July 2018

Issue Brief

The Power of Prevention for Mothers and Children

The Cost Effectiveness of Maternal and Child Health Interventions

Revitalizing Our Investments in Women, Children, and Families

State maternal and child health (MCH) programs have been authorized by Title V of the Social Security Act to provide maternal and child health services for more than 80 years. As a fundamental component of our nation's public health system, state MCH programs support comprehensive public health systems and services in every U.S. state and jurisdiction. Title V MCH programs harness the power of prevention* to improve health and well-being over the life course. The long-term benefits of our nation's investments in maternal and child health are best measured through improved physical and mental health, better quality of life, and the prevention of premature death. Making these investments early in life reaps benefits throughout adulthood and often into the next generation. The health benefits have an economic value as well, through reduced health care costs, educational gains, improved productivity, and other benefits to individuals and society as a whole.

While authorized at $850 million, the Title V MCH Services Block Grant is funded at $651.7 million for fiscal year 2018. This represents an increase of $10 million from fiscal year 2017 but remains $78 million less than fiscal year 2003. This issue brief presents evidence that MCH interventions are cost-effective, and it highlights the unique roles of state Title V MCH programs.

The Title V MCH Services Block Grant Serves All Women and Children While Focusing on Greatest Needs

Title V is the only federal program focused exclusively on improving the health and well-being of *all* women, children, and families. To accomplish this mission, Title V programs are responsible for addressing the significant differences in health outcomes experienced by different segments of the population. Overall indicators of maternal and child health often mask disparities based on race or ethnicity, income level, geographic location, or special health care needs. State MCH programs assess population-level health needs, support interventions to meet those needs, and ensure access to health care services. Title V plays a critical and unique role in ensuring that service systems have the capacity to effectively meet community needs and improve population health.

* For the purposes of this document, prevention is defined as comprehensive public health systems, services, and interventions to improve the overall health of the population.

The Title V MCH Services Block Grant Is a Leader in Accountability

A hallmark of the Title V MCH Services Block Grant is the flexibility it gives states to identify and develop MCH programs that meet both federally mandated performance standards and state-identified needs. The Title V MCH Services Block Grant is a model of performance and accountability, having earned the highest program rating possible on the Office of Management and Budget's Performance Assessment Rating Tool, previously used to assess the effectiveness of federal programs.[1] This review found that the Title V MCH Services Block Grant achieves results; is well-managed; improves efficiency; and has contributed to reducing the infant mortality rate, preventing disabling conditions, and improving the overall health of women and children.

The U.S. Health Resources and Services Administration's (HRSA) Maternal and Child Health Bureau (MCHB) established the National Title V Performance Measurement System in 1997. MCHB is one of the first federal agencies to create performance measures.[2] Since 2015, state Title V programs have used a three-tier performance measurement framework to demonstrate the impact of Title V activities on health outcomes. In this framework, Title V National Outcome Measures (NOMs) represent long-term indicators of maternal and child health status. Title V National Performance Measures (NPMs) are indicators of health behaviors, health care access, or health care quality that influence those longer-term outcomes. Finally, states delineate evidence-based strategy measures to track their programmatic efforts to improve NPMs.

Healthy Women, Healthy Pregnancies, Healthy Babies

With 5.9 infant deaths for every 1,000 live births,[3] the infant mortality rate in the United States is higher than the infant mortality rate in Canada and most European countries.[4] Disorders related to preterm birth and low birth weight are the leading cause of death in the neonatal period (less than 28 days after birth) and the second leading cause of all infant mortality in the United States, accounting for 18 percent of deaths in the first year of life.[5] Babies born preterm are more likely to have cerebral palsy, hearing and/or vision impairments, and other long-term developmental disabilities, in addition to pulmonary, gastrointestinal, and other acute complications in the perinatal period.[6]

Poor birth outcomes have significant economic consequences as well. The societal cost of preterm births in the United States was at least $26.2 billion in 2005: $16.9 billion in medical services (primarily neonatal), $1.9 billion in maternal delivery costs, $611 million in early intervention services, $1.1 billion in special education services, and $5.7 billion in lost labor market and household productivity.[7] A 2017 study on preterm birth in employer-sponsored plans estimated the costs for infants born preterm at $6 billion during the year 2013.[8] In another, more recent analysis, preterm births in just a single Ohio county resulted in $93 million in initial hospital costs, and accounted for more than $300 million in lost annual earnings in adulthood.[9]

