

Report to the General Assembly

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State of Illinois

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Introduction

The Illinois Department of Healthcare and Family Services (HFS) is the largest insurer in Illinois, providing health insurance for over two million Illinoisans through Medicaid, the Children's Health Insurance Program (CHIP) and state-funded health care programs. In calendar year 2007, HFS covered 52% of the State's births and 90% of the teen births¹.

Reducing infant mortality (death during the first year of life), low birth weight (infants born less than 2500 grams), and very low birth weight (infants born less than 1500 grams) are health priorities in the United States, as well as in Illinois. Progress has been made in health care and medical technology that has contributed to steady overall declines in infant mortality in the United States. Although the U.S. infant mortality rate did not decline from 2000 to 2005, preliminary data for 2006 shows a statistically significant decline between 2005 and 2006 of 2%. In 2004, the United States ranked 29th in the world in infant mortality – down from 12th in 1960 and 23rd in 1990.²

In the United States, perinatal health disparities persist and are widening for African Americans.³ The infant mortality rate among African American children is 2.4 times that for white children (13.63 for black women compared to 5.76 for white women). In 2004, Black infants were more likely than all other racial and ethnic groups in the U.S. to be born low birth weight (13.7 percent compared to 7.2 percent for white neonates), and two and a half times as likely to be born at very low birth weight compared to white neonates – conditions that place them at higher risk for multiple health problems, disability and death.⁴ Forty-six percent of infant deaths to black women were preterm-related as compared to 32% for white women.⁵ While maternal mortality rates have decreased dramatically over the past several decades, the rate has not declined significantly since 1982. The maternal death rate is about four times higher (36.1) among African American women compared to white women (9.8), and is often preventable.⁶

Illinois mirrors the nation with its experience in perinatal disparities among African Americans. In Illinois in 2007, the infant mortality rate among African American children is more than double that for white children (13.5 for African American children compared to 5.3 for white children). In 2005, the maternal death rate was more than five times higher among African American women in Illinois compared to Caucasian women (2.29 for African American women compared to .43 for Caucasian women).⁷ More recent data is not available at this time.

¹ Department of Human Services, Birth File Match, 2007

² MacDorman, Marian F., Ph.D., Mathews, T.J., M.S. Recent Trends in Infant Mortality in the United States. NCHS data brief, no 9. Hyattsville, MD: National Center for Health Statistics. 2008.

³ MacDorman, Marian F., Ph.D., Mathews, T.J., M.S. Recent Trends in Infant Mortality in the United States. NCHS data brief, no 9. Hyattsville, MD: National Center for Health Statistics. 2008.

⁴ U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. *Child Health USA 2006*. Rockville, Maryland: U. S. Department of Health and Human Services, 2006.

⁵ MacDorman, Marian F., Ph.D., Mathews, T.J., M.S. Recent Trends in Infant Mortality in the United States. NCHS data brief, no 9. Hyattsville, MD: National Center for Health Statistics. 2008.

⁶ U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. *Child Health USA 2006*. Rockville, Maryland: U. S. Department of Health and Human Services, 2006.

⁷ Illinois Department of Public Health, Vital Records, 2006.

This report will identify the steps HFS has taken with its partners (other State agencies, advocate groups, maternal and child health experts, local funding resources and others) to address the perinatal health care needs and racial health disparities in Illinois; detail the progress made on addressing the priority recommendations as outlined in the 2004 Report to the General Assembly as a result of Public Act 93-0536; review the available trend data on infant mortality, low birth weight and very low birth weight outcomes; identify the progress made to address poor birth outcomes through analysis of trend data; and identify next steps in improving birth outcomes.

Legislative Mandate

Public Act 93-0536 (305 ILCS 5/5 – 5.23) was passed with the goal of improving birth outcomes for over 80,000 babies whose births are covered by HFS every year. The law states that HFS may provide reimbursement for all prenatal and perinatal health care services that are provided for the purpose of preventing low birth weight infants, reducing the need for neonatal intensive care hospital services, and promoting perinatal health. Additionally, HFS was required to develop a plan for prenatal and perinatal health care for presentation to the General Assembly by January 1, 2004. HFS is required to report to the General Assembly on the effectiveness of prenatal and perinatal health care services, on or before January 1, 2006, and every 2 years thereafter.

As required, this document is presented to the General Assembly in compliance with Public Act 93-0536 (305 ILCS 5/5 – 5/23) to report on the effectiveness of prenatal and perinatal health care services reimbursed by HFS in improving birth outcomes. This document, as well as the three previous reports from 2004, 2006 and 2008, are available on the HFS Web site at: < http://www.hfs.illinois.gov/assets/041504pa93_0536.pdf >.

Status of Priority Recommendations

Over the past six years, the Illinois Department of Healthcare and Family Services (HFS) has used the Report to the General Assembly, Public Act 93-0536, initially issued in 2004, as a guide in implementing initiatives aimed at improving birth outcomes in Illinois. Since the original report was issued, many new initiatives have been implemented and Illinois has seen some improvement in outcomes. Other initiatives will be implemented over the years to follow. The status of the priority recommendations from the initial report are summarized below.

Planned Pregnancies

- Provide coverage for family planning to the Title XXI 19-year old population who are leaving the program due to age or to female parents/relative caretakers under Illinois Family Care who no longer meet the income requirements for that program (high priority).
- Expand coverage under the *Illinois Healthy Women* program to women who would otherwise be eligible for HFS maternity coverage if pregnant, and whose income is below 200 percent of the federal poverty level, irrespective of whether they were previously enrolled in HFS or CHIP (high priority).

Status: Completed. The *Illinois Healthy Women* waiver was amended. A renewal application was submitted to the Centers for Medicare & Medicaid Services (CMS) on October 15, 2008, requesting an extension for an additional three years or for the maximum period allowed. CMS has tentatively approved the renewal through December 31, 2009, and expects the full waiver extension to be granted in the near future.

- Include folic acid and vitamin supplementation in the package of covered services under *Illinois Healthy Women* (high priority).

Status: Completed. Folic acid and vitamin supplementation are available to all women enrolled in HFS' medical programs, including *Illinois Healthy Women*. HFS promotes their use to its women of childbearing age and recommends its providers prescribe folic acid and vitamin supplementation.

- Add coverage for a preconception visit and interconception care (between pregnancies) to address health issues and plan for a healthy birth (high priority).

Status: In Progress. An annual adult preventive visit is now reimbursable and is being promoted in managed care – with both the Managed Care Organizations (MCOs) and the Primary Care Case Management (PCCM) program. A preconception risk assessment screening tool has been tested and is being evaluated and validated. An interconception care pilot project, *Healthy Births for Healthy Communities*, is being tested in high-risk community areas of Chicago. HFS is currently involved in data analysis to identify the highest-risk population. In addition, the Illinois Department of Human Services (DHS) is leading the Preconception/Interconception Care Committee (PICC) that has

recommended standards of care, developed a comprehensive training curriculum on preconception and interconception care, and conducted training to maternal and child health providers. HFS is an active participant on the PICC. The training developed by PICC is being adapted for HFS providers by the HFS Quality Improvement Organization (QIO), Health Systems of Illinois (HSI) for spread within the HFS provider network. DHS is also focusing on interconception care in its Healthy Start program and conducted two satellite trainings on preconception health during 2008.

HFS conducted an extensive literature review and received stakeholder input on a model of preconception/interconception care for all women and interventions that address the health needs of identified high-risk women. In addition to the standards of care, HFS intends to launch a preconception/interconception model within its health care delivery system – planning is underway.

Mental Health During the Perinatal Period

- Create a statewide Perinatal Mental Health Consultation Service for providers that includes a university-based Perinatal Mental Health Consultation Team charged with developing a model program template for addressing the specific needs of HFS-enrolled women of reproductive age, providing assistance to prenatal and primary care providers to help the clinics adapt and implement the model at their sites, and maintaining an ongoing telephone, fax or e-mail consultation service for HFS primary care providers (high priority).

Status: Completed. A comprehensive program has been implemented which includes a consultation service, provider training and technical assistance, a medications treatment chart, a 24-hour crisis hotline for women and development of referral and treatment resources statewide. Alternative treatment options are also being developed, including a stepped care disease management model and a self-care tool kit for women. Public Act 95-0469, Perinatal Mental Health Disorders Prevention and Treatment Act, was effective January 2008, and is intended to increase awareness and promote early detection and treatment of perinatal depression. Ongoing sustainable funding is required to continue this comprehensive approach to identification and treatment of perinatal depression.

- Allow HFS reimbursement for screening for depression, such as for the Edinburgh Postnatal Depression Scale during the prenatal and postpartum period (high priority).

Status: Completed. HFS provides reimbursement for perinatal depression risk assessment, both prenatally and up to one year after delivery. HFS is monitoring perinatal depression screening by its providers through claims analysis, with a plan for ongoing feedback.

- Provide information and training to HFS providers on how to use the depression screening tool (medium priority).

Status: In Progress. Training is available from UIC, the Illinois Chapter of the American Academy of Pediatrics (ICAAP), and the Enhancing Developmentally Oriented Primary Care (EDOPC) program. Ongoing sustainable funding is required to continue training and for ongoing technical assistance to providers on the identification and treatment of perinatal depression. In addition, DHS requires its case management

programs to screen for perinatal depression at least once prenatally and during the postpartum period. Case management providers receive training on how to complete screenings and DHS monitors compliance during annual reviews. DHS also funds assessment and follow-up care for case management participants in the Chicago area.

Public Act 95-0469, Perinatal Mental Health Disorders Prevention and Treatment Act, effective January 2008, is intended to increase awareness and promote early detection and treatment of perinatal depression. DHS is the lead agency named in the legislation along with HFS, Illinois Department of Public Health (DPH), Illinois Department of Financial and Professional Regulation (DFPR) and the Medical Licensing Board to work with health care providers to develop policies, procedures, information and educational supplies. The agencies named in the Act have been working together toward compliance with the Act. DHS is drafting rules to provide guidance to providers on issues such as staff training, educational materials, recording of screening results, and patient follow-up. The rules will provide guidance to providers on issues such as staff training, educational materials that can be utilized and dissemination of same, recording of screening results, and client follow-up.

- Identify a mechanism to provide mental health screening and treatment to women beyond the current 60 days postpartum eligibility period and work with other agencies (e.g., DHS, Division of Mental Health (DMH)) to provide mental health services to these women (requires further study).

Status: In Progress. HFS provides reimbursement for screening of perinatal depression up to one year after delivery and is working with DHS and advocates to address identification and referral (screening, assessment and treatment).

Oral Health

- Expand HFS coverage for prevention and treatment of oral disease in pregnant women, including measures to reduce colonization of *S. mutans* and to control periodontal infections (high priority).

Status: Not Completed. Extensive literature review has not revealed conclusive evidence to support that prevention and treatment of oral disease in pregnant women improves birth outcomes.

Smoking Cessation

- Encourage providers to assess smoking status and update smoking status at each visit, providing advice to quit (high priority).

Status: Completed. Through provider notices, HFS encourages providers to assess smoking status and counsel patients to quit. Providers are also encouraged to refer patients to the Illinois Tobacco Quitline for individual counseling and support.

- Provide a booklet, which is motivational and includes self-help skills for quitting, to providers for distribution (high priority).

Status: Completed. The Illinois Tobacco Quitline provides motivational booklets that can be downloaded by providers and distributed to patients. Motivational booklets are also distributed to individuals who are referred to the Quitline by providers.

- Provide reimbursement for a more intensive smoking cessation program that includes one-on-one counseling, telephone support and cessation classes or support groups for pregnant women who smoke (high priority).

Status: In Progress. The Illinois Tobacco Quitline provides motivational and educational materials, education, one-on-one counseling, telephone support and referral to smoking cessation classes or support groups. HFS is operating a pilot project in the Englewood community to educate providers on smoking cessation and provide peer counseling to women ready to quit. Currently, risk assessment and counseling for smoking cessation are part of an office visit.

- Provide smoking cessation intervention with women in the public delivery of care system who are not currently pregnant as quitting during pregnancy is often temporary (requires further study).

Status: In Progress. HFS encourages providers to assess smoking status, counsel, and make referrals to smoking cessation services for all patients. HFS provides reimbursement for smoking cessation products to assist all HFS participants in quitting smoking. HFS sends regular notices to participants encouraging them to quit smoking and informing them of the Illinois Tobacco Quitline and the availability of smoking cessation products to help them quit.

In addition, HFS' disease management program, *Your Healthcare Plus*, requires smoking risk assessment and development of action plans that include strategies for quitting and educational materials. These action plans are shared with the patients' physicians. Many of the educational materials that are routinely mailed to participants includes information about smoking cessation and the Quitline. HFS' dental program also promotes smoking cessation with participants. Dentists are supplied with prescription pads that encourage patients to quit smoking and provide information on the Quitline.

Perinatal Addiction (Status Provided by Department of Human Services, Division of Alcoholism and Substance Abuse - DASA)

- Provide training for physicians on the signs, symptoms and screenings for addictions (high priority).

Status: In Progress. Some physician training has occurred, although not specific to women/pregnant women. This includes work in the Screening, Brief Intervention and Referral to Treatment Project with primary care physicians and some training in pain management. In 2010, DASA plans to implement a Gender Competency credential to promote gender-specific services and highlight the priority mandate of treating women in Illinois. Gender-specific guidelines and a monitoring tool will be implemented to measure the quality of care for this population.

- Convene a subcommittee on data and evaluation to recommend strategies to improve capturing birth outcomes of addicted women (high priority).

Status: Not Yet Initiated. The Data Automated Recording and Tracking System (DARTS) is the source used to gather statistical, demographic, and service data for pregnant women and women with dependent children. DHS/DASA has begun to refine and improve on analyzing the patterns of evidence-based practices, client engagement into treatment, longer stays of retention to improve outcomes, and developing policy and practices to support sustainable recovery.

- Include a substance abuse specialist in the Targeted Intensive Prenatal Case Management and Healthy Start programs (high priority).

Status: Not Yet Initiated. At the time of admission into the Family Case Management (FCM), Healthy Start, Targeted Intensive Prenatal Case Management, and High-risk Infant Follow-up programs, pregnant and parenting women are asked about substance use. Women who admit to use are referred to a substance abuse treatment program for further evaluation and treatment, as indicated. Pregnant incarcerated women receiving prenatal case management at Cermak Jail in Chicago are routinely referred to the MOMS program and Haymarket House for residential treatment services when they leave the jail.

- Establish a formal network for consultation as needed by primary care providers (high priority).

Status: Not Yet Initiated.

- Identify existing resources needed to establish a Maternal Child Health team with a substance abuse treatment specialist (requires further study).

Status: Not Yet Initiated.

- Increase the number of outreach workers and treatment slots for pregnant women (requires further study).

Status: Not Yet Initiated. DASA maintains funding for several specialty women's treatment programs that provide rehabilitation services for pregnant and parenting women. Child care residential is also provided at a number of these locations. Funding reductions have not allowed expansion of these services.

- Fund a smoking cessation specialist position in DASA to review and recommend smoking cessation programs and provide smoking cessation training (requires further study).

Status: Not Yet Initiated.

HIV Counseling

- Cover HIV counseling and testing under *Illinois Healthy Women* (high priority).

Status: Completed. HIV testing and counseling is covered under all of HFS' medical programs, including *Illinois Healthy Women*. Counseling is included in the office visit

and is not separately billable. In addition, DHS funds HIV testing and counseling in Chicago through its family planning program.

- Implement strategies (e.g., outreach and case finding of pregnant women) to ensure that pregnant women receive prenatal care and Family Case Management services (high priority).

Status: Pilot Completed. A creative outreach and case finding strategy for reaching high-risk women in community areas with high rates of adverse pregnancy outcomes was piloted. Although some pregnant women are more difficult to locate and engage in care, the pilot demonstrated that to be effective, the outreach staff must establish linkages with community agencies where the women are known. This more targeted approach has proven more efficient than “street” outreach in locating women. By far the most common source for finding eligible women is “case finding”, i.e., referrals from other community organizations, word of mouth, and DHS.

- Refer pregnant women who are HIV-positive to Targeted Intensive Prenatal (TIP) Case Management (high priority).

Status: In Progress. Pregnant women who are positive for the HIV virus are automatically referred to one of the high-risk prenatal case management programs, if there is a high-risk prenatal case management program available in the community. The high-risk programs sustained an 11% cut in funding, resulting in a reduction of caseloads across the State.

- Look for ways to assure compliance with the requirement that providers of prenatal health care services routinely provide HIV counseling to all pregnant women; routinely discuss the importance of HIV testing; and routinely offer HIV testing on a voluntary basis, as well as compliance with the requirement that every health care professional or facility that cares for a newborn, upon delivery or within 48 hours after the infant’s birth, provide counseling and automatically perform HIV testing when the HIV status of the infant’s mother is unknown, if the parent or guardian does not refuse (high priority).

Status: In Progress. The Illinois Perinatal Prevention Act of 2003 (PA 93-0566) specifies requirements for health care professionals related to counseling and testing for HIV. The 2006 amendment to the Act (PA 94-0919) clarifies and adds requirements related to rapid testing, documentation, reporting, confidentiality, treatment information and parental objection. The Act requires DPH to operate a 24-hour Perinatal HIV Hotline and to submit an annual report to the Governor and General Assembly. The 2007 amendment to the Act (PA 95-0007) incorporates recommendations from the Centers for Disease Control and Prevention related to making HIV testing a routine part of general medical care. The Illinois Department of Public Health (DPH) is charged with training, technical assistance and outreach to implement routine HIV testing in health care medical settings.

HFS has informed its provider network of the requirements of PA 93-0536 and the subsequent amendments to the Act through provider notices. The notices encourage providers to routinely test pregnant women throughout the pregnancy, to document test results and make results available to the labor and delivery hospital. Providers are also encouraged to administer rapid testing during labor and delivery for women whose HIV

status is unknown. HFS provides reimbursement for these services as well as testing of the infant and any necessary treatment to reduce HIV transmission.

Nurse Midwifery

- Increase the use of Certified Nurse Midwives as a cost-effective group of perinatal providers (medium priority).

Status: Completed. Effective January 2006, HFS began recognizing Certified Nurse Midwives (CNM) as one of four advance practice nurse (APN) specialties under HFS' medical programs. Between state fiscal years 2008 and 2009, 2 APN services have increased by 54%, patients served by APNs have increased by 45%, the number of APNs billing HFS increased by 23%. There are currently 3,529 APNs enrolled with HFS, with 33 available for selection in the PCCM program as a medical home with an associated PCCM capacity of 19,455. In State Fiscal Year 2009, 2,471 unique APNs billed for over 322,000 services rendered to nearly 119,000 HFS patients, amounting to approximately \$15 million.

- Base reimbursement rates on the services provided, rather than whether a physician or Certified Nurse Midwife provided the services (medium priority).

Status: Completed. Since January 2006, all APNs (except psychiatric APNs) were reimbursed at 100 percent of the physician rate. Beginning October 2009, APNs are also eligible to provide and receive reimbursement for psychiatric services, with the exception of group psychotherapy.

- Allow Certified Nurse Midwives to have MCH (enhanced rate) status (requires further study).

Status: Completed. Since January 2006, all APNs are eligible to receive the enhanced rate for MCH services.

Lactation Counseling

- Use the task force model to develop an awareness and outreach campaign to more effectively utilize services across agencies (high priority).

Status: Not Yet Implemented.

- Provide updated breastfeeding information to physicians who serve HFS participants (requires further study).

Status: Completed. A provider notice was mailed to all HFS providers in December 2005 encouraging them to promote breastfeeding with HFS patients. The notice included breastfeeding recommendations from provider organizations, information on the benefits of breastfeeding, information about HFS reimbursement for breast pumps, information about WIC and other breastfeeding resources. The notice will be recirculated and information about the importance of breastfeeding will be included in the PCCM newsletter. Encouraging breastfeeding is included in other HFS client materials.

- Provide reimbursement for lactation counseling/support for breastfeeding women during the first weeks after birth (requires further study).

