



# Pediatricians and Public Health: Optimizing the Health and Well-Being of the Nation's Children

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Ensuring optimal health for children requires a population-based approach and collaboration between pediatrics and public health. The prevention of major threats to children's health (such as behavioral health issues) and the control and management of chronic diseases, obesity, injury, communicable diseases, and other problems cannot be managed solely in the pediatric office. The integration of clinical practice with public health actions is necessary for multiple levels of disease prevention that involve the child, family, and community. Although pediatricians and public health professionals interact frequently to the benefit of children and their families, increased integration of the 2 disciplines is critical to improving child health at the individual and population levels. Effective collaboration is necessary to ensure that population health activities include children and that the child health priorities of the American Academy of Pediatrics (AAP), such as poverty and child health, early brain and child development, obesity, and mental health, can engage federal, state, and local public health initiatives. In this policy statement, we build on the 2013 AAP Policy Statement on community pediatrics by identifying specific opportunities for collaboration between pediatricians and public health professionals that are likely to improve the health of children in communities. In the statement, we provide recommendations for pediatricians, public health professionals, and the AAP and its chapters.

## abstract

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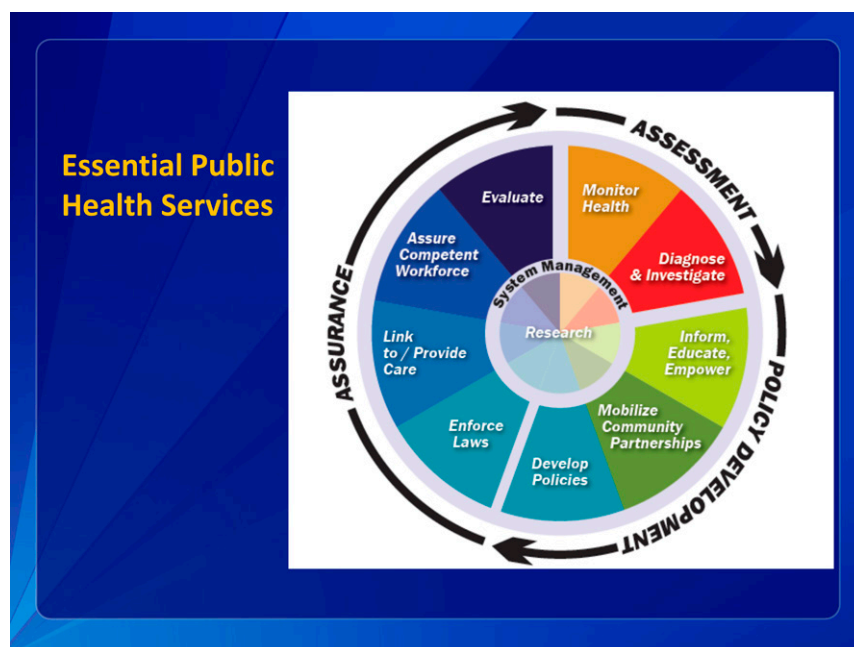
## THE HEALTH OF A NATION CAN BE JUDGED BY THE HEALTH OF ITS YOUNGEST MEMBERS

Many children and youth in the United States are not thriving. For example, in 2015, 19.7% of US children lived in families with incomes below the federal poverty level.<sup>1</sup> Of children and teenagers in the United States from 2011 to 2014, ~1 in 3 was overweight or obese; 17% were obese.<sup>2,3</sup> Of children 9 to 17 years old, ~1 in 5 may have a diagnosable

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mental or addictive disorder that could cause at least minimal impairment.<sup>4</sup> As of early 2017, ~4.8% of US children remained uninsured.<sup>5</sup> In 2014, 4042 children and youth aged 0 to 21 years were killed by firearms in the United States.<sup>6</sup>

