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# Health and School Readiness Literature Review

Selected Programs,  
Components, and Findings  
in the United States, Excluding California

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Funded by First 5 California



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## PURPOSE

The purpose of this literature review is to summarize the health components, initiatives, and outcomes of key School Readiness (SR) Programs across the United States, not including California. The intent of this review is to provide relevant information for county First 5 staff renewing their School Readiness Programs and developing health interventions and/or outcomes to address the required ‘health and social services’ element of their programs.

## BACKGROUND

The literature review was compiled through online searches of the Education Information Resource Center (ERIC), PubMed, and the World Wide Web. While hundreds of documents were examined, approximately 46 articles from ERIC, 20 articles from PubMed, and 67 program websites contributed to this review. Documents were selected if they included health as a component of the described SR program.

## OUTLINE

The literature review is divided into four sections:

- I. Introduction:** National efforts such as the National Education Goals Panel, Healthy People 2010, and National School Readiness Indicators Initiative have shaped the specific health components included in many School Readiness Programs. In addition, several research studies of children under six years of age included health outcomes. These findings may inform program planners to include interventions which can potentially improve children’s health status before they start kindergarten.
- II. Key/Selected School Readiness Programs:** Influential studies from the 1960’s to the present time continue to be used as reference points for today’s school readiness programs. The completed programs (see A-G sections) provide a historical framework for the present programs’ inclusion of health components in school readiness programs. Selected current school readiness programs (see H-M sections) are summarized, highlighting the health components and outcomes, if reported. Additionally, key state and regional SR programs are summarized.
- III. Key Findings and Lessons Learned:** This section summarizes the main points of the review related to the health components shown to increase children’s readiness for school. It provides readers with a summary of key findings across programs and lessons learned about what worked well and what didn’t work well. This summary can help SR programs target health interventions based on evidence-based research or important components of other key programs or initiatives.
- IV. Tables and References:**
  - A. Key/Selected School Readiness Initiatives Across the US: Studies A-G
  - B. Health Indicators by Selected States
  - C. Selected States Program Websites

# TABLE OF CONTENTS

Section	Page
<b>I. Introduction</b>	
A. National Education Goals Panel . . . . .	3
B. National School Readiness Indicators Initiative . . . . .	4
C. National Governors' Association . . . . .	5
D. Healthy People 2010 . . . . .	6
<b>II. Key/Selected School Readiness Programs</b>	
<i>Studies of Historical Relevance:</i>	
A. Head Start . . . . .	8
B. Chicago Child-Parent Centers . . . . .	11
C. Syracuse Family Development Research Program . . . . .	12
D. Brookline Early Education Project . . . . .	14
E. Carolina Abecedarian Project . . . . .	15
F. Elmira Prenatal/Early Infancy Project . . . . .	17
G. Infant Health and Development Program . . . . .	18
<i>Selected Current State and Regional Programs:</i>	
H. Arizona's School Readiness Action Plan . . . . .	21
I. Smart Start — North Carolina . . . . .	23
J. First Steps — South Carolina . . . . .	25
K. Early to Rise — Philadelphia . . . . .	27
L. Kids Matter — Washington State . . . . .	27
M. Achieving School Readiness: A 5-Year Action Agenda for Maryland . . . . .	30
<b>III. Key Findings and Lessons Learned</b>	
A. Broad Findings . . . . .	31
B. Recommendations for Inclusion of Specific Health Components in Community SR Programs . . . . .	32
<b>IV. Tables and References</b>	
A. Table 1: Lessons Learned . . . . .	34
B. Table 2 Key/Selected School Readiness Initiatives Across the US: Studies A-G . . . . .	35
C. Table 3 Health Indicators by Selected States . . . . .	37
D. Table 4 State Programs' Websites . . . . .	41
E. References . . . . .	42

## Section I: Introduction

School Readiness (SR) has garnered national attention since the mid-20th century when Head Start and other programs were specifically designed to enhance children's early childhood care and education (ECE) experiences. Early intervention programs provide positive returns related to children's health and development, economic activity, and adult human capital development.<sup>1</sup> Health, however, has only recently been specified as an important component of SR.<sup>2-4</sup> The National Academy of Sciences' Committee on Evaluation of Children's Health defined children's health broadly "... as the extent to which individual children or groups of children are able or enabled to (a) develop and realize their potential, (b) satisfy their needs, and (c) develop the capacities that allow them to interact successfully with their biological, physical, and social environments."(p.4)<sup>5</sup> This definition includes the different aspects of health covered in this literature review, including health services, health screening, and health outcomes.

Many health and social disparities originate in early childhood.<sup>6</sup> Studies have shown that children learn better when they are healthy.<sup>2,7</sup> Denton and West (2002) found that kindergartners who were healthy had better scores in math and reading than children who were not physically healthy.<sup>8</sup> Unhealthy children may be absent from school, have difficulty concentrating, and/or develop disruptive behavior in class due to an illness.<sup>9</sup> About 70% of kindergarten-aged children with developmental problems could have been identified earlier if they had adequate screening and follow-up.<sup>10,11</sup> Only 57% of parents report their child's development was assessed during a visit a pediatric primary care visit.<sup>12</sup>

Currie (2005) found that not addressing health problems can have a multi-faceted effect on a child's readiness for school:

Health problems can affect a child's school readiness both directly and indirectly. Lead poisoning, for example, directly impairs a child's cognition and causes behavior problems. Poor health can also affect readiness indirectly by crowding out beneficial activities and changing the way the family treats a child. For example, parents who perceive a child as frail or vulnerable may be overly protective. They may coddle or inadequately discipline the child or may discourage him or her from engaging in activities that could hone both academic and social skills. (p. 118)<sup>4</sup>

Researchers have not been the only child experts to comment on the importance of health on school readiness. Teachers have designated it an invaluable characteristic as well. Ackerman and Barnett (2005)<sup>13</sup> described a 1990 study by the Carnegie Foundation which interviewed over 7,000 teachers about the readiness of children to begin kindergarten and a later study (1993) that reported on teachers' perceptions of top readiness attributes. The results from these studies showed:

1. 35% of children were considered not ready to be successful in kindergarten, and
2. The top readiness attribute as reported by kindergarten teachers had nothing to do with cognitive abilities as was expected by the researchers. Rather, teachers felt that the top characteristic was for the child to be "physically healthy, rested, and well nourished."

National organizations and recommendations as well as evidence from the literature regarding the essential role of children's health are briefly summarized below.

### A. National Education Goals Panel

In 1990, the **National Education Goals Panel** (NEGP) was created to monitor national and state achievement toward the eight National Education Goals which were established to improve learning and teaching in the nation's education system. The NEGP was an independent agency in the Executive Branch of the federal government. Members of the panel included eight governors, four members of Congress, four state

legislators, and two Administration officials. The goals helped provide a national framework for education reform and promote systemic changes needed to ensure equitable educational opportunities and high levels of educational achievement for all students.<sup>14,15</sup>

The first National Education Goal was that ‘all children in America will start school ready to learn’. The first objective under this goal addressed the health needs of pre-school age children and it stated:

- Children will receive the nutrition, physical activity experiences, and health care needed to arrive at school with healthy minds and bodies, and to maintain the mental alertness necessary to be prepared to learn, and the number of low-birthweight babies will be significantly reduced through enhanced prenatal health systems.<sup>14</sup>

The interdisciplinary group of experts articulated a broad concept of readiness, with at least five major threads that together form the fabric of children’s school readiness: health and physical development; emotional well-being and social competence; approaches to learning; communicative skills; and cognition and general knowledge.<sup>15</sup> Children’s health is linked to school performance and thus, it is an important component of school readiness.

Although the last update for the goals was in 2002, shortly before the NEGP was dissolved, the National Education Goal provide important guidelines for nationwide research and program development to improve children’s readiness for school.

### **B. National School Readiness Indicators Initiative<sup>16</sup>**

The National School Readiness Indicators Initiative was a multi-state initiative developed between 2001 to 2004 that tracked outcomes related to state-level indicators for children from birth through age 8. The goal was for states to use the school readiness indicators to track progress in meeting key goals for young children and inform public policy decisions. The task of participating states was to develop a comprehensive set of school readiness indicators from birth through third grade. The Initiative involved teams from 17 states, including Arizona, Arkansas, California, Colorado, Connecticut, Kansas, Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Jersey, Ohio, Rhode Island, Vermont, Virginia and Wisconsin.

A set of core indicators was chosen by the teams, based on several criteria:

- Each of the core indicators had been selected as a high priority school readiness indicator by multiple states involved in the School Readiness Indicators Initiative.
- The core indicators reflect conditions that can be altered through state policy actions.
- A change in one or more of the core indicators will influence children’s school readiness.
- Each of the core indicators is currently measurable using state and local data.

The National School Readiness Indicators Initiative also created what is known as the “Ready Child Equation:”

Ready Families + Ready Communities + Ready Services + Ready Schools = Ready Children.<sup>a</sup>

**Ready Families:** Describes children’s family context and home environment.

**Ready Communities:** Describes the community resources and supports available to families with young children.

<sup>a</sup>For more information on the National Readiness Indicators Initiative, the Ready Child Equation, and states’ readiness indicators, please see [www.gettingready.org](http://www.gettingready.org).

**Ready Services:** Describes the availability, quality and affordability of proven programs that influence child development and school readiness.

**Ready Schools:** Describes critical elements of schools that influence child development and school success. (p. 5.)<sup>16</sup>

This formula is being used by many states as they establish their own initiatives and specific program components. Arizona is one of the states currently utilizing the Ready Child Equation. Each state involved in the Initiative is responsible for developing their program components.

