



Maternal, Infant and Child Health

Summary

Maternal and Child Health (MCH) addresses the health and lives of pregnant and reproductive-age women, infants, children and adolescents, including children and youth with special health care needs. MCH programs take a broad approach to disease prevention and health promotion to provide benefits across the lifespan. Healthy women give birth to healthier babies who grow to be healthier children, adolescents and adults.¹

Many factors influence the health of the maternal and child population including income, family support, access to health care and health-related behaviors. Women and children are more likely than others to use public health, education, social and health care services. MCH programs in Kansas work with health care providers, educators, social workers and others to promote access to quality preventive and treatment services such as immunizations and prenatal care. MCH programs work to promote healthy behaviors including good nutrition, physical activity, safe sexual activity, and lifestyles free of tobacco and substance use. Improving and promoting maternal and child health includes supporting the development of healthy

relationships and optimal mental health. Many efforts focus on creating systems and policies that contribute to safe communities to ensure the healthy development of infants and children.¹

Maternal and child public health aims to provide the opportunity for children and families to reach their full potentials. An important part of this effort is working to ensure a healthy start and access to care for those who need it.¹

The topics in this focus area provide a glimpse of some of the health issues faced by women, infants, children, adolescents, and their families. The selected topic, infant mortality, shows trends and demographic and other risk factors. While we have made strides in improving pregnancy outcomes and creating systems to care for those





most in need, the data presented here show that for specific populations and certain issues, we have much work ahead to reverse worrisome trends and see improvement in the health of mothers and children.¹

Brief Overview

This focus area addresses selected topics primarily on pregnancy and infant health outcomes. An additional topic highlights children and youth with special health care needs, whose service needs are greater than those of other children and youth. Topics in this focus area are:

- Infant mortality
- Preterm birth
- Prenatal care in the first trimester
- Smoking during pregnancy
- Breastfeeding at least 6 months
- Children and youth with special health care needs (CYSHCN) achieving national outcome measures

Major Highlights and Key Discussion Points

Nationally and in Kansas, progress on maternal and child health outcomes during the past 10 years has been mixed. This is likely due to the complex set of factors underlying most maternal

and infant health outcomes. While some behaviors, such as smoking during pregnancy and placing infants to sleep on their backs have improved, poverty and the cost of living have increased, and health insurance and access to care for adults has become more challenging. For most maternal and child health outcomes, rates of adverse events in Kansas are similar to or lower than national rates.¹

During the past decade (2001-2010), the infant mortality rate (IMR) has statistically remained the same. However, between 2007 and 2010, there was a significant decrease in trend detected. For many years, the rate of non-Hispanic black infant mortality has been more than twice that of the non-Hispanic white infant mortality rate. Decreases in IMRs were observed for non-Hispanic white and non-Hispanic black infants from 2001 to 2010. However, no change was observed for Hispanic infants.²

In recent years (2004-2010), the Kansas preterm and late preterm birth rates have declined significantly. In 2010, the rate for preterm births, those occurring before 37 weeks gestational age, was 8.8 percent. The non-Hispanic black prematurity rate was 41.9 percent higher than the non-Hispanic white rate (12.2% and 8.6%, respectively). Hispanic premature births (7.5%) were lower than the state average (8.8%). In 2010, approximately one-third (30.5%) of Kansas births were delivered by cesarean section, a 35.6 percent increase from 22.5 percent in 2001. There was an increase in cesareans among all gestational age groups. The induction rate increased 43.9 percent from 19.6 percent in 2001 to 28.2 percent in 2010. An increasing trend was observed in inductions among all gestational age groups.²

In 2010, a total of 40,439 live births occurred to Kansas residents and 75.1 percent of infants were born to pregnant women receiving prenatal care in the first trimester, a slight increase from 2009

(74.1%).² The U.S. data for 2010 on this measure was 73.1 percent. While Kansas exceeded the U.S. on this measure by 2.7 percent, this was below the Healthy People 2020 goal of 77.9 percent. Between 2005 and 2010, Joinpoint regression analysis showed a significantly decreasing trend during the interval 2005 to 2007 followed by a significantly increasing trend from 2007 to 2010.