Status: Not Initiated. All pregnant and parenting women are eligible for the Special Supplemental Nutrition Program for Women, Infants and Children’s (WIC) program. The WIC program promotes breastfeeding and provides education, classes, counseling and direct support for low-income pregnant and breastfeeding women. HFS does not provide separate reimbursement for lactation counseling/support since this service is provided by WIC. HFS does cover counseling as a component part of a medical visit; it is not separately reimbursed. HFS provides reimbursement for breast pumps. HFS sends annual notices to enrolled women regarding the benefits of breastfeeding, reimbursement for breast pumps, WIC education, counseling and support services, and other resources available.

Labor Support During the Perinatal Period

- Conduct research to determine the cost and benefits associated with continuous labor support provided through a doula or monitrice (low priority).

Status: Requires Further Study. The DHS funds a doula project for at-risk pregnant teens. The doulas provide education and support during pregnancy, labor, and delivery. Evaluation demonstrated that young women who have a doula have higher initiation and sustaining rates for breastfeeding and are more likely to delay a subsequent pregnancy beyond one year after the birth of their baby. These young women also have better pregnancy outcomes than pregnant teens who did not have a doula. In addition, HFS is exploring alternative models of prenatal care services to low-risk pregnant women, such as the Centering Pregnancy model, and provides reimbursement for prenatal care provided through the Centering Pregnancy model. Centering Pregnancy initiatives have shown promising results toward engaging women in their own health care and improving compliance.

Case Management and Home Visiting

- Expand the existing case management program to target high-risk areas, which is supported by HFS (high priority).

Status: In Progress. DHS administers the Family Case Management (FCM) program and HFS claims federal matching funds for the Medicaid population being served by FCM. FCM is operational in all Illinois counties and all community areas in Chicago. DHS also operates two targeted case management programs to reduce the infant mortality rate in high-risk communities: Chicago Healthy Start and Targeted Intensive Prenatal Case Management. Even with the resources committed by Illinois to prenatal case management programs, there continues to be unmet need and the program is under funded to meet the need.

- Expand outreach efforts (especially in Chicago) to locate “hard-to-reach” pregnant women and get them into care (high priority).

Status: In Progress. With private foundation funding and federal match, HFS and DHS are operating a quality improvement project in the North Lawndale and Austin

communities in Chicago to test a performance-based approach to reimbursement for intensive outreach to engage hard-to-reach women. The project is measuring the effort required to locate and engage high-risk women and evaluating the effectiveness of various methods. Preliminary results show that to be effective, the outreach staff must establish linkages with community agencies where the women are known. This more targeted approach has proven more efficient than “street” outreach in locating women. By far the most common source for finding eligible women is “case finding”, i.e., referrals from other community organizations, word of mouth, and DHS.

- Pilot more intensive models of case management, such as a program that covers six home visits during the prenatal period and 21 follow-up visits during the first 2 years of life (low priority).

Status: Not Yet Initiated. HFS is working with DHS to identify strategies to address the chronic conditions of high-risk women between pregnancies, as well as to identify women needing more intensive case management. Better coordination between the PCP, the women’s health care provider, and the case management program is a focus. This recommendation is being considered for integration into the HFS interconception initiative for high-risk women.

Other Priority Recommendations

- Disseminate information to the provider community concerning standards of care.

Status: In Progress. HFS and DHS partnered to conduct the Closing the Gap Study on the Content/Quality of Prenatal Care. The study has been completed. Findings present an opportunity for improvement through implementation of strategies to encourage clinical guidelines, best practices, targeted interventions, and comprehensive charting of services provided and referrals made. In partnership with its QIO, HSI, HFS is working with the provider community to develop standards of prenatal care for high-risk low-income women.

- Work with the provider community to educate their colleagues about the standards of care.

Status: In Progress. HFS is working with the provider community to determine the most effective way of communicating standards of prenatal care for high-risk low-income women to providers.

- Consider performing a focused quality study that assesses the extent to which providers are performing medical services according to ACOG guidelines.

Status: Completed. HFS and DHS partnered to conduct the Closing the Gap Study on the Content/Quality of Prenatal Care. The study included a retrospective medical record review to determine the extent that providers who serve high-risk HFS-enrolled women are performing medical services according to ACOG and community standards. Findings present an opportunity for improvement through implementation of strategies to encourage clinical guidelines, best practices, targeted interventions, and comprehensive charting of services provided and referrals made. In partnership with its QIO, HSI, HFS

is working with the provider community to develop standards of prenatal care for high-risk low-income women.

- Provide an educational campaign to encourage pregnant women to be active in their reproductive health care.

Status: In Progress. HFS is an active partner in the Illinois Maternal and Child Health Coalition’s “Save Our Babies Campaign”, which strives to educate women about the importance of reproductive health care and healthy lifestyle practices. The PICC is also working on a social marketing strategy to educate women about reproductive health.

- Compare the cost and outcomes of care provided by MCH and non-MCH enrolled physicians and also look at outcomes in different care settings, e.g., community health centers and private physician settings.

Status: Not Yet Initiated.

- Analyze birth outcomes utilizing predictive analytics to better understand factors affecting the health of births.

Status: In Progress. HFS is using medical claims data, Vital Records, APORS data, and Cornerstone (FCM and WIC) data to identify risk factors of women with poor birth outcomes. This information will be utilized by HFS to target interventions for high-risk women prenatally and interconceptionally.

- Look at the effects of nutritional support from WIC and food stamp participation on birth outcomes.

Status: Not Yet Initiated. HFS will partner with DHS to complete this study.

Data Highlights

Key HFS Data Points	CY	2004 Report	CY	2006 Report	CY	2008 Report	CY	2010 Report
% of State's Births Covered by HFS	2001	40%	2004	41%	2005	51%	2007	52%
% of State's Teen Births Covered by HFS	2001	89%	2003	95%	2005	95%	2007	90%
Unintended Pregnancies	2000	66%	2003	70%	2005	58%	2006	57.3%
Subsequent (2 nd or Higher) Births	2001	65%	2003	66%	2005	63%	2007	63%
Interpregnancy Interval <18 Months	2001	18%	2003	17%	2005	17%	2007	17%
Women Receiving <21% of Recommended Prenatal Care	NA	NA	NA	NA	2006	11%	2008	11%
Women Receiving >81% of Recommended Prenatal Care	NA	NA	NA	NA	2006	45%	2008	47%
Non-Normal Deliveries	2001	31.32%	2004	34.01%	2006	35%	2007	36.88%
HFS Women Receiving WIC or FCM	NA	NA	2003	85%	2005	84%	2007	84.41%
HFS Infant Mortality (IM) Rate	2000	9.3	2001	7.7	2004	8.2	2006	8.1
HFS IM with WIC/FCM	NA	NA	2001	5.8	2004	5.1	2006	6.3
HFS IM w/o WIC/FCM	NA	NA	2001	16.2	2004	17.0	2006	18.1
HFS VLBW	2001	1.73%	2003	1.8%	2005	1.8%	2007	1.7%
HFS VLBW with WIC/FCM	2001	1.2%	2003	1.4%	2005	1.4%	2007	1.22%
HFS VLBW w/o WIC/FCM	2001	3.7%	2003	3.9%	2005	4.1%	2007	3.52%
HFS LBW	2001	9.53%	2003	9.4%	2005	9.5%	2007	9.1%
HFS LBW with WIC/FCM	2001	8.66%	2003	8.7%	2005	8.8%	2007	8.5%
HFS LBW w/o WIC/FCM	2001	13.59%	2003	13.4%	2005	13.6%	2007	12.1%

Illinois Healthy Women Family Planning Waiver

The interim evaluation of the HFS family planning waiver (*Illinois Healthy Women – IHW*) shows promise and successes in meeting its goals:

- **Decrease in HFS births** – an estimated 4,240 births were averted.
- **Decrease in fertility rates** – in waiver years 2-4, the fertility rate for IHW women was 7% compared with 11.8% for low-income women (2006).
- **More low-income women are using family planning services** – HFS data shows an 11.1% increase from 2003-2007.
- **IHW is reaching the target population** – 64% of women who apply for IHW are 19-24 years of age and 75% have not previously been pregnant.
- **Reduction in unintended births** – unintended HFS births dropped from 66% in 2003 to 58.1% in 2005 – Pregnancy Risk Assessment Monitoring System (PRAMS).
- **Interpregnancy spacing is increasing** – interpregnancy intervals greater than 24 months increased from 67.9% in 2001 to 69.5% in 2006. Increasing interpregnancy intervals has been demonstrated to assist in reducing adverse birth outcomes.
- **Access to care has improved** – From waiver year 1 to waiver year 4, the number of HFS family planning providers increased by 7.3%; and, approximately 80% of respondents on the IHW Customer Satisfaction Survey reported the ability to access primary care services, if they needed them.
- **IHW is cost effective** – HFS spent an average of \$277 per IHW enrollee for family planning services as compared to the average cost of pregnancy, delivery and the first year of an infant's life of \$10,172 (waiver year 4). An estimated total cost savings of approximately \$40.6 million in medical services has resulted from IHW to date, with a total projected savings over the life of the waiver of \$86.7 million.

Current Status of Perinatal Health for Illinois' Healthcare and Family Services Participants

The following information, based on State data (HFS paid claims matched with shared data from DHS' Cornerstone system and DPH's Vital Records) for 2007, shows what is currently known about HFS birth, including demographics, health care, outcomes and costs of services. Information from the combined data is presented in the summary to follow.

Birth Demographics

- HFS covers more than half of the live births in Illinois each year. HFS paid for 91,486 births in calendar year 2007. (Appendix I, Charts 1 and 2)
- Teenagers make up 10% of all births in Illinois, although the number of teenage births in the State is on the decline. From 2000 to 2006, the proportion of teen births covered by HFS as compared to all births covered by HFS decreased from 32% to 17.72%. HFS covers over 16,000 births to teens each year. In 2007, this number represented 90% of the total teen births in the State. (Appendix I, Charts 3 and 4)
- According to the 2006 Pregnancy Risk Assessment Monitoring System (PRAMS) data, approximately 57.3% of HFS births were unintended. This represents a decrease from 66% in 2003. Women eligible for HFS' medical programs (or low-income women) are more likely to have an unintended birth than women not eligible for HFS' medical programs. (Appendix I, Chart 5)
- Sixty-three percent of HFS births were subsequent births (2nd or higher). (Appendix I, Chart 6) Seventeen percent (17%) had a birth interval of less than 18 months and 30% had a birth interval of less than 24 months. This presents an opportunity to address the health care needs of these women, including reproductive health, during the interconception period. Research concludes that birth intervals of between 18 and 24 months are optimal for better birth outcomes. (Appendix I, Chart 7)

Delivery

- Seventy-three (73) percent of the HFS births were delivered vaginally, while 27% were delivered by a cesarean section in calendar year 2007. The rate for first time HFS births is comparable at 26%. Vaginal deliveries decreased from 80% to 73%, and cesarean section deliveries increased from 20% to 27% from 2001 to 2007. The rate of HFS vaginal and cesarean section deliveries is consistent with the rate of the overall population in Illinois and nationally. (Appendix I, Chart 8)

A recent March of Dimes study showed an increase in the proportion of births delivered between 34-39 weeks of nearly 20% along with a nearly 26% *decrease* in births occurring after 39 weeks from 1992 to 2002. The study also showed that increasing rates of cesarean section deliveries and induced births have contributed to this shift. In some instances, cesarean section deliveries are occurring when not medically indicated and reflect non-medical concerns such as logistical reasons, scheduling and patient

preference. Late preterm infants have a higher risk of serious health problems compared to full term infants and the infant mortality rate is three times higher for late preterm infants than for full term infants.⁸ This presents an opportunity for provider and patient education on late preterm births and the associated risks.

Birth Outcomes

- Over one-third of HFS' births were considered non-normal in 2007. Non-normal births include Diagnosis Related Groupings (DRGs) of 385, 386, 387, 388, 389, 390, 985, 986, 987, and 989.⁹ (Appendix I, Chart 9)
- The rate of low birth weight (LBW) babies in Illinois for calendar year 2007 was 8.3%, with the rate for HFS at 9.1%. (Appendix I, Chart 11)
- The very low birth weight (VLBW) rate for Illinois was 1.6% for calendar year 2007, and has remained relatively unchanged since 2001. The VLBW rate for HFS is 1.7%. (Appendix I, Chart 12)
- Illinois' infant mortality rate has decreased significantly from 10.7 in 1990, to 6.6 in 2007. Although the infant mortality rate for African-Americans has continued to decrease, the racial disparity of the infant mortality rate continues to be dramatic, with the African-American rate almost three times higher than the white rate – 13.5 compared to 5.3. (Appendix I, Chart 13)
- The infant mortality rate for Illinois for calendar year 2006 was 7.1; the HFS rate was 8.1. The infant mortality rate for HFS infants decreased from 9.3 per 1,000 live births in calendar year 2000, to 8.1 per 1,000 live births in calendar year 2006, although the infant mortality rate for HFS continues to be higher than the statewide rate. (Appendix I, Chart 14)
- Only 84.4% of HFS-eligible women participate in WIC and/or FCM, and WIC and FCM participation continues to result in better birth outcomes than non-participation (Appendix I, Chart 15):
 - Women in FCM and/or WIC had a LBW rate of 8.5%, and those who did not participate experienced a LBW rate of 12.1%, significantly higher than those with the intervention. (Appendix I, Chart 16)
 - The VLBW rate of babies born to HFS-enrolled women who received WIC and/or FCM was 1.22%. HFS women who were without the intervention of WIC and/or FCM experienced a rate of 3.52% VLBW outcomes. This rate is more than three times higher than the rate of VLBW outcomes among women with intervention. (Appendix I, Chart 16)

⁸ March of Dimes, "Late Preterm Birth: Every Week Matters: Medical Perspectives on Prematurity" March 2006.

⁹ DRGs: 385, 985=Neonate, Died or Transferred to Another Acute Care Facility
386, 986= Extreme Immaturity or Respiratory Distress Syndrome, Neonate
387, 987=Prematurity with Major Problems
388=Prematurity without Major Problems
389, 989=Full Term Neonate with Major Problems
390= Neonate with Other Significant Problems

- The infant mortality rate among infants born to women who participated in both WIC and FCM was 6.3 per 1,000 in calendar year 2007, nearly one-third the rate (18.1) per 1,000 among infants born to HFS-eligible women who did not participate in either program. (Appendix I, Chart 16)

A significant opportunity exists in FCM/WIC for improving birth outcomes, but all women needing those services are not engaged in receiving them, pointing to the need for additional funding for outreach, case finding and program engagement. Additionally, the data analyzed shows the highest risk women with chronic conditions require more intense medical management and follow-up.

Prenatal and Postpartum Care

- HFS uses HEDIS measures to monitor the frequency and timing of prenatal care. The percentage of pregnant HFS women receiving less than 21% of recommended prenatal care visits has remained consistent between 2006 and 2008. The percentage of pregnant HFS women receiving more than 81% of recommended prenatal care visits increased slightly between 2006 and 2008. (Appendix I, Chart 18)
- The percentage of pregnant HFS women who received timely prenatal care visits has increased between 2006 and 2008, from 49% to 52%. Timely prenatal care visits are defined as visits occurring within the first trimester of the pregnancy, or within 42 days of enrollment in one of the HFS medical programs. (Appendix I, Chart 19)
- DPH administers the Illinois Perinatal System, which is a statewide system that provides services targeted to pregnant women with high-risk conditions and newborns requiring neonatal intensive care. There are ten regions throughout the state, each lead by an Administrative Perinatal Center, which must be part of a university or university affiliated hospital. The Perinatal System is being underutilized for high-risk births. Out of all the non-normal births, only 49% of VLBW, 26% of LBW, 33% of infant mortality, and 21% of all other non-normal births were receiving prenatal care at a Perinatal Level III facility. This represents an opportunity for improvement to assure that high-risk women receive appropriate referral to the Perinatal System with coordination between the primary care physician, the women's health care provider, and the Perinatal System. (Appendix, I, Chart 20)
- Of the 101,629 women enrolled in the PCCM program who received prenatal care in calendar year 2008, 42% received prenatal care from a PCCM network provider.
 - 23% of the women in the PCCM network who received prenatal care, received it from their designated primary care provider (PCP)/group.
 - 19% of the women in the PCCM network who received prenatal care, received it within the PCCM network, but not from their designated PCP/group.
 - 58% of women in the PCCM network received prenatal care outside the PCCM network.
 This represents an opportunity for improvement and the need for closer coordination within the PCCM program.
- The percentage of women whose delivery was paid for by HFS and who received postpartum care increased from 53% to 55% between 2006 and 2008. This represents an opportunity for improvement, to ensure postpartum care is received and reproductive

health services, including family planning to promote planned pregnancies, is obtained interconceptionally. (Appendix I, Chart 21)

Risk Factors

According to 2006 PRAMS data:

- HFS women reported significantly higher percentages of abuse when compared to non-HFS women. Almost 6% of HFS women reported abuse before pregnancy compared to 1.1% of non-HFS women. More than 3% of HFS women reported abuse during pregnancy, compared to 0% for non-HFS women. Women who had given birth to low birth weight babies reported significantly higher rates of abuse from ex-husbands/ex-partners during pregnancy when compared with women who had given birth to normal birth weight babies. Over 5% of women with low birth weight babies reported abuse before pregnancy compared to over 3% of women with normal weight babies. Over 3% of women with low birth weight babies reported abuse during pregnancy compared to 1.5% of women with normal weight babies. (Appendix I, Chart 22)
- HFS women are less likely to use alcohol before and during pregnancy than non-HFS women. About 38% of HFS women reported using alcohol before pregnancy compared to 64% of non-HFS women. During pregnancy, 4.3% of HFS women reported using alcohol, compared to 9.2 of non-HFS women. (Appendix I, Chart 23)
- HFS women are considerably more likely to smoke than non-HFS women before, during, and after pregnancy. Twenty-seven percent (27.1%) of HFS women smoked before pregnancy, 18% during pregnancy, and 23.6% after pregnancy, compared to 16% of non-HFS women who smoked before pregnancy, 4.7% who smoked during pregnancy, and 8.8% who smoked after pregnancy. (Appendix I, Chart 24)
- HFS women reported being diagnosed with depression at a significantly higher rate than non-HFS women. Almost 11% of HFS women reported a depression diagnosis compared with 4.5% of non-HFS women. (Appendix I, Chart 26)
- According to HFS claims data, the number of perinatal depression screenings has continued to increase from 2006 to 2008. Women who received only prenatal screenings increased from 24% to 27%; women who received only postpartum screenings increased from 13.5% to 19.5%; and women who received both prenatal and postpartum screenings increased from 8% to 12.6%. (Appendix I, Chart 27)
- According to DHS data, the number of women receiving DASA supported substance abuse treatment and recovery services has steadily declined from 33,043 in FY 2005 to 25,009 in FY 2009, due to State funding cuts. This is unfortunate, and presents an opportunity for improvement since studies have shown reduced rates of adverse birth outcomes for women actively engaged in residential rehabilitation and significantly reduced costs for infants born drug free compared to drug exposed infants. (Appendix I, Chart 28)
- Using a predictive analytics approach, HFS developed an odds ratio to determine if HFS women who delivered in 2007 with a pre-existing situation are more likely to have an adverse birth outcome than average. Appendix I, Chart 31, shows that the following

conditions are likely to result in an adverse outcome: of low birth weight, very low birth weight or infant mortality:

- Previous moderate low birth weight
- Previous multiple births
- Mental health disorder
- Third trimester premature labor
- Previous very low birth weight
- Uterine bleed

Note in Appendix I, Chart 31, that an odds ratio of greater than one indicates a higher probability of an adverse outcome. The confidence interval of each odds ratio must also be considered. It is important to consider both the odds ratio and the confidence interval to determine whether the risk factor is one that would be appropriate to target with a “population-based” intervention. Only women who have previously given birth were used for the analysis. Women may be counted in more than one pre-existing situation. This information provides an opportunity for HFS to target women with these previous outcomes and health conditions for more intensive interventions designed to improve subsequent birth outcomes.