Although children's health outcomes are influenced by access to quality health care in a medical home, social, economic, and environmental factors are critical determinants of child health.<sup>7</sup> Pediatricians and public health professionals are particularly well suited to address these multifaceted issues in the community setting. Grounded in a shared commitment to prevention and population health, the 2 groups must leverage each profession's strengths and expertise to promote prevention, improve the delivery of health services, and advance health at the community level. In the 2013 American Academy of Pediatrics (AAP) Policy Statement "Community Pediatrics: Navigating the Intersection of Medicine, Public Health, and Social Determinants of Children's Health," researchers briefly described partnership with public health as a key component of practicing community pediatrics. However, it is critical for all pediatricians to recognize the importance and value of collaboration with public health colleagues to improve children's health. In recent years, there has been a growing movement to increase collaboration between the fields of clinical medicine and public health.<sup>8,9</sup> Recent child health emergencies (such as the 2015 measles outbreak that was associated with exposures in Disneyland; the water crisis in Flint, Michigan; and the emergence of Zika virus) further reinforce the need for medical and public health expertise to approach an urgent child health issue. The enhancement of this relationship is also critical because of the health care system's increased focus on reducing



**FIGURE 1**

Ten essential public health services include the following: (1) monitor health status to identify and solve community health problems; (2) diagnose and investigate health problems and health hazards in the community; (3) inform, educate, and empower people about health issues; (4) mobilize community partnerships and action to identify and solve health problems; (5) develop policies and plans that support individual and community health efforts; (6) enforce laws and regulations that protect health and ensure safety; (7) link people to needed personal health services and ensure the provision of health care when otherwise unavailable; (8) ensure the presence of a competent public and personal health care workforce; (9) evaluate the effectiveness, accessibility, and quality of personal and population-based health services; and (10) research for new insights and innovative solutions to health problems. (Reprinted with permission from the Centers for Disease Control and Prevention. The public health system and the 10 essential public health services. Available at: <https://www.cdc.gov/nphsp/essentialservices.html>. Accessed March 21, 2017.)

health care costs by improving population health outcomes.

#### **A DEFINITION OF PUBLIC HEALTH FOR PEDIATRICIANS**

In the National Academy of Medicine (formerly the Institute of Medicine) report "The Future of Public Health," researchers describe public health as "fulfilling society's interest in assuring conditions in which people can be healthy." They further identify 3 core functions for public health: assessment, assurance, and policy development.<sup>10</sup> In 1994, a consensus list of essential public health services was developed by federal health agencies in partnership with major national public health organizations and adopted by the Public Health Functions Steering Committee.

These services, mapped to the 3 core functions, are illustrated in Fig 1.<sup>11</sup>

Many public health activities are conducted by local, state, and federal government agencies.<sup>12–14</sup> The primary roles of these agencies are to monitor health and disease, provide strategies for disease prevention, and promote healthy practices. Public health practitioners contribute to these functions by informing, educating, and mobilizing members of the public about current and emerging health issues; advocating for and enforcing laws and regulations that protect health and ensure safety; and addressing a number of specific conditions (Table 1).

However, many other entities (public and private, local and national)

**TABLE 1** Examples of Threats to Children’s Health Requiring Pediatrics and Public Health Collaboration to Prevent or Alleviate

Environmental health concerns, including climate disruption, air quality, water safety, environmental toxins, and natural disasters
Food safety
Vaccine refusal
Communicable diseases
Obesity epidemic
Adverse childhood experiences resulting in toxic stress, including poverty, social isolation, and violence
Health care access, especially for underserved groups (eg, children of undocumented immigrants)
Injury prevention (including gun violence), education, regulation, and anticipatory guidance
Substance abuse (including smoking, alcohol, and illicit drugs)

participate in maintaining and supporting public health.

**PEDIATRICIANS’ UNDERSTANDING OF THE WORK OF MAJOR ENTITIES PROVIDING RECOMMENDATIONS IN PUBLIC HEALTH**

Public health entities such as the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention (CDC),<sup>15</sup> the CDC Community Preventive Services Task Force,<sup>16</sup> the Maternal and Child Health Bureau, and the US Preventive Services Task Force<sup>17</sup> provide a portion of the evidence base for the content of well-child care. These public health entities synthesize, review, and provide information and recommendations about preventive care and policies. They often provide easily accessed, up-to-date information for children and families and can provide information to pediatricians about the monitoring of diseases and disease-prevention activities in communities. The efforts of these groups inform and assist AAP efforts to improve child health. The AAP informs pediatricians about the information and recommendations that many of these entities produce. Although individual pediatricians in primary-care practice and medical and surgical subspecialties need not maintain expertise in the work of these public health entities, they should be aware of the public health data and resources that they

provide to support population health improvement.

