Informing Physicians About the Relevance of PL 99-457: An Experimental Evaluation of a Dissemination Method

Fathima Humera

University of Tennessee - Knoxville
To the Graduate Council:

I am submitting herewith a dissertation written by Fathima Humera entitled "Informing Physicians About the Relevance of PL 99-457: An Experimental Evaluation of a Dissemination Method." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

Vey M. Nordquist, Major Professor

We have read this dissertation and recommend its acceptance:

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[Signature]

Associate Vice Chancellor
and Dean of The Graduate School
INFORMING PHYSICIANS ABOUT THE RELEVANCE OF PL 99-457: AN EXPERIMENTAL EVALUATION OF A DISSEMINATION METHOD

A Dissertation Presented for the Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Fathima Humera
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Abstract

The purpose of the present study was to evaluate experimentally the combined effects of an information package comprised of a written pamphlet and a videotape on physicians' knowledge about federal law and its implications for making referrals to early intervention programs. There were 38 physicians with practice located in a 16-county region of East Tennessee who participated in the study. Physicians were randomly assigned to experimental and control groups. Physicians assigned to the experimental group received the information package and the Physicians' Knowledge and Practice Questionnaire. Physicians in this group were given 2 weeks to review the materials and complete and return the questionnaire. Physicians assigned to the control group received only the Physicians' Knowledge and Practice Questionnaire. They also had 2 weeks to complete and return the questionnaire. Results of a one-way ANOVA revealed a difference between the total knowledge scores of physicians in the two groups; the knowledge score of physicians in the experimental group was higher than the score of physicians in the control group. Data gathered from the TEIS child find directory
indicated that, after the information package was distributed to physicians, there was a dramatic increase in the number of new referrals to TEIS. There were 14 new referrals made to TEIS by physicians who participated in the study. Of these 14 referrals, 10 were made by 6 physicians in the experimental group and 2 referrals were made by 1 physician in the control group. Results of a \( t \) test indicated that there was a significant difference between groups in the number of new referrals. Taken together, the knowledge and referral data indicated that the information package was a useful means of informing physicians about the law, their roles and responsibilities related to the law, and services for children with special needs and also changing their referral practices to TEIS.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Components of Public Law 99-457</td>
<td>2</td>
</tr>
<tr>
<td>Individuals with Disabilities Education Act and Physician Involvement</td>
<td>5</td>
</tr>
<tr>
<td>Interdisciplinary Collaboration and Serving Children with Special Needs</td>
<td>8</td>
</tr>
<tr>
<td>Barriers to Physician Involvement</td>
<td>12</td>
</tr>
<tr>
<td>Influence of Communication on Physicians' Knowledge</td>
<td>16</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>18</td>
</tr>
<tr>
<td>II. Review of Literature</td>
<td>20</td>
</tr>
<tr>
<td>Physicians' Knowledge About Public Law 99-457 and its Implementation</td>
<td>23</td>
</tr>
<tr>
<td>Methods of Informing Physicians About PL 99-457 and the Importance of Early Intervention</td>
<td>51</td>
</tr>
<tr>
<td>III. Method</td>
<td>80</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>80</td>
</tr>
<tr>
<td>Design</td>
<td>81</td>
</tr>
<tr>
<td>Sample</td>
<td>81</td>
</tr>
<tr>
<td>Treatment</td>
<td>85</td>
</tr>
<tr>
<td>Measurement</td>
<td>91</td>
</tr>
<tr>
<td>Data Collection</td>
<td>96</td>
</tr>
<tr>
<td>Analyses</td>
<td>98</td>
</tr>
<tr>
<td>IV. Results</td>
<td>99</td>
</tr>
<tr>
<td>Descriptive Analyses</td>
<td>99</td>
</tr>
<tr>
<td>Comparative Analyses</td>
<td>106</td>
</tr>
</tbody>
</table>
V. Discussion .............................................................................................................110
  Limitations of the Study .......................................................................................115
  Directions for Future Research ...........................................................................117

LIST OF REFERENCES ................................................................................................122

APPENDIXES ............................................................................................................131
  APPENDIX A. Subsidies .........................................................................................132
  APPENDIX B. Transcript of Videotape .................................................................146
  APPENDIX C. Transcript of Pamphlet .................................................................154
  APPENDIX D. Questionnaire ...............................................................................165
  APPENDIX E. Definition of Terms .......................................................................181
  APPENDIX F. Correspondence .............................................................................183
  APPENDIX G. Evaluation of the Information Package .......................................188

VITA .............................................................................................................................192
LIST OF TABLES

TABLE                                             PAGE

1. Demographic Characteristics of the Sample.........86

2. Frequency and Percentage of Physicians' Responses to Questions of Knowledge About the Law...............................................................101

3. Frequency and Percentage of Physicians' Responses to Questions of Knowledge About Tennessee's Early Intervention System...............102

4. Frequency and Percentage of Physicians' Responses About Barriers to Their Involvement in Early Intervention Activities..........................104

5. Comparison of Frequency Distribution of Characteristics of Physicians in the Experimental and Control Groups...........................................107
CHAPTER I

Introduction

Advanced technology and improvements in medical care have led to a decrease in prenatal, perinatal, and postnatal mortality of many at-risk infants. Increased survival rates of premature, low-birth-weight, and other at-risk infants have resulted in an increase in the number of children with developmental disabilities. Approximately 20% of the 3.7 million infants born annually in the United States of America have prenatal or postnatal conditions that place them at risk for developmental disabilities (Harber, 1991; Parette, Hourcade, & Brimberry, 1990).

In addition, during the last two decades researchers have accumulated a wealth of knowledge pertaining to the effectiveness of early intervention programs for infants and toddlers with disabilities. Researchers have found that there are certain periods during the early years when a child is very susceptible and responsive to different learning experiences (Peterson, 1987). Also, it is during the early years that initial patterns of learning
and behavior greatly influence subsequent development (Peterson, 1987). Therefore, it is important that intervention begins early in the life of a child with special needs so that the primary disability does not put the child at risk for the development of secondary disabilities. Usually, primary disabilities can be detected before 18 months of age by a pediatrician, who is often the first person to recognize a potential problem (Adams, 1982; Howard, 1982; Parmelee, 1962). Early diagnosis and referral of these children to early intervention programs is therefore essential.

**Components of Public Law 99-457**

Increased knowledge in the area of early intervention led, in part, to the passage of Public Law (PL) 94-142 in 1975 (formerly known as the Education for All Handicapped Children's Act and now known as the Individuals with Disabilities Education Act [IDEA]), which mandated that all school-age children with disabilities receive free appropriate education in the least restrictive environment. In 1986 an amendment to this law was enacted. It was called PL 99-457 and it extended early intervention services to children 3 to 5 years of age (Part B) and also offered states additional incentives to provide
early intervention for the birth through 2-year-old population (Part H). The Part H section of PL 99-457 represents one of the most comprehensive national agendas ever implemented for young children with disabilities (Brewer, McPherson, Magrab, & Hutchins, 1989). Part H (Programs for Infants and Toddlers) is intended to provide a system of family-focused intervention. The objectives of this part of the legislation are to (a) develop and implement a statewide, comprehensive, coordinated, and multidisciplinary interagency program of early intervention services for infants and toddlers with disabilities and their families, (b) facilitate the coordination of payment for early intervention services from federal, state, local, and private sources (including public and private insurance coverage), and (c) enhance the states' capacity to provide quality early intervention services and also improve existing early intervention services being provided to infants and toddlers with disabilities and their families (Federal Register, Sec. 303.1).

In order to receive Part H funds, states had to participate in a 5-year planning and evaluation process that results in the full implementation of intervention services during the final year. Governors of participating
states were responsible for designating a lead agency for the overall administration of the early intervention system. The lead agency is responsible for the full implementation of the law in the state. The governor also was responsible for establishing an Interagency Coordinating Council. This council is comprised of representatives of state agencies, higher education, service providers, and parents. The purpose of the Interagency Coordinating Council is to assist the lead agency in the development and implementation of the state's plan. The lead agency, along with the Interagency Coordinating Council, is responsible for creating a comprehensive network of services through interagency agreements that include all 14 components of the law. These components are (a) a definition of developmentally delayed to be used by the state to carry out programs under this law; (b) a timetable for services to be provided to all eligible children in the state; (c) a comprehensive multidisciplinary evaluation of the functioning of children with special needs that must include an assessment of the family's needs so that they can help appropriately in the development of the child; (d) an individualized family service plan; (e) a comprehensive child find system for making referrals to service providers; (f) a public
awareness program with a focus on early identification of children with special needs; (g) a central directory that includes a list of services, experts, and resources as well as research and demonstration projects conducted in each state; (h) a comprehensive system of personnel development; (i) a single line of authority in a lead agency, designated or established by the governor for carrying out all activities under this part of the law; (j) a procedure for timely disbursement of funds; (k) policies pertaining to contracting or making arrangements with local service providers to provide early intervention; (l) policies and procedures for personnel standards to ensure that personnel are appropriately and adequately prepared and trained; (m) a system for compiling data regarding the number of children with special needs in the state, number of children with special needs served, and type of early intervention services provided; and (n) procedural safeguards.

Individuals with Disabilities Education Act and Physician Involvement

The Individuals with Disabilities Education Act (IDEA), 1990 (typically referred to as PL 99-457) for the first time emphasized the involvement of primary
referral sources, including physicians, in 3 of the 14 components of the law (Berman & Melner, 1992). The three components that specified physician involvement were child find, public awareness, and personnel development. Child find refers to the ways that children with disabilities are identified and brought into the early intervention system. Medical practitioners such as physicians, nurses, and allied personnel play a primary role in child find activities. The public awareness component of the law specifies the need to create knowledge of early intervention that is understood and supported by professionals as well as parents of children with special needs. Personnel development refers to methods used to train professionals to work with special needs children. Methods to enhance personnel development are more formal than methods of child find and public awareness. Broadening personnel knowledge about the importance of early intervention, promoting awareness of different early intervention programs in the community, and fostering positive attitudes towards serving children with special needs are important aspects of personnel development that must be incorporated in training programs for professionals working with special needs children.
In addition, prior to the 1990 amendment to PL 94-142 the American Academy of Pediatrics (1988) identified certain competencies required by physicians in three other components of the law. They are child assessment, referral, and the Individualized Family Service Plan (IFSP). Child assessment begins when a child is perceived to be at risk for developmental delays or has a condition that is certain to developmental delays; it ends when a decision is made either to intervene or not to intervene. Referral is the process that includes notifying early intervention programs about a child identified to be at risk for developmental delays. An IFSP consists of a multidisciplinary assessment of the needs of the child and family and the identification of services to meet those needs. The IFSP is developed by a multidisciplinary team of individuals who are involved with the care and development of the child.

All of the five components mentioned above require the lead agency for Part H activities in each state to inform potential referral sources, particularly hospital personnel and physicians in private practice, about PL 99-457, and to develop ways to disseminate information that promote awareness of the legislation and obtain their participation in the referral process. Therefore, it is
important that all primary referral sources, including physicians, be aware of the existence of each state's Part H program, typically referred to as the *state early intervention system*. This is because physicians play an important role as a source of information and support for families with infants who may have special needs and also because they are responsible for referring young children with disabilities to early intervention programs.

**Interdisciplinary Collaboration and Serving Children with Special Needs**

Historically, physicians have played a unique and fundamental role in the care of children with disabilities and their families (Downey, 1990). It is therefore essential that their extensive experience with this population be made available to early intervention practitioners, for example, by supplying them with information about potential effects that a therapeutic or educational intervention program might have on the medical condition of a child (Parette et al., 1990). The role of sharing information with professionals from other disciplines enables physicians to be effective members of an interdisciplinary team.
In order for physicians to be part of an interdisciplinary team and participate in the state early intervention system, they will have to understand specifically what their responsibilities are and how they can access the system with which they are expected to work. They also have to acquire certain knowledge, skills, attitudes, and behaviors to participate effectively as members of the interdisciplinary team (Shonkoff, 1989). Lack of knowledge about their roles in the early identification, referral, and interdisciplinary collaboration processes is a major concern of many physicians who want to take part in the state early intervention system (American Academy of Pediatrics, 1988).

In the past, the primary role of the physician typically has been to conduct routine physical examinations and detect medically based disabilities (e.g., seizure disorders, sensory defects, neurological impairments, genetic disorders) (Parette et al., 1990). Once these disorders were diagnosed, depending on the type and extent of the disability, the child usually was referred either to a residential setting or to an educational program (Shonkoff, Dworkin, Leviton, & Levine, 1979). This process minimized the need for further involvement of the physician and did not give her
or him an opportunity to work with professionals from other disciplines after a referral was made. The importance of physician involvement on an interdisciplinary team for the care of children with disabilities has been well described by Downey (1990):

Physician's distinctive alliance with the child and family emphasizes the powerful position he/she holds in this interdisciplinary team whose task is to develop a plan to help that particular child and family. The pediatrician serves as an advisor to the parent, advocate for the child, and community leader, who is willing to share insights gleaned from his [or her] training in growth and development with other members and who is sensitive to and appreciative of the equally important insights shared by other professional disciplines. (p. 125)

The passage of PL 99-457 and its emphasis on the involvement of medical professionals, therefore, provides
new opportunities for physicians to interact with professionals from other disciplines. The law emphasizes the importance of physicians' being aware of their roles, responsibilities, and functions in providing early intervention to children with special needs.

The child find system must include procedures for use by primary referral sources for referring a child to the appropriate public agency within the system for (i) Evaluation and assessment. (ii) As appropriate, the provision of services . . . 2(ii) Ensure that referrals are made no more than two working days after a child has been identified; and (iii) include procedures for determining the extent to which primary referral sources, especially hospitals and physician, disseminate the information prepared by the lead agency on the availability of early intervention services to parents of infants with disabilities. (Federal Register, 303.321)
Therefore, the need for physicians to be aware of their new roles and responsibilities is very important (American Academy of Pediatrics, 1988).

**Barriers to Physician Involvement**

Although the need is great for physicians to be involved in the implementation of PL 99-457, there are a number of barriers they must be overcome in order to serve children with special needs efficiently and effectively. One of the major barriers is the lack of training that physicians receive through medical school, residency, and Continuing Medical Education experiences (Daeshner & Cerreto, 1985). Because physicians often know so little about the law and its implications for them, efforts are being made in some states to incorporate post-medical school training in areas such as roles and responsibilities under the law and to familiarize physicians with concepts such as, family-focused intervention, coordinated care, and community-based intervention (Blackman, Healy, & Ruppert 1992; Desguin, 1988; Wachtel, Grossman, Hyman, & Kappelman, 1992). Other components that are included in many training programs address methods for making referrals to early intervention practitioners once the initial diagnosis has
been made (Powers & Healy, 1982) and for collaborating with professionals from other disciplines through the interdisciplinary team process (Desguin, 1988). Emphasis often is placed on their role expectations as members of an interdisciplinary team, particularly their role as mediator between parents and other medically oriented personnel such as physical therapists and speech-language pathologists (Wachtel et al., 1992). This kind of role may suit physicians best because of their understanding of the medical-social history of the child and family as well as the family's dynamics. Through the team process, physicians are best suited to facilitate communication of medically related information between the family and other professionals in a nonthreatening way (Parette et al., 1990).

A second potential barrier that limits the way many physicians can become involved in the early intervention process is the possibility that they may lack interest in collaborating with professionals outside of the medical disciplines. Although it is well recognized that collaborative interactions between special educators and physicians will ultimately improve services to children with special needs and their families, this relationship has been difficult to establish (Bennett, 1982). Perhaps
this is because physicians possess only limited knowledge about special education and thus feel inadequate to interact with professional educators (Downey, 1990). However, if children with disabilities are to receive the maximum benefits provided by the new legislation, the basic expertise and talents of the medical community along with that of professional educators must be used.

Another factor that often impedes collaboration between medical personnel and professionals from other disciplines is the traditional view held by many individuals in the medical field that the areas of child development and care of developmentally disabled children are primarily the responsibility of physicians and not special educators (Bennett, 1982; Howard, 1982; Peter, 1992). Therefore, medical professionals may feel at times that special educators are trespassing on their field of expertise. Such a view can lead to bitter feelings and unnecessary misunderstandings among professionals from different disciplines.

Differences in style and approach to the problems of disabled children are additional factors that often impede the collaboration process (Shonkoff, 1989). Many physicians tend to utilize a narrow diagnostic or medical management approach to the care of children with special
needs. The ultimate goal of their practice is the medical cure of an illness or disability and not the rehabilitative care of a condition over a long-term period (Guralnick, 1982; Peter, 1992). The latter approach is more often taken by special educators who believe that, in order to prevent secondary disabilities in addition to treating the primary disability, early intervention of a long-term nature is necessary.

One way to address the philosophical and procedural differences between physicians and special educators towards early intervention is to facilitate transdisciplinary collaboration. This might be done in part by examining ways that information is disseminated to physicians. Effective communication might help physicians to understand the philosophy and practices of the two disciplines so that children who need therapeutic or educational assistance are served more effectively.

A third potential barrier to physician involvement in the process of early intervention is the lack of attention given to education in child development and behavior and the rehabilitative care of children with developmental disabilities in most pediatric training and professional development activities (Teplin, Kuhn & Palsha, 1993). However, with the advent of PL 99-457
and its emphasis on the importance of physicians' acquiring knowledge about the law and the need to participate in the state early intervention system, there is now an increased number of physicians attending to and participating in Continuing Medical Education short courses, workshops, and other kinds of educational opportunities (Healy, 1993).

A fourth and potentially major barrier that hinders physicians' participation in an intervention system is the time constraints they often face as they try to manage busy schedules and case overloads and also participate in child find, child assessment, IFSP, and personnel training activities (Liptak & Revell, 1989; Parette et al., 1992; Peter, 1992).

Once major barriers to physicians' participation in Part H activities are known and fully appreciated by a state's lead agency, efforts must be made to address the problems created by these barriers. This would help physicians participate effectively in the implementation of PL 99-457.

Influence of Communication on Physicians' Knowledge

One way that physicians might overcome common barriers that hinder their involvement in Part H activities
is to become more aware of their roles and responsibilities toward serving children with special needs. This might be accomplished by the lead agency through the utilization of effective means of communicating with medical personnel and informing them about the requirements of the law. However, communicating with physicians is not an easy task, primarily because of the long history of segregation between the fields of education and medicine. Although major advances in the technology of disease prevention and control and greater appreciation of psychosocial influences on children's development have helped to overcome some of this segregation, effective means of bridging the gap between the two fields is still needed (Guralnick, 1982).

It has been suggested that communication between physicians and special educators might be improved if physicians could meet regularly with educators, therapists, and social workers and exchange information about the child and family (Howard, 1982). In order for this type of communication to be effective, there must be an awareness and acceptance of differences among the different disciplines. Also, professionals must appreciate the differences in their skills and methods of intervention
and be willing to admit their limitations as well as call on others to provide assistance and knowledge. There should also be nonthreatening opportunities for discussion and sharing of information (Guralnick, 1982). Good communication by professionals in the field of early intervention with physicians can help expand their knowledge about PL 99-457 and the importance of participating in the process of early intervention.

**Purpose of the Study**

The purpose of the study was to address problems that early interventionists face when they try to inform physicians about PL 99-457 and the importance of early identification, referral, and interdisciplinary collaboration. Researchers in the field of early childhood special education literature have not empirically evaluated some of the common methods that lead agencies are currently using to inform physicians. It is therefore the aim of the present study to examine whether a combination or package of written and videotape material is an effective means of imparting knowledge to physicians. An experimental evaluation of this package should help special educators and other professionals working in early intervention settings know
whether it is an effective means of enhancing physicians' knowledge about early intervention and to improve physicians' practices that relate to services for young children with disabilities and their families.
CHAPTER II

Review of Literature

Since the inception of Individuals with Disabilities Education Act (IDEA) (formerly known as the Education for All Handicapped Children's Act of 1975, there has been a need to increase collaboration between families of children with disabilities and their physicians. With an amendment to this law in 1986, which extended therapeutic and educational services to children with disabilities from birth through 2 years of age, the need for collaboration became even greater. Primary care physicians had then and still have an important role to play in the implementation of this law as opportunities to work with other professionals and families are made available through early intervention activities.

Although there is a great need for physicians to participate in the state early intervention system, methods of involving them in the process have not been examined carefully, primarily because the law was enacted only 8 years ago. Also, prior to the law, physicians' responsibilities for serving young children
with disabilities were not clearly defined. Early identification and referral of children with disabilities to the state early intervention system were not previously specified under the law as the responsibilities of physicians. Moreover, evaluation of methods of informing physicians about their new roles and responsibilities have not been explored by researchers since the inception of the law.

