:

1. **Assess**
  - (a) **Auditory brainstem response (ABR) audiometry**
  - (b) **Behavioral audiometry**
  - (c) **Immittance testing**
2. **Provide intervention**
3. **Assess for secondary problems**
4. **Provide hearing screening**

### **Objectives**

1. To present the High Risk Register as a method for identifying infants to be evaluated
2. To demonstrate various ways to evaluate infant hearing
3. To present hearing screening as the responsibility of the audiologist
4. To present referral for hearing screening as the responsibility of the speech-language pathologist

### *Focus for Discussion*

When the videotape is stopped, this will be the focus for discussion:

**Why did the threat of a handicap put Kasey at risk for caregiving problems?**

### **Case Study: Kasey**

#### *Biological risks*

- Meningitis at 8 days; at risk for profound hearing loss.
- Secondary risks: cognitive, language, and social-affective delays associated with hearing loss

### Caregiving risks

- The family's interactions with Kasey changed due to worry about his hearing loss. Instead of normal interactions, they focused on evaluation of his hearing status.
- Secondary risks include interruption of language development associated with problems of interaction.

### Summary

The High Risk Register is a method for identifying infants to be evaluated for hearing loss. The High Risk Register does not identify all deaf infants. Hearing may be tested at any age. Ways of testing infant hearing are behavioral audiometry and auditory brainstem response (ABR) audiometry. Behavioral testing of infants may not rule out unilateral hearing loss, very mild hearing loss, or high-frequency loss. Repeated testing is necessary to rule out progressive loss. ABR is a test of the integrity of the auditory mechanism. It is not a test of hearing perception. Behavioral testing should always accompany ABR in a hearing evaluation but not necessarily in a hearing screening. Immittance testing, to check for middle-ear problems, is necessary whether ABR or behavioral audiometry is chosen. An infant at risk for hearing loss should be screened for secondary disorders such as cognitive, language, or social-affective delays. Ideally, all infants would be screened for hearing loss, but certainly those at risk for communication problems must be.

### High Risk Register

**Suggested High Risk Criteria from the American Academy of Pediatrics Joint Committee on Infant Hearing Position Statement 1982**  
(*Pediatrics*, vol. 70, no. 3)

1. A family history of childhood hearing impairment.
2. Congenital perinatal infection (e.g., cytomegalovirus, rubella, herpes, toxoplasmosis, syphilis).
3. Anatomic malformations involving the head or neck (e.g., dysmorphic appearance, including syndromal and nonsyndromal abnormalities, overt or submucous cleft palate, morphologic abnormalities of the pinna).
4. Birth weight less than 1500 grams.
5. Hyperbilirubinemia at levels exceeding indications for exchange transfusion.
6. Bacterial meningitis, especially H. influenza.
7. Severe asphyxia, which may include infants with APGAR scores of 0 to 3 who fail to institute spontaneous respiration by 10 minutes and those with hypotonia persisting to 2 hours of age.

## Hearing Loss Intervention Materials

### *Organizations for Parents*

Alexander Graham Bell Association for the Deaf, 3417 Volta Place N.W., Washington, DC 20007

John Tracy Clinic, 806 West Adams Boulevard, Los Angeles, CA 90007

### *Materials for Parents and Professionals*

Clark, T. C., and S. Watkins. 1978. *The Ski-Hi model*. Logan, UT: Utah State University. A comprehensive model for identification, language facilitation, and family support for children with hearing handicaps through home management, ages birth to 6.

John Tracy Clinic. 1983. *Parents of pre-schoolers*. 1979. *Parents of babies*. 1988. *Parents of blind/deaf*. Correspondence courses (revised). Educational Materials Department, John Tracy Clinic, 806 West Adams Boulevard, Los Angeles, CA 90007

Schuyler, V. S., N. Rushmer, R. Arpan, A. Melum, J. Sowers, and N. Kennedy. 1985. *Parent-infant communication*. Portland, OR: Infant Hearing Resource. A program of clinical and home training for parents and infants with hearing impairments.

Simmons-Martin, A. 1975. *Chats with Johnny's parents*. Alexander Graham Bell Association for the Deaf, 3417 Volta Place N.W., Washington DC 20007

Watkins, S. 1983. *Developing cognition in young hearing impaired children*. Logan, UT: Ski Hi Institute, Utah State University. A program to help parents of young children with hearing impairments stimulate the development of thinking skills in their children.

\_\_\_\_\_. 1977. *Talk to Me—How to Help Your Baby*. Baltimore, MD: Waverly Press, Inc. A home study of language development for children with hearing impairments (infancy to preschool).

# Section 4: Primary Prevention with Parents and Prevention with Health Professionals

## *Clinician Roles*

### A. Primary Prevention with Parents

The following clinician roles can be observed in this section of the videotape:

1. Informally assess mother and infant
2. Prevent occurrence of communication disorder

Other clinician roles in the prevention program:

1. Follow-up at home
2. Refer or begin traditional intervention

### B. Prevention with Health Professionals

The following clinician roles can be observed:

1. Identify sources of iatrogenic communication disorders with the health care team
2. Participate with other members of the health care team to minimize any potentially harmful effects of treatment on the infant's communication system.

## Objectives

1. To demonstrate a method for primary prevention with an at-risk mother
2. To demonstrate an interactive approach to informing other members of the health care team about the causes and effects of iatrogenic communication disorders

### *Focus for Discussion*

When the videotape is stopped, the following will be the focus of discussion.

- A. Alecia seemed receptive to the clinician's counseling. What should the clinician do if the mother is not receptive? What resources should she call upon for help? What can she do to follow up with Alecia and Joseph when they leave the hospital?
- B. The clinician led a discussion with a group of nurses. What are other ways she might have presented the information? What do you think is the most effective way? The discussion centered on causes of communication disorders. What solutions can be found to prevent the occurrence of those disorders?

### Case Study: Alecia and Joseph

#### *Biological risks*

- None at birth
- Secondary risks: failure to thrive associated with problems of attachment

#### *Caregiving risks*

- Mother is at high risk; she is adolescent and single. She lives with her own mother and has a low socioeconomic status.
- Secondary risk is language delay associated with problems of attachment and interaction.

### Risks for NICU Infants

#### *Biological risks*

- Hearing loss from high noise levels and ototoxic drugs, laryngeal damage from ventilator tube
- Secondary risks: language delay associated with hearing loss, voice disorders associated with laryngeal injury

#### *Caregiving risks*

- Low appropriate language stimulation, overstimulation from constant light and sound
- Secondary risks: interference with language development associated with understimulation and overstimulation

### Summary

Primary prevention is prevention of the occurrence of a communication disorder. A program of primary prevention with an at-risk mother is to show the mother her infant's cues and responses in order to facilitate their interactive synchrony. The same program allows the clinician to observe both the infant's

responses and the mother's developing attachment with her infant. Effective prevention includes following up after the infant and parent leave the hospital. If secondary problems appear, the clinician may begin intervention or make an appropriate community referral.

(Your *Guide* provides a primary prevention protocol. Please note that it is not intended for use with NICU infants. A list of suggested referral sources is also provided on the following pages.)

Four iatrogenic communication disorders associated with treatment in the NICU are of primary importance to speech-language pathologists and audiologists: hearing loss from noise, hearing loss from ototoxic drugs, vocal fold damage from intubation, and lack of stimulating vocal sounds. Clinicians must inform other members of the health care team of the causes and effects of iatrogenic communication disorders. Clinicians must respect the roles of other members of the team when communicating that information.

## Primary Prevention Program\*

Perinatal Phase—Protocol for Presentation of Stimuli

Time Frame—15 to 20 minutes

Infant Age—The best age is 2 or 3 days old while the infant is between feedings

Equipment—A soft rattle, bell, black-and-white face and the words, "Can you turn this way when I talk to you?"

*Introduce yourself.*

Explain: I want to talk with you about some of the things your baby can do now and show you some of the ways he/she communicates with you. What is your baby's name?

Baby should be in the hospital bassinet. If asleep, begin with 1; if awake, go to 3, or 8(c) if appropriate. Although several of the following items note examiner presentation of stimuli, the ultimate goal is to have the mother present the stimulus and gain a response from her baby.

1. *Response to rattle.* You wish to break through sleeping and create a startle response. The stimuli should be brief. Shake the rattle 5 seconds after each response to the last shake. Do this for 10 trials or until the baby makes no response to two consecutive stimuli. Notice general startle, eye blinking, and respiratory changes. Explain that the baby can shut out certain stimuli.
2. *Response to bell.* As above.
3. *Response to visual stimulus (black-and-white face).* You wish to demonstrate the baby's ability to watch and follow the face. The stimulus should be presented and then slowly moved vertically, horizontally, and in a circle. Notice and point out if the baby focuses on the face, follows it, exhibits facial expressions, exhibits eye widening, etc. If baby does not attend while lying down, try propping baby up or holding baby on your lap.
4. *Response to auditory stimulus (soft bell or rattle).* You wish to demonstrate baby's ability to hear and respond to sound. The stimuli should be

presented to each side and out of sight (6" to 12" away). Alerting and brightening should be noticed and pointed out to baby's mother. Baby may turn head in the direction of the sound source.

5. *Response to animate visual stimulus (examiner's face)*. You wish to demonstrate baby's ability to see and respond positively to the human face. This might be a nice time to comment on baby's preference for the human face over other objects. Examiner should move her face into baby's line of vision, move in lateral and vertical arcs until baby stops following and notice alerting, brightening, and movement of the face to follow examiner's.
6. *Response to animate auditory stimulus (mother's voice)*. You wish to demonstrate baby's ability to hear and respond to the human voice. This is an appropriate time to mention baby's preference for the human voice over other sound. The mother should remove her face from the baby's line of vision and speak from one side at 6" to 12" from baby's ear. Continuous, soft, high-pitched speech is the best. Notice and point out alerting, turning of the head and eyes, respiratory changes, and brightening.
7. *Response to animate visual and auditory stimulus (examiner's face and voice)*. The examiner's continuous voice is used to reinforce the face as it moves slowly across baby's line of vision. Look for alerting and brightening as before. Try this while the infant is lying in the bassinet and then while infant is being held.
8. *Baby's imitation of examiner's mouth movements (for example, mouth open or tongue out)*. Demonstrate these states whenever the situation arises.
  - (a) Alertness—Point out this state is a good time to communicate and play with the baby. Encourage the mother to be attentive to baby's cues, which tell us when he/she needs a rest and that we should stop interaction. Guide the mother to notice respirations, widened eyes, facial expressions, body activity, etc.
  - (b) Cuddliness—Demonstrate the infant's response to being held. Mention individuality and watching for baby's cues as to type and amount of holding baby prefers. Discuss being in rhythm with the baby. Notice if baby resists holding, lies passively, molds and relaxes, nestles, clings, etc.
  - (c) Consolability—Demonstrate baby's ability to be consoled when upset. Again, mention individuality. Try examiner's face first, then face and voice, touching infant's belly, hand on belly and restraint of both arms, picking up and holding, holding and rocking, pacifier while holding and rocking. Baby should be fussing for 15 seconds before these are tried.

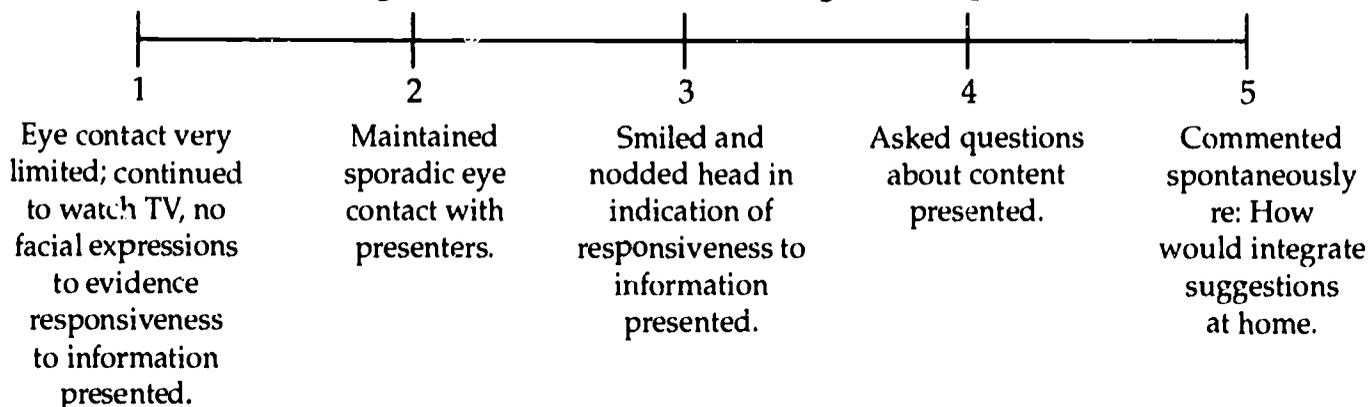
## Summary

A conversation takes place between you and your baby. Watch for baby's "comments" and respond to what baby is "saying." The plan is not to teach mothers to complete given tasks with their babies but to foster interactional skills by demonstrating the baby's communicative abilities at a vulnerable point for learning. A similar rationale is supported by Bromwich and Parmelee (1979).