**PEDIATRICIANS’ ROLE IN PUBLIC HEALTH**

Pediatricians function as an arm of public health by preventing diseases in their patients (eg, by promoting immunizations), treating diseases, and promoting healthy lifestyles (eg, by striving toward tobacco and substance abuse prevention and promoting healthy nutrition and physical activity). Pediatricians are often the first to know about a public health issue and must report it to the local or state department of health (eg, a child with meningitis, a family testing positive for tuberculosis, or a child in day care with lead poisoning). Starting with individual patient occurrences, these may be considered sentinel events, signaling problems that may require action by a public health agency. Additionally, pediatricians typically participate in ≥1 of the 3 core public health practice functions by assessing an individual’s health status and health needs, ensuring that necessary services are provided, or developing policy.<sup>10</sup>

However, the pediatrician can only partially address population health issues within the examination room.<sup>18</sup> Pediatricians can also participate in a variety of population-based efforts that promote child health. The Title V Maternal and Child Health Block Grant Program

needs assessment process is a key opportunity.<sup>19</sup> This process is used to foster collaboration between the federal Maternal and Child Health Bureau, each state’s Department of Health, families, practitioners, and community organizations to work toward improving community-wide child and maternal health outcomes.

Pediatricians can also serve on the advisory boards of public health programs, school boards, and school-based clinics and partner with health-promotion projects in communities. Individual prevention approaches that are based in the pediatric examination room and population-based activities are complementary strategies that help advance the health and well-being of all children.

**PEDIATRIC AND PUBLIC HEALTH COLLABORATIONS**

Public health and pediatrics are professions with a shared commitment to disease and injury prevention, anticipatory guidance, and early recognition and response to threats to lifelong health. Historically, the fields of pediatrics and public health have successfully collaborated on a variety of children’s health issues (Table 2). Collaborations can include a range of activities, including sharing information and data, developing joint health-promotion and planning initiatives, coordinating health care services, and implementing education and/or training activities.<sup>20</sup>

**Case Examples**

The following cases are recent child health scenarios that required collaboration between pediatrics and public health.

*Disneyland Measles Outbreak (December 2014 to February 2015)*

During the 2014–2015 measles outbreak that was linked to exposures at Disneyland theme parks in Southern California, 125

**TABLE 2** Examples of Activities in Which Pediatrics and Public Health Practitioners Currently Collaborate

Epidemic response and emergency preparedness
Immunization endeavors, including education, administration, and tracking through registries
Lead poisoning prevention
Newborn screening
Perinatal hepatitis B prevention
Promotion of healthy lifestyles
Protecting the health of travelers
Recognition and reporting of new illness and outbreaks by pediatricians
Substance use prevention and reduction, including tobacco, alcohol, and illicit drugs

confirmed cases were identified by the California Department of Public Health, 110 of which were in California residents. State Senator Richard Pan, MD, FAAP (Democrat-Sacramento) and State Senator Ben Allen (Democrat-Santa Monica) coauthored a bill (SB 277) that was introduced in the California State Legislature in early February 2015 (with support from AAP, California) that mandated that all children be vaccinated on school entry. This bill in effect only allowed for medical exemptions and did not allow parents to exempt their children from vaccinations on the basis of religious or personal beliefs. Hundreds of pediatricians across the state were joined by thousands of nonpediatrician physicians, all of whom educated legislators about the importance of this bill. California's governor signed the bill into law in June 2015, and the law went into effect on January 1, 2016.<sup>21</sup>

