
School-Based Health Centers in an Era of Health Care Reform: Building on History

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School-based health centers (SBHCs) provide a variety of health care services to youth in a convenient and accessible environment. Over the past 40 years, the growth of SBHCs evolved from various public health needs to the development of a specific collaborative model of care that is sensitive to the unique needs of children and youth, as well as to vulnerable populations facing significant barriers to access. The SBHC model of health care comprises of on-school site health care delivery by an interdisciplinary team of health professionals, which can include primary care and mental health clinicians. Research has demonstrated the SBHCs' impacts on delivering preventive care, such as immunizations; managing chronic illnesses, such as asthma, obesity, and mental health conditions; providing reproductive health services for adolescents; and even improving youths' academic performance. Although evaluation of the SBHC model of care has been complicated, results have thus far demonstrated increased access to care, improved health and education outcomes, and high levels of satisfaction. Despite their proven success, SBHCs have consistently faced challenges in

securing adequate funding for operations and developing effective financial systems for billing and reimbursement. Implementation of health care reform (The Patient Protection and Affordable Care Act [P.L. 111-148]) will profoundly affect the health care access and outcomes of children and youth, particularly vulnerable populations. The inclusion of funding for SBHCs in this legislation is momentous, as there continues to be increased demand and limited funding for affordable services. To better understand how this model of care has and could further help promote the health of our nation's youth, a review is presented of the history and growth of SBHCs and the literature demonstrating their impacts. It may not be feasible for SBHCs to be established in every school campus in the country. However, the lessons learned from the synergy of the health and school settings have major implications for the delivery of care for all providers concerned with improving the health and well-being of children and adolescents.

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School-based health centers (SBHCs) bring critical, developmentally appropriate services to children and adolescents where they spend

most of their waking hours: at school. SBHCs have been providing a range of comprehensive services to youth for >40 years.¹ Although they vary based on community need and resources, SBHCs possess several common characteristics including location inside or on school grounds, provision of comprehensive services by a multidisciplinary team, and integration with the school community (Box 1).² Today, there are >1900 SBHCs in the USA, with 57% of these established in urban, 27% in rural, and 16% in suburban settings.³

Clearly, this represents a small proportion of all schools currently operating in the USA. Nevertheless, SBHCs are a model that can inform the linkage between health and education systems to improve preventive and primary care. Health providers and school educators and administrators share mutual goals of assuring that students are both healthy and ready to learn and thrive. This is a particularly timely moment to address the health needs of students as

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BOX 1. Common characteristics of the SBHC Model

Common characteristics of SBHCs include the following²:

Being located in schools or on school grounds

Working within the school to become an integral part of the school

Providing a comprehensive range of services that meet the specific physical and behavioral health needs of the young people in the community

Using a multidisciplinary team of providers to care for the students, including nurse practitioners, registered nurses, physician assistants, social workers, physicians, alcohol and drug counselors, and other health professionals

Providing clinical services through a qualified health provider, such as a hospital, health department, or medical practice

Requiring parents to sign written consents for their children to receive the full scope of services provided at the SBHC . . . (with the exception of those services in certain states that youth can consent to themselves by law)

Having an advisory board consisting of community representatives, parents, youth, and family organizations, to provide planning and oversight

SBHC, school-based health center.

future members of the nation's workforce. With budget shortfalls in education and in health, collaboration across these 2 systems is needed to ensure that available resources can be used effectively and efficiently.⁴ Together, schools and health centers are investing in a healthy and productive future for the nation's children.

SBHCs are most often sponsored or operated by a local health care organization such as a community health center (CHCs; 28%), hospital (25%), or local health department (15%).³ In addition, approximately 1 of 10 (12%) SBHCs nationwide are sponsored by a school system.³ Other sponsoring agencies include nonprofit organizations, universities, and mental health agencies.

These lead agencies are typically charged with the administrative operations of the SBHCs and partner with other local community health and wellness practitioners to provide services outside of their own agency's usual scopes of activities. For example, an SBHC that is operated by a medical lead organization may contract with a local mental health agency to provide on-site mental health services. In other models (eg, "school-linked" services), a provider may come to the school periodically to conduct screenings and educational sessions, with any required follow-up occurring in their usual clinic setting.

SBHCs may provide an entry point and source of primary care, with ongoing connections to a medical home, for children who do not otherwise have access to consistent care. They may also provide additional needed care for those youth who already have primary pediatric

providers. For example, mental health counseling is a service that may not be available within a traditional community-based primary care setting, but it could be provided at a youth's SBHC. A health educator working

as part of the SBHC can also provide valuable reinforcement of health education messages delivered by the clinician and can, for example, continue to help in monitoring ongoing compliance with recommended medications. An example of this collaborative relationship is the implementation of a coordinated plan of care between an SBHC and primary care providers to manage chronic diseases, such as diabetes, in students. In these examples, the SBHC can serve as an extension of youth's providers, as well as serve

as the primary source of care if their families have no other resources.

SBHCs have been successful in addressing the health care needs of students from kindergarten through high school. In elementary school settings, SBHCs provide opportunities for preventive care, health maintenance, and the treatment of acute illnesses and injuries. In a 5-year study of the utilization patterns in an elementary SBHC in Atlanta, Georgia, health supervision, respiratory and skin conditions, and injuries and poisonings were among the top reasons for visits to the SBHCs.⁵

In addition, school-aged children diagnosed with chronic illnesses, such as asthma, face many challenges in care coordination that can be facilitated by the SBHC in partnership with primary providers or specialists, as well as with the child's family. The

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impact of chronic illness on academics may also be mitigated by the collaboration of SBHC and school staff working with school-aged children who are not yet able to manage their chronic health conditions “independently,” and who benefit from having careful monitoring, for example, to increase adherence with recommended medications. In the previously mentioned SBHC in Atlanta, >20% of all visits to the clinic were respiratory related, with asthma being the leading diagnosis in 4 of the 5 years studied.⁵

Moreover, mental health services integrated within elementary school settings can assist with the early identification, referral, and/or treatment of children with emotional or behavioral issues. This might include providing early counseling interventions to children with behavioral concerns in the classroom or dispensing and monitoring of adherence to medication and behavioral plans in the case of attention-deficit hyperactivity disorder.^{5,6}

In middle and high schools, SBHCs may serve all the above functions as well as supporting adolescents in their increasing ability to play an active role in promoting their own health. This includes preventing disease in addition to navigating access to and appropriate use of health services. During adolescence, access to confidential services is a key part of comprehensive health care. However, many adolescents may not be aware of confidentiality laws or how they can access care in both school and community settings. SBHCs can help to increase adolescents’ awareness of confidentiality policies, and provide these services in a safe and convenient setting. Mental health is also a key area of adolescent health, as depression, suicidality, and exposure to violence come to the forefront during this developmental period.^{7,8} One study of middle and high SBHCs in Baltimore, Maryland, documented that aside from general medical examinations, the most common reasons for visits to the health center were related to either mental or reproductive health.⁹ In this particular study, the middle school students sought care for mental health issues more often than the high school students, for whom reproductive health visits were more common.

Amidst the changing landscape of the health care system in the USA, SBHCs represent a model of care that is responsive to the unique physical and mental health needs of children and adolescents in an accessible environment. SBHCs overcome traditional barriers to care and serve ethnically/racially diverse clients, groups that experience the greatest likelihood of being un- or underinsured and those who face the greatest challenges accessing health care. In 2010, major federal health care reform legislation was enacted that would later significantly change the health care system. Many aspects of this legislation directly affect youth’s health care access and outcomes, especially those of vulnerable populations, such as homeless, minority, and immigrant youth.¹⁰ An appropriation for SBHCs was included in this legislation, which comes at a critical time when there is increased demand for affordable services and decreased funding available nationwide because of the economic downturn. This appropriation represents the first time that SBHCs have been nationally recognized to this degree as entities that provide significant contributions to the health and well-being of children and adolescents.

To better understand how this model of care has and could further help promote the health of our nation’s youth, the following review presents the history and growth of SBHCs in the USA and the important role they serve

in meeting the diverse physical and mental health care needs of children and adolescents in a variety of school settings. Areas significantly impacted by the SBHC model of health care delivery are reviewed, such as preventive care, chronic illness management, and academic performance. An overview of funding, policy, and evaluation efforts is also included, as well as proposed future directions for SBHCs and the roles they can further play in reducing health disparities and improving children’s health. Clinical providers who may not have access to an SBHC in their own communities may review the following information with an eye to creating linkage opportunities between their own practices and the children and families they care for, as well

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as the major institutions where their patients spend a considerable amount of their day.

Historical Background

The origins of school-based health can actually be traced back to the early 1900s with the public health nursing movement.^{1,11} At that time, student absenteeism rates because of communicable disease, such as measles, scarlet fever, whooping cough, and tuberculosis, were high.¹¹ In an attempt to contain contagious illnesses, the Board of Health in New York City instituted a “rule of exclusion” in schools, sending home any child with a contagious disease—but without any treatment or plan of care. Many of these children did not receive medical attention, and without proper education, families often continued to allow them to play with other healthy children, thus continuing the spread of disease. In 1902, the first “school nurse,” Lina Rogers, was brought in to help with these issues and she soon began creating treatment protocols and providing care to children who were unnecessarily being excluded from school. In addition, she and other nurses began conducting home visits to provide families with health education about hygiene and other methods to control the spread of disease. Within 1 year, the rates of absenteeism in the city had decreased by almost 90%, and the need for school nurses became nationally recognized.¹¹ Over the next 50 years, the role of the school nurse continued to focus on health education, but also expanded to include aspects of primary health care, including immunizations, health screenings, and referrals.¹

During the early 1960s, parts of the nation were recognizing a shortage of primary care physicians, especially in the area of pediatrics.¹² The role of the pediatric nurse practitioner (PNP) as an advanced practice nurse with skills to provide primary health care to children emerged and was embraced across the country.¹² By the mid-1970s, a school nurse practitioner certification program had been established in Colorado in response to public dissatisfaction with the limited role of the school nurse and the recognized need for school health.¹ The role of the nurse practitioner continued to be instrumental during the growth and expansion of school-based health, and today, the majority of primary health providers in SBHCs are either nurse practitioners or physician assistants.³ This well-established pattern of appropriate and effective

workforce utilization provides an excellent example of the potential role that nurse practitioners and physician assistants may also be able to play as federal health care reform is implemented.

Around this same time, Dr. Phillip J. Porter, a physician in Cambridge, Massachusetts, began paving the way for SBHCs through the establishment of “neighborhood health centers” to care for underserved children in the community.¹³ Staffed primarily by PNPs, the majority of these health centers were housed within local elementary schools and provided much-needed acute and well care to their students. Dr. Porter also identified the need for collaboration between the PNPs and teachers in the early recognition of children with school difficulties, in hopes that it would “lead to early remediation and reduction in the number of children who are promoted without learning.”¹³ Community leaders in Dallas, Texas, with similar visions also opened centers in local communities.^{1,14}

In the mid-1970s, the St. Paul Maternal and Infant Care Project was developed in select public high schools in Minnesota to address poor rates of prenatal care participation and birth complications among teenage mothers.¹⁵ This comprehensive, interdisciplinary prenatal care program was the first model of school-based health care in the secondary school setting, and its initial success was seen as a promising model to pursue as a means of primary and repeat teenage pregnancy prevention.^{16,17} This generated tremendous national attention and began to prioritize a school-based, clinical services’ approach to prevent teenage pregnancy by providing reproductive health care to teens, especially among those who had never experienced a pregnancy. It also reinforced the model’s potential for providing a comprehensive array of services, beyond the original reproductive health services. This was reflected in the decision by the Minnesota clinics to expand their portfolio of services and, thus, attract both male and female students.

Awareness of the need to improve and expand the availability of clinical services to all teenagers was increasing during this time as well, especially after a Surgeon General report highlighted the deteriorating health status of adolescents in the USA.¹⁸ This attention, combined with an increase in public and private funding opportunities in several states, facilitated the growth of SBHCs in high school settings.¹⁸ Today, approximately 80% of all SBHCs in the USA serve at least one grade of adolescents (6th grade or higher).³ Although reproductive health remains a cornerstone of

the services that adolescent SBHCs provide, attention to the primary and mental health care needs of students drives the continued interest in the model and the gaps it aims to close.