Improving Women's Health Before Pregnancy

Women's health is important in and of itself, whether or not women choose to become mothers. Women's health also plays a role in the health of their babies. Improving women's health before pregnancy has benefits for both mother and child. Poor birth outcomes — such as preterm delivery, low birth weight, and infant mortality — result from complex interactions of social, economic, environmental, and other factors that precede pregnancy and directly and indirectly influence health.[10,11] Nearly half (45 percent) of pregnancies in the United States are unintended,[12] which underscores the need to address health before conception and between pregnancies. Preconception care consists of screening and interventions to promote health and mitigate medical, environmental, psychosocial, and other risk factors for poor reproductive health outcomes.[13]

Women who enter pregnancy with poorly controlled diabetes are at higher risk for a number of maternal complications and poor infant outcomes. Preconception care for women with diabetes reduces rates of preterm birth, birth defects, and perinatal mortality.[14] Compared with no preconception care, universal preconception care could prevent 10,664 preterm deliveries, 4,731 birth defects, and 2,377 perinatal deaths every year.[15] Taking into account the lifetime costs associated with those outcomes, preconception care for women with diagnosed and undiagnosed diabetes can produce up to $5.5 billion in estimated lifetime societal cost savings (including direct costs of medical and other services, and lost productivity costs).[16]

Women who are overweight or obese before pregnancy are at higher risk for maternal and infant morbidity and have longer hospital stays with higher delivery-related health care costs.[17] They also are more likely to have gestational diabetes during pregnancy; moreover, the two conditions together amplify the odds of adverse outcomes. The direct costs of maternal delivery hospitalization and infant inpatient care during the first year of life that are attributable to pre-pregnancy overweight/obesity and gestational diabetes amount to $58.6 million per year.[18]

How Title V Makes a Difference[†]

State Title V programs monitor progress toward improving preconception health with NPMs for adolescent and well-woman preventive medical visits and national outcome measures that reflect maternal health status. Title V programs have been leaders in developing preconception health indicators to improve states' capacity to monitor risk factors known to affect maternal outcomes, such as smoking, alcohol misuse, diabetes, and obesity. State Title V programs also work to improve women's health before and between pregnancies by:

- Conducting public education campaigns about the importance of well-woman visits and preconception health.
- Integrating education about healthy weight, physical activity, smoking cessation, nutrition, chronic disease management, and mental health into Healthy Start and home visiting programs.
- Promoting the use of women's health assessment tools in family planning and other public health programs.
- Educating health care providers about preconception health and health care.

[†] Research and information for all *How Title V Makes a Difference* sections in this issue brief were primarily drawn from Title V MCH Service Block Grant applications, which are available on the Title V Information Systems website: https://mchb.tvisdata.hrsa.gov.

- Supporting Preconception Peer Educator programs that train college students as ambassadors for health promotion and reproductive life planning.
- Partnering with other state agencies to address obesity and chronic disease.
- Developing state-level preconception health plans.

Enhancing Prenatal Care for High-Risk Pregnancies

Relying on traditional prenatal care alone to prevent poor birth outcomes may be "too little, too late";[19] a comprehensive approach to addressing contributors to health over the life course is necessary, with clinical care during pregnancy as just one integral component.[20] Routine prenatal care is a valuable opportunity for health counseling as well as for identifying and treating pregnancy complications, infection, and chronic disease.[21] Newer approaches to delivering enhanced prenatal services have shown greater promise in reducing rates of low birth weight and preterm birth among high-risk pregnant women.[22]

Comprehensive prenatal case management (PCM) programs for medically or socially high-risk pregnant women provide services such as risk assessment, care coordination, health education, and counseling tailored to the needs of the participant.[23] Participation in Medicaid PCM provides benefits for the mother, including improved mental health, employment, and educational outcomes. A moderate to high "dosage" of services — measured by duration, breadth, and amount delivered — reduces the likelihood of low birth weight and preterm birth.[24] The Washington State Institute for Public Policy estimated that every dollar invested in Medicaid-enhanced prenatal care programs could produce savings of $15.42 in Washington state.[25] Michigan's Maternal Infant Health Program (MIHP), which offers enhanced prenatal services and care coordination for Medicaid-eligible mothers, reaped a 138 percent return on investment for Medicaid in just the first month of life from reduced rates of preterm births.[26] The longer-term benefits likely make the program even more cost-effective, as evidence suggests MIHP participation is associated with greater receipt of well-child visits for infants and lower odds of infant death.[27,28]

