

## EVIDENCE-STATEMENT:

# CHILD HEALTH PROMOTION (Screening, Counseling, Immunization, Preventive Medication, and Treatment)

Why This Chapter is Important for Employers: An Overview

### Child Developmental (Screening):

- Approximately 17% of children age 17 years and younger in the United States have at least one developmental disability, and 30% of children with a developmental disability have comorbid or multiple developmental disorders.<sup>1</sup>
- Children with developmental delays and disabilities are at increased risk for poor health and social outcomes and added medical and education costs.
- The *lifetime* direct and indirect costs for persons born in 2000 with developmental disabilities were estimated to equal \$51.2 billion for persons with mental retardation, \$11.5 billion for persons with cerebral palsy, \$2.1 billion for persons with hearing loss, and \$2.5 billion for persons with vision impairment (all figures in year 2003 dollars).<sup>2</sup>
- The added time and stress associated with caring for a child with a developmental disability may result in employees experiencing higher medical claims (due to increased health problems or depression), lower productivity, increased absenteeism, or an early exit from the workforce. The mothers of children with disabling conditions are estimated to lose an average of approximately 5 hours of work per week equaling 250 hours per year.<sup>3</sup> Assuming an hourly cost of \$12 to \$20 (including fringe benefits), that implies a lost productivity cost of \$3,000 to \$5,000 per child, per year.<sup>3</sup>
- Children with developmental delays and disabilities who are identified and treated early have better long-term outcomes.

### Dental Caries Prevention Through Oral Fluoride Supplementation (Preventive Medication):

- Dental caries (tooth decay) is an infectious, transmissible disease in which bacterial by-products (i.e., acids) dissolve the hard surfaces of teeth. It is the most common chronic disease of childhood; up to 27% of children aged 2 to 5 years and 49% of children aged 6 to 11 years have experienced dental caries.<sup>4</sup>
- Dental caries can result in pain and loss of tooth structure or teeth and can progress to acute systemic infection.
- Dental disease is particularly prevalent among young children of lower socioeconomic status.
- Fluoride supplementation prevents 32% to 81% of caries lesions in primary teeth or tooth surfaces.<sup>5</sup>
- Expenditures for dental services in the United States in 2004 totaled \$81.5 billion, which was slightly more than 4% of the amount spent on health care that year. Private health insurance paid for \$40.5 billion, or about half, of this amount.<sup>6</sup>
- Preventing tooth decay can reduce school absenteeism<sup>7</sup> and therefore reduce lost productivity among adult caregivers.
- Many preschool-aged children never visit a dentist. Primary care physicians are often the first and only health care professionals that children visit and are therefore in a unique position to address dental disease in this population.<sup>8</sup>

**Immunizations for Children and Adolescents (Immunization):**

- Approximately 11,000 babies born each day in the United States will need vaccination against fourteen diseases before age two.
- All vaccines are cost-effective, and most child and adolescent vaccines are cost-saving. The routine childhood vaccination program saves nearly \$10 billion in direct medical costs and \$43 billion in societal costs for every birth cohort (all children born in one year).<sup>9</sup>
- Approximately 24% of toddlers may be vulnerable to serious illnesses, including polio, measles, mumps, rubella, diphtheria, tetanus, pertussis, invasive *Haemophilus influenzae* type b infection, hepatitis B, and varicella because they have not completed the recommended vaccination series.<sup>10</sup>