The rate of smoking during pregnancy has declined significantly during the past six years (2005-2010), but was still nearly 1.5 times the national rate.² In 2010, the percent of pregnant Kansas women reporting smoking during pregnancy was 15.0 percent.² The smoking rate was highest for non-Hispanic Native American women (29.8%) followed by non-Hispanic white women (17.5%) and non-Hispanic black women (15.7%).² Rates for Hispanic (4.8%) and non-Hispanic Asian women (2.5%) were substantially lower.² Female teenagers 18-19 years and women in their early twenties had the highest smoking rates (23.4% and 21.9%, respectively).² Smoking rates for women in their thirties and older were sharply lower, approximately 9 percent.²

The percent of Kansas WIC infants (Special Supplemental Nutrition Program for Women, Infants, and Children) ever breastfed has increased by 11.0 percent in the last 10 years from 61.0 percent in 2001 to 67.7 percent in 2010. ² However, the percent breastfed at least 6 months and 12 months have decreased.²

Effective promotion of health and health services for children and youth with special health care needs (CYSHCN) requires a system of care that is integrated, comprehensive, coordinated, family centered and consistent across the life course (or lifespan). The six core outcomes that the Federal Maternal and Child Health Bureau established to facilitate integrated systems of care for CYSHCN are:

1. Partners in Decision-Making,
2. Medical Home,
3. Adequate Health Insurance,
4. Early and Continuous Screening,
5. Ease of Community-Based Service Use, and
6. Transition to Adulthood (age 12-17 years only).²

The 2009/10 National Survey of Children with Special Health Care Needs (NS-CSHCN) estimates that 25.0 percent of Kansas CYSHCN age 0-11 met all five core outcomes, compared to 20.2 percent of the U.S., and Kansas ranked 7th in the nation. For CYSHCN age 12-17, 19.9 percent met all six core outcomes compared to 13.6 percent of the U.S., and Kansas ranked fourth in the nation.² In Kansas, 52.7 percent of youth with special health care needs received services necessary to transition to all aspects of adult life compared to the national average of 40.0 percent. Kansas ranked first in the nation.²

Key Disparities

While Kansas' rates of prenatal care, breastfeeding and preterm births compare favorably to national rates, the persistence of disparities indicates we have more work to do. Most commonly, adverse maternal and infant health outcomes are more prevalent among those with lower socioeconomic status and among some race and ethnic groups. Similar to long-standing national data, black non-Hispanic





infants in Kansas are more than twice as likely to be born low birthweight and twice as likely to die in their first year as white non-Hispanic infants. Mothers with lower socioeconomic status who receive Medicaid payment for prenatal care or delivery are more likely than mothers who do not receive Medicaid to report their birth was from an unintended pregnancy, and their infants are more likely to be born low birthweight or to die in their first year of life. Moreover, mothers and infants who receive welfare (Temporary Assistance for Needy Families—TANF) in addition to Medicaid are more likely to suffer adverse outcomes than mothers and infants who receive only Medicaid. Non-citizens, though, who are largely of Hispanic origin and have incomes generally less than women who receive TANF, have more favorable maternal and infant health outcomes, suggesting that non-economic factors such as family and community support also play a role in healthy birth outcomes.¹

Similar to national data, Kansas data show disparities related to socioeconomic factors among children with special health care needs. CYSHCN in higher-income families were more likely to meet the core outcomes than CYSHCN in poverty. The prevalence of special health care needs also varies by the child's race and ethnicity. Black non-Hispanic children were the most likely to have special health care needs. Fewer children of Hispanic origin have special health care needs than white or black non-Hispanic children. This difference might be due to under-diagnosis among children of Hispanic

origin due to poor access to health services.^{1,2} Many factors influence maternal and child health outcomes and it is not clear which interventions are most effective in reducing racial and ethnic disparities. Understanding the factors that contribute to health across the lifespan is important for developing systems that promote healthy behaviors and access to care for all ages, and ultimately, to reduce disparities.¹

