KENT COUNTY INFANT HEALTH INITIATIVE

2010 Annual Report

Interconception Care Program

HEALTH DEPARTMENT
Caring today for a healthy tomorrow

Public Health FOR MICHIGAN FOR YOU

HEALTHY KENT 2010

Table of Contents

Overview & Background

History of the Kent County Infant Health Initiative – Interconception Care Program

In the spring of 2005, the Kent County Health Department (KCHD) received a grant from the Michigan Department of Community Health (MDCH). The grant funded the development of an infant mortality coalition, a community action plan to reduce infant mortality, particularly for African Americans, and implementation of an evidence-based Interconception Care (IC) Program. Kent County was one of 11 Michigan counties who received funding based on high disparities between African American and white infant survival. The Kent County IC Program is modeled after two demonstration projects: 1) Interconception Health Promotion Initiative in Denver, CO and 2) The Interpregnancy Care Program at Grady Memorial Hospital in Atlanta, GA. The impetus for delivering the IC Program is supported by the Centers for Disease Control and Prevention (CDC) Recommendations to Improve Preconception Health and Health Care which include interconception care and the following goal: *Reduce risk indicated by a previous adverse pregnancy outcome through interventions during the interconception care period, which can prevent or minimize health problems for a mother and her future children.*

Healthy Kent 2010 - Infant Health Implementation Team serves as the Kent County infant mortality support coalition for the IC Program. Healthy Kent is a collaborative effort between 31 agencies that seeks to improve the health and well being of Kent County residents through assessing community health needs and assets, activating a community health plan, and following progress of community action, change, and outcomes of the plan.

The Perinatal Periods of Risk (PPOR) was used as a model by MDCH to analyze infant deaths and identify target intervention areas. During inception of the IC Program, MDCH provided PPOR data to all 11 counties with the highest rates of infant mortality. Kent County PPOR data indicated excess deaths and infant mortality rates occur in categories of Maternal Health/Prematurity and Infant Health. As a result, the IC Program is an evidence based model that supports intervention in these categories.

The IC Program aligns with Kent County data from the Perinatal Periods of Risk (PPOR) and targets all of the following outcome areas:

- Fewer preterm births
- Fewer low birth weight babies
- More planned pregnancies
- More pregnancies with a 12-18 month pregnancy interval.

The IC Program is supported by funds from KCHD and funding from the Genesee County Racial and Ethnic Approaches to Community Health – Legacy Project grants through the CDC. The IC Program is housed in the Health Education and Promotion Section of the Administration Division of KCHD.

The Kent County Infant Health Initiative (KCIHI) includes a variety of projects aimed at reducing infant mortality and eliminating racial and ethnic health disparities. The projects described in this report include the Interconception Care Program, Brush Up for Baby and Family Planning Program.

Please direct questions or feedback regarding this report to Karyn Pelon, Health Educator at the Kent County Health Department, at 616/632.7122 or karyn.pelon@kentcountymi.gov .