Other prenatal home visiting programs for high-risk pregnant women show similar "dosage" effects. In other words, higher numbers of visits are associated with reduced likelihood of low birth weight and preterm birth.[29] The evidence base for effects of prenatal home visiting on preterm birth and low birth weight has been limited by the uneven quality of existing research and potential program enrollment late in pregnancy.[30] However, analyses of longer-term outcomes show benefits to participants and society that exceed the costs of the programs. Because home visiting programs that begin during pregnancy often continue into early childhood, these programs are discussed in more detail in the Healthy Children and Youth section below.

How Title V Makes a Difference

Multiple measures related to perinatal care and birth outcomes are featured in the Title V NPMs and NOMs that guide state Title V program planning, including early prenatal care, risk-appropriate perinatal care, preterm birth, low birth weight, and maternal and infant mortality. State Title V program strategies include:

- Connecting pregnant women with prenatal care providers and conducting initial assessments and referrals to ensure high-risk women receive services early in the first trimester.
- Using the U.S. Centers for Disease Control and Prevention's (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS) survey about mothers' experiences before, during, and after pregnancy to identify risk and protective factors, inform program planning, and monitor progress toward perinatal health objectives.
- Partnering with state Medicaid agencies to administer home visiting and comprehensive prenatal case management programs for high-risk pregnant women. One effective example is the Centers for Medicare and Medicaid Services Innovation Center's Strong Start for Mothers and Newborns Initiative.
- Developing regionalized systems of perinatal care to ensure babies are born in risk-appropriate hospitals.
- Establishing mortality review programs to identify preventable factors contributing to fetal, infant, and maternal deaths.
- Convening community and state-level stakeholders to create comprehensive plans to improve birth outcomes.

Lowering Rates of Maternal Smoking

Among women who gave birth in 2016, 7.2 percent reported smoking during pregnancy.[31] Geographic differences in maternal smoking rates are significant, ranging from rates of less than 2 percent in California to 25 percent in West Virginia.[32] Smoking during pregnancy is associated with many adverse maternal and infant outcomes, including placental complications, orofacial birth defects, fetal growth restriction, preterm delivery, stillbirth, perinatal mortality, and sudden infant death syndrome (SIDS).[33,34] Some research suggests a potential link between maternal prenatal smoking and neurobehavioral disorders such as attention deficit hyperactivity disorder.[35]

Prenatal smoking adds significantly to health care costs in the first year of life. By one estimate, prenatal smoking is responsible for $122 million annually in neonatal health care costs alone,[36] with two-thirds of those costs paid by Medicaid.[37] Other research suggests that prenatal smoking accounts for at least $232 million in hospitalization costs for preterm infants during the first year of life.[38]

Prenatal smoking cessation programs are effective. A Cochrane Review found that psychosocial interventions for smoking cessation during pregnancy boosted the late-pregnancy quit rate by 35 percent, reduced low birthweight births by 17 percent, and reduced admissions to neonatal intensive care units (NICU) by 22 percent.[39] A 2008 review of economic evaluations of prenatal smoking cessation interventions found significant economic benefit. Research has demonstrated that these interventions reduce NICU costs, and prevent perinatal death and long-term disability, resulting in savings ranging from $2 to $6 for every dollar spent.[40] An updated review published in 2015 observed that few economic evaluations of prenatal smoking cessation interventions have examined the full range of known adverse maternal and infant outcomes. Nor have they considered the long-term health effects over the lifespan or accounted for relapse.[41] Even with these limitations, nearly all of the 18 studies reviewed found that prenatal smoking cessation interventions were cost-

effective. (One of the interventions was less cost-effective for smoking cessation but more cost-effective for relapse prevention.[42])

How Title V Makes a Difference

State Title V programs monitor the percentage of women who smoke during pregnancy as an NPM and lower rates of maternal smoking by:

- Incorporating smoking cessation education and outreach into preconception and perinatal health promotion programs.
- Training staff of Women, Infants, and Children (WIC), home visiting, and other public health programs to deliver evidence-based smoking cessation interventions for pregnant women and women of childbearing age.
- Incorporating smoking assessment, intervention, and referral records into program data systems.
- Disseminating provider protocols and other resources for smoking cessation counseling and referrals.
- Directing smoking cessation interventions to communities with high rates of smoking during pregnancy and with poor birth outcomes.