It was in 1990 when IDEA was enacted that physicians were included in the statutory language of the law (Berman & Melner, 1992). The section of the law pertaining to the provision of medical and health services by qualified personnel now include physicians and specifically stated that, "consultations by physicians with other service providers concerning the special health care needs of eligible children will need to be addressed in the course of providing other early intervention services" (Federal Register, Sec. 303.12).

Therefore, with the growing knowledge about the importance of the early years and the need for implementing intervention for children with special needs at an early age, methods of informing physicians about their roles and responsibilities for completing
developmental assessments, making referrals, and participating in the decision-making process through team collaboration need to be examined very carefully. There is no empirical information available that documents the effects of different methods of informing physicians about their roles and responsibilities pertaining to their participation in the state early intervention system. Pertinent information that is available related to the different methods of disseminating information and promoting physician involvement, specifically in the areas of child assessment, referral, and interdisciplinary collaboration, will be reviewed in the following sections. Physicians' roles and responsibilities and their knowledge in the areas mentioned above also will be reviewed. Furthermore, common barriers faced by physicians in fulfilling their responsibilities and participating effectively in the state early intervention system will be addressed. Finally, methods that have typically been used to inform physicians about the importance of their participation in early intervention will be described and conclusions drawn regarding their effectiveness.
Physicians' Knowledge About Public Law 99-457 and its Implementation

Medical personnel such as obstetricians, nurses, and pediatricians are usually the first people outside of the family to suspect that a child has a developmental delay or is at risk for a delay. Often these personnel are not aware of the range of available early intervention services in the community. Sometimes they may be unaware of the existence of the state early intervention system that is responsible for implementing the legislation. Medical personnel also may be unaware of the benefits of early intervention for children with special needs. Therefore, it is important that the lead agency communicate with physicians and inform them about the law and its requirements. Additionally, the lead agency is responsible for informing physicians about their roles and responsibilities towards implementation of the law, particularly in the areas of child assessment, referral, and development of the Individualized Family Service Plan (IFSP) (Carolina Institute for Child and Family Policy, 1989).
Child Assessment and Referral

Child find, assessment, and referral are important components of PL 99-457 and key aspects of effective early intervention. Because a majority of referrals for early intervention come from the health care system and because parents rely on physicians to identify or confirm their child's developmental delay (Adams, 1982), it is very important that physicians understand the law and fulfill their responsibilities in a manner consistent with its provisions.

The American Academy of Pediatrics and the Bureau of Maternal and Child Health together sponsored a conference in 1989 to "increase opportunities for pediatricians to provide timely and effective medical and health services, to work cooperatively with parents and professionals who provide these services, and to cooperatively plan local, regional, and statewide early intervention services" (National Center for Networking Community Based Services, 1989, p. 3). The goal of this conference was to facilitate participation of physicians in the implementation of the law. Furthermore, a series of competencies required by pediatricians in the area of child find, assessment, and referral were agreed upon. Some of the competencies are as follows: (a) understand
the components and intent of PL 99-457 and the general provisions of their state implementation plan, (b) employ strategies for observing and identifying children with, or at risk for, developmental delays, (c) administer developmental screening instruments to monitor the growth and development of all infants and children, (d) develop competency in using community-based medical and health services and be able to establish effective communication linkages with such services, (e) develop and maintain skills in screening, assessment, and diagnosis, (f) obtain necessary information through the use of medical and social history (from child, family, hospital records, other professional sources) to assess a child, (g) perform longitudinal monitoring of a child's growth and development when appropriate, and (h) make appropriate referrals to the agencies providing early intervention services.

Much has been said about what a physician should know about serving children with developmental disabilities. However, there is very little documentation of their practices in areas of child find, assessment, and referral (Shonkoff et al., 1979) and most of the extant information is anecdotal in nature.
One exception, however, is a study conducted by Shonkoff et al. (1979). These researchers interviewed 97 pediatricians from five New England states (Maine, Vermont, New Hampshire, Rhode Island, and Massachusetts). Some of the questions asked in the interview were related to physicians' perceptions of the frequency they see children with disabilities in their practice and practices they use to serve them. Physicians were presented with seven clinical problems: a child with gross-motor delay, speech and language delay, hemiparesis, hearing impairment, school failure, hyperactivity, and mental retardation. The investigators specifically studied pediatricians' recall of their involvement in areas of diagnosis, assessment, and referral. Shonkoff et al. (1979) found that when a child with known gross-motor delays was evaluated, 63 pediatricians (65%) relied exclusively on clinical judgment to make a diagnosis. Only 24 pediatricians (25%) indicated that they would employ a standardized developmental test as part of their office evaluation. When asked whether they would at some point refer the child for further evaluation or early intervention, 89 pediatricians (92%) said they were likely to refer these children for early intervention services, with 85 (88%)
indicating that they would generally make the referral before a child was 2 years of age. In the case of a child having speech and language delays, only 18 pediatricians (19%) indicated that they used standardized developmental tests on a regular basis as a means of identifying a disability. When asked about referring the child for early intervention, only 40 (43%) reported that they would refer a child for further evaluation when she or he reached 2 1/2 years of age; 58 (91%) stated that they would make a referral by 3 years of age. When a 6-month-infant who was identified with mild hemiparesis during a well-baby visit was presented, 74 of the pediatricians (76%) interviewed said they would refer the child for further consultation and 18 (19%) indicated they would make the referral only if the condition persisted for a year. When asked about their approach to making a referral for further evaluation on a child who consistently failed in school, 28 pediatricians (29%) indicated that they would make a referral to a medical out-patient clinic for further evaluation. When pediatricians were asked about hearing screening practices, 40 (41%) reported they performed routine hearing screenings in their offices. Hearing tests were reported to be used by 31 (32%) pediatricians only when they suspected hearing
problems, and 26 (27%) said they did not perform any type of screening in their offices. When pediatricians were asked about assessment practices with a 3-year-old suspected of having cognitive delays, 37 (38%) reported that they would refer the child to a psychologist for further evaluation, 39 (30%) indicated that they would rely on their clinical judgment to determine a child's cognitive ability, 11 (11%) said they obtained information from laboratory studies such as electroencephalograms, amino-acid screening tests, and skull X-rays. The use of a standardized test was reported by 37 pediatricians (38%). When pediatricians were asked about practices they used to screen preschool children, 79 (80%) reported that they routinely monitored their development. Among those who performed routine developmental screenings, 20 (26%) reported that they used standardized screening instruments; the remainder used only their clinical judgment.

Thus, Shonkoff et al. (1979) showed that a majority of the pediatricians relied exclusively on clinical judgment and general observations for assessing young children's developmental problems in their offices. This practice may have left a significant number of children with developmental delays unidentified at an early age.
Also, the level of disability seemed to have an effect on physicians' screening and referral practices; children with more severe delays were screened and referred for early intervention much sooner than children with mild to moderate delays.

When physicians were asked questions about their attitudes regarding the value of early identification, it was found that a majority of pediatricians strongly felt that early identification would decrease the possibility of developmental delays in later years for children with special needs. There were 62 pediatricians (62%) who perceived this way about children who had cerebral palsy, 44 (44%) perceived the same way about children with mental retardation, 59 (59%) about children with learning disabilities, 67 (67%) about children with behavior problems, 71 (71%) about children with language impairments, 89 (89%) about children with hearing impairments, and 78 (78%) about children who are blind.

Although most physicians strongly agreed that early identification and intervention were essential, many of them still failed to make an affirmative effort to identify children with developmental delays and many of them did not seem to refer those with delays to early
intervention programs in a timely manner. Because of the discrepancy between physicians' attitudes toward the effectiveness of early intervention and their referral practices, it also may be that some physicians are not aware of assessment instruments they can use to identify children with developmental delays. Lack of knowledge may function, therefore, as a barrier in the identification of children with developmental delays and thereby impede referrals to early intervention providers.

In another study, Glascoe and vanDervoort (1985) evaluated the actual screening and referral practices of physicians in Tennessee. There were 139 physicians who participated in the study, including general practice physicians, family practice physicians, and pediatricians. Participants were asked questions about the type of screening instruments they used, how often they conducted screenings, how they used screenings results, and their referral practices. When asked about their screening practices, 47% of the physicians reported that they used standardized testing instruments for screening and 53% reported using informal screening methods such as parental reports and observations. When they were asked how often they conducted screenings, 29% reported that they screened every patient, 42% indicated that they
screened only some patients, and 37% reported that they screened most patients. Among physicians who reportedly screened some or most patients, 43% reported that they screened only when they observed delays, 45% screened when parents suspected delays, and 34% screened only when a child had a serious illness. When physicians were asked how they used screening results, only 45% indicated that they continued to monitor patients across visits after screening results indicated the presence of a delay. Referral practices also varied; 80% of the physicians reported that they made referrals to medical specialists, 43% made referrals to school systems, and 73% made referrals to agencies or individuals for developmental evaluations.

Glascoe and vanDervoort (1985) also compared the number of physicians' referrals to a developmental evaluation center to the numbers made by other providers such as medical center services, social agencies, and developmental programs. Of the 641 children who were referred to the developmental center, 239 were made by hospital and university medical center personnel, 195 by other physicians, 126 by developmental specialists in programs such as Head Start and day care centers, and 81 by social service personal.
When the referral practices of physicians for children with mental disabilities and other handicapping conditions were examined, the results indicated that there were no differences between the referral practices of physicians and those of other providers. However, there were differences when children with other disabilities were involved (e.g., learning disabilities, autism, and language problems). Physicians referred these kinds of children at an older age to the developmental center when compared to providers in other fields who referred children with the same disabilities.

Glascoe and vanDervoort (1985) suggested that improvements have occurred in the screening and referral practices of physicians since Shonkoff et al. (1979) reported their findings. Nevertheless, many physicians still seemed to depend on informal methods of screening rather than standardized testing procedures, and many tended to make referrals of children with disabilities (with the exception of children with mental retardation) much later than other service providers. Both of these practices might have important negative effects on the later development of some children with disabilities.
The screening and referral practices of primary care physicians in Alabama were examined by Nelson (1986) for very-low-birth-weight infants (<1500 grams). The results of the survey showed that, despite the knowledge of the appreciation that very-low-birth-weight infants are at risk for developmental delays, only 39% of pediatricians and 29% of family physicians performed a formal developmental assessment. In addition, even when serious disabilities like cerebral palsy were diagnosed before the age of 1 year, referrals to therapeutic or educational programs were not routinely made until a child was 2 years of age. The same findings were observed for children with birth weights less than 1000 grams. Out of 136 children with low birth weight, only 36 were diagnosed with major disabilities such as blindness, deafness, and cerebral palsy. Moreover, 75% of these children were not diagnosed with developmental delays. Of the 25% who were identified by their primary care physician with possible delays, 83% were not referred for any kind of early intervention service. Taken together, the results of this study suggests that even when a child’s condition is severe and places the child at high risk for developmental delays, many primary care physicians still
fail to diagnose the condition and, in most cases, do not make referrals for early intervention in a timely manner. Perhaps this is because many physicians are not knowledgeable about appropriate assessment instruments and the importance of timely assessments for making referrals to early intervention programs.

Scott (1990) surveyed 342 pediatricians in an effort to learn about the screening methods and referral practices of physicians in Virginia. The study focused specifically on child find efforts related to children birth through 2 years with developmental delays. Pediatricians were asked to complete a questionnaire that consisted of 33 items presented in a checklist format. Data were analyzed by comparing differences and similarities of child find efforts among pediatricians across the state. From the results it was seen that, of 305 pediatricians who responded, 96.6% (n = 280) reported they performed screenings regularly through observations, 90.7% (n = 262) reported that they used maternal histories, 87.2% (n = 252) reported that they conducted neurological examinations, and 58.5% (n = 169) indicated that they used standardized screening instruments. When asked to identify follow-up procedures they used after an infant was screened and
re-evaluated, 309 of the pediatricians responded and 76% (n = 234) stated that they would make referrals to appropriate professionals (e.g., referral to a speech-language pathologist if there was a delay in speech and language development). Referrals to early intervention programs were made by 74% (n = 228) of the physicians.

The results reported by Scott (1990) and Glascoe and vanDervoort (1985) represent an increase in the percentage of children with special needs who were identified and referred by physicians to early intervention providers compared to similar results reported by Shonkoff et al. (1979). Comparisons of these findings suggest that physicians are beginning to screen infants more frequently. However, Scott (1990) found there are still many physicians who do not perform standardized developmental screenings and therefore fail to identify some children with developmental disabilities. Although Scott (1990) did not discuss possible reasons for this failure, one reason might be that some physicians do not have sufficient knowledge about the assessment process and therefore do not refer some children with disabilities to early intervention programs.

Kanthor, Pless, Satterwhite, and Myers (1974) found that knowledge about early intervention is related
to referral patterns of physicians and pediatricians. In their study, mothers' perceptions of a primary care physician's role in the care of children with spina bifida were examined. Evaluation and treatment of the disease, advice regarding intervention, genetic counseling, coordination of care, and emotional support for the family were some of the areas studied. Based on interviews that were conducted with 44 mothers of spina bifida children, Kanthor et al. (1974) found that primary care physicians did not sufficiently fulfill any of the roles mentioned above in the eyes of the children's mothers. Physicians were perceived by mothers to provide primarily acute medical care and to some extent to contribute to the rehabilitative and coordinated care of their children. However, most of the mothers perceived that the physicians did not take responsibility for providing coordinated care. The results of this study suggests a general unwillingness on the part of pediatricians to become actively involved in the comprehensive care and intervention of children with special needs. Major factors that reportedly accounted for physicians' noninvolvement were their lack of knowledge about the importance of early intervention for children with disabilities and information about community resources (such as early
intervention programs serving children with special needs) that were available to help a child and family. The results of this study strongly suggest that knowledge about the importance and availability of early intervention has a major influence not only on the comprehensive involvement of physicians in the early identification process but also on their tendency to make referrals to early intervention programs. However, the results of the study should be viewed with caution because only the perceptions of mothers were assessed, not direct observation of the clinical practices of physicians in different areas of care coordination.

In another study, Lucas (1993) examined the number of referrals made by to Tennessee’s Early Intervention System (TEIS) by physicians of children birth to 3 years that were seen in a Pediatric Intensive Care Unit (PICU). Physicians in this study were informed on several occasions (e.g., during grand rounds) about PL 99-457 and the importance of referring children with developmental disabilities or suspected to be at risk for developmental disabilities to TEIS. Data were collected retrospectively from the monthly PICU directory and from the child find directory at TEIS for 1991-93. The results showed that out of 275 admissions to the PICU,
only 25 of the children (11.2%) were referred to TEIS. Of the 25 children who were referred, 19 (76%) had significant developmental delays, 5 children (20%) were not evaluated because parents refused services, and 1 child could not be located in the TEIS directory (4%). These findings strongly suggest that even when physicians are given information about the importance of early referral, some of them still fail to make referrals to TEIS of children who have serious medical conditions and who are at risk for developmental delays.

Although there is very little empirical information in the early childhood special education literature regarding the extent of physicians' knowledge about the importance of early diagnosis, screening, and referral, there is some information about their awareness of developmental disabilities. Wolraich (1980), for example, assessed pediatric practitioners' knowledge and attitudes about developmental disabilities and compared it with the knowledge of pediatric residents before and after one month of rotation in developmental pediatrics. Level of knowledge was assessed using a 50-question multiple choice examination. Physicians' attitudes were measured using the Attitudes Towards Disabled Persons (ATDP) Scale (Yuker, Block, & Young, 1970). Some of the areas in
which knowledge was assessed included ages at which various developmental milestones were acquired, PL 94-142, prognosis, pathology, functional assessment, and etiology of disorders such as cerebral palsy and mental retardation. There were 57 physicians who responded to the knowledge items and 47 who responded to the attitude items. When the scores on knowledge about developmental disabilities of practicing physicians were compared with the scores of pediatric residents after the rotation period, there was a difference; pediatric residents scored higher in the posttest in comparison to pediatricians. The results of this study indicated that pediatricians had less knowledge about developmental disabilities than did pediatric residents. The implication is that if information is imparted to pediatricians, there is a good chance that they will recognize the importance of early identification, diagnosis, and referral and possibly serve children with special needs better. However, comparative findings of residents' attitudes pre- and post-training indicated that their attitudes did not change after the 1-month training. Thus, it may take quite a while, even when they are well informed, for some physicians to acquire more positive attitudes about the
need to use certain practices when serving children with disabilities.

It can be concluded from the results of the above studies (Glascoe & vanDervoort, 1985; Kanthor et al., 1974; Lucas, 1993; Nelson, 1986; Scott, 1990; Shonkoff et al., 1979) that although there appears to be an increasing trend toward physicians' performing screening more frequently, many practitioners still fail to identify children with developmental disabilities. One reason for this failure could be because of the reluctance on their part to perform standardized developmental screenings. Moreover, of those physicians who do identify children with disabilities, regardless of the method of screening and assessment that is used, the majority of physicians still fail to make timely referrals to early intervention programs, even when the child's condition is severe. One explanation that can account for this latter finding is that many physicians still are not fully aware of the benefits a child can receive from early intervention, particularly in the following areas: importance of early diagnosis, referral, and intervention. Still another possibility is that if they are aware of the areas mentioned above, they are not knowledgeable about all of the services available for young children with disabilities. This was clearly
reflected in Scott's (1990) study where a relationship was found between pediatricians' referrals to early intervention programs and pediatricians' beliefs about the beneficial effects of early intervention. The implication is that pediatricians who are knowledgeable about the beneficial effects of early intervention are more likely to make referrals to early intervention programs than pediatricians who are not as knowledgeable about the potential benefits.

In order for physicians to identify and refer children with disabilities effectively to the state early intervention system, they need to understand the components and intent of PL 99-457 and also be aware of the general provisions of the state's implementation plan for serving young children with disabilities. In addition, they need to know what the risks are to a child if early identification and referral do not occur in a timely manner. Based on anecdotal information presented by pediatricians at a 1991 American Academy of Pediatrics conference, it was concluded by the participants at the conference that pediatricians who had knowledge about PL 99-457 and recognized the importance of early intervention were far more inclined to perform periodic screenings in their offices on all infants and young
children with whom they came in contact than physicians who did not have this knowledge. The American Academy of Pediatrics (1991) also reported that well-informed pediatricians were more apt to recognize high-risk medical and environmental situations during the course of routine medical and social histories and perform periodic rescreening to monitor a child's development compared to pediatricians who were less informed about the law and significance of early intervention.

Lack of knowledge in the areas mentioned above was well described by the Joint Commission on Pediatric Research and Practice in 1965. It was reemphasized by the Task Force on Pediatric Training in 1978. In the latter report, Task Force members indicated that 40% of the pediatricians who were surveyed thought that their training in the area of developmental disabilities was inadequate during their pediatric residency and, consequently, did not prepare them to serve children with disabilities in a competent manner. Now that the need for further training has been recognized, it is important for the lead agency in each state to take responsibility for informing physicians about the
importance of early intervention and the need for them to fulfill their responsibilities as required by law.

Despite recent efforts by both the pediatric community and state early intervention personnel to educate, involve, and promote collaboration among physicians and early intervention providers, parents still continue to report that physicians do not always acknowledge their child's delay or make referrals to early intervention programs when necessary (Harber, 1991). Parents and professionals from other disciplines have to keep in mind that physicians' legal roles and responsibilities were not included in the law until 1990. Therefore, a majority of them are probably still unaware of the importance of early identification and the need to make referrals to early intervention programs in a timely manner.

Although progress has been slow, some improvement has occurred in the process of early identification and referral. Pediatricians in small numbers are beginning to refer to and consult regularly with early intervention programs and other professionals working with special needs children as reflected in Scott's (1990) study.
Developing/Managing the Individual Family Service Plan and Interdisciplinary Collaboration (IFSP)

The IFSP is one of the most important features of the implementation of PL 99-457. It involves an assessment of family's resources, priorities, and concerns as well as the child's abilities and includes specifications of services required for the child. The decisions about the major outcomes to be accomplished for the child are jointly made by the IFSP team members. It is essential that the pediatrician be involved in the IFSP process, not only because he or she has a distinctive alliance with the child and family, but also because the physician can help other team members understand how the child's medical condition might affect other areas of development (Downey, 1990; Parette et al., 1992). Such information can often affect decisions regarding educational and therapeutic approaches to intervention. It is for these reasons that the recent legislation (IDEA, 1990) has placed so much importance on the IFSP process and stressed the need for including a medical-health assessment, even if the primary problem is not health related. Inclusion of medical-health assessment not only would help to ensure that a child's underlying medical-health needs are not impeding progress toward
educational and developmental goals, but it also would facilitate the contribution of medical personnel to the development and implementation of the goals specified in the IFSP (National Council for Networking Community Based Services, 1989).