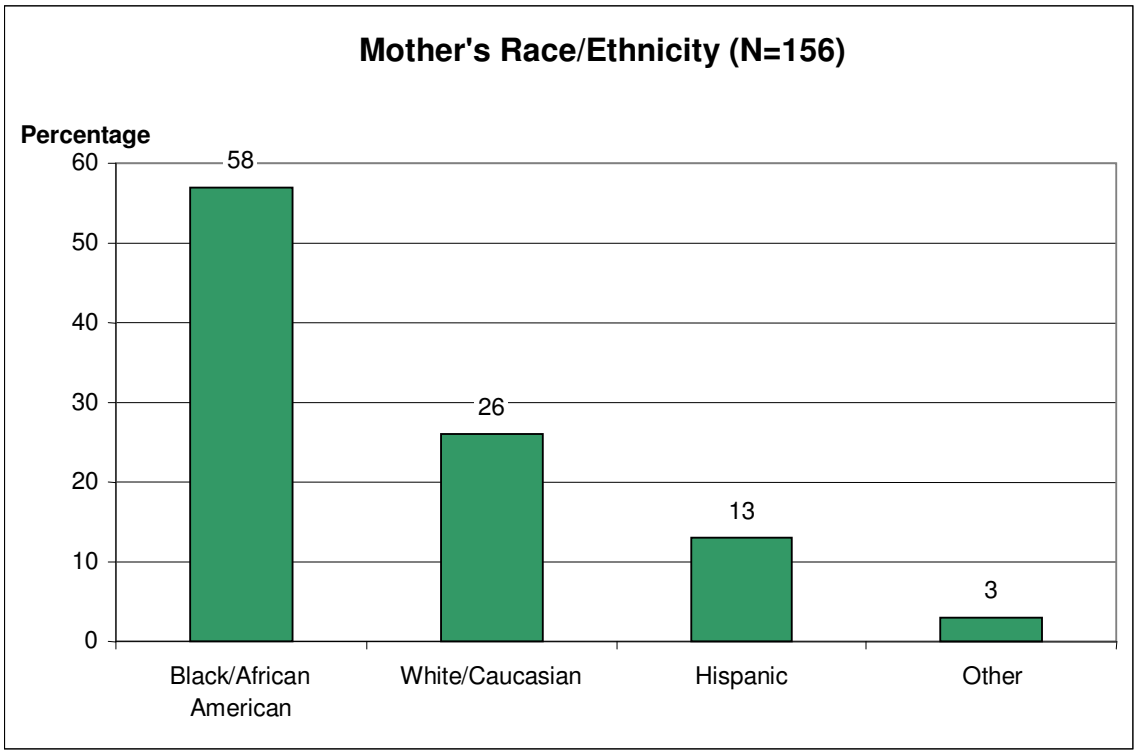
Interconception Care Program

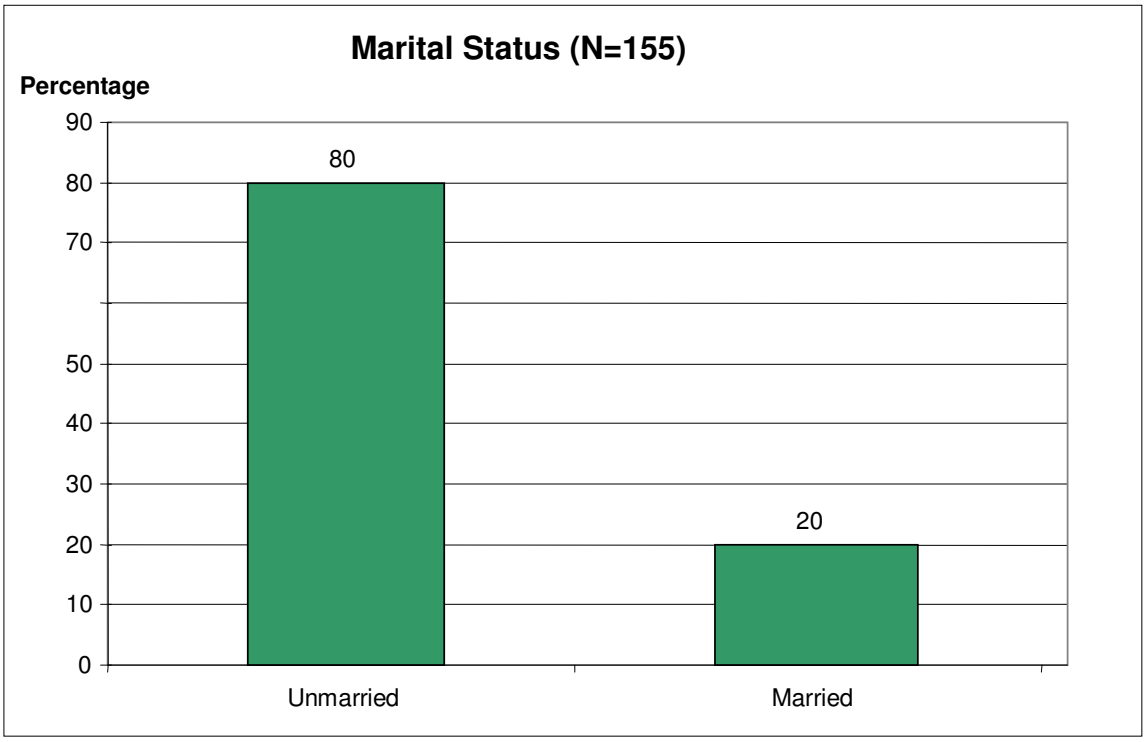
The goal of the IC Program is to provide comprehensive interconception care targeting but not limited to African American women with adverse pregnancy outcomes. An adverse pregnancy outcome is defined as a preterm birth (a birth that takes place before 37 weeks gestation), low birth weight baby (an infant weighing less than 2500 grams), infant death, stillbirth or miscarriage after the fourth month of pregnancy. As of September 30, 2010, 156 women had been enrolled in the program.