#### *Flint Water Contamination Crisis (April 2014 to Present)*

Contamination of the drinking water in the city of Flint, Michigan, occurred after city officials changed the water supply to a local river without applying corrosion inhibitors. Pediatrician Mona Hana-Attisha, MD, MPH, FAAP, noticed that the number of children <5 years old with blood lead concentrations of >5 µg/dL<sup>22</sup> increased after the change in water supply. By using hospital records, she was able to determine the percentage of Flint children with blood lead concentrations of >5 µg/dL (which is the concentration, based

on the US population, of children ages 1–5 years who are in the top 2.5% of children when tested for lead in their blood). The percentage increased from 2.4% to 4.9%, and in areas with higher water-lead content, it increased from 4% to 10.6%.<sup>23</sup> Because of her data and efforts by environmental advocates, in January 2016, both the state and federal governments declared the Flint water crisis a state of emergency and authorized aid toward resolving the crisis and ameliorating the effects on child development. At the time of this publication, efforts are ongoing.

#### *Emergence of the Zika Virus (September 2015 to Present)*

After a Zika virus outbreak was identified in January 2015 in northeast Brazil, 35 newborn infants with microcephaly were identified who were born between September and November 2015 to mothers from that area; by summer 2016, >1700 infants with microcephaly had been born in northeast Brazil since the beginning of the outbreak. The link between microcephaly in infants and Zika virus infection has been established with certainty.<sup>24</sup> Zika is a *Flavivirus* that is transmitted by *Aedes* mosquitoes, the same kind of mosquito that transmits yellow fever, dengue, and chikungunya virus infections. The CDC issued a report<sup>25</sup> in January 2016 cautioning pregnant women who travel to areas with endemic Zika virus infection and recommending protection against mosquito bites, such as the use of mosquito nets while sleeping and the use of Environmental Protection

Agency–approved insect repellents. The CDC has issued several updated guidance documents<sup>26</sup> about the epidemic, which has reached many countries in the Caribbean and Central America as well as Puerto Rico and the Southern United States. In a summary of knowledge about Zika virus published in August 2016, Tom Frieden, MD, MPH, who was the director of the CDC at the time, and his colleagues<sup>24</sup> cited work with the AAP on developing guidance for pediatricians on dealing with infants who are born to mothers who were exposed to the virus. Efforts to develop a Zika vaccine were showing early signs of success as of the summer of 2016.

#### **Keys to Successful Collaborations**

Many factors can influence the strength and effectiveness of primary care and public health collaborations. The 2012 report “Primary Care and Public Health: Exploring Integration to Improve Population Health”<sup>20</sup> includes a series of principles for the successful integration of primary care and public health, including the following:

- A shared goal of population health improvement;
- Community engagement in defining and addressing population health needs;
- Aligned leadership;
- Sustainability; and
- Sharing and collaborating in the use of data and analysis.

Pediatricians and public health professionals can draw on these principles for collaborative activities and use resources such as *The Practical Playbook: Public Health and Primary Care Together* (practicalplaybook.org) to help refine their collaboration strategies. This resource provides step-by-step guidance to assist public health and primary-care professionals

in working together to improve population health.

### **PEDIATRIC ADVOCACY FOR CHILD PUBLIC HEALTH ISSUES**

Pediatricians' voices are important for effective advocacy on issues that affect children's health. As described in the AAP Policy Statement "Community Pediatrics: Navigating the Intersection of Medicine, Public Health, and Social Determinants of Children's Health,"<sup>27</sup> pediatricians are well positioned to advocate for access to health care in a medical home as well as for the social, economic, educational, and environmental resources that are essential for every child's healthy development. This advocacy is needed at local, state, and federal levels. Pediatricians can also serve as critical allies and advocates to support the public health infrastructure as part of the overall child health care system in the United States. Public health funding at the federal level has remained flat for the last several years, whereas most local and state public health department budgets have declined.<sup>28</sup> A lack of investment in public health systems, services, and programs can hinder important activities for child health, including disease surveillance and reporting, health promotion, and emergency preparedness. Pediatricians can provide important insights about the need for public health investments to optimize child health at the individual and population levels.