Justification for physicians' contribution can also be made because of their unique relationship with the child and family. Physicians can serve as advisors to the parents and advocates for the right of children with special needs by participating of interdisciplinary teams. In addition, because of their close contact with families, they can follow up on some of the IFSP goals, particularly in a case where the child is medically fragile (Harber, 1991).

The American Academy of Pediatrics (1988) developed a list of competencies needed by pediatricians in order to help them participate effectively as members on the interdisciplinary team. The competencies developed are as follows: (a) be aware of the law and support the concept of a family-centered intervention plan; (b) define and arrange all medical consultation required for the child's assessment, diagnosis, and ongoing management as required; (c) participate as a team member in the process of IFSP development by
communicating the child's medical and health needs during IFSP development; and (d) function as a coordinator or liaison regarding the child's health or medical needs and communicate with other members.

There is no doubt that physicians must play an important role in the development and implementation of the IFSP (DeGraw et al., 1988). However, there are significant barriers that often prevent or impede successful involvement. One important barrier is time constraints. It is difficult for physicians to find the time in their busy schedules to attend IFSP meetings. This difficulty was noted by Peter (1992), who reported (based on anecdotal information from physicians) that physicians frequently could not find time to participate in the development of the IFSP.

Lack of appropriate financial compensation for their time is a second barrier that tends to inhibit the extent to which physicians become involved in the IFSP process. For every hour a physician spends in this process, he or she loses an hour when he or she could otherwise be financially compensated. Typically, physicians and parents are the only participants in the IFSP process who do not receive compensation (Healy, 1993).
Limited knowledge about the requirements of PL 99-457 with respect to the role of the physician in the IFSP process is a third barrier that contributes to their non-involvement. The extent of physician involvement in the coordination of care of the developmentally disabled child also depends on the knowledge, expertise, and interest of the physician (Peter, 1992). Most physicians still seem to be unclear and to a great extent unaware of their roles and responsibilities as defined by PL 99-457 (American Academy of Pediatrics, 1988). Adequate training in the area of the development of the IFSP and specifically their contribution and collaboration is recommended by the Academy.

A fourth barrier to physicians' participation in the development of an IFSP is difficulty they may have working collaboratively with professionals from other disciplines. Interdisciplinary collaboration is an integral component of the IFSP process. One of the potential problems associated with the process of interdisciplinary collaboration is the protection of professional turf (Bennett, 1982). From the point of view of many physicians, the health care system was established before statewide early intervention systems came into effect. It may be hard, therefore, for them to understand what the
precise role of early intervention is and why it is so important for them to collaborate with professionals who provide early intervention services. In addition, some physicians may fear that their role as the primary care provider for children with disabilities is being threatened in some manner. In both of these respects, it is easy to understand why involvement of physicians in statewide early intervention systems has not progressed very rapidly.

Another problem preventing collaboration is the traditional belief that physicians have decision-making authority over professionals from other disciplines and that professionals from other disciplines should defer to them when questions arise regarding the child (Shonkoff, 1989). This hierarchical effect has led in some instances to a lack of respect among different members of the interdisciplinary team.

One way of combating the problem of ineffective interdisciplinary collaboration would be to involve residents from the onset of their training in activities that familiarize them not only with the IFSP process but also help them feel comfortable working alongside and communicating with professionals from other disciplines (Shonkoff, 1989). Cross-disciplinary cooperation during residency would provide future physicians with not only
an understanding of skills and functions required to work as a team member but also familiarize them with the vocabulary used in other disciplines with which they are likely to come into contact (Shonkoff, 1989). By starting training early, it might be possible to overcome many of the barriers that hinder physician collaboration. Peter (1992), for example, pointed out that mutual respect and trust are important components that influence collaboration between different members of the interdisciplinary team. Bennett (1982) even described how the problem of collaboration between physicians and other providers can be overcome:

It can be overcome by sensitive, secure professionals willing to compromise and able to appreciate both the strengths and weaknesses of the interdisciplinary process. There must be flexibility to encourage professional growth and development while acknowledging legitimate concerns over preserving individual areas of expertise. An attitude of openness and inquiry toward other disciplines' philosophies . . . . The
pediatrician must have the experience and maturity to function both as a team leader in certain settings and also as an equal participant. (p. 313)

It therefore seems important that in order to enhance positive interactions between physicians and professionals from other disciplines, continuous flow of important information is necessary. One method that has been used to inform physicians about the importance of participation in the IFSP is the distribution of professional education materials that address the importance of early identification, effectiveness of early intervention programs, and interdisciplinary collaboration in the development of an IFSP (Berman & Melner, 1992). Another method that has been widely used is to have joint sponsoring of training workshops for primary care physicians by professionals from different disciplines working with special needs children. The purpose of joint training workshops is not only to combat the problem of noncooperation between physicians and professional educators but also to educate them about the importance of interdisciplinary cooperation and
encourage their participation in the development of the IFSP (Bennett, 1982).

The literature suggests that time constraints, inadequate financial reimbursement, lack of knowledge, and poor interdisciplinary collaboration limit physicians' participation in the development of the IFSP. Of these factors, lack of knowledge could be the most critical one that affects physicians' participation in the development of an IFSP. The reason for this conclusion is that when physicians understand the purpose and importance of joint efforts that are needed to develop an effective plan of action, it is very likely that they will try to make efforts to overcome time and financial barriers and also be more willing to collaborate with professionals outside their discipline as the IFSP is implemented.

Methods of Informing Physicians About PL 99-457 and the Importance of Early Intervention

Informing physicians about their roles and responsibilities vis-a-vis the law has been a great challenge to the lead agencies of state early intervention systems. This is primarily because of the difficulty in overcoming barriers such as time constraints, financial reimbursement, and inaccessibility of information. In
this section, some of the common methods used to inform physicians about PL 99-457 and the significance of early intervention will be described. However, none of these methods have been evaluated experimentally. Therefore, part of the following discussion will focus on types of methods used by marketing agencies, especially pharmaceutical companies and home health agencies, to inform physicians about new products and services. In addition, information was retrieved from research conducted in the field of Continuing Medical Education as a means of forming ideas about methods that may be effective in informing physicians about Part H activities.

A major portion of the information included in this section is anecdotal in nature, obtained from reports and topical papers. Information obtained through personal communication with the developers of training programs is also included. In addition, an informal comparison of various methods typically used to inform physicians will be undertaken in order to form tentative conclusions about each method's effects.
Common Methods used to Inform Physicians in the Field of Early Intervention

There is some information available from a survey conducted by Berman and Melner (1992) in 25 states about the common methods used by individuals and organizations that engaged in statewide Part H planning or those who conducted projects that were designed to enhance early intervention. The results of the survey provided information about current methods used to communicate with physicians and other medical personnel working with special needs children. Individuals participating in the survey were asked to answer a total of 11 questions. These were 7 questions that pertained to descriptions of methods used to inform primary referral sources to make them aware of early intervention services in the community, 3 questions that were related to the evaluation of these methods, and 1 question that asked project organizers to list any product that evolved from their project (e.g., research reports, manuals, brochures, or training materials). The results indicated that six methods were commonly used to inform primary referral sources about PL 99-457 and the significance of early intervention. The methods identified were mailings, newsletters, peer networks, annual
awareness campaigns, and personal contacts made by Part H personnel (e.g., workshops, seminars). In the section that follows each of these methods will be described. In addition, information about training programs that were not reported in the Berman and Melner (1992) report but that have commonly been used to inform physicians will be presented.

Mailings of general information. Berman and Melner (1992) reported that mailing of information was one of the methods most commonly used by lead agencies in communicating with physicians. Brochures, letters, and flyers containing general information about Part H and early intervention were mailed regularly to physicians. Maine, Kansas, and North Dakota were among the 25 states that reportedly used this procedure. Personnel in the Part H program in Maine mailed brochures to health care facilities that included information about the Part H program, location of early intervention services, and the role of health care professionals in serving children with special needs. In Kansas, personnel in the state Part H program sent brochures containing similar information to physicians. Medical personnel in North Dakota felt that information
contained in brochures helped them in their personal contacts with families with children with special needs. Personnel in the state Part H program in New York also included information about procedures for making referrals to early intervention programs in its mailings to physicians.

**Newsletters.** Sending newsletters to physicians was another method reported by Berman and Melner (1992) that was commonly used in several states to communicate with physicians. It was concluded by them that sending newsletters on a regular basis offered ongoing communication between a state early intervention system and medical personnel. Again, personnel in the Kansas Part H program distributed a monthly newsletter called *It's News* throughout the state that contained information about procedures and policies related to the legislation. Staff in Tennessee and North Carolina also developed a similar newsletter that disseminated information about progress and activities of the Part H program in the state to families and other professionals working with children with special needs. In Minnesota, personnel in the state Part H program sent a quarterly newsletter to physicians that contained
similar information. In Colorado, members of the state chapter of the American Academy of Pediatrics jointly published with the Department of Education, the lead agency for Part H programs, a newsletter called Physicians, Kids and 99-457. It was distributed to physicians throughout the state and was reportedly beneficial; however, data that supported this conclusion were not included in the report. In Illinois, a newsletter called Early Intervention: Quarterly Newsletter of the Illinois Early Childhood Intervention Clearinghouse, was distributed to medical personnel. It contained information on Part H activities; reports from special education meetings; legislative updates; calendar of upcoming meetings; conferences; and workshops. Again, no data are available that illustrate the newsletter's effects on its readership.

Peer network. Using physicians to encourage their colleagues to participate in child find, assessment, and referral activities has been used in some states, including North Carolina, Maine, and Ohio. In North Carolina, for example, a pediatrician on the Interagency Coordinating Council helped develop child find and public awareness materials. Another physician in the same state helped to
inform physicians in the community about the law and its requirements. In Maine, an advisory group of physicians developed a flow chart of service activities that could be used by medical professionals working with children with special needs. These physicians took responsibility for working with their peers to help them understand points at which active participation in care-coordination of children with special needs by physicians is required. In Ohio, medical professionals have been recruited to work with both Title V and Part H personnel to help facilitate physicians' participation in the implementation of Part H activities. This particular strategy has much to offer because of the initiative taken by physicians in encouraging fellow physicians to participate in implementing the law but, like most other methods reported, its effectiveness has not been empirically demonstrated.

Annual awareness campaigns. Informing physicians through annual awareness campaigns is another commonly used method to communicate with physicians. Ohio, Wisconsin, and Wyoming have published reports in which this method was said to be successful,
but again no data were presented in the report to support these claims.

**Personal contact with primary referral sources.** Systematic follow-up through personal contacts after handing out written materials was discussed in the report as a necessary step in order to maintain consistent exchange of information between primary referral sources and other involved person. One of the states had a nonmedical person maintain ongoing contact with physicians, and this strategy was reported to be effective as far as establishing positive relationships with physicians.

**Training.** Training is another method that has been reported to be commonly used to inform physicians about PL 99-457 and the significance of early intervention. Although a number of training programs were reported, only two included detailed information regarding specific components and procedures.

A training program developed by the Medical Home Project of the Hawaii Medical Association is one of the programs mentioned by Berman and Melner (1992) that received considerable praise. This program, developed
by Sia and Peter (1988), is community based and has a Continuing Medical Education approach to training pediatricians. It addresses several major areas of physician responsibility such as early identification, referral, and interdisciplinary collaboration.

The training program is composed of three modules that are presented to pediatricians in a workshop format. Each module is presented in approximately 2 hours and covers different aspects of pediatric care and involvement in Part H activities. Module I, entitled "The Pediatrician and Community-Based Care," outlines the changing role of pediatricians and some of the potential problems they are likely to face when they participate in the care of children with special needs. The module includes a discussion of selected screening tools and guidelines for use in the daily practice of pediatricians. Module II, entitled "The Pediatrician and Coordinated Care," introduces physicians to early intervention service providers. Opportunities are given for physicians and professionals outside the medical field to address existing barriers to coordinate care within the community. Module III, entitled "The Pediatrician and Family-Centered Care," provides an introduction to the philosophy of family-centered care. In this module,
emphasis is placed on the need for early diagnosis and communicating appropriately with parents. Suggestions for enhancing the physician's role with families are also presented and discussed.

From a personal conversation (M. I. Peter, June 1993) with the developer of the program, it was found that no formal evaluation was done to ascertain its effectiveness, other than a brief evaluation that was done before its implementation. However, Peter indicated that positive feedback was obtained from physicians who participated in this evaluation. One reason given for the training program's effectiveness was that the barriers that hinder physicians' involvement, such as time constraints and financial reimbursement, were recognized and attempts were made to overcome these barriers.

The other exemplary training program reported by Berman and Melner (1992) was developed by the staff at the Child Development Resource Center in Virginia. This program was designed for physicians with the cooperation of the state chapter of the Academy of Family Physicians and the Academy of Pediatricians in Virginia. The Virginia training model is called Caring for Children With Disabilities: New Roles for Physicians, and it was originally conceptualized by Sekleman, Scott, and
Garland (1990) to ensure that pediatricians and family physicians are provided with information and the skills needed to be effective participants in the state early intervention system. Its purpose is to provide continuing medical education and follow-up support for physicians by addressing areas such as identification of children through developmental assessment, referral, participation in an IFSP, and service coordination.

The Virginia curriculum is divided into four levels. The first level consists of foundation information that focuses on the changing roles of physicians as a result of the Part H legislation. Information included in this level is presented in a workshop format to a group of physicians. The second level includes self-study manuals and audiotapes that provide information about child find, developmental assessment, IFSP, and transition. The third level of training requires physicians to apply information learned from levels one and two in their clinical settings. Activities such as screening, assessing, and working collaboratively with other service providers are examples of third-level implementation efforts. The last level of training is designed to encourage physicians to come together to review case studies, discuss effective communication strategies and intervention skills, and
make recommendations for future inservice training. The training program was expected to begin sometime in the fall of 1993.

A training program that was developed in Arizona is one of the programs for which detailed information relating to its different components is not available. This program was presented to 650 physicians and other health personnel at 27 different sites (Melmed, 1991). It was offered to practicing physicians in an effort to update them on the latest information and technological advances relevant to their respective fields. The Arizona training program was developed after surveys were conducted in several states regarding approaches that had been used to address public awareness issues related to PL 99-457. Information gathered from a survey of physicians in Arizona, including pediatricians and family practitioners, also was used to develop the training program. Key components of the program included informing medical personnel about PL 99-457; describing the new roles of the physicians; discussing issues related to early identification, treatment, and referral; and reviewing resources available in the community to help families with special needs children.
The Bridging Early Services Transition Project (BEST) is another program about which there is limited information regarding its content and methods of delivery. This program was developed in the state of Kansas. It provides training to both early intervention professionals and their counterparts in medical facilities through personal contacts with each other. One of the objectives of the program was to communicate effectively with physicians about PL 99-457, the importance of early intervention, and the availability of community resources to serve children with special needs through personal contacts.

Another training program is in the process of being developed by the Wyoming Health Department. The primary purpose of this program is to educate health care providers about the availability of early intervention services for children with special needs. Another purpose of this program is to provide multidisciplinary and community-based training experiences through continuing medical education activities for physicians. No further information is available about this program.

The Technical Assistance Systems in Kansas and Maryland, in collaboration with physicians, have helped to inform medical community personnel about medical
and health issues pertaining to serving children with special needs. The New York State Part H program also has created a Technical Assistance System to conduct workshops for the purpose of informing physicians, including pediatricians, about the legislation and their roles and responsibilities pertaining to the legislation.

The American Academy of Pediatrics with support from the Office of Special Education, developed a 16-hour inservice training program for 5,000 physicians who served children with disabilities and their families (Powers & Healy, 1982). A major part of the training addressed ways to enhance physicians' attitudes towards children with special needs. In addition, methods were used to increase their knowledge and promote acquisition of skills to serve children with special needs effectively. One important objective of this training was to provide physicians with information and guidelines that would help them see how they could conduct screening and better identify children with disabilities. Again, no information is available about specific components or the success of this program.

Another training program that reportedly worked well (R. B. Darling, personal communication, June 1993) was developed by Darling (1993). This program
consisted of a 40-minute videotape entitled *Early Intervention: The Physician's Role in Referral* and manual that were prepared through the collaborative efforts of parents, physicians, and early intervention professionals. The videotape addressed obstacles faced by professionals when making timely referrals to early intervention programs and illustrated some of the benefits of early intervention. Although no empirical data were collected to evaluate the effectiveness of the training program, it is presently being used in over 30 states as part of their child find efforts.

Tonniges (1991) developed a statewide Continuing Medical Education program to train physicians in the state of Nebraska. Information about methods used to train participants was not included in the report. However, it is known that the program addressed the growing need to educate and train physicians about issues related to early diagnosis, screening, and referral of children with special needs. Training sessions were provided by various experts in the pediatric field as well as professional educators. Tonniges (1991) reported that pediatricians who received training indicated that they were more inclined to participate in serving children with special needs. Physicians also indicated that the program
increased their awareness and helped them understand the different components involved in serving children with special needs. After completing the training, most of the participants reportedly felt better qualified to serve children with special health care needs and indicated that they felt more comfortable conducting developmental screenings after training compared to before training. Information about the methods of collecting these findings or data to support them are not available.

Although there is very little information about the effectiveness of any of the above methods, the information that is available suggests that certain methods of informing physicians are more feasible and cost-effective than others. For example, Berman and Melner (1992) reported that general mailings, newsletters, personal contacts, and training programs were more effective means of informing physicians, although empirical data about the effectiveness of any of the above-mentioned methods on physician participation is not available.

Methods Used in Related Fields

Physicians are frequently targets of marketing communications as pharmaceutical companies and home
health agencies try to inform them about new products and programs. As a consequence, physicians have become so inundated with information that they are forced to develop information acquisition strategies to be able to retain (or not retain) information that they perceive to be important (or not important) to their practices. In many instances, physicians have difficulty distinguishing between competing market methods simply because products are sometimes quite undifferentiated in the market place (Rundle, 1991). This situation has put even greater pressure on physicians to assess the believability of claims that come from competing sources (Beltramini & Sirsi, 1992).

A major problem faced by pharmaceutical companies in their efforts to influence physicians' decision making (that favors their products) is that physicians have become less accessible to company salespeople; time constraints and lack of interest appear to be major barriers (Beltramini & Sirsi, 1992). As a result, marketers have rigorously pursued these problems and experimented with various methods to reach such an inaccessible population effectively. Methods evaluated have included direct mailing and videotapes (White, 1990), personal contact, newsletters
(Wilkerson, 1987), seminars and other types of group presentations, and grand rounds (Marsden & Grant, 1989). An important observation that has been made by several researchers in this field is that, regardless of the method that is used to communicate with physicians, it is important to maintain ongoing communication with them (White, 1990). In order to develop better relationships with physicians, it is helpful to have an open dialogue about the information that is shared with them. This gives them ample opportunities to ask questions as well as clarify controversial or difficult issues.

A survey was conducted by Steen & Flyn, Inc. (1987), a marketing consulting firm, for the purpose of identifying physicians' preferences about methods of marketing medical equipment. The results of the survey indicated that physicians are most interested in and open to two types of marketing strategies. The first is clinically oriented education, in the form of seminars and presentations. On a scale of 1 to 10, seminars had an average rating of 7.5 and presentations had an average rating of 6.0. The next strategy most preferred by physicians was personal calls from representatives of diagnostic centers about equipment. This method received an average rating of 5.9. It was noted that
direct mailing (average rating of 4.7) was another marketing avenue preferred by some physicians.

Beltramini and Sirsi (1992) conducted a study in an attempt to answer the question, "How should information about a product or service be presented so that targets ultimately acquire the information communicated to them?" The purpose of the study was to assess the impact that type of source (colleague, salesperson, advertisement) and type of information (positive vs. negative information) has on the extent to which physicians believe certain information. An example of source and positive information was a colleague who highly recommended a new drug; an example of another source and negative information was a salesperson who denigrated a competitor's product. There was a total of 228 physicians who participated in the study. The positive message group included 128 and the negative message group included 100 physicians. A questionnaire was used to determine the extent to which physicians believed certain information. It contained a set of scenarios that presented the respondents with information about a hypothetical new product that was about to be introduced in the marketplace. Furthermore, information about the new product was provided either
by a salesperson, colleague, or written advertisement, and it also contained either a positive or negative message about the product. To assess believability, a scale was used that included 10 bipolar adjective pairs that organized information on a 7-point scale. Physicians were instructed to read each scenario carefully and then rate the believability of each scenario.