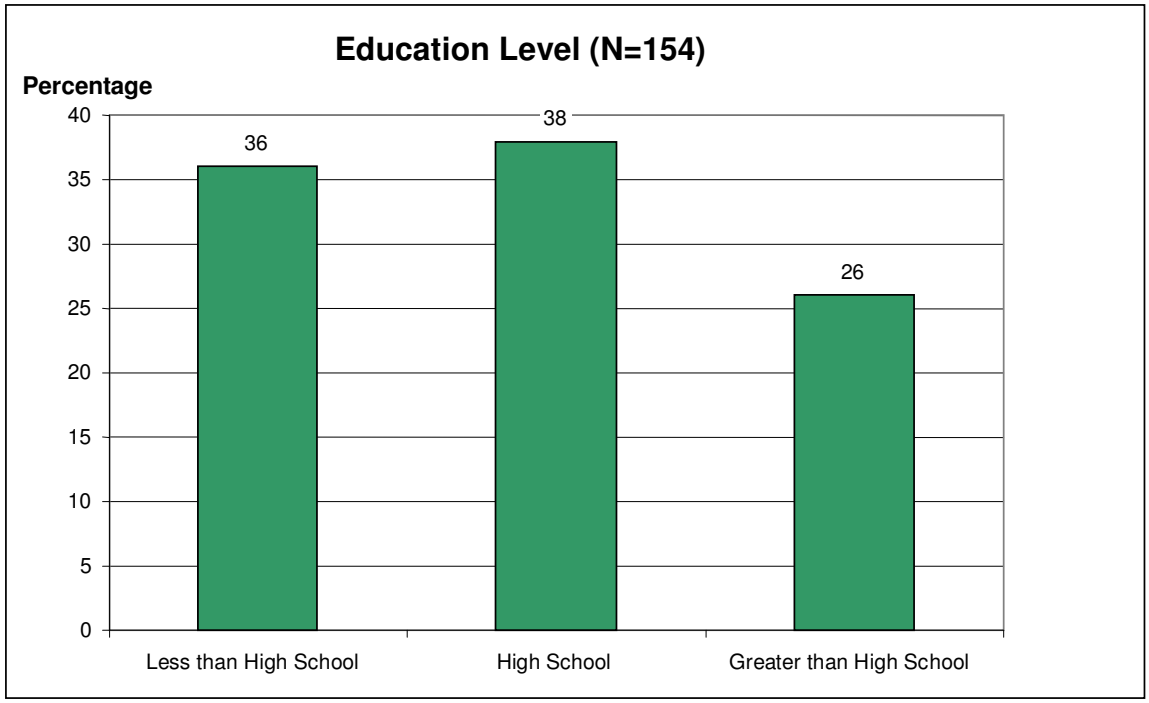
IC program coordination is carried out by a KCHD Health Educator, and eligible women are recruited into the program by KCHD, Maternal Infant Health Program and Cherry Street Health Services (a federally qualified health center). Women are seen by a nurse or other health professional and receive enhanced case management for up to 18 months post partum.