Beginning in the early 1980s, national foundations played a key role in SBHC replication in several states, such as California, Louisiana, Colorado, and New York. For example, the Robert Wood Johnson Foundation founded the National Healthy Children Program and the School-Based Adolescent Health Care Program in an effort to expand community-based efforts aimed at increasing access to health care for children and adolescents in underserved communities.^{18,19} Health care and education policy makers across the country also increasingly became more aware and supportive of the value of school-based health care delivery in meeting the need for greater access to health care among youth. By 1988, there were approximately 120 SBHCs in the country.¹⁴

During the 1990s, the number of SBHCs multiplied nearly 3-fold, largely owing to private funding investments. For example, in 1994, the Robert Wood Johnson Foundation launched “Making the Grade: State and Local Partnerships to Establish School-Based Health Centers,” a multi-year \$23.2 million initiative to stimulate state-level policy changes to advance the SBHC model and work toward long-term sustainability.²⁰ Since then, other national and local foundations, such as the W.K. Kellogg Foundation, have played a key role in providing funding to develop and implement programs. Such foundations have also assisted with the provision of technical assistance to state-level associations to further solidify the sustainability of these efforts. As a result, a number of state governments have invested in funding new SBHCs through state general funds. In addition, their institution of public policies to support the long-term sustainability of SBHCs has been instrumental, for example, mandating contracts between SBHCs and managed care organizations to support reimbursement of SBHC services provided to Medicaid enrollees.^{21,22} During this time, several states also allocated part of their Maternal and Child Health Services Title V block grant funds to SBHCs. The Title V funds aim to extend and improve health and welfare services for mothers and children, and thus, SBHCs were consistent in this mission. The expansion of the Federal Medicaid

and State Children’s Health Insurance Programs (SCHIP) also provided significant resources for this growth.²³

In recent years, the acknowledgment and acceptability of SBHCs has continued to grow. For example, in 2008, California’s government passed the School Health Centers Expansion Act, with the aim of establishing a grant program for SBHCs.^{24,25} However, this legislation did not result in the addition of new SBHCs, primarily because no funding was allocated to the Act. Nevertheless, the Oakland and Los Angeles school districts (2 of California’s larger districts) have continued to expand the SBHCs in their communities through local voter-approved bonds and philanthropic donations.²⁶ In Oakland, Kaiser Permanente, one of the region’s largest health care providers, provided significant support for sustaining several existing SBHCs and the development of 4 new SBHCs, even though only a subset of students’ families are

formally enrolled in the Kaiser health care system. In this case, Kaiser recognizes the importance of investing in the health of the population in general, with a special focus on schools as a means of promoting health, including the prevention of childhood obesity. In 2005, Atlantic Philanthropies selected Baltimore, Chi-

cago, Oakland, and the State of New Mexico as sites to roll out integrated educational, after-school, health, dental and community services in middle schools, known as the Elev8 project. Each Elev8 site is supported by a combination of private and public funds and has an SBHC with dental services as an integral component of the program. The University of California, San Francisco Schools of Nursing and Dentistry have recently been funded to support the sustainability of the Elev8 sites in Oakland, with evaluation by the Philip R. Lee Institute for Health Policy Studies. Despite all of these private and public funding efforts, it is important, as previously noted, to stress that it was not until the recently passed national health care reform legislation that SBHCs were included as a noted health care delivery mechanism that warrants national investment. Overall, funding sustainability continues to be a challenge and has contributed to

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the relatively small number of SBHCs across the country, as discussed later in this review.

Meeting the Needs of Underserved Populations

SBHCs are well positioned to address the unmet physical and mental health needs of underserved youth populations by increasing accessibility and continuity of health care directly on the school campus.

Links to Medical Homes

The American Academy of Pediatrics (AAP) has emphasized that a “medical home” is the ideal form of health care delivery for children and adolescents.²⁷ A true medical home is a system of care that is accessible, family centered, continuous, comprehensive, coordinated, compassionate, and culturally effective.²⁷ Patients in medical homes have been shown to have lower rates of hospitalization and emergency department use because of better preventive care and illness management.²⁸ In the USA, children from minority, uninsured, and low-income backgrounds have the lowest likelihood of having a quality medical home.²⁹⁻³¹

Although the SBHC model embodies many of the principles of the medical home, such as accessibility and comprehensive and culturally effective care, most SBHCs have not had the opportunity to actually serve as medical homes to their clients.³² This is primarily because of the challenges in providing continuous and coordinated care in an SBHC that is only open during school hours and is, therefore, unavailable after school, during holidays, and vacations. One solution to this problem has been for the SBHC to provide a link to medical services in the community. This is often done through the SBHC’s sponsoring organization, such as a community clinic, hospital, or public health department. In its recommendations for SBHCs, the AAP has emphasized that, even if youth receive most of their care at the SBHC, youth and their families should be taught how to access care directly through their medical home and be formally linked with a permanent primary care provider.³³ With appropriate resources and integration into community systems of care, SBHCs could serve as a valuable component of a medical home, providing increased access to health care for vulnerable youth, for those who are geographically isolated from other health care settings and for

children whose parents cannot take time off work. For the student, the ability to access care onsite also assures that less “school seat time” is lost. This can benefit both the student and the school setting, where students’ average daily attendance represents financial resources for the school.

The concept of a medical home is an important component of how the Patient Protection and Affordable Care Act (ACA) will be implemented throughout the country as part of “Accountable Care Organizations” (ACOs). ACOs will carry a specific caseload of individuals and their families and will be accountable and responsible for the oversight of their health care access and delivery. On a basic level, ACOs will be hospital and community health systems working together toward the delivery of coordinated streamlined patient care. The potential of incorporating SBHCs as part of such a network is promising, but not yet fully tested. It calls to mind a period during the early development of SBHCs in which community practitioners who were not directly involved with the centers saw them as potential competitors. Over time, however, the role of SBHCs in serving children and adolescents whose families might lack health insurance coverage was recognized as playing an important role in closing coverage gaps, rather than being competitors for patients who would not be in a position to pay for care.

With the promise of the ACA, new opportunities emerge for coordinating services across a network of care providers, as well as affording the opportunity to provide patients with multiple entry points and focusing on primary and preventive care. What will be key as part of the ACA is the establishment of electronic health information records that will enable links to be established across systems of care as a means of avoiding duplication of effort and increasing coordination of care.

Serving the Adolescent Population

Adolescents as a group frequently have unmet physical and mental health needs. Few adolescents receive routine preventive health care, and teens from disadvantaged backgrounds are at the highest risk of not having regular health maintenance visits.³⁴⁻³⁷ Adolescents also tend to engage in health behaviors that place them at risk for the leading causes of morbidity and mortality.³⁸ Developmentally and culturally, appropriate health supervision could be instrumental in mitigating these risks.

SBHCs are uniquely positioned to fill adolescents' unmet health needs by increasing access to sensitive and appropriate care, including mental health services.³⁹ In addition, most adolescent SBHC users report high levels of satisfaction with the care they receive, an important health care quality metric that is being increasingly recognized as key within health care reform.⁴⁰⁻⁴²

Serving Minority Youth Populations

More than 70% of the students in schools that contain SBHCs are of minority ethnic or racial backgrounds.³ Minority children in the USA face higher risks of suboptimal health status, poor access to medical and dental care, and less frequent receipt of prescriptions and other essential health services, as compared with white children.⁴³ Increased accessibility and continuity of health care on the school campus makes the SBHC an ideal setting for the diminishing and eventual elimination of these health disparities. SBHCs also offer consistent and familiar access to compassionate care, further qualities of a true medical home much needed by this population.²⁹

Families from racial or ethnic minority backgrounds also face a wide range of barriers to health care access related to being un- or underinsured, including transportation, cost of visits, and inability to take time off work for health care appointments.⁴³ Even when minority families are eligible for Medicaid, they may find it difficult to identify a provider who is willing to accept additional Medicaid patients because of the program's historically limited reimbursement for health services. These issues affect lower socioeconomic groups regardless of race or ethnicity. However, it is well documented that minority populations have historically experienced greater disparities related to insurance and/or health care access, as well as a variety of other barriers that may interfere with access even if they have health insurance coverage.^{3,43} Immigrant parents may also face the predicament of children with mixed status: one child born in the USA and eligible for public coverage, and another child born abroad and unauthorized and ineligible for most services.⁴⁴

Others face barriers in identifying a local provider who will take care of their children or are unable to afford requisite copayments, thus further delaying their entrance into the health care system. One study found that minority youth used SBHC services more frequently than other available community health delivery sites,³⁶ suggesting that the SBHC setting might be ideal for minority families, even if it serves as a complement to their existing care providers.

SBHCs and Health and Social Outcomes

SBHCs have been found to impact a variety of health and social outcomes. A summary of the literature demonstrating these impacts is provided in the following text.

Health Promotion and Illness Prevention

As mentioned previously, children and adolescents who lack health insurance or are underinsured are at high risk for experiencing high levels of unmet health care needs, including lack of opportunities for health maintenance, well-child care, and mental health services.^{35,37,43,45}

The majority of SBHCs in the USA currently provide these necessary services including comprehensive health assessments (97%), vision, hearing, and other screening services (93%), and immunizations (85%).³ Students from disadvantaged backgrounds in schools with an SBHC are frequently found to have increased access to health care, including mental health services.^{36,46-48} Across all age-groups, general health examinations are among the most common reason for visiting an SBHC.^{5,9,34,47,49}

Immunizations

Because of their increased accessibility to youth, SBHCs have been a valuable location for improving immunization rates, especially for adolescents.^{34,50-52} A study in Denver, Colorado, comparing SBHC users with community clinic users, aged between 14 to 17 years, found that SBHC users were more likely to have received an influenza vaccine (45% vs 18%), a tetanus booster (33% vs 21%), and a hepatitis B vaccine (46%

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vs 20%).³⁴ The use of recall notification systems to remind students of necessary vaccines is highly prevalent among SBHCs, which may contribute to high immunization rates.^{50,52} In an analysis of hepatitis B vaccination completion rates among adolescents (aged 13-19 years) at 3 sites in New York City, rates were significantly higher among teenagers from an SBHC where loudspeaker announcements were made to advertise the vaccine (76% vs a hospital-based adolescent health center, 24%).⁵² Also, nearly all SBHCs participate in the Vaccines for Children program, which allows them to provide vaccines to publicly insured or uninsured youth—a group at high risk for low immunization rates.⁵⁰ Indeed, a more recent study of immunization registry data in Denver found higher immunization completion rates among patients aged 12 to 18 years from SBHCs than from CHCs, even though the SBHC population had limited insurance coverage.⁵¹

Oral Health

In a 2000 report by the Surgeon General, dental caries was identified as the most common chronic disease of childhood, with >80% of children affected by late adolescence.⁵³ At particular risk for dental disease are children from low-income or minority backgrounds or those with special health care needs, mostly because of lack of access to and/or funding for qualified professionals.^{54,55} Untreated dental problems have been found to lead to further difficulties for children, such as growth problems or emergency room visits and hospitalizations.⁵⁵ Possibly most significant, however, is the impact that oral health problems have on school time, with students missing an estimated 52 million hours of school per year because of oral and dental disease.⁵⁵ Because most dental diseases are preventable, optimizing opportunities for preventive dental care for children is essential.

SBHCs are an ideal setting to meet the oral health care needs of school-aged children; however, many can only do this in a limited capacity. Most SBHCs (84%) provide oral health education, but much fewer have the resources to provide formal dental care.³ Currently, less than a quarter of SBHCs provide basic dental care to students, including dental examinations (20%), sealants (25%), and cleanings (23%),³ and

some of these services are provided by specially trained medical providers and not dental professionals.⁵⁶ When more complex care is needed, most SBHCs are forced to refer their students out to the community. In areas with limited availability of dental providers, this could present a great disparity in care.