### Perinatal Phase

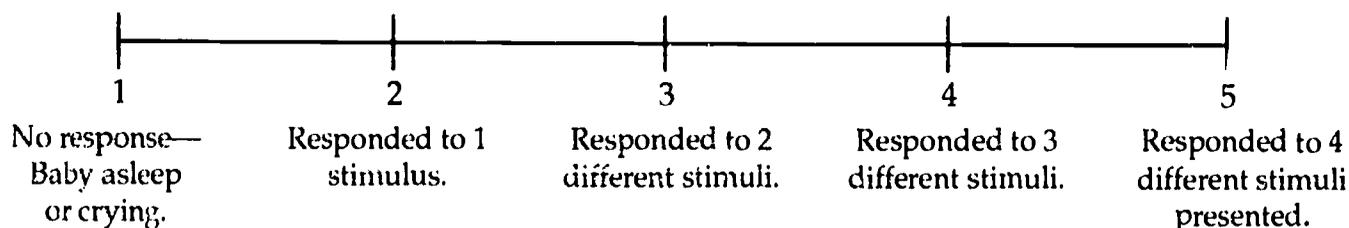
Mother's Name: \_\_\_\_\_ Rater: \_\_\_\_\_  
 Mother's Age: \_\_\_\_\_ Race: \_\_\_\_\_  
 Marital Status: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Date: \_\_\_\_\_ First Baby: \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ #  
 Baby's Name: \_\_\_\_\_ Baby's Age in Hours: \_\_\_\_\_

#### Rating of Mother/Father (Do a rating for each present)



Comments on Mother's Reactions/Questions/Physical Condition: \_\_\_\_\_

Stimulus	Rating of Baby	Response
1. Bell/Rattle—Asleep	1.	_____
2. Presenter's/Mother's Voice—Asleep or Awake	2.	_____
3. Black-and-White Face	3.	_____
4. Presenter's/Mother's Face	4.	_____
5. Tracking of Presenter's/Mother's Face and Voice	5.	_____
6. Tongue Imitation	6.	_____
7. Bell/Rattle—Awake	7.	_____



Description of Baby's State/Responses \_\_\_\_\_

Nurse's Comments re: Mother/Baby Dyad: \_\_\_\_\_

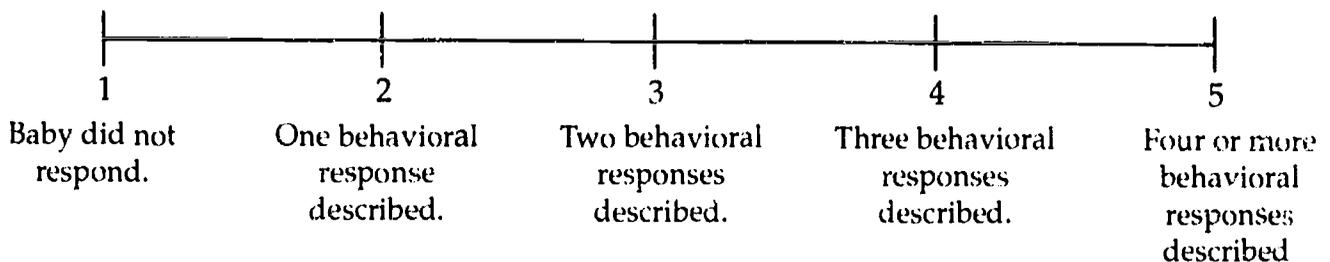
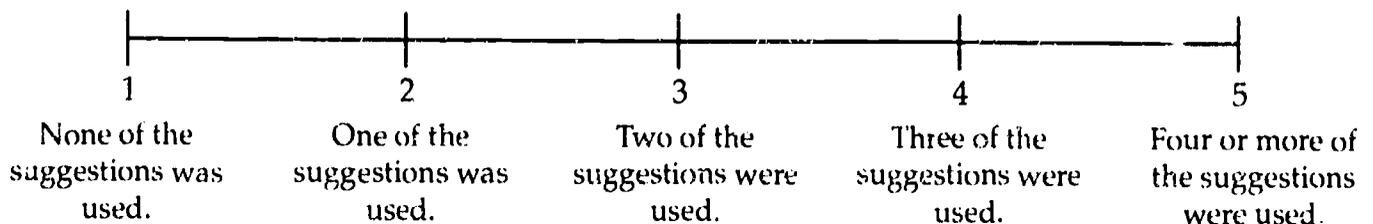
## Postnatal Phase Follow-Up Call

Mother's Name: \_\_\_\_\_ Date of Call: \_\_\_\_\_

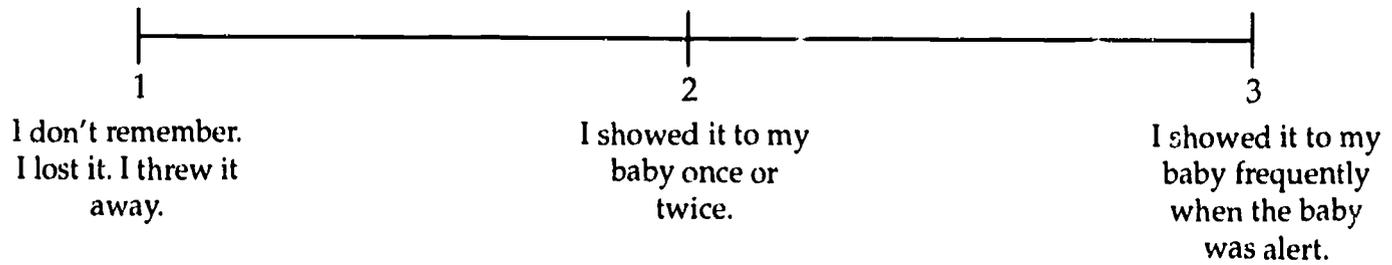
Baby's Name: \_\_\_\_\_ Interviewer: \_\_\_\_\_

1. How are you? \_\_\_\_\_
2. How is baby? \_\_\_\_\_
3. Of the things that we talked with you about in the hospital was there anything that was totally new? \_\_\_\_\_  
\_\_\_\_\_
4. Of the suggestions given to you, which ones are you using with your baby? \_\_\_\_\_  
\_\_\_\_\_
5. How did your baby respond?

Described		Suggestion	Response
Spontaneously	With Probe		
_____	_____	A. Bell/Rattle—Asleep	1. _____
_____	_____	B. Presenter's/Mother's Voice Asleep or Awake	2. _____
_____	_____	C. Black-and-White Face	3. _____
_____	_____	D. Mother's Face	4. _____
_____	_____	E. Tracking of Mother's Face and Voice	5. _____
_____	_____	F. Tongue Imitation	6. _____
_____	_____	G. Bell/Rattle—Awake	7. _____



6. What did you do with the face we gave you?



7. Reminders given:

8. Do you have any questions?

9. Should this project be continued for other people?

Why?

Why not?

\*Harlan, N. T., T. M. Metropoulos, J. Connors, and S. Nalls. 1984. Prince George's County Health Department, 6490 Landover Road, Suite E., Landover, MD 20785

## Consultation and Referral Services

Most communities have a variety of agencies, service organizations, and interest groups that are oriented toward infants, young children, and their families. Speech-language pathologists and audiologists who serve infants at risk for communication disorders need to know about their services. Some communities have a directory of local services to refer to, such as the one from which the following examples are excerpted, which was compiled by the Calhoun County (Michigan) Association for Infant Mental Health. Often, in addition to local addresses, telephone numbers, and contact people, such a directory includes (800) telephone numbers for national organizations. If clinicians do not have access to a service directory, they can rely on an informal network of social service, educational, religious, and medical professionals to arrange consultation and referral.

### Birthright

*Services:* Clothes and furniture for new baby

### Community Mental Health

*Services:* (1) Respite care, foster care, support services, (2) Case management, (3) Family support subsidy, (4) Classes for parents, (5) Resource library

*Eligibility:* (1) Developmentally delayed child, (2) County resident, (3) School classification of SMI, SXI, AI, age 0 to 18

### County Department of Public Health

*Services:* (1) Hope program: prenatal care and postnatal follow-up for one year, (2) Immunization program, (3) Well baby clinic, (4) Screening programs: vision, hearing, Medicaid eligibility, (5) WIC program: pregnant mothers or children under 5 at nutritional risk

### County Department of Social Services

*Services:* (1) Child protection—alleged abuse or neglect, (2) Foster care—court order placement, (3) Hard to place adoptions—court order placements, (4) Financial aid (ADC), based on income and situation, (5) Food stamps, based on income and situation

### Child Guidance Center

*Services:* (1) Evaluate and treat emotional problems of children/families, (2) Intelligence and psychological testing

### Cleft Palate Association

*Services:* (1) Hotline: 1-800-24-CLEFT, (2) Information and referral

### Community Hospital

*Services:* (1) Apnea/monitoring program—previous apnea/SIDS in family, (2) Teaching literature available, (3) CPR for parents

### Coping Parents Support Group

*Services:* Support for parents who have suffered an infant loss

### Down Syndrome Awareness Group

*Services:* (1) Information and referral, (2) Parent support group, (3) Advocacy

**Easter Seal Society**

*Services:* (1) Hotline: 1-800-292-2729, (2) Information and referral, (3) Advocacy, (4) Financial assistance for medical equipment

**Family and Children's Services of County**

*Services:* (1) Adoption, (2) Infant mental health: identification and case management, (3) Specialized foster care, (4) Family counseling

**Friends/Parents of Children with Cancer**

*Services:* Emotional and financial support to parents of children with cancer

**Genetics Clinic**

*Services:* (1) Diagnostic evaluation for children with birth defects, (2) Counseling for families, (3) Information and referral

**Crippled Children Services**

*Services:* (1) Financial assistance, (2) Family assessment and referral services, (3) Case management

*Eligibility:* Must have severe physically handicapping conditions from birth

**Muscular Dystrophy Association**

*Services:* (1) Diagnostic and treatment clinic, (2) Provides medical equipment, (3) Genetic testing and counseling

**National Sudden Infant Death Association**

*Services:* (1) Information and referral, (2) Parent counseling, (3) Education

**Oral Cleft Clinic**

*Services:* Evaluation and referral for hypernasal speech and clefts

**Organization Against Domestic Violence**

*Function:* Domestic violence services to spouse abuse victims and their children (crisis oriented)

*Services:* (1) Protection/housing for victims of domestic violence and their children, (2) Structured day activities program, (3) Child care assistance, (4) Informal support groups for children

*Eligibility:* Must be victims of physical, mental, or emotional abuse and their children

**Parents of Premature and High Risk Infants International, Inc.**

*Function:* Provide information, referrals, and other services to parent support groups, families, and professionals concerned with infants who require special care at birth

*Location:* 33 W. 42nd St., New York, NY 10036, (212) 840-1259

**School District**

*Services:* (1) Project Find: Information and referral regarding special education programs/services, (2) Pre-primary program (birth to 3): developmental evaluation, home-based intervention, child and parent group meetings

**Special Neighborhood Activities Program**

*Services:* (1) Child care (0 to 3), (2) Preschool program (3 and 4 yrs.), (3) After-school program (5 yrs.), (4) Parent support group, (5) Summer activities program, (6) Clothing shop, (7) Infant stimulation

**Spina Bifida Association**

*Services:* (1) Information and referral for spina bifida and neural tube disorders, (2) Parent support group, (3) Parent-to-parent hospital contact, (4) Referral for financial assistance

**United Cerebral Palsy Association**

*Services:* (1) Advocacy, (2) Information and referral

**Visiting Nurse Service**

*Services:* (1) Occupational, speech, and physical therapy, (2) Pediatric care, (3) Family assessment, (4) Referral to other agencies

# Section 5: Conclusion

## Review Questions

1. **How are newborns identified as being at risk?**
  - Biological conditions
  - Caregiving conditions
  - Both biological and caregiving conditions
  
2. **What assessment and intervention services do we provide to newborn infants and their families?**
  - Principles of assessment:
    - Assess dimensions of the conditions
    - Assess risks of secondary disorders
  
  - Principles of intervention:
    - Minimize and alleviate communication problems
    - Promote appropriate interaction
    - Promote normal development
  
3. **What is our role in prevention with at-risk newborns?**
  - Primary prevention before symptoms
  - Prevent secondary disorders
  - Prevent iatrogenic disorders

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## INFANTS AT RISK FOR COMMUNICATION DISORDERS

This program shows your interdisciplinary team areas they need to address when working with at-risk infants and toddlers:

- identification
- assessment
- intervention
- prevention

One full-color video focuses on working with newborns, the other video focuses on working with infants and toddlers in the home or clinical setting. The Leader's and Participant's Guides summarize the videos and provide focus for discussion. Each video presents three case studies illustrating the variety of clinical roles and approaches to intervention.

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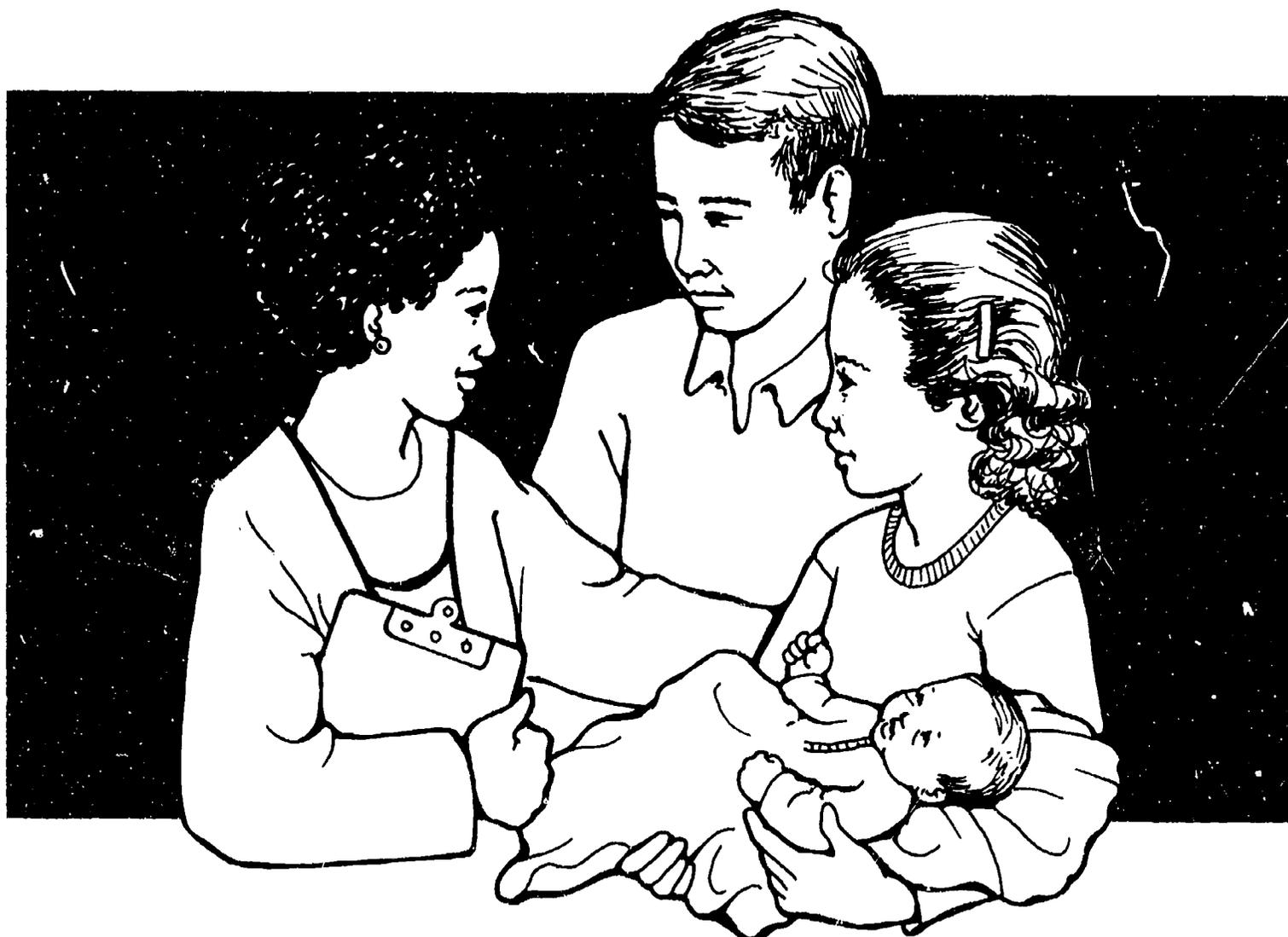
INFANTS AT RISK FOR COMMUNICATION DISORDERS

# The Professional's Role in the Home or Center

Shirley N. Sparks, M.S., CCC-SLP  
Michael J. Clark, Ph.D., CCC-SLP  
Robert L. Erickson, Ph.D., CCC-SLP  
Donna B. Oas, M.A., CCC-SLP



Department of Speech Pathology and Audiology  
Western Michigan University  
Kalamazoo, Michigan



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## **PARTICIPANT'S GUIDE**

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Ms. Oas received an A.B. in speech correction from University of Michigan. She received an M.A. in speech pathology from Western Michigan University and has completed the academic courses required for an Ed.D. from the same institution.