**Outcomes/indicators:**

1. *Ready Children*

a. **Physical Well-Being and Motor Development**

- **Percent of children with age-appropriate fine motor skills**

b. **Social and Emotional Development**

- **Percent of children who often or very often exhibit positive social behaviors when interacting with their peers**

c. Approaches to Learning

- Percent of kindergarten students with moderate to serious difficulty following directions

d. Language Development

- Percent of children almost always recognizing the relationships between letters and sounds at kindergarten entry

e. Cognition and General Knowledge

- Percent of children recognizing basic shapes at kindergarten entry

2. *Ready Families*

a. Mother's Education Level

- Percent of births to mothers with less than a 12th grade education

b. Births to Teens

- Number of births to teens ages 15-17 per 1,000 girls

c. Child Abuse and Neglect

- Rate of substantiated child abuse and neglect among children birth to age 6

d. Children in Foster Care

- Percent of children birth to age 6 in out-of-home placement (foster care) who have no more than two placements in a 24-month period

3. *Ready Communities*

a. Young Children in Poverty

- Percent of children under age 6 living in families with income below the federal poverty threshold

b. Supports for Families with Infants and Toddlers

- Percent of infants and toddlers in poverty who are enrolled in Early Head Start

c. **Lead Poisoning**

- **Percent of children under age 6 with blood lead levels at or above 10 micrograms per deciliter**
4. *Ready Services — Health*
    - a. **Health Insurance**
      - **Percent of children under age 6 without health insurance**
    - b. **Low Birthweight Infants**
      - **Percent of infants born weighing under 2,500 grams (5.5 pounds)**
    - c. **Access to Prenatal Care**
      - **Percent of births to women who receive late or no prenatal care**
    - d. **Immunizations**
      - **Percent of children ages 19-35 months who have been fully immunized**
  5. *Ready Services- Early Care and Education*
    - a. Children Enrolled in an Early Education Program
      - Percent of 3- and 4-year-olds enrolled in a center-based early childhood care and education program (including child care centers, nursery schools, preschool programs, Head Start programs, and pre-kindergarten programs)
    - b. Early Education Teacher Credentials
      - Percent of ECE teachers with a Bachelor’s Degree and specialized training in early childhood
    - c. Accredited Child Care Centers
      - Percent of child care centers accredited by the National Association for the Education of Young Children (NAEYC)
    - d. Accredited Family Child Care Homes
      - Percent of family child care homes accredited by the National Association for Family Child Care (NAFCC)
    - e. Access to Child Care Subsidies
      - Percent of eligible children under age 6 receiving child care subsidies
  6. *Ready Schools*
    - a. Class Size
      - Average teacher/child ratio in K-1 classrooms
    - b. Fourth Grade Reading Scores
      - Percent of children with reading proficiency in fourth grade as measured by the state’s proficiency tests

### **C. The National Governor’s Association Task Force on School Readiness**

The National Governor’s Association (NGA) Task Force on School Readiness (2002-2004) included state governors who recognized the potential for closing the persistent achievement gap by addressing the developmental needs of young children within the context of their families, communities, and schools.<sup>17</sup> The final report of the Task Force, published in 2005, identified five core principles which guided their recommendations:



1. Family plays the most important role in a young child's life.
2. Responsibility for school readiness lies not with children, but with the adults who care for them and the systems that support them.
3. The first 5 years of life are a critical developmental period.
4. Child development occurs across equally important and interrelated domains — **physical** and motor, social and emotional, language, and cognitive.
5. Governors and states can pursue various options to promote school readiness.

The NGA seeks to support leadership among governors and national organizations to build Ready States, Ready Schools, Ready Communities, Ready Families, and Ready Children that can provide a foundation for bright futures for our nation's youngest children.

One of the national organizations supporting the core assumptions of the NGA is the National Center for Children in Poverty (NCCP). The NCCP promotes the link between social and emotional health and school readiness and they recently published a community guide to promote health and SR<sup>18</sup> (available at [www.nccp.org](http://www.nccp.org)). The NGA assumptions provide a framework for supporting comprehensive, integrated SR programs that involve all aspects of a child's development, including **health, mental health**, cultural identity, general knowledge, language, motivation, and enthusiasm for learning.

#### D. **Healthy People 2010**

National health objectives from the U.S. Department of Health and Human Services, called **Healthy People 2010**, included a comprehensive description of child health factors related to school readiness.<sup>19</sup> Among them are:

- maternal health and prenatal care
- immunization
- access to high quality and developmentally appropriate preschool programs
- nutrition issues including iron deficiency, breast feeding, nutrition education, and nutritious child care food services
- exposure to tobacco smoke
- obesity
- mental health
- the importance of assessment by primary health care providers of the child's cognitive and emotional development, and parent-child functioning
- violence and child abuse
- injury prevention
- reducing mental retardation
- persistent environmental problems, such as lead poisoning
- oral health
- asthma
- screening for impairment of vision, hearing, speech, or language, developmental milestones, and chronic disease
- financing of preventive services

Medical homes, primary care providers, and public health agencies emphasize Healthy People 2010 objectives. These objectives provide the framework for planning public health interventions and developing targeted health outcomes for children of all ages.

## **Conclusion**

There were few experimental studies showing the impact of health programs on children's readiness for school. Specifically, it is rare that health is measured as an outcome measure in SR studies. On the other hand, these National panels, initiatives, and organizations provide a holistic framework to include health in SR programs so young children can be healthy and ready to learn by the time they enter kindergarten. SR Programs need to define health broadly and consider health as an interrelated component within the context of other interventions which nurture the child's development across different domains. Such programs have been shown to be economically beneficial to society. The financial gains demonstrate that primary prevention programs for young children have long term benefits for individuals and society.

## **Section II: Key/Selected School Readiness Programs**

Interest in improving the health and education of young children has resulted in the creation of many innovative programs, starting in the mid-20th century and continuing to the present day. This section reviews key programs targeted for preschool-age children which included health components or health care and have shaped the early care and education field. For example, one of the most cited studies, the High/Scope-Perry Preschool Project, is not listed here because its interventions were wholly based on educational strategies rather than an integrated approach inclusive of health.

Studies summarized here were selected based upon the following criteria: (1) Inclusion of health-related components and (2) Experimental or quasi-experimental design. The following evidence-based programs have been important in forming the foundation upon which current SR programs and early intervention research have been built.

To easily identify the health components or outcomes this text is in **bold font**.

### **Studies A-G: Programs of Historical Relevance**

- A. Head Start
- B. Chicago Parent-Child Centers
- C. Syracuse Family Development Research Program
- D. Brookline Early Education Project
- E. Carolina Abecedarian Project
- F. Elmira Prenatal/Early Infancy Project
- G. Infant Health and Development Program

#### **A. *Head Start***

##### **1. Background**

Begun in 1965 as part of President Johnson's "War on Poverty," Head Start, or Project Head Start as it was originally known, was an experimental eight-week pilot project that sought to improve the social competence of economically disadvantaged children.<sup>20</sup> It soon became a nine-month, half-day program and then evolved into a school-year program. By 2000, Head Start served approximately 800,000 children, that enrollment represented only 35% of eligible 3- and 4-year-old children.<sup>21</sup>

## 2. Components

- a. *Providing a productive learning environment*
- b. **Health services:** according to Currie and Thomas (1995) “Specifically, Head Start guidelines require that each child be given a physical examination inclusive of oral health; an assessment of immunization status; a growth assessment; vision, hearing, and speech tests; a hemoglobin or hematocrit test (for anemia); and a tuberculin skin test. Head Start centers are also required to screen for sickle-cell anemia, lead poisoning, and parasitic infection, if these problems are common in the community.”<sup>22</sup>
- c. *Health screening and assessment*
- d. **Referral to appropriate medical services covering other physical health issues, oral health care, and mental health.**
- e. *Information/education regarding:*
  - i. **nutrition**
  - ii. **child development**
  - iii. **child safety**<sup>23,24</sup>

## 3. Outcomes

- a. A 1981 meta-analysis of Head Start, while limited by methodological considerations, showed that Head Start participants experienced immediate cognitive benefits which faded over time. Currie and Thomas (1995) found that, for European American children, participation in Head Start significantly improved test scores and “school attainment.” African American children also showed improved test scores, but these gains eventually faded in later years.<sup>22</sup>
- b. In their 1985 analysis of the impact of Head Start, McKey, et al. commented that “although the Head Start program has considerable potential for affecting the health of children, research on Head Start rarely examines this program effort.”(p. v3)<sup>25</sup> However, they did find some favorable physical health effects to be associated with Head Start’s interventions within the literature reviewed:
  - i. **General health status: Head Start children with health problems during the pretest period were less likely to have the same problems at posttest than non-Head Start children. (43% vs. 66% respectively.)**
  - ii. **Immunizations: One finding suggested that Head Start is associated with an 8-11% higher immunization rate for both European and African American children than for non-Head Start children.**<sup>22</sup>
  - iii. **Head Start children had a diet with significantly more calories, protein, and almost all of the other nutrients studied compared to the non-Head Start children.**
  - iv. **Fewer children screened by Head Start had abnormal hematocrit or hemoglobin concentrations at post test (7%) compared to non-Head Start children or Head Start children who had not received a hematologic screening (18%).**
  - v. **While very few studies examined oral health, it was found in at least one study that Head Start children had significantly fewer caries at posttest than non-Head Start children. However, it was emphasized that the programs that saw improvement in oral health offered free transportation to dental services or the services were offered directly by the Head Start program.**

- c. Currently, the United States Department of Health and Human Services is conducting a 5-year impact study of Head Start. Five thousand children have been randomly assigned to a Head Start group or a control group that does not receive Head Start services. (However, the control group children may receive other, similar services available in the community.) The children who were enrolled in the study in 2002 were either 3 or 4 years of age. They will be followed until the spring of their first grade year in 2006. Domains measured include cognitive, social-emotional, health, and parenting practices. The researchers use the term “impacts” to describe any differences between groups associated with Head Start participation.

Early results from 2002 indicated the following findings:<sup>26</sup>

- i. Cognitive domain: There are small to moderate statistically significant positive impacts for both 3- and 4-year-old children on several measures across four of the six cognitive constructs, including pre-reading, pre-writing, vocabulary, and parent reports of children’s literacy skills.
- ii. Social-Emotional domain:
  - For children who entered the study as 3-year-olds, there is a small statistically significant impact in one of the three social-emotional constructs, “problem behaviors.” The other constructs were “social skills and approaches to learning” and social competencies.
  - There were no statistically significant impacts on social skills and approaches to learning or on social competencies for 3-year-olds.
  - No significant impacts were found for children entering the program as 4-year-olds.
- iii. **Health domain:**
  - **For 3-year-olds, there are small to moderate statistically significant impacts in both constructs, higher parent reports of children’s access to health care and reportedly better health status for children enrolled in Head Start with an effect size of 12%.**
  - **For both 3- and 4-year-olds, participation in Head Start had a positive impact on parent-reported receipt of dental care. Seventeen percent (17%) more Head Start 3-year-olds received dental care as opposed to non-Head Start 3-year-olds. Similarly, 16% more Head Start 4-year-olds had received dental care than non-Head Start 4-year-olds.**
- iv. Parenting Practices domain:
  - For children who entered the program as 3-year-olds, there are small, statistically significant impacts in two of the three parenting constructs, including a higher use of educational activities and a lower use of physical discipline by parents of Head Start children. **There were no significant impacts for safety practices.**
  - For children who entered the program as 4-year-olds, there are small statistically significant impacts on parents’ use of educational activities. **No significant impacts were found for discipline or safety practices.**

Head Start is the oldest large-scale public program of its kind. Many programs to be discussed later have been modeled after Head Start. The Head Start Impact Study, 2002-2006, is a promising beginning to needed research using a randomized study design.

## B. *Chicago Child-Parent Centers*

### 1. **Background**

The Chicago Child-Parent Centers (CPC) program was started in 1967 by Dr. Lorraine Sullivan, the Superintendent of District 8 in the Chicago Public Schools. The program was intended to serve economically disadvantaged children ages 3-9 years old who were not involved in Head Start or similar preschool programs. The guiding principle of the program is that by providing a school-based, stable learning environment during preschool and during kindergarten through third grade, in which parents are active and consistent participants in their child's education, scholastic success will follow.<sup>27</sup> Children 3 and 4 years of age were considered preschoolers. Funding came from the Elementary and Secondary Education Act of 1965.<sup>28</sup>

Data gathered for review came from the Chicago Longitudinal Study which:

“...followed 1,539 low-income minority students (95 percent of whom are African-American, and 5 percent of whom are Hispanic.) All children resided in neighborhoods eligible for Title I services. Among them were 1,150 children who were enrolled in 20 CPCs that had both preschool and kindergarten programs, and those students served as the ‘intervention’ group. The comparison group consisted of 389 children who were students at six randomly selected schools participating in a full-day kindergarten program for low-income students. Some of the children in the comparison group may have received CPC services in grades 1 through 3. At the start of the CLS, the two groups were similar in most family and child characteristics. These students were followed for a total of 15 years, after which time the typical child was age 20.” (p. 3-4)<sup>27</sup>

### 2. **Components**

#### a. *Education:*

- i. **Location:** Unlike Head Start, the CPCs, which still operate today, are integrated with primary schools. The CPC programs are held on the campuses of their affiliated schools. The program has three components: pre-kindergarten, kindergarten, and primary grades. Pre-kindergarten children attend half-day programs during the school year. Kindergarteners participate in full-day (six hours) school year programs. Primary grade children attend full-time, regular-schedule classes.<sup>27</sup>
- ii. **Class size:** Small class sizes allow staff-to-child ratios of 1:8 for preschoolers and 1:12 for kindergarten and primary grades.