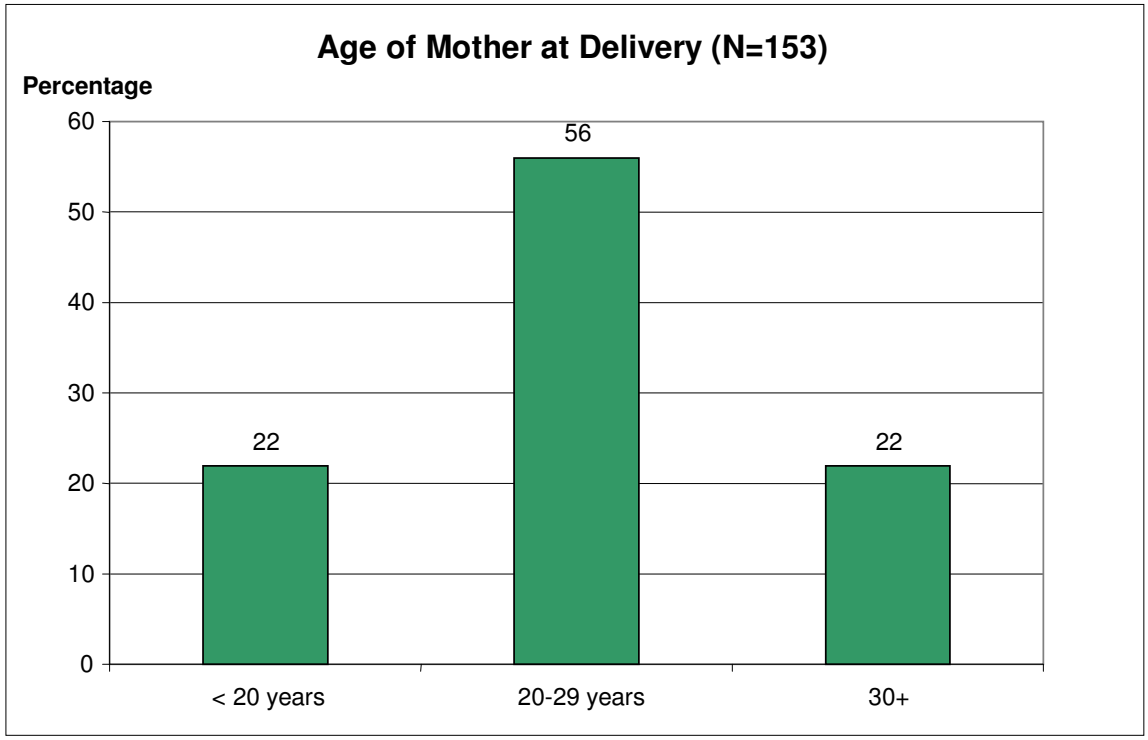
The March of Dimes states that pregnant women should not endanger the fetus by smoking, as maternal smoking is associated with higher infant mortality rates and increased risk of preterm and low birth weight births. The March of Dimes also urges women to take a multivitamin containing folic acid prior to and during early pregnancy to reduce the risk of serious birth defects, abstain from drinking alcohol during pregnancy, and see their doctors to help manage chronic health conditions such as diabetes, hypertension and obesity. The IC Program collects data on smoking, alcohol use and other risk factors during pregnancy. Multivitamins containing folic acid and other resources to promote interconception health are distributed to IC clients upon enrollment. Case managers assist IC clients with access to preventive health screenings and support services, and encourage regular check-ups with a medical provider.