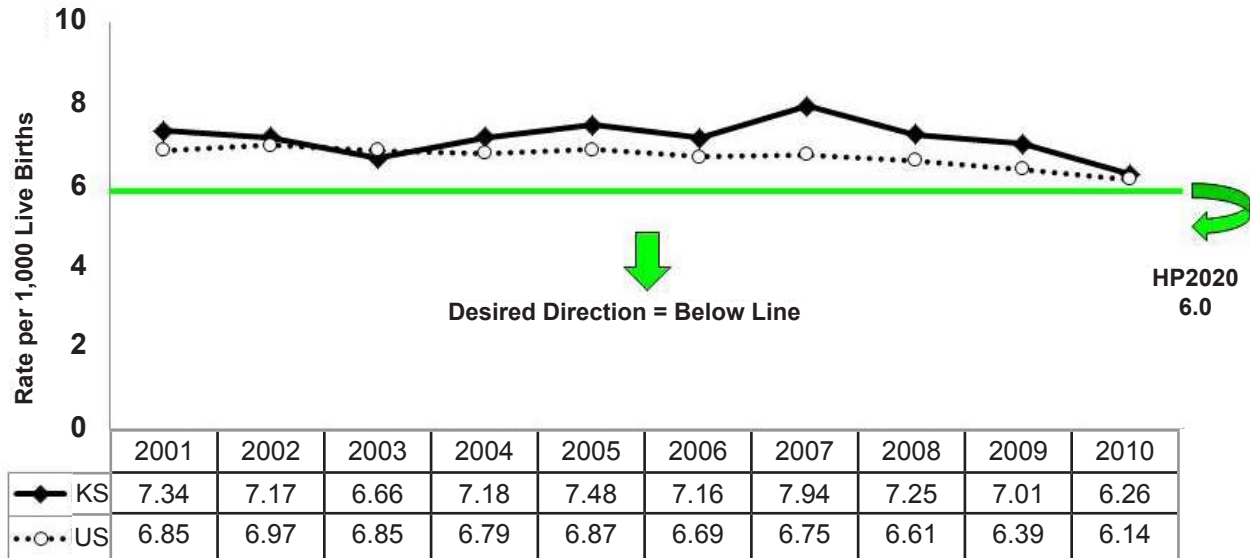
Infant Mortality

Summary

Infant mortality is associated with poor maternal health, poor quality of and access to medical care and preventive services, and low socioeconomic position.¹ In 2010, 253 Kansas infants died in their first year of life. The state infant mortality rate (IMR) for that year was 6.26 per 1,000 live births, compared to a 2010 national rate of 6.14 per 1,000.² The IMR among non-Hispanic black infants was 2.4 times higher than that of non-Hispanic white infants in 2010. Decreases in IMRs were observed for non-Hispanic white and non-Hispanic black infants from 2001 to 2010. However, no change was observed for Hispanic infants.² The national Healthy People 2020 objective is to reduce infant mortality to no more than 6.0 deaths per 1,000 live births. This goal was set at 10 percent lower than the 2006 U.S. infant mortality rate. Kansas did not meet the national objective.

No single intervention reduces all infant mortality. Prenatal care, participation in the Women, Infants and Children nutrition program (WIC), and receipt of high-risk neonatal care help to reduce deaths. Other proven strategies to reduce infant death include folic acid supplementation to prevent some types of birth defects, smoking cessation, use of infant car seats and placing infants to sleep on their backs. Reducing births before 39 weeks in women without medical conditions requiring early delivery also lowers risk of infant death.¹

Infant Mortality Rate Trends Kansas and U.S., 2001-2010



HP2020 = Healthy People 2020

Source: Bureau of Epidemiology and Public Health Informatics, KDHE, National Center for Health Statistics (U.S. 2010 preliminary data)

Time Trends

During the 2001-2010 decade, the IMR has statistically remained the same. However, for 2007-2010, there was a significant decrease in the trend detected with the annual percent change of -7.16.