#### b. *Parent inclusion:* Indeed, parents are required to dedicate at least a half-day per week to volunteer at the CPC. The parent resource center provides training in consumer education, **nutrition**, personal development, **health and safety**, and homemaking arts.<sup>28</sup>

#### c. *Outreach services:*

- i. Recruiting program participants in Title 1-eligible neighborhoods. (Title 1 provides supplementary funding to improve the quality of education in high poverty schools. Districts generally must serve schools with the highest poverty rates first and give them proportionately more funding.)
- ii. Home visits: Staff visit newly enrolled families and continue visiting on an as-needed basis to refer families to helping agencies to address employment, physical **health**, **mental health**, and welfare needs.

#### d. **Health:** Upon enrollment, all children receive a health screening from a registered nurse. Hearing and vision are tested at this time.

e. **Nutrition: All students also receive a free breakfast and lunch.**<sup>27</sup>

### 3. Outcomes<sup>27</sup>

#### a. Education:

- i. Children who attended a CPC preschool program, as compared with children who did not attend preschool, scored higher on cognitive school readiness tests.
- ii. By age 15, CPC children continued with higher math and reading scores than non-CPC children.
- iii. Also at age 15, CPC participants were less likely to be retained than their non-CPC counterparts.
- iv. CPC children were less likely to be placed in special education by age 15 than non-CPC children.
- v. More years of participation in the program equal greater benefits in all outcome areas.

b. **Health: At the 15-year follow-up, it was found that children who attended a CPC preschool program, as compared with children who did not attend preschool, were 52% less likely to be victims of child maltreatment.**

Like Head Start, the CPC programs have guidelines to be met by each school program but also allow for flexibility in the delivery of services. Thus, it is difficult to ascertain which or how many of the CPC program's many components are actually producing the positive outcomes associated with the CPCs. However, at least one research clearinghouse, RAND's Promising Practices Network on Children, Families, and Communities<sup>b</sup>, gave the Chicago Child-Parent Centers a "proven" rating, indicating that the research and methodology were rigorous enough for other programs to emulate.

### C. *Syracuse Family Development Research Program*<sup>29</sup>

#### 1. Background

The Family Development Research Program (FDRP) operated from 1969 to 1976 in Syracuse, New York. The goal was to provide a comprehensive early childhood program designed to improve child and family functioning through home visitation, parent training, and individualized day care. Family services were added to the early education and child care programs already in existence at Syracuse University. The 108 families that were recruited for the study were poor with mothers that had less than a high school education, a history of either no work or semi-skilled work, and averaged 18 years of age. Most of the families were African American.

Evaluative data comes from two studies cited on the Promising Practices Network website<sup>29</sup>:

- a. Honig, Lally, and Mathieson's 1982 study assessed 37 FDRP students in kindergarten and 20 FDRP students in the first grade. Comparison group children were selected from each of the 15 schools in the city where FDRP students were enrolled. A comparison child was chosen for each FDRP child and was matched for age, sex, race, and socioeconomic status of the family, classroom, and teacher.

<sup>b</sup>The Promising Practice Network (PPN) is operated by the RAND Corporation. RAND is a nonprofit research organization providing objective analysis and effective solutions that address challenges facing the public and private sectors around the world. PPN was founded by a partnership between four state-level intermediary organizations. The Network now includes additional organizations and individuals dedicated to providing quality evidence-based information about what works to improve the lives of children, families, and communities. More information is available at the PPN website: [www.promisingpractices.net](http://www.promisingpractices.net).

- b. A 1988 longitudinal study by Lally, Mangione, and Honig followed FDRP participants into their teen years. The sample consisted of 65 FDRP and 54 comparison group children. Data sources included school records, court records, and probation department records. School performance was assessed in each group by the number of failing grade-point averages, the number of students performing at a C-average grade level or better, and the number of school absences.

## 2. Components

- a. *Home visits*: Visits by paraprofessionals called Child Development Trainers (CDT) helped families deal with emotional, social, financial, and nutritional problems. Home visits were started prenatally and occurred on a weekly basis until the child reached 5 years of age. Visits were targeted for the mother rather than the child; **CDT's provided mothers with information on health issues, developmental processes, and also encouraged and supported the mothers emotionally.**
- b. *Parent inclusion*: Parents were encouraged to be involved in the program and had access to a formalized parent education group.
- c. *Services for children (all services were provided at the Children's Center)*
  - i. 6 -15 months old: Infants were assigned a caregiver at the child care center five half-days per week. Caregivers provided the infants with attention, cognitive and social games, sensorimotor activities, and language stimulation.
  - ii. 15-18 months old: Toddlers were cared for in a transition group in the child care center (the toddlers were encouraged to develop autonomy before they moved into the next phase of the program) five full-days per week.
  - iii. 18-60 months old: Toddlers and preschoolers were cared for in a family-style child care center that emphasized social and cognitive skill development five full-days per week. The preschool program supported child-chosen opportunities for learning and peer interaction in a space-oriented framework, i.e., specific areas of the Center were designated for specific types of activities.

## 3. Outcomes

- a. *IQ*: Evaluations completed at kindergarten, first grade, and age 15 indicated that, in the early years, children in the study had IQ advantages compared to non-study children, but these differences faded by the time the children were 6 years old.
- b. *Maternal education*: Mothers in the intervention group were found to have positive experiences with the program with more intervention mothers completing high school during their time in the FDRP than control mothers.
- c. *Gender differences*: By age 15, girls in the study group showed significant advantages in grades and school attendance; the same effect was not present for boys.
- d. *Juvenile delinquency*: Rates and severity of juvenile delinquency were much lower for both genders than their counterparts in the control group.

The Syracuse Family Research Development Program received a “promising” rating from RAND’s Promising Practices Network, the University of Colorado’s Center for the Study of the Prevention of Violence, and the U.S. Surgeon General’s Office (again for preventing violence.)

## D. *Brookline Early Education Project*

### 1. **Background**

The Brookline Early Education Project (BEEP) was administered by the Brookline, Massachusetts Public Schools from 1972 to 1979. According to Palfrey et al. (2005), “The program’s essential goal was to ensure that children in the project would enter kindergarten **healthy** and ready to learn (p.145.)”<sup>7</sup> The project was also available to neighboring communities in Boston, thereby serving both suburban and urban groups. Commitment to the project was extensive with participation from Boston Children’s Hospital, the Harvard Graduate School of Education, and the Harvard School of Public Health.

BEEP participants entered the program at the birth of their child and continued until their children were enrolled in kindergarten. 286 children were enrolled at the beginning of the program with 169 of those children evaluated in second grade. Services were center-based rather than located in a public school setting.

“At program entry, families in BEEP were assigned randomly to 1 to 3 levels of intensity, A, B, or C, with A receiving the highest intensity of services and C the lowest intensity . . . children in all 3 levels of service received **regular structured health and developmental evaluations (with feedback given to parents)**, a weekly playgroup at age 2, and a daily preschool program from 3 to 5 years of age. Parents in the 2 most intensive levels of service (i.e., A and B levels) participated in home visits and parent groups. Parents in the A level averaged 14 to 18 home visits and 8 parent group sessions during their children’s first 2 years of life; those in the B level received an average of 10 to 12 home visits and 5 parent group sessions in the first 2 years. Parents in the C level had access to the center to borrow toys or books but did not receive home visits or participate in parent groups (p.146.)”<sup>7</sup>

Evaluations were conducted when children entered kindergarten, second grade, and when the participants were approximately 25 years old. Early evaluations utilized comparisons between groups A, B, and C, as well as a control group of children who did not participate in BEEP but were in the same classrooms and matched in background characteristics.

### 2. **Components. (Child development and psychological issues are related to health).**

- a. *Two-generation format:* BEEP sought to provide health and education services that served both children and their parents.
- b. *Home visits:* **Visits focused on child development with educators, social workers, and psychologists, all of whom were also parents, utilized as home visitors.**
- c. *Parent inclusion:* **Groups were provided for parents designed to reduce feelings of isolation and provide a forum for shared information on the child’s developmental phases. Home visits provided parents with information on the child’s developmental phases and discussions regarding the child’s eating and sleeping patterns, sibling relationships and suggestions for parental safety measures.**
- d. *Health:*
  - i. **Health screening:** Children were provided with health and developmental monitoring.
  - ii. **Regular health care provider:** BEEP staff members emphasized health care and promoted use of regular health care services for participants.



- e. *Prekindergarten programs:* Toy and book libraries and playgroups were arranged for preschool children at two years of age. Children 3-5 years old attended a daily preschool program based on “Piagetian constructivist developmental theory and focused on executive planning and organizing skills, consistent with the approach developed by the High/Scope Education Research Foundation.”<sup>7</sup>

### 3. Outcomes

- a. *Initial evaluation:* Evaluations were conducted when children entered kindergarten and second grade.
  - i. Social development: Positive associations were found for BEEP children in social development.
  - ii. Education: BEEP children improved in their acquisition of learning skills and strategies.
  - iii. Outcomes related to maternal educational status: Significantly, it was also found that for BEEP children whose mothers had lower educational status and who received a high-intensity program, **the children attained positive health and educational outcomes equivalent to children from more highly educated families.**
  - iv. **Regular health care provider: As a result of BEEP staff promoting health care and use of a primary care health provider, more BEEP families were able to use and maintain one consistent source of health care.**
- b. *25-year follow-up study:*
  - i. Income levels: As young adults, the BEEP intervention group had higher levels of income than their peers.
  - ii. Education: BEEP young adults also had higher levels of education than their control-group counterparts.
  - iii. **Health and well-being: The BEEP intervention group young adults appeared to have an enhanced sense of well-being and were better caretakers of their own health.**

Palfrey, et al. (2005) suggest that the comprehensive array of services may have been the key to these positive findings.<sup>7</sup>

As with all studies, BEEP also has limitations. The sample size was fairly small and assignment to groups was not randomized. Nonetheless, the Brookline Early Education Project was clearly associated with positive outcomes for participants both as children and as adults. It continues to hold the unique achievement of being one of very few important studies to emphasize health in both the intervention and as an outcome measure.