Family Planning

- Just over half of HFS women who gave birth in 2007 were using family planning services (birth control) within six months after delivery. (Appendix I, Chart 32)

HFS Eligibility

- Of all HFS women who gave birth in 2007, 46% were eligible nine or more months before delivery and 65% were eligible nine or more months after delivery. (Appendix I, Chart 33)
- Of women who experienced a poor birth outcome in 2007, 50% are eligible nine or more months prior to delivery and nearly 68% are eligible nine or more months after delivery. This represents a significant opportunity to engage the majority of these women who were covered by HFS for delivery in an interconception care model. (Appendix I, Chart 34)

Birth Costs

- About one-third of HFS births are non-normal, but account for more than two-thirds of the total birth costs. (Appendix I, Chart 35)
- While normal births cost nearly \$282 million in 2007, averaging \$5,333 per birth, non-normal births cost \$595 million the same year, for an average cost of 19,278 per birth. HFS can realize cost savings while improving health outcomes by reducing the number of women experiencing non-normal births, including low birth weight, very low birth weight, and infant mortality. (Appendix I, Chart 35)
- While VLBW represents less than 2% of birth outcomes, it accounts for almost 60% of the average costs of births (prenatal care, delivery and first year of life in 2007). (Appendix I, Chart 36)

- HFS estimates that considerable savings can be made by shortening the length of stay in the Neonatal Intensive Care Unit setting. Initial estimates project a savings of over \$800,000 for every 1% decrease in length of stay. For a 15% decrease, the savings is estimated at over \$12 million.

Future Direction for 2010 and 2011: Preconception Care for All Women, Maternity Care and Interconception Care for High-Risk Women

The data presented herein show that while birth outcomes are improving, there is still much to be accomplished. Starting in 2010, HFS proposes to begin the spread of new models of care, including preconception care for all women and prenatal and interconception care for high-risk women. This plan is consistent with Public Act 96-0799, effective October 2009, which allows HFS to undertake a pilot project to study patient outcomes for patients at risk of low birth weight or premature birth, which includes all medical and other conditions that lead to poor birth outcomes or problematic pregnancies.

While early and adequate prenatal care is an important part of a healthy pregnancy, there are other factors to consider as well. A healthy pregnancy also depends on a number of factors before pregnancy, such as a woman's health status, preventive care, and eliminating risk-taking behaviors. A good example of preventive care is folic acid, which taken before and early in a pregnancy, can reduce the risk of neural tube defects. Quitting smoking can reduce the risk of a premature birth and subsequent infant health issues. Stopping alcohol use can eliminate the risk of fetal alcohol syndrome. Prenatal care is only part of the equation – addressing issues that contribute to poor birth outcomes preconceptionally or interconceptionally is the other part. In addition, indicators of chronic conditions, which lead to adverse birth outcomes that need to be addressed, such as mental health, should be identified on an ongoing basis through predictive analytics of claims and other data, e.g., Vital Records match.

Extensive research has been accomplished on preconception and interconception care. HFS conducted a literature review to identify evidence-based best practices and proven interventions. The following models are based on information gleaned from the literature review and from HFS claims data and Vital Records. Recommendations from a "Peer Review" session held in October 2009, which sought input from experts in the field of perinatal health, including physicians, advanced practice nurses, provider organizations, academia, researchers, advocacy groups, and sister State agencies have also been incorporated into the models. The models are targeted to different groups of women, but have the same objectives: improving the overall health of women, reducing unintended pregnancies, increasing the use of family planning services/birth control, increasing interpregnancy spacing intervals and reducing risk factors, all of which will improve birth outcomes. In addition, a Request for Information (RFI) will be released in order to obtain other information and best practice strategies that have been employed for improving birth outcomes.

Under each of the models, HFS will work with the provider community to develop care guidelines, actionable steps, provider training, and to better coordinate care and assure appropriate referrals. HFS proposes to integrate these new models of care into existing programs, such as its PCCM program, MCO program and the established Perinatal System.

All Women

Preconception Care

This model is targeted to all women of childbearing age and is intended to promote preconception care at every opportunity. Preconception care will be integrated into the existing delivery systems of care – fee-for-service, PCCM, and MCOs working with the provider organizations representing primary care providers serving adolescents and women of childbearing age, preconception care will focus on promotion, provider training and technical assistance. Care guidelines will address:

- Annual preconception/preventive visit
- Planned pregnancies: family planning and reproductive life planning a component part of every health care visit
- Folic acid
- Preconception risk assessment; address all risk factors; counseling on healthy lifestyle; appropriate referrals
- Mental health screening, assessment and treatment, or referral, as needed
- Smoking cessation counseling, as needed
- Postpartum care
- Life stressors (homelessness, unemployment, domestic violence)

Preconception care is an important strategy in promoting planned pregnancies and thus, improving birth outcomes. With preconception care, physicians will be able to educate and encourage women to take the necessary steps to lead healthy lives, to eliminate risks (take folic acid, stop smoking, alcohol and drug use, eliminate environmental risks) and address chronic conditions, resulting in improved health outcomes.

High-Risk Women

HFS data shows that about two-thirds of women have had two or more pregnancies paid by HFS. This means that HFS has claims data regarding their previous pregnancy(ies) and information about chronic health conditions or other risk factors that may contribute to poor birth outcomes. This data, coupled with Vital Records, is a valuable tool to identify women who are at risk for a poor birth outcome, since a previous poor birth outcome is the single biggest predictor of a subsequent poor birth outcome.

HFS will use claims data and matched birth file data to identify high-risk women. Two separate populations of high-risk women are being targeted. The first is pregnant women who have had a previous poor birth outcome or who have risk factors that contribute to poor birth outcomes. A high-risk prenatal care model will be developed for these women. The second population consists of women who are not pregnant, who have a recent poor birth outcome or who have risk factors that contribute to poor birth outcomes. A high-risk interconception care model will be developed for these women.

HFS proposes to use a predictive analytics approach to identify high-risk women. This approach will use claims data and matched birth files to analyze birth outcomes and health information of HFS women to identify risk factors. Logistic regression will be used to identify risk factors that may lead to poor birth outcomes, with an odds ratio used to predict the likelihood of a poor birth outcome attributable to certain risk factors. Once the high-risk

women are identified, they will be flagged and targeted for the more intensive interventions of the high-risk models. Data to date identifies that targeting childbearing age women for intervention who have experienced a recent previous very low birth weight, low birth weight or infant death outcome has promise to improve subsequent births, and reduce health care costs.

A reimbursement strategy will be investigated that considers reimbursing providers for the high-risk coordination required in medical management of these high-risk women. In addition, a number of components currently included in the PCCM model will be adapted for providers of high-risk women. Clinical indicators will be developed and incentives will be considered for payment to providers who meet the indicators – an expansion of the pay-for-performance model from primary care to prenatal and interconception care. Providers will receive feedback on their performance in relation to expectations and how they compare to other providers.

Client education and engagement is another important part of the strategies for caring for high-risk women. A case management component will be employed to help women understand the importance of compliance with their care regimen, to provide assistance with barriers, and to encourage them to establish life planning goals, including goals related to health, reproductive and family planning goals, and life goals. Coordination with the FCM program for outreach of these high-risk women and integration of the Perinatal System into the strategy has promise to improve care and compliance.

High-Risk Prenatal Care

This model is targeted to pregnant women who have had a previous poor birth outcome or who have risk factors that contribute to poor birth outcomes. An important part of this model will be early identification of women as soon as they become pregnant. A mechanism will be developed for providers to notify HFS immediately when determining that a woman is pregnant. Based on the predictive analytics approach described above, women who are at-risk will be flagged on HFS' files. HFS can then alert the provider that the woman is considered high-risk and provide a profile that details the high-risk factors. High-risk prenatal care will be integrated into the existing delivery systems of care – fee-for-service, PCCM, and managed care organizations. Care guidelines will address:

- Prenatal care for high-risk women
- Risk assessment; address all risk factors; counseling and guidance; appropriate referrals
- Care related to other chronic conditions
- Appropriate referrals to perinatal specialty care through the Perinatal System; feedback from specialist to the referring provider; eventual transfer of the patient back to the referring provider
- Minimum data set for delivery – providers required to submit certain information to HFS pertaining to the woman's pregnancy, including test results and problems; providers will be reimbursed for submitting the information and the information will be available to delivery hospitals, electronically
- Postpartum care – postpartum care is the first step to a continuum of care for women, providing an opportunity to reinforce messages about healthy lifestyles and family planning/birth control

- Transfer of high-risk women to the interconceptional care model to promote 24 months or more spacing between pregnancies, address chronic conditions, and promote planned pregnancies, if and when the women wish to conceive

This model attempts to address problems with the current system of care. Anecdotal information from the provider community indicates that many prenatal care providers may resist making referrals to the Perinatal System for perinatal specialty care because they do not receive feedback from the specialty providers about the women's condition/progress and the women are not transferred back to the referring provider for ongoing care. This needs to be further assessed and as needed, addressed. An ongoing problem for delivery hospitals is that women present in labor and the hospital has no knowledge of the women. It is critical for the hospital to have immediate access to information related to the woman's pregnancy, including results of lab tests and identification of problems with the pregnancy. When the hospital has no knowledge of a woman, they must perform lab tests to assess the woman's status and identify problems so the woman can be treated appropriately (an example is HIV testing), which often results in duplication of services and additional costs, which can be avoided. Addressing problems with the current health care system, early identification, and a more intensive level of care for these women are expected to result in improved birth outcomes.

For those births that require neonatal intensive care, another strategy will be employed to assist hospitals in providing intensive care coordination for these infants. The PCCM program will be utilized to assure that the special health care needs of these infants are addressed. This strategy is intended to reduce the lengths of stay in the neonatal intensive care unit (NICU) and is expected to result in significant cost savings.

High-Risk Interconception Care

This model is targeted to women who have had a recent poor birth outcome. An important part of this model will be early identification of women as soon as they deliver or for those who have delivered in the past year with results of an adverse pregnancy outcome. A mechanism will be developed for hospitals to notify HFS or its QIO immediately upon delivery by HFS women, with information about the outcome. These women will be flagged on HFS' files and based on the predictive analytics approach described above, any of these women who are at-risk due to health status will also be flagged. HFS can then alert the provider and the case manager to engage these women in the more intensive interconception intervention. Providers will receive a profile that details the high-risk factors. High-risk interconception care will be integrated into the existing delivery systems of care – fee-for-service, PCCM, and managed care organizations. Care guidelines will address:

- Postpartum care for high-risk women
- Interconception care for high-risk women
- Risk assessment; address all risk factors; counseling and guidance; appropriate referrals
- Care related to other chronic conditions
- Planned pregnancies: family planning and reproductive life planning a component part of every health care visit
- Folic acid
- Life stressors (homelessness, unemployment, domestic violence)

This model will focus on health education, addressing chronic health conditions, assuring that women set reproductive and life planning goals, and increasing interpregnancy spacing intervals, with the result being that women delay and plan for healthy pregnancies.

Summary

The above interventions are in the early stages of development and will evolve based on being informed and further developed with stakeholder input. Lessons learned from the interconception care pilot in high-risk Chicago communities, Healthy Births for Healthy Communities, dictate that housing, job availability and life/goal planning should be considered and are important in improving health outcomes. Progress with planning and implementing the care model described above and as it evolves based on best practices will be reported in the 2012 Report to the General Assembly.