One of the biggest barriers to providing comprehensive oral health care in the school setting is identifying the appropriate personnel and location to deliver services in the face of limited resources.⁵⁶ Only 12% of SBHCs report having a dental provider on staff and generally for a limited number of hours per week or month.³ Some SBHCs have been able to provide some preventive care, such as fluoride varnish or sealants, by training their health care providers to deliver these services.⁵⁶ Other models of care involve the collaboration between a school or district and an academic dental center where dental residents or dental hygiene students provide dental care to children as part of a service learning project.^{57,58} In this latter approach, the use of portable equipment or mobile vans can help to compensate for a lack of more permanent space or resources.⁵⁷

Reimbursement is no doubt another factor affecting the availability of oral health care services in SBHCs. In a recent study, approximately 22% of U.S. children lacked dental insurance.⁵⁴ Even among children with Medicaid insurance,

use of dental care services is poor,⁵⁹ possibly because of a reluctance by dental providers to accept Medicaid when reimbursement is traditionally low.^{54,59,60} The ACA includes several provisions for the improvement of pediatric oral health in the USA,^{56,61} which will hopefully decrease the current disparities in dental coverage for children. Combined with the call for increased federal funding and expansion of SBHCs, these ACA provisions could contribute to the implementation of more widespread school-based dental health services and, thus, greatly impact the state of children's oral health in our nation.

Asthma

It is estimated that approximately 10% of children in the USA suffer from asthma.⁶² Nearly 60% of school-aged children with asthma report asthma-related school absences, amounting to >10 million missed

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school days each year.⁶² Racial and ethnic disparities in asthma care for children are significant, with African American children experiencing the highest overall rates of asthma-related health care visits (including outpatient, emergency room, and hospitalization), asthma attacks, and poorer compliance with asthma medications, among other indicators.⁴⁵ SBHCs have documented significant improvements in health outcomes for children with asthma. In comparison with those from non-SBHC schools, children with access to an SBHC have shown a significantly decreased need for and cost of emergency room visits⁶³⁻⁶⁵ and hospitalizations.^{63,66,67} For example, in a study comparing SBHC and non-SBHC school districts in Cincinnati, Ohio, the relative risk of hospitalizations for students with asthma decreased 2.4-fold after the SBHCs opened.⁶³ Study investigators estimated the potential cost savings of these results as approximately \$970 per asthmatic child per school year. Some studies also demonstrated decreased rates of absenteeism related to asthma.^{66,67} One longitudinal study of children with asthma in 6 elementary schools in Bronx, New York, found that children with asthma in schools with an SBHC missed fewer days of school per year than those in a non-SBHC school (18.2 vs 21.3, respectively).⁶⁶ Other studies have found lower reported rates of daily rescue medication use⁶⁴ and lower reported asthma-related activity restriction⁶⁵ by SBHC users.

It is likely that factors such as additional health education, closer monitoring, and readily available clinical care contribute to these results. Providers working in communities without an SBHC might consider adopting elements of the SBHC model of asthma care, including community-oriented approaches and the provision of some services by nonclinicians. Even with the potential expenses of supporting such extended staff, hospital and insurance companies may want to ascertain the costs averted through the avoidance of emergency department use and unnecessary hospitalizations.

Under ACA, financial incentives will be focused on reducing excess costs by improving disease management, especially of chronic health conditions. With the potential of different reimbursement models and greater accountability for a panel of patients, new care delivery sites will likely become even more attractive. This shift away from current incentives that perversely reward the care of sicker children toward incentives that reward improved health outcomes with lower costs will likely increase the importance of SBHCs as viable partners. In addition, SBHCs may represent an

important conduit for screening, assessing eligibility, and enrolling children and families into their appropriate ACOs or, if they are not eligible because of their residency status, a site for helping families navigate and identify an appropriate source of care.⁶⁸

Obesity

Approximately one-third of school-aged youth in the USA are overweight, and the rates are even higher among minority youth.⁶⁹ Evidence strongly supports counseling to improve dietary habits, decreased time spent in sedentary behaviors, and increased physical activity as important strategies for the prevention and treatment of childhood overweight and obesity.⁷⁰ Currently, approximately 90% of SBHCs in the USA offer nutrition, fitness, and/or weight management services to students and sometimes to their families as well.³

In schools without SBHCs, various programs have been implemented to address childhood obesity, including nutrition education, physical activity programs, and/or modifications to the school environment or meals provided.⁷¹ Results are somewhat mixed as to whether these types of programs are successful in reducing the body mass index of overweight children, although most seem to have positive short-term effects on reducing the prevalence of childhood overweight and obesity in schools.⁷¹ SBHCs can bridge a potential gap in some of these school-based interventions by providing consistent follow-up counseling and reinforcement for students struggling with weight loss or maintenance, as well as implementing primary prevention efforts before children become overweight or obese.

Some SBHCs have already found encouraging results from their obesity prevention and treatment efforts.^{72,73} For example, an intervention program consisting of nutrition and physical activity classes taught by staff from the Louisiana State University Health Sciences Research Program and the SBHC staff was designed to address high rates of obesity in a Louisiana middle school.⁷² Although it was a small study with several limitations, it did show some weight loss or weight maintenance in the intervention group and, more importantly, demonstrated the ability to conduct an obesity intervention program in a school with an SBHC. A much larger study in several middle and high schools in Michigan demonstrated the positive effects of simply using an SBHC on students' health-promoting behaviors.⁷³ Among the students in the study with

access to an SBHC, use of the center was associated with eating significantly more healthy foods and being significantly more physically active.

In addition to educational interventions and programs, the SBHC can offer medical evaluation and management of coexisting conditions, such as diabetes, dyslipidemia, or hypertension, which now appear to be affecting youth in greater numbers. In a performance improvement project in 9 SBHCs in Delaware, 4% of >1500 students assessed were found to have blood pressures in the prehypertensive range, and 44% were found to have follow-up needs related to overweight or obesity.⁷⁴ Follow-up consisted of multidisciplinary efforts including referrals to a dietitian and/or an outside primary care provider. The project demonstrated great success in identifying at-risk students and providing them the comprehensive care they needed, including connections and referrals with community providers. The potential for collaboration between medical, mental health, and school professionals and educators, including the cafeteria staff, makes the SBHC an ideal environment for a more comprehensive and youth-centered approach to obesity intervention.

Children With Special Health Care Needs (CSHCN)

Approximately 14% (10.2 million) of U.S. children under 18 years of age were estimated to have a special health care need in 2005-2006.⁷⁵ The Federal Maternal and Child Health Bureau defines CSHCN as those “who have or are at an increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required for children generally.”⁷⁶ CSHCN often require complex and long-term health and educational services and are vulnerable to high costs, access issues, and fragmented systems when seeking care.⁷⁵ Given their accessibility and holistic approach to service provision, SBHCs are well positioned to support this group of youth who are increasingly being mainstreamed in schools.

According to the 2008 Census of the National Association of School-Based Health Centers (NASBHC), 30% of SBHCs partner with schools to support CSHCN.³ This support is offered in the form of SBHC staff monitoring medications (95%); reviewing medical records (94%); assisting in the implementation of students’ Individualized Education Plans (75%); and serving on the Individ-

ualized Education Plans development committee (70%).³ There is limited research on the impact of SBHCs’ involvement in serving the needs of CSHCN. However, in 2006, NASBHC convened a committee of experts to discuss how SBHCs can partner with schools to support the education and health needs of CSHCN.⁷⁷ The committee identified major areas of potential impact including mental health and medical services. With their links to both the school and multidisciplinary service providers, SBHCs are well positioned to understand the relationship between the health and mental health needs of CSHCN and the school environment. Another important area where the committee felt SBHCs could greatly assist school systems was in meeting their legal obligations regarding CSHCN and the identification, treatment, and referral of students with special education needs. The committee felt that SBHCs can effectively and efficiently identify accommodations needed by CSHCN; serve as a consistent accessible resource for these youth; increase appropriate referral of students for testing for special education services; and help to ensure the appropriateness and effectiveness of specialized services. However, one of the biggest challenges in the provision of services to CSHCN is obtaining adequate and specific reimbursement, particularly for case management and mental health services. Partnerships with medical homes would be critical not only to provide family centered, community-based, coordinated care, but also to maximize opportunities for reimbursement for services provided to CSHCN.

Reproductive Health

Providing comprehensive reproductive health care services is essential, particularly in the middle and high school settings, as reproductive health visits are among the most common reasons adolescents seek care at SBHCs.^{9,34,36,39,42} However, differences in state and school regulations have led to a variety of models for providing reproductive health care to teens. The majority of SBHCs serving adolescents offer pregnancy testing (81%), contraceptive counseling (70%), and follow-up services for contraceptive users (59%).³ Some evidence shows improved contraceptive use among SBHC users^{42,46,78}; one recent study showed a greater decline in pregnancy rates in schools with SBHCs.⁷⁹ However, >60% of SBHCs are still prohibited from dispensing contraception on site.³ These restrictions may be put in place by the school district, the SBHC’s sponsoring organization, state-

level limitations, and/or concerns about the acceptability of dispensing contraception by the surrounding community.^{3,80} Almost 70% of SBHCs also offer sexually transmitted disease diagnosis and treatment, even if they are not permitted to provide contraception on site. Studies also show that SBHCs often offer opportunities for preventive counseling to teens regarding sexually transmitted diseases, irrespective of whether they provide other reproductive health care on site.^{42,81}

The availability of confidential services has been cited as an incentive for teens using SBHCs,^{42,81} although as previously noted, laws governing confidentiality for sensitive services differ by state.⁸² This is a significant component of health care delivery for youth, as evidence shows that adolescents who engage in high-risk health behaviors are likely to cite confidentiality concerns as a reason for foregoing health care.⁸³ As readily accessible providers of sensitive, nonjudgmental, confidential, and tailored care, SBHCs are ideal sites for adolescent health care delivery. The SBHC is one of the few systems of care wherein young people can have repeated and ongoing “time alone” with a provider, disclosing their personal concerns over time as they establish a trusting relationship.⁸⁴

Mental Health

The gap in access to appropriate mental health services for children and adolescents is staggering. It is estimated that up to 20% of adolescents meet the diagnostic criteria for a mental disorder with severe impairment during their lifetime.⁸⁵ However, only about one-third of these adolescents have ever obtained treatment.⁸⁶ Minority or impoverished students are at high risk for psychiatric disorders, but are less likely to receive the care they need because of increased barriers to access, including lack of health insurance and underinsurance for mental health services.⁸⁶⁻⁸⁹ For example, Hispanic youth have been found less likely to receive treatment for severe attention-deficit hyperactivity disorder, and both Hispanic and African American youth have been found less likely to receive treatment for mood disorders than their white counterparts.^{45,86} Furthermore, adolescents whose families are on public assistance or

without a means for paying for health services have been found to be two-thirds more likely than those who are privately insured to seek mental health services from a SBHC, as it is likely these students would not have any alternative access to care.³⁹

Many SBHCs offer convenient on-site access for the early identification and frequent follow-up that is often required for successful mental health treatment plans. Studies have found that adolescents were 10 to 21 times more likely to prefer visiting an SBHC over a CHC for mental health care, and enhanced availability of care was cited as one of the likely reasons for this preference.^{36,90} Most school-based mental health providers report virtually no attrition or no-show rates because of the ease of access to students during the school day. The integration of mental health within the

SBHC setting also lowers the risk, for youth, of being stigmatized for seeking out these services.^{91,92}

Studies have also shown improvements in youth’s mental health outcomes related to SBHCs, including a significant decline in depression among students who received SBHC mental health services⁹³ and a reduced likelihood of suicide ideation among students attending schools with SBHCs.⁴⁶

The importance of early identification of mental and behavioral health issues in younger age-groups supports the need for services in elementary and middle schools as well. Research shows

that use of SBHC mental health services by these groups has increased significantly in recent years.^{5,9,49,60,94} For example, a study of 8 elementary and middle school districts implementing SBHCs in the Ohio and Kentucky areas found that the greatest increase in visits over the first 3 years of operation was for mental health issues, up from 1% of visits in the first year to 22% of visits in the third year.⁴⁷

The prevalence of mental health disorders in the school-age population is noteworthy for providers who work and live in settings where no SBHC exists. The high unmet need for these services in such communities calls for effective planning for school referrals to community providers, where they are available. Unfortunately, there is a dearth of mental health providers in many communities, par-

Adolescents whose families are on public assistance or without a means for paying for health services have been found to be two-thirds more likely than those who are privately insured to seek mental health services from a SBHC.

ticularly in minority communities. One model that brings schools and mental health providers together has been developed by Drs. Howard Adelman and Linda Taylor at the School Mental Health Project/Center for Mental Health in Schools at the University of California, Los Angeles.⁹⁵ The emphasis in their model is on better use of school teachers as a first line of defense in the creation of supportive school climates promoting improved mental health and well-being.