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# Preface

The manuals and accompanying videotapes were developed by the Department of Speech Pathology and Audiology at Western Michigan University. They are the main results of a project aimed at enhancing the ability of speech-language pathologists and audiologists to serve at-risk infants and their families and to work cooperatively with other professionals involved with infant care. The project was supported by The Robert Wood Johnson Foundation.

## How to Use These Materials

The manuals and tapes include two independent modules, one focusing on working with newborns, the other on working with infants and toddlers in their homes or at clinical centers. Each of these modules can stand alone as the content of an in-service program or a unit in a university course. Alternatively, since the two modules complement each other, they can be combined in a larger, more comprehensive in-service program or course unit. Both modules present actual clinical cases of infants at risk and their families.

The modules are designed for group presentations, although they can be used for individual self-instruction as well. Normally, one person will function as the leader of the presentation. This person is mainly responsible for leading the discussions after each section of videotape; discussion questions are provided in the manual, but the leader may freely supplement these. The leader also guides the participants in using the printed resources included in the manual. The best results are seen when the leader has had direct experience in working with infants and has taken time to become thoroughly familiar with the videotape(s) and manual(s).

Since these modules focus on risk for communication disorders, the leader and most of the participants are likely to be speech-language pathologists or audiologists. However, professionals from other disciplines—occupational therapy, nursing, pediatrics, developmental psychology, social work, and special education, for example—are also deeply committed to caring for infants and their families, and their knowledge and skills would be valuable resources in any presentation. The videotape shows a number of other professionals working with the infants, and the discussions should explore how the infants' interests are served by multidisciplinary cooperation.

## Formative Evaluation and Validation of These Materials

*Needs Assessment.* Early in the project a needs assessment was conducted to answer the following questions: What are the current trends in service to at-risk infants and their families? What is the current status of communication assessment and intervention with at-risk infants? What are the current roles of speech-language pathologists and audiologists in working with at-risk infants? What is the current effectiveness of practicing speech-language pathologists and audiologists who work with at-risk infants?

Answers to these questions were sought in a variety of ways: review of professional literature; review of information from the American Speech-Language-Hearing Association (ASHA); review of survey results covering the

background, training, and needs of speech-language pathologists and audiologists in a four-county area in New Jersey; review of course work and practica concerned with at-risk infants in four other Michigan universities; review of published media programs on at-risk infants; and interviews with 14 practitioners currently working with at-risk infants and their families.

The needs assessment yielded the following observations pertinent to our project:

- Only 4% of speech-language pathologists and 9% of audiologists were then providing service to at-risk infants and their families.
- Due to governmental regulations, continued growth was anticipated in programs and services designed for at-risk infants.
- There appeared to be no universally accepted definition of at-risk infants and certainly no definition of language or communication impairment in infants.
- Research results documented the effectiveness of programs for infants with various handicapping and risk conditions that can lead to communication disorders.
- Children in the 0-2 age range, who were seen as most in need of expanded and improved services, have traditionally been underreferred to speech-language pathologists and audiologists by physicians and across disciplines.
- The need for speech-language pathologists and audiologists to work with at-risk infants and families was not clearly understood, although university faculty members acknowledged the need for including instructive material in coursework and practica.
- Our videotape and manual would not duplicate known existing products.

*Field Testing and Content/Design Analyses.* Two separate but complementary modules were developed, each consisting of a videotape and accompanying leader's guide and participant's guide. One module focused on the professional's role with the newborn, and the other focused on the professional's role in the home or center. Field testing of the initial versions of the modules was conducted with three audiences: two composed of graduate students and one primarily of practicing professionals. The materials were also reviewed by our Project Advisory Board, a multidisciplinary and multi-institutional group. In addition, presentations were made to the ASHA Communicative Disorders Prevention and Epidemiology Study Group and to the pediatric care staff of Healthwin Rehabilitation Hospital, South Bend, Indiana. Both presentations yielded additional evaluation information.

Based on evaluative comments from these groups, the video scripts, participant's guides, and leader's guides were revised. The new scripts and guides were reviewed by the project staff, by the neonatal developmentalist on the Advisory Board, and by an experienced speech-language pathologist at Cook County Hospital in Chicago.

Content analyses were also conducted on the modules by two recognized experts in service delivery to infants with communication disorders: M. Diane Klein, Ph.D. (California State University at Los Angeles), and M. Jeanne Wilcox, Ph.D. (Kent State University, Ohio); and an instructional design analysis was conducted by Howard Poole, Ph.D., of the WMU Office of Instructional

**Development.** Minor revisions were made in the leader's and participant's guides on the basis of these professionals' advice.

**Validation.** Validation studies were designed to collect information from subjects at various field-test sites in order that recommendations could be made about the most effective uses for the modules. The following questions were of interest. For what type(s) of audience(s) (in terms of professional specialization, level of experience, and employment setting) are these modules most appropriate? In what kind(s) of program(s) (for example, university class, professional continuing education) are the modules best implemented?

Eleven field-test sites across the United States were chosen to allow collection of data in a wide variety of settings and from varied audiences. At each site, questionnaires were administered to the participants and to the leader. These instruments included questions relating to seven variables: (1) effectiveness of the modules, (2) implementation of the modules, (3) effectiveness of the leader's guide, (4) satisfaction of the participants and leaders, (5) demographic characteristics of the participants and (6) of the leaders, and (7) future application of the modules.

With few exceptions, both participants (n = 166) and leaders (n = 11) reported high satisfaction with the modules, regardless of their professional specialization, level of experience, and employment setting. Similarly, they found the modules to be highly effective in accomplishing their objectives and well implemented in the programs where the modules were presented. All of the leaders rated the leader's guides as highly effective and recommended that work experience with at-risk infants be specified as a prerequisite for leaders at future presentations.

In addition to the presentations made as part of the validation study, the completed modules have been subjected to professional scrutiny several other times, always with very favorable results. Module 1, *The Professional's Role with the Newborn*, was presented at the February 1988 Convention of the Illinois Speech-Language-Hearing Association to an audience of 100 speech-language pathologists and audiologists. Sparks presented Module 2, *The Professional's Role in the Home or Center*, in June 1988 to the Ministry of Public Health, Victoria Province, Vancouver, BC (75 speech-language pathologists, audiologists, and professionals from related disciplines). Oas presented Module 1 at the International Association for Infant Mental Health Conference in Providence, Rhode Island, in September 1988 to an audience of 16 psychologists, social workers, and professionals in other related disciplines.

Sparks also utilized videotapes from the modules in her role as an invited presenter at ASHA-sponsored workshops (Infants and Toddlers: Communication with a Family Focus) in 1988 in four cities: Washington, Minneapolis, Houston, and Denver. The audience total for the four workshops was more than 250, primarily speech-language pathologists and audiologists. Oas, Sparks, and Clark presented the videotapes and selected portions of the manual in a double mini-seminar at the 1988 annual convention of ASHA in Boston. In all cases the material was well received. Participant evaluations were highly positive.

# Purposes and Overview

## Purposes of This Program

This presentation is intended to enhance the preparation of speech-language pathologists and audiologists for service to infants at risk for communication disorders and their families in home-based or center-based programs.

## Overview

Speech-language pathologists and audiologists are professionals who have a role in early identification, assessment, intervention, and prevention with infants at risk for communication disorders. These services may currently be performed by other professionals or not at all. Targets for our assessment are the infant, the infant-caregiver interaction, and/or the caregiver. Targets of intervention are determined by assessment; they may be all or only one of the targets of assessment. Intervention is based on interaction with caregivers.

# Section 1: Introduction

- Objectives**
1. To review the concept that both infant and caregiver have roles to play in interaction
  2. To introduce and explain the interaction of biological and caregiving conditions that place communication development at risk
  3. To provide an Assessment Tree for identifying targets
  4. To explain a typical sequence of activities in center-based and home-based intervention

**Summary** Both infant and caregiver have roles to play in interaction. Biological and caregiving conditions interact to place an infant at risk. The Assessment Tree (see page 11) may be used to identify targets for intervention: infant, caregiver-infant interaction, and/or caregiver. Behavior tested in infancy may change significantly as the infant grows, making tests in infancy nonpredictive. A typical sequence of activities in center-based intervention is arrival, group activities for a general task, small group or individual therapy, snack time, another small group or individual therapy, group activity, and closing. A typical sequence of activities in home-based intervention is arrival, discussion of the infant's weekly progress, individual work with the infant, assessment of progress, demonstration of new activity, and departure.

## Comparison of Test Types

### *Norm-Referenced Tests*

Standardized on normal infants (correct for age if premature)  
Identify for intervention  
Standards exclude handicapped  
Measure sensorimotor performance

### *Criterion-Referenced Tests*

Not necessarily standardized  
Prescribe intervention (behavior present or absent)  
May allow for handicaps

## Categories of Risk

The term *handicap* is defined as a disadvantage in society, due to an impairment (any loss or abnormality of psychological, physiological, or anatomical structure or function) and resulting disability (the reduced ability to meet the needs of daily living), experienced by an individual (Beukelman 1986).

1. Conditions of *known range of expectations for handicap (established risk, Tjossem, 1976)*. Risks for hearing loss; language delay; and articulation, voice, and oral-motor problems are secondary to the original disorder. Examples are:
  - Chromosomal disorders, such as Down syndrome, fragile X syndrome

- Single gene disorders, such as Hunter/Hurler syndrome, Treacher-Collins syndrome, Cornelia de Lange syndrome, Tay-Sachs disease
  - Environmental disorders acquired prenatally, such as fetal alcohol syndrome and AIDS
2. Conditions of *unknown expectations for handicap (established risk, Tjossem 1976)*. The resulting communication handicaps may range from minimal to severe. Examples are:
- Congenital hearing loss
  - Cerebral palsy
  - Hydrocephalus and other neural tube defects
  - Clefting
3. Conditions of birth that *may or may not result in handicap (biological risk, Tjossem 1976)*. Risk is increased for neurological sequelae: cognitive impairment, poor language development, attention deficit disorder, hearing loss.
- Prenatal conditions
    - (1) Anoxia—placenta abnormalities
    - (2) Maternal infections—STORCH (syphilis, toxoplasmosis, other infections, rubella, cytomegalic inclusion disease, herpes)
    - (3) Maternal diabetes (includes gestational)
    - (4) Blood group incompatibility
    - (5) Maternal toxemia (eclampsia and pre-eclampsia)
    - (6) Maternal alcohol and drug ingestion
    - (7) Lack of prenatal care (nutrition)
  - Perinatal conditions
    - (1) Prematurity—low birth weight (1500-2500 g) and very low birth weight (under 1500 g) appropriate for gestational age
    - (2) Small-for-gestational age (low birth weight in a term or a near-term neonate)
    - (3) Anoxia (acute and total or prolonged and partial), placenta abnormalities (abruptio placenta, placenta previa), breech presentation, prolonged delivery
    - (4) Intraventricular hemorrhage, grades I-IV
    - (5) Respiratory distress syndrome—bronchopulmonary dysplasia
    - (6) Hyperbilirubinemia—kernicterus
    - (7) Anesthetic intoxication
    - (8) Neonatal medications
  - Postnatal conditions
    - (1) Acute or chronic disease (especially central nervous system)

- (2) Failure to thrive (organic and nonorganic)
  - (3) Otitis media
  - (4) Seizures
  - (5) Head injury: accidents, abuse
  - (6) Neglect
  - (7) Iatrogenic disorder
  - (8) Exposure to toxic agents (lead)
4. Caregiving (*environmental risk*, Tjossem 1976): conditions in the family or in society with implications for inadequate nurturing and stimulation, which in turn have implications for communication development.
- Parental factors
    - (1) Impaired parents—mentally, physically, or by alcohol and/or drugs
    - (2) Mother under 19
    - (3) Parents with little education
    - (4) Parents who have experienced recent loss of infant or loved one
    - (5) Parents with low self-esteem
    - (6) Parents with unrealistic expectations for infant
    - (7) Parents who abuse or neglect
    - (8) Parents for whom pregnancy was unwanted
    - (9) Single parent or parent with limited support system
    - (10) Parents experiencing grief for biological risk conditions
  - Social/environmental factors
    - (1) Poverty
    - (2) High stress
    - (3) Separation of parents from infant

### Brief Descriptions of Risk Conditions\*

1. Some conditions present known expectations for handicap.
  - *Chromosomal disorders*, involving thousands of genes, are defects in one of the 46 chromosomes, a missing chromosome (45), too many chromosomes (46+), or broken or rearranged chromosomes.
  - *Single gene disorders* are altered forms of single genes (mutations).
  - *Fetal alcohol syndrome* produces a constellation of abnormalities directly related to alcohol ingestion during pregnancy, including growth retardation without catch-up, characteristic face, and central nervous system impairment.