Reducing Rates of Early Elective and Low-Risk Cesarean Delivery

Elective early-term deliveries — inductions and cesarean deliveries without medical indication at 37 and 38 weeks of gestation — are associated with poorer maternal and neonatal outcomes, higher rates of NICU care, longer hospital stays, and concomitant increases in health care costs, compared with deliveries at 39 weeks and beyond.[43,44,45,46,47,48,49] A 2010 analysis estimated that lowering the early elective delivery (EED) rate to 1.7 percent nationally could reduce annual health care costs by nearly $1 billion through decreased NICU admissions and lengths of hospital stay.[50] Nationally, hospital-reported EED rates decreased from 17 percent in 2010 to 1.9 percent in 2016.[51]

Medicaid plays a significant role in reducing EED and cesarean rates, as it pays for nearly half of all U.S. births,[52] ranging by state from 27 percent in New Hampshire to 72 percent in New Mexico.[53] Medicaid payment reform and quality improvement initiatives that provide technical support and performance measurement at the facility, system, and state levels have driven rapid and sustained improvements across the country. A hospital system in Utah decreased its EED rate from 28 percent to less than 10 percent in the first six months of its EED-reduction initiative and achieved a sustained rate of less than 3 percent within six years.[54] The Ohio Perinatal Quality Collaborative achieved a 68 percent decrease in its EED rate in six years, with associated cost savings of $27.8 million.[55] An initiative involving 24 hospitals in the five most populous states (California, Florida, Illinois, New York, and Texas) saw an 83 percent decrease in EED rates, from 27.8 percent to 4.8 percent, in one year.[56]

Rates of cesarean delivery among low-risk, first time births have not declined as much as those for EED. Nearly 27 percent of all low-risk births in 2013 were cesarean deliveries,[57] with low-risk cesarean rates varying tenfold across U.S. hospitals.[58] After a first cesarean delivery, subsequent deliveries are likely to be cesarean

as well.[59] Cesarean deliveries are associated with increased risk of maternal and neonatal complications[60] and cost 50 percent more than vaginal deliveries.[61]

How Title V Makes a Difference

Title V programs are key partners in cross-sector perinatal quality improvement initiatives that build capacity for measurement and accountability, such as perinatal quality collaboratives and the Collaborative Improvement and Innovation Network (CoIIN) to Reduce Infant Mortality. Title V's Special Projects of Regional and National Significance (SPRANS) program funds multiple CoIIN initiatives that help state Title V programs drive system change to improve birth outcomes. With population-level data capacity and accountability for state-level perinatal outcomes, state Title V programs are well-situated to align preventive public health and clinical care quality improvement efforts.[62] The NOMs monitored by every Title V program include rates of early term birth and EED, in addition to an NPM tracking low-risk cesarean deliveries. State Title V programs progress further on these measures by:

- Educating consumers about the risks of early delivery and non-medically indicated cesarean sections
- Educating consumers about the importance of fetal development during the final weeks of gestation.
- Providing technical assistance to birthing hospitals that have high rates of EED and low-risk cesarean deliveries.
- Facilitating interagency data linkages to measure hospital performance and population-level outcomes.
- Partnering with provider associations, hospital systems, and state Medicaid agencies to change practices, policies, and payment mechanisms.

Ensuring Newborn Screening and Follow-Up

Early detection of heritable and congenital disorders can reduce disability and death. State universal newborn screening programs ensure that all infants receive timely screening tests, with appropriate follow-up for diagnosis and treatment. The U.S. Secretary of Health and Human Services recommends screening newborns for 34 core conditions‡ that otherwise could be undetectable at birth. Signs and symptoms appear later, but often too late for the early diagnosis that is needed to prevent serious disability. Treatment for phenylketonuria, for instance, must begin soon after birth to prevent the development of an intellectual disability. Treating severe combined immunodeficiency (SCID) within the first 3.5 months after birth significantly improves the survival rate compared to later treatment; left untreated, SCID is fatal by age 2.[63] Newborn screening for hearing loss facilitates early intervention, which is correlated with improved language development.[64] Timely detection of critical congenital heart disease in newborns reduces the risk of potentially