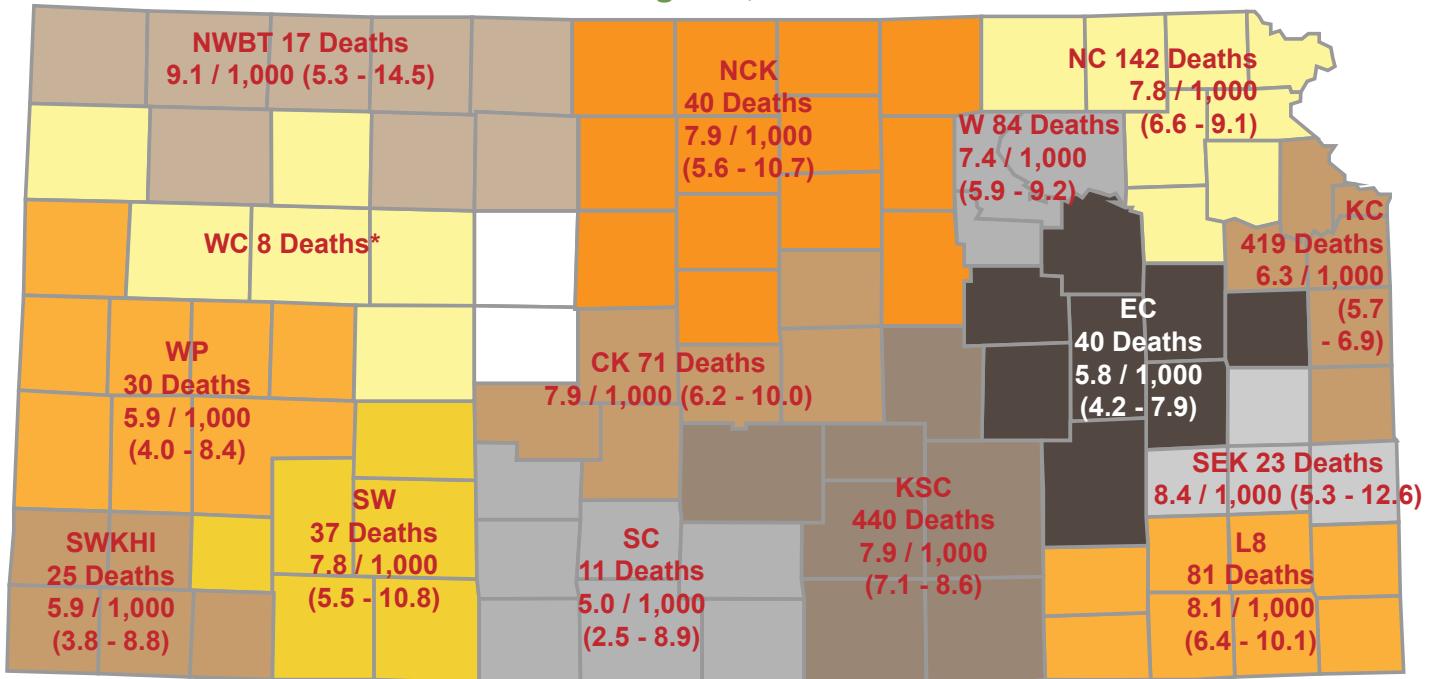
Geographic Variation

The counties with the highest number of infant deaths (2006-2010) included Sedgwick (317, 21.5% of the total), Johnson (227, 15.4% of the total), Wyandotte (121, 8.2% of the total) and Shawnee (106, 7.2% of the total). These four counties accounted for 52.4 percent of the infant deaths and account for approximately 49.8 percent of the state's population. However, the counties with the highest infant mortality rates and a relative standard error of 30 percent or lower included Marion (22.2), Neosho (15.5), Cowley (10.9), Geary (10.4) and Reno (8.9). While the counties with the lowest rates were Leavenworth (5.0), Douglas (5.2), Finney (5.2), Riley (5.8), Johnson (5.9) and Butler (5.9).³

Since the number of deaths was too small for analysis in many counties, counties were combined into the Public Health Regions. The region with the highest infant mortality rate and a relative standard error of 30 percent or lower was the Northwest Bioterrorism Region at 9.1 per 1,000 live births and the region with the lowest infant mortality rate was the South Central Coalition at 5.0 per 1,000. None of the rates by region were statistically significantly different from the state infant mortality rate.³

Several zip codes had enough deaths to allow analysis for 2006-2010. The zip codes with the highest mortality rates and a relative standard error of 30 percent or lower included 66605 (Shawnee County, 16.2), 66720 (Neosho County, 14.9), 67156 (Cowley County, 13.1), 67218 (Sedgwick County, 12.7), and 67214 (Sedgwick County, 12.4). The zip codes with the lowest rates were 67212 (Sedgwick County, 3.6), 66030 (Johnson County, 5.0), 66062 (Johnson County, 5.3), 66106 (Wyandotte County, 5.5), and 67846 (Finney County, 5.6).³

Infant Deaths, Mortality (IM) Rates with 95% Confidence Intervals by Public Health Regions, Kansas 2006-2010



Kansas Public Health Regions

CK = Central Kansas	SW = S West Surveillance
L8 = Lower 8 of SE KS	W = Wildcat
NC = Northeast Corner	KC = Kansas City Metro
SKHI = SW KS Health Initiative	SEK = S East Kansas
WP = Western Pyramid	WC = W Central Public Health Initiative
EC = East Central Coalition	KSC = KS S Central Metro
NCK = N Central KS Public Health Initiative	NWBT = N West BT Region
SC = S Central Coalition	

Kansas IM Rate = 7.3 (6.8 - 7.5)

*Numbers too small to calculate rates (>=30 Relative Standard Error)