**Lead, Elevated Blood Lead Levels (Screening):**

- The dangers of lead are well documented for all age groups, and high levels of lead exposure produce serious neurologic complications that can result in permanent disability or death. Lead affects multiple organ systems such as the cardiovascular, renal, and hepatic systems.<sup>11-12</sup> Lead can also reduce growth, resulting in restricted height.<sup>13-14</sup> Among children, elevated BLLs are associated with behavioral and reaction (attention) deficits<sup>15-19</sup> and intellectual impairments (lowered IQ).<sup>20-25</sup>
- Approximately 310,000 children between the ages of 1 and 5 years have elevated blood lead levels.<sup>26</sup>
- An estimated 24 million housing units have significant lead-based paint hazards and pose a serious threat to children's health. These units include 1.2 million homes occupied by low-income families with children under the age of 6 years.<sup>26</sup>
- Between 1988 and 1992, childhood lead poisoning was estimated to result in 53,400 hospitalization days and \$41 million in inpatient treatment costs.<sup>27</sup>
- Screening for elevated blood lead levels helps identify children who are exposed to lead and need interventions to reduce their blood lead levels. The higher a child's BLL and the longer it persists, the greater the chance that the child will experience serious adverse neurologic effects or other problems.
- Only 33% of children ages 1 to 5 years in the United States receive recommended screening.<sup>28</sup>
- In most states, case identification and treatment is the responsibility of health care providers and is therefore dependent on private insurance coverage. Environmental management and education of affected families remains the responsibility of local public health departments.

**Newborn Hearing (Screening):**

- Congenital hearing loss affects approximately 3 per 1,000 children.<sup>29</sup> Hearing loss, even loss that is mild in magnitude or unilateral (only one ear affected), can affect a child's potential to develop speech, language, and social skills, and school performance.<sup>30</sup>
- The average lifetime cost for one person with early childhood-onset hearing loss is estimated to be \$417,000 (in year 2003 dollars).<sup>31</sup> It is estimated that the *lifetime* cost for all people born with congenital hearing loss in the year 2000 will total \$2.1 billion (in year 2003 dollars).<sup>31</sup>

- Screening newborn infants for hearing loss identifies most children with congenital hearing loss prior to the onset of language development, allowing their parents to access support services much earlier than otherwise.

#### **Newborn Screening for Genetic and Endocrine Disorders (Screening, Medical Foods, and Treatment):**

- Newborn screening using dried blood spot specimens collected from newborn infants' heels can detect a number of disorders such as phenylketonuria (PKU), congenital hypothyroidism (CH), galactosemia, and sickle cell disease (SCD). All states require newborn screening for at least some genetic and endocrine disorders, but the required tests differ among various jurisdictions.
- At least 4 million babies in the United States undergo newborn blood spot screening each year. Severe disorders are detected in about 3,000 newborns. Accurate screening:
  - Identifies affected babies quickly.
  - Ensures that cases are not missed.
  - Helps start treatment early to reduce negative and irreversible health problems for affected newborns.
- Disorders identified by newborn screening programs require treatment in order to prevent serious and sometimes fatal complications. Lifelong medical management (including specialized medical foods or access to specialty clinics) is required to prevent serious medical complications associated with newborn metabolic disorders.
- The economic value of the prevention of mental retardation due to just two metabolic conditions (PKU and CH) exceeds \$400 million per year, more than twice the amount of money spent on all newborn screening.<sup>32-33</sup>
- Sickle cell disease is a major cause of hospitalizations. During 1989 to 1993, hospitalization costs for children and adults with SCD averaged \$475 million per year (in year 1996 dollars).<sup>34</sup>

#### **Vision (Child) (Screening):**

- Visual impairment is a common condition that affects 7% to 8% of children.<sup>35</sup> The most common forms of visual impairment in children are refractive errors (nearsightedness, farsightedness, anisometropia, and astigmatism), amblyopia (reduced visual acuity without a detectable organic lesion of the eye), and strabismus (ocular misalignment).
- Uncorrected amblyopia may be a risk factor for future blindness in later childhood and adulthood<sup>36</sup> and may harm school performance, ability to learn, and later, adult self-image.<sup>37</sup> Further, the lack of binocular vision disqualifies individuals with amblyopia from many occupations.
- The estimated *lifetime* cost (in year 2003 dollars) for persons born in 2000 with vision impairment is \$2.5 billion.<sup>38</sup>
- Early detection and treatment is essential for amblyopia, as treatment is highly effective in early childhood.
- Because visual impairment in children is common and believed to have an early sensitive period when interventions lead to better outcomes, much interest has focused on primary care vision screening tools for early detection, referral, and treatment.

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**Why This Chapter is Important for Employers: An Overview**

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