‡ The full list of disorders in the Recommended Uniform Screening Panel (RUSP) can be viewed at https://www.hrsa.gov/advisory-committees/heritable-disorders/rusp/index.html. (Accessed March 28, 2018.)

fatal complications. [65] Universal screening has reduced geographic and racial and ethnic disparities in health outcomes related to differential access to care.[66]

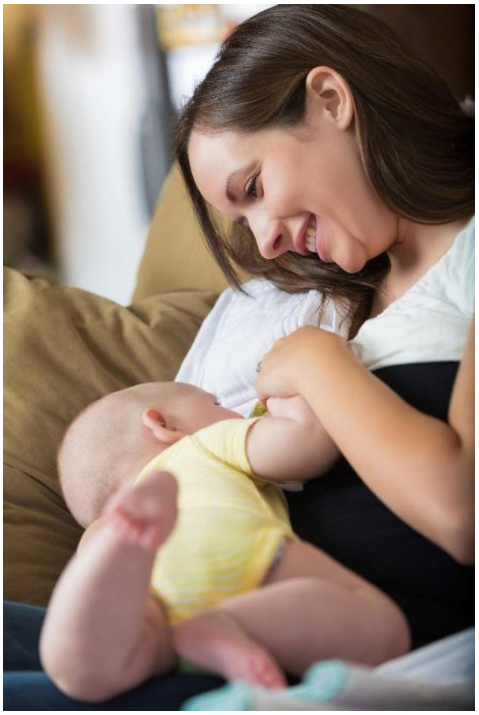
Approximately three in 1,000 newborns are diagnosed with a disorder covered by the recommended core screening panel.[67] Economic analyses suggest that newborn screening is cost-effective.[68,69] A Washington state analysis of newborn screening for medium-chain acyl-CoA dehydrogenase deficiency found a societal net benefit of $22.7 million, with $3.4 dollars saved for every $1 in costs (a 3.4 benefit-to-cost ratio).[70] Washington's newborn screening program has a benefit-cost ratio of between 4 and 5.4 to 1 for cystic fibrosis,[71] and between 2.7 and 5.3 to 1 for SCID.[72]

How Title V Makes a Difference

State Title V programs report data on newborn screening annually, and nationally Title V is working to establish data capacity for tracking the timeliness of states' newborn screening follow-up. State Title V roles in newborn screening include:

- Ensuring that all positive screens result in appropriate referrals for diagnosis and follow-up care.
- Improving and linking data systems to enable quality improvement.
- Training providers and educating families.
- Facilitating care coordination for infants and children with special health care needs through a medical home.
- Providing oversight to identify and address gaps in the system of care.
- Contributing to the development of state contingency plans to ensure newborn screening during natural disasters and other emergency situations.

Promoting Breastfeeding



Breastfeeding provides health benefits for both infants and mothers. For mothers, a history of breastfeeding is associated with a lower risk of developing breast cancer, ovarian cancer, type 2 diabetes, hypertension, and myocardial infarction.[73,74,75] Infants who were breastfed are less likely to require hospitalization for lower respiratory tract diseases. They also have reduced risks of acute ear infection, gastrointestinal infection, childhood leukemia, obesity, and SIDS.[76,77]

Rates of breastfeeding initiation have nearly reached the Healthy People 2020 goal of 81.9 percent; among infants born in 2013, 81.1 percent were ever breastfed.[78] However, only 22.3 percent were breastfed *exclusively* for the first six months, and 30.7 percent were still breastfeeding at 1 year — the time frames recommended by the American Academy of Pediatrics and other major medical organizations.[79] (Healthy People 2020 targets are 25.5 percent and 34.1 percent, respectively.) If 90 percent of infants were breastfed at 1 year, and exclusively breastfed through 6 months, the United States could save $3 billion in medical costs, $1.3 billion in non-medical costs that are the result of illness (such as lost work time), and $14.2 billion in the costs of premature death, representing 3,340 maternal and child lives saved.[80]

How Title V Makes a Difference

Breastfeeding rates are among the NPMs that State Title V programs track to guide planning and monitor progress toward national goals to increase the percentages of infants who were ever breastfed and the number of infants breastfed exclusively through 6 months. State Title V programs promote breastfeeding by:

- Partnering with stakeholders to develop statewide strategic plans and consistent messaging for breastfeeding promotion.
- Assisting workplaces, child care centers, and birthing hospitals in adopting breastfeeding-friendly policies.
- Providing training and technical assistance to health care providers and program partners to promote breastfeeding best practices.
- Sponsoring public education and social marketing campaigns that focus on the importance of breastfeeding.
- Developing data sources to enable analysis of breastfeeding indicators, disparities, and strategies.