Age Period at Death

Timing of infant deaths is categorized as occurring in the neonatal period (first 27 days of life) and the post-neonatal period (28 to 364 days). The neonatal period is further sub-divided into early days or hebdomadal deaths (0-6 days) and post-hebdomadal deaths (7-27 days). Perinatal period III includes stillbirths and hebdomadal deaths.³

Neonatal/Post-Neonatal Period Deaths: For Kansas, between 2006 and 2010, there were 926 neonatal deaths (4.5/1,000 live births) and 546 post-neonatal deaths (2.7/1,000 live births) with 62.9 percent of deaths occurring in the neonatal age period. Congenital anomalies were the leading cause of neonatal deaths, while SIDS was the leading cause of post-neonatal deaths.³

Perinatal Period III Deaths: For Kansas, between 2006 and 2010, there were 1,688 perinatal deaths

(8.1/1,000 live births and stillbirths) including 941 stillbirths and 747 hebdomadal deaths. Maternal factors (ICD-10 codes P00-P04) was the leading cause of stillbirths (51.8%), while prematurity or low birthweight was the leading cause of death for hebdomadal period deaths (32.4%).³

Economic and social factors

Research continues to associate lower maternal income with higher infant mortality rates.¹ Medicaid delivery can be used as an indicator of low income. In 2010, in Kansas, where payment source was known, the infant mortality rate was highest for the Medicaid service population (7.3 per 1,000 live births) and lowest for the non-Medicaid population (5.5). The overall infant mortality rate for Kansas was 6.2.⁴

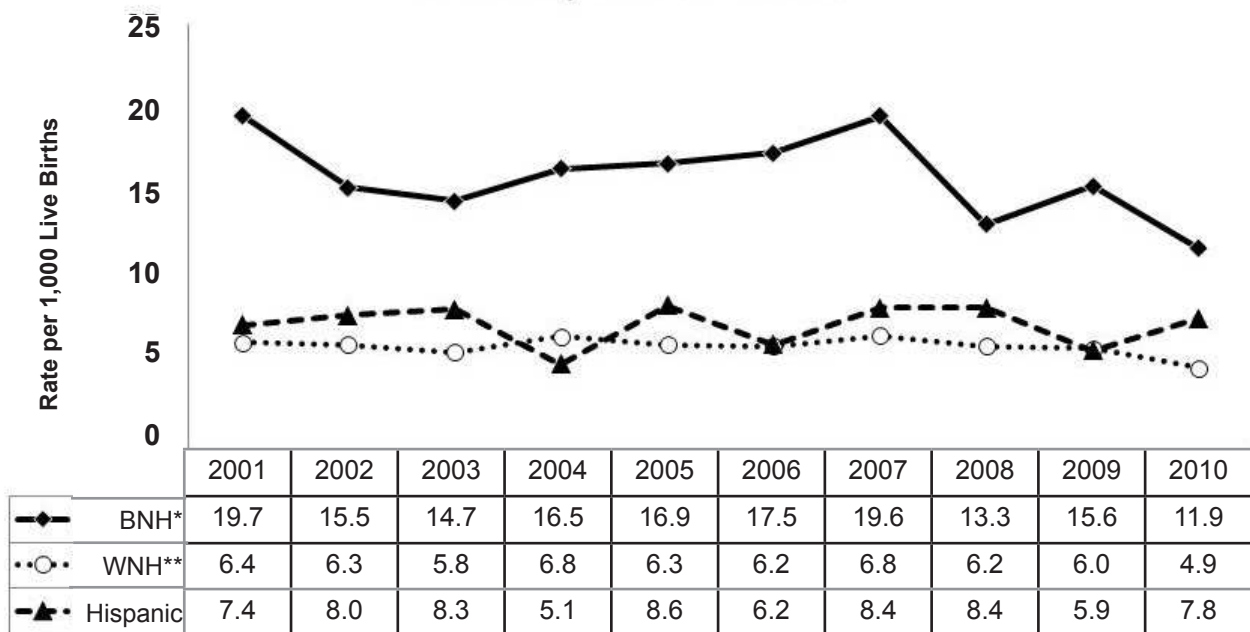
The MCH program has collaborated with the

Kansas City federal Healthy Start Program to conduct Fetal-Infant Mortality Review (FIMR) recommended by the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP) as a best practice strategy in helping communities identify the systems issues that need to be addressed to prevent infant deaths.⁴

Race and Hispanic Origin

The IMR among non-Hispanic black infants was 2.4 times higher than that of non-Hispanic white infants in 2010. Decreases in IMRs were observed for non-Hispanic white and non-Hispanic black infants from 2001 to 2010. However, no change was observed for Hispanic infants.²