There were differences in the believability scores between sources of information; information provided by colleagues was found to be more believable than information provided by a salesperson or written advertisement. The believability score for colleagues was the highest, followed by salesperson, and least was for written advertisement. There also were differences between believability scores for the two types of messages. Positive messages were found to be more believable than negative messages. In addition, it was found that the effect of the type of information (positive vs. negative) on physicians' believability score varied depending upon the source of message (colleague, salesperson, or advertisement). Scores for the effects of the message for each information source revealed that a salesperson was perceived as providing more believable information when he or she provided positive
information than negative information. Similarly, positive information by a colleague was believed more than negative information. However, there was no difference between the believability scores for written advertisements. These findings suggest, therefore, that information provided by a colleague can have an important influence on the likelihood that physicians will accept a new product and may be more powerful when it is positive rather than negative.

Friis, Bro, Mabeck, and Vejlsgaard (1991) investigated the effects of written information, written information with follow-up lectures, and written information with follow-up presentation by a pharmaceutical company on changing the prescribing habits of physicians. There were 602 general practice physicians who participated in the study. Physicians were divided into three groups according to the counties in which they practiced. Physicians in all three groups received information through the mail about the harmful effects of a certain drug when it is used to treat infectious diseases. Two of the three groups received additional information about the use of the drug by either attending a lecture presented by a physician from the local health department or by attending a lecture that was presented
by a person from the pharmaceutical company. The results of the study indicated that there were changes in the prescribing habits of physicians who attended the presentation by another physician. However, there were no differences between groups that received information through the mail or by attending a presentation by the pharmaceutical company. These results may not be encouraging for salespeople who work for pharmaceutical companies because they suggest that physicians may be influenced in some instances only by colleagues. Although mailings was a method found by Steen & Flyn, Inc. (1987), to be a means of delivering information that physicians often preferred, it may not be effective in practice if the results of Friis et al. (1991) are generally representative of physicians' behavior.

Schaffner, Wayne, Federspiel, and Miller (1983) examined differences between methods of informing physicians about antibiotic prescriptions they might use in their office practices. The aim of the study was to inform physicians about the harmful effects of a commonly used antibiotic and to reduce the number of prescriptions that physicians write for the drug. Information was disseminated to physicians about the harmful effects of the antibiotic by one of the following
methods: mailing a brochure, office visit by a drug educator, and office visit by a physician. Approximately 375 physicians were assigned to one of the three treatment groups or a control group. The results of the study indicated that both the drug educator and fellow physician were well received by physicians in their offices; participants in these two groups stated that the visits were useful. Although drug educators were well received, they did not have a significant effect on the prescription-writing habits of physicians; only fellow physicians had a significant effect. As expected, there were no differences between the number of prescriptions written by physicians in the control group and physicians who received only a brochure. These findings are similar to the results reported by Friis et al. (1991).

Researchers in the field of health care marketing also have struggled with the issue of how to inform physicians best about various programs and services. In their attempts to address this problem, they have conducted studies in an effort to find effective ways of informing physicians about health care products. Kolatch (1991), for example, found that physician referrals increased a referral baseline of approximately from 3.5% to 6% over a period of 4 years. Approximately 100
referrals were made during a 3-month period when a nurse periodically visited their offices and informed them about the services of a home health care agency. It was concluded that ongoing personal contact with physicians can have a significant effect on the frequency of physician referrals. Communication appears to help physicians keep up to date on their patients as well as remain abreast of services offered by a particular program.

Researchers in the field of educational marketing also have evaluated methods that facilitate communication between physicians and education consultants. For example, Cockburn, Ruth, Silagy, Dobbin, Scollo, and Naccarella (1992) conducted a study in which 3 methods of marketing a "quit smoking" intervention were evaluated. There were 264 physicians who participated in the study. Physicians were randomly assigned to one of three methods of information delivery, a personal presentation of the kit by an educational facilitator with a follow-up visit 6 weeks later (n = 80), delivery of the kit by a voluntary courier with a follow-up phone call 6 weeks later (n = 92), and postal delivery of the kit with a follow-up letter 6 weeks later (n = 92). All participants were contacted 4 months after the kit
was delivered and asked if they had used any of its components. Physicians also completed a questionnaire focused on perceptions related to different aspects of the kit and the method that was used to deliver it. The results of the study indicated that there were differences among the three groups. The educational facilitator approach was found to have a significantly greater effect on physicians' use of the kit compared to the other two approaches. Physicians who received information from the educational facilitator used the kit more often with their patients and also found the kit easier to use than participants in the other groups. There were no differences between the responses of participants in the volunteer courier and postal delivery groups. Participants in both of these groups indicated that the kit was too complicated to use and therefore they did not use it often. It would seem, therefore, that personal contact with the physician can have an important influence on his or her behavior, much more so than other methods of providing information. However, it seems that a person's background is important to physicians, a finding that was reported also by Friis et al. (1991) and Schaffner et al. (1993).
It can be concluded from the above results that there are certain strategies that affect physicians' behavior more than others. For example, information physicians receive from colleagues or individuals with high credibility seems to be accepted and acted on more readily than information received from individuals who do not have medical or related credentials (Beltramini & Sirsi, 1992; Friis et al., 1991; Schaffner et al., 1983). In addition, when physicians are contacted personally and given positive information about a certain product or program, they are more likely to be influenced than they are when non personal methods are used and they receive negative impersonal information (Cockburn et al., 1992; Kolatch, 1991).

**Conclusions**

Based on the review of literature, it seems that professionals outside the field of medicine, especially those in the field of early intervention, are beginning to make strong efforts to involve physicians in the implementation of PL 99-457. The need for lead agencies to inform them about PL 99-457 and the importance of early intervention also has been recognized by medical personnel (Blackman et al., 1992; National Council of
Networking Community Based Services, 1989; Powers & Rickert, 1979; Scott, 1990).

Areas where there is a need for physicians to participate in PL 99-457 have been identified (e.g., American Academy of Pediatrics, 1988). Also, important barriers that prevent physicians from fulfilling their roles and responsibilities as required by law have been recognized (Liptak & Revell, 1992; Peter, 1992). This information has, to some extent, helped lead agencies and other professionals effectively inform physicians about the law and its requirements. However, it is difficult to determine which of these methods is most effective without the benefit of empirical comparisons. Marketing research conducted in the fields of pharmaceutical sales and home health care programs has provided some insight into the potential usefulness of different methods of communicating with physicians, but to date these methods have not been examined experimentally for their effects on physicians who serve young children with disabilities and their families.

Video tape is one method of informing physicians that has begun to be used by professionals in the field of early intervention. Video tape also has been widely used in Continuing Medical Education activities and is
frequently preferred by physician participants (Bearon et al., 1993; Manning et al., 1987). Videos are often excellent teaching tools because they can be viewed at a time and place that is convenient to the physician and also reviewed as many times as the physician wishes with minimal difficulty (Alexander, 1990). However, one important disadvantage of this method of information delivery is that physicians cannot obtain answers to questions that might arise while they are viewing a tape (Alexander, 1990).

Because videotape is being used increasingly by professionals in the field of early intervention as a means of communicating with physicians, it would seem important to examine experimentally just how effective it is at informing physicians about the law and their roles and responsibilities related to the law. Of course, the most common method that is used is the written word format, usually in the form of brochures and newsletters. The purpose of the present study, therefore, was to evaluate the combined effectiveness of these two methods, presented in a packaged form, on physicians' knowledge about the law and the significance of early intervention. It was predicted that physicians who received and reviewed the package of written and video
materials would acquire more knowledge about the law, their roles and responsibilities related to the law, the importance of early intervention, and TEIS than physicians who did not receive the package. It also was predicted that physicians who had the benefit of knowledge related to these areas would make more referrals to TEIS than physicians who did not have this knowledge.
CHAPTER III

Method

Tennessee's Early intervention System (TEIS) is the state Part H program that is responsible for the implementation of Part H section of PL 99-457. One of the responsibilities of this system is to inform the medical community, in particular physicians, about the law and its requirements. The objective is to help physicians serve children with disabilities better by participating in early intervention activities such as performing developmental assessments, making timely referrals, and participating in an Individualized Family Service Plan (IFSP).

Hypotheses

It was hypothesized that there would be differences in knowledge about PL 99-457, roles and responsibilities of physicians as related to the law, importance of early intervention, and TEIS between physicians in the control and experimental groups. It
was also hypothesized that there would be differences in the number of referrals made to TEIS by physicians in the control and experimental groups.

**Design**

A Posttest-Only Control Group Design (Campbell & Stanley, 1966) was used. The independent variable was treatment; there were two groups--experimental and control. The dependent variables were (a) physicians' knowledge about PL 99-457, roles and responsibilities pertaining to the law, importance of early intervention, and TEIS (b) and number of referrals made by physicians to TEIS.

Physicians in the control group did not receive any intervention but were posttested. Physicians assigned to the experimental group received an information package that contained a pamphlet and videotape. This group also had to complete the Physicians' Knowledge and Practice Questionnaire.

**Sample**

The potential pool of participants included approximately 450 physicians who belonged to one of three specialties: general practice, family practice, and
pediatrics. The sample included physicians who were licensed to practice in the state of Tennessee in the 16 counties of the East Tennessee District (Anderson, Blount, Campbell, Clairborne, Cocke, Grainger, Hamblen, Jefferson, Knox, Loudon, Monroe, Morgan, Roane, Sevier, Scott, and Union Counties). A list of names was retrieved from the Directory of Doctors of Medicine (1993). In addition, the American Academy of Pediatrics' Fellowship Directory (1993) and names of physicians in the yellow pages of the South Central Bell telephone directories of the 16 counties were used to cross check the physicians' directory list to make sure that all general practice physicians, family practice physicians, and pediatricians from the different specialties were identified. Finally, various service providers who worked closely with physicians also were contacted for the purpose of cross checking names. The final list was composed of 241 family practice physicians, 63 general practice physicians, and 103 pediatricians.

Various techniques (see Appendix A) were used to encourage the physicians to participate in the study. First, the Chair of the Committee for Children with Disabilities of the Tennessee Chapter of the American Academy of Pediatrics wrote a letter in which he
informed all physicians not only about the importance of the study but also asked them to participate in it. Second, physicians received various subsidies that would benefit their patients once they completed the study. These subsidies included a copy of a Resource Directory published by TEIS, which contained information about various community resources available for children with special needs; an article about various screening instruments that can be used to assess and identify children birth through 2 years with special needs; and a summary of the research findings. In addition, physicians were allowed to keep copies of the written pamphlet and videotape that contained information about PL 99-457, the roles and responsibilities of physicians, importance of early intervention, and TEIS.

There were 23 physicians who voluntarily agreed to participate after receiving the initial letter; this number included 10 family practice physicians, 1 general practice physician, and 12 pediatricians. Because of the low rate of response to the initial letter, other types of contacts had to be made with the help of TEIS staff in order to insure that an adequate number of subjects could be assigned to the experimental and control groups. All physicians who had failed to respond to the initial
letter were therefore contacted either by telephone from TEIS staff or in person by a physician or a clinical nurse practitioner. Physicians were primarily contacted through either the receptionist, secretary, or office manager.

Out of approximately 380 physicians who were contacted by telephone, 25 of them (approximately 5 family practice physicians and 20 pediatricians) requested that the letter be remailed to them because they did not recall receiving information about the research project. There were approximately 70 physicians (approximately 15 family practice physicians and 55 pediatricians) who indicated that they would like information about the research project to be sent by facsimile machine (FAX) to them. Out of 25 remailings and 70 FAXs, 11 physicians (2 family practice physicians and 9 pediatricians) returned the informed consent form. Personal with physicians contacts also were made by one physician and two clinical nurse practitioners. Out of a total of approximately 25 contacts (2 family practice physicians and 23 pediatricians), 9 physicians agreed to participate (2 family practice physicians and 7 pediatricians). The overall response rates of physicians irrespective of the type of the contact was approximately
5% (n = 12) for family practice physicians. 2% (n = 1) for general practitioners, and 27% (n = 28) for pediatricians. Because only one general practice physician agreed to participate (even after telephone contacts were made requesting them to participate), this group was excluded from the present study.

Out of a total of 40 physicians who agreed to participate, 2 failed to complete the study. Among the two physicians who did not complete the study, one belonged to the experimental group and the other to the control group. The final sample was composed of 38 physicians (19 in each of the two groups).

Descriptive data on the final sample can be found in Table 1. These data indicate that participants were primarily male pediatricians in private practice, less than 45 years of age, and graduated from medical school after 1980. These physicians had practices in eight counties, including three that were rural counties (Cocke, Hamblen, and Monroe).

Treatment

The treatment consisted of an information package. This package contained a videotape and a written pamphlet.
### Table 1

**Demographic Characteristics of the Sample**

<table>
<thead>
<tr>
<th>Characteristic</th>
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<tbody>
<tr>
<td>Age</td>
<td></td>
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<tr>
<td>45 years or less</td>
<td>27</td>
</tr>
<tr>
<td>46 years or more</td>
<td>11</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
</tr>
<tr>
<td>Family practice</td>
<td>12</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>26</td>
</tr>
<tr>
<td>Practice type</td>
<td></td>
</tr>
<tr>
<td>Academic setting</td>
<td>8</td>
</tr>
<tr>
<td>Local health department</td>
<td>3</td>
</tr>
<tr>
<td>Private practice (solo, group)</td>
<td>27</td>
</tr>
<tr>
<td>Children seen in practice</td>
<td></td>
</tr>
<tr>
<td>Less than 100 per year</td>
<td>29</td>
</tr>
<tr>
<td>Over 100 per year</td>
<td>9</td>
</tr>
<tr>
<td>Child development training</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
</tr>
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</table>

Table continues
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<tr>
<th>Characteristic</th>
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</thead>
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<tr>
<td><strong>Year of graduation from medical school</strong></td>
<td></td>
</tr>
<tr>
<td>1950-1965</td>
<td>5</td>
</tr>
<tr>
<td>1966-1975</td>
<td>8</td>
</tr>
<tr>
<td>1976-1985</td>
<td>12</td>
</tr>
<tr>
<td>After 1986</td>
<td>13</td>
</tr>
<tr>
<td><strong>Geographical area of practice</strong></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>11</td>
</tr>
<tr>
<td>Suburban</td>
<td>15</td>
</tr>
<tr>
<td>Urban</td>
<td>12</td>
</tr>
<tr>
<td><strong>County of practice</strong></td>
<td></td>
</tr>
<tr>
<td>Anderson</td>
<td>4</td>
</tr>
<tr>
<td>Blount</td>
<td>5</td>
</tr>
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<tr>
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</tr>
<tr>
<td>Knox</td>
<td>12</td>
</tr>
<tr>
<td>Roane</td>
<td>1</td>
</tr>
<tr>
<td>Sevier</td>
<td>1</td>
</tr>
</tbody>
</table>
Videotape

A videotape entitled *The Physician, The Law, and Tennessee's Early Intervention System* was developed by the researcher and produced at the Center for Telecommunications and Video, The University of Tennessee, Knoxville (see Appendix B). The approximate length of the tape was 30 minutes.

The videotape contained information about PL 99-457, the roles and responsibilities of physicians that relate to the law, the importance of early intervention and referral, and a description of TEIS. The tape was narrated by a clinical nurse specialist. It included information that was designed to meet four objectives:

1. Describe the importance of early intervention. Information focused on this objective included a narrative supported by pictures of children in an Intensive Care Unit that described how children with disabilities used to be placed in institutions shortly after birth but are now raised at home and cared for by physicians. Also included were data presented in the form of charts and graphs that illustrated the cost effectiveness of early intervention programs.

2. Clarify the responsibility of physicians to refer children at risk for or with developmental disabilities to
early intervention programs. Information in this section was supported by visual excerpts from the Federal Register along with a narrative description and charts of the three components that have direct implications for physicians.

3. Identify important roles and responsibilities of physicians (which were identified by the American Academy of Pediatrics). This information was discussed by a panel of physicians, who also noted several difficulties that physicians often face when they treat children with disabilities and try to make referrals to early intervention programs.

4. Inform physicians about TEIS and its various services to families with special needs children. Information in this section of the videotape was supported by a chart and statements from the parents of a child with Down's syndrome who described how TEIS helped them find appropriate services for their child.

Pamphlet

A 6-page pamphlet, The Physician, The Law, and Tennessee's Early Intervention System, was developed by the researcher (see Appendix C). The pamphlet contained most of the information that was included in the
videotape. The pamphlet was organized into four parts. The first part described (with the help of graphs and charts) the importance of early intervention, with special emphasis on early identification and treatment of children at risk for or having developmental delays, and the importance of referring such children to early intervention programs. The second part contained information about the Part H component of the Individuals with Disabilities Education Act (IDEA, 1990). Components of the law that had direct implications for physicians were highlighted in this section. The third section of the pamphlet described the roles and responsibilities of physicians that were identified by the American Academy of Pediatrics. Again, a chart was used to highlight important responsibilities. The fourth and final section contained information about TEIS, such as background information about the system and eligibility criteria for children to receive services. Information also was included about the TEIS process and services available to families through the system. The pamphlet concluded with a description of how TEIS can help physicians to serve children with special needs more effectively.
Measurement

Data on physicians' knowledge about PL 99-457, their roles and responsibilities pertaining to the law, the importance of early intervention, and TEIS were collected using a questionnaire (see Appendix D). Data on the number of referrals made by physicians to TEIS were collected from the TEIS child find directory.

Questionnaire

A questionnaire entitled Physicians' Knowledge and Practice Questionnaire was used. Portions of the questionnaire were adapted from the Physicians Early Intervention Questionnaire (Scott, 1990).

Instrument description. The questionnaire was divided into two parts. Part I consisted of demographic and background information that was completed either by the physician or a clerical assistant. Part II contained questions that pertained to physicians' knowledge. This part of the questionnaire was completed only by the physician.

Some of the questions in Part I related to the type of practice, the geographical area covered by the practice, the year of graduation, and the number of children with
special needs that are seen in the practice. There was a total of 11 questions in Part I. Respondents could circle one item from a list of items that comprised each of the questions.

Questions in Part II related to physicians' knowledge about PL 99-457 and the Part H component of the law; their roles and responsibilities pertaining to the law in the areas of child find, assessment, referral, and the Individualized Family Service Plan (IFSP); the importance of early intervention; and TEIS, particularly its role in serving children with special needs. Questions that pertained to the source of their knowledge and extent of their familiarity about the various areas mentioned above also were included in Part II. There was a total of 21 questions that addressed physicians' knowledge. They were organized into multiple-choice formats with either yes or no response options or with yes, no, and do not know response options. Each question had between four to eight parts, and physicians were asked to respond to each part of each question.

Reliability and validity. Five experts who resided outside of the 16 counties of the East Tennessee District helped to assess the validity of the questionnaire.
Experts included three physicians and two special educators, all of whom were selected by TEIS project coordinators in other districts of the state. Coordinators made their selections on the basis of experience working with these experts and the knowledge that each expert had about PL 99-457, the roles and responsibilities of physicians, the importance of early intervention, and TEIS. The validity of the questionnaire was evaluated using a content validity procedure, designed "to see the thoroughness and completeness of the questionnaire" (Adams & Schvaneveldt, 1985, p. 83). This was done to determine whether the questionnaire actually measured major dimensions of knowledge in the area of interest.

The following procedure was used to assess content validity:

1. Experts were given a list of items that the researcher believed were related to relevant knowledge and that were related to the stated purposes of the study. A definition of the term knowledge also was given to the experts (see Appendix E).
2. Experts were told to determine whether an individual item was consistent with the definition of knowledge or belonged in one of the other categories (attitudes and practices)\(^1\).

3. A tally was computed for each item based on assignments given to these categories. Items assigned by at least four of the five experts to the knowledge category were included in the questionnaire. In this manner, 97% of the knowledge items were retained.

4. Experts were asked to generate items that they thought needed to be included. All five judges agreed that the questionnaire was thorough and that there was no need to add additional items. The reliability of the questionnaire was assessed using Cronbach's alpha. This was done to determine the internal consistency of the items. The alpha coefficient for knowledge items was .92.