2. Some conditions present unknown expectations for handicap.
  - *Hydrocephalus*, resulting from pressure of spinal fluid that is prevented from leaving the brain and being absorbed into the bloodstream, may cause brain damage.
  - *Other neural tube defects* are midline defects of the skin, spinal column, and spinal cord, such as spina bifida.
3. Conditions of birth may or may not result in handicap.
  - Some adverse conditions are prenatal.
    - (1) *Anoxia* is too little oxygen in the blood and tissues, which may result from an abnormality in the transfer of oxygen by the placenta.
    - (2) *STORCH* comprises various infections of the mother.
      - (a) *Syphilis* is a sexually transmitted infection caused by a bacterium. Untreated syphilis, whether contracted during pregnancy or years before, may be transmitted to the fetus.
      - (b) *Toxoplasmosis* is an infection caused by a protozoan organism, most widely carried by cats, that may pass through the placenta of an unsuspecting pregnant woman to the fetus. Affected infants may have low birth weight, a large liver and spleen, jaundice and anemia, and neural tube and brain defects.
      - (c) *Other infections* include influenza virus, chicken pox, and various other viruses that are suspected of causing damage to the fetus.
      - (d) *Rubella* is a virus commonly called German measles. The fetus is most susceptible during the first three months of gestation. Typical congenital malformations include heart defects, microcephaly, cataracts, mental retardation, diabetes, and hearing loss.
      - (e) *Cytomegalic inclusion disease* is most dangerous to the fetus during the mother's first infection by a common virus. Congenital defects include disease of the retina, deafness, and developmental delay.
      - (f) *Herpes simplex* is a virus that may be acquired during the infant's passage through the birth canal when the mother has active herpes in the genital region. The result may be a mild disease of the skin and mucous membranes of the mouth and eye; if severe, it may involve all organs of the body, including the brain.
    - (3) With *maternal diabetes*, kidney problems and inadequate control of blood sugar in the mother may stress the fetus, although the baby will not be born with diabetes. Infants of diabetic mothers are likely to be large, but preterm. As newborns, they are likely to have significant difficulty maintaining normal blood sugar.
    - (4) *Blood group incompatibility* is a condition in which fetal red blood cells are destroyed faster than they can be replaced. The mother's system may have developed an immunity to the fetus's blood, as in Rh disease, and may pass antibodies to the fetus through the placenta, resulting in severe anemia and jaundice in the newborn, which may result in CNS damage. ABO and other blood group incompatibilities may result in significant, but less severe, anemia and jaundice. The

major effect of anemia is lack of energy to perform the usual developmental tasks of childhood. (Note: sickle-cell disease is a serious cause of anemia; it is transferred by genetic inheritance, not caused by incompatibility.)

(5) *Maternal toxemia* appears to affect the kidneys, resulting in varying degrees of high blood pressure, protein in the urine, and fluid retention. The early, milder stage is *pre-eclampsia*; *eclampsia* is the later, severe form characterized by grand mal seizures in the mother. High blood pressure in the mother can result in poor fetal growth as well as separation of the placenta from the uterine wall with resultant hemorrhage (see *abruptio placenta* under *perinatal anoxia* below).

(6) *Maternal alcohol and drug ingestion* can injure the fetus throughout the entire pregnancy but most severely during the first trimester when fetal organs (including the brain) are forming.

(7) *Lack of prenatal care* may result in handicap. Contact with a physician early in pregnancy can prevent complications by facilitating the detection of conditions that may adversely affect the fetus and newborn. Studies have shown a higher incidence of prematurity and complications in newborns whose mothers did not receive adequate prenatal care.

- Adverse perinatal conditions may result in handicap.

(1) *Prematurity* is less than 37 weeks gestation with birth weight appropriate for fetal age.

(2) *Small-for-gestational age* describes an infant whose weight falls below the tenth percentile of expected weight for fetal age. The SGA baby has usually suffered growth retardation in the uterus.

(3) *Anoxia* or *asphyxia* results from failure to breathe after delivery. Circumstances that may lead to anoxia include (a) compression of the umbilical cord, (b) premature separation of the placenta, (c) sustained contraction of the uterus, (d) an umbilical cord that is wrapped tightly around the neck or body, and (e) damage to the head and brain during the birth process. With *placenta previa* the placenta overlies the opening of the uterus and will hemorrhage during delivery. With *abruptio placenta* there is separation of the placenta from the uterine wall with resultant hemorrhage. Complete and total asphyxia can occur when the umbilical cord is clamped or compressed, as when the fetus is in breech position (buttocks first). Prolonged, partial asphyxia can be produced by very strong uterine contractions during delivery.

(4) *Intraventricular hemorrhage*, or bleeding into the fluid-filled spaces of the brain, may result in cerebral palsy.

(5) *Respiratory distress syndrome* is a pulmonary disorder of premature infants caused by lack of surfactant in the lungs. Infants with very severe RDS, especially those on a mechanical ventilator for prolonged periods, may develop the chronic lung disorder of bronchopulmonary dysplasia.

(6) *Hyperbilirubinemia* is failure of the liver to eliminate the natural bilirubin from the blood quickly enough. High levels of bilirubin may

result in damage to the basal ganglia of the brain. Such damage, called *kernicterus*, may result in athetoid cerebral palsy.

(7) *Anesthetic intoxication* is depression of the infant's breathing caused by drugs administered to the mother during labor.

(8) *Neonatal medications* are risks because some drugs place a neonate at risk for hearing loss. Such drugs include salicylates and quinine, potent diuretics, and some antibiotics (streptomycin, kanamycin, neomycin, gentamicin, and tobramycin).

- Adverse postnatal conditions may result in handicap.

(1) *Acute or chronic disease* is a risk condition to the extent that disease interrupts development. A child with optimal health is most likely to have optimal development and to benefit from learning experiences.

(2) *Failure to thrive* describes weight gain at a slower than normal rate during infancy. Organic causes include numerous disorders, especially central nervous system, cardiovascular, and digestive tract problems. Nonorganic failure is often associated with neglect, emotional disturbances, or parents who are often themselves victims of poor parenting and ongoing stresses.

(3) *Iatrogenic disorder* is caused by treatment, usually to save the life of the newborn. Lasting effects of neonatal medications, damage to the larynx from insertion of tubes, and hearing loss from noise in the intensive care unit are examples.

#### 4. Caregiving conditions may contribute to handicaps.

- Parental factors may be adverse.

(1-9) These conditions (from Categories of Risk list) are generally accepted to be risks for nurturing and attachment, resulting in a less than optimal environment for communication development.

(10) Grief for biological risk conditions may occur if parents form expectations during pregnancy about the baby they will have. When their baby is different (sick or handicapped) they must grieve for their expected baby before they can turn their attention to the baby they have.

- Social/environmental conditions may be adverse.

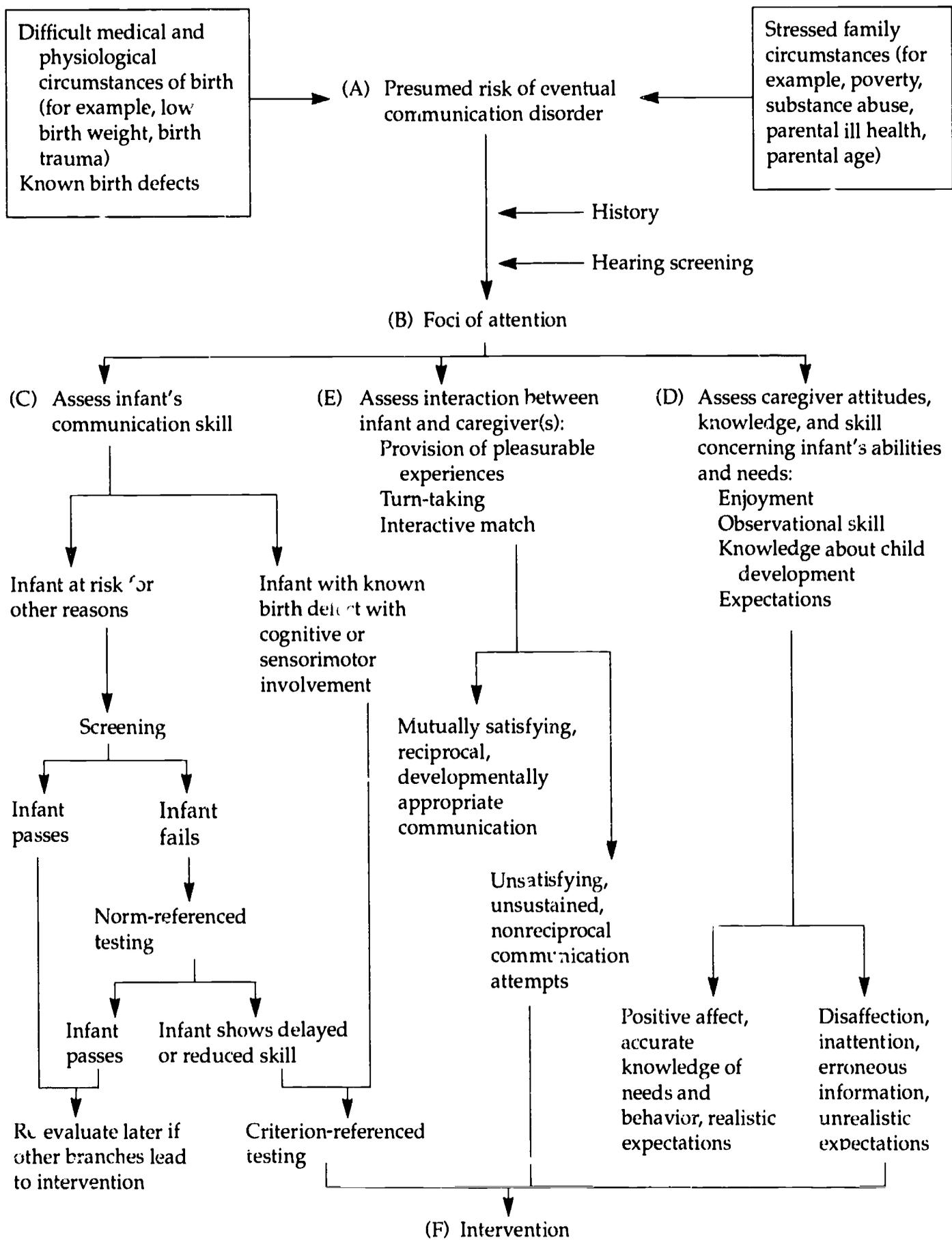
(1) and (2) refer to factors in society with implications for impairment in nurturing and stimulation, which in turn have implications for communication development.

(3) Separation of parents from infant is a risk condition. When an infant is hospitalized for established or biological risk conditions, natural bonding and appropriate language stimulation are interrupted.

---

\*From Blackman 1984 and Sparks 1984

### Assessment Tree\*



\* Tree and explanation are from M. J. Clark and S. N. Sparks. 1988. Evaluation of the at-risk infant. In *Decision making in speech-language pathology*, edited by D. E. Yoder and R. D. Kent. Toronto: B. C. Decker. Reprinted by permission.

## Explanation of Assessment Tree

- (A) Different kinds of circumstances are presumed to decrease the chance that an infant will develop communication skills normally. Known birth defects often involve cognitive or sensorimotor disabilities, which predictably complicate the development of communication skills. Difficult medical and physiologic circumstances of birth do not lead with the same degree of certainty to communication disorder, but since they usually involve lengthened hospital care in a neonatal intensive care unit, they cause a disruption of the normal context of infant-parent interaction. Of equal importance are a variety of family circumstances that may interfere with parents' ability to deal with infants in a nurturing manner; these circumstances may lead to inadequate caregiving, which has consequences for communication development. The biologic and caregiving risk factors are not mutually exclusive. Biologic difficulties may precipitate familial developments that disrupt caregiving, and stressed family circumstances may contribute to the genesis of biologic difficulties. The majority of infants who are presumed to be at risk for unsatisfactory communication development are at risk for reasons of both kinds.
- (B) An infant and his or her caregiver(s) are part of a system of interaction. They affect each other mutually, in complex ways. Therefore a speech-language clinician assessing an infant's communication development must attend to this system—the individual participants and their interaction. The three branches of the tree do not represent kinds of assessment to be selected from, but rather foci of attention, all of which are necessary.
- (C) The procedures represented here deal with the infant's communication skills, particularly the ability to respond to communication signals and to initiate communication. For some children (for example, those with identified birth defects), it is virtually certain that communication skills will be delayed or limited, but for most children presumed to be at risk, delayed or limited skills are a possibility, not a certainty. For screening an infant's communication development, the Early Language Milestone (ELM) Scale (Coplan 1984) may be used; it surveys a variety of communicative behaviors (auditory receptive, vocalization-speech, and visual) that occur with some reliability in children from 0 to 36 months of age. Failure in any area calls for further assessment. The criteria for passing the screening are liberal, so failure should be taken seriously. The ELM may be administered by any health professional. In this and all other instruments that compare a child to other children of the same age, chronological age must be corrected to allow for gestational age if the infant was premature. If in-depth testing by a speech-language clinician is indicated, a variety of evaluation instruments may be used. Norm-referenced tests, which yield either age-equivalency scores or scores showing the extent of deviance from the mean performance expected for given ages, identify children who are performing significantly less well than expected and may need intervention. Scores are not predictive of future skill attainment. Since most instruments have been standardized on "normals" and do not permit compensation for impaired sensory or motor skills, using them with infants with known birth defects usually serves no useful purpose; performance clearly deviant and intervention

is required. Criterion-referenced tests identify skill levels in various domains and are useful for guiding formulation of intervention goals. A list of infant and child assessment instruments, both norm- and criterion-referenced, is found in this guide (pages 18-20).