Healthy Children and Youth

Promoting Healthy Early Childhood Development

The early years of life set the stage for health and wellness through the life span. Young children who experience adverse circumstances such as abuse, neglect, exposure to violence, caregiver mental illness, incarceration, or substance abuse have lower levels of overall well-being and increased odds of poor academic skills and behavioral problems in kindergarten.[81,82] The repercussions of poor physical and social-emotional health in early childhood can extend well into adulthood.

Home visiting programs promote family strengths and improve child health and development. These programs may begin during pregnancy and continue through early childhood. The federal Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV) supports evidence-based home visiting programs for high-risk pregnant women and families with young children.[4] Program models focus on improving child and family outcomes related to health and development, school readiness, family relationships, parenting practices, family violence, child maltreatment, juvenile delinquency, and economic self-sufficiency.[83] Research on the effects of home visiting programs shows a range of benefits, including improvements in measures of child health (e.g., immunizations, hospitalizations, well-child visits, unintentional injury), child development (cognitive and social-emotional), maternal health (e.g., prenatal care, depression screening and treatment, substance abuse), and family functioning (e.g., child abuse).[84,85]

[4] For a list of home visiting programs that meet the U.S. Department of Health and Human Services criteria for evidence-based models, see https://homvee.acf.hhs.gov/models.aspx. (Accessed March 1, 2018).

The positive effects of home visiting endure long after the intervention ends. In a 12-year follow-up, mothers who participated in the Memphis Nurse Family Partnership home visiting program had better outcomes than a control group on a number of measures of well-being, as well as reduced receipt of welfare benefits — translating into government savings that exceeded the cost of the program.[86] At age 19, girls whose low-income mothers had participated in the Elmira, N.Y., Nurse Family Partnership program beginning in pregnancy had fewer arrests and convictions and less Medicaid use than members of a control group.[87] Cost analyses of the Nurse Family Partnership provide consistently net positive estimates of benefits compared to costs of delivering the program. The Washington State Institute for Public Policy estimates a benefit-to-cost ratio of $1.88 in the state, taking into account direct and indirect long-term economic benefits related to health care utilization, child welfare, education, labor market earnings, crime, and public assistance.[88] The Rhode Island Office of Management and Budget, looking only at benefits related to child abuse and neglect, estimated that the state saves $2.31 for every $1 it spends on the program.[89] An analysis undertaken for the Nurse Family Partnership Program estimated that by a child's 18th birthday, state and federal cost savings would be 2.9 times the program costs. Taking into account long-term societal benefits, the benefit-cost ratio rose to $6.40.[90]

Another proven approach to enriching the early childhood environment is providing high-quality early childhood education programs. Early childhood education programs such as Head Start and other pre-kindergarten models have benefits reaching long past childhood. Participation is associated with better educational outcomes, including higher high school graduation rates, and better health outcomes as adults.[91] Early childhood education programs generate a positive return on investment at the societal level due to the benefits that accrue over the life course, with a median societal return of $4.19 for every $1 invested.[92]

How Title V Makes a Difference

The Affordable Care Act established MIECHV under a new section of Title V of the Social Security Act. The Bipartisan Budget Act of 2018 reauthorized MIECHV for five years at $400 million per year. MIECHV supports home visiting programs for at-risk families in all 50 states, the District of Columbia, five U.S. territories, and American Indian and Alaska Native tribal organizations. State Title V programs support and augment MIECHV and other early childhood programs through strategies such as:

- Providing training and tools for home visitors to address women's health objectives such as preventive primary care; reproductive life planning; and screening and referrals for depression, substance abuse, and intimate partner violence.
- Promoting the use of standardized developmental screening tools and referral protocols in home visiting and early childhood education programs, and with health care providers.
- Training childcare providers on best practices for physical activity, safe sleep, and breastfeeding.
- Conducting oral health screenings and preventive care in Head Start classrooms.
- Identifying opportunities for coordination among infant and early childhood programs in service delivery, policy and practices, and professional education.

- Establishing statewide home visiting and early childhood performance measurement plans.
- Integrating data systems to support quality improvement across a comprehensive system of early childhood services.