Appendix I - Charts/Maps

HFS Births

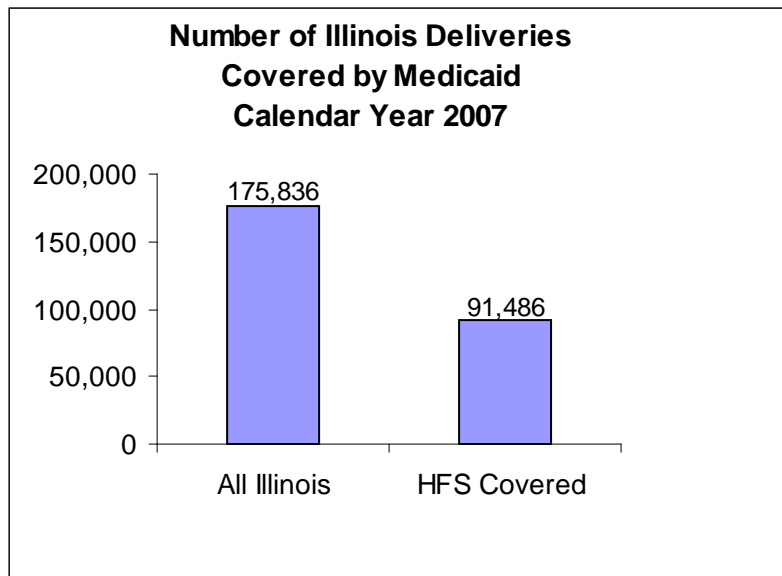


Chart 1: Illinois Department of Human Services, Birth File Match, 2007

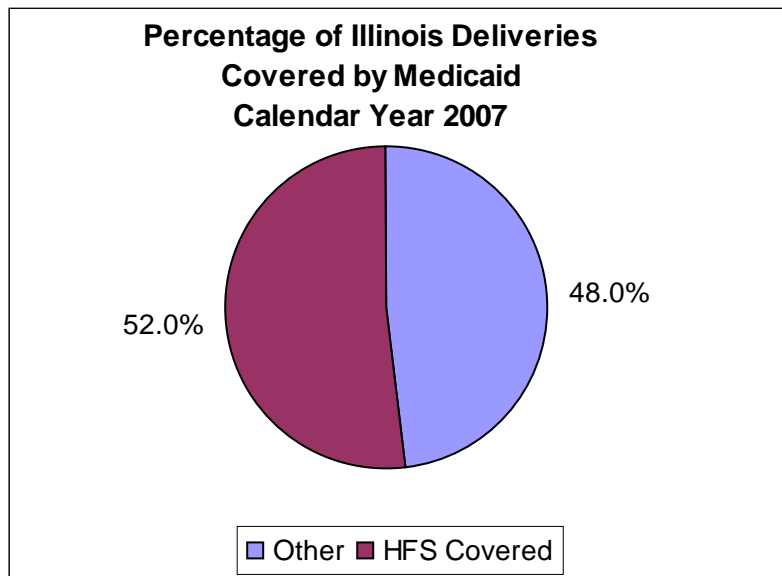


Chart 2: Illinois Department of Human Services, Birth File Match, 2007

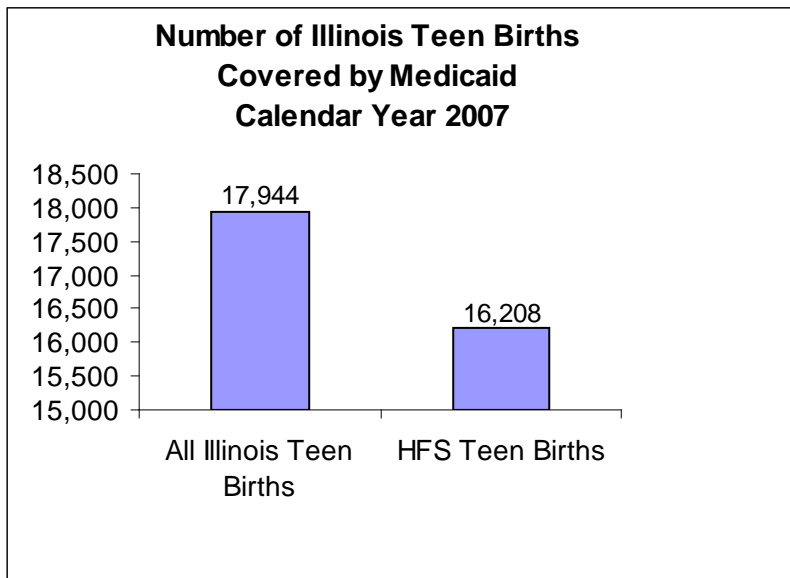


Chart 3: Illinois Department of Human Services, Birth File Match, 2007

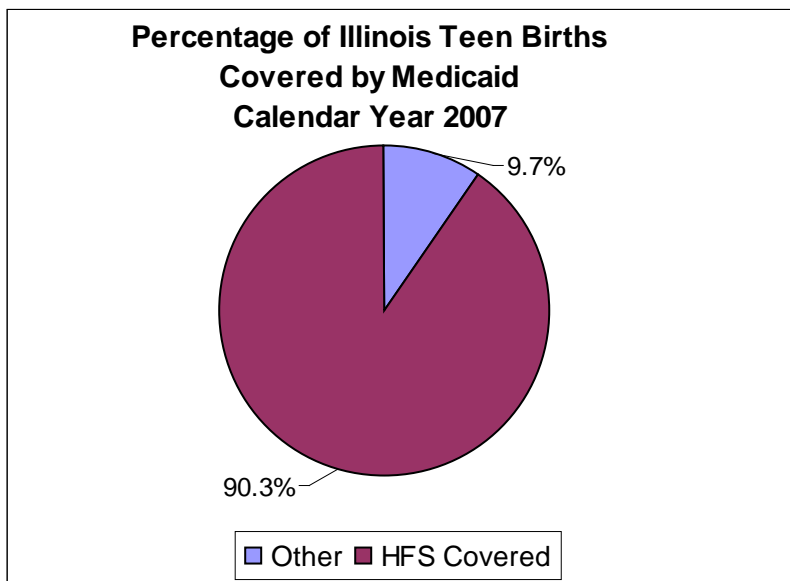


Chart 4: Illinois Department of Human Services, Birth File Match, 2007

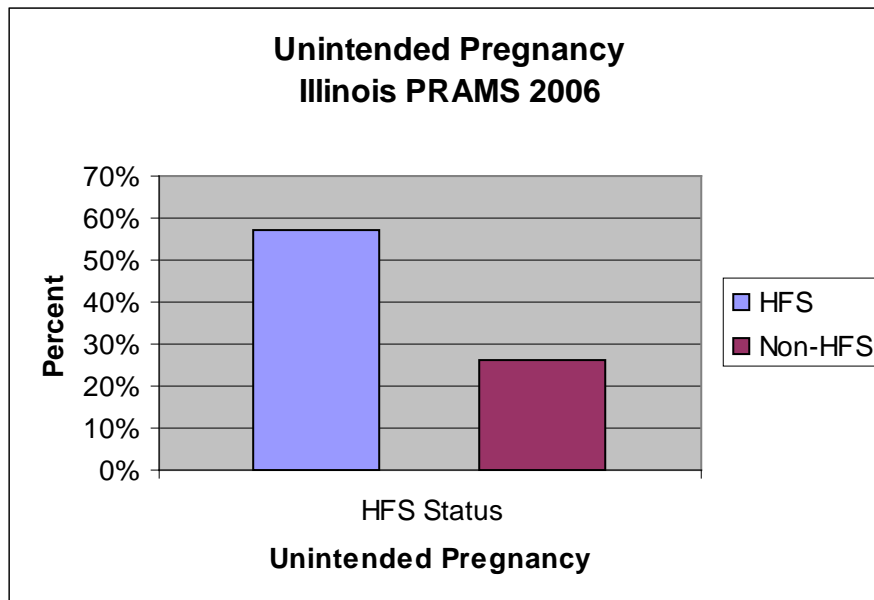


Chart 5: Illinois Department of Public Health, 2006 PRAMS

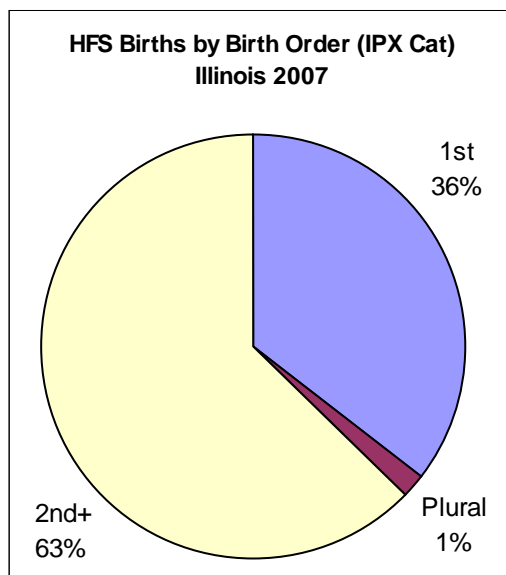


Chart 6: Illinois Department of Human Services, Birth File Match, 2007

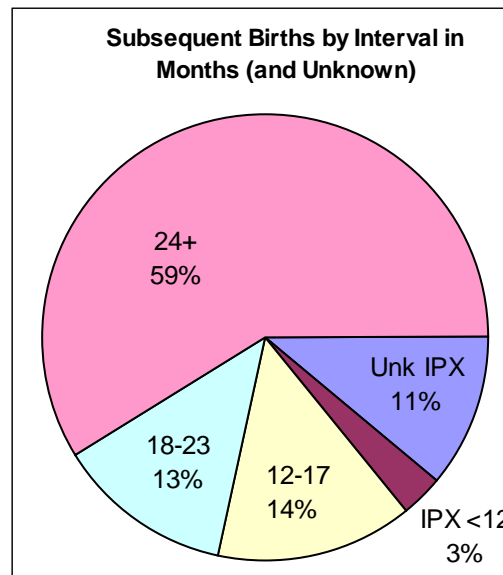


Chart 7: Illinois Department of Human Services, Birth File Match, 2007

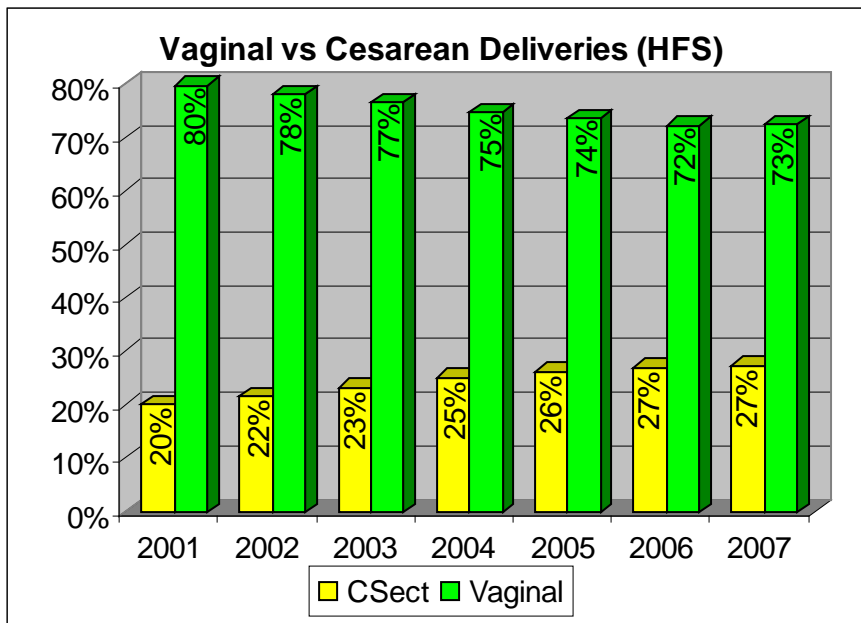


Chart 8: Illinois Department of Human Services, Birth File Match, 2001-2007

Birth Outcomes

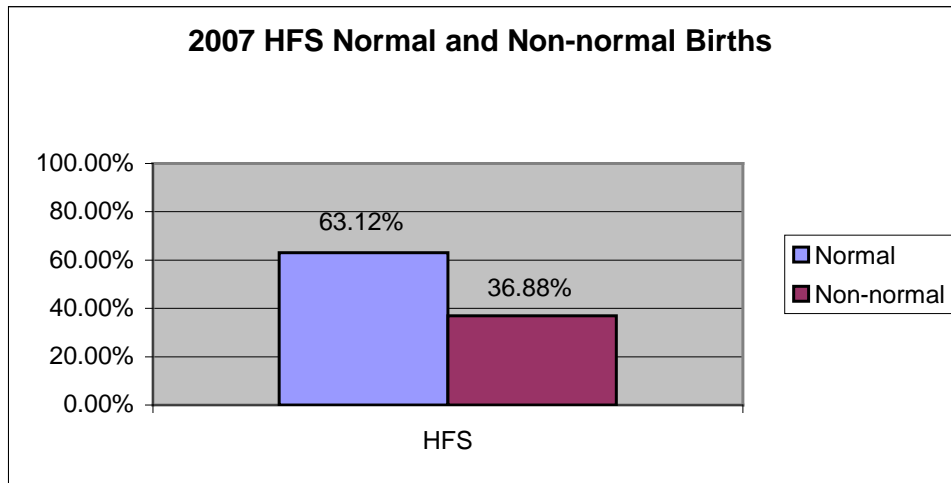


Chart 9: Healthcare and Family Services, Medical Data Warehouse, 2007

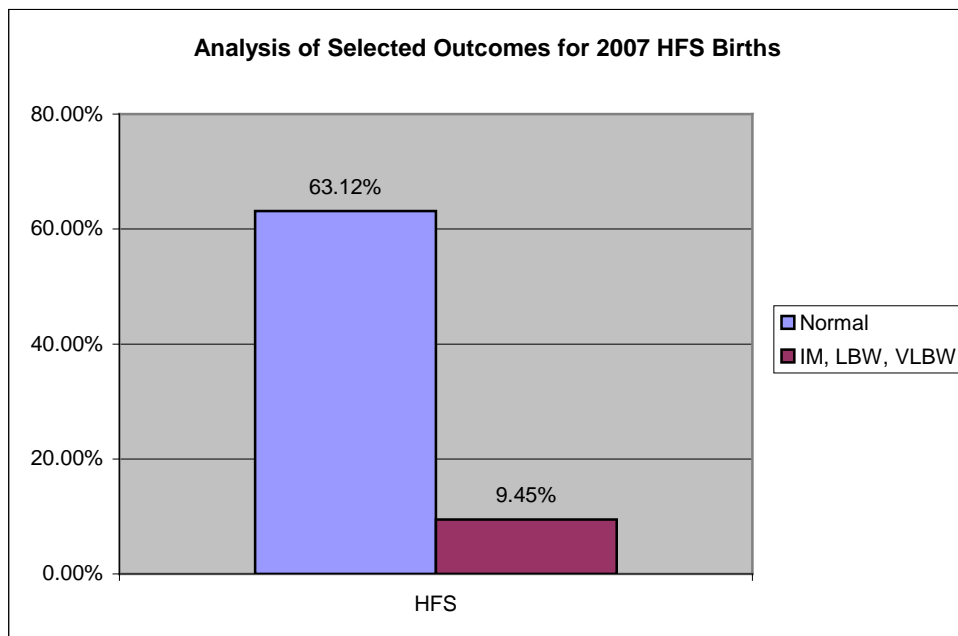


Chart 10: Healthcare and Family Services, Medical Data Warehouse, 2007

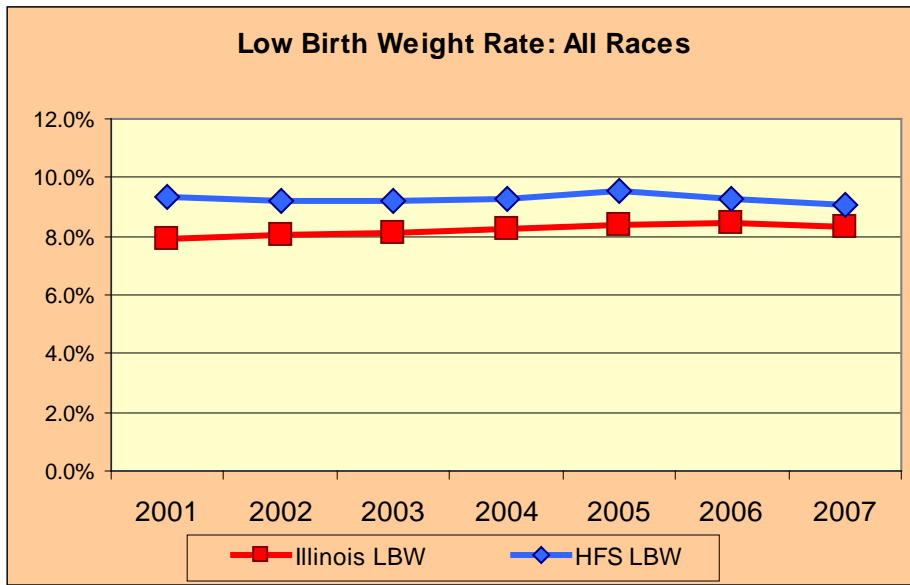


Chart 11: Illinois Department of Human Services, Birth File Match, 2007

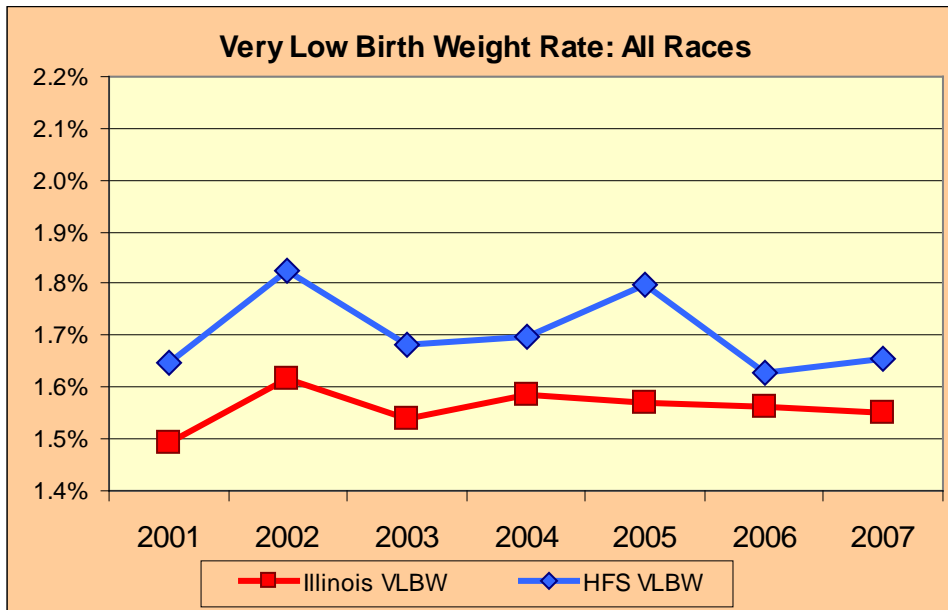


Chart 12: Illinois Department of Human Services, Birth File Match, 2007

**Illinois Infant Mortality
Rates are Per 1,000 Live Births**

Year	Number	Overall Rate	White	African-American
2007	1,196	6.6	5.3	13.5
2006	1,343	7.4	6.1	14.4
2005	1,294	7.2	5.7	15.4
2004	1,317	7.3	5.9	14.8
2003	1,380	7.6	6.1	15.6
2002	1,304	7.2	5.5	15.7
2001	1,379	7.5	5.9	14.9
2000	1,528	8.3	6.5	16.3
1999	1,504	8.3	6.2	17.4
1998	1,505	8.2	6.3	16.8
1997	1,476	8.2	6.2	16.5
1996	1,536	8.4	6.3	17.1
1995	1,724	9.3	7.2	18.2
1994	1,711	9.0	6.7	17.9
1993	1,838	9.6	7.1	18.8
1992	1,911	10.0	7.4	19.5
1991	2,068	10.7	7.9	21.1
1990	2,090	10.7	7.6	22.1

Chart 13: Illinois Center for Health Statistics, Illinois Department of Public Health, Vital Statistics, Illinois Mortality Statistics, 1990-2007

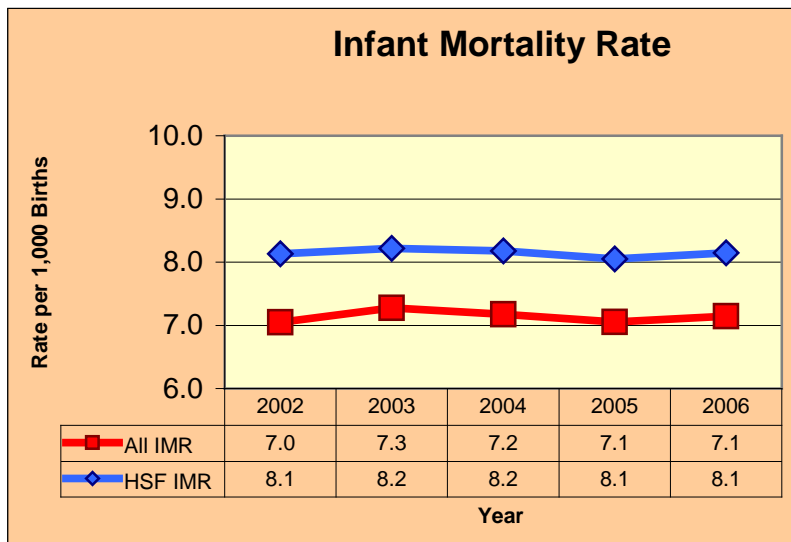


Chart 14: Illinois Department of Human Services, Birth File Match, 2002-2006

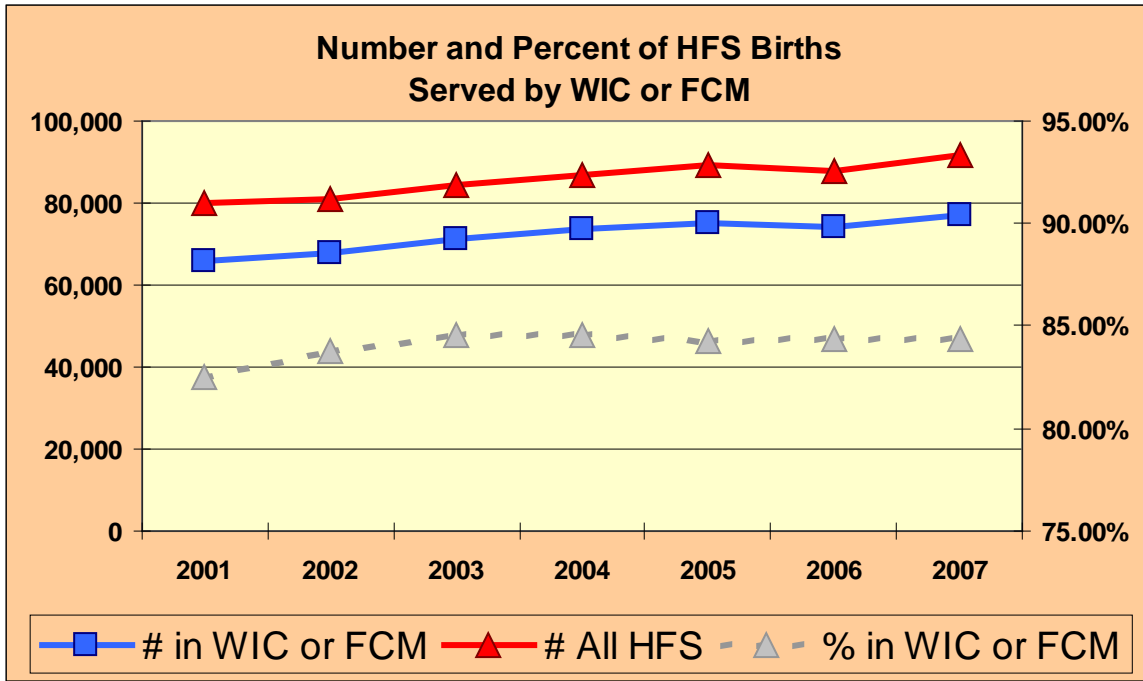


Chart 15: Illinois Department of Human Services, Birth File Match, 2007

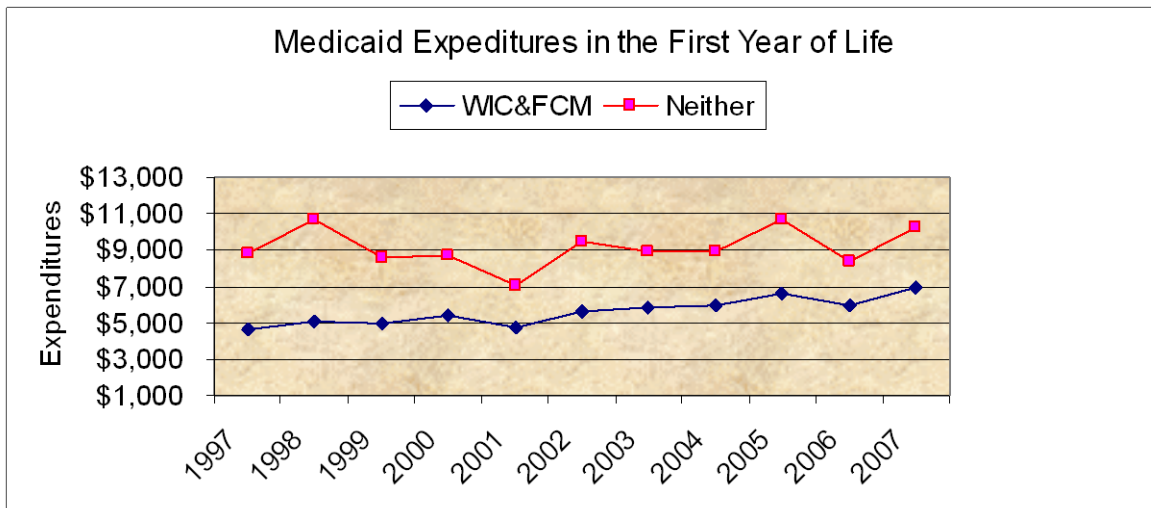


Chart 16: Illinois Department of Human Services, Birth File Match, 2007

Comparison of Outcome Measures Between HFS-Eligible Pregnant Women Who Did and Did Not Participate in WIC and FCM: 2007			
Outcome Measure	WIC & FCM	No Intervention	Percent Difference
VLBW	1.22%	3.52%	65.3%
LBW	8.5%	12.1%	29.6%
IM	6.3	18.1	65.1%
Avg. \$ 1st year of Life	\$6,900	\$10,252	32.7%

Chart 17: Illinois Department of Human Services, Birth File Match, 2007
(Infant Mortality Data is for 2006)

Prenatal and Postpartum Care

Frequency of Ongoing Prenatal Care Percentage of Pregnant Women Receiving Prenatal Care Visits

Year	<21% Visits	21-40% Visits	41-60% Visits	61-80% Visits	>=81% Visits
2006	11.41%	7.44%	12.55%	23.46%	45.13%
2007	11.29%	7.10%	12.27%	23.31%	46.03%
2008	11.31%	6.89%	11.95%	22.66%	47.20%

Chart 18: Healthcare and Family Services, Executive Information System, 2006-2008

Timeliness of Prenatal Care Percentage of Pregnant Women Receiving a Timely Prenatal Care Visit In the First Trimester or Within 42 Days of Enrollment

Year	% Timely
2006	49.19%
2007	50.18%
2008	52.20%

Chart 19: Healthcare and Family Services, Executive Information System, 2006-2008