**Infant Mortality Rate Trends
By Non-Hispanic Black, Non-Hispanic White and Hispanic
Kansas and U.S., 2001-2010**



*BNH=non-Hispanic Black; **WNH=non-Hispanic White

Source: Bureau of Epidemiology and Public Health Informatics, KDHE

Other Measures of importance

For Kansas, between 2006 and 2010, the leading cause of infant mortality was congenital anomalies. The most frequent congenital anomaly was congenital malformations of the circulatory system (22.7%, ICD-10 codes Q20-Q28), followed by chromosomal abnormalities (19.8%, ICD-10 codes Q90-Q99). Seventy-four percent (74.1) of deaths due to congenital anomalies occurred in the neonatal (under 28 day) time period. The category “other causes” includes respiratory distress of the newborn, primary atelectasis, cardiac failure/dysrhythmia, necrotizing enterocolitis, etc. Analysis of underlying cause of death by population group (2006-2010) shows that prematurity was the leading cause of death among black non-Hispanic infants. Congenital anomalies was the leading cause of death among white non-Hispanic and Hispanic infants.³



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Strengths and Assets

Strengths

Fetal Infant Mortality Review (FIMR) Projects

Sedgwick and Geary counties are developing and implementing a FIMR process, which is a case review process that assists communities in identifying risk factors associated with the incidence of infant mortality and implementing a set of interventions to reduce infant mortality. Examples of interventions include programs addressing maternal smoking cessation, preconception peer education and safe sleep.

High 5 for Mom and Baby – Breastfeeding Friendly Hospital Campaign

The goal of the Breastfeeding Friendly Hospital campaign is to recognize hospitals and maternity centers that provide an optimal environment for breastfeeding mothers by fulfilling the standards outlined in the Ten Steps to Successful Breastfeeding, as laid out by WHO and UNICEF. Seven Kansas hospitals are enrolled and more are being contacted about the program. The program has been endorsed by Papa Murphy's Pizza, Wesley Medical Center, Kansas Action for Children, M-C Industries, Kansas Breastfeeding Coalition, KDHE, March of Dimes, Stormont-Vail HealthCare and the Kansas American Academy of Pediatrics.

Kansas Perinatal Quality Collaborative (KPQC)

The Kansas Chapter of the March of Dimes is coordinating the formation of KPQC, which will be dedicated to improving perinatal health for moms and babies in Kansas. Hospital quality improvement projects related to preterm and early term births are likely to be among the KPQC's top priorities.

Preconception Peer Educator Training

Research has shown that preconception health is one of the most important and less emphasized aspects influencing birth outcomes and maternal and infant health. KDHE is working with other partners in the state to facilitate preconception peer educator training using a federal Office of Minority Health curriculum. The training has the following three goals:

- Reach the college-age population with targeted health messages emphasizing preconception health and health care.
- Train minority college students as peer educators.
- Arm the peer educators with materials, activities and exercises to train their peers in college and in the community at large.

Maternal, Infant & Early Childhood Home Visiting Program

There are approximately 140 families currently enrolled in the Home Visiting Program in Montgomery and Wyandotte Counties. The program uses evidence-based programs (Early Head Start, Healthy Families America and Parents



as Teachers), includes a centralized outreach and referral system, and implements a comprehensive benchmarks plan to assess improvement with common, cross-program measures and data reporting systems. Currently a promising approach is being evaluated in Kansas City, KS, called Team for Infants Endangered by Substance Abuse (TIES).

Kansas Kids Fitness Challenge Program

This incentive program is designed to enhance the educational and health benefits of Kansas Kids Fitness Day by providing a chance to be active prior to the actual event. Third grade classes that reach the determined physical activity goal will be awarded a class certificate, a class prize, prizes for all students in the class and recognition at a local Kansas Kids Fitness Day event.

Assets

- Existing infrastructure for working on health issues affecting mothers, infants and children
- History of solid public health presence
- Collaboration is strong
 - Ongoing partnerships on common causes (e.g., legislation to create Kansas Indoor Clean Air Act)
 - Collaborative groups like Kansas Blue Ribbon Panel on Infant Mortality
 - Private groups and community-based groups work well together
- Strong, active organizations/groups supporting maternal and child health issues (e.g., March of Dimes, Kansas Action for Children, SIDS Network of Kansas, Healthy Kansas Schools)
- Strong public health foundation support
- Dedicated, diverse workforce; great individual programs filled with knowledgeable, passionate people