Ensuring Access to Medical Homes

Medical homes have shown promise as vehicles for reducing racial and ethnic disparities in access to care.[93] Having a medical home is associated with higher levels of well-being in children, increased receipt of preventive care and developmental screening, and reduced emergency department usage.[94,95] Medical homes are especially important for children with chronic illnesses and disabilities, whose often complex health care needs require significant care coordination and communication with specialists and other service providers. Nationally, nearly 20 percent of children under the age of 18 have special health care needs.[96] These children have fewer unmet specialty care needs when they receive care coordination, and that effect is amplified when care is received in a comprehensive medical home.[97] Among publicly insured children with chronic health conditions, patient-centered primary care is associated with lower rates of emergency department usage and hospitalization.[98] Families have lower out-of-pocket medical expenses when their children with special health care needs have medical homes.[99]

Children with the most complex medical needs make up less than one-half percent of U.S. children,[100] but they account for 34 percent of all Medicaid health care spending on children and 47 percent of Medicaid spending on pediatric hospital care.[101] More than half of families with these medically fragile children report having health care-related financial problems, and most have a family member who stopped working to care for the child.[102] Enhanced models of comprehensive care for children with medical complexity have achieved reductions in emergency department visits, hospital admissions, and hospital lengths of stay, with corresponding decreases in Medicaid costs.[103]

How Title V Makes a Difference

At least 30 percent of each state's Title V MCH Services Block Grant must be spent on children and youth with special health care needs (CYSHCN). State Title V programs play a leadership role in developing family-centered, community-based, coordinated systems of care for CYSHCN, and improving access to medical homes is a critical part of that effort. Title V programs track the percentage of children both with and without special health care needs who have medical homes as an NPM, and they ensure access to medical homes by:

- Developing partnerships and providing technical assistance to promote adoption of medical home models and improve systems of care.
- Providing expertise about CYSHCN to medical home initiatives.
- Working with Medicaid agencies to incorporate medical home components into Medicaid managed care contracts and quality indicators.
- Linking medical home initiatives with other state efforts to ensure coordinated planning processes.
- Supporting care coordinators and parent advocates who help families of CYSHCN access needed services and navigate the system of care.

- Strengthening capacity within medical homes for the transition of adolescents into the adult health care system.
- Assessing medical home status during encounters with local public health agencies and determining presumptive Medicaid eligibility for prenatal care.
- Promoting awareness of and access to medical homes for all children, adolescents, and pregnant women.
- Operationalizing the Standards for Systems of Care for Children and Youth with Special Health Care Needs national systems standards to ensure medical home initiatives and activities address the core components of the structure and processes of an effective system of care for CYSHCN.

Promoting Childhood Immunizations

CDC's Vaccines for Children (VFC) program ensures that all children have access to routine childhood immunizations, regardless of family income or insurance status. Over the lifetimes of children born between 1994, when the VFC program began, and 2013, vaccinations will prevent 322 million illnesses, 21 million hospitalizations, and 732,000 premature deaths.[104] The economic impact of this disease prevention is significant, with net savings of $1.38 trillion for society as a whole, in addition to $295 billion net savings in direct costs.[105] For a single birth cohort — children born in 2009 — estimates of societal savings from childhood vaccinations range from $68.8 billion to $184 billion.[106,107] At the least, every dollar spent on routine childhood vaccination saves $10 for society. [108]

Small changes in vaccination rates can result in large changes in disease rates. If the rate of Measles, Mumps, and Rubella (MMR) vaccination dropped by just 5 percent, the number of annual measles cases would triple among children between the ages of 2 and 11, with a cost to state and local health agencies alone of $2.1 million.[109] Increasing the current MMR vaccination rate of 93 percent to 95 percent would cut annual measles cases by 20 percent.[110]

How Title V Makes a Difference

The Title V NOMs include several measures of vaccination rates. State Title V programs partner closely with other agencies and programs, especially state immunization programs, to promote childhood immunization. Title V strategies include:

- Monitoring immunization rates and identifying gaps in coverage.
- Assessing community barriers to compliance with recommended vaccination schedules.
- Sponsoring media campaigns and public awareness efforts in communities with low immunization rates.
- Conducting outreach to providers with low immunization rates.
- Supporting school-based vaccination efforts.
- Working with child care providers to improve vaccination reporting.
- Linking data systems to enable early intervention, home visiting, and WIC programs to assess children's immunization status and make referrals for needed vaccines.
- Aligning state MCH and immunization program funding streams to local agencies to foster integration and coordination of core maternal and child health services.