#### E. Carolina Abecedarian Project<sup>20,30,31</sup>

##### 1. Background

The Carolina Abecedarian<sup>c</sup> Project, in operation from 1972-1985 at the Frank Porter Graham Child Development Center of the University of North Carolina, was a comprehensive early education project for young children at risk for developmental delays and school failure. “The goal of the program was to prevent mild mental retardation and improve academic and social competence at school entry for economically disadvantaged children (p. 51.)”<sup>20</sup> Participants were low income families, usually consisting of a female

<sup>c</sup> **Abecedarian** means one who learns the fundamentals of something, such as the alphabet.

parent who had an average IQ of 85, a low education level, and a mean age of 20 years. Referrals of the families to the project were made through hospitals, clinics, social service agencies, and other community resources.

A High Risk Index score (the index included demographic information, parental education, income, intelligence, and maladaptive family behaviors<sup>20</sup>) was obtained for the families who were then randomized to the preschool intervention or control groups from birth to five years. Approximately one hundred (107) children were included in the final sample. Data for the initial analysis were collected every 6 months during the time the children were ages 6-54 months.

At age 5, prior to starting kindergarten, all the children were reassigned to either the intervention group, which included a school-age intervention component, or the control group. This research design resulted in four separate groups for comparison:

- Eight years of intervention — five in preschool and three in primary school (the experimental/experimental [or EE] group with 25 children)
- Five years of intervention in preschool only (the experimental/control [or EC] group with 24 children)
- Three years of primary school intervention only (the control/experimental [or CE] group with 21 children)
- No educational intervention at all (the control/control [or CC] group with 22 children).<sup>31</sup>

Outcomes were assessed by either comparing all four groups or by combining the EE and EC groups and the CE and CC groups.

**While the Abecedarian Project included health components, there were no health outcomes reported. Both the intervention and control groups received the same health care and nutritional supplements from the same pediatricians. The researchers studied outcomes related to the educational intervention.**<sup>32</sup>

## 2. Components

- a. *Preschool:* Programming for the preschool component was designed to improve children's cognitive and linguistic skills. Services were provided 5 full-days each week on a year-round basis at a child care center.
- b. *School age:* Children 5-8 years old were provided with extra academic exposure via a home/school resource teacher (HRT) who visited families approximately every other week with an average of 13-15 visits per year. These children no longer participated in center-based activities.
  - i. Home visits: Home activities that complemented concepts being taught at school were provided by the HRTs who not only made home visits, but also visited the children in their classrooms to ensure that the materials being given in the home matched the curriculum in the classroom.
- c. ***Health: Pediatric care was provided at the center by a team of research nurses and pediatricians. Iron-enriched formula was also provided for both control and intervention group children.***
- d. *Parent inclusion:* Parents were encouraged to participate in family education sessions that focused on parenting and child development.

## 3. Outcomes

- a. *IQ:* It was found that, at the end of the preschool intervention, participants outscored non-participants in IQ scores. This difference continued to be significant until age 15,

when it finally faded and no difference was found in comparison to the control group. An interesting outcome of the study was that the IQ differences came from participation in the preschool component of the program. The group that only participated in the school-age intervention did not show this advantage in IQ.

- b. *Education:* Although IQ effects were no longer significant at age 15, children who participated in the preschool program showed significant differences in the areas of reading and math where scores were higher than in the control group. These children also had less grade retention and less special education placement. Unlike IQ, these results seemed to be most strongly associated with the school-age intervention. Karoly, et al. (1998) comment that “these results are suggestive of a role for high-quality, educational, center-based care in promoting early cognitive development, combined with subsequent school-age intervention to boost academic performance.”(p. 53)<sup>20</sup>
- c. *Maternal education:* As with the Syracuse study, mothers in the Abecedarian Project also were more likely to have significantly more years of education at the end of the project after having no difference at the beginning.

The Abecedarian Project is viewed as one of the stronger studies from a methodological standpoint because they included a control group from the beginning of the study. They compared findings from the intervention group with a randomly selected control group. It has received a “proven” rating from RAND’s Promising Practices Network.

## F. *Elmira Prenatal/Early Infancy Project*

### 1. **Background**

The Elmira Prenatal/Early Infancy Project (PEIP), also known as the Elmira Nurse Home Visitation Program, took place from 1978 to 1982 in Elmira, New York. The intent of the study was to ascertain the effects of home visiting on first-time mothers and their children, who were considered to be at high risk for poor family and child outcomes. Four hundred study participants were recruited from prenatal clinics and social service agencies. Most were unmarried (62%) with low socioeconomic status (59%) and nearly half of the participants were less than 19 years of age at registration (48%.) Participants were randomly assigned to one of two intervention groups or one of two control groups. The difference between intervention groups was the duration of home visits: one group received home visiting only during pregnancy, while the other received home visits until the children were two years old. Free transportation to prenatal and well-child health care was provided for both intervention groups and one of the control groups.

### 2. **Components**

#### a. *Home visits/health:*

##### i. **Nurse visits:**

**Visits by the registered nurses were designed to improve maternal functioning in the areas of prenatal health, child health and development, parenting, and future goals planning. Nurses also taught parents how to create a support system by linking with family and friends as well as utilizing available health and human services. Approximately 9 visits occurred during pregnancy with a total of 23 visits from the child’s birth to age 2.**

##### ii. **Nurses also addressed the following areas with mothers/families:**<sup>33</sup>

- **Substance abuse**
- **Issues related to low-birth weight deliveries and poor child outcomes:**

- inadequate weight gain
- inadequate diet
- inadequate use of office-based prenatal care
- hypertension
- Abuse and neglect
- Rapid, successive pregnancies

### 3. Outcomes<sup>33</sup>

- a. *Emergency room visits:* during the second year of life, intervention group children were seen 32% fewer times than control group children.
- b. *Child abuse and neglect:* home-visited children had 80% fewer verified cases of abuse and neglect.
- c. *Children of women who smoked:* Of children whose mothers smoked 10 or more cigarettes per day, those in the intervention group had significantly higher IQ scores at ages 3 and 4 than children of smokers in the control group.
- d. *Maternal life course:* For women in the intervention group who were classified as poor and unmarried, the following was found in comparison to the control group:
  - i. Fewer subsequent pregnancies
  - ii. Fewer subsequent births
  - iii. Longer time between births of first and second children
  - iv. Fewer months on welfare
  - v. Fewer months receiving food stamps
  - vi. Fewer behavioral problems resulting from substance abuse
  - vii. Fewer arrests
- e. *Antisocial behavior among study children at age 15.* Children living with poor, unmarried women in the intervention group compared to the control group showed the following behaviors by age 15
  - i. Fewer incidences of running away
  - ii. Fewer arrests
  - iii. Fewer convictions and violations of probation
  - iv. Fewer lifetime sex partners
  - v. Fewer cigarettes smoked per day
  - vi. Fewer days having consumed alcohol

Olds and colleagues (1999) replicated the Elmira Project in Memphis, Tennessee and concluded that the home visitation program was most beneficial for families at high-risk, i.e., poor, unmarried, first-time mothers. They caution against replication on a wide scale basis due to possible lessened effectiveness of the program. However, at the time of their study in 1999, funding had been made available to replicate the program in Los Angeles, Fresno, and Oakland, California; Oklahoma City, Oklahoma; St. Louis, Missouri; and Clearwater, Florida.<sup>33</sup>

### G. *Infant Health and Development Program*

1. **Background** The Infant Health and Development Program (IHDP), initiated in 1985, was a comprehensive early intervention for low-birth-weight (less than or equal to 2,500

grams), premature (less than or equal to 37 weeks) infants designed to reduce the infants' health and developmental problems. A sample of 985 infants was "categorized into two birth-weight groups: greater than 2,000g = "heavier" and less than or equal to 2,000g = "lighter." One-third of the sample came from the heavier group and two-thirds from the lighter group. Within each weight group, one-third of the subjects were randomized to the intervention group and two-thirds to the control group. The randomization procedures monitored balance between groups for birth weight, gender, maternal education (less than high school; high school graduate; some college, or more), maternal race (African-American, Hispanic, and white/other), primary language in the home, and infant participation in another study. Random assignment procedures resulted in 377 infants (142 heavier, 235 lighter) in the intervention group and 608 infants (220 heavier, 388 lighter) in the control group (p. 4)"<sup>34</sup>

The program was operated in eight medical institutions in Little Rock, Arkansas; New Haven, Connecticut; Miami, Florida; Cambridge, Massachusetts; Bronx, New York; Philadelphia, Pennsylvania; Dallas, Texas; and Seattle, Washington from 1985 to 1988.<sup>34</sup>

## 2. Components

Interventions began after discharge and were provided until the child reached 36 months.

- a. *Assessment and referral*: All children received **medical, social, and developmental assessments** with referrals as appropriate.
- b. *Home visits*: The intervention group received visits from a home visitor weekly for the first year and bi-weekly for the duration of the program. *The home visitors focused on children's health issues* as well as social and intellectual development. Parents were taught problem-solving skills so they could address the needs of their children as they arose. The home visitors were college graduates with special training in the area of early childhood care and education.

**Ramey and Ramey (1993) detail the duties of the home visitors: "Home visitors facilitated the delivery of health care by explaining the importance of specific procedures, arranging for transportation to offices and clinics, accompanying parents (when useful), and observing the hygiene and health care behaviors in the home. Thus, home visitors were viewed as liaisons in the health domain, but not as the primary providers of health care (p.136)"<sup>35</sup>**

- c. *Health*: Ramey and Ramey continue their description of health services provided by the home visitors:

**The strategy for addressing health of the children included (1) regular high-quality health surveillance (following the schedule recommended by the American Academy of Pediatrics for visits and procedures during the first three years of life), including home visitor assistance with scheduling, transportation, referral, and additional care as needed; (2) parent education through home visiting regarding basic nutrition, hygiene, and the need for specialized care of premature and low birth weight children (adapted for each child); (3) in the Child Development Centers, when children were between 12 and 36 months of corrected age (determined as chronological age minus weeks of prematurity), all employees were trained in health care behaviors to meet standards set by the American Academy of Pediatrics and the Centers for Disease Control. Because of the potential vulnerability of these at-risk children, the maintenance of these standards was monitored weekly by project staff, including written documentation, and supplemented by outside professional monitoring. In the domain of health, some children were judged to need specialized therapies, such as physical therapy and**

speech therapy, and these were provided to all children for whom it was recommended by the primary physician. Transportation and other assistance in receiving these supplemental therapies were facilitated by home visitors and other project staff. (p.137)<sup>35</sup>

- d. *Child care:* The intervention group also received educationally-based child care services which occurred year-round, five days per week starting when the infants were 12 months old.
- e. *Parent inclusion:* Beginning when the child was 12 months old, bimonthly parent group meetings provided parents with information on child rearing, **health and safety**, and other parenting concerns, along with some degree of social support.