\(^{1}\) Analyses regarding the attitudes and practice categories were not included in the present study with one exception: the number of new referrals made to TEIS.
Scoring. Of the 21 questions that related to overall physicians' knowledge, only 15 were scored by assigning each correct answer 1 point; the other 6 items were not scored. A minimum of 0 and a maximum of 79 points could be obtained from the 15 questions. The average score for each physician was used for the purpose of statistical analysis in order to give credit to participants who did not respond to all items on the questionnaire. The average score was computed by adding all the correct responses and dividing it by the total number of responses. The other 6 questions examined the sources of the respondents' knowledge and therefore were not scored numerically. Information from these responses was used to describe physicians' backgrounds, such as, how most physicians learned about the law (e.g., journals, newsletters), how familiar they were with TEIS, and the type of contacts they have had with TEIS staff.

Referral System

Information about the number of referrals made by physicians to TEIS was gathered from the child find directory located at TEIS. This information was collected at the end of each day for a period of 6 weeks after the information package was distributed.
**Data Collection**

A letter from the researcher was included along with a letter from the chair of the Tennessee Chapter of the American Academy of Pediatrics' Committee for Children with Disabilities explaining the purpose of the research and the physician's role in the study. Physicians were asked to complete and return an informed consent form indicating their willingness to participate in the study.

Physicians who were assigned to the treatment group were asked not to discuss any of the information that they received with colleagues. Physicians assigned to this group received a copy of the videotape, the information package, and a cover letter (see Appendix F) that briefly described the written material and videotape, and the Physicians' Knowledge and Practice Questionnaire. Physicians were asked to evaluate both the packet of written material and the videotape for clarity of the information presented, helpfulness of the information, and convenience of reading the written material and viewing the tape. In addition, physicians were asked to identify areas in which they would have liked additional information. A stamped, self-addressed envelope was included for returning the questionnaire.
The telephone number of TEIS was noted in the cover letter in order for physicians to call and ask questions that might arise before, during, or after reviewing the materials. Physicians were given 2 weeks to read the pamphlet, view the videotape, and complete the questionnaire.

Physicians assigned to the control group received the questionnaire along with the cover letter (see Appendix F). Their cover letter included instructions for completing the questionnaire. Physicians in this group also were given 2 weeks to complete and return the questionnaire.

At the end of the second week, a letter (see Appendix F) was mailed to those physicians who had failed to return the questionnaire asking them to complete it in no later than 1 week. All except two who had agreed to participate finally returned the questionnaire. After all questionnaires were received, a letter (see Appendix F) was mailed to the participants thanking them for their time and efforts. Subsidies that were described in the cover letter also were sent at this time.
Analysis

A chi-square analysis was used to make sure that both the control and treatment groups were comparable on background characteristics. A one-way analysis of variance was used to determine differences between the total knowledge scores of physicians in the control and experimental groups. A significance level of $p = .05$ was selected for the chi-square test and the ANOVA.

A $t$-test was used to analyze the difference between the number of referrals made by physicians to TEIS in the experimental and control groups. A lower criterion for significance ($p = .10$) was used to determine differences in referrals because of the short time period during which referral data were collected.
CHAPTER IV

Results

All physicians responded to at least 70% (55 out of 79 items) of the questionnaire items. Both descriptive and comparative analyses were completed on the data. Descriptive analyses were completed to describe physicians' (a) familiarity with the law, (b) familiarity and involvement with Tennessee's Early Intervention System (TEIS), and (c) barriers to involvement when serving children with special needs. Comparative analyses were completed to examine differences between the experimental and control groups on their performance of knowledge and number of referrals made to TEIS.

Descriptive Analyses

Information about physicians' familiarity with the law, familiarity with TEIS, and barriers to involvement was summarized. These data are presented in the form of frequencies and percentages.
Familiarity with the Law

Physicians were asked to indicate how familiar they were with the law. Both frequency and percentage data are presented in Table 2. A majority of physicians indicated that they had not heard about the law or, if they had heard about the law, they were not familiar with any of its individual components. When physicians were asked to indicate how they had heard about the law, regardless of how familiar they were with it, a majority of them either did not respond to any of the five alternatives (brochures, colleagues, conferences, journal articles, newsletters) or indicated that none of the alternatives had been a source of information. When physicians were asked to indicate how many articles they had read since 1990 that pertained to PL 99-457 or services related to children with special needs, a majority of them indicated they had not read a single article.

Familiarity with Tennessee's Early Intervention System

When physicians were asked if they were familiar with TEIS (see Table 3), a majority of them indicated that had never heard about TEIS or had heard only the name TEIS. The primary type of contact with TEIS among physicians who indicated involvement was through
Table 2

Frequency and Percentage of Physicians' Responses to Questions of Knowledge About the Law

<table>
<thead>
<tr>
<th>Question</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Familiarity with the law</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiar with most components</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>Familiar with components pertaining to physicians</td>
<td>4</td>
<td>10.5</td>
</tr>
<tr>
<td>Heard about the law but not individual components</td>
<td>18</td>
<td>47.4</td>
</tr>
<tr>
<td>Never heard of the law</td>
<td>14</td>
<td>36.8</td>
</tr>
<tr>
<td><strong>Source of knowledge about the law</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brochures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>20.0</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>80.0</td>
</tr>
<tr>
<td>No response</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Colleagues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>No response</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Conferences/workshops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>30.0</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>70.0</td>
</tr>
<tr>
<td>No response</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Journal articles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>36.4</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>63.6</td>
</tr>
<tr>
<td>No response</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Newsletters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>72.7</td>
</tr>
<tr>
<td>No response</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td><strong>Articles read about the law and services related to children with special needs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>27</td>
<td>71.1</td>
</tr>
<tr>
<td>1-5</td>
<td>10</td>
<td>26.3</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
<td>2.6</td>
</tr>
</tbody>
</table>
Table 3

Frequency and Percentage of Physicians' Responses to Questions of Knowledge About Tennessee's Early Intervention System

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Familiarity with TEIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not familiar</td>
<td>16</td>
<td>42.1</td>
</tr>
<tr>
<td>Familiar only with the name</td>
<td>7</td>
<td>18.4</td>
</tr>
<tr>
<td>Familiar to some extent</td>
<td>14</td>
<td>36.8</td>
</tr>
<tr>
<td>Very familiar</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Type of contact with TEIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>41.2</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>58.8</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Personal contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>17.7</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>82.3</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td>31.0</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>69.0</td>
</tr>
<tr>
<td>No response</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
letters followed by telephone contact, and the least type of contact was personal contact with TEIS staff.

**Barriers to Involvement**

When physicians were asked questions about common difficulties they face when identifying children with developmental delays (see Table 4), a majority of physicians reported that lack of time and inadequate training and knowledge about performing developmental screening were barriers to identifying children with developmental delays. When physicians were asked to identify the types of barriers they face when making referrals of children with or at risk for developmental disabilities to early intervention programs, a majority of them reported that lack of knowledge about community resources was a major barrier to making referrals. When asked about reasons for not attending an Individualized Family Service Plan (IFSP) meeting (if they were invited), a majority of participants did not respond to this item; those who did indicated that lack of time might be a barrier to attendance.
Table 4

Frequency and Percentage of Physicians' Responses About Barriers to Their Involvement in Early Intervention Activities

<table>
<thead>
<tr>
<th>Question</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performing developmental screenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>31</td>
<td>86.1</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>13.9</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Lack of training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23</td>
<td>67.6</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>32.4</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Lack of economic feasibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>41.9</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>58.1</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Referring children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>31.2</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>68.8</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>85.7</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>14.3</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Lack of expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>46.9</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>53.1</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td></td>
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Table continues
<table>
<thead>
<tr>
<th>Question</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participating in an IFSP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>85.7</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>14.3</td>
</tr>
<tr>
<td>No response</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>72.7</td>
</tr>
<tr>
<td>No response</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Lack of financial compensation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>72.7</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>No response</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>
Comparative Analyses

Although subjects were randomly assigned to experimental and control groups, a chi-square test was performed to make sure groups were comparable on the following demographic variables: number of children birth through 2 years that are seen in the practice every year, age, gender, year graduated from medical school, training in child development, specialty, type of practice, and geographical area served by the practice. As shown in Table 5, the chi-square results verified that there were no differences.

A one-way analysis of variance (ANOVA) was performed to determine if there was a difference between the total knowledge scores of physicians in the two groups (experimental and control). The data revealed that the difference between the mean knowledge scores was significant, \( F(1) = 60.44, p < .0001 \). It was also found that the knowledge score of physicians in the experimental group were higher (\( M = .70, SD = .10 \)) than the scores of physicians in the control group (\( M = .45, SD = .10 \)).

Data gathered from the TEIS child find directory permitted comparisons to be made between the number
Table 5

Comparison of Frequency Distributions of Characteristics of Physicians in the Experimental and Control Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( I^a )</td>
<td>( I^b )</td>
</tr>
<tr>
<td><strong>Children treated</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 100</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>More than 100</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 years or less</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>46 years or more</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td><strong>Year of graduation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1950-1965</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>1966-1975</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>1976-1985</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>After 1985</td>
<td>7</td>
<td>6</td>
</tr>
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</table>

Table continues
<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ia</td>
<td>IIb</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
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</tr>
<tr>
<td>Family Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clinical</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Health department</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Geographical area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Suburban</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Urban</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. No \( \chi^2 \) values were significant at \( p < .05 \).

\( a \) Physicians in experimental group
\( b \) Physicians in control group
of new referrals from physicians before and after the present study was conducted. From January 1994 until mid-September 1994, the total number of referrals made by physicians to TEIS was 23. However, after the information package was distributed to physicians in mid-September of 1994, a dramatic increase in the number of new referrals occurred. Within a period of 6 weeks, 18 referrals were made by physicians to TEIS; 14 of these referrals came from physicians who participated in the study and never had referred children to TEIS. Of the 14 referrals, 10 were made by 6 physicians in the experimental group; only 2 referrals were made by 1 physician in the control group. A t test was performed and indicated that the difference between the groups in number of new referrals was significant, t(36) = 1.80, p < .10.
CHAPTER V

Discussion

The purpose of the study was to examine the effects of an information package (which included a pamphlet and a videotape) on physicians' knowledge about the law, their roles and responsibilities pertaining to the law, the importance of early intervention, and Tennessee's Early Intervention System (TEIS). The results of the study indicated that physicians who read the written information and viewed the videotape had better knowledge about the law and services related to children with special needs and made more referrals to TEIS than physicians who did not review these materials. The use of a control group in addition to random assignment of the subjects permitted the conclusion that the differences between the mean knowledge scores and referral rates of physicians assigned to the two groups was because of the information package and not confounding effects such as differential subject selection.
The information package appears, therefore, to be a useful means of informing physicians about the law, their responsibilities, and services related to children with special needs, as well as changing their referral practices to TEIS. These findings are consistent with results reported by researchers in the fields of Continuing Medical Education (Bearson et al., 1993; Manning et al., 1987) and early intervention (Berman & Melner, 1992), who have found that physicians often prefer and are more likely to act on written and videotape methods of receiving information than other methods. In addition, information from the referral data suggests that if physicians are well informed about early intervention and related issues, some of them are likely to change important practices that benefit young children with disabilities and their families. This finding is similar to that of Scott (1990), who found that pediatricians who seemed to understand the importance of early intervention were more likely to refer children with developmental delays to early intervention programs than pediatricians who were not as familiar with the benefits of early intervention.

The results of the study further revealed that the majority of pediatricians and family physicians who
practice in the East Tennessee District have not heard about the law or any of its individual components. Likewise, slightly more than half of the physicians who participated in the study indicated that they were not familiar with TEIS or its services. The results of this study support the findings of Scott (1990), who found that most physicians in the state of Virginia were not familiar with law. It therefore seems unreasonable to expect physicians in Tennessee to perform the roles and responsibilities stipulated in the law if they are not aware of the law and its requirements.

If participants in the present study are representative of physicians in Tennessee, the implication is that a majority of physicians in our state are not aware of the law and its requirements. Efforts have been made in the past by East Tennessee District Part H personnel to inform physicians. For example, information about TEIS along with information about the importance of early intervention and timely referral of children with special needs to early intervention programs was mailed to all pediatricians in the 16 counties of the East Tennessee District in 1992. It was noted that this strategy did not seem to be effective because there were no referrals or contacts made by pediatricians with TEIS personnel.
subsequent to the mailing. On a different occasion, information was presented about TEIS to a group of physicians during pediatric grand rounds by one of the TEIS principal investigators for the East Tennessee District. Again, there were no contacts made with TEIS personnel by pediatricians who attended the presentation. It is therefore important that state Part H personnel use strategies similar to the ones used in present study to make sure that physicians receive information not only about the law but also about TEIS and other community-based early intervention services for children with special needs.

Physicians who received the information package seemed to understand better than physicians who did not receive the package the importance of referrals of children at risk for or having developmental delays to early intervention programs. The best evidence that supports this conclusion is that 6 of the 19 physicians who received the information subsequently made 10 referrals to TEIS. Onlyl physician in the control group made 2 referrals during the same period. Moreover, the majority of new referrals were children who had received care previously in Intensive Care Units. These results have very important implications for
professionals in the field of early intervention, particularly personnel associated with state Part H programs who want to build collaborative relationships with physicians in their state. It can be concluded that once physicians acquire knowledge about the law, their roles and responsibilities, and the importance of early intervention, they are more likely to make referrals to the state's system of coordinated services.

Another finding was that none of the demographic variables made a significant contribution to the difference between the knowledge scores or referral rates of the two groups. Regardless of a physician's background, it is still very likely that she or he will acquire important knowledge and make more referrals to TEIS after reviewing pertinent written and videotape material.

Finally, the results suggest that certain barriers do indeed impede physician involvement in early intervention. Lack of time was reported by a majority of physicians to be a critical barrier to performing developmental screenings on young children as well as participating in an IFSP. Similar findings were noted by Scott (1990) and other researchers in the fields of early intervention and medicine (American Academy of
Physicians also indicated that insufficient financial compensation sometimes functioned as a barrier to participation in the IFSP process.

Taken together, these findings may have very important implications, particularly for personnel in state Part H programs who have the responsibility of finding ways to facilitate physicians' participation in early intervention activities. Although there are no known solutions to barrier-related problems, particularly financial compensation for physicians' time, it is important that professionals be aware of these barriers as they try to collaborate with physicians and be sensitive to the day-to-day demands of their profession.

**Limitations of the Study**

An important methodological limitation to the present study is the small sample size. There was only 5% representation of family practice physicians and 25% representation of pediatricians in the present study. Because of the small sample size, generalizability of the findings to physicians in the East Tennessee District and other parts of the state cannot be made with any degree of certainty.
Second, a bias in the sample may have been present because physicians who agreed to participate probably were more interested in early intervention and services related to children with special needs than physicians who declined to participate. Therefore, it may be that physicians who are difficult to contact and have little interest in research may not review information that is sent to them, whether it is presented in the manner that was done here or in some other manner such as audiotapes or personal contact.

Third, general practice physicians were not included in the subject sample. Some families that reside in rural areas of East Tennessee rely on general practice physicians for their children's health services. Although the original intent was to include general practice physicians, they were not included in the study because their response rate was very low; only 1 agreed to participate out of a total of approximately 63 who were contacted.

Also, there was a very low response rate of family practice physicians. A possible reason for family practice physicians' low response rate could be that the cover letter was endorsed by the American Academy of Pediatrics, not by their own specialty organization.
Finally, the treatment variable consisted of a package of information that combined written and videotape methods of organizing and presenting information. Consequently, it was not possible to assess the individual contributions that were made by the written or videotape portions of the package to the differences in the knowledge scores or the number of new referrals to TEIS. However, physicians' evaluation of the information package provided some information about the usefulness of the written pamphlet and the videotape (see Appendix G). A majority of physicians indicated that the information presented in the videotape was not only useful but was also clearly presented. Similar evaluation were statements made about the written pamphlet.

**Directions for Future Research**

Because there is so little research conducted in the field of early intervention that has examined the effects of commonly used methods of informing physicians about their roles and responsibilities toward serving children with special needs, the findings of the present study constitute a significant contribution to the field. They indicate clearly that the information package was quite
successful, not only because it enhanced physicians' knowledge about the law and services for children with special needs but also because it had a dramatic impact on the number of new referrals that physicians made to TEIS. The findings are very important, therefore, despite the above limitations and should serve as the impetus for several different lines of future research.

Although videotapes are commonly used to inform physicians about services related to children with special needs, there are other methods described in the literature that also seem to be effective. For example, mailings of brochures and newsletters, personal contact with a physician, workshops, and seminars are frequently mentioned (Berman & Melner, 1992). Like videotapes, none of these methods has been evaluated experimentally for its effect on physicians' knowledge and practices. Before it is possible to recommend any single method or combination of methods to state Part H coordinators, it will be necessary to conduct a more comprehensive comparative study in which some or all of the methods are evaluated individually.

Considering the fact that both family practice and general practice physicians see children birth through 2 years in their daily practice, it seems important to
include them in future studies by using more effective strategies for encouraging their participation. One strategy that is commonly used in addition to being reported to be an effective means of facilitating physician participation in nonmedical activities (e.g., early intervention activities) is personal contact by a medical person (Berman & Melner, 1992; Kolatch, 1991). Personal contact by a nurse practitioner could be one possible way to encourage family practice and general practice physicians to participate in future research.

The state Part H program is comprised of nine developmental districts. However, only physicians who practiced in the East Tennessee district were included in the study. Although there is no reason to believe that physicians in East Tennessee differ in some way from physicians who practice in other districts in this state or in other states, it would still be important to investigate this empirically.

Research conducted in the field of pharmaceutical marketing and home health care suggests that physicians who receive information personally from someone with a medical background respond differently from physicians who receive information from someone with a nonmedical background (Beltramini & Sirsi, 1992; Friis et
(al., 1991; Kolatch, 1991). Many physicians are more receptive to information that is presented by medical personnel, especially a fellow physician. Physicians also tend to change their practices when relevant information comes from a person in the medical field compared to when it does not. It therefore would be important to find out if a similar method of presenting information affects physicians who serve young children with special needs. The videotape that was used in the present study was narrated by a clinical nurse practitioner, for example. Perhaps her medical background had some effect on physicians who viewed the tape, or maybe the treatment effect would have been more (or less) powerful if the narrator had been a pediatrician (or special educator). Thus the potential contribution of both personal contact and a person's background characteristics should be examined in future research.

The research design did not permit an experimental analysis of the effects of the information package on other practices, such as the use of screening and assessment methods to identify children with special needs. Such an analysis would require a longer delay between the time that the package is disseminated and evaluation of physicians' responses. An examination of
these practices would help determine the long-term effects of the information package on physicians' practices.

In summary, the present study provided empirical information about the combined effectiveness of written information and videotape materials. However, continued attention needs to be devoted to further research in this area to be able to make recommendations to professionals in the field of early intervention, especially personnel in State Part H programs, regarding effective ways of informing physicians about the law and its requirements.
LIST OF REFERENCES
REFERENCES


APPENDIXES
APPENDIX A

Subsidies
June 22, 1994

Dear Fellow Physician:

I am writing this letter to inform you about the proposed study that Ms. Fathima Humera, who is a doctoral student in the Department of Child and Family Studies, The University of Tennessee, Knoxville intends to conduct. Her study will evaluate some of the methods that have commonly been used to inform physicians about Public Law 99-457, their roles and responsibilities in implementing the law, the importance of early intervention, and Tennessee’s Early Intervention System (TEIS).

Many of you are probably aware of how difficult it is for us to keep abreast of the latest developments in the field of early intervention, primarily because of the many demands on our time. This is what her proposed study intends to address, namely, to identify methods that will best accommodate our time constraints and also provide useful information about effectively serving children with special needs.

I therefore want to encourage you to take the time to participate in this important study. You will find enclosed a letter written by Ms. Humera that explains in detail how you can contribute to the completion of her study.

Thank you,

Sincerely,

Quentin A. Humberd, M.D., F.A.A.P.
Chairman, Committee on Disabilities
July 15, 1994

Dear Potential Participants,

I am a doctoral student in the Department of Child and Family Studies, The University of Tennessee, Knoxville. I am also a Service Coordinator for Tennessee's Early Intervention System (TEIS), a project that provides services to young children with developmental disabilities. I have completed writing a proposal to carry out a study that will evaluate some of the methods that have commonly been used to inform physicians about Public Law 99-457, their roles and responsibilities in implementing the law, the importance of early intervention, and TEIS.

Recent advancements in medical care have led to increased survival rates of infants and toddlers who are at risk for having developmental disabilities. Usually, these disabilities can be detected by a physician who is often the first person to recognize the potential problem. However, many physicians in East Tennessee do not refer children with developmental disabilities to TEIS when they see a need for early intervention services. In addition, many physicians are not fully informed about the roles and responsibilities that are required of them under the Individuals with Disabilities Education Act, PL 101-476 (typically referred to as PL 99-457). The reason(s) for this is (are) not clear, but may be related to the methods by which physicians are typically informed about new developments in the field of early intervention.