Given the strong evidence to support the need for mental health care in SBHCs, it is encouraging that approximately 75% of current SBHCs offer mental health services on site.³ These sites include mental health professionals, such as licensed clinical social workers, clinical psychologists, and/or substance abuse counselors, working either part time or full time as part of the SBHC staff. The SBHC's medical and nursing staff also establish a unique sense of trust with students that allow greater opportunities for the disclosure of psychosocial issues, which might otherwise be missed in traditional health care delivery sites.^{36,94,96}

Alcohol, Tobacco, and Substance Use

Alarming rates of tobacco, alcohol, and other drug use among adolescents provide further support for the potential benefits of school-based mental health programs that also incorporate services for these types of risk behaviors. According to the 2009 National Youth Risk Behavior Survey, approximately 26% of youth in grades 9 through 12 reported current tobacco use ("current" is defined as use in the 30 days before the survey), and 5% had smoked cigarettes on school property.³⁸ More than 41% of youth reported current alcohol use, 24% reported binge drinking (5 or more drinks within a couple of hours), and approximately 5% had consumed alcohol on school grounds. Current marijuana use was reported at almost 21%, and 7% of students reported they had used marijuana on school property. Furthermore, >22% of students reported being offered, sold, or given an illegal drug by someone on school property in the past 12 months. The lack of progress in

the Center for Disease Control and Prevention's 2010 National Adolescent Health Objectives clearly points to the importance of continuing to prioritize these outcomes and to identify additional ways to reach young people with meaningful and effective interventions.⁹⁷

Fortunately, tobacco and substance use counseling services are being provided by a large proportion of SBHC mental health providers (89% and 84%, respectively).³ A survey of SBHCs with tobacco cessation programs showed that most were based on on-site education programs rather than referrals or prescriptions for nicotine replacement therapy.⁹⁸ There is clearly a need for additional comparative research to determine the most effective school-based, tobacco prevention and cessation interventions.⁹⁸ Currently,

there is limited research exploring the implementation of alcohol or substance abuse treatment and counseling in SBHCs, although the majority report at least providing individual prevention, early intervention, and risk reduction education in both elementary and secondary school settings (56% and 87%, respectively).³ Similar to other mental health conditions, the utilization and quality of treatment for substance use disorders also remains poor among ethnic minority youth in general.⁸⁸ This further reinforces the potential and actual value of SBHCs to address these issues among vulnerable populations, whose access to these services would be severely re-

stricted without the availability of on-site programs. Indeed, one study of high school students in California found that cigarette and marijuana use were each predictive of use of an SBHC for general and mental health services.³⁹

Satisfaction With Care

As mentioned previously, adolescents report high levels of satisfaction with the care they receive from SBHCs.⁴⁰⁻⁴² For example, in a study of adolescent SBHC users, nearly all students surveyed regarding their SBHC experiences felt that the SBHC providers were people they could go to for advice or information and that they were easier to talk to than other doctors or nurses.⁴² Although the literature documenting pa-

The majority of parents supported the provision of comprehensive primary health care services at their children's schools through SBHCs, including counseling for emotional problems, drug and alcohol abuse, and family planning services for sexually active teens.

BOX 2. Overview of No Child Left Behind Act

The NCLB Act is the primary statute governing the federal government's role in K-12 education. First passed during the Johnson administration as the ESEA, it was overhauled in 2001 by President George W. Bush's administration. The NCLB Act of 2001 incorporates the principles and strategies proposed by President Bush "to improve the performance of America's elementary and secondary schools while at the same time ensuring that no child is trapped in a failing school. These include increased accountability for States, school districts, and schools; greater choice for parents and students, particularly those attending low-performing schools; more flexibility for States and local educational agencies (LEAs) in the use of Federal education dollars; and a stronger emphasis on reading, especially for our youngest children."¹⁰² NCLB required all states to develop and administer annual tests to students in reading and math with the overall goal of having all children reach academic proficiency by 2014. Schools were expected to achieve this goal by setting academic standards and supporting students to achieve them; collecting and reporting data annually that demonstrated that all students were meeting state goals; and ensuring that all teachers were highly qualified. School districts and schools that failed to make AYP toward statewide proficiency goals were subject to improvement, corrective action, and restructuring measures. Schools that met or exceeded AYP goals or closed achievement gaps were eligible for achievement awards.¹⁰² Since its enactment, the NCLB Act of 2001 has proven to be a controversial piece of legislation. It has been praised for raising test scores, particularly those of minority students, and criticized for placing too much emphasis on standardized testing.¹⁰³⁻¹⁰⁷

In March 2010, the Obama administration released its blueprint for revising the ESEA. "This blueprint builds on the significant reforms already made in response to the American Recovery and Reinvestment Act of 2009 around four areas: (1) Improving teacher and principal effectiveness; (2) Providing information to families to help them evaluate and improve their children's schools; (3) Implementing college- and career-ready standards; and (4) Improving student learning and achievement in America's lowest-performing schools by providing intensive support and effective interventions." The administration has replaced the 2014 deadline for bringing every American child to academic proficiency, with a call for states to adopt new academic standards that aim to have all students ready for college and careers by the time they finish high school.¹⁰⁸

AYP, adequate yearly progress; ESEA, Elementary and Secondary Education Act; NCLB, No Child Left Behind.

rental support is limited, one study found that the majority of parents supported the provision of comprehensive primary health care services at their children's schools through SBHCs, including counseling for emotional problems, drug and alcohol abuse, and family planning services for sexually active teens.⁹⁹ Recent media attention on SBHCs has also demonstrated that parents support them. For example, in 2009, a new SBHC was opened in Forest Grove, Oregon, as a result of significant parent and youth engagement and advocacy.¹⁰⁰ The SBHC's Youth Advisory Committee and the Latino Parent Advisory Committee are charged with helping to sustain the SBHC, which serves all district students and community members. Additionally, in Baltimore, Maryland, the city's jeopardized SBHC programs were restored after the city budget was passed in June 2010 with continued funding for SBHCs, a move praised by parents because of the role SBHCs played in serving youth in need.¹⁰¹

Students' Educational Outcomes

Schools have been under increasing pressure to demonstrate the impact of their programs on students' educational outcomes, particularly since the implementation of the No Child Left Behind Act of 2001 (Box 2).¹⁰⁹ Similarly, SBHCs are being asked to demonstrate their contributions to supporting learning and improving academic outcomes. Although the re-

search base provides insufficient support of a direct link between SBHCs and academic outcomes overall,¹⁰⁹ several studies have demonstrated positive shorter-term impacts. For example, studies have found that students identified and referred for mental health services by an SBHC have fewer absences and tardiness rates¹¹⁰ and increased grade point averages,¹¹¹ factors that are known to contribute to longer-term academic success. Significant increases have also been found in school attendance for SBHC medical users compared with nonusers.¹¹¹ A recent study of 2 urban high schools (one with an SBHC, one without) in western New York state examined differences in academic indicators for students who received a combination of SBHC and school nursing services, as compared with students who received only traditional school nursing services.¹¹² Findings noted that early dismissals from school were significantly reduced in schools with SBHCs, compared with students who received school nursing services alone. Furthermore, students who were not receiving services from the SBHC lost 3 times as much "seat time" (time students were available in school to learn) as students enrolled in the SBHC services.¹¹² Finally, a recent longitudinal study in an urban district of Seattle, Washington, found that low-to-moderate use of SBHC services was related to one-third lower likelihood of dropping out of high school; this association was higher for youth who were at higher risk for dropout.¹¹³ This literature supports the

idea that SBHCs can play an important role in improving the educational success of our nation's youth, including critical retention in school attendance.

Supporting the Larger School Environment

The scope of SBHC services expands beyond the provision of individual client health-related services to reach the broader school community. For example, SBHC staff deliver health education curricula in classrooms; conduct health fairs for students, staff, and parents; serve on educational committees; and provide consultations to teachers and other school staff to support and address students' needs in their classrooms.

The relationship between emotional or behavioral dysfunction and poor academic performance calls for mental health professionals working closely with teachers and other school personnel to both identify students in need of services and also collaborate in their care. Mutual respect and cooperation between school personnel and mental health staff is essential for the success of this type of collaboration, as in the end, it contributes to a more holistic and comprehensive approach to care.^{6,96,114} Stationing mental health providers on site also creates an opportunity for school staff education regarding the mental health needs of students, which can further facilitate collaborative efforts toward the identification and treatment of those in need of care.^{6,115}

Positive correlations have also been found between SBHCs and the school environments in which they operate. In a study of public schools in a large northeastern city, students and parents from schools with SBHCs reported more favorable perceptions of the school learning environment, particularly academic expectations, communication, and school engagement, as compared with schools without SBHCs.¹¹⁶ One example given to demonstrate support for these findings explained that some of the SBHCs in this study sample provided the schools with community health liaisons to engage students and parents in weekend classes on healthy cooking and enjoyable exercise activities.

Providing Meaningful Opportunities for Youth Participation

In addition to their health and academic impacts, SBHCs provide opportunities to expose youth to projects that promote healthy development and empowerment. The concept of youth development has been defined as "the ongoing growth process in which all youth are engaged in attempting to: (1) meet their basic personal and social needs to be safe, feel cared for, be valued, be useful, and be spiritually grounded, and(2) to build skills and competencies that allow them to function and contribute in their daily lives."¹¹⁷

Many SBHCs provide a variety of youth development opportunities. Youth advisory boards are one example and consist of a group of young people who are appointed to make recommendations on issues of

program and policy development from the consumer's perspective.

The overall strengths of the youth advisory board model include engaging youth in meaningful dialogue about their health and school programs, identifying service gaps and opportunities for improvement, and supporting their own personal and professional development and growth.¹¹⁸ Additional youth development opportunities offered by some SBHCs include peer health education and youth-led research programs. These opportunities not only expose young

people to leadership and advocacy roles, but also provide them with firsthand knowledge of and experience with health care careers that are modeled by SBHC staff. These programs also provide opportunities to engage underrepresented youth in health promotion and research-related career pathways far earlier in their educational experiences, adding in the short term to their sense of self-confidence, leadership skills, and achievement.¹¹⁹

Serving Students' Families, School Staff, and Community Members

More than two-thirds of SBHCs nationwide reported providing services to individuals beyond the student population at the schools in which they are located.³ These individuals include students from other schools

In addition to their health and academic impacts, SBHCs provide opportunities to expose youth to projects that promote healthy development and empowerment.

in the community (58%); out-of-school youth (34%); faculty and school personnel (42%); family members of students (42%), and other community members (24%).³ Recently, the number of SBHCs that serve nonstudent populations nationwide has increased. Contributing factors may include families' loss of employer-sponsored health insurance coverage, increasing family financial strains, and a greater need for affordable health care delivery in the community.³ For SBHCs who are connected to a community hospital or health care organization, these services may be reimbursable through third-party sources. However, without these connections, many of these services are often provided without reimbursement.

SBHCs present many opportunities for increasing outreach, prevention education, early screening and detection, and continuity of care for community members, families, and the school workforce. Health promotion trainings and activities on nutrition, exercise, stress reduction, and other topics can be provided to adults within the SBHC or school setting through health fairs and other types of events. Early screening on health issues, such as high blood pressure and stress, follow-up information, and referrals to community resources can also be provided to family and school community members. Many SBHCs also assist families with applications for enrollment in services for which they are eligible, for example, Medicaid or the SCHIP, thereby increasing their ability to access additional health services, when necessary, for their children and themselves.