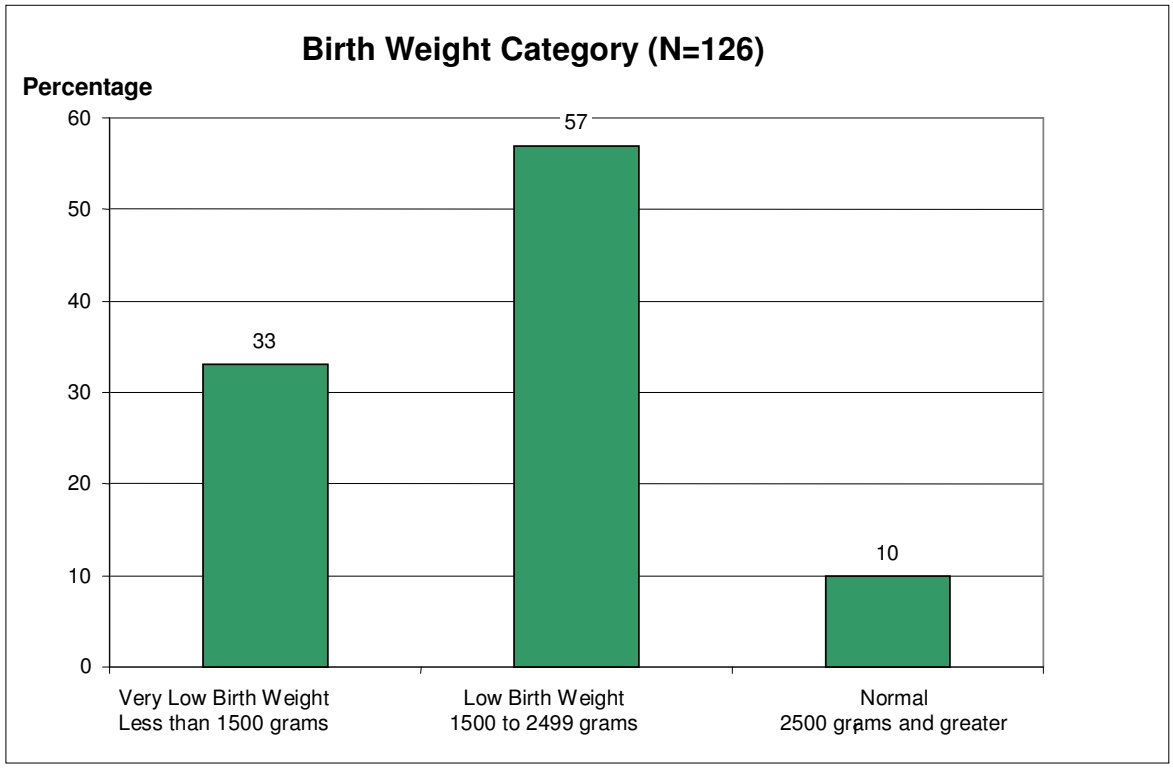
The following graphs detail information on demographics and other health risks of the 156 IC clients.