Physicians who are willing to participate in the study will receive a copy of a Resource Directory published by TEIS. This directory contains very useful information about various community resources that are available for children with special needs in the East Tennessee area. Participants also will receive information about various screening instruments that can be used to assess and identify young children with special needs. A summary of findings will be sent to participants once the study is completed. Finally, physicians will be asked to keep copies of materials they receive that contain information about PL 99-457, the roles and responsibilities of physicians, the importance of early intervention, and TEIS.
If you agree to participate in the study you will be asked to review information about PL 99-457, the roles and responsibilities of physicians as related to the law, the importance of early intervention, and TEIS by participating in one of the following modes of information delivery: (a) written materials; (b) a video-tape; (c) an audio-tape; or (c) meet with a pediatric nurse. Some physicians will complete only a questionnaire.

Three weeks will be allotted to review the materials after which the Physicians' Knowledge, Practice, and Attitude Questionnaire will be mailed to you. You will have one week to complete and return this questionnaire. The estimated time to review the materials is about 30 to 45 minutes and to complete the questionnaire is about 30 minutes.

Please read the Informed Consent Form and then sign it, to indicate that you understand the purpose of the study and are willing to participate in it. Return the signed consent form in the enclosed envelope to TEIS by August 5, 1994. In the next couple of weeks you will be receiving materials to review. If you have questions about the project please feel free to contact me at (615) 974-2328.

Thank you.

Sincerely,

Fatima Humera
Service Coordinator, TEIS
INFORMED CONSENT FORM

I understand that the purpose of the study is to evaluate some effects of four methods of informing physicians about: (a) Public Law 99-457, (b) the roles and responsibilities of physicians in implementing the law, (c) the importance of early intervention, and (d) Tennessee's Early Intervention System (TEIS). These four methods include: mailings of written information; a personal meeting with a pediatric nurse; viewing a videotape; and listening to an audio-tape. I also understand that I will be the recipient of only one of these methods or possibly serve as a control subject and receive no material at all.

I understand that I should not discuss the materials received with other colleagues until the study is completed.

I understand that the approximate time it will take for me to review materials and complete a questionnaire in the study is 30 minutes or 60 minutes, depending on my assignment to a control or treatment group.

I have been informed that there are no anticipated risks to me if I decide to participate in the study because I will review only materials that may enhance my ability to serve young children with disabilities and their families.

I understand that the information I provide on the questionnaire will be confidential, kept in a locked cabinet in the TEIS office, and used only for research purposes such as publications in journals, presentations at workshops and conferences, and discussions among TEIS staff. I also understand that my name will not be used and that results will be reported only in group form. The master list of participants' names will be seen only by the Project Director and Co-Director and will be destroyed when the study is completed.

I understand that my participation is voluntary and that I may choose to withdraw from the study at any time without penalty or obligation to explain the reason(s) for doing so.

I am also aware that when I finish reviewing the materials and complete the questionnaire, I may retain all of the information materials I receive. I also understand that I will receive a copy of the TEIS Resource Directory, a written description of assessment instruments that can be used to assess...
and identify young children with developmental delays and, eventually receive a summary of the research findings.
I understand that any questions I may have about the research project can be addressed to Fahima Humera or Dr. Vey M. Nordquist at Tennessee's Early Intervention System, 402 Jessie Harris Building, The University of Tennessee, Knoxville. Phone (615) 974-2558.

Name (Please Print): __________________________

Signature: __________________________________

Date: _____________________________________
ABSTRACT. Public Law 99-457 amends the Education of the Handicapped Act to include services for children from birth through 5 years. Inasmuch as detection and referral of children with developmental delays continues to reside largely with pediatricians and other health care professionals, developmental screening, using standardized tests, is increasingly important. To help practitioners select from the array of instruments 18 different screening tests were administered by a pediatrician and used by a panel of pediatricians and a special educator. While the panel found few tests fit within the same minimums of psychometric practice, several tests approached standards for experimental and psychometric work. These included the Bayley Developmental Inventory Screening Test, Infant Motor Screening System, Developmental Indicators for Assessment of Learning Readiness, Schedules Children for Related Early Educational Needs, and the Developmental Profile II. Questionnaire 1000 for 3-5-year-old children, screening tests.

Public Law 99-457, enacted in 1986, amends the Education of the Handicapped Act to include services for 0 to 3-year-old children with developmental delays. At present, lead agencies in every state are planning how the law should be implemented. Determining child-find and case management methods, identifying personnel training needs, refining federal definitions of high-risk, at-risk, and developmental delay, and selecting tests for determining and monitoring children's development.

CONSUMER REPORTS
A Comparative Review of Developmental Screening Tests
Frances P. Glascott, PhD; Elaine J. Martin, MD; and
Steven Humphrey, MD
From the Child Development Center, Department of Pediatrics, Vanderbilt University, Nashville, Tennessee.
METHOD

A team of 64 psychologists and one special education teacher rated 14 different measures using a detailed evaluation instrument developed for the study. The instrument called test procedures and standards for educational and psychological tests and is described below. Each test was administered at least once by one of the psychologists to better consider the measures in relation to the outcomes of office practice. Tests selected were used in one of several ways on developmental domains and/or were found in manuals by leading test publishers. All tests (except for two which could not be obtained but which have been extensively reviewed elsewhere) involving the following criteria were reviewed. The tests (1) measured multiple developmental domains and (2) were scored on children ages 0 to 3 and/or 3 to 6 years (because PI 69-67 also extends public school services to disabled preschoolers).

Tests were rated on the following dimensions: (1) developmental domains evaluated; (2) measurement methods, including direct child behavior and observations during a physical examination or in other indirect contexts, and/or interview with parents, (3) test standardization, including (a) reliability—measured results if approximately 10% of the sample population were assessed and correlations exceed .3 for internal consistency, interrater and test-retest (preferably across a 1-month interval); (b) validity measured highly if items required realistic behavior, were clearly related to domains measured; were derived from a broad range of research or observations (e.g., intelligence tests, language, nonverbal intelligence tests, etc.) if subset and total test scores highly correlated with diagnostic tests (* and above); and if the population on which the test was standardized was stratified carefully (e.g., by geographic and residential areas, parental education, etc.) and included approximately 100 children per age range; (e) specificity the proportion of children correctly identified as delayed—rated as excellent if approached 80%, particularly as noted in research other than the test's author(s); and (6) sensitivity the proportion of nondelayed children identified correctly—rated highly if it approached 80%, (4) types of scores produced, such as age equivalents, pass-fail, etc.; (5) examinee qualifications and training needs; (6) miscellaneous features such as whether items were normed, the protocol could be used, users were directed to specific types of referrals on the basis of test performance, e.g., in a speech pathologist rather than to a physical therapist, and examiner were told how to explain results to parents trusted likely to diagnose other than developmental delay were reviewed. Also noted were the nature and quality of test manual, ease of locating materials including item directions and subsequent subjects, simplicity of the protocol, duration of testing, ease, et al. (7) ease of use for preschool practice, particularly whether parent training was a system (establishing means to give a small portion of the test to determine whether more scoring is needed, and (8) descriptiveness and age data, because the data needed in brief, and score the test and the ages of children for whom the test was designed.

Each test is described and evaluated below. The accompanying figure allows readers to compare instruments on various features. The reviews keep with tests most highly regarded by the panel.

RESULTS AND DISCUSSION

Newborn J, Stock J, West L, Goldberg J, Swinski J, Battelle Developmental Inventory Screening Test. 1984: Allen TX DLM—Teaching Resources. $29.95 $29.95 with materials.

The Battelle screens children 0 to 5 years of age via seven subtests: Verbal-Social, Adaptive, Gross Motor, Fine Motor, receptive Language, expressive Language, and Cognitive. Items use a combination of interview, direct observation, and assessment. The use of test and retesting keeps testing and scoring time around 30 minutes. Each subtest produces age equivalents and pass/fail scores. Alternative cutoff allow users to determine the percentage of children detected (e.g., 1.5%, 5%). Standardization is excellent. Although psychometricians may administer the test, it takes several hours to score. Well-developed interviewing and valid management skills are required. Directions are clearly written and easy to follow. Although the manual need further editing and more aid for changing subtests. Make expensive and materials are not purchased from the publisher, comparable materials are hard to find and expensive. Subtests are helpful specify the types of referrals needed, e.g., psychologist, speech-language pathologist, physical therapist, and there are follow-up guidelines for explaining test results to parents. In a prompt re- search in recent research, the scores were re- lated. However, over referrals appear likely if the test itself is used. Perhaps use language for routine medical office screening, the precise nature of the instruments is hard enough that further research will address whether certain subtests in Expressive Language and Receptive Language could be used as a pediatrics office preschool test.
have a limited sample of skills needed for school success, particularly expressive language and academic skills.1-3

Slosar R. Slosar Intelligence Test. 1986; Amsterdam, NY: Slosar Educational Publications. $45.00.

Designed as an individual intelligence screen, the Slosar measures language skills, verbal problem solving, and general information from birth through adulthood. There are no subtests and a single deviation IQ score is produced. Items use direct elicitation and parent interview and the test can be completed and scored in approximately 60 minutes. Standardization is somewhat limited in terms of standardization and reliability, but numerous validity studies are reported in the manual. Use of the test for children younger than 6 years of age is cautioned. The manual is concise, provides clear directions, and carefully describes the purpose and limitations of IQ scores. However, there is little guidance about what to make referrals and the single IQ score may lead examiners into the temptation of diagnosis. While the Slosar's questionable validity for young children makes it less than useful for pediatric practice, it may be helpful for generating hypotheses about developmental lag in young children. 


Designed to screen 3- to 5-year-old children for school readiness, the Dababnon measures motor, academic, and language skills to produce a single age equivalent score. Items use observation and elicitation and the test takes approximately 20 minutes to administer and score. The test requires no special equipment, a speech-language pathologist is not required to administer the test. The Dababnon is well written, with excellent scoring materials, clear examiner notes, and appealing tasks. Standardization is somewhat limited. One of the Dababnon's most attractive features is a printed "Readiness Report" on which examiners can check appropriate boxes to provide parents an explanation of test results and suggestions for remedial activities. Unfortunately, the test is administered by a majority of items tapping expressive language, reading, and academic skills, which suggests that it is not likely to identify many children with mild handicapping conditions.10-13 Lack of a prescreening subtest further reduces the Dababnon's usefulness for pediatric practice. 

Frankenburg W, Dodd J. Denver Developmental Screening Test-Revised (DDST), 1978; Denver, CO: DCM, Inc. $37.00.

The DDST screens children 0 weeks to 6 years of age in the areas of language, personal-social, fine-motor-adoptive, and gross motor skills. Pass/fail questions are produced for each of the four subscales and for the total test as a whole. Items rely on direct elicitation, observation, and parent interview and take approximately 20 to 30 minutes to administer and score. Standardization is limited to children in the Denver area and interrater and test-retest reliability are not thoroughly assessed. Validity studies conducted by researchers other than the authors are not included in the manual. Because the DDST is one of the first and currently most researched screening instruments, both studies exist in abundance in the pediatric literature. Many suggest that the DDST fails to detect an unacceptably large number of children with handicapping conditions. A search of items sampling expressive language and academic skills probably accounts for this lack of sensitivity. Examiner directions and scoring guidelines are clearly written, although it is difficult to locate these in the lengthy manual. Reproducibility of the procedure in numerous pediatric tests increases the probability of mischaracterized administrations and interpretations. Adequate guidance is given for explaining results to parents but examiners are not aided in selecting among referral options. The test is useful for pediatric practice in that the 15 items may be reduced to 28 for more rapid prescreening. The DDST is one of the few measures that evaluates comprehensively. 

Frankenburg W, van Doornink WJ, Linzell T. Denver Preschool Developmental Questionnaire (DPQ), 1976; Denver, CO: DCM, Inc. $32.00.

Based on items from the DDST, the DPQ uses a 100% interview format to provide quick prescreening for children 0 weeks to 5 years. Items are read and scored by parents and probably take less than 10 minutes to complete, assuming normal literacy. Next to each item is a code indicating which developmental domain is being assessed. This enables examiners to determine easily which areas of development need further screening. The DPQ consists of a single pass/fail "yes" score. Fail- ing scores prompt administration of the full DDST. Clear guidelines are given for explaining test results. Diagnosis of specific disabilities is appropriately reserved. The standardization sample is poorly described and sensitivity specificity data

The Lexington screens children 0 to 6 years in the areas of motor, personal-social, cognitive, perceptual, academic, language, and articulation skills. Multiple measurement methods are used and the test takes 30 minutes to administer and score. Unfortunately, only a single age equivalent score is provided. The Lexington can be administered individually or in small groups. Standardization is limited. The manual is color-coded by subtest, which makes it easy to use. Examiner notes and scoring instructions are occasionally lacking. However, the latter is improved by partial-credit scoring. Directions for interpreting behavior observations are insufficient. Numerous materials are needed for testing but a list is not provided. Parents concerns are elicited during testing but are not used in scoring or interpretation. Guidelines for explaining results to parents are insufficient, although children's strengths and weaknesses are charted for ease of interpretation and referral. The absence of a normative option and the minimal standardization limits the applicability for pediatric practice of this otherwise promising and comprehensive screening test.


Designed as a brief measure of skills needed for school success and to assess the effects of early intervention, the Cooperative Preschool Inventory screens children between 3 and 8 years of age. The test has an appealing mixture of direct and indirect, verbal and motor tasks, all of which enhance preschool and readiness skills. A simple percentile score is produced and the test takes approximately 15 minutes to administer and score. Standardized exclusively on children of low socioeconomic status, reliability and validity remain limited. The examiner's guide is well written and directions are excellent but correspond poorly with the sequence of test items. Stimuli are not purchased.


The CIP screens children between the ages of 3 and 6 in motor, receptive, and expressive skills. Multiple measurement methods are used to produce pass/fail scores for each subtest. The test takes approximately 60 minutes to administer. Standardization is limited. Although the CIP is designed to refer 20% of children for a more detailed evaluation and/or individualized planning, while this rate seems to correspond to national norms and groups. Standardized, it takes approximately 60 minutes to administer. The examiner notes and scoring instructions are occasionally lacking. However, the latter is improved by partial-credit scoring. Directions for interpreting behavior observations are insufficient. Numerous materials are needed for testing but a list is not provided. Parents concerns are elicited during testing but are not used in scoring or interpretation. Guidelines for explaining results to parents are insufficient, although children's strengths and weaknesses are charted for ease of interpretation and referral. The absence of a normative option and the minimal standardization limits the applicability for pediatric practice of this otherwise promising and comprehensive screening test.


The EDI screens children who are between the ages of 3 and 6. It measures the EDI uses 16 tasks, 15 of which are standard tasks, and an additional 15 tasks that are unique to the EDI. The examiner's guide is well written and directions are excellent but correspond poorly with the sequence of test items. Stimuli are not purchased.
The test is administered, but the manual is poorly organized and seems devoted to defending against possible validity threats. With overly detailed and poorly drawn pictures, unrealistic word-picture associations, and lack of norms for examinee performance on visual acuity, accurate screening seems unlikely.

The ANSER is a series of forms designed to elicit and organize empirical observations about children between 3 and 11 years of age supplemented with data including ratings by the author.}

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**PYRAMID, FEER** and assist in the design of appropriate services. As such, it functions much like a screening test by attempting to identify delayed children and applies appropriate referrals. However, the ANSER's absence of standardization and inability to produce any scores that may be meaningful in isolation is a review of screening tests. Perhaps most important for those with limited interviewing skills or difficulty organizing the test, the ANSER seems complicated and time consuming for the average practitioner to use. Although items are well written, their scoring and interpretation are not well explained. The absence of validity studies, the original conceptualization of development, and the depth of referral guidance further limit the applicability of the measure.


**Designed to aid teachers in all aspects of curriculum planning, the Riley actually assesses only a few aspects of fine motor and visual perceptual skills in children 2 to 6 years of age. Items measure one of the performance tasks which take 10 to 15 minutes to administer and score. From these, the examiner is prompted to speculate, with much evidence, to a child's self-concept, organization, behavior, and social readiness. Any refusal results in referral. Standardization is only marginally disturbed. The test is administered and interpreted by a psychologist or specially trained teacher. Early administrators of the Riley had high English and Spanish editions, individual differences in combinations, motor tasks, and menus are not emphasized. Rule any additional concerns about the validity of the measure.

**SUMMARY**

Early detection of young delayed children is largely with pediatrics and other federal social workers. Standardized instruments with measures of identification are recommended for identification and determination of program eligibility. A variety of standardized instruments have been reviewed above. Several items assessed recommended standards for emotional and physical development, and were used bimely by the PACE. Nevertheless, there is a need for improvement in emerging measures to assess the importance of pediatric procedures.
Efficacy of Prior-Review Programs

Corporate efforts to control health-care costs by requiring evaluations prior to planned hospitalization and surgery haven't been preventing enough to reduce the long-term rate of cost increases, according to a study by the Institute of Medicine.

In the last decade, many corporations have employed the "utilization management" cost containment strategy as a way to control health-care costs for employees. These programs vary widely, but they require second opinions on proposed surgery, preadmission reviews of elective hospitalizations and reviews of treatment during lengths of stay periods. Between 1982 and '86, 87% of today's workers are covered by such plans, up from 45% five years ago.

"Although it probably has reduced the level of expenditures for some preadmission utilization management--like most other cost containment measures--it hasn't appeared to have altered the long-term rate of increase in health-care costs," the Institute of Medicine, an arm of the National Academy of Sciences, concluded after a two-year study. Employers who saw a short-term moderation in benefit expenditures are facing a return to previous levels.

While utilization management frequently reduces hospitalization costs, these savings are often offset by increases in outpatient services and higher administrative costs, according to the report by a panel of health-care experts.

"Utilization management needs to better demonstrate that it reduces the wasteful use of resources, improves the appropriateness of patient care and imposes only reasonable burdens on patients and providers," the panel concluded.

Baron R. Form lever; 1: s rgvce rvere by u the prior-revie wp grams. J our nal. h e Whi t

(continued...
APPENDIX B

Transcript of Videotape
Transcript of the video-tape

I. Overview (with pictures of children in hospital ICU/NICU)

Approximately 20% of the 37 million infants born annually in the United States have prenatal or postnatal conditions that place them at risk for developmental disabilities. Due to the advancement in medical technology, many premature and very low birth weight infants are now surviving. These advancements have increased the number of at risk children who are usually seen by primary care physicians, such as Family Practice, General Practice physicians and Pediatricians. Parents depend on their primary care providers to promptly identify medical or developmental problems and to help them and their child seek the necessary treatment and referral.

II. Information about the law and the importance of early intervention narrated by Reid Tatum

a. Introduction by Reid Tatum

My name is Reid Tatum. I am a clinical nurse specialist in maternal and child health. The objectives of the tape are to:

1. Identify the importance of EI
2. Review Public Law 99-457
3. Describe the roles and responsibilities of physicians as related to PL 99-457.
4. Information about Tennessee's Early Intervention System (TEIS) (highlights of the tape on a chart)

b. Historical background about early intervention

In the past children with disabilities were often placed in institutions shortly after birth. In the 1960's treatment practices began to change primarily due to our knowledge about the effectiveness of early intervention (EI). Children with disabilities are more frequently raised at home and cared for by primary care providers. In the last two decades, research has demonstrated the effectiveness of EI with infants and toddlers with disabilities. Findings have shown that the early years are critical to the child's physical, social, emotional, and cognitive development. (pictures of Lakeshore)

c. Importance of early intervention

This graph shows the number of children remaining in special education programs at age 18 based on the age at which they began
receiving early intervention services. Of 1000 children who began receiving services at birth 261 remained in the special education classes at age 18. In contrast of 1000 children who received no services until at age 2, 297 still needed special education services at age 18. And children who received no early intervention services at all during first 6 years of their life 671 out of 1000 remained in special education through out their school years. (Graphs to illustrate the effectiveness of early intervention)

d. **Cost effectiveness of early intervention**
   According to a study done in 1980 the cost to educate a child birth through 18 years in regular class room was about $14,000. In contrast 18 years of special education was about $53,000. By reducing the time spent in special education early intervention can save taxpayers between 9 to 10 thousand dollars per child. Therefore, one can see that early intervention is a very cost effective approach. (Graphs to illustrate the cost-effectiveness)

Our knowledge of the effectiveness of EI together with efforts by parent organizations and certain court rulings resulted in more young children with disabilities receiving EI services. In 1986 an amendment to the Education of All Handicapped Children Act was passed. Which is commonly referred to as PL 99-457 that included early intervention services for children birth through two years. (pictures of children receiving services in preschool)

e. **Individuals with Disabilities Education Act**
   In 1990 this law was further amended and called the Individuals with Disabilities Education Act. Part H of the law emphasized responsibilities of all primary referral sources, including physicians, to refer children at risk for or with developmental disabilities to early intervention programs within two working days. This was done to ensure that these children receive prompt services. (excerpt from the law)

f. **Components of the law pertaining to physicians**
   The law has 14 components to it which all participating states are required to implement. The American Academy of Pediatrics (AAP) identified three components of this law which have direct implications to physicians. They are:
1. Child Find: This is the process by which children with disabilities are identified through developmental screening and brought into the EI system.