### 3. Outcomes

- a. *IQ:* At the end of the 36-month intervention, IQ scores for children in the intervention group were significantly higher than control group children. At ages 5 and 8, follow-up studies indicated the IQ differences had faded except for children in the intervention group who were “heavier” low-birthweight children.
- b. *Health:*<sup>34</sup>
  - i. **Lighter-birth-weight children in the intervention group reported higher morbidity scores (i.e., a higher presence of health conditions over three years) than did lighter-birth-weight children in the control group. No significant differences were found between groups for the heavier-birth-weight infants.**
  - ii. **No significant differences were found between groups for functional status or for maternal perceptions of the child’s health.**
  - iii. **Behavior-problem scores at 24 and 36 months of age demonstrated a significant intervention effect at both ages. The 36-month behavior scores indicated that the IHDP was more effective for African-American infants than for European American infants.**
  - iv. **Behavioral measures showed significantly better scores for the intervention group than the control group at age 3. No significant differences remained at age 5.**
  - v. **At age 3 years, the intervention group scored significantly higher than the control group on the morbidity index, indicating a higher rate of brief illnesses in the intervention group. (The authors explain this finding as possibly being due to the increased risk of illness associated with center-based child care and a greater number of physician office visits by intervention program children). There were no significant differences remaining at ages 4 to 5 years.**<sup>36</sup>
  - vi. **There were no significant differences between the groups at ages 3 or 5 for number of hospitalizations.**<sup>36</sup>
  - vii. **One study<sup>37</sup> looked at child behavior at 30 months and found that intervention group children had higher scores than the control group children on all child behavior measures. The intervention group children had significantly higher ratings for persistence (i.e., goal-directedness), enthusiasm (i.e., quality of interest), and overall child behavior (i.e., summary of enthusiasm, persistence, cooperation with mother, and enjoyment of reward).**
  - viii. **A study<sup>38</sup> of low-income children in the IHDP found significantly more intervention group than control group infants with scores less than 65 on the Total Problems scale of the behavioral outcome measure (85% versus 73%).**

**There were no significant differences between groups with regard to health status or growth status.**

ix. **Bradley, Burchinal, and Casey (2001)<sup>39</sup> assessed whether a child’s home environment impacted the effects of the IHDP on 36-month IQ and behavior scores. Their results showed that the intervention group had significantly better scores than the control group on behavioral outcome measures. They also found that there was no significant relationship between intervention group status and Home Observation for Measurement of the Environment (HOME) scores for behavioral measures, suggesting that the quality of the home environment does not affect the impact of the IHDP on behavioral outcomes.**

c. *Math achievement:* Also at age 8, the children in this latter group still held a significant advantage in math achievement scores over their control counterparts.

d. *Level of participation:* A finding of interest was that at 2 and 3 years of age, those children whose families had higher participation in intervention services had better scores on cognitive tests than those who had less consistent participation.<sup>40</sup>

The IHDP has received a “proven” rating by RAND’s Promising Practices Network.

### **Programs H-M: Selected Current State and Regional Programs**

Programs were selected based first on the presence of health outcomes (if any), secondly on the inclusion of children’s health in their goals and program components, and lastly, on the comprehensiveness of their agenda or plan. While this paper cannot describe all programs fitting these criteria, the following states and regions represent a sample of regionally mixed, promising programs. ( I think using the phrase “promising programs” indicates they are strong examples.)

H. Arizona’s School Readiness Action Plan

I. Smart Start — North Carolina

J. First Steps — South Carolina

K. Early to Rise: Improving the school readiness of Philadelphia’s young children

L. Kids Matter — Washington State

M. Achieving School Readiness: A 5-Year Action Agenda for Maryland

#### **H. Arizona’s School Readiness Action Plan<sup>41</sup>**

##### **1. Background**

Arizona’s Action Plan is a recent (2004) endeavor motivated by the goal of ensuring that all Arizona children begin 1st grade safe, **healthy** and ready to succeed. The Governor’s School Readiness Action Plan was developed with input from 144 business and community leaders, child care, education and health professionals, tribal representatives, state agencies, and elected officials.

##### **2. Components**

a. *Provide parent education and family support programs that strengthen families and promote school readiness.*

i. **Increase funding for Healthy Families (a strengths-based child abuse prevention program.)**

b. *Increase health screening for Arizona children birth through 6 years old beginning with children covered by Arizona Health Care Cost Containment System (AHCCCS) and*

*KidsCare (Arizona's health insurance program for children under the age of 19 not covered by other health insurance.)*

- i. **Increase the number of children with well-child health screens.**
  - ii. **Screen Neonatal Intensive Care Unit (NICU) babies and refer those with possible developmental delays to early intervention services/programs.**
  - iii. **Engage experts in screening and treating children with developmental delays.**
  - iv. **Train more health professionals and lay people to identify children with possible developmental delays.**
  - v. **Train child care center staff to screen children for oral health needs.**
  - vi. **Screen all children born in an Arizona hospital for hearing ability prior to discharge.**
- c. *Provide child care and preschool staff with access to a nurse health consultant.*
- i. **Design a Health Consultation System.**
- d. *Create public-private partnerships to build capacity of local communities to provide quality ECE programs.*
- e. *Improve the quality, health and safety of ECE settings.*
- i. **Ensure sufficient monitoring of health and safety standards in licensed child care.**
- f. *Increase the pool and retention of qualified early care and education professionals.*
- g. *Provide adequate funding for child care subsidies at a level that promotes high quality ECE to enhance Arizona students' chances of academic success by making voluntary full-day kindergarten available to every child.*
- h. *Phase-in high quality state-supported preschool.*
- i. *Coordinate early care and education functions between state agencies, Head Start and Tribes.*

### 3. **Outcomes**

While there are no formalized plans for evaluating the results of the Action Plan, the governor has listed the following indicators to be measured:

- a. *Ready Families*
  - i. **Increase number of families served by Healthy Families**
  - ii. **Increase number of AHCCCS enrolled children (aged 15 mos. and 3-6 years) who receive EPSDT well child screening**
  - iii. **Increase number of one year olds who receive oral health screening**
  - iv. **Increase number of ECE settings using a health consultant**
- b. *Ready Programs and Schools*
  - i. Increase number of high quality programs (accreditation, self-study, or technical assistance)
  - ii. Increase number of schools offering voluntary full-day kindergarten
- c. *Ready Teachers*
  - i. Increase number of teachers with an Associate of Arts degree in Early Childhood Education
  - ii. Increase number of K-3 teachers with Early Childhood Endorsement/Certificate



iii. Increase the number of Early Childhood Education Scholarships

d. *Ready Systems*

- i. Consolidate Department of Economic Security (DES) early childhood education functions within DES
- ii. Implement the early childhood marketing campaign with community partners
- iii. Complete fund maximization plan
- iv. Implement statewide evaluation of the early childhood education system
- v. Implement the governance structure

I. **Smart Start — North Carolina**

1. **Background**

North Carolina's Early Childhood Initiative (Smart Start) was created in 1993 as a partnership among state government and local leaders, service providers, and parents to better serve children under six and their families. The state distributes funds to county-based Partnerships for Children, which are nonprofit corporations established specifically for the purpose of administering Smart Start activities.

Smart Start programs and services provide access for children under age six to high-quality and affordable child care, **health care**, and other critical family services. **The primary goal of Smart Start is to ensure that all children enter school healthy and prepared to succeed.**<sup>42</sup>

According to one of the many monographs written about the initiative, Smart Start functions as follows:

Smart Start local partnership boards assess the needs of children and families in their community as well as resources and services available to meet those needs. Based on this assessment, a comprehensive plan is developed to create a continuum of community-based services for children, ages 0-5. In each local partnership, planning teams make decisions about the kinds of programs that are developed using Smart Start funding and how to integrate existing resources with Smart Start funding. North Carolina Partnerships for Children (NCPC) board members, staff and key stakeholders from state agencies review each local partnership's plan at length. These stakeholders facilitate counties' efforts by identifying and coordinating available funding and other supports their agencies can offer. They also identify additional sources of funding, technical assistance and other resources that can help a county reach its goals.

As required by legislation, Thirty percent (30%) of all Smart Start service funds are spent on child care subsidies. Forty percent (40%) of funds are used on other child care related services (e.g., child care resource and referral, quality improvement projects and teacher wage supplements), **leaving thirty percent (30%) for health and family support activities.** Typically, local partnerships fund subcontractors to provide needed services.<sup>43</sup>

**In actual practice, the health component of Smart Start receives 10% of the funding.**

2. **Components**<sup>42</sup>

It is difficult to specify the interventions and components of Smart Start because it funds local partnerships that have flexibility in what kind and how their services are provided. Even so, Smart Start services are generally grouped in this manner:

- a. *Child Care and Education*
- b. *Family Support and Education*

- c. *Health Care and Education (Not all of the following components are provided by each program. Rather, these are components from a number of different Smart Start partnerships.):*
- i. **Support for Immunizations**
  - ii. **Health and Developmental Screenings**
  - iii. **Health Education for Parents and Child Care Providers**
    - *Child Care Health Consultants:* The role of consultants may vary by individual programs and partnerships, but in general, consultants provide advice and workshops on development issues, special health care needs, infectious/contagious disease, nutrition, injury prevention, health screenings and mental health.<sup>44,45</sup>
  - iv. **Access to mental health care**
  - v. **Health promotion**
  - vi. **Nutrition services**
  - vii. **Injury prevention**
  - viii. **Provision of a mid-level Health Practitioner**
  - ix. **Preventive Dental Care Program**
  - x. **Dental Treatment**
  - xi. **Purchase of equipment and supplies necessary for Vision Screening**
  - xii. **Support for the Mobile Health Unit providing outreach and treatment**
  - xiii. **Childcare Outreach Nurses**
  - xiv. **Early Intervention Teams**
  - xv. **Vision Screening — Prevent Blindness of North Carolina**
  - xvi. **In-Home Visitation**
  - xvii. **Health Care Coordination**
  - xviii. **Nursing Education and Technical Assistance**
  - xix. **Community Transition Coordinator (for “at-risk” infants)**
  - xx. **Survey of dental health care providers and parents to identify dental health needs in the county**
  - xxi. **Sickle Cell education for childcare providers and preschool program staff**
  - xxii. **Health Check Coordinator**
  - xxiii. **Nursing staff to visit childcare centers and verify immunization status of children**
  - xxiv. **Vision Screenings at childcare centers and family childcare homes**
  - xxv. **Eye injury education for parents**
  - xxvi. **Immunization Service expansion**
  - xxvii. **Food and Nutrition education programs**
  - xxviii. **In-home breastfeeding support**
  - xxix. **Pediatric Primary Care**
  - xxx. **Parental Education in child development**
  - xxx. **Infectious disease control in out-of-home child care settings**

### 3. Outcomes<sup>42</sup>

Kropp, Kotch and Harris (2001) studied a sample of 711 Smart Start children and 1415 non-Smart Start kindergarten children to determine if Smart Start interventions were associated with children having a regular place of medical care, timely immunizations, and health screenings and follow-up. Data were gathered on a form called the **Kindergarten Health Assessment** by school system or partnership employees.

- a. *Regular place of care:* Smart Start children were found to have a regular place of health care significantly more than non-Smart Start children. “Regular place” was defined as either a private doctor or health department/community health center. “No regular place” was defined as an emergency room or no source of medical care. However, of the children with a regular place of care, 62% of non-Smart Start children had a private doctor compared to 48% of Smart Start children who appeared more likely to use the health department or community health centers.
- b. *Immunizations:* Smart Start children were twice as likely to have their DPT vaccinations than non-Smart Start children. Smart Start children were also more likely to have their last set of vaccinations on time, but this was not a significant difference.
- c. *Screening tests included blood pressure, hemoglobin or hematocrit, vision, hearing, and developmental:* no significant differences were found between groups in the category “need for screening follow-up.”
- d. *Illnesses/developmental problems.* Five illnesses were examined: asthma, ear infection, speech problems, dental problems, and abnormal blood pressure. There were no significant differences of prevalence of these problems between the Smart Start and non-Smart Start groups.