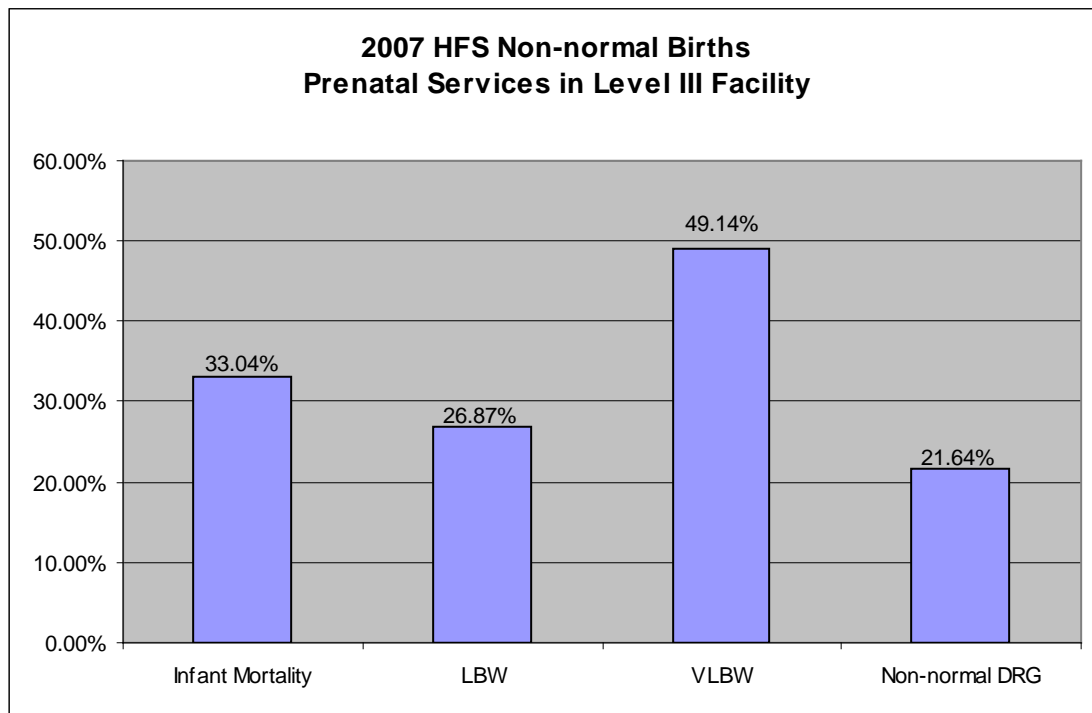


Chart 20: Healthcare and Family Services, Medical Data Warehouse, 2007

Postpartum Care Percentage of Women Receiving a Postpartum Care Visit

Year	%
2006	53.10%
2007	53.89%
2008	55.97%

Chart 21: Healthcare and Family Services, Executive Information System, 2006-2008

Risk Factors

Physical Abuse: Illinois PRAMS 2006

Abuse by Husband/Partner Before Pregnancy:	
Illinois	3.5%
HFS Women	5.9%
Non-HFS Women	1.1%
Abuse by Husband/Partner During Pregnancy:	
Illinois	1.7%
HFS Women	3.3%
Non-HFS Women	0%
Abuse by Ex-Husband/Ex-Partner Before Pregnancy:	
Illinois	3.6%
HFS Women	6.2%
Non-HFS Women	1.2%
Abuse by Ex-Husband/Ex-Partner During Pregnancy:	
Illinois	1.7%
HFS Women	3.1%
Non-HFS Women	0.3%

Chart 22: Illinois Department of Public Health, PRAMS, 2006

Prevalence of Drinking Before and During Pregnancy: Illinois PRAMS 2006

Women who drank 3 months before pregnancy:	
Illinois	51.4%
HFS Women	38.3%
Non-HFS Women	64.6%
Women who drank during last 3 months of pregnancy:	
Illinois	6.8%
HFS Women	4.3%
Non-HFS Women	9.2%

Chart 23: Illinois Department of Public Health, PRAMS, 2006

**Prevalence of Smoking Before and During Pregnancy:
Illinois PRAMS 2006**

Women who smoked 3 months before pregnancy:	
Illinois	21.7%
HFS Women	27.1%
Non-HFS Women	16.0%
Women who smoked during last 3 months of pregnancy:	
Illinois	11.4%
HFS Women	18.0%
Non-HFS Women	4.7%

Chart 24: Illinois Department of Public Health, PRAMS, 2007

Illinois Tobacco Quitline Calls for State Fiscal Year 2009

Description	Number
Total Calls	9,288
Self-Reported as Being Pregnant	123
Self Reported for Receiving WIC	174
Call Attributable to HFS Mailing	178
Female Callers	5,525
Children in Household under Age 5	751

Chart 25: Illinois Tobacco Quitline, Caller Report, SFY 2009

**Postpartum Depression Diagnosis:
Illinois PRAMS 2006**

Women With a Postpartum Depression Diagnosis:	
Illinois	7.6%
HFS Women	10.8%
Non-HFS Women	4.5%

Chart 26: Illinois Department of Public Health, PRAMS, 2007

**Perinatal Depression Screenings
Percent of Peripartum Women Receiving Perinatal Depression Screenings**

Year	Prenatal Only	Postpartum Only	Both
2006	23.96%	13.51%	7.9%
2007	26.08%	16.03%	10.3%
2008	27.07%	19.54%	12.6%

Chart 27: Healthcare and Family Services, Executive Information System, 2006-2008

**Women Served in DASA-Supported
Treatment and Recovery Services**

FY05	FY06	FY07	FY08	FY09
33,043	32,443	28,376	28,123	25,009

Chart 28: Illinois Department of Human Services, Division of Alcoholism and Substance Abuse, SFY 2005-2009

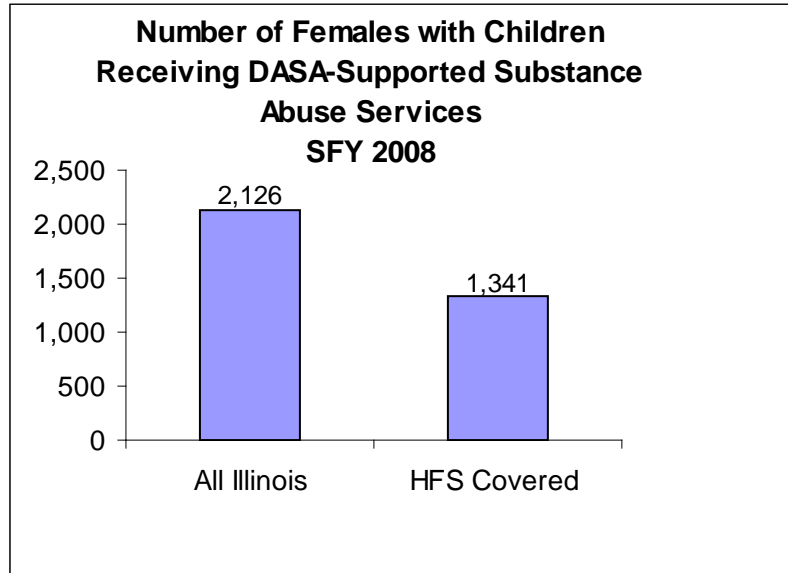


Chart 29: Illinois Department of Human Services, Division of Alcoholism and Substance Abuse, SFY 2008

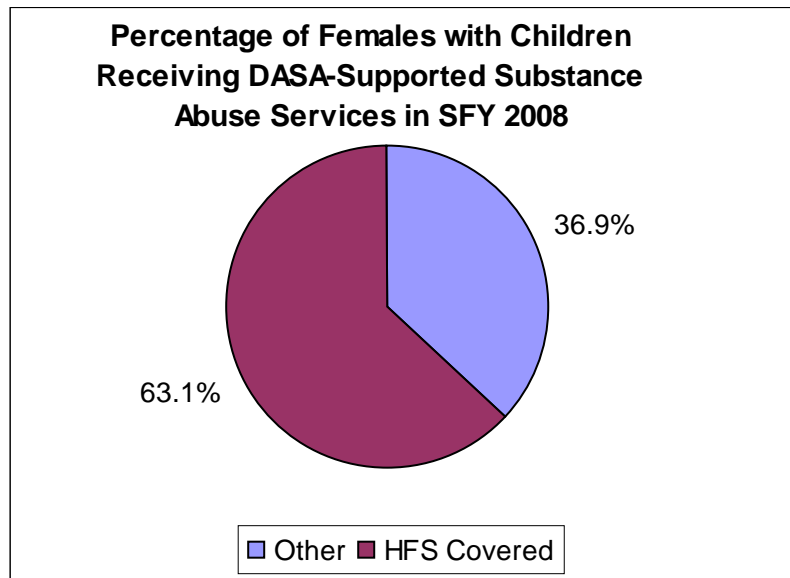


Chart 30: Illinois Department of Human Services, Division of Alcoholism and Substance Abuse, SFY 2008

Odds Ratio of Adverse Outcome for HFS Women With Pre-Existing Situation - 2007 Births

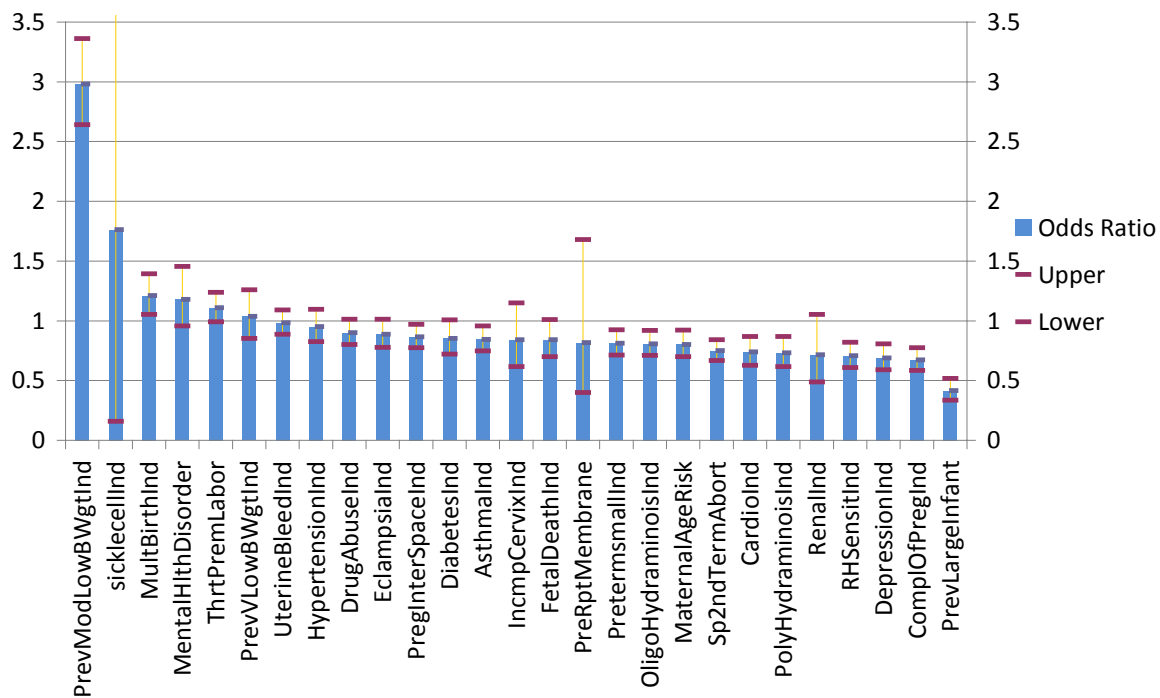


Chart 31: Healthcare and Family Services, Medical Data Warehouse, 2000-2007

Family Planning

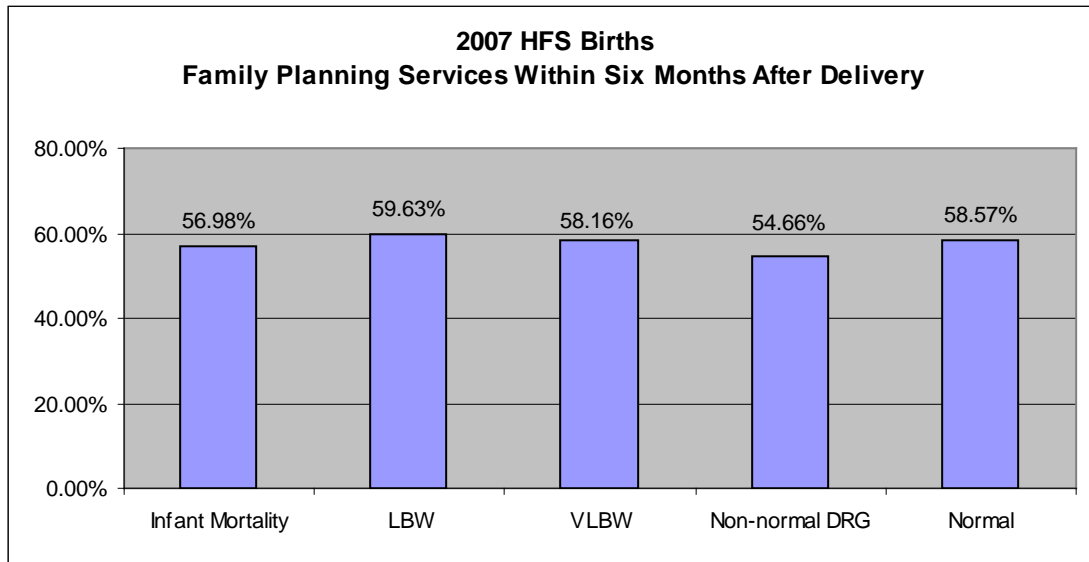


Chart 32: Healthcare and Family Services, Medical Data Warehouse, 2007

Eligibility

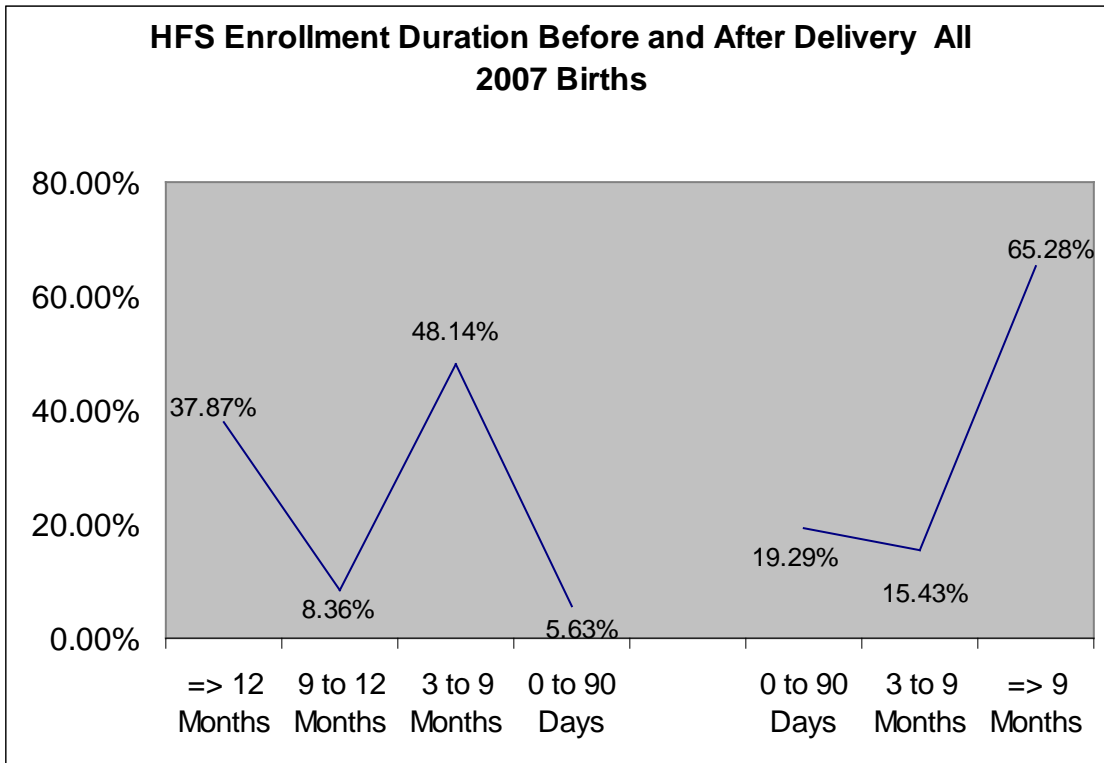


Chart 33: Healthcare and Family Services, Medical Data Warehouse, 2006-2008

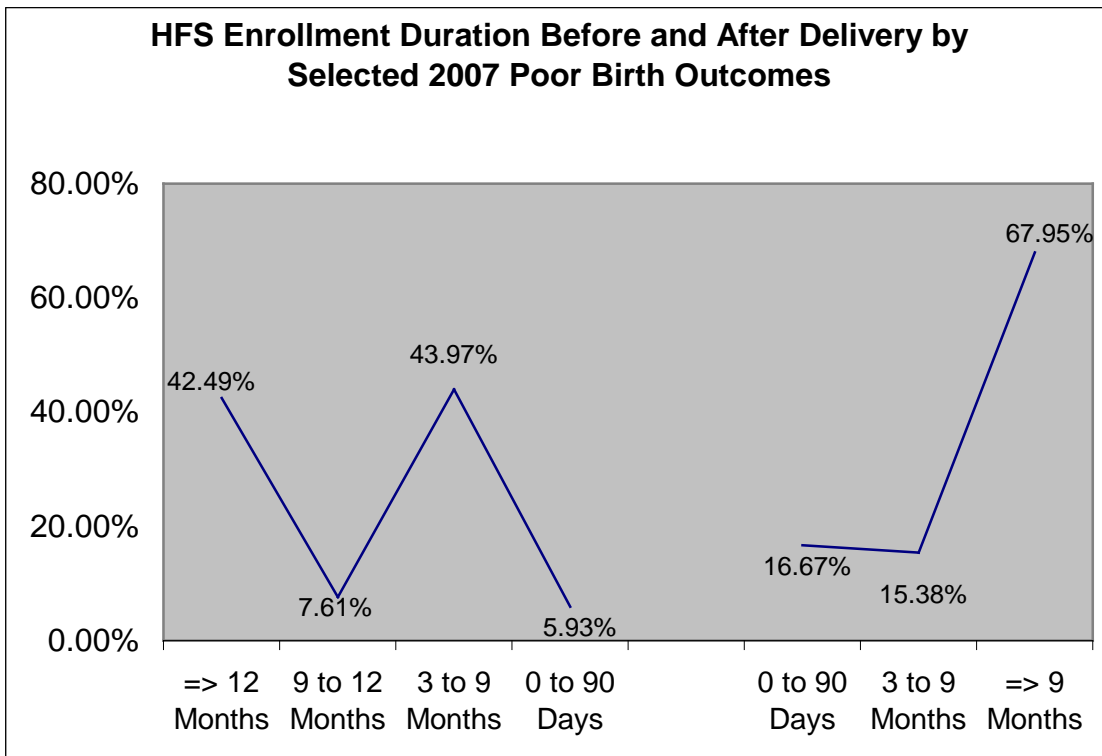


Chart 34: Healthcare and Family Services, Medical Data Warehouse, 2006-2008

Birth Costs

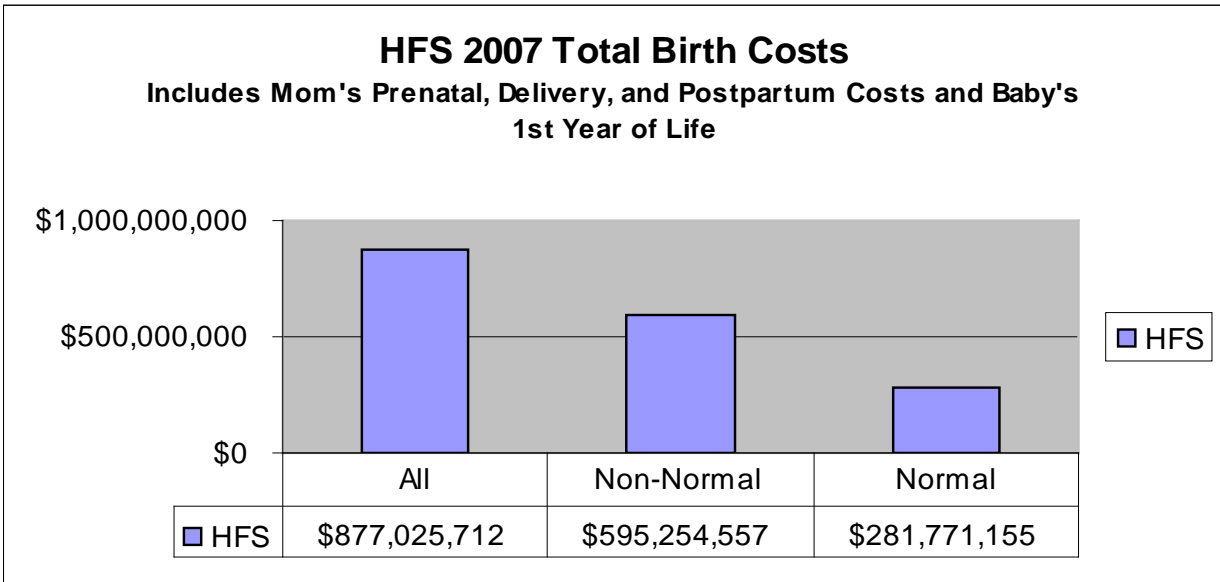


Chart 35 Healthcare and Family Services, Medical Data Warehouse, 2007
Non-normal DRGs: 385, 386, 387, 388, 389, 390, 985, 986, 987, 989