Despite the potential for increased community prevention and early intervention services, providing services to adults in SBHCs could present some potential challenges. First, providing treatment to adults would require a much larger investment of resources, and most SBHCs are already at capacity in serving the student population. Referrals and linkages to community health providers would help to address this challenge. Another challenge could arise in seeing adults at the same time as students who are accessing confidential services. This situation could potentially jeopardize adolescent confidentiality and also negatively impact youth's trust and comfort in accessing services. Furthermore, opening SBHCs' doors to community members during school hours could potentially provide unwanted access to the school and students. To address these challenges, SBHCs can arrange to have separate entrances for adults and schedule specific hours for them to access services that are outside

of traditional school hours. Some sites, whose sponsoring agencies deliver screening services in the community by using mobile clinic vans, have additional flexibility in locating on the school site without disturbing the school building. This also provides additional opportunities for providing services in the latter part of the afternoon and weekends.

Evaluation and Quality Improvement

SBHC evaluation and quality improvement efforts have helped to refine and advance this model of care, although these areas can benefit from further attention as the model expands.

SBHC Evaluations

In many respects, SBHCs have been placed under a rigorous microscope, with demanding expectations that they be successful in achieving a wide range of health and educational outcomes. Various evaluations of SBHC programs have been conducted since the model was implemented 40 years ago, and have demonstrated increased access to care, improved health and education outcomes, and high levels of satisfaction with care. However, evaluating the impact of SBHCs continues to be complicated for a number of reasons, including the wide range of services provided and limited resources devoted to conducting a rigorous evaluation. Methodological limitations include difficulty in establishing randomized control designs, confidentiality and consent concerns, diverse school environments, small sample sizes, and attrition within school populations.⁴² For example, "turn-over" rates in students attending any one particular school in resource-deprived settings can reach as high as 75%, thus tracking and monitoring outcomes become cost and resource prohibitive. Furthermore, obtaining parental consent to participate in evaluation for youth who access sensitive services from SBHCs would jeopardize their confidentiality. Without parental consent, data can only be analyzed in an aggregate or de-identified manner. These restrictions complicate linking data about use of SBHC services from health data sets protected by the Health Insurance Portability and Accountability Act, with specific student educational outcomes from academic data sets protected by the Family Educational Rights and Privacy Act, limiting the level of analysis that can be conducted.

Despite these challenges, evaluations of SBHCs are beneficial to the field, particularly in helping to determine which staffing and funding patterns are the most cost effective and impactful. The increased demand for academic accountability in school health services, coupled with the need to improve adolescent health outcomes, heightens the need for well-controlled longitudinal studies that examine the specific impact of SBHCs so that they can be replicated and expanded to serve more individuals in need. However, randomized longitudinal studies are practically difficult to institute and ethically unacceptable within one school. Challenges in adequately matching schools as the unit of analyses also have made strong rigorous studies difficult to conduct.

Furthermore, the research literature has not always accounted for the variation in SBHC components, including scope of services, staffing, location, sponsorship, and funding.⁶⁰ Evaluations of SBHCs are often conducted broadly as if they were a uniform intervention, and efforts to assess the advantages and disadvantages of their different components have been limited.⁶⁰ Rigorous studies are needed to determine which components are most effective in meeting the needs of the communities they are designed to serve. Moving forward, the field of SBHC evaluation needs to establish a more standardized set of health services indicators, with a stronger emphasis on health outcomes, to better document the value of this model of care. This includes fully defining the types of interventions that are implemented. For example, consistency in tobacco prevention and treatment counseling would need better articulation to assess the degree to which these services are being implemented, for which students, and under which circumstances. To increase the sample size, there would need to be consistency in the intervention implementation across an array of school settings to allow for the “pooling” of students to further ascertain the intervention effectiveness. This would require a strong process and fidelity evaluation (assessing whether the interventions planned were implemented to a sufficient level of fidelity and whether they reached the pool of students in need of services appropriately), as well as an evaluation of the short- and longer-term outcomes.

Quality Improvement

Nationwide, health care organizations have used quality improvement principles and practices widely;

however, implementation of these methods in SBHCs has been limited.¹²⁰ NASBHC has provided extensive resources and technical assistance to many SBHCs nationwide to conduct quality improvement efforts and ensure that their services are meeting or exceeding key child health quality standards, incorporating best practices, and increasing efficiency and effectiveness.¹²¹ Colorado and New Mexico are 2 of several states that provide state funding to SBHCs and have implemented mandatory statewide quality improvement initiatives (QII) to improve clinical services and delivery systems in SBHCs.^{32,120} As part of these initiatives, QII committees assessed how well the SBHCs were meeting standards of care and identified areas for improvement. These groups then provided quality improvement training, staff development, and evaluation services to the SBHCs to support them in their efforts to use best practices in their work. Findings from their efforts were encouraging, with SBHCs performing well on indicators of child health screening requirements, staff credentialing, and patient satisfaction.¹²⁰ Improvements were also documented in areas that were addressed through QII trainings, such as documenting student health and behavioral health assessments. Areas identified as needing further improvement included immunization rates and screening youth for tobacco use.¹²⁰ SBHCs can continue to demonstrate their capacity to provide evidence-based, coordinated, and patient-centered health care by conducting quality improvement activities. This will further position them to meet the emerging standards in primary care and support the medical home model,³² especially with the greater accountability and measurement that will be mandated under current health reforms.

SBHC Financing and Sustainability

To consider how the SBHC model could be brought to “scale” and potentially play a more important role in schools across the country, 2 important factors must be acknowledged: costs associated with establishing and operating the model and fiscal sustainability.

SBHC Operating Costs and Financing

A financial study in SBHCs in Oregon found that the median start-up costs ranged from \$49,750 to \$128,250, depending primarily on the state of the space where the SBHC would be housed.¹²² Median

TABLE 1. Federal government funding sources for SBHCs

Funding source	Objective	Program details
Section 330 of the Public Health Service Act (42 USC§ 254b) Authorizing Legislation of the Health Center Program ¹²⁴	Provide primary health care for the nation's underserved populations through community health centers, migrant and rural health centers, and health care programs for the homeless and public housing residents	As Federally Qualified Health Centers, Section 330 programs receive Medicare and Medicaid reimbursement, funds to offset the costs of uncompensated care, and access to the Vaccines for Children Program for uninsured children, among other benefits.
Title V Maternal and Child Health Block Grant of the Social Security Act ¹²⁵	Ensure the health of mothers, women, and youth through health services and related activities, including planning, administration, education, evaluation, and purchase of technical assistance	States and jurisdictions must apply for funding annually and match every \$4 of federal funding with at least \$3 of state and/or local money. Allocations are based on the proportion of low-income children in the state compared with the number nationally.
Title X Family Planning Program of the Public Health Services Act ¹²⁶	Provide comprehensive family planning and related preventive health care services to all who want and need them, with priority given to low-income persons by law	Title X clinics provide contraceptives' services and related counseling, as well as pregnancy, sexually transmitted disease, and other reproductive health-related prevention education, counseling, testing, treatment, and referral as appropriate.

annual operations costs ranged from \$90,750 to \$208,500; the variation was mostly based on the scope of services and hours. However, fully expanded SBHCs operating year round in Oregon had annual operating budgets exceeding \$400,000. In Colorado, SBHCs operate on an average annual revenue of approximately \$287,000 (including \$233,000 in cash and \$54,000 from in-kind support), with wide variation based on size and scope of the SBHC.¹²³ Similar data would be useful across a number of geographic locations, types of schools (eg, elementary vs high school), and scope of practice (eg, numbers and types of practitioners), as all these factors significantly impact operation costs.

Most SBHCs finance their operations through a diverse portfolio of funding sources. According to NASBHC's 2008 national census of SBHCs, clinics reported the following nonpatient billing revenue sources: state government (76% of SBHCs), private foundations (50%), sponsoring organizations (49%), school or school district (46%), and federal government (39%; Table 1).³ Furthermore, the majority of SBHCs bill public insurance programs, including Medicaid (81%) and the SCHIP (68%), private insurance (59%), and students or families directly (38%).³ In Colorado, for example, revenue sources are primar-

Despite their popularity and established success, SBHCs have faced consistent sustainability challenges. These challenges come from the SBHC's mission to serve all students regardless of their insurance status and the large volume of currently nonreimbursable educational and preventive services SBHCs provide.

ily from private sources, such as foundation grants, which represent one-third of their revenue (31%); patient revenue through third-party reimbursement (21%); in-kind donations, such as space and utilities from the school district (20%); state funding (18%); and a variety of Federal sources (8%).¹²⁷

Sustainability and Financing Issues

Despite their popularity and established success, SBHCs have faced consistent sustainability challenges. These challenges come from the SBHC's mission to serve all students regardless of their insurance status and the large volume of cur-

rently nonreimbursable educational and preventive services SBHCs provide. These factors have also contributed to the relatively small number and proportion of SBHCs. With >98,000 public schools in the USA,¹²⁸ only 1900 SBHCs exist nationwide, representing approximately 2% of all schools.³

Many SBHC users are uninsured, which in most states leaves few sources of payment for the SBHC. A particularly important issue in states like California, Texas, and New York is the large proportion of undocumented or mixed status immigrant families who have even more restrictions on their usual sources of health care. This situation is likely to worsen, as

undocumented immigrants are not included in health care reform efforts and will thus be even more likely to be reliant on community providers including Federally Qualified Health Centers. Noncitizen immigrants who have been residents for <5 years may be similarly affected. Even for patients who are insured, SBHCs face challenges obtaining reimbursement. Many plans will not reimburse SBHCs because they are not a student's designated "primary care provider." SBHCs, in turn, often have difficulty billing insurance because their patients are enrolled in multiple public and private health plans. Moreover, because billing revenue is so limited, they have insufficient billing staff devoted to pursuing payments for services provided and monitoring outstanding financial payments. Finally, SBHCs provide many key services, such as case management, health education, and teacher consultation. Although these are beneficial to the well-being of children, they often fall outside of the scope of a billable visit, and, thus, if reimbursement is obtained, it rarely covers the true cost of the visit.¹²⁹

Researchers who have examined these issues have voiced both concerns and recommendations for ensuring the financial security of SBHCs. For example, in 2002, the Rutgers Center for State Health Policy recommended that SBHCs must diversify their donor base including both public and private insurers and foundation support.¹³⁰ Additional recommendations to promote financial sustainability included delineating a clear definition of the services provided; improving clinic record keeping; developing a communications infrastructure, establishing confidentiality procedures and quality assurance; developing a state association; identifying and seeking appropriate sponsors who understand contracting, are vested in SBHCs, and who have the capacity or an interest in entrepreneurship; and educating potential allies about the centers.

As mentioned previously, the establishment of ACOs may bring new opportunities to further expand the availability and sustainability of SBHCs. The potential for colocation of services in school settings reaching students and their families who are newly eligible for health care is worthy of consideration, as the ACO regulations are developed and implemented. ACOs and other delivery mechanisms will be judged on a variety of metrics, including beneficiary satisfaction. In addition, providers will be more focused on demonstrating their effective management of chronic health conditions for the families they are responsible for serving. Furthermore, health providers will likely

receive payment for "bundled care" and disease management of illnesses, such as diabetes and heart disease. In other words, providers will receive one payment for managing all aspects of a health care condition, from patient education through treatment. As a result, incentives for improving service delivery may contribute to incorporating SBHCs as part of integrated care. The ACA has also heralded a major commitment to prevention and health promotion, providing potential additional funding opportunities for SBHCs. For example, if SBHCs are recognized as part of an ACO and they are able to document that they are delivering care that maintains the health and well-being of their enrollees, they might be in a position to obtain part of the reimbursement that the health system is receiving from the insurance company. Another option is for SBHCs to actively pursue prevention funds that are being set aside by the Center for Disease Control and Prevention to reduce the incidence of smoking, diabetes, and teenage pregnancy.