### J. First Steps — South Carolina

#### 1. Background

South Carolina’s First Steps is very similar to North Carolina’s Smart Start Initiative since it is a public/private endeavor which funds local county partnerships to prepare children ages 0-5 for successful entry into school. First Steps resulted from legislation that was passed in 1999; the program reached full statewide implementation in 2002.

#### 2. Components<sup>46</sup>

Again like Smart Start, it is only possible to summarize the general program elements as the local partnership programs are providing the actual services. In general, First Steps focuses on these four components:

- a. *Early Education*
- b. *Family Strengthening*
- c. *Childcare Quality*
- d. *Healthy Start*
  - i. **Nutrition**
  - ii. **Affordable access to quality age-appropriate health care**
  - iii. **Early and periodic screenings**
  - iv. **Required immunizations**
  - v. **Initiatives to reduce injuries to infants and toddlers**

vi. **Technical assistance and consultation for parents and child care providers on health and safety issues**

3. **Outcomes**

No evaluative studies have been completed on First Steps as of the present time. However, the High/Scope Research Foundation has been funded to develop a program impact report sometime in 2006. (See <http://www.highscope.org/Research/SouthCarolinaFirstSteps.htm> for updates on the report.)

A difficulty that many of the local partnership programs have had in incorporating health components has been a rule in the law that forbids “supplanting” of any other publicly-funded health program by First Steps. Thus, most of the children who are eligible for First Steps are also eligible for Medicaid and therefore cannot be served by a First Steps health intervention.

The following data is from the Initiative’s Fifth Anniversary Report 1999–2004<sup>47</sup>:

- a. *Referred uninsured and underinsured families with children 0–5 to medical homes through school readiness interventions and increased penetration of school readiness services to Medicaid eligible families.*
  - i. 3,419 children served through public health promotion programs.
  - ii. 2,937 children served through nutrition programs.
  - iii. 3,713 children linked to a doctor/medical home from 2002–2004.
  - iv. 10,016 referrals made to support services such as doctors, dentists, WIC, and BabyNet for 8,094 families referred from 2002–2004.
- b. *Increased immunization rates, adequate medical care and early referral for learning disability/health issues which impact school performance among South Carolina families with children 0–5. From 2002–2004, First Steps supported:*
  - i. 915 dental screenings.
  - ii. 1,400 hearing screenings.
  - iii. 688 vision screenings.
  - iv. 9,179 developmental screenings.
  - v. 1,525 home environment assessments (2004 only).
  - vi. In 2004, 99% of children in the First Steps-supported Parents as Teachers programs were fully immunized by age 2, 18 percentage points higher than the state average of 81%.
- c. *Improved parent/caregiver knowledge regarding health and safety issues for young children, and potential educational success impact.*
  - i. 4,322 children served through home-based health services.
- d. *Increased number of uninsured mothers receiving prenatal and postnatal care, in an effort to reduce the number of low birth weight babies.*
  - i. 1,453 pre-natal and post-natal assessments/visits.
  - ii. 365 infant assessments/visits per year on average.
- e. *Increased medical service delivery/integration at school and childcare sites where possible to meet parent needs and ensure health needs of young children are met.*
  - i. 5,027 children served through non-home-based health services.

- ii. **1,273 childcare facilities or schools received a health consultant visit from 2002–2003.**

f. *Increased involvement of pediatric community in family literacy/school readiness referral and guidance.*

- i. **9,074 books handed out at doctors' offices from 2002–2004.**

K. **Early to Rise: Improving the school readiness of Philadelphia's young children**<sup>48</sup>

1. **Background**

In 2001, the Improving School Readiness Project, funded by the United Way of Southeastern Pennsylvania, City of Philadelphia, and the School District of Philadelphia, took a comprehensive approach to developing an action plan for school readiness. The Project obtained feedback from parents, providers, and community leaders and also commissioned original research on the status of Philadelphia's children and families. The Project then developed a set of Core Areas to be addressed along with recommendations for each area. Again, due to the health focus of this literature review, only recommendation in the area of health will be shown.

2. **Components**

a. *Core Area: Early Care and Education*

b. *Core Area: Health Care*

- i. **Target health insurance outreach, enrollment and service efforts to uninsured children, particularly Medicaid-eligible children and those whose families face barriers (such as language/cultural issues.)**
- ii. **Increase lead poisoning prevention and hazard removal activities.**
- iii. **Target at-risk children for preventive dental hygiene and early oral care, beginning at age one.**
- iv. **Merge the application for Medicaid/Child Health Insurance Plan with the application for Child Care Works, the state's subsidized child care program, and WIC, the federally funded child nutrition program.**
- v. **Broaden the number of organizations actively engaged in enrolling uninsured young children in health insurance and assisting their families in maintaining their insurance status and using health services.**
- vi. **Ensure that all eligible young children at the City's district health centers apply for and receive appropriate insurance coverage.**

c. *Core Area: Public Engagement of Parents*

d. *Core Area: Parent Involvement, Education and Support*

- i. Engage parents about child development through school readiness/child development specialists in high trust, low stigma settings such as **health care practices**, ECE settings and communities of faith.

e. *Core Area: Systems Coordination*

3. **Outcomes**

No outcomes or plans for evaluation were found at this time.

L. **Kids Matter — Washington State**<sup>49</sup>

1. **Background**

From 2003–2005, the state of Washington developed a comprehensive framework for providing services to ensure that all children enter school healthy and ready to learn. A collaborative among the Washington Department of Health, the Washington Build Initiative, and the Head Start-State Collaboration Office, Kids Matter is based on a family support approach which helps strengthen and empower families and communities.

Hallmarks of the plan are defined as:

- a. Approaches early childhood systems as a collaborative effort
- b. Serves as an over-arching bridge for a comprehensive and integrated framework
- c. Defines common goals and outcomes
- d. Outlines specific strategies and partners
- e. Focuses on accountability and evaluation of progress

## 2. Components

### a. *Access to health insurance and medical homes*

- i. **Increase awareness among all who care for young children about the importance of comprehensive health care**
- ii. **Enroll more eligible children in public health insurance programs (Medicaid, SCHIP, Basic Health, SSI)**
- iii. **Facilitate access to a medical home for all children (including medical, dental, mental health, vision and hearing services)**
- iv. **Make developmental assessment and referral to early intervention accessible**

### b. *Social, emotional, and mental health*

- i. **Ensure that communications with all who work with young children emphasize the importance of social, emotional and mental health**
- ii. Promote existing programs' awareness and implementation of models of services and supports for young families that are effective, culturally competent and community-based
- iii. Promote existing programs' awareness and implementation of practices that provide opportunities for social connectedness for families
- iv. **Promote caregivers' knowledge of social, emotional and mental health of young children**
- v. Promote collaboration among policymakers, providers and other stakeholders

### c. *Early care and education/child care*

- i. Use Washington State Early Learning and Development Benchmarks as a tool to enhance the quality of early care and learning
- ii. Improve the ability to evaluate and reward high-quality programs through the development of a Quality Rating System (QRS) and tiered reimbursement
- iii. **Promote children's health in ECE programs (ongoing statewide collaborative effort: Healthy Child Care Washington-HCCW): Includes Child Care Health Consultants working with ECE programs.**
- iv. Support high quality professional development services for caregivers
- v. Develop capacity within the ECE systems to engage in family support
- vi. Expand access to high quality preschool experiences

d. *Parenting information and support*

- i. Provide information to parents and facilitate connections to needed services and supports
- ii. Provide professional development programs, services and supports for professionals providing information and support to parents
- iii. Strengthen and sustain the Washington Parenting Education Network (WAPEN)

3. **Outcomes**

As the Kids Matter plan is fairly new, there are no research data on outcomes available. However, the plan lists the following outcomes to measure.

a. *Access to health insurance and medical homes*

i. **Parent and Caregiver**

- **Increased understanding of the importance of comprehensive health care (including medical, dental, mental health, vision and hearing)**
- **Increased ability to recognize an emerging issue with their child's health or development and connect with appropriate services**

ii. **System**

- **Increased number and percentage of children who have medical insurance**

iii. **Child changes**

- **Increased number and percentage of children who receive recommended preventive care (e.g., well-child, immunizations)**
- **Increased number and percentage of children who have access to comprehensive health care (including medical, dental, mental health, vision and hearing)**

b. *Social, emotional, and mental health*

i. **Parent and caregiver**

- **Improved understanding and practice of nurturing behaviors to promote children's optimal social-emotional development and mental health**

ii. **System**

- **Increased availability of appropriate and coordinated mental health services for children**

iii. **Child changes**

- **Increased number and percentage of children entering kindergarten with social/emotional skills**

c. *Early care and education/child care*

i. **Parent and caregiver**

- **Increased understanding of what children need for optimal health and development (physical, social-emotional, cognitive and language)**

ii. **System**

- **Increased number and percentage of child care and preschool programs that are quality rated**
- **Increased wages for quality child care providers**

- Increased systems' recognition of families' role as the primary nurturers of their children
  - **Public recognition of ECE, health and school readiness as a major contributor of academic success and economic growth**
  - Improved ability of families to obtain quality child care and preschool programs that meet families' needs
  - Increased availability of community resources and support networks for families and caregivers
- iii. Child changes
- **Increased number and percentage of children entering kindergarten healthy and ready for school, including: 1) physical wellbeing, health and motor development, 2) social and emotional development, 3) approaches toward learning, 4) cognition and general knowledge, and 5) language, communication and literacy**
- d. *Parenting information and support*
- i. Parent and caregiver
- **Increased stress-reduction skills**
  - **Increased knowledge and skills to support children's healthy development**
- ii. System
- Increased availability of parenting education resources and services
- iii. Child changes
- Increased number and percentage of children who live in safe, stable and supportive families

## M. **Achieving School Readiness: A 5-Year Action Agenda for Maryland**

### 1. **Background**

Maryland's Leadership in Action Program (LAP) was convened in December 2001 and consisted of 40 leaders from state and local government and community advocacy and service agencies. Concerned that, in 2001, only 49% of Maryland's kindergartners had been assessed as ready for school, LAP members spent ten months researching, discussing, and developing a 5-year School Readiness Action Agenda. Encompassing all children ages birth to 5, the Action Agenda target is, for school year 2006-2007, 75% of all kindergartners will be assessed as fully ready for school based on the State's readiness assessment, the Work Sampling System.

The LAP developed six goals as part of the Agenda:

- a. All children, birth through age 5, will have access to quality ECE programs that meet the needs of families, including full day options.
- b. Parents of young children will succeed in their role as their child's first teacher.
- c. **Children, birth through age 5, and their families, will receive necessary income support benefits and health and mental health care to ensure that the children arrive at school with healthy minds and bodies.**
- d. All ECE staff will be appropriately trained in promoting and understanding school readiness.