Preventing Childhood Injury

Unintentional injury is the leading cause of death for children ages 1 to 19, and the fifth leading cause of death for infants under 1 year.[111] Childhood unintentional injuries cost more than $91 billion every year, which includes the lifetime costs of health care and loss of work.[112] Considering the value of decreased quality of life, this more than doubles the estimated annual societal costs.[113] The costs of intentional injury are significant as well. Suicide and homicide are the second- and third-leading causes of death for children ages 1 to 19.[114] The medical costs of suicide deaths among children 10 to 19 reach nearly $16 million per year, and the annual medical costs of nonfatal self-harm injuries are close to $558 million.[115] Adding the costs of lost work and quality of life, societal costs reach $26.5 billion per year for suicides and self-harm injuries to children in this age group.[116] Childhood injuries of all types in 2015 together accounted for $537 billion in societal costs.[117]

The majority of deaths due to unintentional injuries among children over age 1 are caused by motor vehicle accidents. The second-most common cause is drowning, followed by poisoning and fires/burns.[118] Injury prevention interventions are as varied as the causes of injury. Interventions range from educational campaigns, changes to laws and other policies, as well as the distribution of safety devices and equipment. These efforts have produced positive results. For instance, between 2002 and 2012, the rate of motor-vehicle-related deaths for ages 0 to 19 dropped by 51 percent, and the rate of nonfatal motor-vehicle-related injuries dropped by 38 percent.[119]

Every child safety seat distributed yields societal savings[5] of $2,400, for an average cost of $57 per seat.[120] Each booster seat distributed, at an average cost of $38 per seat, yields societal savings of $2,700.[121] Fully implementing a Medicaid-funded program to promote use of child restraint systems could save Medicaid more than $1 million per 100,000 children, with cost-effectiveness on par with federal vaccination programs.[122] Home visiting and other one-on-one parent education and support programs also are effective mechanisms for improving safety in young children's homes and reducing risk of injury.[123]

How Title V Makes a Difference

State Title V programs monitor efforts to prevent childhood injury with NPMs and NOMs of safe sleep practices, injury-related hospitalization, child and adolescent mortality, adolescent motor vehicle death, and adolescent suicide. Title V program strategies include:

- Promoting safe sleep practices for infants.
- Training school staff and other youth-serving professionals to implement evidence-based suicide prevention programs.
- Participating in the Child Safety CoIIN to spread best practices and drive system change.
- Increasing use of properly installed child safety seats by having local agencies with trained car seat technicians distribute car seats.
- Partnering with schools on teen driver safety programs.
- Developing standardized home safety assessment tools for use in home visiting and prenatal education programs.

[5] Societal savings considers the benefits of deaths prevented.

- Operating poison control hotlines and sponsoring public information campaigns.
- Providing smoke and carbon monoxide detectors to families of children with special health care needs.
- Supporting adolescent health coordinators in their role of reducing risky behaviors including substance abuse and suicide attempts.

The Power of Prevention

State Title V programs play a vital role in delivering interventions that successfully address the most pressing public health concerns facing our nation's women, children, and families. By preventing death and disability and improving health outcomes over the lifespan, these interventions reduce health care costs and provide long-term economic value to society.

The Association of Maternal & Child Health Programs (AMCHP) urges policymakers to consider the power of prevention for mothers and children and the value of our national investment in Title V programs. State Title V programs perform critical public health functions that go beyond the purview of individual service providers to support the health of whole populations.

Acknowledgments

Funding

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U01MC00001 Partnership for State Title V MCH Leadership Community Cooperative Agreement ($1,696,335). This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS, or the U.S. Government.

About AMCHP

The Association of Maternal & Child Health Programs is a national resource, partner and advocate for state public health leaders and others working to improve the health of women, children, youth and families, including those with special health care needs. AMCHP's members come from the highest levels of state government and include directors of maternal and child health programs, directors of programs for children with special health care needs and other public health leaders who work with and support state maternal and child health programs. AMCHP builds successful programs by disseminating best practices; advocating on our member's behalf in Washington; providing technical assistance; convening leaders to share experiences and ideas; and advising states about involving partners to reach our common goal of healthy children, healthy families and healthy communities.

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End Notes

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