Current trends in health care reform such as the ACO model emphasize the need for health care providers to adopt electronic health records and participate in a "Health Information Exchange" between health care organizations to better coordinate and streamline care. As noted previously, these trends also emphasize the need for providers to be accountable for health outcomes documented through data collection and engagement in quality improvement efforts. To align with this movement, SBHCs will need to prioritize the use of information technology to collect and report data on services and patient outcomes, and they have the capacity to exchange data with other health care systems (which represent the medical home for their students) to increase opportunities for billing and reimbursement.¹²⁹

Although concerns about SBHC sustainability have been voiced for several decades, the number of SBHCs nationwide has continued to increase and a relatively small number have closed (Linda Juszczak, personal communication, April 2011). In the last national census, 50% of SBHCs were 10 years old or older, and an additional 22% had been open between 5 and 9 years.³ SBHCs have managed to persist and provide services to their communities, even though funding is often scarce and concerns of long-term sustainability are always looming. Once again, it should be noted that although a relatively small proportion of all schools have SBHCs, the lessons learned through their on-site delivery have significant

implications for health providers. Specifically, providers must be encouraged to value the types of relationships they can establish with important community organizations (like schools) that play a partnership role in improving child health.

Policy/Advocacy and Health Care Reform

Historically, most advocacy efforts for SBHCs have materialized on the state level. Over the past 20 years, the number of state SBHC initiatives has increased from 5 to 19.²² These initiatives are often characterized by state health departments establishing SBHC programs within their departments, as well as allocating funding to and authorizing legislation for SBHCs.

As mentioned previously, state initiatives played a significant role in the expansion of SBHCs by securing state funding, primarily through general funds, and allocating federal funding, primarily through Title V, for SBHCs. States also set program standards, monitored performance and impact through data collection, and advocated for long-term sustainable resources.²²

The combination of multiple funding streams, from both government and the private sector, has been instrumental in the sustainability of the SBHC model. However, this may also help explain why the model has not been more widely replicated across the country, given the challenges of small numbers of staff who are responsible for both seeking funding in addition to providing direct services.

On the Federal level, NASBHC has recently made significant progress in advancing SBHCs as a vital part of health care reform by successfully advocating for the inclusion of 2 provisions for SBHCs within the ACA. The first of these provisions in the legislation signed in March 2010 (Sec. 4101[b])¹³¹ recognized SBHCs as a federally authorized program. The second provision included a one-time mandatory appropriation that provides \$200 million for SBHCs over 4 years (Sec. 4101[a])¹³² to be used for capital expenses, including construction, renovation, and equipment

needs. On July 14, 2011, the Health Resources and Services Administration awarded \$95 million in competitive federal grants to 278 SBHCs across the country from this appropriation.¹³³ This was the first in a series of awards that will be made available through the ACA from 2010 to 2013 and will be useful in expanding the number of available sites, as well as the capacity of centers to more fully participate as part of the anticipated implementation of health care reform.

The ACA holds promise for providing greater health care coverage for children and adolescents who previously were uninsured, particularly vulnerable youth and children with preexisting conditions. In particular, the ACA's new mandatory enforcement of state Medicaid and SCHIP enrollment of

vulnerable and underserved populations extends coverage to extremely needy adolescents and young adults who have significant health needs and who previously lacked coverage.¹⁰ Such populations include unaccompanied homeless youth, CSHCN, pregnant women, racial and ethnic minorities, rural populations, and individuals with HIV/AIDS. As stated previously, many SBHCs are located in underserved areas, with over one-quarter (27%) located in rural areas.³ Furthermore, they serve many youth through Medicaid and SCHIP, which further reinforce

Currently, there are an estimated 5 million children and youth who are eligible, but not enrolled in existing programs, a group that could greatly benefit from a school and community health enrollment partnership.

the importance of their inclusion in health care reform efforts. However, irrespective of whether the ACA is fully implemented as planned, it is noteworthy that SBHCs can play a significant role in ensuring that students eligible for programs are appropriately enrolled through school-based screening efforts. Currently, there are an estimated 5 million children and youth who are eligible, but not enrolled in existing programs, a group that could greatly benefit from a school and community health enrollment partnership.¹³⁴ In many respects, the current barriers to enrollment represent the "smoke detector" of future challenges in effective enrollment when the ACA further expands the number of individuals who will be eligible for health care and

the importance of assuring that children and adolescents will not be left behind.

Implications and Future Directions

This article has provided an overview of the documented role of SBHCs in improving health and social outcomes and their promise in making a contribution to reducing health inequities. Throughout the country, SBHCs are a key strategic partner in providing critical access to health care for youth. In summary, there are several implications for the future of SBHCs in the current era of health care reform, as well as implications for health care providers who may be delivering care in communities without an operating SBHC.

SBHCs can Bridge the Gap of Medical Homes

SBHCs possess many of the principles of the medical home, while also providing access to those populations in greatest need of one. They are in a position to be considered a full-fledged medical home if they can integrate more completely into systems of care in the community. As providers of patient-centered, accessible, and culturally responsive care, SBHCs already possess core qualities of the medical home.

In a number of communities, in fact, SBHCs have already demonstrated this capacity to be a link to community providers, either through their sponsoring organizations or the referral relationships that have been established. To sustain and expand their services, SBHCs must partner with community-based providers to create a comprehensive, patient-centered medical home model that ensures access to preventive care for children. In communities where SBHCs are not in place, formal and informal links between health providers and schools can play a critical role in assuring that eligible children have access to the array of care that they need. Schools also represent settings where community health providers, with appropriate financial or in-kind support, can partner to provide screening, health education, and health promotion activities.

Accountable Care Organizations Should Integrate SBHCs

The ACA has emphasized ACOs as a model of care that can increase the efficiency and effectiveness of health care delivery. ACOs should actively pursue opportunities to fully incorporate the SBHC model of

integrated physical and mental health services into their practices, given their strong connections and accessibility to the community. By doing so, they will likely be in a better position to improve their beneficiaries' health outcomes, including investing in prevention and relatively low-cost primary health care delivery, especially if emergency department visits can be avoided and improved health outcomes and health promotion can be achieved over time. In settings without SBHCs, ACOs should consider the types of partnerships they can establish with schools to ensure earlier interventions, as well as effective disease management.

SBHCs Provide Wraparound Services

Chronic conditions impacting many students, such as obesity and asthma, require different types of prevention education, screening, diagnoses, and disease management. SBHCs are an ideal environment for a more comprehensive and youth-centered approach to these interventions as a setting in which medical, mental health, and school professionals can all work together to support youth in preventing and managing these conditions, in a more timely and continuous manner. CSHCN are also living longer and are being mainstreamed throughout this country's school districts. Thus, greater efforts are needed to deliver supportive services, such as case management, that will improve health outcomes and reduce further costs for these populations.

Impact on Adult Health

Many of the behaviors that lead to poor health outcomes in adulthood are developed during childhood and adolescence. SBHC interventions can impact adult health issues, such as tobacco use, obesity, and diabetes, by providing information, education, and treatment to youth before they develop negative health behaviors that lead to these largely preventable and costly health issues in adulthood. Greater investments in these prevention and early intervention services can lead to significant cost savings both in the short and long run.

More Research on the Direct Links Between SBHCs and Educational Outcomes

The clear link and relationship between SBHCs and educational outcomes needs further research to make the case more effectively to a wider variety of policy

makers and stakeholders in education and health. Poor health leads to poor educational outcomes, and poor educational outcomes lead to poor health behaviors. Recognition of this bidirectional relationship can be further elucidated by confidentially linking health and educational short- and longer-term outcomes. Traditionally, a number of barriers have prevented the linkage of SBHC health data, protected by the Health Insurance Portability and Accountability Act, and educational data, protected by Family Educational Rights and Privacy Act, to preserve confidentiality between service systems. Now with more advanced technology, there are ways of linking data while protecting the identity of individuals. This may assist in evaluating more specifically the types of interventions students receive from SBHCs, as opposed to other school interventions, such as school psychologists and academic enrichment programs. The ability to track students longitudinally and/or across different schools will also enable the type of research that is necessary to clearly test this important bidirectional relationship. Even if all the desired health and educational outcomes are not initially achieved, the data will be invaluable in establishing program development and quality improvement efforts that can be used to further enhance and refine the types of interventions being tested. Without strong data, such needed improvements will continue to be elusive.

Areas for Further Program Development and Research

SBHCs provide a unique platform for program and policy development, given their colocation within an important community institution, such as schools. There is a greater need for developing prevention and early interventions that are aimed at serving both students and their families, as well as the school-based workforce. Likewise, there are a number of opportunities for increasing outreach, prevention education, early screening and detection, as well as continuity of care, including chronic care disease management. For example, to continue to decrease the incidence of heart disease among women, schools can play a role in screening for high blood pressure among adults, whether it is a parent dropping off a child, or principals, teachers, or other staff. SBHCs, and clinicians in general, can also play an important role in further developing and testing disease management models tailored to children and adolescents, and implementing

a variety of quality of care metrics that can be tested in community settings.

As the nation is immersed in reforming both our health care and education systems, SBHCs offer a unique model of care that bridges both systems. SBHCs provide access to vital health and mental health services for youth, impacting their ability to succeed physically, emotionally, and academically. Given their relatively young history, SBHCs are at a crucial turning point. Similar to the need for a “community village” approach to successfully raising children, there is a clear need for diverse stakeholders, whether they be policymakers, health and educational professionals, public and private funders, parents, and/or youth themselves, to commit themselves in supporting SBHCs’ needed expansion, enhancement, and sustainability, if the model is to truly fulfill all its potential.

References

1. Gustafson EM. History and overview of school-based health centers in the US. *Nurs Clin North Am* 2005;40:595-606.
2. About School-Based Health Care. Available from: http://www.nasbhc.org/site/c.jsJPKWPFJrH/b.2561553/k.843D/about_sbhcs.htm. Accessed April 28, 2011.
3. Strozer J, Juszczak L, Ammerman A. A 2007-2008 National School-Based Health Care Census. Washington, D.C.: National Assembly on School-Based Health Care; 2010.
4. Austin G, Brindis C. Student Health is Vital to Academic Results. Available from: http://www.childrennow.org/uploads/documents/bwlv2011_student_health_overview.pdf. Accessed August 20, 2011.
5. Johnson V, Hutcherson V. A study of the utilization patterns of an elementary school-based health clinic over a 5-year period. *J Sch Health* 2006;76:373-8.
6. Costello-Wells B, McFarland L, Reed J, Walton K. School-based mental health clinics. *J Child Adolesc Psychiatr Nurs* 2003;16:60-70.
7. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatry* 2005;62:593-602.
8. Knopf D, Park MJ, Paul Mulye TA. Mental Health Profile of Adolescents: 2008 Brief. San Francisco, CA: National Adolescent Health Information Center; 2008.
9. Borenstein PE, Harvilchuck JD, Rosenthal BH, Santelli JS. Patterns of ICD-9 diagnoses among adolescents using school-based clinics: Diagnostic categories by school level and gender. *J Adolesc Health* 1996;18:203-10.
10. English A. The Patient Protection and Affordable Care Act of 2010: How Does it Help Adolescents and Young Adults? Chapel Hill, NC; San Francisco, CA: Center for Adolescent Health and the Law and the National Adolescent Health Information and Innovation Center; 2010.