2. Child Assessment and Referral: Child assessment comprises of a comprehensive developmental evaluation to identify specific delays in certain areas of a child’s development. Referral is the process of informing EI programs about the child with disabilities and requesting the program to provide or access EI services for the child.

3. Development of an Individualized Family Service Plan: This involves a multidisciplinary team that includes both service providers and family members who identifies specific needs of the child in order to provide the needed services.

4. Roles and responsibilities of the law
   The academy also suggested certain roles and responsibilities that physicians need to be aware of pertaining to their implementation of the law. They are:
   
   1. Know the criteria for eligibility of children birth through two; Each state has its own eligibility criteria for determining whether or not a child can receive EI services through Part H.
   2. Employ strategies to identify children with disabilities: Regularly employ strategies for observation and identification of children who have disabilities, developmental delays, or who may be at-risk for delays. Common assessment strategies include, use of developmental screening instruments, comprehensive development assessment, and clinical examinations.
   3. Participate in an IFSP: Be able to present information related to the child’s medical condition and functional level to family and other service providers during an IFSP. The information about the impact of the child’s medical condition on the overall development and its implication for program planning can be very helpful to EI providers.
   4. Awareness of community resources: Be aware of community resources available for infants and toddlers who may be eligible for these EI services. Maintain an ongoing relationship with EI programs who can provide information about what new services are available for children with special needs.
   5. Refer children with disabilities or children who are suspected to be at-risk for developmental delays to EI programs: Use procedures for referring infants and toddlers with developmental delays to Part H programs and other early intervention programs within the community.
III. Physician Interview

IV. Tennessee's Early Intervention System

a. Background history of TEIS
In 1988 Tennessee decided to participate in the implementation of the law. The statewide program responsible for implementing the law is referred to as Tennessee's Early Intervention System (TEIS). The state is divided into nine Portals of Entry (POE) that implement the law. We are located here in the East Tennessee District which serves 16 counties. TEIS program provides services to all families with children birth through two having special needs irrespective of annual income of the family. (map of TEIS used)

b. Eligibility criteria for services through TEIS
In order to receive services through TEIS a child should meet the states definition of developmental delay;
1. a child having 25% delay in two or 40% delay in one of the following areas of development; cognitive, physical, speech/language, social-emotional, self-help.
2. a child has a diagnosed medical condition. for example: Down's Syndrome, or
3. a clinical judgment by a physician that a child is at risk for developmental delays.

c. Services for eligible families through TEIS
Some of the services that eligible families receive through TEIS are.
1. Assessment:
   when a child is suspected to have developmental delays, a developmental screening is completed by a TEIS Service Coordinator to determine whether a child has delays. If delays are not seen at the present time but the child is at risk for delays then the overall development of the child is monitored on a regular basis.
2. Access to services:
   TEIS provides families with information about available community resources that they can access for their child. A Resource Directory is also available through TEIS that gives information about community resources.
3. Coordination of services:
   A child may need more than one EI service and TEIS helps fill the gaps in services by coordinating the necessary services.
4. Financial support:
TEIS also helps families financially by paying for certain EI services for example, physical therapy, occupational therapy, speech therapy. When no other financial resources are available to pay for the service, TEIS also helps families with insurance co-payments. TEIS helps families access financial resources from other agencies, for e.g., TENNCARE, SSI.

5. Transportation:
TEIS reimburses families for transporting their child to receive EI services. Sometimes it makes arrangements for transportation with agencies to transport a child to receive EI services. This has helped several families who live in the rural areas and find it difficult to transport their child.

6. Parent support:
Parent to parent support is available to families by meeting a TEIS staff who is also a parent of a child with special needs. Services through TEIS begin once a referral has been made.

d. **TEIS process (shot of TEIS/family)**
Services through TEIS begin once a referral has been made. The Service Coordinator assigned to the family makes the initial contact with the family to schedule a home visit (HV). During the HV an intake, a developmental screening on the child, and a family needs assessment is completed. The service coordinator gathers information about the child's diagnosis, medical history, previous assessments, and family's financial resources.

Before any kind of service coordination begins, the child's eligibility has to be determined. The Service Coordinator determines the eligibility of the child by completing a developmental screening.

During the initial visit the family needs assessment is also completed. This is done usually in form of an interview to help the Service Coordinator better understand the family's needs and concerns.

After the developmental screening is completed and areas identified in which the child is showing significant delays, the service coordinator helps the family accesses services in these areas. The necessary services are coordinated for the child and family. For example, if the child is found to have delays in speech and language, the service coordinator helps find a program that would be able to provide therapy in this area.
Typically after services have been coordinated for the child an Individualized Family Service Plan (IFSP) is written. It comprises of writing down a plan for the child to receive services in order to promote his/her development. According to the law, this plan is to be completed within 45 days from the day a referral is made. It is a group effort that includes the family and all professionals providing services to the child. During this meeting the family’s needs, concerns, priorities, and child’s immediate and long range needs are discussed and a plan of action is written. The plan is reviewed every six months to make sure that the goals discussed are followed through.

IV. Family interview about their personal experience accessing services through TEIS

V. Information about ways by which TEIS can help physicians. (chart highlighting the points)

TEIS can help physicians serve children with special needs in several different ways.
1. TEIS Service Coordinator can complete a developmental screenings on a physician’s recommendation when a child is suspected to be at-risk for developmental delays.
2. TEIS can provide physicians with information about various community resources available for children with disabilities. For example, information about various EI programs available in different counties, and financial resources available to families. Physicians can share this information with families seeking for help with resources.
3. TEIS can also conduct workshops and seminars for groups of physicians who are interested in gaining more information about serving children with special needs. For example, workshops on care coordination of children with special needs, screening and assessing children with special needs, development of an IFSP.

VI. Conclusion with information about TEIS contact

Early intervention is clearly a critical factor in providing children with special needs the very best opportunity to achieve their greatest potential.

Tennessee’s Early Intervention System is dedicated to reaching all of Tennessee’s children, birth through two years of age, who may have
disabilities. An important element in reaching that goal is TEIS's role as a resource and guide for professionals who work with these special children.

Primary care physicians are usually the first to have the opportunity to identify children who may have disabilities or who may be at risk for developmental delays.

For primary care physicians to be able to serve children with special needs better it is important that they be aware of the following components of PL 99-457:

- Child Find
- Child assessment and evaluation
- Participation in the development of an Individualized Family Service Plan

It is also important that they understand their roles and responsibilities in towards implementing the law which are:

- Know the states eligibility criteria
- Make appropriate referrals to TEIS
- Perform regular developmental screenings
- Participate in the development of an Individualized Family Service Plan

TEIS is here to help make things easier for both families and professionals, including physicians, working with special needs children.

For more information, call 974-2538 or Toll-free- 1-800-1757
APPENDIX C

Transcript of Pamphlet
Primary care physicians play an important role in the comprehensive developmental needs of infants and toddlers with disabilities. Health care professionals are often the first people outside of the child’s family to suspect or identify a developmental delay or risk for delay and to refer families for evaluation and services. However, a majority of physicians are not always aware of the full array of early intervention services available in the community or state and, therefore, may not be able to inform families of the full range of service options. This is the purpose of the present document to provide physicians with information that they may find useful in their efforts to help families of young children with disabilities.

This document is divided into four parts. The first part describes the importance of early identification and treatment of developmental delays. Next, information about the Part H component of the Individuals with Disabilities Education Act (IDEA), PL 102-119 (typically referred to as PL 99–457), which provides comprehensive, family centered, community based services for young children with disabilities, is provided. The third part of the document explains certain roles and responsibilities of physicians that were identified by the American Academy of Pediatrics. The final part describes Tennessee’s Early Intervention System, an agency that is responsible for implementation of the law.

We hope the enclosed information is useful to you. We welcome your comments and suggestions. Please feel free to contact us at:

Tennessee’s Early Intervention System
1215 W Cumberland Avenue
Jessie Harris Building, Rm 402
Knoxville, TN 37996

TEL (615) 974-2858
Approximately 20% of the 3.7 million infants born annually in the United States have prenatal or postnatal conditions that place them at risk for developmental disabilities. Due to advancements in medical technology, many premature and very low birth weight infants are now surviving. These advancements have increased the number of at risk children who are usually seen by primary care physicians, such as Family Practice, General Practice and Pediatricians. Parents depend on their primary care providers to promptly identify medical or developmental problems and make appropriate referrals for treatment.

In the past, children with disabilities were often placed in institutions shortly after birth. During the 1960's, treatment practices began to change as early intervention (EI) strategies became more effective. Today, children with disabilities are usually raised at home and are often cared for by primary care physicians and nurses. During the last two decades, research demonstrated repeatedly that EI with infants and toddlers with disabilities is critical to the child's physical, social, emotional, and cognitive development. According to one study (Fig. 1) the number of children who remained in special education programs at age 18 was examined, based on the age at which they started receiving EI services. Of 1000 children who began receiving services at birth, only 261 remained in special education classes. In contrast, 297children needed special education services when EI services began at the age of 2. Of the children who never received early intervention services, 670 still remained in special education classes at the age of 18. The implication of this finding is that the provision of EI services during the early years of a child's life substantially decreases the likelihood that the child will need Special Education services later in his/her life.
another recent study (Fig. 2), it was found that the cost of educating a child birth through 18 years in regular classroom settings was about $14,000 compared to $55,000 to educate a similar child in special education classroom settings. Thus, by reducing the time spent in special education settings, early intervention can save taxpayers thousands of dollars.

INDIVIDUALS WITH DISABILITIES EDUCATION ACT (IDEA)

Knowledge about the effects of EI together with efforts made by parent organizations as well as legal and legislative actions, have resulted in more young children with disabilities receiving EI services. In 1986 an amendment to the 1975 Education of All Handicapped Children Act was passed. This new legislation was referred to as PL 99-457 and included provisions for early intervention services for children birth through two years. In 1990 this law was further amended and called the Individuals with Disabilities Education Act (IDEA).

The Part H section of this law identified for the first time the responsibility of all primary referral sources, including physicians, to refer children at risk for or with developmental disabilities to early intervention programs within two working days. This part of the law was enacted to ensure that children with disabilities would receive prompt EI services.

The law, as it is presently constructed, includes 14 components which all participating states are required to implement. The American Academy of Pediatrics (AAP) recently noted that three of these components have direct implications for physicians. They are:

1. Child Find
This is the process by which children with disabilities are identified primarily through developmental screenings.

2. Child Assessment and Referral
Child assessment includes a comprehensive developmental evaluation for the purpose of identifying specific delays in the different areas of a child's development. Referral is the process of informing EI programs about a child with disabilities and requesting the program to provide or recommend EI services.

3. Development of an Individualized Family Service Plan (IFSP)
This is a process that results in the provision of needed services. It involves a multidisciplinary team that include both service providers and family members who identify specific needs of the child and family.

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<thead>
<tr>
<th>COMPONENTS OF PL 99-457</th>
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<tbody>
<tr>
<td>1. Child Find</td>
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<tr>
<td>2. Child Assessment &amp; Referral</td>
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<tr>
<td>3. Development of IFSP</td>
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ROLES AND RESPONSIBILITIES OF PHYSICIANS

The academy also suggested certain roles and responsibilities that physicians need to keep in mind as they try to fulfill the spirit of the law. They are:

1. Know the criteria for eligibility of children birth through two
   Each state has its own eligibility criteria for determining whether or not a child can receive EI services through Part H. Physicians should be aware of their respective states eligibility criteria.

2. Employ strategies to identify children with disabilities
   Physicians should regularly employ strategies for observation and identification of children who have disabilities, developmental delays, or who may be at risk for delays. Some of the common strategies that are used to identify children with or at risk for developmental delays are developmental screenings, comprehensive developmental assessments, and clinical examinations.

3. Participate in the development of an IFSP
   Physicians should present information related to a child's medical condition and functional level to family members and other service providers during an IFSP. Information about the impact of a child's medical condition on overall development and implications for program planning can be very helpful to the family and EI providers.

4. Be aware of community resources
   Physicians should be aware of community resources that are available for eligible infants and toddlers and maintain ongoing relationships with EI personnel who can provide information about the availability of new services.

5. Make referrals of children with disabilities or at risk for developmental delays to EI programs
   Physicians should refer infants and toddlers with developmental delays to Part H programs and other early intervention programs within the community as soon as delays are suspected or identified, no later than two working days.
TENNESSEE'S EARLY INTERVENTION SYSTEM (TEIS)

In 1986 Tennessee decided to participate in the implementation of PL 99-457. As a result, a statewide program was developed that is called Tennessee's Early Intervention System (TEIS). TEIS consists of nine Portals of Entry (POE) that are located in different areas of the state called "developmental districts". The East Tennessee District includes 16 counties and is located at The University of Tennessee, Knoxville. TEIS provides services to all families with children birth through two with special needs, regardless of annual family income.

In order to receive services through TEIS, a child must meet the state's definition of developmental delay. A child must:
• have a 25% delay in two or 40% delay in one of the following domains of development: cognitive, physical, speech, language, social-emotional, or self-help;
• be diagnosed with a medical condition, for example, Down's Syndrome, Spina bifida;
• be certified eligible by a physician.

Services to families through TEIS

Some of the services that eligible children and their families receive through TEIS are:

1. Developmental Screenings
   Developmental screenings are conducted by a TEIS service coordinator to determine whether a child has delays. If delays are not present but the child is at risk for delays, then the overall development of the child is monitored on a regular basis.

2. Accessing EI Services
   TEIS helps families access EI services for their disabled child. TEIS can provide families with information about community resources through direct contact as well as through a Resource Directory that contains information about specific EI providers.

SERVICES AVAILABLE TO FAMILIES THROUGH TEIS

1. Developmental screenings
2. Accessing EI services
3. Service Coordination
4. Financial support
5. Transportation
6. Parent-to-parent support
3. Service coordination

TEIS Service Coordinators serve as a single point of contact as they help families gain access to the necessary EI services for their child with disabilities. Service Coordinators also facilitate the timely delivery of available services to benefit the development of the child.

4. Financial Support

TEIS will pay for certain EI services, for example, physical therapy, occupational therapy, and speech therapy, when no other financial resources are available. TEIS also helps families meet insurance co-payment and access financial resources from other agencies, for example, TENNCARE and SSL.

5. Transportation

TEIS reimburses families for transporting their child to EI providers. Sometimes TEIS makes arrangements for transportation with agencies to transport a child. This type of financial support helps families who live in rural areas and often find it difficult to take their child to urban treatment facilities.

6. Parent-to-parent support

Parent-to-parent support is available to families through a staff member who is also the parent of a child with special needs.

TEIS Process

Intake/Screening/Family Needs Assessment:

A Service Coordinator is assigned to each family and makes the initial contact by scheduling a home visit (HVI). During the HVI an intake, a developmental screening, and a family needs assessment are completed. The Service Coordinator first gathers information about the child's diagnosis, medical history, previous assessments, and the family's financial resources, then determines the eligibility of the child by completing a developmental screening. Finally, a family needs assessment is completed. This is done through a structured interview to help the Service Coordinator better understand the family's needs and concerns.

Coordination of Services

After the developmental screening and families needs assessment are completed and a child displays significant delays, the service coordinator helps the family access appropriate services and provides coordination of services.
Development of an IFSP

Typically, after service needs are identified, an IFSP is written. An IFSP is a plan of action for the child. It helps to ensure that the child receives all the necessary services to promote his/her development. According to the law, this plan should be completed within 45 days from the day a referral is made. The IFSP is a group effort that includes the family and all professionals who are likely to provide services to the child. During an IFSP meeting, the family's needs, concerns, priorities, and child's immediate and long-range needs are discussed and a plan of action is written. The plan is then reviewed every six months to make sure that goals are completed or reviewed when appropriate.

How Can TEIS Help Physicians?

TEIS can help physicians in several important ways to serve children with special needs. Some of the ways are:

1. Complete Developmental Screenings
   A TEIS Service Coordinator can complete developmental screenings for a physician upon request when the physician suspects that a child is at risk for developmental delays.

2. Provide information about community resources
   TEIS can provide physicians with information about various community resources that are available for children with disabilities, for example, programs in different counties or the array of and financial resources available to families.

3. Conduct workshops and seminars
   TEIS can conduct workshops and seminars for groups of physicians who are interested in gaining more information about serving children with special needs. Workshops that address service coordination, screening and assessment strategies, and the development of an IFSP are just some of the topics covered by TEIS staff.
Thank you for taking the time to read this Information Packet. If you have question or need further information call

TEIS

(615) 974-2838
The Physician, The Law, and Tennessee's Early Intervention System was produced by TEIS-East Tennessee District and printed by the Printing Services at University of Tennessee, Knoxville.

This document was funded by the Tennessee Department of Education for Public Law 102-119, Part H.
APPENDIX D

Questionnaire
PHYSICIANS' KNOWLEDGE AND PRACTICE QUESTIONNAIRE
Tennessee's Early Intervention System-East Tennessee District

DEFINITIONS OF IMPORTANT TERMS USED IN THE QUESTIONNAIRE

Children with special needs: Children who exhibit a wide variety of disabilities, ranging from mild learning or adjustment problems to severe multiple disabilities usually accompanied by mental retardation, sensory impairments, speech/language impairments, physical impairments and inability to care for themselves.

Developmental assessment: Ongoing procedures used to gain an accurate picture of a child's present level of functioning in the various developmental domains that include: (a) cognitive development; (b) communication and language development; (c) motor development (gross and fine motor); (d) self-help and adaptive behaviors; and (e) social and emotional development.

Developmental delay: Lack of expected progress in the following areas of development: cognitive development, physical development (fine and gross motor) including vision and hearing; communication development; social/emotional development; self-help and adaptive behaviors.

Developmental disability: Involves an injury or incapacity in one or more areas of functioning including: sensory disabilities (a hearing impairment or a visual impairment), physical disabilities (motor impairment arising out of neurological damage, orthopedic impairments), speech and language disabilities, cognitive disabilities (mental retardation and learning disabilities), and behavior disabilities. The condition is referred to as a developmental disability when it occurs during the developmental years, i.e., before eighteen years of age, that may interfere with an individual's ongoing development.

Early intervention program: A program designed to meet the developmental needs of young children with disabilities. Programs may include some or all of the following services:
- physical Therapy  occupational therapy
- speech and language therapy  audiological services
- special instruction  vision Therapy

Infant/toddler: A child birth through two years of age (up to but not including the third birthday)

Screening: An initial, quick method of identifying developmental delays that is usually followed by further evaluation to confirm the delay.

Service provider: Early intervention personnel responsible for provision of consultation, training of parents and others, participation in multidisciplinary assessment of child. Service providers include audiologists, nurses, nutritionists, occupational therapists, physical therapists, physicians, psychologists, social workers, special educators, speech/language pathologists, vision specialists etc.
PART I (To be completed EITHER by a physician or a clerical assistant.) The following questions are intended to gather background information that relate to serving children with special needs. Please circle one response for each item and/or write your response in the blank provided:

1. What is the approximate number of infants and toddlers (birth through two years) with disabilities that are seen in your practice annually? (Physicians in a group practice indicate only the number of children that are seen personally, NOT total seen by all physicians in practice.)
   1 = Less than 100
   2 = 100 - 500
   3 = 501 - 1000
   4 = More than 1000

2. What is your age group?
   1 = Younger than 36
   2 = 36 - 45
   3 = 46 - 55
   4 = 56 - 65
   5 = Over 65

3. What is your gender?
   1 = Female
   2 = Male

4. In what year did you graduate from medical school? __________

5. Did you complete training in child development or a related discipline during your residency?
   1 = No
   2 = Yes

6. What is your specialty?
   1 = Family Practice
   2 = General Practice
   3 = Pediatrics
7. What is your primary professional setting?
   1 = Academic (research)
   2 = Academic (teaching)
   3 = Administrative
   4 = Clinical: practice in group of three or more
   5 = Clinical: solo practice
   6 = Clinical: walk-in clinic
   7 = Local health department
   8 = Other: Specify __________________________

8. How many years have you been in your current practice? ________

9. Are you board certified (e.g., by the American Board of Pediatrics or the American Board of Family Physicians) in your subspecialty?
   1 = No
   2 = Yes

10. What is the primary geographical area served by your practice?
    1 = Rural
        2 = Suburban
        3 = Urban

11. In which county is your primary practice located? ________
PART II: (To be completed ONLY by the physician) The following questions explore physicians' knowledge and practices towards serving children with special needs. Please circle one or more responses as appropriate for each item and/or write your response in the blank provided.