### **TRAINING PEDIATRICIANS IN PUBLIC HEALTH PRINCIPLES**

Many medical school and residency training programs have recently incorporated teaching into their curricula on the functions and activities of public health entities, such as epidemiologic investigation, public health surveillance, and assurance of safety. Targeted

educational instruction in public health is important for pediatricians to address issues from the wider society and environment that affect the health of their individual patients. Pediatricians need training to understand the importance of the identification of sentinel public health events, understanding that such events may signal public health problems that require intervention. Pediatric residents should also know whom to notify of potential sentinel events and how to get support for their elucidation. To understand and help address community health issues, pediatricians should also have access to training on how to use community health data.

The Residency Review Committee of the Accreditation Council for Graduate Medical Education continues to strengthen pediatric training program requirements for education in community health and child advocacy.<sup>29,30</sup> The Academic Pediatric Association,<sup>31</sup> the AAP Community Pediatrics Training Initiative,<sup>32</sup> the Council on Community Pediatrics, and others have developed educational goals and objectives, curricula, and other resources to support this training. After the publication of the 2012 National Academy of Medicine (formerly Institute of Medicine) recommendations in "Primary Care and Public Health: Exploring Integration to Improve Population Health,"<sup>20</sup> the CDC launched a Primary Care and Public Health Initiative<sup>33</sup> to foster relationships between physicians and local and state public health professionals through collaborations with residency program educators.

### **COLLABORATION TO IMPROVE POPULATION HEALTH AND REDUCE HEALTH CARE COSTS**

The Patient Protection and Affordable Care Act (ACA) (Public Law Number 111-148 [2010])

includes a number of insurance reforms and provisions that promote population health. The ACA also provides potential opportunities for pediatricians and public health professionals to collaborate more closely through provisions that focus on health promotion and the prevention of diseases in all individuals, including children. Although not an exhaustive list, some related ACA provisions include the following:

- Requiring nonprofit, tax-exempt hospitals to conduct community health needs assessments every 3 years and involve those with expertise in public health;<sup>34</sup>
- Funding the Maternal, Infant, and Early Childhood Home Visiting Program, which can provide support and education to individuals to promote positive parenting and early child development. Each state must complete a needs assessment to identify at-risk communities to receive any Title V Maternal and Child Health Block Grant funds;
- Requiring private insurance plans to cover preventive services, prohibiting copayments and deductibles for preventive services, and allowing families the opportunity to access age-appropriate benefits for children, including coverage for all Bright Futures-recommended services with no cost sharing; and
- Creating the National Prevention Council to coordinate and promote health and disease-prevention efforts among federal-level agencies and departments and develop a National Prevention Strategy.<sup>35</sup>

Children benefit from these provisions, and the continued implementation of these efforts will be improved by the involvement and collaboration of pediatricians and public health professionals. Any

changes made to the ACA should maintain these important reforms.

An additional and critical opportunity for collaboration lies in the US health care system's increased focus on improving the health of populations while reducing health care costs. As the system evolves to address this challenge through new models of payment, systems integrations, and the broader use of population health data, pediatricians and public health professionals must collaborate and participate in these efforts. Together, they can promote investments in prevention and attention to the social determinants of child health as strategies for developing a strong foundation for lifelong health. A strong foundation established in childhood can potentially reduce chronic disease, improve health outcomes, and ultimately, decrease health care costs across the life course.

A definition change in the provision of preventive services in Medicaid serves as an example of how new models of payment can strengthen the ties between clinical medicine and public health toward the improvement of population health. As of January 2014, the Preventive Services Rule Change issued by the Centers for Medicare and Medicaid Services provides an opportunity for nonphysicians, such as community health workers, to become eligible for Medicaid payment as long as the services provided are recommended by a physician or other licensed practitioner within their states' scope of practice.<sup>36</sup> A state must proactively allow this change by submitting a state Medicaid plan amendment to the Centers for Medicare and Medicaid Services. For example, if the state permits it, this rule would allow asthma educators who are not licensed practitioners but provide services in a home or community setting to be eligible to be paid for their services by Medicaid if those services are recommended by a physician or other state-licensed

practitioner as an extension of the medical home. Asthma educators have been shown to provide cost-effective asthma education and management services, working with children and families in their social and environmental contexts.<sup>37</sup> This is an example of how an evolving model of payment may support a population health approach and collaborations between pediatricians and public health professionals.