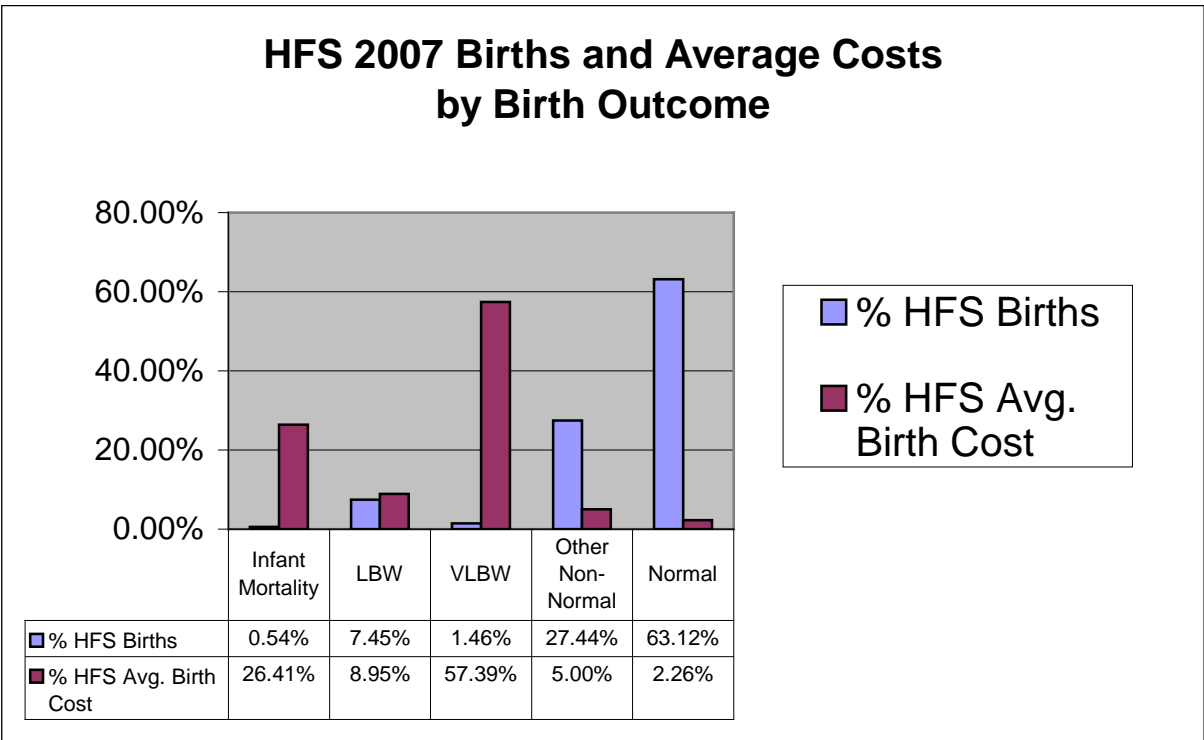
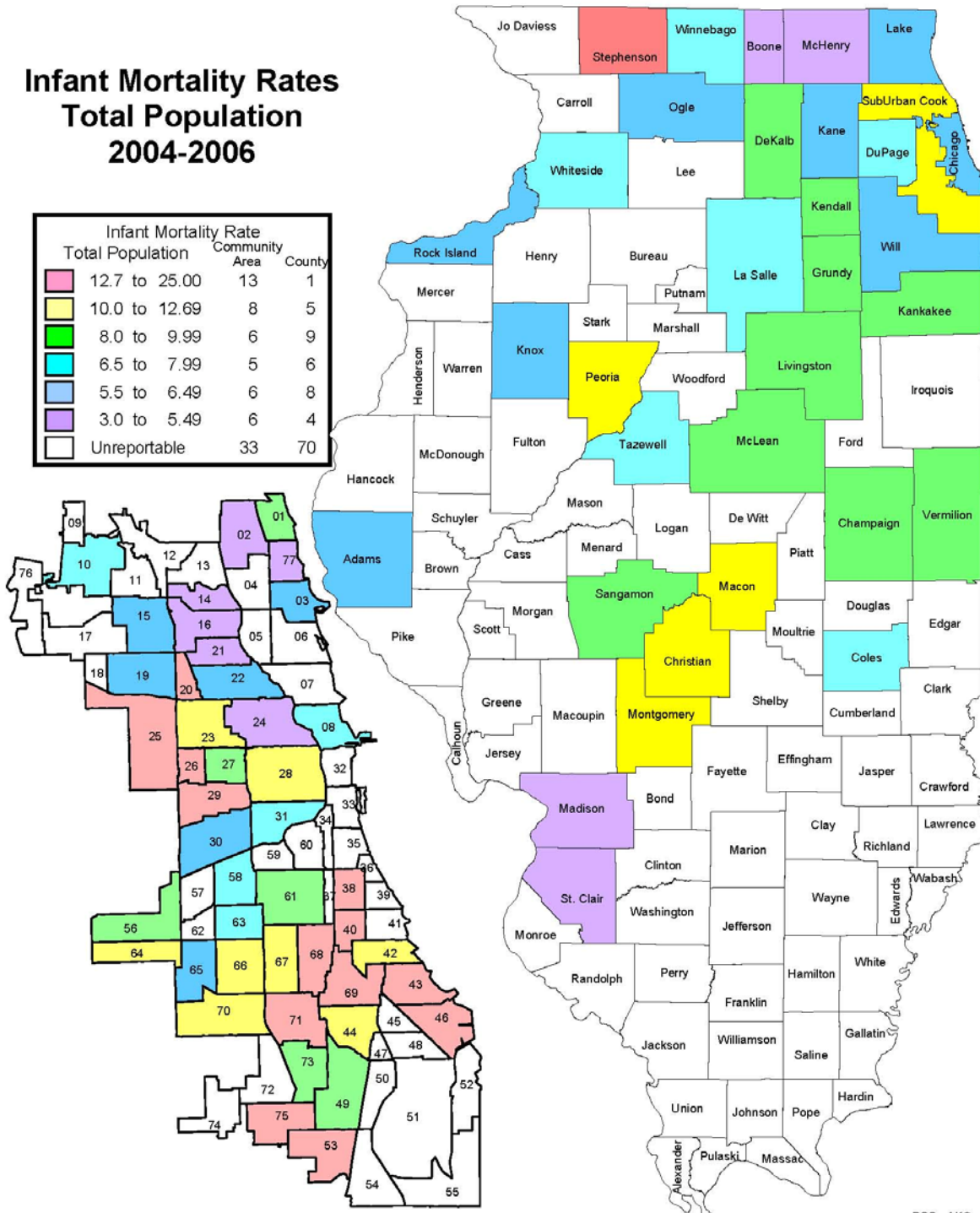


Chart 36: Healthcare and Family Services, Medical Data Warehouse, 2007

Infant Mortality Rates Total Population 2004-2006

Infant Mortality Rate		
Total Population	Community Area	County
12.7 to 25.00	13	1
10.0 to 12.69	8	5
8.0 to 9.99	6	9
6.5 to 7.99	5	6
5.5 to 6.49	6	8
3.0 to 5.49	6	4
Unreportable	33	70

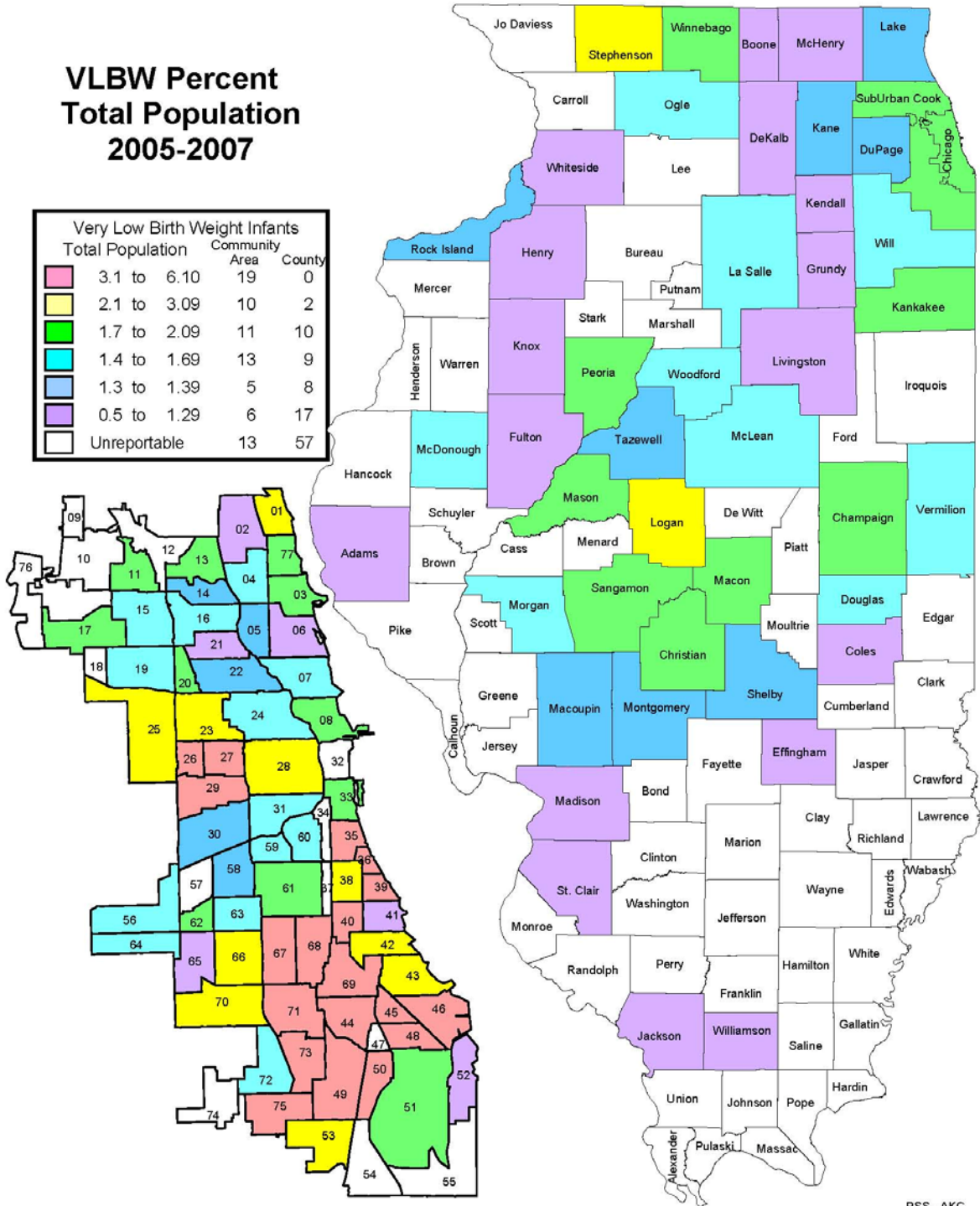


Map 1: Illinois Department of Human Services, Birthfile Match 2004-2006

PSS - AKC
November 2009

VLBW Percent Total Population 2005-2007

Very Low Birth Weight Infants		
Total Population	Community Area	County
3.1 to 6.10	19	0
2.1 to 3.09	10	2
1.7 to 2.09	11	10
1.4 to 1.69	13	9
1.3 to 1.39	5	8
0.5 to 1.29	6	17
Unreportable	13	57

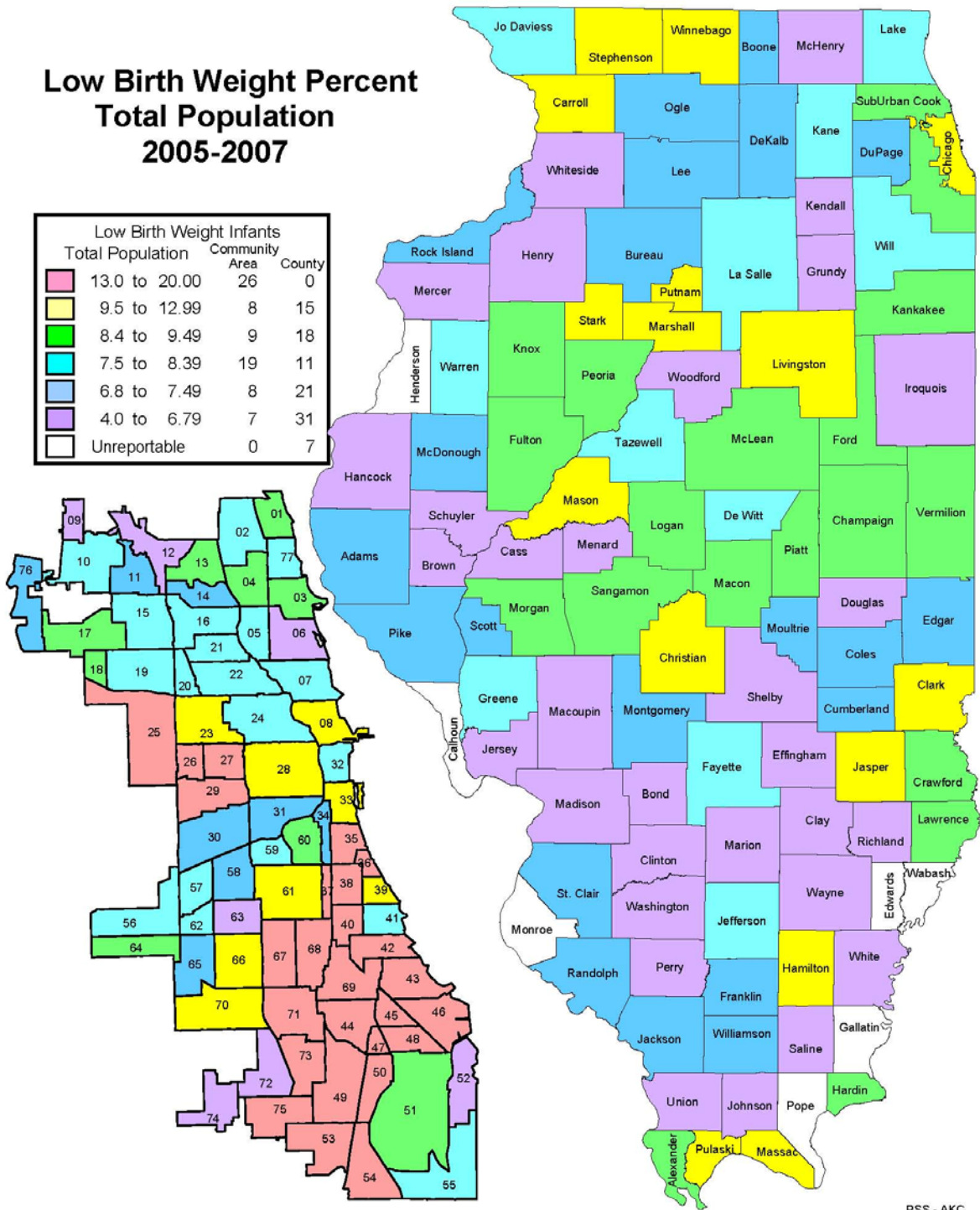


Map 2: Illinois Department of Human Services, Birthfile Match 2005-2007

PSS - AKC
November 2009

Low Birth Weight Percent Total Population 2005-2007

Low Birth Weight Infants Total Population		
Community Area	County	
13.0 to 20.00	26	0
9.5 to 12.99	8	15
8.4 to 9.49	9	18
7.5 to 8.39	19	11
6.8 to 7.49	8	21
4.0 to 6.79	7	31
Unreportable	0	7

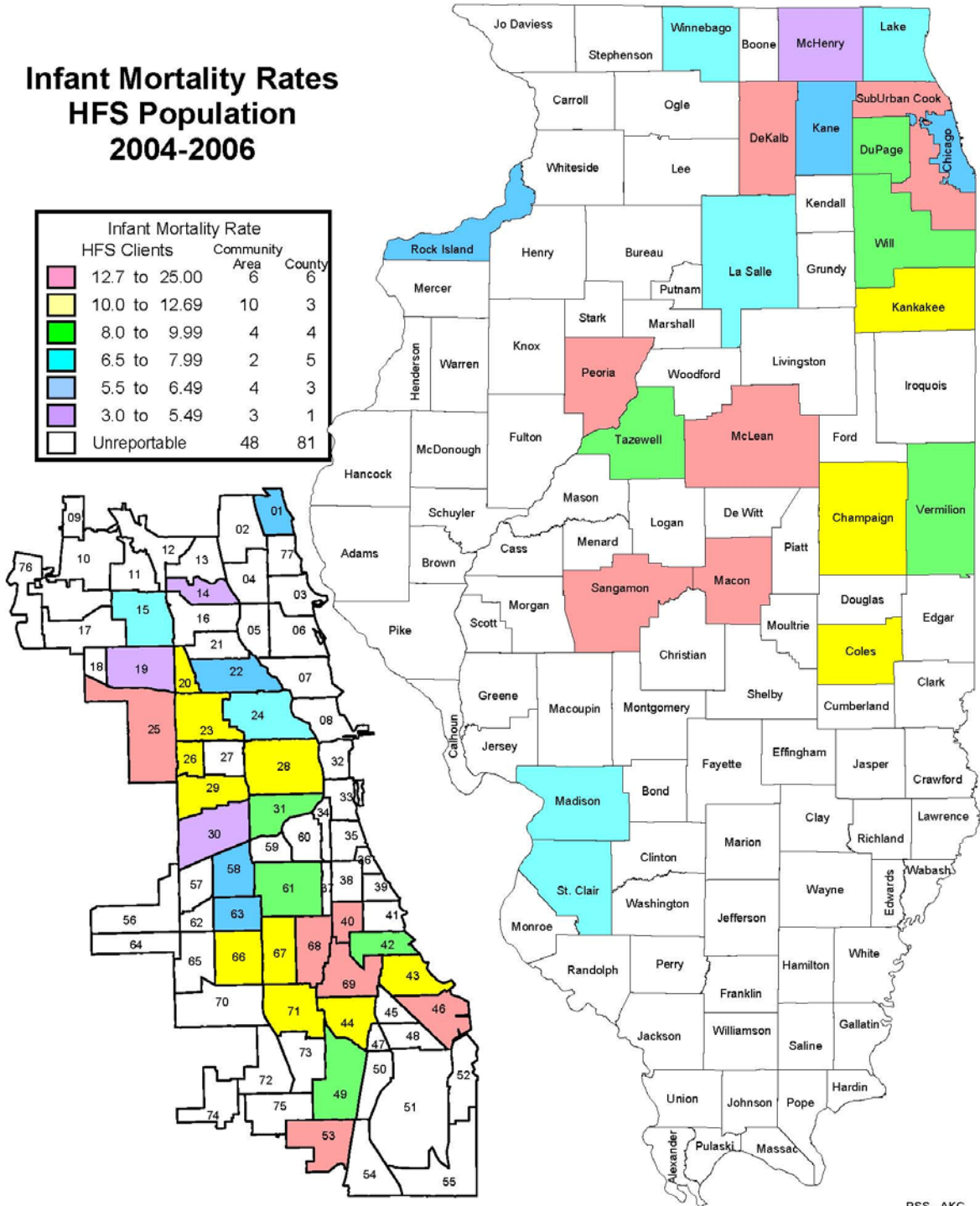


Map 3: Illinois Department of Human Services, Birthfile Match 2005-2007

PSS - AKC
November 2009

Infant Mortality Rates HFS Population 2004-2006

Infant Mortality Rate		
HFS Clients	Community Area	County
12.7 to 25.00	6	6
10.0 to 12.69	10	3
8.0 to 9.99	4	4
6.5 to 7.99	2	5
5.5 to 6.49	4	3
3.0 to 5.49	3	1
Unreportable	48	81