(CC 4) 1. How familiar are you with the amendment to the Individuals with Disabilities Education Act (here on referred to as PL 99-457-Part H)?

   a. Familiar with most components
   b. Familiar with the three components directly impacting a physician
   c. Heard about the law but not any of its individual components
   d. Never heard of the law

2. If you have heard about PL 99-457 (Part H) and are familiar with most of its requirements, please indicate how you learned about it:

   a. Brochures
   b. Colleagues
   c. Conferences, workshops, seminars
   d. Journal articles
   e. Newsletter
   f. Other: Specify ______________________________

3. Which journals do you subscribe to on a regular basis as part of your professional development?

   a. *Infants and Young Children*
   b. *Journal of Contemporary Pediatrics*
   c. *Journal of Pediatrics*
   d. *Pediatrics*
   e. Other: Specify ______________________________
4. Approximately how many journal articles since 1990 have you read about PL 99-457 (Part H) and services for young children with special needs?

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<td>2</td>
<td>1 - 5 articles</td>
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<td>3</td>
<td>6 - 10 articles</td>
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<td>4</td>
<td>More than 10 articles</td>
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5. What age group of children does Part H section of PL 99-457 address?

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<td>3</td>
<td>Birth through 5 years</td>
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<td>4</td>
<td>3 through 5 years</td>
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6. According to Tennessee's definition of developmental delay, what determines whether a child is eligible for services through Part H of PL 99-457?

a. 10% delay in one developmental domain

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b. 10% delay in two developmental domains

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c. 25% delay in two developmental domains

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d. 40% delay in one developmental domain

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e. Clinical judgment by a medical professional

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f. Clinical judgment by a nonmedical professional

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g. Diagnosed medical condition

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7. What are the areas identified by the American Academy of Pediatrics (1988) in which physicians should be involved in the implementation of PL 99-457 (Part E)?

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<td>1.</td>
<td>a. Child assessment</td>
<td>1 = No</td>
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<td>1.</td>
<td>b. Child data count</td>
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<td>1.</td>
<td>c. Child find</td>
<td>1 = No</td>
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<td>1.</td>
<td>d. Compiling a central directory</td>
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<td>1.</td>
<td>e. Individualized Family Service Plan</td>
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<td>f. Personnel development</td>
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<td>g. Procedural safeguards</td>
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<td>1.</td>
<td>h. Public awareness</td>
<td>1 = No</td>
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<td>1.</td>
<td>i. Referrals to early intervention programs</td>
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8. What places a child at risk for developmental delays?

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<td>2.</td>
<td>a. Diagnosed medical condition</td>
<td>1 = No</td>
<td>2 = Yes</td>
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<td>2.</td>
<td>b. Economically disadvantaged families</td>
<td>1 = No</td>
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<td>2.</td>
<td>c. Failure to thrive</td>
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<td>2 = Yes</td>
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<td>2.</td>
<td>d. Large families</td>
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<td>2.</td>
<td>e. Low birth weight</td>
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<td>2.</td>
<td>f. Minority families</td>
<td>1 = No</td>
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<td>2.</td>
<td>g. Prematurity</td>
<td>1 = No</td>
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<td>2.</td>
<td>h. Single parent families</td>
<td>1 = No</td>
<td>2 = Yes</td>
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<tr>
<td>2.</td>
<td>i. Teen mothers</td>
<td>1 = No</td>
<td>2 = Yes</td>
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9. Based on research studies, what strategies are generally effective when identifying children with developmental delays?

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<td>3.</td>
<td>a. Clinical examinations</td>
<td>1 = No</td>
<td>2 = Yes</td>
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<td>3.</td>
<td>b. Clinical judgments</td>
<td>1 = No</td>
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<td>3.</td>
<td>c. Developmental assessments</td>
<td>1 = No</td>
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<tr>
<td>3.</td>
<td>d. Developmental screenings</td>
<td>1 = No</td>
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<td>3.</td>
<td>e. Maternal histories</td>
<td>1 = No</td>
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<td>3.</td>
<td>f. Observations</td>
<td>1 = No</td>
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<tr>
<td>3.</td>
<td>g. Parental reports</td>
<td>1 = No</td>
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10. When there is a reason to suspect that a child may have a developmental delay, what are the areas in which screening is recommended?
   
   (CC 25)  
   a. Cognitive development  
   (KS10a)  
   b. Hearing  
   (CC 26a)  
   c. Self-help skills  
   (KS10b)  
   d. Social-emotional development  
   (CC 27)  
   e. Speech/language development  
   (KS10c)  
   f. Physical development  
   (KS10d)  
   g. Vision  

11. When is it advisable to perform developmental screenings should be performed on children at risk for developmental delays?
   
   (CC 42)  
   a. Annually  
   (KS11a)  
   b. Every 2-3 months  
   (CC 42)  
   c. On parental request  
   (KS11b)  
   d. When a child turns two  
   (CC 44)  
   e. When concerns arise  
   (KS11c)  
   f. When time permits  

12. How often do you (or a nurse practitioner) screen children during well baby visits?
   
   1 = Never  
   2 = Occasionally  
   3 = Regularly
### 13. After screenings are completed and significant developmental delays identified, which of the following procedures are recommended to be good practices?

- **a.** Further evaluation should be recommended in the area of delay.  
  
- **b.** Parent should be advised to wait and see if the child outgrows the developmental delay.  
  
- **c.** Parent should be given suggestions regarding things they can do to help their child's development.  
  
- **d.** Parent should be given the name of another parent with a child having similar condition.  
  
- **e.** Referral should be made to an early intervention program.  

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<td>Parent advice</td>
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<td>Suggestions</td>
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<td>Parent name</td>
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</tr>
<tr>
<td>Referral</td>
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<td>3</td>
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</tbody>
</table>

### 14. According PL 99-457 (Part H), how soon should a physician make a referral to an early intervention program after a child is known to be at risk for developmental delays?

- 1 = 2 working days  
- 2 = One week  
- 3 = 15 working days  
- 4 = One month  
- 5 = Referral not required  
- 6 = Don't know

### 15. What are the strategies that you commonly use in your daily practice to identify children with developmental delays?

- **a.** Clinical examinations  
- **b.** Clinical judgments  
- **c.** Developmental assessments  
- **d.** Developmental screenings  
- **e.** Medical histories  
- **f.** Observations  
- **g.** Parental reports

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<td>2</td>
<td>3</td>
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</table>
16. What is (are) the problems that you face in identifying children with developmental delays?

a. Lack of time
b. Lack of training
c. Not economically feasible
d. Other: Specify ______________

17. What are the areas in which you (or a nurse practitioner) typically perform developmental screenings?

a. Cognitive
b. Hearing
c. Physical
d. Self-help
e. Speech/language
f. Social-emotional
g. Vision

18. What type of condition(s) are usually present in the infant/toddler when you make a referral to an early intervention program?

a. Birth weight less than 3 lb. 5 oz.
b. Congenital abnormalities
c. Hearing/visual impairment
d. Medical fragility
e. Physical impairment
f. Prematurity
g. Other: Specify ______________

19. What is the typical time frame that you adhere to when making referrals to early intervention programs?

1 = 2 working days
2 = One week
3 = 15 working days
4 = One month
5 = Don't make a referral
20. What is (are) the common difficulty(ies) that you face when making referrals?

   a. Lack of time to make the referral
      1 = No 2 = Yes
   b. Lack of knowledge about community resources
      1 = No 2 = Yes
   c. Lack of expertise in making a referral
      1 = No 2 = Yes
   d. Other: Specify ____________________________

21. What procedure(s) do you typically follow after a significant delay is noted?

   a. Further evaluation is recommended in the area of delay
      1 = No 2 = Yes
   b. Parents are advised to wait and see if the child outgrows the developmental delay
      1 = No 2 = Yes
   c. Parents are given suggestions regarding things they can do to help the child
      1 = No 2 = Yes
   d. Parents are given the name of another parent with a child having similar condition
      1 = No 2 = Yes
   e. Referrals are made to an early intervention program
      1 = No 2 = Yes

22. How familiar are you with the Individualized Family Service Plan (IFSP)?

   1 = Not familiar at all
   2 = Somewhat familiar
   3 = Very familiar

23. What is the philosophical principle that governs the implementation of an IFSP?

   1 = Child is the primary focus
   2 = Family is the focus
   3 = Professionals are the focus
24. What issues are addressed in an IFSP meeting?

- a. Child's needs
- b. Family's concerns
- c. Family's needs
- d. Family's resources
- e. Family's priorities
- f. Service provider's concerns
- g. Service provider's needs
- h. Service provider's priorities

25. How many times in the past five years have you been invited to attend an IFSP meeting?

1 = None
2 = 1 - 5 times
3 = 6 - 10 times
4 = More than 10 times

26. How many IFSP meetings have you attended in the past five years?

1 = None
2 = 1 - 5 times
3 = 6 - 10 times
4 = More than 10 times

27. If you were invited to attend an IFSP meeting, but were unable to attend, please state the common reason(s) for not attending?

- a. Lack of time to attend the meeting
- b. Lack of knowledge about IFSP
- c. Lack of financial compensation to attend the IFSP meeting
- d. Other: Specify _____________________
28. How familiar are you with Tennessee's Early Intervention System (TEIS) before participating in the research study?

1 = Not familiar with it at all
2 = Familiar only with the name TEIS
3 = Familiar with it to some extent
4 = Familiar with most of its services

29. What has been the extent of your involvement with TEIS (e.g., calling for information, making referrals)?

1 = Not involved
2 = Somewhat involved
3 = Very involved

30. What kind of contact(s) have you had with TEIS staff?

a. Letter
   1 = No   2 = Yes
b. Personal contact
   1 = No   2 = Yes
c. Telephone
   1 = No   2 = Yes
d. Other: Specify _______________________

31. Have you ever contacted TEIS for the following reasons?

a. To make a referral
   1 = No   2 = Yes
b. To seek information about a child
   1 = No   2 = Yes
c. To seek information about services
   1 = No   2 = Yes
d. Other: Specify _______________________

32. What age group of children does TEIS serve?

1 = Birth through 2 years
2 = Birth through 5 years
3 = 2 to 5 years
4 = 3 to 5 years
5 = Don't know
33. On what basis are families eligible for free services through TEIS?

(CC 24)
(a) Family's annual income  
1 = No  
2 = Yes  
3 = Don't know

(KS 334)
(b) Tennessee's definition of development delay  
1 = No  
2 = Yes  
3 = Don't know

(KS 738)
(c) Age of the child  
1 = No  
2 = Yes  
3 = Don't know

(KK 331)

34. What services can be provided to families with special needs children through TEIS?

(CC 7)
(a) Coordination of services  
1 = No  
2 = Yes  
3 = Don't know

(KS 344)
(b) Counseling services  
1 = No  
2 = Yes  
3 = Don't know

(KS 348)
(c) Direct early intervention services  
1 = No  
2 = Yes  
3 = Don't know

(KS 354)
(d) Financial assistance  
1 = No  
2 = Yes  
3 = Don't know

(KS 364)
(e) Information  
1 = No  
2 = Yes  
3 = Don't know

(KS 346)
(f) Nursing services  
1 = No  
2 = Yes  
3 = Don't know

(KS 342)
(g) Referrals  
1 = No  
2 = Yes  
3 = Don't know

(KS 352)
(h) Screening and assessment  
1 = No  
2 = Yes  
3 = Don't know

(KS 346)

35. In what ways does TEIS help physicians serve children with special needs?

(KS 17)
(a) Conduct developmental screenings  
1 = No  
2 = Yes  
3 = Don't know

(KS 15)
(b) Make referrals to early intervention programs  
1 = No  
2 = Yes  
3 = Don't know

(KS 19)
(c) Provide information  
1 = No  
2 = Yes  
3 = Don't know

(KS 13)
(d) Promote personnel development  
1 = No  
2 = Yes  
3 = Don't know

(KS 12)
(e) Provide financial reimbursement of physicians' time  
1 = No  
2 = Yes  
3 = Don't know

(KS 11)
(f) Represent a physician at an IFSP  
1 = No  
2 = Yes  
3 = Don't know

(KS 31)

THANK YOU! Please return survey in the enclosed envelope.
1. How would you rate the clarity of information presented in the information packet? (circle ONE response)

   excellent ........................................... 1
   good ................................................. 2
   fair ................................................... 3
   poor .................................................... 4

2. How would you rate the clarity of information presented in the videotape? (circle ONE response)

   excellent ........................................... 1
   good ................................................. 2
   fair ................................................... 3
   poor .................................................... 4

3. Was the information presented in the video-tape helpful? (circle ONE response)

   very helpful ........................................... 1
   somewhat helpful ..................................... 2
   not helpful .......................................... 3

4. Was it convenient for you to view the video-tape?

   very convenient ...................................... 1
   somewhat convenient .................................. 2
   not convenient ...................................... 3

4. How would you have preferred to receive this information? (RANK the methods from 1 to 10)

   METHOD                        RANK
   video-tapes ........................................ 1
   audio-tapes ......................................... 1
   personal contact ................................. 1
   mailings ............................................ 1
   grand rounds ....................................... 1
   regional seminars ............................... 2
   annual pediatric chapter meeting devoted to early intervention ... 2
   local workshops .................................. 2
   journal articles ................................ 2
   newsletter ....................................... 2
   other (please specify) .......................... 2
5. In what areas would you want to receive more information? (circle your preferences)

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<th>Area</th>
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<td>Roles and responsibilities of physicians pertaining to the law</td>
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<tr>
<td>Importance of early intervention</td>
<td>3</td>
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<tr>
<td>Tennessee's Early Intervention System</td>
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<tr>
<td>Developmental screening</td>
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<td>Psychological assessments of infants/toddlers and their families</td>
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<td>Communicating developmental concerns to families</td>
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<td>Public/private community resources in early intervention</td>
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<td>Provisions of PL 99-457</td>
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<td>Other (please specify)</td>
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</tbody>
</table>

We would appreciate any additional comments:

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
APPENDIX E

Definition of Terms
Definitions of Terms

Knowledge is defined in the study as physicians' understanding and awareness of the following: (a) Part H component of Individuals with Disabilities Education Act (IDEA) (referred to as Public Law 99-457 in the questionnaire), in particular three of the fourteen components of the law that were identified by the American Academy of Pediatrics in 1988; (b) roles and responsibilities of physicians as related to the law which include early identification of children with developmental delays, referring children with developmental delays to early intervention programs, and participating in the development of the Individualized Family Service Plan (IFSP); (c) importance of early intervention, and (d) services provided to families with special needs children through Tennessee's Early Intervention System (TEIS).

Attitude is defined in the study as physicians' tendency to favor or disfavor the following: (a) enactment of Part H component of Individuals with Disability Education Act (IDEA) and funding of the state wide Part H program; (b) responsibilities of physicians towards serving children with special needs which include regular screening of all children, early referral of children identified to early intervention programs, and participating in the development of the IFSP; (c) importance of early intervention, and (d) services provided to families with special needs children through TEIS.

Practice is defined in the study as the frequency of engagement of physicians in activities that relate to their understanding of: (a) Part H component of Individuals with Disabilities Education Act (IDEA), in particular three of the fourteen components of the law that were identified by the American Academy of Pediatrics in1988; (b) roles and responsibilities of physicians as related to the law that include early identification of children with developmental delays, referring children with developmental delays to early intervention programs, and participating in the development of the IFSP; (c) importance of early intervention, and (d) services provided to families with special needs children through Tennessee's Early Intervention System (TEIS).
APPENDIX F

Correspondence
Dear Dr.

You willingness to participate in the research project "Physicians and the Early Intervention System" is greatly appreciated. Enclosed you will find a packet containing information about PL 99-457, the roles and responsibilities of physicians with respect to this law, the importance of early intervention, and Tennessee's Early Intervention System (TEIS). Also, a video-tape and the Physicians' Knowledge and Practice Questionnaire are enclosed.

The viewing time of the tape is approximately 30 minutes. You can watch the tape wherever you choose. Please remember not to discuss your impressions of the written materials or video-tape with others, particularly colleagues. You may watch the tape as many times as you wish. Also, this tape is for you to keep as an expression of our appreciation for your willingness to take the time to participate in the study. You have two weeks to view the tape and to complete the questionnaire. Please return the questionnaire in the enclosed self addressed envelope by September 22, 1994.

I hope the written materials and video-tape are informative and help answer some of the questions that you may have had about PL 99-457 and local services for young children with special needs. I encourage you to contact me if you need further clarification about information presented in the tape. I can be reached at (615) 974-2838.

Thank you very much for participating in the study!

Sincerely,

Fathima Humera, Service Coordinator
Tennessee's Early Intervention System
Name
Address

September 8, 1994

Dear Dr.

Your willingness to participate in the study is greatly appreciated. Enclosed you will find the Physicians’ Knowledge and Practice Questionnaire to complete and return. Please complete and return the questionnaire by September 22, 1994.

Once the questionnaire is returned, I will forward to you a packet containing information about PL 99–257, the roles and responsibilities of physicians with respect to the law, the importance of early intervention and Tennessee’s Early Intervention System (TEIS). In addition, you will receive a copy of the TEIS Resource Directory containing information about the various community resources available to children with special needs; and information about several assessment instruments that can be used to identify children birth through two with developmental delays. On completion of the study you also will receive a summary of the results.

If you should have any questions about the questionnaire, please feel free to contact me at (615) 974-2838.

Thank you very much for participating in the study!

Sincerely,

Fathima Humera, Service Coordinator
Tennessee’s Early Intervention System
Name
Address
Date
Dear Dr.

This letter is to let you know that I have not received a completed "Physicians' Knowledge, Practice, and Attitude Questionnaire". I am enclosing another copy of the questionnaire for you to complete and return in the event that you misplaced the original. It is very important that I receive the questionnaire by October 10, 1994. If you have already returned the questionnaire, please disregard this notice.

Thank you.

Sincerely,

Fathima Humera, Service Coordinator
Tennessee's Early Intervention System
Dear Dr.

Thank you very much for taking the time to participate in the study. Enclosed you will find a copy of the Tennessee's Early Intervention System (TEIS) Resource Directory as well as an article about screening instruments that can used to identify young children with developmental delays. A summary of the results of the study will be mailed to you once the data analysis is completed.

I hope the enclosed information is helpful to you as you continue to serve children with disabilities. Please contact TEIS if you need additional information about services that are available for young children with special needs, or if you need assistance with performing developmental screenings on children that you suspect are at-risk for developmental delays. If you have identified children with or at-risk for developmental delays, I hope you will consider referring them to TEIS so that the necessary early intervention services can be arranged.

Very gratefully yours,

Fathima Humera, Service Coordinator
Tennessee's Early Intervention System
APPENDIX G

Evaluation of the Information Package
Evaluation of the Video-tape/Information Packet

Number of physicians who watched the video = 19
Number of physicians who completed the form = 18

1. Was the information presented in the brochure clear?

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<th>Percentage (%)</th>
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2. Was the information presented in the video-tape clear?

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3. Was the information presented in the video-tape helpful?

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4. Was it convenient to watch the tape?

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5. In what areas would you like to receive more information?

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Total: 4417
VITA

Fathima Humera was born in Madras, India, on March 24, 1966. She graduated from Vana Vani High School, Madras, India, in 1983. She received her Bachelor of Science degree in Nutrition, Food Service Management, and Dietetics in June of 1986 and her Master of Science degree in Child Development in June of 1988 from The University of Madras, India. After completing her masters program, she worked part-time as a special education teacher at Pathway, Madras, India.

In the fall of 1990, Fathima began graduate study toward the Doctor of Philosophy degree at The University of Tennessee, Knoxville. While working on her degree, she served as a graduate assistant until summer of 1992 at The University of Tennessee, Knoxville, Child Development Laboratories. In Fall of 1992, she began working as a graduate research assistant for Tennessee's Early Intervention System. In December of 1994, she received her Ph.D. degree in Human Ecology with a specialization in Child Development.