## RECOMMENDATIONS

The following recommendations are aimed at helping pediatricians and public health professionals work together optimally to improve child health at the individual and population levels.

### Recommendations for Individual Pediatricians

- Pediatricians should remain aware of reporting requirements for individual diseases, outbreaks, and vaccine adverse events that require reporting to public health agencies. They should also be aware of local and state health department resources (newsletters, Web sites, social media, etc) for information on diseases and outbreaks;
- Pediatricians should make use of the resources and recommendations that are provided by public health agencies and organizations, including local and state health departments, the CDC and its Advisory Committee on Immunization Practices, the US Preventive Services Task Force, the Maternal and Child Health Bureau, and the National Academy of Medicine;
- Pediatricians should be aware of how to access local and state public health data to identify population health needs and trends;
- Pediatricians can identify opportunities to collaborate with public health entities on community disease prevention and

health promotion programs for children and adolescents;

- Pediatricians can serve as advisors to public health entities, such as the Maternal and Child Health Bureau Title V Block Grant Program;
- Pediatricians should consider advocating for population-based approaches to health within their own health care institutions and systems; and
- Pediatricians who are training pediatric residents should include public health and population health curricula and incorporate public health practitioners into the training.

### Recommendations for Collaboration Between Pediatricians and Public Health Professionals

- Pediatricians and public health professionals can work together on sharing data and information about children's health issues, including access to quality health care and health disparities. In partnership with public health and health care systems, they can also work together on mapping and analyzing community health data to identify geographic hot spots of health problems that are in need of targeted interventions;
- Pediatricians and public health professionals should partner on prevention and health-promotion projects to address chronic disease and disability through complementary clinical and community-based approaches;
- Pediatricians and public health professionals should collaborate with families to advocate for healthy environments in which children learn, live, and play;
- Pediatricians and public health entities should work together to ensure that children and adolescents are specifically considered in disaster planning, including the development of strategic plans for communication,

and in the management of the children, particularly children with special health care needs;

- Pediatricians and public health professionals can partner to advocate for investments in public health systems and infrastructure at the local, state, and federal levels. Advocacy should emphasize the importance of public health investments for improving both individual and population health;
- Pediatricians and public health professionals can partner to promote public and private efforts at the local, state, and federal levels that promote healthy community development; and
- Public health professionals and pediatricians should work together to disseminate important public health information, such as immunization messages, to parents and families.

### Recommendations for the AAP and AAP Chapters

The following recommendations address opportunities for the AAP and its chapters to promote pediatric and public health collaborations for child health and well-being:

- The AAP and its chapters should include pediatrician members who serve in public health departments, National Health Service Corps facilities, Indian Health Service facilities, and federally qualified health care centers in AAP and chapter-level communications and activities;
- AAP chapters should develop working relationships with state and local health departments so that important matters of joint interest (eg, outbreaks of infectious disease, disaster planning,

newborn screening changes, needs assessments, and planning for anticipated health effects of climate change) are effectively communicated and, when a crisis occurs, they can work together effectively; and

- The AAP should consider making continuing medical education opportunities in public health practice and priorities available to all of its members.

### CONCLUSIONS

In the seminal report “Primary Care and Public Health: Exploring Integration to Improve Population Health,”<sup>20</sup> researchers noted that “actors in both primary care and public health contribute to the promotion of health and well-being; the assurance of conditions in which people can be healthy; and the provision of timely, effective, and coordinated health care.” This is particularly relevant and important regarding issues of child health. Pediatricians and their public health colleagues are important actors in addressing the social determinants of health that have major consequences on childhood health and well-being. Greater communication, collaboration, and partnership between pediatricians and the public health sector have the potential to improve individual- and population-level child health outcomes.

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### ABBREVIATIONS

AAP: American Academy of Pediatrics  
ACA: Patient Protection and Affordable Care Act  
CDC: Centers for Disease Control and Prevention

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