11. Vessey JA, McGowan KA. A successful public health experiment: School nursing. *Pediatr Nurs* 2006;32:255-13.
12. Murphy MA. A brief history of pediatric nurse practitioners and NAPNAP 1964-1990. *J Pediatr Health Care* 1990; 4:332-7.
13. Porter PJ, Leibel RL, Gilbert CK, Fellows JA. Municipal child health services: A ten-year reorganization. *Pediatrics* 1976;58:704-12.
14. Schlitt J, Santelli J, Juszczak L, Brindis C, Nystrom R, Klein J, et al. *Creating Access to Care: School-Based Health Center Census 1998-99*. Washington, D.C.: National Assembly on School-Based Health Care; 2000.
15. Berg M, Taylor B, Edwards LE, Hakanson EY. Prenatal care for pregnant adolescents in a public high school. *J Sch Health* 1979;49:32-5.
16. Dryfoos J. School-based health clinics: A new approach to preventing adolescent pregnancy? *Fam Plann Perspect* 1985; 17:70-5.
17. Kirby D, Resnick MD, Downes B, Kocher T, Gunderson P, Potthoff S, et al. The effects of school-based health clinics in St. Paul on school-wide birthrates. *Fam Plann Perspect* 1993;25:12-6.
18. Brodeur P. School-based health clinics. In: Isaacs SL, Knickman JR, editors. *To Improve Health and Healthcare 2000: The Robert Wood Johnson Foundation Anthology*. Princeton, NJ: Robert Wood Johnson Foundation; 2000.
19. Hutchins VL, Grason H, Aliza B, Minkovitz C, Guyer B. Community access to child health (CATCH) in the historical context of community pediatrics. *Pediatrics* 1999;103:1373-83.
20. Robert Wood Johnson Foundation. *Making the grade: State and local partnerships to establish school-based health centers, 2007*. Available from: <http://www.rwjf.org/reports/npreports/MakingGrade.htm>. Accessed April 26, 2011.
21. Lear JG, Eichner N, Koppelman J. The growth of school-based health centers and the role of state policies: Results of a national survey. *Arch Pediatr Adolesc Med* 1999;153:1177-80.
22. Schlitt JJ, Juszczak LJ, Eichner NH. Current status of state policies that support school-based health centers. *Public Health Rep* 2008;123:731-8.
23. Lear JG. Health at school: A hidden health care system emerges from the shadows. *Health Aff (Millwood)* 2007; 26:409-19.
24. *It's Elementary: Expanding the Use of School-Based Clinics*. Oakland, CA: California Healthcare Foundation; 2007. Available from: <http://www.chcf.org/~media/Files/PDF/S/PDF%20SchoolBasedClinics.pdf>. Accessed March 20, 2011.
25. California Senate District. Governor Signs School Health Centers Expansion Act: Ridley-Thomas bill Advance Health Care Reform for Children (Press Release); 2008. Available from: <http://www.schoolhealthcenters.org/docs/SB564/SB564signed.pdf>. Accessed March 25, 2011.
26. Freedberg L. School health centers expand despite lack of state funding. *California Watch*; 2011. Available from: <http://californiawatch.org/k-12/school-health-centers-expand-despite-lack-state-funding-8071>. Accessed March 25, 2011.
27. Medical Home Initiatives for Children With Special Needs Project Advisory Committee. American Academy of Pediatrics. The medical home. *Pediatrics* 2002;110:184-6.
28. Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatrics* 2009;124:358-64.
29. Raphael JL, Guadagnolo BA, Beal AC, Giardino AP. Racial and ethnic disparities in indicators of a primary care medical home for children. *Acad Pediatr* 2009;9:221-7.
30. Stevens GD, Seid M, Pickering TA, Tsai KY. National disparities in the quality of a medical home for children. *Matern Child Health J* 2010;14:580-9.
31. Strickland BB, Jones JR, Ghandour RM, Kogan MD, Newacheck PW. The medical home: Health care access and impact for children and youth in the United States. *Pediatrics* 2011;127:604-11.
32. Booker JM, Schluter JA, Carrillo K, McGrath J. Quality improvement initiative in school-based health centers across New Mexico. *J Sch Health* 2011;81:42-8.
33. American Academy of Pediatrics. Committee on School Health. School health centers and other integrated school health services. Committee on School Health. *Pediatrics* 2001;107:198-201.
34. Allison MA, Crane LA, Beaty BL, Davidson AJ, Melinkovich P, Kempe A. School-based health centers: Improving access and quality of care for low-income adolescents. *Pediatrics* 2007;120:e887-94.
35. Irwin Jr CE, Adams SH, Park MJ, Newacheck PW. Preventive care for adolescents: Few get visits and fewer get services. *Pediatrics* 2009;123:e565-72.
36. Juszczak L, Melinkovich P, Kaplan D. Use of health and mental health services by adolescents across multiple delivery sites. *J Adolesc Health* 2003;32(suppl 6):108-18.
37. Nordin JD, Solberg LI, Parker ED. Adolescent primary care visit patterns. *Ann Fam Med* 2010;8:511-6.
38. Eaton DK, Kann L, Kinchen S, Shanklin S, Ross J, Hawkins J, et al. Youth risk behavior surveillance—United States, 2009. *MMWR SurveillSumm* 2010;59:1-142.
39. Amaral G, Geierstanger S, Soleimanpour S, Brindis C. Mental health characteristics and health-seeking behaviors of adolescent school-based health center users and nonusers. *J Sch Health* 2011;81:138-45.
40. Pastore DR, Juszczak L, Fisher MM, Friedman SB. School-based health center utilization: A survey of users and nonusers. *Arch Pediatr Adolesc Med* 1998;152:763-7.
41. Benkert R, George N, Tanner C, Barkauskas VH, Pohl JM, Marszalek A. Satisfaction with a school-based teen health center: A report card on care. *Pediatr Nurs* 2007;33:103-9.
42. Soleimanpour S, Geierstanger SP, Kaller S, McCarter V, Brindis CD. The role of school health centers in health care access and client outcomes. *Am J Public Health* 2010; 100:1597-603.
43. Flores G, Tomany-Korman SC. Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics* 2008;121:e286-98.
44. Glick JE. Connecting complex processes: A decade of research on immigrant families. *J Marriage Fam* 2010;72: 498-515.
45. Flores G, Committee on Pediatric Research. Technical report—Racial and ethnic disparities in the health and health care of children. *Pediatrics* 2010;125:e979-e1020.
46. Kisker EE, Brown RS. Do school-based health centers

- improve adolescents' access to health care, health status, and risk-taking behavior? *J Adolesc Health* 1996;18:335-43.
47. Wade TJ, Mansour ME, Guo JJ, Huentelman T, Line K, Keller KN. Access and utilization patterns of school-based health centers at urban and rural elementary and middle schools. *Public Health Rep* 2008;123:739-50.
 48. Guo JJ, Wade TJ, Keller KN. Impact of school-based health centers on students with mental health problems. *Public Health Rep* 2008;123:768-80.
 49. Kaplan DW, Brindis C, Naylor KE, Phibbs SL, Ahlstrand KR, Melinkovich P. Elementary school-based health center use. *Pediatrics* 1998;101:E12.
 50. Daley MF, Curtis CR, Pyrzanowski J, Barrow J, Benton K, Abrams L, et al. Adolescent immunization delivery in school-based health centers: A national survey. *J Adolesc Health* 2009;45:445-52.
 51. Federico SG, Abrams L, Everhart RM, Melinkovich P, Hambidge SJ. Addressing adolescent immunization disparities: A retrospective analysis of school-based health center immunization delivery. *Am J Public Health* 2010;100:1630-4.
 52. Lancman H, Pastore DR, Steed N, Maresca A. Adolescent hepatitis B vaccination: Comparison among 2 high school-based health centers and an adolescent clinic. *Arch Pediatr Adolesc Med* 2000;154:1085-8.
 53. US Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
 54. Liu J, Probst JC, Martin AB, Wang JY, Salinas CF. Disparities in dental insurance coverage and dental care among US children: The National Survey of Children's Health. *Pediatrics* 2007;119;(suppl 1):S12-21.
 55. US Department of Health and Human Services. The Face of a Child: Surgeon General's Conference on Children and Oral Health Proceedings, June 12-13, 2000, Washington, DC. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
 56. Pekruhn C, Strozer J, Brief I. Oral Health Opportunities in School-Based Health Centers. Washington, DC: National Maternal and Child Oral Health Policy Center; 2010.
 57. Albert DA, McManus JM, Mitchell DA. Models for delivering school-based dental care. *J Sch Health* 2005;75:157-61.
 58. Simmer-Beck M, Gadbury-Amyot CC, Ferris H, Voelker MA, Keselyak NT, Eplee H, et al. Extending oral health care services to underserved children through a school-based collaboration: part 1: A descriptive overview. *J Dent Hyg* 2011;85:181-92.
 59. Fisher MA, Mascarenhas AK. Does Medicaid improve utilization of medical and dental services and health outcomes for Medicaid-eligible children in the United States? *Community Dent Oral Epidemiol* 2007;35:263-71.
 60. Silberberg M, Cantor JC. Making the case for school-based health: Where do we stand? *J Health Polit Policy Law* 2008;33:3-37.
 61. Children's Dental Health Project. ACA: Fulfilling the Pledge to Improve America's Oral Health. Washington, DC: Children's Dental Health Project; 2011. Available at <http://www.cdhp.org/system/files/ACA%20Fulfilling%20the%20Pledge%20to%20Improve%20America%E2%80%99s%20Oral%20Health%203.31.11.pdf>. Accessed February 25, 2012.
 62. Akinbami LJ, Moorman JE, Liu X. Asthma prevalence, health care use, and mortality: United States, 2005-2009. *Natl Health Stat Report* 2011;32:1-14.
 63. Guo JJ, Jang R, Keller KN, McCracken AL, Pan W, Cluxton RJ. Impact of school-based health centers on children with asthma. *J Adolesc Health* 2005;37:266-74.
 64. Webber MP, Hoxie AM, Odlum M, Oruwariye T, Lo Y, Appel D. Impact of asthma intervention in two elementary school-based health centers in the Bronx, New York City. *Pediatr Pulmonol* 2005;40:487-93.
 65. Mansour ME, Rose B, Toole K, Luzader CP, Atherton HD. Pursuing perfection: An asthma quality improvement initiative in school-based health centers with community partners. *Public Health Rep* 2008;123:717-30.
 66. Webber MP, Carpiniello KE, Oruwariye T, Lo Y, Burton WB, Appel DK. Burden of asthma in inner-city elementary schoolchildren: Do school-based health centers make a difference? *Arch Pediatr Adolesc Med* 2003;157:125-9.
 67. Lurie N, Bauer EJ, Brady C. Asthma outcomes at an inner-city school-based health center. *J Sch Health* 2001;71:9-16.
 68. Morrow B, Paradise J. Explaining Health Reform: Building Enrollment Systems That Meet the Expectations of the Affordable Care Act. Washington, D.C.: The Henry J. Kaiser Family Foundation; 2010. Report No.: 8108. Available from: <http://www.kff.org/healthreform/upload/8108.pdf>. Accessed August 13, 2011.
 69. Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007-2008. *JAMA* 2010;303:242-9.
 70. Spear BA, Barlow SE, Ervin C, Ludwig DS, Saelens BE, Schetzina KE, et al. Recommendations for treatment of child and adolescent overweight and obesity. *Pediatrics* 2007;120(suppl 4):S254-88.
 71. Gonzalez-Suarez C, Worley A, Grimmer-Somers K, Dones V. School-based interventions on childhood obesity: A meta-analysis. *Am J Prev Med* 2009;37:418-27.
 72. Edwards B. Childhood obesity: A school-based approach to increase nutritional knowledge and activity levels. *Nurs Clin North Am* 2005;40:661-9.
 73. McNall MA, Lichty LF, Mavis B. The impact of school-based health centers on the health outcomes of middle school and high school students. *Am J Public Health* 2010;100:1604-10.
 74. Stephens MM, McLean K, Cannatelli K, Stillman PL. Identification of overweight, obesity, and elevated blood pressure: A school-based health center performance improvement initiative. *Am J Med Qual* 2011;26:34-8.
 75. Strickland BB, Van Dyck PC, Kogan MD, Lauver C, Blumberg SJ, Bethell CD, et al. Assessing and ensuring a comprehensive system of services for children with special health care needs: A public health approach. *Am J Public Health* 2011;101:224-31.
 76. McPherson M, Arango P, Fox H, Lauver C, McManus M, Newacheck PW, et al. A new definition of children with special health care needs. *Pediatrics* 1998;102:137-40.