- (D) The procedures represented here focus on caregiver attributes. They lead to a characterization of knowledge, skills, and attitudes that may affect how the caregiver(s) approach and respond to the infant. Caregivers may be, in degrees, knowledgeable or ignorant about infants; they may or may not be able to translate their knowledge into action when dealing with their own infants; and they may be emotionally invested in their caregiving situation in helpful or harmful ways. It is important to remember that positive caregiver attributes do not depend on socioeconomic or ethnic status. Especially important here is the question of whether the caregivers make themselves available, physically and emotionally, for interaction with the infant. Another important question concerns the caregivers' expectations about the infant's eventual attainment. The caregivers may expect an unrealistically positive outcome, or they may unfairly disregard the infant's potential. A third question is how the caregiver views interaction with the infant. Caregivers coping with the birth of a handicapped child expectably make some accommodations to their child's individual ways of responding. The clinician should note whether the caregiver is highly directive in attempting to interact with the infant or, on the other hand, is responsive to the infant's communicative signals. Caregiver responsiveness is seen as an advantage in the Transactional Intervention Program (TRIP) (Mahoney and Powell 1984), which was developed for use in families with handicapped infants. A small number of observation instruments are available to guide the clinician in assessing caregiver attributes. A list of assessment instruments for use with the caregiver is found in this guide (pages 40-41).
- (E) The procedures represented here deal with the nature of the interaction between infant and caregiver(s). Observation focuses on whether the participants achieve mutually satisfying communication with each other. An infant's communication development takes place via recurring successful interaction with caregiver(s), so it is important for the clinician dealing with an infant at risk to attend to this interaction by actual observation. The assessment objective is to judge whether the interaction is reciprocal, in the sense that the participants easily take turns with each other, and mutually satisfying and enjoyable. An infant who does not participate in this kind of interaction misses a necessary learning experience for developing communication skill. For assessment of the reciprocal nature of the caregiver-infant interaction, one should observe both turn-taking and interactive match, which refers to the caregiver's ability to adapt to the infant's behavior style, interests, and abilities. [These concepts underlie the TRIP (Mahoney and Powell 1984).] Gaze, vocalization, and movement are the common content of normal infant-caregiver interaction, and the clinician should observe the patterning of these signals. How well does the caregiver read and respond to the infant's communicative signals (for example, cues of alertness and readiness for interaction versus cues of overstimulation)? How does the infant respond to the caregiver's cues of eye contact, facial expression,

and vocalizing, which indicate interest in communicating with the infant? A list of infant-parent assessment instruments is found in this guide (pages 25-26).

- (F) Several principles of intervention in infant communication development may be mentioned. First, the infant and caregiver(s) compose the critical unit; intervention focuses on the infant in interaction with the caregiver(s) rather than with the clinician. Second, intervention may need to be very extensive and intensive or, on the other hand, brief nonintensive intervention may suffice. In some cases, a caregiver may need only a brief period of developmental guidance (informing about expected infant development), while in other cases knowledge and skills may be grossly insufficient, requiring extensive help. Third, caregivers may be unable or unwilling to accept help from clinicians until their own needs are met; a nonthreatening trusting relationship with the clinician needs to develop. Fourth, intervention directed toward infants' communication skills need not be highly didactic in nature; these skills are best seen as learned through satisfying interaction with caregivers, not as taught by caregivers or clinicians. A list of intervention materials is found in this guide (pages 21-22).

## Section 2: Assessment and Intervention with Focus on the Infant/Toddler

### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess infant communication in depth (language/speech/hearing)
2. Assess infant-caregiver interaction
3. Assess caregiver
4. Recommend intervention

### Objectives

1. To demonstrate an Assessment Tree for identifying targets for intervention
2. To identify the prescriptive and natural-social models for intervention with the infant as target
3. To provide a list of instruments for assessing infant/toddler communication
4. To provide a list of materials for infant/toddler communication intervention

### *Focus for Discussion*

You are going to see a child named Missy and her stepmother, Pat.

When the videotape is stopped, this will be the focus for discussion:

Considering Missy's caregiving risks, as well as her need for remediation, what intervention setting would you recommend for Missy? Should it be a home-based or a center-based program? (Note that Missy's case information is included in your *Guide* for later reference.)

## Case Study: Missy

### *Biological risks*

- Birth weight 5 lbs. 2 oz. at 36 weeks gestation
- Oxygen deprivation from hyaline membrane disease in perinatal period
- Placed on ventilator in NICU
- Secondary risks: cognitive, motor, language, affective, hearing, and oral-motor development associated with conditions of birth

### *Caregiving risks*

- Lacked consistent caregiver for first 9 months
- Caregiver has four other children, including new baby
- Secondary risks: problems of interaction, delayed/disordered language development associated with problems of attachment

### *Assessment*

The infant's abilities were assessed by means of the Battelle Developmental Inventory, which is norm-referenced to allow comparison with age peers in order to determine eligibility for service. It is also criterion-referenced for aiding the selection and sequencing of therapy goals. Missy, age 40 months, was given all five screening tests, with performance as listed:

Screening Test	Age Equivalent	Pass/Fail
Cognitive	22-23 mos.	F
Adaptive	28-29	F
Personal-Social	31	P
Motor	36-37	P
Communication	21-22	F

The in-depth test of communication skills of the Battelle was administered, and Missy scored as listed below.

	Raw Scores	Percentile Rank
Receptive	14	1
Expressive	19	1

The interaction between Missy and Pat was assessed by means of clinical observation (as shown on the Assessment Tree), and the following characteristics were noted:

Pleasurable, mutually satisfying activities

Easy, reciprocal turn-taking

Interactive match: developmentally appropriate communication

**[Note: These concepts are developed further in the third section of the videotape.]**

Characteristics of Missy's caregiver, Pat, were assessed by means of interview and clinical observation, and the following were noted:

- Enjoyment of being with Missy and positive affect toward her
- Accurate observational skill
- Excellent general knowledge about infant development
- Realistic expectations of progress for Missy

**[Note: These concepts are developed further in the third and fourth sections of the videotape.]**

*Intervention*

Selection of intervention targets:

1. Primary target: infant's communication skills, especially her syntactic/semantic and phonological abilities
2. Secondary target: interaction, especially to foster Pat and Missy's growing relationship to maximize language use in normal interaction.

Consideration of *intervention models*:

1. Prescriptive intervention, or the "fix-it" model. Emphasis is remedial, so therapy treats what is wrong. Skills are taught in progressive developmental order.
2. Natural-social intervention. The environment is structured to enhance social communicative interaction. Emphasis is preventive.

Each of the models may be seen as having advantages and disadvantages. What would be their advantages and disadvantages in Missy's case?

For more about models of intervention, see the Bibliography.

	<b>Home Based</b>	<b>Center Based</b>
<b>Advantages</b>		
<b>Disadvantages</b>		

## Summary

The Assessment Tree (infant, infant-caregiver interaction, caregiver) led to the conclusion that in this case the infant/toddler was the primary target for intervention. Assessment of the interaction revealed pleasurable, mutually satisfying activities; easy, reciprocal turn-taking; and good interactive match with developmentally appropriate communication. Caregiving characteristics of positive affect, accurate knowledge of needs and behavior, and realistic expectations were present. One model for intervention with the infant/toddler as target is prescriptive (remedial) intervention; skills are taught in progressive developmental order. Another model is natural-social intervention; families are provided with skills that will enhance their child's development in typical activities with the child. Both models are appropriate for intervention. Caregiving risks must be considered in an intervention plan. An infant at risk for communication disorders must have an audiological assessment.

A list of infant/toddler assessment instruments and a list of intervention materials are provided on the following pages.

## Assessment Instruments for Use with the Infant/Toddler

### *Screening Tests*

Coplan, J. 1984. *The Early Language Milestone Scale*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced screening test

**Age Range:** Birth to three years

**Content Areas:** Auditory expression, auditory reception, visual

**Administration Time:** 10 minutes

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory Screening Test*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to eight years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 10 to 15 minutes for children under 3 and over 5, 20 to 30 minutes for children between the ages of 3 and 5

Trembath, J. 1977. *Milani-Comparetti Motor Development Screening Test*. Omaha, NE: Meyer Children's Rehabilitation Institute, University of Nebraska Medical Center.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 24 months

**Content Areas:** Screens for early evidence of neuromotor delay or deficits

**Administration Time:** 4 to 8 minutes

### *In-Depth Tests*

Bayley, N. 1969. *Bayley Scales of Infant Development*. San Antonio: The Psychological Corporation.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 36 months

**Content Areas:** Mental and psychomotor developmental indices (MDI and PDI)

**Administration Time:** 45 minutes per index

Bzoch, K. R., and R. League. 1971. *Receptive-Expressive Emergent Language (REEL) Scale*. Baltimore, MD: University Park Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Receptive and expressive language; administered by parent interview

**Administration Time:** 20 minutes

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Ziesloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Cognitive, fine motor, gross motor, expressive language, social-emotional, and self-help

**Administration Time:** 15 to 30 minutes for children up to 2; 1 hour for children over 2

Hedrick, D. L., E. M. Prather, and A. R. Tobin. 1984. *Sequenced Inventory of Communication Development (SICD)*. Seattle, WA: University of Washington Press.

**Type of Measure:** Norm-referenced, norms available 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48 months

**Age Range:** 4 months to 4 years

**Content Areas:** Receptive language: awareness, discrimination and understanding. Expressive: motor, vocal, and verbal responses

**Administration Time:** For children under 2, 30 minutes for administration, 10 minutes for scoring. For children over 2, up to 1 hour for administration, 10 minutes for scoring.

Johnson-Martin, N., K. G. Jens, and S. M. Attermeier. 1986. *The Carolina Curriculum for Handicapped Infants and Infants at Risk: Assessment Log*. Baltimore, MD: Paul H. Brookes.

**Type of Measure:** Criterion-referenced

**Age Range:** Birth to 24 months developmental age

**Content Areas:** 24 skill domains

MacDonald, J. D., and D. S. Horstmeier. 1978. *Environmental Prelanguage Battery (EPB)*. San Antonio: The Psychological Corporation.

**Type of Measure:** Criterion-referenced

**Age Range:** Nonverbal or minimally verbal individuals who are functioning below or at the single-word level

**Content Areas:** Verbal: sound imitation, noun imitation, noun production, action-verb production, two-word phrase production. Nonverbal: history of early sound productions; observation of preliminary skills including eye control, sitting behavior, on-task behavior, and object permanence; observation of function play with toys and objects; motor imitation; and assessment of receptive language

Morris, S. E. 1982. *Pre-Speech Assessment Scale*. Clifton, NJ: Preston.

**Type of Measure:** Rating scale

**Content Areas:** Feeding behavior, sucking, swallowing, biting and chewing, respiration, phonation, and sound play

Newborg, J., J. R. Stock, and L. Wnek. 1984. *Battelle Developmental Inventory*. Allen, TX: DLM Teaching Resources.

**Type of Measure:** Norm-referenced and criterion-referenced

**Age Range:** Birth to 8 years

**Content Areas:** Personal-social, adaptive, motor, communication, and cognition

**Administration Time:** 1 hour or less for children under the age of 3 and over the age of 5; 1-1/2 to 2 hours for children between the ages of 3 and 5

Owens, R. E. 1982. *Program for the Acquisition of Language with the Severely Impaired*. San Antonio: The Psychological Corporation.

**Type of Measure:** Caregiver interview, environmental observation, and interaction

**Age Range:** All ages

**Content Areas:** Presymbolic and symbolic skills

Schafer, D. S., and M. S. Moersch. 1981. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press.

**Type of Measure:** Norm-referenced

**Age Range:** Birth to 3 years

**Content Areas:** Perceptual/fine motor, cognition, language, social-emotional, self-care, gross motor

**Administration Time:** 30 to 60 minutes

Tanner, D. C., and W. M. Lamb. 1984. *The Cognitive, Linguistic, and Social-Communicative Scales (CLASS)*. Tulsa, OK: Modern Education Corporation.

**Type of Measure:** Norm-referenced, indirect assessment

**Age Range:** Birth to 72 months

**Content Areas:** Cognitive, linguistic, and social-communicative

**Administration Time:** 45 minutes

Uzgiris, I. C., and J. M. Hunt. 1975. *Assessment in Infancy*. Chicago: University of Illinois Press.

**Type of Measure:** Sensorimotor scales

**Age Range:** Birth to 2 years

**Content Areas: Six Scales**

- I: The Development of Visual Pursuit
- II: The Development of Means of Obtaining Desired Environmental Events
- III: The Development of Imitation
- IIIa: Vocal Imitation
- IIIb: Gestural Imitation
- IV: The Development of Operational Causality
- V: The Construction of Object Relations in Space
- VI: The Development of Schemes for Relating to Objects

**Prescriptive or Skill-Centered Intervention Materials**

Clark, T. C., E. C. Morgan, and A. L. Wilson-Vlotman. 1984. *The Insite Model*. Logan, UT: Ski Hi Institute. A parent-centered, in-home, sensory interventive, training and education program for the infant with multiple impairments.

Dmitriev, V. 1982. *Time to Begin*. Milton, WA: Caring, Inc. A practical manual for guiding the development of children with Down syndrome from infancy to 2 years.

Furuno, S., T. T. Inatsuka, K. A. O'Reilly, C. M. Hosaka, B. Zeisloft, and T. Allman. 1984. *Hawaii Early Learning Profile (HELP)*. Palo Alto, CA: VORT Corporation. Activities for the clinician based on the HELP assessment instrument.

Hanson, M. 1987. *Teaching the Infant with Down Syndrome*. 2nd ed. Austin, TX: Pro-Ed, Inc. Activities for parents of infants with Down syndrome.

Johnson-Martin, N., K. G. Jens, and S. M. Altermeier. 1986. *Carolina Curriculum for Handicapped Infants and Infants at Risk*. Baltimore, MD: Paul H. Brookes. Teaching procedures and evaluation criteria to create a program for specific strengths and weaknesses of a child based on the Assessment Log.