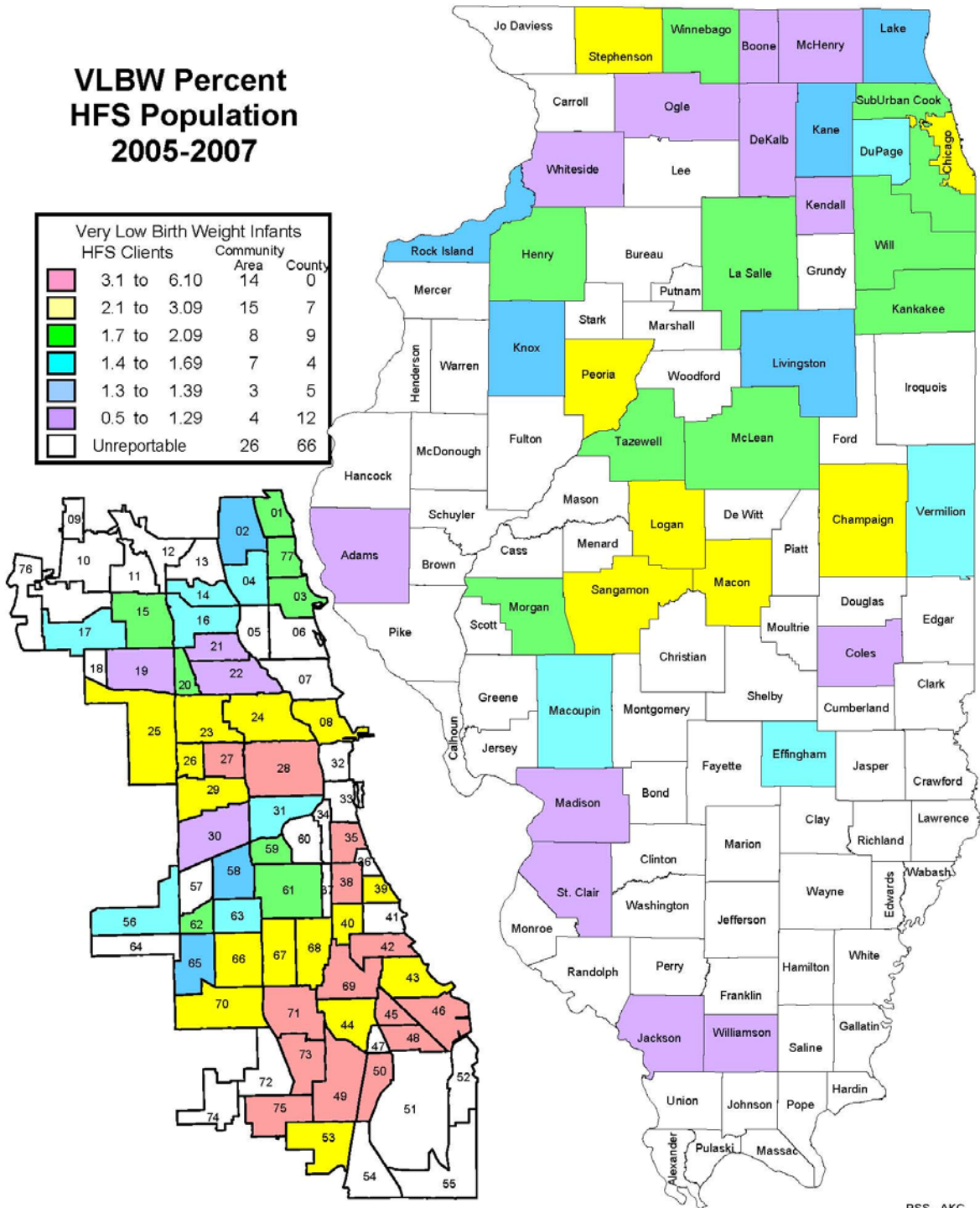


Map 4: Illinois Department of Human Services, Birthfile Match 2004-2006

PSS - AKC
November 2009

VLBW Percent HFS Population 2005-2007

Very Low Birth Weight Infants HFS Clients		
Community Area	County	
3.1 to 6.10	14	0
2.1 to 3.09	15	7
1.7 to 2.09	8	9
1.4 to 1.69	7	4
1.3 to 1.39	3	5
0.5 to 1.29	4	12
Unreportable	26	66

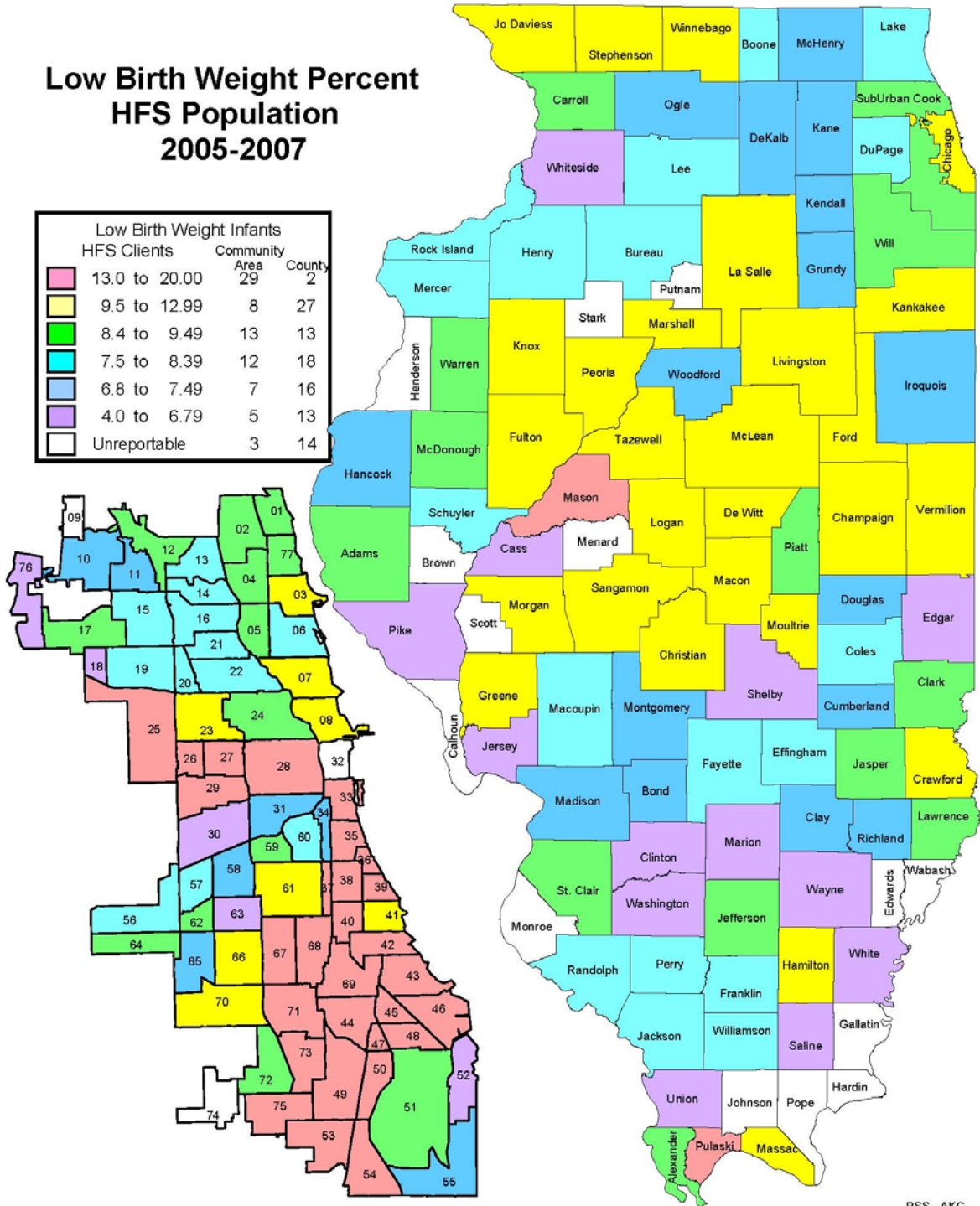


Map 5: Illinois Department of Human Services, Birthfile Match 2005-2007

PSS - AKC
November 2009

Low Birth Weight Percent HFS Population 2005-2007

Low Birth Weight Infants HFS Clients		
Community Area	County	
13.0 to 20.00	29	2
9.5 to 12.99	8	27
8.4 to 9.49	13	13
7.5 to 8.39	12	18
6.8 to 7.49	7	16
4.0 to 6.79	5	13
Unreportable	3	14



Map 6: Illinois Department of Human Services, Birthfile Match 2005-2007

PSS - AKC
November 2009

Appendix II – Acronyms

ACOG	American College of Obstetrics and Gynecology
APN	Advanced Practice Nurse
APORS	Adverse Pregnancy Outcome Reporting System
BFM	Birth File Match (performed by DHS)
CHIP	State Children’s Health Insurance Program Reauthorization Act
CMS	Centers for Medicare and Medicaid Services
CNM	Certified Nurse Midwife
DARTS	Data Automated Recording and Tracking System, administered by DHS/DASA
DASA	Division of Alcohol and Substance Abuse (DHS)
DHS	Illinois Department of Human Services
DRG	Diagnosis Related Grouping
DMH	Division of Mental Health (DHS)
DPH	Illinois Department of Public Health
EDOPC	Enhancing Developmentally Oriented Primary Care
EIS	Executive Information System
FCM	Family Case Management
HBHC	Healthy Births for Healthy Communities
HFS	Illinois Department of Healthcare and Family Services
HSI	HealthSystems of Illinois
HIV	Human Immunodeficiency Virus
ICAAP	Illinois Chapter of the American Academy of Pediatrics
IHW	Illinois Healthy Women Program
IM	Infant Mortality
LBW	Low Birth Weight
MCH	Maternal and Child Health
MCO	Managed Care Organization
NCHS	National Center for Health Statistics
NICU	Neonatal Intensive Care Unit
PCCM	Primary Care Case Management
PICC	Preconception/Interconception Care Committee
PRAMS	Pregnancy Risk Assessment Monitoring System
QIO	Quality Improvement Organization
TIP	Targeted Intensive Prenatal Case Management (administered by DHS)
UIC	University of Illinois at Chicago
VLBW	Very Low Birth Weight
WIC	Special Supplemental Nutrition Program for Women, Infants and Children

Appendix III – Bibliography of Preconception/Interconception Literature Review

Allaire, Alexander and Cefalo, Robert C. **Preconception Health Care Model.** *European Journal of Obstetrics & Gynecology and Reproductive Biology* (1998) 78:163-168

Anderson, John E., Ebrahim, Shahul, Floyd, Lloyd, Atrash, Hani. **Prevalence of Risk Factors for Adverse Pregnancy Outcomes During Pregnancy and the Preconception Period-United States, 2002-2004.** *Maternal and Child Health Journal* (2006) 10:S101-S106, DOI 10.1007/s10995-006-0093-z

Annals of Internal Medicine. **Screening for Hepatitis B Virus Infection in Pregnancy: U.S. Preventive Services Task Force Reaffirmation Recommendation Statement.** *Annals of Internal Medicine* (16 June 2009) 50:12

Association of Maternal and Child Health Programs. **Implementing Preconception Health & Health care: A California Case Study.** *Association of Maternal and Child Health Programs* (September 2008)

Association of State and Territorial Health Officials. **Fact Sheet: Preconception Care.** *Association of Maternal and Child Health Programs* (2006)

Atrash, Hani K., Johnson, Kay, Adams, Myron (Mike), Cordero, Jose F., Howse, Jennifer **Preconception Care for Improving Perinatal Outcomes: The Time to Act.** *Maternal and Child Health Journal* (2006) 10:S3-S11, DOI 10.1007/s10995-006-0100-4

Atrash, Hani, MD, MPH, Jack, Brian W., MD, Johnson, Kay, MPH, EdM, Coonrod, Dean V., MD, MPH, Moos, Merry-K, BSN, FNP, MPH, Stubblefield, Phillip, G., MD, Cefalo, Robert, MD, PhD, Damus, Karla, MSPH, PhD, RN, Reddy, Uma M., MD, MPH. **Where is the “W”oman in MCH?** *American Journal of Obstetrics & Gynecology*, Supplement to December (2008)

Badura, Maribeth, RN, MSN, Johnson, Kay, MPH, MEd, Hench, Karen, RN, MS, Reyes, Madelyn, RN, MPA. **Healthy Start: Lessons Learned on Interconception Care.** *Women’s Health Issues* 18S (2008) S61-S66

Bernstein, Peter S., Tani, Sangyhi, & Irwin, R. Merkatz. **Improving Preconception Care.** *The Journal of Reproductive Medicine.* (2000) 45(7): 546-552

Biermann, Janis, Dunlop, Anne Lang, Brady, Carol, Dubin, Cynthia, Brann, Jr., Alfred **Promising Practices in Preconception Care for Women at Risk for Poor Health and Pregnancy Outcomes.** *Maternal and Child Health Journal* (2006) 10:S21-S28

Bogges, Kim A., Edelstein, Burton L. **Oral Health in Women During Preconception and Pregnancy: Implications for Birth Outcomes and Infant Oral Health.** *Maternal and Child Health Journal* (2006) 10:S169-S174

Boulet, Sheree L., Johnson, Kay, Parker, Christopher, Posner, Samuel F., Atrash, Hani. **A Perspective of Preconception Health Activities in the United States.** *Maternal and Child Health Journal* (2006) 10:S13-S20

Boulet, Sheree L., Parker, Christopher, Atrash, Hani. **Preconception Care in International Settings.** *Maternal and Child Health Journal* (2006) 10:S29-S35

Brann, Alfred W. **The Interpregnancy Care Program: The Feasibility and Impact of Delivering Interpregnancy Care to Mothers of Very Low Birthweight Infants.** *National Summit on Preconception Care* (21 June 2005)

Brown, Judith E., Jacobs, D.R., Barosso, G.M., Potter, J.D., Hannan, P.J., Kopher, R.A., Rourke, M.J., Hartman, T.J., Hase, K. **Recruitment, Retention and Characteristics of Women in a Prospective Study of Preconceptional Risks to Reproductive Outcomes: Experience of the Diana Project.** *Pediatric and Perinatal Epidemiology* (1997). 11: 345-358

Bushy, Angeline. **Preconception Health Promotion: Another Approach to Improve Pregnancy Outcomes.** *Public Health Nursing* (1992) 9(1)10-14

Centers for Disease Control and Prevention. **Guidelines on Improving Preconception Health Care.** *Morbidity and Mortality Weekly Report* (21 August, 2006)

Centers for Disease Control and Prevention. **Healthy Births Initiative Expansion Framework.** *Centers for Disease Control and Prevention* (2002)

Center for Health Care Strategies, Inc. **High-Risk Pregnancy studies Reporting Decreases in Cost/Utilization.** *Center for Health Care Strategies, Inc.*

Chatterjee, Sharmila, MD, MPH, Kotelchuck, Milton, PhD, MPH, Sambamoorthi, Usha, PhD. **Prevalence of Chronic Illness in Pregnancy, Access to Care, and Health Care Costs Implications for Interconception Care.** *Women's Health Issues* 18S (2008) S107-S116

Cook, Judith A., PhD, Mock, Lynne O., PhD, Jonikas, Jessica A., MA, Burke-Miller, Jane K., PhD, Carter, Tina M., BA, Taylor, Amanda, MA, Petersen, Carol A., MEd, Grey, Dennis D., BA, Gruenenfelder, David, MA. **Prevalence of Psychiatric and Substance Use Disorders Among Single Mothers Nearing Lifetime Welfare Eligibility Limits.** *Archives of General Psychiatry* Vol. 66 (No. 3), (March 2009)

Coonrod, Dean V., MD, MPH, Jack, Brian W., MD, Boggess, Kim A., MD, Long, Richard, MD, Conry, Jeanne A., MD, PhD, Cox, Shanna N., MSPH, Cefalo, Robert, MD, PhD, Hunter, Kam D., MD, PhD, Pizzica, Albert, DO, Dunlop, Anne L., MD, MPH **The Clinical Content of Preconception Care: Immunizations as Part of Preconception Care.** *American Journal of Obstetrics and Gynecology* S290 Supplement (December 2008)

Coonrod, Dean V., MD, MPH, Jack, Brian W., MD, Stubblefield, Phillip G., MD, Hollier, Lisa M., MD, MPH, Boggess, Kim A., MD, Cefalo, Robert, MD, PhD, Cox, Shanna N., MSPH, Dunlop, Anne L., MD, MPH, Conry, Jeanne A., MD, PhD, Gibbs, Ronald S., MD, Hogan, Vijaya K., DrPH. **The Clinical Content of Preconception Care: Infectious Diseases in Preconception Care.** *American Journal of Obstetrics and Gynecology* S296 Supplement (December 2008)

Cragan, Janet D., Friedman, J.M., Holmes, Lewis B., Uhl, Kathleen, Green, Nancy S., Riley, Laura. **Ensuring the Safe and Effective Use of Medications During Pregnancy: Planning and Prevention Through Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S129-S135

Curtis, Michele, Abelman, Steve, Schulkin, Jay, Williams, Jennifer L., Fassett, Elizabeth M. **Do We Practice What We Preach? A Review of Actual Clinical Practice with Regards to Preconception Care Guidelines.** *Maternal and Child Health Journal* (2006) 10:S53-S58

Curtis, Michele G., MD, MPH. **Preconception Care: A Clinical Case of “Think Globally, Act Locally”.** *American Journal of Obstetrics and Gynecology* S257 Supplement (December 2008)

DeWeerd, Sabina, Steegers, Eric, A. **The Past and Present Practices and Continuing Controversies of Preconception Care.** *Community Genetics* (2002) 5:50-60

Dunlop, Anne L., MD, MPH, Gardiner, Paula M., MD, MPH, Shellhaas, Cynthia S., MD, MPH, Menard, M. Kathryn, MD, MPH, McDiarmid, Melissa A., MD, MPH. **The Clinical Content of Preconception Care: The Use of Medications and Supplements Among Women of Reproductive Age.** *American Journal of Obstetrics and Gynecology* S367 Supplement (December 2008)

Dunlop, Anne L., MD, MPH, Jack, Brian, MD, Frey, Keith, MD, MBA. **National Recommendations for Preconception Care: The Essential Role of the Family Physician.** *Clinical Guidelines and Primary Care* doi: 10.3122/jabfm.2007.01.060143

Dunlop, Anne L., MD, MPH, Jack, Brian W., MD, Bottalico, Joseph N., DO, Lu, Michael C., MD, MS, MPH, James, Andra, MD, MPH, Shellhaas, Cynthia S., MD, MPH, Haygood-Kane Hallstrom, Lynne, DO, CNM, MS, Solomon, Benjamin D., MD, Feero, W. Gregory, MD, PhD, Menard, M. Kathryn, MD, MPH, Prasad, Mona R., DO, MPH. **The Clinical Content of Preconception Care: Women with Chronic Medical Conditions.** *American Journal of Obstetrics and Gynecology* S310 Supplement (December 2008)