- e. All Maryland citizens will understand the value of quality ECE as the means to achieve school readiness.
  - f. Maryland will have an infrastructure that promotes sufficient funds and holds accountable its school readiness efforts.
2. **Components**

To expand on the goals, the LAP developed strategies for each one. For the purposes of this paper, only the strategies from Goal C. will be reviewed.

- a. **Goal C: Children, birth through age 5, and their families, will receive necessary income support benefits and health and mental health care to ensure that the children arrive at school with healthy minds and bodies.**
    - i. **Assure access to all benefits for which a family may be eligible.**
    - ii. **Improve access to health care for uninsured and underinsured children and women of childbearing age.**
    - iii. **Expand appropriate substance abuse treatment in order to provide treatment on demand to parents of children 0-6.**
    - iv. **Further reduce incidence of childhood lead poisoning statewide.**
    - v. **Develop an integrated system of early childhood mental health services to promote healthy social-emotional growth.**
3. **Outcomes**

No outcomes have been obtained for Maryland's plan at this time. However, the LAP did call for Maryland's Subcabinet for Children, Youth and Families to create a subcommittee charged with spearheading evaluation efforts for the Action Agenda.

### **Section III: Key Findings and Lessons Learned**

This health and school readiness literature review summarizes over 40 years of innovation and planning for ECE and school readiness programs. Studies A-G informed current research and development and state/city programs H-M are following the lead of these seminal projects. This section summarizes the key findings or common programmatic components of programs included in this review as well as take-home lessons for program planning. A few broad findings are summarized and recommendations are made for inclusion of specific health components for community-based SR programs. Finally, Table 1 summarizes the common findings from the programs reviewed of 'what works best' and 'what does not work well' related to health and SR.

#### **A. Broad Findings**

1. **School readiness programs are effective in many ways.** The studies and programs described in this review are associated with positive effects of ECE interventions in the following areas:

Research-based, historical programs show that comprehensive ECE programs affect the following positive outcomes:

  - **Increased access to health care**
  - **Improved health status**
  - **Increased access to dental care**
  - **Decreases in child abuse/neglect**
  - **Regular place of care/medical home**

- **Fewer emergency room visits**
- **Improved behavioral skills**
- Increased cognitive skills
- Increased social skills
- Improved maternal education
- Decreased juvenile delinquency
- Decreased grade retention
- Decreased special education placement
- Higher income and education levels during young adulthood
- **Increased sense of well-being as young adults**
- Increases in IQ (if only briefly)

Present state and regional programs show that SR programs with health components provide:

- **Better access to health care**
  - **Increased number of families with health insurance**
  - **Increased use of regular place of health care/identification of medical homes**
  - **Increased number of children with up-to-date immunizations**
  - **Increased number of children identified with problems through comprehensive screenings**
  - **Increased health and safety knowledge and standards in ECE programs working with trained health care consultants**
  - **Increased knowledge of health and safety for parents and ECE providers**
2. **States are showing promising efforts in school readiness.** As can be seen in Programs H-M and in Section V, states are developing new and innovative ways to not only provide school readiness health components, but to also measure them. Many states have generated indicators that will assist in gathering data in the near future.
  3. **The Ready Child Equation shows potential in providing guidelines for SR initiatives.** As mentioned earlier in Section I, the Equation is Ready Families + Ready Communities + Ready Services + Ready Schools = Ready Children.
  4. **More outcome data is needed on the effects of health components included in school readiness programs.** While it is encouraging to note the inclusion of health components in recent school readiness initiatives, the field needs more *research specific to the impact of health components* on the health of children and families participating in the school readiness programs. Such data will help guide state and local efforts to provide the most effective health interventions to ensure that children are healthy and ready to learn.

## **B. Recommendations for Inclusion of Specific Health Components in Community SR Programs**

While more research is needed to verify which particular health components lead to specified health outcomes, it is possible to make some recommendations for program implementation based on the available research.

1. **Children need to be healthy in these areas:**
  - a. Medical/physical, specifically:

- i. immunizations
    - ii. lead poisoning
    - iii. asthma
    - iv. nutrition
    - v. safety from injuries
    - vi. safety from child abuse/neglect
  - b. Vision
  - c. Oral health
  - d. Social and emotional development
  - e. Mental health
2. **In order to address these issues, programs should provide or facilitate easier access to:**
- a. Screenings for medical, oral, vision, and mental health issues
  - b. A medical home or regular place of medical care
  - c. A Child Care Health Consultant
  - d. Access to health insurance for children and mothers
  - e. Nutrition assistance such as WIC and Food Stamps
  - f. An integrated approach that serves **both** children and parents/caregivers
  - g. Parent education regarding children's health issues and developmental milestones
  - h. Health education for early care and education professionals
3. **Programs *may* want to also address these issues:**
- a. Maternal health
  - b. Educating pediatricians, dentists, and other child health care providers about the importance of health to school readiness
  - c. Collaborating with other agencies to achieve the above recommendations

Section IV: Tables and References

Table 1: Lessons Learned\*

What Seems to Work Best		What Doesn't Work As Well	
Topic	What Seems to Work Best	What Doesn't Work As Well	What Doesn't Work As Well
<b>Comprehensive services</b>	Providing an integrated array of services designed to effectively address children's health issues. <b>A-M</b>	Picking and choosing one or two interventions	
<b>Collaboration</b>	Planned, strategic collaboration with health care providers, mental health systems, and schools. <sup>7</sup> <b>H-M</b>	Trying to provide quality services in isolation	
<b>Two-generation format</b>	Programs that involve direct services to the child and parent/caregiver, involvement/education. <b>A-M</b>	Services directed at parents only	
<b>Parent education</b>	Providing education for parents regarding health and development of their children. <b>H, I, L, M</b>	Directing services at the child only	
<b>Home visiting</b>	a. Home visiting in combination with other interventions. <b>B-G</b> b. Utilizing nurses as home visitors. <b>F</b>	Home visiting as a primary intervention or home visiting that is the only intervention utilized <sup>49-51</sup>	
<b>Child Care Health Consultation</b>	Utilizing professionals trained to provide health consultation for community SR programs. <b>H, I, J, M</b>	Trying to provide health components without technical assistance	
<b>Medical home/regular place of care</b>	Ensuring that all staff encourage families to access and utilize a regular place of health care. <sup>32</sup> <b>D, I, M, J</b>	Using the emergency room for health care	
<b>Access to health insurance</b>	Assisting families to obtain health insurance for children by merging applications or having health insurance information readily available at community centers and sites utilized by families. <b>H, J, L, M</b>	Minimal assistance with accessing health insurance; no hands-on approach	
<b>Access to available services</b>	Outreach to families to assist with access to available services such as WIC, Food Stamps, Medicaid/MediCal, early care and education programs. <sup>4</sup> <b>A, B, K, L</b>	Assuming families know what services are available to them and how to access the services	
<b>Health screenings</b>	Providing health screenings, assessments, and referrals for medical, vision, oral health, mental health, and social/emotional development services and supports. <b>A-M</b>	No health screenings, assessments, or referrals	
<b>Mental health</b>	Use of mental health consultants to assist with screening for and access to mental health care. <sup>53</sup>	Trying to provide mental health screenings without professional consultation	
<b>Immunizations</b>	Sending parents letters prompting them to have their child vaccinated on time. <sup>4</sup>	Giving parents an immunization schedule without accompanying prompts.	
<b>Nutrition</b>	Providing nutrition education to parents and links to WIC and food stamp programs. <sup>4</sup>	No health education for parents; difficulty accessing needed services.	
<b>Lead poisoning</b>	Providing education to parents regarding lead poisoning and effective home maintenance practices to reduce lead exposure. <sup>4</sup>	Assuming there is no problem with lead poisoning anymore; assuming parents know what to do regarding possible presence of lead.	
<b>Oral health</b>	-Including oral screening in other health screenings. -Utilizing points of entry into WIC, child care, home visits, and during immunizations to make referrals for oral health care and provide parent education. <sup>4</sup> -Providing transportation to dental services. - Providing dental services directly. <b>A</b>	-Neglecting to include oral health in screenings; making referrals difficult to obtain. -Assuming that families will use public transportation to get to dental services.	

\*Table 1 shows lessons learned from the programs reviewed. Lessons learned from review of the literature, but not necessarily a program, are listed by endnote number. The program or programs from which the lessons were obtained are listed by their respective letters in bold font as delineated in the review.

**Table 2: Key Programs and Health Indicators of Selected Stat**

This section provides a summary in table form of the key/selected programs from Section I of the review (Table 2.) Table 3 shows health indicators from SR initiatives from 19 states across the United States. Please note that, while only health indicators are provided for this review, Table 4 provides website information that encompasses each state's entire SR initiative.

**Table 2: Studies A-G**

<b>Program</b>	<b>Study Design (if any)</b>	<b>Program Health Components</b>	<b>Sample</b>	<b>Health Outcomes</b>	<b>Relevant Findings</b>
A. Head Start	1981 Meta-analysis; Head Start Impact randomized trial (started in 2002)	<ul style="list-style-type: none"> <li>- Health Services and assessment</li> <li>- Referral to appropriate medical service</li> <li>- Information/education regarding nutrition, child development, child safety</li> </ul>	<p>For Head Start Impact Study, 5000 children 3 or 4 years of age.</p>	<p>Head Start Impact Study:</p> <ul style="list-style-type: none"> <li>- Higher parent reports of children's access to health care</li> <li>- Children who entered the program as 4-year olds: moderate impacts on access to health care</li> <li>- Improvement in behavioral issues</li> </ul>	<ul style="list-style-type: none"> <li>- Small but significant positive impacts for 3-4 year olds in pre-reading, pre-writing, vocabulary, and literacy</li> <li>- Parents used more educational activities and less physical discipline</li> </ul>
B. Chicago Child-Parent Centers	Chicago Longitudinal Study 1986-present	<ul style="list-style-type: none"> <li>- Screening/assessment by home visitors</li> <li>- Initial health screening from a registered nurse</li> <li>- Hearing test</li> <li>- Vision test</li> <li>- Free breakfast and lunch</li> </ul>	<p>1,539 low-income children, 93% of whom are African-American. Sample was studied from the time they entered kindergarten.</p>	<p>At the 15-year follow-up, it was found that children who attended a CPC preschool program as compared with children who did not attend preschool were 52% less likely to be victims of child maltreatment.</p>	<ul style="list-style-type: none"> <li>- CPC participants were more likely than non-CPC participants to score higher on cognitive tests.</li> <li>- At age 15, intervention group children continued with higher math and reading scores than the control group, were less likely to be retained, and less likely to be placed in special education.</li> <li>- More years of participation in the program was associated with greater benefits in all outcome areas.</li> </ul>
C. Syracuse Family Development Research Program	Quasi-experimental; longitudinal	<ul style="list-style-type: none"> <li>- Home visits by Child Development Professionals to provide education on health issues and developmental processes</li> </ul>	<ul style="list-style-type: none"> <li>- 108 low-income families</li> <li>- Mothers had less than HS education</li> <li>- Avg. maternal age = 18</li> <li>- Children served were from 6 mos. to 5 years old</li> </ul>	<p>No health outcomes</p>	<ul style="list-style-type: none"> <li>- FDRP children had IQ advantages over control group children, but these advantages faded by the time the children were 6 years old.</li> <li>- Maternal education increased during time spent in the program</li> <li>- By age 15, girls showed significant advantages in grades and school attendance. The same was not true for boys</li> <li>- Juvenile delinquency was much lower by age 15 for FDRP children than for non-FDRP children.</li> </ul>