77. National Assembly on School-Based Health Care. Health Care for Special Populations: Examining the Role for School-Based Health Centers in Supporting Children with Special Health Care Needs. Conference Proceedings, October 2006. Available from: http://www.nasbhc.org/atf/cf/{cd9949f2-2761-42fb-bc7a-cee165c701d9}/CSHCN_paper_final.pdf. Accessed August 26, 2011.
78. Bearss N, Santelli JS, Papa P. A pilot program of contraceptive continuation in six school-based clinics. *J Adolesc Health* 1995;17:178-83.
79. Ricketts SA, Guernsey BP. School-based health centers and the decline in black teen fertility during the 1990s in Denver, Colorado. *Am J Public Health* 2006;96:1588-92.
80. Fothergill K, Feijoo A. Family planning services at school-based health centers: Findings from a national survey. *J Adolesc Health* 2000;27:166-9.
81. Klein JD, Handwerker L, Sesselberg TS, Sutter E, Flanagan E, Gawronski B. Measuring quality of adolescent preventive services of health plan enrollees and school-based health center users. *J Adolesc Health* 2007;41:153-60.
82. English A, Bass L, Boyle AD, Eshragh F. State Minor Consent Laws: A Summary. Chapel Hill, NC: Center for Adolescent Health & the Law; 2010.
83. Lehrer JA, Pantell R, Tebb K, Shafer MA. Forgone health care among U.S. adolescents: Associations between risk characteristics and confidentiality concern. *J Adolesc Health* 2007;40:218-26.
84. Edman JC, Adams SH, Park MJ, Irwin Jr CE. WHO gets confidential care? Disparities in a national sample of adolescents. *J Adolesc Health* 2010;46:393-5.
85. Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, et al. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the national comorbidity survey replication—Adolescent supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2010;49:980-9.
86. Merikangas KR, He JP, Burstein M, Swendsen J, Avenevoli S, Case B et al. Service utilization for lifetime mental disorders in U.S. adolescents: Results of the national comorbidity survey-adolescent supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2011;50:32-45.
87. Alegria M, Vallas M, Pumariega AJ. Racial and ethnic disparities in pediatric mental health. *Child Adolesc Psychiatr Clin N Am* 2010;19:759-74.
88. Alegria M, Carson NJ, Goncalves M, Keefe K. Disparities in treatment for substance use disorders and co-occurring disorders for ethnic/racial minority youth. *J Am Acad Child Adolesc Psychiatry* 2011;50:22-31.
89. Simpson GA, Cohen RA, Bloom B, Blumberg SJ. The impact of children's emotional and behavioural difficulties on their lives and their use of mental health services. *Paediatr Perinat Epidemiol* 2009;23:472-81.
90. Kaplan DW, Calonge BN, Guernsey BP, Hanrahan MB. Managed care and school-based health centers. Use of health services. *Arch Pediatr Adolesc Med* 1998;152:25-33.
91. Armbruster P, Lichtman J. Are school based mental health services effective? Evidence from 36 inner city schools. *Community Ment Health J* 1999;35:493-504.
92. Jennings J, Pearson G, Harris M. Implementing and maintaining school-based mental health services in a large, urban school district. *J Sch Health* 2000;70:201-5.
93. Weist MD, Paskewitz DA, Warner BS, Flaherty LT. Treatment outcome of school-based mental health services for urban teenagers. *Community Ment Health J* 1996;32:149-57.
94. Wade TJ, Mansour ME, Line K, Huentelman T, Keller KN. Improvements in health-related quality of life among school-based health center users in elementary and middle school. *Ambul Pediatr* 2008;8:241-9.
95. Center for Mental Health in Schools. School Mental Health Project; UCLA 2011. Available from: <http://smhp.psych.ucla.edu/>. Accessed September 6, 2011.
96. Armbruster P, Gerstein SH, Fallon T. Bridging the gap between service need and service utilization: A school-based mental health program. *Community Ment Health J* 1997; 33:199-211.
97. Jiang N, Kolbe LJ, Seo DC, Kay NS, Brindis CD. Health of adolescents and young adults: Trends in achieving the 21 critical national health objectives by 2010. *J Adolesc Health* 2011;49:124-32.
98. Price JH, Yingling F, Dake JA, Telljohann SK. Adolescent smoking cessation services of school-based health centers. *Health Educ Behav* 2003;30:196-208.
99. Santelli J, Alexander M, Farmer M, Papa P, Johnson T, Rosenthal B et al. Bringing parents into school clinics: Parent attitudes toward school clinics and contraception. *J Adolesc Health* 1992;13:269-74.
100. American Public Health Association. Diverse Voices, One Vision Build New School-Based Health Center in Forest Grove, Oregon. Battle Creek, MI: W.K. Kellogg Foundation. Available from: <http://www.apha.org/NR/rdonlyres/53241E01-BE87-4CE5-A201-271C75257D85/0/WashCounty.pdf>. Accessed April 23, 2011.
101. Baltimore Education Coalition. Student Resources Once on the Chopping Block to be Fully Funded, School Officials say; 2010. Available from: http://becfourkids.org/index.php?option=com_content&view=article&id=3:student-resources-once-on-the-chopping-block-to-be-fully-funded-school-officials-say&catid=16:news-feed-content&Itemid=4. Accessed April 25, 2011.
102. Executive Summary: The No Child Left Behind Act. Washington, D.C.: U.S. Department of Education; 2004. Available from: <http://www2.ed.gov/print/nclb/overview/intro/execsumm.html>. Accessed August 26, 2011.
103. No Child Left Behind's 5th Anniversary: Keeping Promises and Achieving Results (Archived Information); January 2007. Available from: <http://www2.ed.gov/nclb/overview/importance/nclb5anniversary.pdf>. Accessed August 31, 2011.
104. Stecher BM, Vernez G, Steinberg P. Reauthorizing no child left behind: Facts and recommendations (monograph). Rand Corporation; 2010. Available from: http://www.rand.org/pubs/monographs/2010/RAND_MG977.pdf. Accessed August 31, 2011.
105. Schraw G. No school left behind. *Educational Psychol* 2010;45:71-5.
106. Kober N, McMurrer J, Silva MR. State Test Score Trends Through 2008-09, Part 4: Is Achievement Improving and are Gaps Narrowing for Title I Students?. Washington, D.C.:

- Center on Education Policy; 2011. Available from: http://www.cep-dc.org/cfcontent_file.cfm?Attachment=KoberMcMurrerSilva%5FFullReport%5FTitleI%5F080111%2Epdf. Accessed August 31, 2011.
107. Wang L, Becket TG, Brown L. Controversies of standardized assessment in school accountability reform: A critical synthesis of multidisciplinary research evidence. *Appl Meas Educ* 2006;19:305-28.
 108. U.S. Department of Education. A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Education Act. Washington, D.C.: U.S. Department of Education; March 2010. Available from: <http://www2.ed.gov/policy/elsec/leg/blueprint/blueprint.pdf>. Accessed August 26, 2011.
 109. Geierstanger SP, Amaral G, Mansour M, Walters SR. School-based health centers and academic performance: Research, challenges, and recommendations. *J Sch Health* 2004;74:347-52.
 110. Gall G, Pagano ME, Desmond MS, Perrin JM, Murphy JM. Utility of psychosocial screening at a school-based health center. *J Sch Health* 2000;70:292-8.
 111. Walker SC, Kerns SE, Lyon AR, Bruns EJ, Cosgrove TJ. Impact of school-based health center use on academic outcomes. *J Adolesc Health* 2010;46:251-7.
 112. Van Cura M. The relationship between school-based health centers, rates of early dismissal from school, and loss of seat time. *J Sch Health* 2010;80:371-7.
 113. Kerns SE, Pullmann MD, Walker SC, Lyon AR, Cosgrove TJ, Bruns EJ. Adolescent use of school-based health centers and high school dropout. *Arch Pediatr Adolesc Med* 2011;165:617-23.
 114. Pastore DR, Techow B. Adolescent school-based health care: A description of two sites in their 20th year of service. *Mt Sinai. J Med* 2004;71:191-6.
 115. Clayton S, Chin T, Blackburn S, Echeverria C. Different setting, different care: Integrating prevention and clinical care in school-based health centers. *Am J Public Health* 2010;100:1592-6.
 116. Strolin-Goltzman J. The relationship between school-based health centers and the learning environment. *J Sch Health* 2010;80:153-9.
 117. Pittman KJ, O'Brien R, Kimball M. Youth Development and Resiliency Research: Making Connections to Substance Abuse Prevention. Washington, D.C.: Center for Youth Development and Policy Research; 1993.
 118. Mandel LA, Qazilbash J. Youth voices as change agents: Moving beyond the medical model in school-based health center practice. *J Sch Health* 2005;75:239-42.
 119. Soleimanpour S, Brindis C, Geierstanger S, Kandawalla S, Kurlaender T. Incorporating youth-led community participatory research into school health center programs and policies. *Public Health Rep* 2008;123:709-16.
 120. Gance-Cleveland B, Costin DK, Degenstein JA. School-based health centers. Statewide quality improvement program. *J Nurs Care Qual* 2003;18:288-94.
 121. National Assembly on School-Based Health Care. Improving school-based health care practice: Quality improvement collaborative series. Available from: http://www.nasbhc.org/atf/cf/{CD9949F2-2761-42FB-BC7A-CEE165C701D9}/TAT_QI%20complete.pdf. Accessed March 24, 2011.
 122. Nystrom RJ, Prata A. Planning and sustaining a school-based health center: Cost and revenue findings from Oregon. *Public Health Rep* 2008;123:751-60.
 123. Colorado Association for School-Based Health Care. Colorado School-Based Health Centers: Fact sheet. Denver, CO: Colorado Association for School-Based Health Care; 2011. Available from: <http://www.casbhc.org/publications/FactSheet.pdf>. Accessed August 16, 2011.
 124. HRSA Bureau of Primary Health Care. Authorizing Legislation. Washington, D.C.: Health Resources and Services Administration. Available from: <http://bphc.hrsa.gov/policiesregulations/legislation/index.html>. Accessed August 16, 2011.
 125. HRSA Bureau of Maternal and Child Health. Title V Maternal and Child Health Services Block Grant Program. Washington, D.C.: Health Resource. Available from: <http://mchb.hrsa.gov/programs/titlevgrants/index.html>. Accessed August 16, 2011.
 126. U.S. DHHS Office of Population Affairs. Title X Family Planning. Washington, D.C.: U.S. Department of Health and Human Services. Available from: <http://www.hhs.gov/opa/title-x-family-planning>. Accessed August 16, 2011.
 127. Colorado Association for School-Based Health Care. School-Based Health Centers: Communities Working Together to Improve the Health of Colorado Children. Denver, CO: Colorado Association of School-Based Health Care; 2010. Available from: <http://www.casbhc.org/publications/Communities%20Working.pdf>. Accessed August 16, 2011.
 128. Fast Facts: How Many Educational Institutions Exist in the United States?. Washington, D.C.: U.S. Department of Education Institute of Education Sciences; 2011. Available from: <http://nces.ed.gov/fastfacts/display.asp?id=84>. Accessed August 16, 2011.
 129. California School Health Centers Association. Three-year Strategic Plan 2011: June 2014. Oakland, CA: California School Health Centers Association; 2011.
 130. Silberberg M. Rutgers Center for State Health Policy. Creating Sustainable School-Based Health Centers: A report on Clinic Financing. New Brunswick, NJ: Rutgers Center for State Health Policy; September, 2002.
 131. SBHC Operation Grants. Available from http://www.nasbhc.org/site/c.ckLQKbOVLkK6E/b.8019507/k.6637/SBHC_Operations_Grants.htm. Accessed April 3, 2012.
 132. SBHC Capital Grants. Available from http://www.nasbhc.org/site/c.ckLQKbOVLkK6E/b.8019505/k.1DA1/SBHC_Construction_and_Equipment_Grants.htm. Accessed April 3, 2012.
 133. Health Resources and Services Administration. HHS Announces New Investment in School-based Health Centers. Washington, D.C.: U.S. Department of Health and Human Services, 2011. Available from: <http://www.hhs.gov/news/press/2011pres/07/20110714a.html>. Accessed August 16, 2011.
 134. Cassidy A. Health Policy Brief: Medicaid and CHIP Enrollment Efforts. Health Affairs. Available from: http://www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=39. Accessed January 27, 2011.