Ebrahim, Shahul H., Seen-Tsing Lo, Sue, Zhuo, Jiatong, Han, Jung-Yeol, Delvoye, Pierre, Zhu, Li. **Models of Preconception Care Implementation in Selected Countries.** *Maternal and Child Health Journal* (2006) 10:S37-S42, DOI 10.1007/s10095-006-0096-9

Elsinga, Joyce, PHD, de Jong-Potjer, Lieke C., MD, PhD, van der Pal-de Bruin, Karin M., PhD., le Cessie, Saskia, PhD, Assendelft, Willem J. J., MD, PhD, Buitendijk, Simone E., PhD. **The Effect of Preconception Counseling on Lifestyle and Other Behavior Before and During Pregnancy.** *Women’s Health Issues* 18S (2008) S117-S125

Emory University, **Fact Brief – Interconception Care**

Fetterolf, Donald E., MD, M.B.A., F.A.C.P. Stanziano, Gary, MD, Istwan, Niki, RN. **Application of Disease Management Principles to Pregnancy and the Postpartum Period.** *Disease Management* Volume 11, Number 3 (2008)

Florida Department of Health. **Interconceptional Education and counseling Module: Interconceptional Care and Health Start.** Available online at: <http://www.doh.state.fl.us/family/mch/training/icc/icc.html>

Floyd, R. Louise, DSN, RN, Jack, Brian W., MD, Cefalo, Robert, MD, PhD, Atrash, Hani, MD, MPH, Mahoney, Jeanne, BSN, RN, Herron, Anne, PhD, Husten, Corinne, MD, MPH, Sokol, Robert J., MD. **The Clinical Content of Preconception Care: Alcohol, Tobacco, and Illicit Drug Exposures.** *American Journal of Obstetrics and Gynecology* S333 Supplement (December 2008)

Floyd, R. Louise, Ebrahim, Shahul, Tsai, James, O'Connor, Mary, Sokol, Robert. **Strategies to Reduce Alcohol-Exposed Pregnancies.** *Maternal and Child Health Journal* (2006) 10:S149-S151

Freda, Margaret Comerford, Moos, Merry-K, Curtis, Michele. **The History of Preconception Care: Evolving Guidelines and Standards.** *Maternal and Child Health Journal* (2006) 10:S43-S52

Frey, Keith, A. **Preconception Care by the Nonobstretical Provider.** *Mayo Foundation for Medical Education and Research* (2002) 77:460-473

Frieder, Ariels, MD, Dunlop, Anne L., MD, MPH, Culpepper, Larry, MD, MPH, Bernstein, Peter S., MD, MPH. **The Clinical Content of Preconception Care: Women with Psychiatric Conditions.** *American Journal of Obstetrics and Gynecology* S328 Supplement (December 2008)

Frey, Keith A., Files, Julia A. **Preconception Healthcare: What Women Know and Believe.** *Maternal and Child Health Journal* (2006) 10:S73-S77

Frey, Keith A., MD, MBA, Navarro, Shannon M., MPH, Kotelchuck, Milton, PhD, MPH, Lu, Michael C., MD, MPH. **The Clinical Content of Preconception Care: Preconception Care for Men.** *American Journal of Obstetrics and Gynecology* S389 Supplement (December 2008)

Gardiner, Paula M., MD, MPH, Nelson, Lauren, Shellhaas, Cynthia S., MD, MPH, Dunlop, Anne L., MD, Long, Richard, MD, Andrist, Sara, MPH, RD, LD, Jack, Brian W., MD. **The Clinical Content of Preconception Care: Nutrition and Dietary Supplements.** *American Journal of Obstetrics and Gynecology* S345 Supplement (December 2008)

Gaynes, BN, Gavin, N., Meltzer-Brody, S., Lohr, KN, Swinson, T., Gartlehner, G., Brody, S., Miller, WC. **Perinatal Depression: Prevalence, Screening Accuracy, and Screening Outcomes.** *Agency for Healthcare Research and Quality Evidence Report / Technology Assessment* Number 119

Gilbody, Simon DPhil, Sheldon, Trevor, DSc, House, Allan, DM. **Screening and Case-finding Instruments for Depression: A Meta-Analysis.** *Canadian Medical Association Journal* (8 April, 2008) 178(8)

Gold, Rachel Benson, MPA, Alrich, Casey, MPH. **Role of Medicaid Family Planning Waivers and Title X in Enhancing Access to Preconception Care.** *Women's Health Issues* 18S (2008) S47-S51

Grainger, David A., Frazier, Linda M., Rowland, Courtney A. **Preconception Care and Treatment with Assisted Reproductive Technologies.** *Maternal and Child Health Journal* (2006) 10:S161-S164

Grady, M.C., **Preconception and the Young Cancer Survivor.** *Maternal and Child Health Journal.* (2006) 10:S165-S168

Graham, Lisa, **CDC Releases Guidelines on Improving Preconception Health Care.** *American Family Physician.* (2006) 74(11): 1967-1976

Green-Raleigh, Kathleen, Carter, Heather, Mulinare, Joseph, Prue, Christine, Petrini, Joann. **Trends in Folic Acid Awareness and Behavior in the United States: The Gallup Organization for the March of Dimes Foundation Surveys, 1995-2005.** *Maternal and Child Health Journal* (2006) 10:S177-S182

Grosse, Scot D., Sotnikov, Sergey V., Leatherman, Sheila, Curtis, Michele. **The Business Case for Preconception Care: Methods and Issues.** *Maternal and Child Health Journal* (2006) 10:S93-S99

Herman, William H., Janz, N.K., Becker, M.P., Charron-Prochownik, D. **Diabetes and Pregnancy: Preconception Care, Pregnancy Outcomes, Resource Utilization and Costs.** *The Journal of Reproductive Medicine.* (1999) 44(1):33-38

Hillemeier, Marianne M., PhD, Downs, Danielle Symons, PhD, Feinberg, Mark E., PhD, Weisman, Carol S., PhD, Chuang, Cynthia H., MD, Parrott, Roxanne, PhD, Velott, Diana, MPA, Francis, Lori A., PhD, Baker, Sara A., MSW, Dyer, Anne-Marie, MS, Chinchilli, Vernon M., PhD **Improving Women's Preconception Health: Findings from a Randomized Trial of the Strong Healthy Women Intervention in the Central Pennsylvania Women's Health Study.** *Women's Health Issues* 18S (2008) S87-S96

Hobbins, Debra **Full Circle: The Evolution of Preconception Health Promotion in America.** *Journal of Obstetric Gynecologic and Neonatal Nursing.* Volume 32, Number 4

Howse, Jennifer L., PhD. **Marching Forward: Action Steps to Optimize the Health of Women and Babies.** *Women's Health Issues* 18S (2008) S10-S12

Jack, Brian W., MD, Atrash, Hani, MD, MPH, Coonrod, Dean V., MD, MPH, Moos, Merry-K, BSN, FNP, MPH, O'Donnell, Julie, MPH, Johnson, Kay, MPH, EdM. **The Clinical Content of Preconception Care: An Overview and Preparation of This Supplement.** *American Journal of Obstetrics and Gynecology* S266 Supplement (December 2008)

Jack, Brian W., MD, Atrash, Hani, MD, MPH, Bickmore, Timothy, PhD, Johnson, Kay, MPH, Med. **The Future of Preconception Care: A Clinical Perspective.** *Women's Health Issues* 18S (2008) S19-S25

Johnson, Kay, MPH, MEd, Atrash, Hani, MD, MPH, Johnson, Alion, MPH. **Policy and Finance for Preconception Care: Opportunities for Today and the Future.** *Women's Health Issues* 18S (2008) S2-S9

Johnson, Kay A. **Public Finance Policy Strategies to Increase Access to Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S85-S91

Johnson, K., Posner, S.F., Biermann, J., Cordero, J.F., Atrash, H.K., Parker, C.S., Boulet, S., Curtis, M.G. **Recommendations to Improve Preconception Health and Health Care: A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care,** *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report.* (2006). Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5506a1.htm>.

Keith, Louis G. **Is It Time to “Bang the Shoe” on Preconception Care?** *Maternal and Child Health Journal* (2006) 10:S1-S2

Kent, Helene, RD, MPH, Streeter, Nan, MS, RN. **Title V Strategies to Ensure A Continuum of Women's Health Services.** *Women's Health Issues* 18S (2008) S67-S73

Klerman, Lorraine V. **Family Planning Services: An Essential Component of Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S157-S160

Klerman, Lorraine V., DrPH, Jack, Brian W., MD, Coonrod, Dean V., MD, MPH, Lu, Michael C., MD, MS, MPH, Fry-Johnson, Yvonne W., MD, Johnson, Kay, MPH **The Clinical Content of Preconception Care: Care of Psychosocial Stressors.** *American Journal Obstetrics and Gynecology* S362 Supplement (December 2008)

Kroelinger, Charlan, PHD, Ehrental, Deborah, MD, FACI. **Translating Policy to Practice and Back Again: Implementing a Preconception Program in Delaware.** *Women's Health Issues* 18S (2008) S74-S80

Lampe, Margaret A. **Human Immunodeficiency Virus-1 and Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S193-S195

Leiferman, Jenn A., PhD, Dauber, Sarah E., Heisler, PhD, Paulson, James F., PhD **Primary Care Physicians' Beliefs and Practices toward Maternal Depression.** *Journal of Women's Health* Volume 17, Number 7 (2008)

Lu, Michael C., MD, MPH, Bragonier, Robert, MD, PhD, Silver, Ellen R., RNP, MSN, Bemis-Heys, Rose, RN, NP. **Where It All Begins: The Impact of Preconceptional and Prenatal Care on Early Childhood Development.** *UCLA Center for Healthier Children, Families and Communities* (January 2001)

Lu, Michael C., Kotelchuck, Milton, Culhane, Jennifer F., Hobel, Calvin J., Klerman, Lorraine V., Thorp, Jr., John M. **Preconception Care Between Pregnancies: The Content of Internatal Care.** *Maternal and Child Health Journal* (2006) 10:S107-S122

Marcus, Sheila M., Flynn, Heather A. **Depression, Antidepressant Medication, and Functioning Outcomes Among Pregnant Women.** *International Journal of Gynecology and Obstetrics* (2008) 100, 248-251

McDiarmid, Melissa A., Gehle, Kim. **Preconception Brief: Occupational/Environmental Exposures.** *Maternal and Child Health Journal* (2006) 10:S123-S128

McDiarmid, Melissa A., MD, MPH, Gardiner, Paula M., MD, MPH, Jack, Brian W., MD. **The Clinical Content of Preconception Care: Environmental Exposures.** *American Journal of Obstetrics and Gynecology* S357 Supplement (December 2008)

Misra, Dawn P., PhD, Grason, MA, Weisman, Carol, PhD **An Intersection of Women's and Perinatal Health: The Role of Chronic Conditions.** *Women's Health Issues* Vol. 10, No. 5 (September/October 2000)

Misra, Dawn P., PhD, Guyer, Bernard, MD, Allston, Adam, MPH. **Integrated Perinatal Health Framework: A Multiple Determinants Model with a Life Span Approach.** *American Journal of Preventive Medicine* (2003)

Moos, Merry-K, BSN, FNP, MPH, Dunlop, Anne L., MD, MPH, Jack, Brian W., MD, Nelson, Lauren, MD, PhD, Coonrod, Dean V., MD, MPH, Long, Richard, MD, Boggess, Kim, MD, Gardiner, Paula M., MD, MPH **Healthier Women, Healthier Reproductive Outcomes: Recommendations for the Routine Care of All Women of Reproductive Age.** *American Journal of Obstetrics and Gynecology* S280 Supplement (December 2008)

Moos, Merry-K. **Preconceptional Wellness as a Routine Objective for Women's Health Care: An Integrative Strategy.** *Journal of Obstetrics Gynecologic and Neonatal Nursing* Volume 32, Number 4

Moos, Merry-K., MPH, RN, FNP, FAAN. **Preconceptional Health Promotion: Progress in Changing a Prevention Paradigm.** *Journal of Perinatal and Neonatal Nursing* Vol. 18, No. 1, pp. 2-13

Moos, Merry-K, RN, FNP, MPH, FAAN. **Preconception Health: Where to From Here?** *Women's Health Issues* 16 (2006) 156-158

Morgan, Maria A., Hawks, Debra, Zinberg, Stanley, Schulkin, Jay **What Obstetrician-Gynecologists Think of Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S59-65S

Morrison, Elizabeth H. **Primary Care: Clinics in Office Practice.** *Preconception Care.* (2000). 27(1): 1-12.

Neumeyer-Gromen, Angela, MD, MPH, Lampert, Thomas, Dipl-Soz, Start, Klaus, MD, PhD, Kallischnigg, Gerd, Dipl-Math. **Disease Management Programs for Depression: A**

Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Medical Care* Volume 42, Number 12, (December 2004)

Owens, Michelle D., Kieffer, Edith C., Chowdhury, Farah M. **Preconception Care and Women with or at Risk for Diabetes: Implications for Community Intervention.** *Maternal and Child Health Journal* (2006) 10:S137-S141

Perry, L.E. **Preconception Care: A Health Promotion Opportunity.** *The Nurse Practitioner.* (1996). 21(11)24-41

Phillips, Kathryn E., MPH, Flood, Georgette. **Employer Approaches to Preconception Care.** *Women's Health Issues* 18S (2008) S36-S40

Posner, Samuel F., Johnson, Kay, Parker, Christopher, Atrash, Hani, Biermann, Janis **The National Summit on Preconception Care: A Summary of Concepts and Recommendations.** *Maternal and Child Health Journal* (2006) 10:S197-S205

Posner, Samuel F., PhD, Broussard, Danielle L., PhD, MPH, Sappenfield, William M., MD, MPH, Streeter, Nan, MS, RN, Zapata, Lauren B., PhD, MSPH, Peck, Magda G., ScD. **Where Are the Data to Drive Policy Changes for Preconception Health and Health Care?** *Women's Health Issues* 18S (2008) S81-S86

Prue, Christine E., Daniel, Katherine Lyon. **Social Marketing: Planning Before Conceiving Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S79-S84

Reichman, Nancy E. **Timing of Enhanced Prenatal Care and Birth Outcomes in New Jersey's Health Start Program.** *Maternal and Child Health Journal* (2005). 9(2):151-171

Reynolds, Heather D. **Preconception Care: An Integral Part of Primary Care for Women.** *Journal of Nurse-Midwifery* (1998) 43(6):445-458

Rosenbaum, Sara, JD./ **Women and Health Insurance: Implications for Financing Preconception Health.** *Women's Health Issues* 18S (2008) S26-S35

Rosenthal, Abby C., Melvin, Cathy L., Barker, Dianne C. **Treatment of Tobacco Use in Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S147-S148

Ross, Danielle S., Jones, Jeffery L., Lynch, Michael F. **Toxoplasmosis, Cytomegalovirus, Listeriosis, and Preconception Care.** *Maternal and Child Health Journal* (2006) 10:S187-S191

Ruhl, Catherine, CNM, MS, Moran, Barbara, CNM, PhD. **The Clinical Content of Preconception Care: Preconception Care for Special Populations.** *American Journal of Obstetrics and Gynecology* S384 Supplement (December 2008)

Russell, Rebecca B., Green, Nancy S., Steiner, Claudia A., Meikle, Susan Howse, Jennifer L., Poschman, Karalee, Dias, Todd, Potetz, Lisa, Davidoff, Michael J., Damus, Karla, Petrini, Joann R. **Cost of Hospitalization for Preterm and Low Birth Weight Infants in the United States.** *Official Journal of the American Academy of Pediatrics* (2007); 120; e1-e9, DOI: 10.1542/peds.2006-2386

Shapira, Stuart K., Dolan, Siobhan **Genetic Risks to the Mother and the Infant: Assessment, Counseling, and Management.** *Maternal and Child Health Journal* (2006) 10:S143-S146

Siege-Riz, Anna-Maria, Laraia, Barbara. **The Implications of Maternal Overweight and Obesity on the Course of Pregnancy and Birth Outcomes.** *Maternal and Child Health Journal* (2006) 10:S153-S156

Simon, Kosali Ilayperuma, PhD, Handler, Arden, DrPH. **Welfare Reform and Insurance Coverage During The Pregnancy Period: Implications for Preconception and Interconception Care.** *Women's Health Issues* 18S (2008) S97-S106

Solomon, Benjamin D., MD, Jack, Brian W., MD, Feero, W. Gregory, MD, PhD **The Clinical Content of Preconception Care: Genetics and Genomics.** *American Journal of Obstetrics and Gynecology* S340 Supplement (December 2008)

Stankaitis, Joseph A., MD, MPH, Brill, Howard R., PhD, Walker, Darlene M., RN, MS, FNP. **Reduction in Neonatal Intensive Care Unit Admission Rates in a Medicaid Managed Care Program.** *The American Journal of Managed Care* March (2005)

Stubblefield, Phillip G., MD, Coonrod, Dean V., MD, Reddy, Uma M., MD, MPH, Sayegh, Raja, MD, Nicholson, Wanda, MD, MPH, MBA, Rychlik, Daniel F., MD, Jack, Brian W., MD. **The Clinical Content of Preconception Care: Reproductive History.** *American Journal of Obstetrics and Gynecology* S373 Supplement (December 2008)

Swan, Lynn L., Apgar, Barbara, S. **Preconceptual Obstetric Risk Assessment and Health Promotion.** *American Family Physician* (1995) 51(8) 1875-1885

The Colorado Trust. **Interconceptional Health Promotion Initiative Final Report.** (9 June 2003). Available at:
<http://www.coloradotruster.org/repository/publications/pdfs/IHPIfinalreport04.pdf>

Thierry, JoAnn M., PhD, MSW. **The Importance of Preconception Care for Women with Disabilities.** *Maternal and Child Health Journal* (2006) 10:S175-S176

U.S. Preventive Services Task Forces. **Screening for Hepatitis B Virus Infection in Pregnancy: U. S. Preventive Services Task Force Reaffirmation Recommendation Statement.** *Annals of Internal Medicine* (16 June 2009)

Wallerstedt, Cheryl, Lilley, Margaret, Baldwin, Kathleen, **Interconceptional Counseling after Perinatal and Infant Loss.** *Journal of Obstetric and Gynecologic Neonatal Nursing* (2003). 32(4) 533-542

Weisman, Carol S. **CePAWHS: Central Pennsylvania Women's Health Study.** *Penn State College of Medicine* (18 May 2005)

Wilens, Jennifer M., Mounts, Kyle O. **Women with Depression – “You Can't Tell by Looking”.** *Maternal and Child Health Journal* (2006) 10:S183-S186

Wilensky, Sara, JD, MPP, Proser, Michelle, MPP. **Community Approaches to Women's Health: Delivering Preconception Care in a Community Health Center Model.** *Women's Health Issues* 18S (2008) S52-S60

Williams, Jennifer L., Abelman, Stephen M., Fassett, Elizabeth M., Stone, Cheryl E., Petrini, Joann R., Damus, Karla, Mulinare, Joseph. **Health Care Provider Knowledge and Practices Regarding Folic Acid, United States, 2002-2003.** *Maternal and Child Health Journal* (2006) 10:S67-S72

Wise, Paul H., MD, MPH. **Transforming Preconceptional, Prenatal, and Interconceptional Care Into a Comprehensive Commitment to Women's Health.** *Women's Health Issues* 18S (2008) S13-S18

Bibliography

Illinois Department of Healthcare and Family Services. Medical Data Warehouse (2007)

Illinois Department of Human Services. Birth File Match (2007)

Illinois Department of Public Health. Vital Records (2006)

MacDorman, Marian F., Ph.D., and Mathews, T.J., M.S. **Recent Trends in Infant Mortality in the United States.** NCHS data brief, no 9. Hyattsville, MD: National Center for Health Statistics (2008)

March of Dimes. **Late Preterm Birth: Every Week Matters: Medical Perspectives on Prematurity.** (March 2006)

U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. **Child Health USA 2006.** Rockville, Maryland: U. S. Department of Health and Human Services (2006)