Karnes, M. B. 1982. *You and Your Small Wonder*. Books I (0-9 mos) and II (9-18 mos). Circle Pines, MN: American Guidance Service. Activities and materials to foster physical, emotional, and intellectual growth and language.

Owens, R. E. 1982. *Program for the Acquisition of Language for the Severely Impaired*. San Antonio: The Psychological Corporation. Presymbolic and symbolic training levels have formal training mode, incidental teaching strategies, and stimulation methods.

Reidlick, C. E., and M. E. Herzfeld. 1983. *O to 3 Years—An Early Language Curriculum*. Moline, IL: Linguistics, Inc. A series of communication activities sequenced developmentally and divided into receptive and expressive language skill areas.

Schafer, D. S., and M. S. Moersch. 1981. *Developmental Programming for Infants and Young Children*. Ann Arbor, MI: University of Michigan Press. Book 1: Assessment and Application; Book 2: Early Intervention Developmental Profile; Book 3: Stimulation Activities.

Sparling, J., and I. Lewis. 1979. *Learning Games for the First Three Years*. New York: Berkeley Publishing Group. Household activities for parents of infants from birth to 3 years.

## Natural-Social or Nondirective Intervention Materials

Gardner, A. 1986. *Talking Together*. Richmond Health Department, 6911 No. 3 Road, Richmond, British Columbia V9N7X6. A guide to speech and language development in young children for parents.

Klein, M. D., M. H. Briggs, and P. A. Huffman. 1987. *Facilitating Caregiver-Infant Communication*. Los Angeles, CA: California State University at Los Angeles, Division of Special Education. 5151 State University Drive, Los Angeles, CA 90032. A center-based program for infant-caregiver interaction.

MacDonald, J., and Y. Gillette. 1985. *Ecological Communication System (ECO System)*. San Antonio: Psychological Corp. Activities for parents and clinicians to promote interaction and language.

Mahoney, G. J., and A. Powell. 1984. *Transactional Intervention Program*. Woodhaven, MI: Woodhaven School District. A guide for clinicians to help parents improve their interactive match with their developmentally delayed infants.

Manolson, A. 1985. *It Takes Two to Talk*. Toronto: Hanen Early Language Resource Centre, 252 Bloor St. West, Suite 4-126, Toronto, Ontario M5S1V6. A program to help parents of at-risk and handicapped infants become more effective language facilitators.

## Section 3: Assessment and Intervention with Focus on Infant-Caregiver Interaction

### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess interaction
2. Assess caregiver
3. Provide intervention for interaction
4. Provide intervention for caregiver

### Objectives

1. To identify components of infant-caregiver interaction that are important to assess
2. To demonstrate the developmental guidance model of intervention directed toward caregiver knowledge and expectations for infant's development
3. To provide an infant developmental chart without ages
4. To demonstrate the directive model of intervention focused on infant response
5. To demonstrate the nondirective model of intervention focused on infant-caregiver interaction
6. To provide a list of instruments for assessing caregiver and infant-caregiver interaction
7. To provide a list of nondirective intervention resources

### *Focus for Discussion*

You will see a child named David and his mother, Dawn.

When the videotape is stopped, this will be the focus for discussion: Why was a developmental chart without ages chosen? What is the next step in intervention for David and Dawn? What were the positive aspects of their interaction? Are there other suggestions for improving their interaction?

## Case Study: David and Dawn

### *Biological risks*

- Established condition: Down syndrome
- Secondary risks: delay associated with Down syndrome in all development, including language and articulation disorder; significant conductive hearing loss as a result of congenital middle ear anomalies; sensorineural hearing loss as a result of severe otitis media

### *Caregiving risks*

- David does not give the expected cues and responses. Dawn has difficulty reading them.
- Secondary risks: disrupted interaction; disordered pattern of language development associated with disrupted synchrony in addition to expected delayed pattern of language development associated with Down syndrome.

### *Assessment*

The infant's abilities in receptive and expressive speech and language were tested at the center.

The assessment of the interaction between David and Dawn was done by clinical observation (as shown on the Assessment Tree). In terms of the provision of pleasurable experiences, Dawn tries but David does not show pleasure. Their interaction is unsatisfying, unsustained. Turn-taking is nonreciprocal. David does not take a turn. Dawn calls upon David to respond, not to initiate. Dawn directs David's activities. With regard to interactive match, Dawn does not seem sensitive to David's interests.

Characteristics of David's caregiver, Dawn, were assessed by means of interview and clinical observation, and the following were noted:

Enjoyment of being with David and positive affect toward him

Accurate observational skill

Basic general knowledge, obtained at David's center program, about infant development in Down syndrome

Uncertain expectations of progress for David

### *Intervention*

Selection of intervention targets:

1. Primary target: interaction, especially to structure the interaction so that David will communicate
2. Secondary target: caregiver, so that Dawn will understand David's developmental level and communication abilities

Consideration of intervention models:

1. Developmental guidance. Caregiver is given information to form appropriate expectations of infant's communications.
2. Directive. Infant imitates caregiver models and responds to cues of caregiver who teaches communication skills.

3. Nondirective. Infant-caregiver turns are balanced; infant makes things happen with communication; infant imitates some activities, caregiver imitates infant.

## Summary

Components in assessment of interaction are: provision of pleasurable experiences, balance of turns between infant and caregiver (caregiver's directiveness), and interactive match. Two intervention models for caregiver-infant interaction are directive and nondirective; nondirective is preferred. It is important to reinforce to caregivers the positive aspects of caregiver behaviors. One way of helping a parent to form appropriate expectations of the infant's communication is a developmental chart without ages. It allows caregivers to see developmental milestones without focusing on age appropriateness. Providing information to caregivers is called developmental guidance.

## Infant-Caregiver Interaction Assessment Instruments

Bee, H. L., K. E. Barnard, S. J. Eyres, C. A. Gray, M. A. Hammond, A. L. Spietz, C. Snyder, and B. Clark. 1982. *Nursing Child Assessment Teaching and Feeding Scales*. In Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. *Child Development* 53:1134-56.

**Type of Measure:** Behavioral checklist

**Purpose:** Assessment of parent and child behaviors during teaching and feeding as screening device and pre/post intervention

**Age Range:** 1 to 36 months

**Content Areas:** Parent's sensitivity to cues, response to distress, cognitive and socio-emotional growth fostering, and child's clarity of cues, responsiveness

**Administration Procedures:** Check behaviors observed after 3 to 5 minutes of teaching; feeding observation time varies per dyad; rating time = 15 minutes per scale; 73/76-item binary checklists

McCollum, J. A., and V. D. Stayton. 1985. Social Interaction Assessment/Intervention. In Studies and intervention guidelines based on the SIAI model. *Journal of the Division for Early Childhood* 9:125-35.

**Type of Measure:** Behavioral count

**Purpose:** Evaluation of parent-handicapped child interaction pre/post intervention to increase parent's ability to make independent adjustments to child's behavior during play

**Age Range:** Nonspecific

**Content Areas:** Communicative social interaction; individualized target behaviors for parent and child, such as imitation, vocalization, and turn-taking

**Administration Procedures:** Videotapes of 4-minute play in home; count target behaviors in 5- to 10- second intervals

Owens, R. E. 1982. *Program for the Acquisition of Language with the Severely Impaired: The Diagnostic Interaction Survey and Caregiver Interview and Observation*. San Antonio: The Psychological Corporation.

**Type of Measurement:** Informal caregiver interview and environmental observation

**Purpose:** To identify the child's communication partners and the content, behaviors, and quality of child-caregiver communication

**Age Range:** Nonspecific

Robinson, E., and S. Eyberg. Dyadic Parent-Child Interaction Coding System. In The dyadic parent-child interaction coding system: Standardization and validation. *Journal of Consulting and Clinical Psychology* 49:245-50.

**Type of Measurement:** Behavioral count

**Purpose:** Assesses degree to which parent's or child's behavior during play is deviant and evaluates effectiveness of treatment

**Age Range:** Nonspecific

**Content Areas:** Parent's directiveness, positive and negative physical contact, child's compliance

**Administration Procedures:** Count behaviors during 5 minutes of play in clinic

# Infant Development from Birth to Three Years

## Heads Up

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Expresses different needs and moods (fussy, hungry, tired, wet, wanting to be held) through variations in tone and intensity of crying</p> <p>Comforted by voice, if held closely or wrapped in a blanket</p> <p>Has own personality</p> <p>Is developing a sense of trust</p> <p style="text-align: center;">200</p>	<p>Newborn reflexes:</p> <ul style="list-style-type: none"> <li>• Startles at a sudden light or noise</li> <li>• May startle when touched unexpectedly</li> <li>• Will follow a rattle with eyes for a short distance</li> <li>• Arms, legs, and body move, wiggle, and shake at the same time</li> <li>• Turns to suck on breast or bottle nipple</li> </ul> <p>Will lift head when placed on stomach</p> <p>Looks at objects (mobile, picture, fuzzball, etc.) placed in line of vision</p> <p>Grasps a finger when placed in infant's hand</p> <p>"Prereaches": simple reach and grasp movements exist but then fade</p> <p>Head unsteady; needs support</p> <p>Can bring fingers to mouth to suck</p>	<p>Snuggles, cuddles</p> <p>Recognizes Mom's voice</p> <p>Looks directly at a familiar adult face</p> <p>Looks away from strangers (yawn, sign of anxiety)</p> <p>Responds to rhythm of adult speech by body movements, looking alert, dozing off, etc.</p> <p>Needs the closeness of holding for stimulating and bonding</p>	<p>Tuned in to speech from birth</p> <p>Learning grows out of reflexes (for example, child first sucks air, then learns to suck food)</p> <p>Learns about objects through looking</p> <p>Looks at bright objects</p> <p>Follows a slow-moving bright object</p> <p>Will ignore something that disturbed infant the first time infant heard it</p>	<p>Cries</p> <p>Responds to sounds: ringing bell, music, dog barking, etc.</p> <p style="text-align: center;">201</p>

# Infant Development from Birth to Three Years (continued)

## The Looker

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Smiles in response to others</p> <p>Initiates contact by smiling</p> <p>Frowns</p> <p>Laughs</p> <p>Squeals</p> <p>Cries because infant is bored and not just hungry, tired, or wet</p> <p>Settles down into own pattern of eating and sleeping with minor variations</p> <p style="text-align: center;">202</p>	<p>Continues to wave arms and kick feet</p> <p>Follows rattle in an arc from one side to another</p> <p>Clasps hands together</p> <p>Changes posture on lap for comfort</p> <p>When placed on stomach, will push chest up with arms</p> <p>Can hold head steady</p> <p>Reaches toward a hanging mobile with hands or feet</p> <p>Sits with support</p> <p>Grasps and briefly holds object (rattle) placed in hand</p> <p>Turns head from side to side to look at pictures taped to crib</p> <p>Uses fingers to explore own face</p>	<p>Develops selective attention (paying attention to some people while ignoring others)</p> <p>Can tell whether or not parent is in good mood</p> <p>Acts and responds differently with different people</p>	<p>Visual Exploration:</p> <ul style="list-style-type: none"> <li>• Learns about space and objects by looking and hearing</li> <li>• Engages in repetitious looking</li> <li>• Coordinates what is seen with what is heard</li> </ul> <p>When infant accidentally causes an interesting event to occur (for example, knocking the roly poly, causing movement and ringing), will try to find out what caused the event by trying to make it happen again</p> <p>Continues to be actively curious and exploratory</p> <p>Uses sense of taste as a way of exploring the world</p> <p>Acquires certain simple habits centered about own body (for example, anticipating feeding, cooing in crib on waking)</p> <p>Repeats actions previously performed (vocal, visual, grasping)</p> <p>Notices and responds to interesting events</p>	<p>Turns toward sounds</p> <p>Coos and makes other random sounds</p> <p>May imitate simple sounds (ooh, aah) that another person makes</p> <p>Plays with own voice, repeating and trying out sounds</p> <p>Grows from knowing when infant is conversing with Mom to an awareness of their "talk" being interrupted</p> <p>Begins to try to enter conversation with others</p> <p>Begins to actively listen to sounds (for example, will turn head to listen to music box and may cry when it stops)</p> <p style="text-align: center;">203</p>

# Infant Development from Birth to Three Years (continued)

## The Crawler-Creeper

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Shows delight with self</p> <p>Gets others to "play" by actively expressing affection</p> <p>Stops eating to play</p> <p>Feeds self simple "finger food" (for example, crackers)</p> <p>Still takes everything into mouth</p> <p>Holds out arms to be held or picked up</p> <p>Discovers parts of body (puts feet into mouth)</p> <p style="text-align: center;">204</p>	<p>Balances on a lap</p> <p>Coordinates seeing and grasping: reaches and grasps for objects (likes dangling objects)</p> <p>Rolls over</p> <p>Sits in high chair</p> <p>Bears weight on legs</p> <p>Crawls, may creep</p> <p>Rakes (makes sweeping, uncoordinated reaches) to attain objects; works to get toys that are out of reach</p> <p>Sits alone</p> <p>Will hold a cube in each hand</p> <p>Practices motor skills: first sitting, then pivoting, rolling, crawling, pulling self up to knees, then standing while holding on to something</p> <p>Passes cube hand to hand</p> <p>Learns to get self into sitting position</p>	<p>Receives and shows pleasure in being with Mother</p> <p>Coos, makes sounds to get comfort, help, or people to play</p> <p>Can pick out Mom from others</p> <p>May show anxiety at strangers</p> <p>Will smile at own reflection in the mirror</p> <p>May start a game with an adult (for example, drop the rattle, tickle me, catch the object)</p>	<p>Infant's world widens; horizons expand; exploring by looking continues</p> <p>Recognizes familiar objects; can select favorite toy if placed in front of infant</p> <p>Repeats enjoyable activities and actions over and over and over</p> <p>Likes to make things happen; explores by feeling, tracing, tasting</p> <p>Experiments with objects by shaking, banging, pushing, dropping</p> <p>Shows interest in external environment by:</p> <ul style="list-style-type: none"> <li>• Searching for dropped objects</li> <li>• Recognizing partly hidden objects</li> <li>• Acting, then waiting for effect to occur</li> <li>• Trying to repeat actions accidentally discovered</li> <li>• Picking out cues that may help in recognizing a known place (Grandma's, babysitters, nursery)</li> </ul>	<p>Develops syllables (<i>b, d, m</i>)</p> <p>Recognizes own name</p> <p>Turns toward voices and sound that interest infant</p> <p style="text-align: center;">205</p>