**Table 2: Studies A-G, cont.**

<b>Program</b>	<b>Study Design (if any)</b>	<b>Program Health Components</b>	<b>Sample</b>	<b>Health Outcomes</b>	<b>Relevant Findings</b>
D. Brookline Early Education Project	Experimental	<ul style="list-style-type: none"> <li>- Home visits focused on child development; visits were made by educators, psychologists, and social workers, all of whom were parents</li> <li>- Parent health education groups</li> <li>- Health screenings</li> <li>- BEEP staff emphasized health care and promoted use of regular health care services for participants.</li> </ul>	282 children from the Brookline, MA and Boston, MA area. The project was open to all children. (Not based on SES.)	<p>Outcomes for intervention group children:</p> <ul style="list-style-type: none"> <li>- For BEEP children whose mothers had low educational status, the children attained positive health and educational outcomes equivalent to children from highly educated families</li> <li>- Increase in BEEP participants use and maintenance of medical home</li> <li>- As young adults, BEEP children had better well-being and were better caretakers of their own health</li> </ul>	<ul style="list-style-type: none"> <li>- Social development: positive associations were found for BEEP intervention children</li> <li>- Education: intervention group children improved in their acquisition of learning skills and strategies</li> <li>- As young adults, those in the intervention group had higher levels of income and education than the control group</li> </ul>
E. Carolina Abecedarian Project	Experimental; follow-up studies quasi-experimental, longitudinal	Center-based pediatric care provided by a team of research nurses and pediatricians.	111 children from low income, predominantly (98%) African American families	As young adults, the intervention group had lower rates of teen pregnancy than non-intervention children	<ul style="list-style-type: none"> <li>- Higher reading and math scores for the intervention group at age 15</li> <li>- Maternal education was higher for intervention group mothers than non-intervention mothers</li> <li>- As young adults, intervention group children had more years of total education, were more likely to attend a four-year college, and scored higher on measures of intellectual and academic achievement than did the control group</li> </ul>
F. Elmira Prenatal/ Early Infancy Project	Experimental	Home visits by nurses who provided parent education on: low birth weight issues, child abuse and neglect, rapid/successive pregnancies, developmental processes, maternal life-course development, and substance abuse	400 women who had no previous live births, 85% of whom were unmarried, adolescent, or poor.	<p>For intervention group:</p> <ul style="list-style-type: none"> <li>- Decrease in emergency room visits</li> <li>- Fewer cases of child abuse/neglect</li> <li>- Better maternal life course</li> <li>- At age 15, decreased antisocial behavior for intervention group children</li> </ul>	<p>Better maternal life course specifics:</p> <ul style="list-style-type: none"> <li>- Fewer subsequent pregnancies</li> <li>- Fewer subsequent births</li> <li>- Longer time between 1<sup>st</sup> and 2<sup>nd</sup> births</li> <li>- Fewer months on welfare</li> <li>- Fewer months receiving food stamps</li> <li>- Fewer behavioral problems from substance abuse</li> <li>- Fewer arrests</li> </ul>
G. Infant Health and Development Program	Experimental	Home visitors assisted with transportation to offices and clinics, observed hygiene and health care in the home, accompanied parents as needed, education of parents regarding basic nutrition and specialized care of low birthweight children	985 low birthweight infants	<ul style="list-style-type: none"> <li>- Decrease in behavioral problems for children in intervention group</li> <li>- Fewer hospitalizations for intervention group children</li> <li>- More brief illnesses for intervention group children</li> </ul>	<ul style="list-style-type: none"> <li>- Higher IQs for the intervention group, which faded to control group levels by age 5</li> <li>- At age 8, the intervention group still held a significant advantage in math achievement scores over the control group</li> <li>- Children whose families had higher participation in intervention services had better scores on cognitive tests than those who participated less</li> </ul>

Table 3: Health Indicators by Selected States

State	Health Indicators										
	EPSDT	Oral health screening	Vision screening	Hearing screening	Developmental milestones	Overweight or obese	Body-Mass Index (BMI)	Immunizations	Lead poisoning, lead levels	Asthma	
Arizona	X	X									
Colorado		X			X	X	X				
Connecticut					X			X			
Kansas		X	X	X			X				
Kentucky		X		X	X						
Maine		X	X	X		X		X	X	X	
Maryland	X								X		
Massachusetts		X	X	X		X		X	X	X	
Missouri									X		
New Hampshire		X	X	X				X			
New Jersey											
North Carolina		X	X	X	X						
Ohio									X		
Rhode Island					X						
South Carolina	X										
Vermont			X	X							
Virginia									X		
Washington		X	X	X	X						
Wisconsin	X	X	X	X				X	X	X	

Table 3: Health Indicators by Selected States, cont.

State	Health Indicators										
	Social/emotional difficulties	Child mental health	Anemia	Injury prevention	Special needs	Child abuse/neglect	Births to teen mothers	Low birthweight babies	Maternal health	Prenatal care	
Arizona											
Colorado	X					X					
Connecticut				X	X			X	X	X	
Kansas	X					X			X	X	
Kentucky		X				X					
Maine	X									X	
Maryland	X	X								X	
Massachusetts	X	X				X	X			X	
Missouri	X	X								X	
New Hampshire						X		X		X	
New Jersey											
North Carolina		X		X							
Ohio		X						X		X	
Rhode Island	X					X					
South Carolina				X							
Vermont	X			X	X	X	X	X		X	
Virginia						X	X			X	
Washington	X										
Wisconsin	X		X					X		X	



Table 3: Health Indicators by Selected States, cont.

State	Health Indicators										
	Folic acid	Tobacco-free mothers	Infant mortality	Well-child visits	Public education regarding healthy babies	Parents mental health	Substance abuse treatment for parents	Parent health education	Children with health insurance	Access to available services	
Arizona											
Colorado						X			X		
Connecticut		X	X	X			X	X	X	X	
Kansas											
Kentucky	X				X						
Maine									X		
Maryland						X	X	X	X	X	
Massachusetts				X		X			X		
Missouri									X		
New Hampshire											
New Jersey											
North Carolina				X				X			
Ohio		X									
Rhode Island									X		
South Carolina								X		X	
Vermont			X						X		
Virginia											
Washington				X				X	X		
Wisconsin		X	X				X		X		

Table 3: Health Indicators by Selected States, cont.

State	Health Indicators									
	Regular access to health care	WIC, food stamps	Free school lunches	Health care centers in schools	Medical home/regular place of health care	Use of health consultant	High quality programs	Educating ECE staff re: health issues		
Arizona						X	X			
Colorado	X		X	X						
Connecticut	X									
Kansas	X				X					
Kentucky								X		
Maine										
Maryland										
Massachusetts			X							
Missouri										
New Hampshire			X							
New Jersey		X	X							
North Carolina			X		X	X				
Ohio							X			
Rhode Island										
South Carolina						X				
Vermont										
Virginia										
Washington					X					
Wisconsin		X	X		X	X				

**Table 4: State Programs' Websites**

State	Website
Arizona	<a href="http://governor.state.az.us/cyf/school_readiness/index_school_readiness.html">http://governor.state.az.us/cyf/school_readiness/index_school_readiness.html</a>
Colorado	<a href="http://gettingready.org/matriarch/">http://gettingready.org/matriarch/</a> and click on "Participating States" or use the full web address for Colorado: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_101_A_PageName_E_Colorado">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_101_A_PageName_E_Colorado</a>
Connecticut	<a href="http://chdi.org/files/Ind_book.pdf">http://chdi.org/files/Ind_book.pdf</a>
Kansas	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use Kansas' full web address at: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_103_A_PageName_E_Kansas">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_103_A_PageName_E_Kansas</a>
Kentucky	<a href="http://education.ky.gov/KDE/Instructional+Resources/Early+Childhood+Development/Components+of+KIDS+NOW+Initiative.htm">http://education.ky.gov/KDE/Instructional+Resources/Early+Childhood+Development/Components+of+KIDS+NOW+Initiative.htm</a>
Maine	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use Maine's full web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_105_A_PageName_E_Maine">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_105_A_PageName_E_Maine</a>
Maryland	<a href="http://mdk12.org/instruction/ensure/readiness/pdfs/lap_report.pdf">http://mdk12.org/instruction/ensure/readiness/pdfs/lap_report.pdf</a>
Massachusetts	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use Massachusetts' full web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_106_A_PageName_E_Massachusetts">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_106_A_PageName_E_Massachusetts</a>
Missouri	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use Missouri's full web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_107_A_PageName_E_Missouri">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_107_A_PageName_E_Missouri</a>
New Hampshire	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full New Hampshire web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_108_A_PageName_E_NewHampshire">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_108_A_PageName_E_NewHampshire</a>
New Jersey	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full New Jersey web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_109_A_PageName_E_NewJersey">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_109_A_PageName_E_NewJersey</a>
North Carolina	<a href="http://www.ncsmartstart.org/index.htm">http://www.ncsmartstart.org/index.htm</a> . For <i>The Effect of Smart Start Health Interventions on Children's Health and Access to Care</i> go to <a href="http://www.fpg.unc.edu/smartstart/reports/childrens_health.pdf">http://www.fpg.unc.edu/smartstart/reports/childrens_health.pdf</a>
Ohio	<a href="http://www.gettingready.org/matriarch/">http://www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full web address for Ohio: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_275_A_PageName_E_Ohio1">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_275_A_PageName_E_Ohio1</a>
Rhode Island	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full Rhode Island web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_110_A_PageName_E_RhodeIsland">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_110_A_PageName_E_RhodeIsland</a>
South Carolina	<a href="http://www.scfirststeps.org/">http://www.scfirststeps.org/</a>
Vermont	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full Vermont web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_111_A_PageName_E_Vermont">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_111_A_PageName_E_Vermont</a>
Virginia	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the full Virginia web address: <a href="http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_112_A_PageName_E_Virginia">http://gettingready.org/matriarch/OnePiecePage.asp_Q_PageID_E_112_A_PageName_E_Virginia</a>
Washington	<a href="http://earlylearning.org/kids-matter">http://earlylearning.org/kids-matter</a> and click on "Read the Kids Matter Executive Summary (pdf)"
Wisconsin	<a href="http://www.gettingready.org/matriarch/">www.gettingready.org/matriarch/</a> and click on "Participating States" or use the following web address for Wisconsin's SR indicators: <a href="http://gettingready.org/matriarch/d.asp_Q_PageID=301&amp;PageName2=IndicatorDocs&amp;p=&amp;PageName=Wisconsin+12%2D03%2Epdf">http://gettingready.org/matriarch/d.asp_Q_PageID=301&amp;PageName2=IndicatorDocs&amp;p=&amp;PageName=Wisconsin+12%2D03%2Epdf</a> The Wisconsin KidsFirst report can be found at: <a href="http://www.wisgov.state.wi.us/docs/kidsfirst.pdf">http://www.wisgov.state.wi.us/docs/kidsfirst.pdf</a>

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