# Infant Development from Birth to Three Years (continued)

## The Cruiser

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>beginning to sense that infant is a separate being</p> <p>Expresses feelings:</p> <ul style="list-style-type: none"> <li>• Demonstrates affection</li> <li>• Listens with pleasure to sounds</li> <li>• Has a sense of humor</li> <li>• Expresses aggression by throwing things</li> </ul>	<p>Can hold two cubes and bang them together</p> <p>Can grasp small objects (raisins, cherries) between thumb and finger</p> <p>Creeps, if hasn't before</p> <p>Holds furniture and pulls self up to stand</p> <p>Walks when led, holding on to adult's thumb</p> <p>Handles objects with more ease</p> <p>Able to coordinate eye-hand movements more easily</p> <p>Picks up small objects but will choose large over small</p> <p>Easily sits self up without support</p> <p>Enjoys emptying and filling</p> <p>Discovers genitals</p>	<p>Behaves differently with different people</p> <p>Shows separation anxiety</p> <p>Waves bye-bye</p> <p>Masters separation anxiety</p>	<p>Continues to play peek-a-boo as a way of learning things exist when they cannot be seen</p> <p>Understands that infant can get a toy that's out of reach</p> <p>Searches actively for hidden objects</p> <p>Throws, retrieves, loses, searches, finds</p> <p>Understands that something has to be done to get what infant wants</p> <p>Intentionally chooses appropriate actions to carry out with a variety of toys</p> <p>Begins to solve simple problems</p> <p>Can make things happen</p> <p>Often gets distracted when pursuing goals (for example, if intent is to use the string to pull the pull toy, infant may end up playing with the string)</p> <p>Can anticipate an immediate happening (for example, the sound of footsteps means "Mom")</p>	<p>Says "Mama" or "Dada" but doesn't understand meaning</p> <p>Imitates speech sounds</p> <p>Differentiates expressive vocalizations</p> <p>Associates "ba" with bottle, "Mama" with Mom, "Dada" with Dad, "ma" with more, etc.</p> <p>Engages in reciprocal baby talk; babbles back at parents</p> <p>Understands simple statements like "Bring me the shoe"</p>

# Infant Development from Birth to Three Years (continued)

## The Walker

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Imitates housework</p> <p>Fights diaper changing</p> <p>Expresses a variety of emotions, including much affection</p> <p>Will "make a scene" to get what is wanted; protests loudly</p> <p>Shows off</p> <p>Conveys a variety of messages with ease (shakes head for "no," points, etc.)</p> <p>Is "into everything"</p> <p>Has a firm sense of self as a separate being</p>	<p>Scribbles</p> <p>Builds tower of 2 or 3 cubes</p> <p>Neat pincer grasp</p> <p>Imitates complex motor tasks (stirring, sweeping)</p> <p>Climbs stairs</p> <p>Stands alone</p> <p>Walks</p> <p>Stoops to pick up objects</p> <p>Tears papers, magazines</p> <p>Climbs: gets on top of or under tables, desks, counters, etc.</p> <p>Rocks in rocking chair</p> <p>Can get up on furniture; bounces on furniture</p> <p>Uses both hands freely, but may show preference for one hand</p> <p>Picks up small objects</p>	<p>Explores parents' hair, faces, glasses, etc.</p> <p>Runs to be picked up, cuddled</p> <p>Enjoys roughhousing, tossing games</p> <p>Will obey a "No"</p> <p>Teases</p> <p>Initiates games of give and take</p> <p>Likes to be within sight and hearing of adult</p> <p>May stop playing for a little while to make sure parent is nearby</p>	<p>Pursues new and different activities for their own sake</p> <p>Continues to be curious about objects</p> <p>Tends to experiment with different objects and things</p> <p>Expands range of explorations; empties cupboards, pokes into shelves and drawers, pulls out pots and pans</p> <p>Demonstrates skill in making things happen:</p> <ul style="list-style-type: none"> <li>• Nests toys</li> <li>• Puts in, takes out</li> <li>• Pulls, pushes</li> <li>• Rolls, rocks</li> </ul> <p>Active in trial and error exploration:</p> <p>Seeks new ways to get what she wants and to solve problems</p> <p>Identifies body parts</p> <p>Recognizes existence of objects apart from self</p>	<p>Knows a few words other than "Mama" and "Dada"</p> <p>Expresses desires verbally</p> <p>Follows verbal cues</p> <p>Knows own name and turns around when infant hears it</p> <p>Uses words and gestures to get adult's attention</p> <p>Asks "What?" or "What's that?" frequently</p> <p>May try to sing</p> <p>Enjoys rhymes and tries to join in</p> <p>Echoes important words or last words addressed to infant</p> <p>Uses first sentences</p>
208				209

# Infant Development from Birth to Three Years (continued)

## The Doer

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Strives for autonomy; wants to do things on own:</p> <ul style="list-style-type: none"> <li>• Takes off clothing</li> <li>• Helps with simple household tasks</li> <li>• Begins to clean up</li> <li>• Shows independent streak ("do it myself"; often refuses help with dressing, bathing, etc.)</li> <li>• Acts possessive (me, mine)</li> <li>• Can be negative ("No, no"); has temper tantrums</li> <li>• Becomes aware of who infant is by mastering skills, opposing people and situations, asserting self, making choices, protesting and cooperating</li> <li>• Demands sameness of routine yet dislikes pressure that training places on infant</li> </ul>	<p>Actively exploring as large and small muscle skills and eye-hand coordination are mastered and fine tuned:</p> <ul style="list-style-type: none"> <li>• Builds towers of 3 to 5 blocks, then knocks them down, rebuilds, etc.</li> <li>• Dumps items from containers</li> <li>• Kicks large ball</li> <li>• Throws ball</li> <li>• Opens and closes containers</li> <li>• Tries hopping, somersaults, walking backwards</li> <li>• Carries several toys at once</li> <li>• May be ready for toilet training</li> <li>• Climbs on furniture to look out window, get to counter, etc.</li> <li>• Will spontaneously make circular scribbles and dots when given paper and crayon (will do this on walls—watch out!)</li> </ul>	<p>Plays near other children, not with them</p> <p>Pats and hugs house pets affectionately, though can be rough</p> <p>Punches, slaps</p> <p>Imitates parents</p> <p>Bossy—gives orders</p> <p>Increases range and frequency of interaction with adults</p> <p>Resists demands of adults either playfully or seriously</p>	<p>Learns to master many aspects of the environment through observation, exploring, trial-and-error testing, problem-solving</p> <p>Combines toys in more complex ways</p> <p>Has favorite toys, foods, books; makes selections</p> <p>Struggles; gets frustrated when learning new skills</p> <p>Invents new ways to solve problems</p> <p>Memory develops: holds images (for example, parental pictures) in mind; begins to use these images</p> <p>Understands that infant or another person can "picture" what has to be done to cause something to happen</p> <p>Firmly grasps concept of object permanence (understands objects exist when they cannot be seen)</p> <p>Watches and understands TV shows</p> <p>Begins to engage in "make-believe" activities</p>	<p>Uses 2 or 3 different words in sentences</p> <p>Points to and names body parts with help</p> <p>Names familiar items (ball, cat, truck) in pictures</p> <p>Follows simple directions: "Show me your nose," "Get your coat"</p> <p>Likes to listen to stories; pages through magazines with adults</p> <p>"Talks" on phone</p> <p>Imitates animal sounds, cat noise, etc.</p> <p>Hums; may sing</p> <p>Understands more words and ideas than can be expressed</p> <p>Is taken with the power of words:</p> <ul style="list-style-type: none"> <li>• Refers to self by name</li> <li>• Asks names of objects over and over</li> <li>• Talks to self during play</li> </ul>

# Infant Development from Birth to Three Years (continued)

## The Tester

Sense of Self	Physical Changes	Relationships	Understanding the World	Communication
<p>Begins to gain a sense of self as a small individual who can do things independently:</p> <ul style="list-style-type: none"> <li>• Develops self-help skills (washing hands, using toilet, undressing self)</li> <li>• Has favorite foods and other preferences</li> <li>• Continues to demand independence</li> <li>• Feels part of the family; does not want to be left out—puts off going to bed</li> <li>• Develops sense of humor</li> </ul> <p style="text-align: right; font-size: 24pt; font-weight: bold;">212</p>	<p>Continues to master motor skills:</p> <ul style="list-style-type: none"> <li>• Stacks/builds towers with cubes or blocks</li> <li>• Puts in, takes out, puts together, takes apart</li> <li>• Can copy simple shapes</li> <li>• Can throw a ball</li> <li>• Jumps, rides a trike</li> <li>• Runs (lopsided)</li> <li>• Climbs</li> <li>• Walks down stairs</li> <li>• Feeds self (may be messy, awkward)</li> <li>• Sleeps less—is usually awake for most of the day</li> <li>• Tries to work zippers, snaps, buttons, etc.</li> <li>• Begins to master slides and swings</li> <li>• Begins to coordinate complex hand and eye movements (for example, can work a 4- or 5-piece puzzle)</li> <li>• Inserts shapes into shape box, pegs into pegboard, strings large beads</li> </ul>	<p>Relies on routines (likes things arranged and done same way every day)</p> <p>May get upset if Mother stays away overnight</p> <p>Has flashes of temper</p> <p>Imitates adult activities (dusting, sweeping, drinking coffee, etc.)</p> <p>Has difficulty sharing</p> <p>Will play by self</p> <p>Shows achievements to parents</p> <p>Likes running errands ("go get a spoon, please")</p> <p>Enjoys roughhousing</p> <p>Likes to watch others play</p> <p>Gradually is able to separate from parent</p> <p>Likes chances to do for self and others</p>	<p>Continues to be naturally and actively curious</p> <p>Continues to learn about people and things and to organize own findings</p> <p>Uses words with pictures</p> <p>Associates people with certain places; knows where neighbors live, etc.</p> <p>Knows names of body parts</p> <p>Begins thinking and expressing thoughts about things not directly involved with</p> <p>Can name, identify, ask for, and describe objects, people</p> <p>Begins to identify size relationships (for example, which ball is bigger?)</p> <p>Can represent the world through mental images</p> <p>Can recognize similarity and differences in objects</p> <p>Can classify objects (put the puzzles on the shelf and the truck under the table)</p> <p>Makes choices</p> <p>Has beginning understanding of time concepts ("After your nap, we'll go outside.")</p> <p>Shows animistic thinking</p> <p>Sees objects in terms of one or two prominent features</p> <p>Learning is situation-bound</p>	<p>Improves language skills rapidly</p> <p>Uses plurals</p> <p>Understands more than infant can say</p> <p>Sings songs</p> <p>Uses phrases, simple sentences ("He go car." "Me want milk.")</p> <p>Counts ("one, two")</p> <p>Enjoys rhymes, chants</p> <p>Understands and uses concept words (hot, cold, high, down, soft, no, hard)</p> <p>Talks about events (trip to store, a book, spilled milk, etc.)</p> <p>Follows a series of directions</p> <p>Can express wants and needs ("more milk" "want candy")</p> <p>Likes to talk and work with parent</p> <p>Responds to questions, simple statements</p> <p>Can be engaged in simple conversations</p> <p>Asks "why?"</p> <p style="text-align: right; font-size: 24pt; font-weight: bold;">213</p>

# Speech and Language Development of the Infant and Young Child

Stages of Speech and Language Development	Developmental Stages	How to Stimulate Speech and Language Development
Sounds	Heads Up The Looker The Crawler/Creepers The Cruiser	Look at the baby (eye contact) Smile at the baby/make faces Touch the baby—the whole body receives messages Sing Encourage imitation games such as peek-a-boo Imitate the baby's speech sounds Encourage the baby to imitate new sounds Read books with the baby
Single Words	The Walker	Name objects for the baby Read books with the baby Recite nursery rhymes Imitate the baby's movements and vocalizations Encourage imitation games such as peek-a-boo Talk to the baby about what you are doing when you are together
2- or 3- Word Utterances	The Doer	Be a good speech model Repeat new words over and over Talk about what you are doing when you are together Read books with the child Listen to the child when he/she is talking to you Carry on conversations with the child
Sentences	The Tester	Use words the child has trouble with frequently in your speech Talk about relationships of words, objects, and ideas Talk about similarities or differences between things Encourage the child to tell stories using books and pictures Allow the child time to play with other children Pay attention to the child when he/she is talking, remembering that repeating words and sounds is normal during this period of growth Extend the child's conversation

## Section 4: Assessment and Intervention with Focus on the Caregiver

### *Clinician Roles*

The following clinician roles can be observed in this section of the videotape:

1. Assess infant/toddler language by in-depth test
2. Assess infant-caregiver interaction
3. Assess caregiver
4. Recommend intervention to supervisor and team
5. Build trust with caregiver through listening
6. Provide intervention for the infant through caregiver
7. Refer to other professionals

### Objectives

1. To present problems of clinician's communication with unresponsive caregiver
2. To identify important components of a caregiver assessment
3. To identify the developmental guidance and active listening models of intervention
4. To provide aids to active listening
5. To identify barriers that hamper a caregiver's acceptance of developmental guidance and acceptance of referral
6. To provide a list of assessment instruments for the caregiver
7. To provide a list of family assessment instruments
8. To provide a list of possible community resources for client referral

### *Focus for Discussion*

You will see Sue with her two children, Cory and Ray. Ray, the older child, is at risk. When the videotape is stopped, this will be the focus for discussion:

What are the obstacles that prevent intervention from being effective at this time? Referral to what other professionals might be considered? What should the clinician recommend to her supervisor and the center team? What should the clinician do if Sue rejects referral to another professional?

## Case Study: Ray, Cory, and Sue

### *Biological risks*

- Small-for-gestational age; birth weight 4 lb. 4 oz.; hospitalized at 2 mos. for salmonella and hernia; failed to thrive; chronic ear infections
- Secondary risks: delays in all areas of development, including language; hearing loss associated with otitis media

### *Caregiving risks*

- Teen mother; lack of social support; poverty; attachment difficulties dating from Ray's one-month hospitalization; Sue feels that Ray prefers his grandmother to her
- Secondary risks: delayed/disordered language; social-affective disorder associated with separation; problems of attachment and interaction

### *Assessment*

The child's abilities were assessed by means of the Early Language Milestones Screening Test, a norm-referenced test. If either auditory expression or auditory reception is failed, in-depth testing should be done. Ray's chronological age was 21 months.

Auditory expression: failed at age level

Auditory reception: passed

Screening failed

The in-depth test of the Mental Scale of the Bayley Scales of Infant Development was administered when Ray's chronological age was 23 months, and Ray scored as listed:

Raw score 124

Developmental index 66

Mental age 17-18 months

The interaction between Sue and Ray was assessed by means of clinician observation, and the following characteristics were noted:

Provision of pleasurable experiences: unsatisfying

Turn-taking: nonreciprocal; Sue withdraws from interaction

Interactive match: not tuned to his interests, negative

Characteristics of Ray's caregiver, Sue, were assessed by means of interview and clinical observation, and the following were noted:

Enjoyment: disaffection

Observational skills: inattention

Knowledge about infant development: very limited

Expectations: unrealistic

### *Intervention*

#### Selection of intervention targets:

1. Primary target for intervention: caregiver, to help Sue be consistent, establish attachment, and change her behavior toward Ray to create an environment for language to develop.
2. Secondary targets for intervention: interaction, to establish interaction between Ray and Sue; child's communication skills, to remediate Ray's expressive language and monitor his hearing.

#### Consideration of intervention models:

1. Developmental guidance. Instruct caregiver on ways to help language develop and ways to parent effectively.
2. Counseling, active listening. Help caregiver overcome obstacles to attachment to infant. Help caregiver find other resources to solve problems.

## Components of the Individual Family Service Plan for P.L. 99-457

The IFSP must be developed by a multidisciplinary team and must contain:

1. A statement of the child's present levels of development (cognitive, speech/language, psychosocial, motor, and self-help)
2. A statement of the family's strengths and needs related to enhancing the child's development
3. A statement of major outcomes expected to be achieved for the child and the family
4. The criteria, procedures, and timelines for determining progress
5. The specific intervention services necessary to meet the unique needs of the child and family, including the method, frequency, and intensity of services
6. The projected dates for the initiation of services and expected duration
7. The name of the case manager
8. The procedures for transition from early intervention into the preschool program

The IFSP must be evaluated at least once a year and must be reviewed every six months or more often where appropriate.

## Individual Family Service Plan

A. Present Status

B. Family Strengths:

Family Needs:

C. Major Outcomes

1.

2.

3.

4.

5.

D. Early Intervention Services to Meet Needs:

frequency

intensity

method of delivery of service

E. Dates

F. Case Manager

G. Steps Taken to Go to Part B (Preschool)

# Outcomes

Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
220				221

## Summary

Problems of communication may arise between a caregiver and clinician as a result of differing socioeconomic status and cultural values. Components in the caregiver assessment are attitudes, knowledge, and skill concerning the child's abilities and needs. Two models for caregiver intervention are developmental guidance and counseling/active listening. Barriers that hamper a caregiver's acceptance of developmental guidance are emotional stress and unresolved conflicts. Barriers to acceptance of referral are lack of transportation, sense of loss of control, and differing values. A clinician in the unfamiliar role of counselor should have a supervisor and other members of a team as resources.

## Assessment Instruments for Use with the Caregiver

Bromwich, R. M., E. Khokha, L. S. Fust, E. Baxter, D. Burge, and E. W. Kass. 1978. Parent Behavior Progression. In *Working with parents and infants: An interactional approach*, edited by R. Bromwich, 1981. Baltimore: University Park Press.

**Type of Measurement:** Behavior checklist

**Purpose:** Assess infant-related maternal behaviors in order to develop short-term goals aimed at changing maternal attitudes and behavior to enhance maternal-infant interaction

**Age Range:** Two forms: birth to 9 months, 9 to 39 months

**Content Areas:** Parent-infant relationship

**Administration:** For use by practitioners familiar with family being assessed. Establish rapport, observe spontaneous interaction, talk informally about activities with infant; after session with parent check behaviors on PBP if evident from observation or parent report

Field, R. M., J. R. Dempsey, N. H. Hallock, and H. H. Shuman. 1978. The Mother's assessment of the behavior of her infant. *Infant Behavior and Development* 1:156-157.

**Type of Measurement:** Behavioral checklist

**Purpose:** Nonspecific

**Age Range:** To discern parental attitudes toward infant

**Content Areas:** Infant reactions to parental behaviors, crying, motor activities, physical characteristics

**Administration:** Questions to parent about characteristics of infant

Klein, M. D., and M. H. Briggs. 1987. Observation of Communicative Interaction (OCI). In *Facilitating mother-infant communicative interactions in mothers of high-risk infants*. *Journal of Communication Disorders* 10(2):95-106.

**Type of Measurement:** Checklist

**Purpose:** Evaluation of caregiver attributes

**Content Areas:** Provides tactile stimulation; pleasure, responses, positions, cues, modifications

**Administration:** Observation of parent in interaction with infant

Mahoney, G., I. Finger, and A. Powell. 1985. Maternal Behavior Rating Scale. In Relationship of maternal behavioral style to the development of organically impaired mentally retarded infants. *American Journal of Mental Deficiency* 90:296-302.

**Type of Measurement:** Rating scale

**Purpose:** Assess quality of maternal interactive behavior during play with young mentally retarded children for use in program evaluation

**Content Areas:** Parent's expressiveness, warmth, sensitivity to child state, achievement orientation, social stimulation, effectiveness, directiveness; child's activity level, attention span, enjoyment, expressiveness

**Administration:** Rate after viewing 10-minute videotape of dyadic free play in home with standard set of toys; two raters

## Family Assessment

Bailey, D. B., and R. J. Simeonsson. 1988. Family Needs Survey. In *Family assessment in early intervention*, edited by D. B. Bailey and R. J. Simeonsson. Columbus: Merrill.

**Type of Measurement:** Checklist

**Purpose:** Parents' perceptions of their needs

**Content Areas:** Need for information, support, explaining to others, community services, financial help, family functioning assistance

**Administration:** Parents fill out checklists

Caldwell, B. M., and R. H. Bradley. 1984. *Home observation for measurement of the environment inventory*. Little Rock, AK: University of Arkansas at Little Rock.

**Type of Measurement:** Observation/interview checklist

**Purpose:** Prediction of academic success

**Age Range:** Birth to three years

**Content Areas:** Social, emotional, and cognitive support available to a young child in the home

**Administration:** Observation and interview of the parent in the home

## Active Listening\*

You Are Not Listening to Me, and You Do Not Care about Me When:

- You say you understand before you know me well enough.
- You have an answer for my problem before I've finished telling you what my problem is.
- You cut me off before I finish speaking.
- You feel critical of my vocabulary, grammar, or accent.
- You are dying to tell me something.
- You are communicating to someone else in the room.
- You tell me about your experience, making mine seem unimportant.

### You Are Listening to Me When:

- You come quietly into my private world and let me be me.
- You really try to understand me even if I'm not making much sense.
- You grasp my point of view even when it's against your own sincere convictions.
- You realize that the hour I took from you has left you a bit tired and drained.
- You allow me the dignity of making my own decisions even though you may think they may be wrong.
- You do not take my problem from me, but allow me to deal with it in my own way.
- You hold back your desire to give me good advice.
- You do not offer me religious solace when you sense I am not ready for it.
- You give me enough room to discover for myself what is really going on.
- You accept my gift of gratitude by telling me how good it makes you feel to know you have been helpful.

### Assisting Parents in Prioritizing Their Problems\*

It is easy to become overwhelmed when parents begin sharing their needs, desires, and concerns. It is also too easy to get bogged down in attempting to solve all the problems they present to a home visitor/family advocate.

Questions home visitors/family advocates ask regarding this situation are:

1. How do you deal with these issues and get on with other parts of the home visit?
2. What responsibility does the home visitor/family advocate take concerning families' needs?

The home visitor/family advocate's main role is to assist the family in sorting out and prioritizing the problems they present. Once this is done, more often than not the home visit can proceed and focus is placed on the child. The following method is recommended for sorting and prioritizing with parents:

1. Affirm the parent's feelings

Yes, I agree. You do have some real (concerns, problems, needs).

I can see that it is making you (upset, frustrated, angry).

I understand and know it's hard to think about anything else.

2. Offer moral support

I would be (or have been) upset, too, over these problems.

We can sit down and try to sort this situation out together.

I find it helps if someone else helps me think of things to do.

3. Begin demonstrating how to take positive action

Let's start listing these things on paper so we can look at each one and think about what we can do.

Which one of these do you think needs to be taken care of right away?

Which ones can wait for awhile?

What should we do first? Second?

I can do this.

You can do this.

4. Affirm your commitment to the family

I'm going back to my (center, office, agency) and start to work on this right away.

I will contact you on \_\_\_\_\_ to let you know what I've done and check on what you've gotten done.

5. Reinforce their sense of gaining some control

Now you can feel better with some things put in order, and we will continue to work on this list so you will continue to see results in solving these problems.

6. Take this information to program supervisor and continue to follow through, following the supervisor's direction.

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\*Home Visitor Training Materials provided by High/Scope Educational Research Foundation Family Programs Department, Ypsilanti, MI

## Consultation and Referral Services

Most communities have a variety of agencies, service organizations, and interest groups that are oriented toward infants, young children, and their families. Speech-language pathologists and audiologists who serve infants at risk for communication disorders need to know about their services. Some communities have a directory of local services to refer to, such as the one from which the following examples are excerpted, which was compiled by the Calhoun County (Michigan) Association for Infant Mental Health. Often, in addition to local addresses, telephone numbers, and contact people, such a directory includes (800) telephone numbers for national organizations. If clinicians do not have access to a service directory, they can rely on an informal network of social service, educational, religious, and medical professionals to arrange consultation and referral.

### Birthright

*Services:* Clothes and furniture for new baby

### Community Mental Health

*Services:* (1) Respite care, foster care, support services, (2) Case management, (3) Family support subsidy, (4) Classes for parents, (5) Resource library

*Eligibility:* (1) Developmentally delayed child, (2) County resident, (3) School classification of SMI, SMI, AI, age 0 to 18

### County Department of Public Health

*Services:* (1) Hope program: prenatal care and postnatal follow-up for one year, (2) Immunization program, (3) Well baby clinic, (4) Screening programs: vision, hearing, Medicaid eligibility, (5) WIC program: pregnant mothers or children under 5 at nutritional risk

### County Department of Social Services

*Services:* (1) Child protection—alleged abuse or neglect, (2) Foster care—court order placement, (3) Hard to place adoptions—court order placements, (4) Financial aid (ADC), based on income and situation, (5) Food stamps, based on income and situation

### Child Guidance Center

*Services:* (1) Evaluate and treat emotional problems of children/families, (2) Intelligence and psychological testing

### Cleft Palate Association

*Services:* (1) Hotline: 1-800-24-CLEFT, (2) Information and referral

### Community Hospital

*Services:* (1) Apnea/monitoring program—previous apnea/SIDS in family, (2) Teaching literature available, (3) CPR for parents

### Coping Parents Support Group

*Services:* Support for parents who have suffered an infant loss

### Down Syndrome Awareness Group

*Services:* (1) Information and referral, (2) Parent support group, (3) Advocacy

**Easter Seal Society**

*Services:* (1) Hotline: 1-800-292-2729, (2) Information and referral, (3) Advocacy, (4) Financial assistance for medical equipment

**Family and Children's Services of County**

*Services:* (1) Adoption, (2) Infant mental health: identification and case management, (3) Specialized foster care, (4) Family counseling

**Friends/Parents of Children with Cancer**

*Services:* Emotional and financial support to parents of children with cancer

**Genetics Clinic**

*Services:* (1) Diagnostic evaluation for children with birth defects, (2) Counseling for families, (3) Information and referral

**Crippled Children Services**

*Services:* (1) Financial assistance, (2) Family assessment and referral services, (3) Case management

*Eligibility:* Must have severe physically handicapping conditions from birth

**Muscular Dystrophy Association**

*Services:* (1) Diagnostic and treatment clinic, (2) Provides medical equipment, (3) Genetic testing and counseling

**National Sudden Infant Death Association**

*Services:* (1) Information and referral, (2) Parent counseling, (3) Education

**Oral Cleft Clinic**

*Services:* Evaluation and referral for hypernasal speech and clefts

**Organization Against Domestic Violence**

*Function:* Domestic violence services to spouse abuse victims and their children (crisis oriented)

*Services:* (1) Protection/housing for victims of domestic violence and their children, (2) Structured day activities program, (3) Child care assistance, (4) Informal support groups for children

*Eligibility:* Must be victims of physical, mental, or emotional abuse and their children

**Parents of Premature and High Risk Infants International, Inc.**

*Function:* Provide information, referrals, and other services to parent support groups, families, and professionals concerned with infants who require special care at birth

*Location:* 33 W. 42nd St., New York, NY 10036, (212) 840-1259

**School District**

*Services:* (1) Project Find: Information and referral regarding special education programs/services, (2) Pre-primary program (birth to 3): developmental evaluation, home-based intervention, child and parent group meetings

**Special Neighborhood Activities Program**

*Services:* (1) Child care (0 to 3), (2) Preschool program (3 and 4 yrs.), (3) After-school program (5 yrs.), (4) Parent support group, (5) Summer activities program, (6) Clothing shop, (7) Infant stimulation

**Spina Bifida Association**

*Services:* (1) Information and referral for spina bifida and neural tube disorders, (2) Parent support group, (3) Parent-to-parent hospital contact, (4) Referral for financial assistance

**United Cerebral Palsy Association**

*Services:* (1) Advocacy, (2) Information and referral

**Visiting Nurse Service**

*Services:* (1) Occupational, speech, and physical therapy, (2) Pediatric care, (3) Family assessment, (4) Referral to other agencies

# Section 5: Conclusion

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