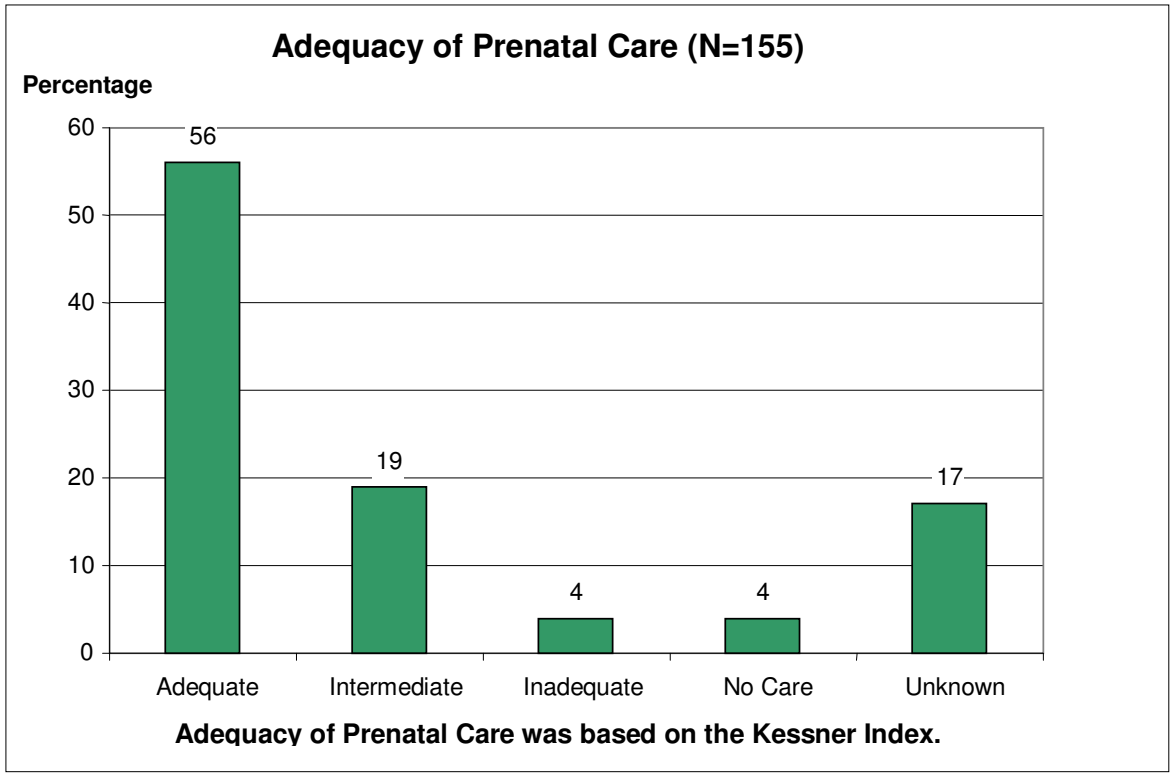


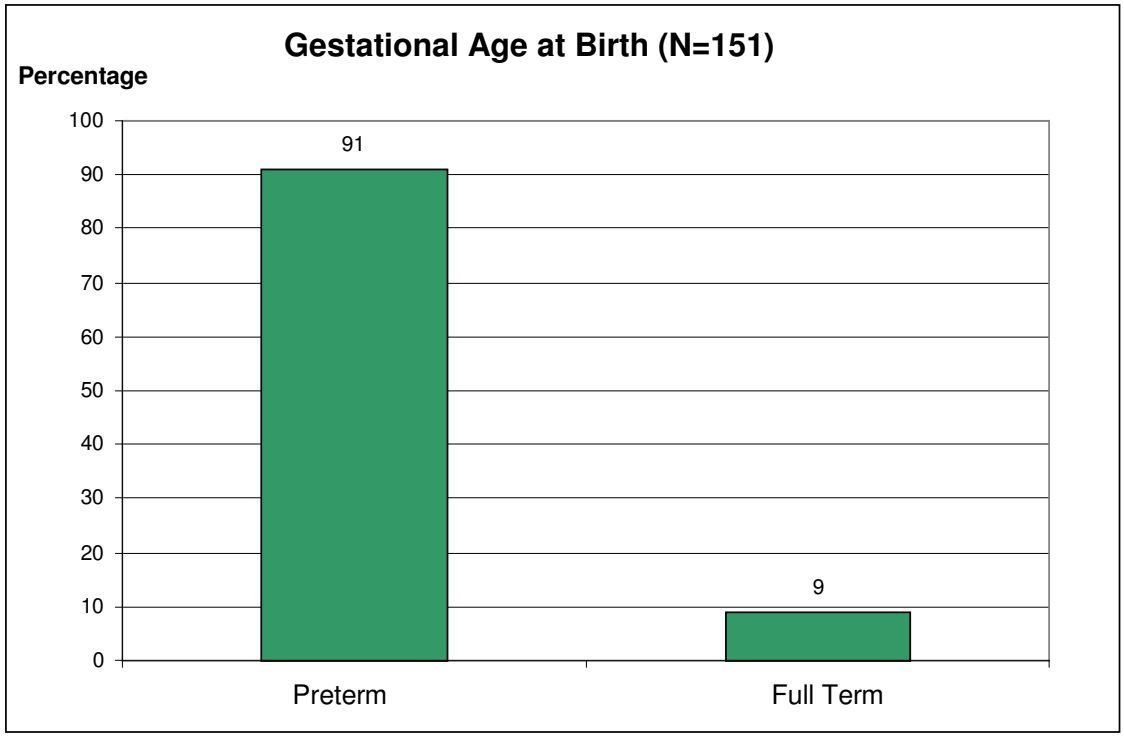


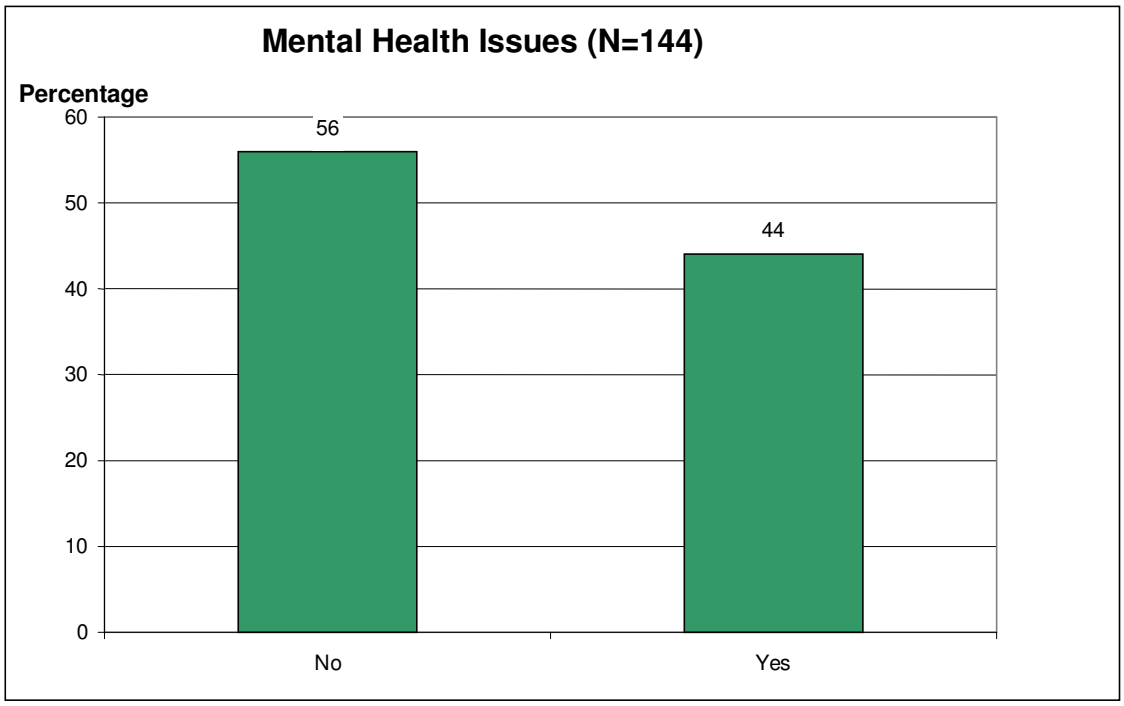

Education Level (N=154)
Percentage
40
35
30
25
20
15
10
5
0
36
38
26
Less than High School
High School
Greater than High School

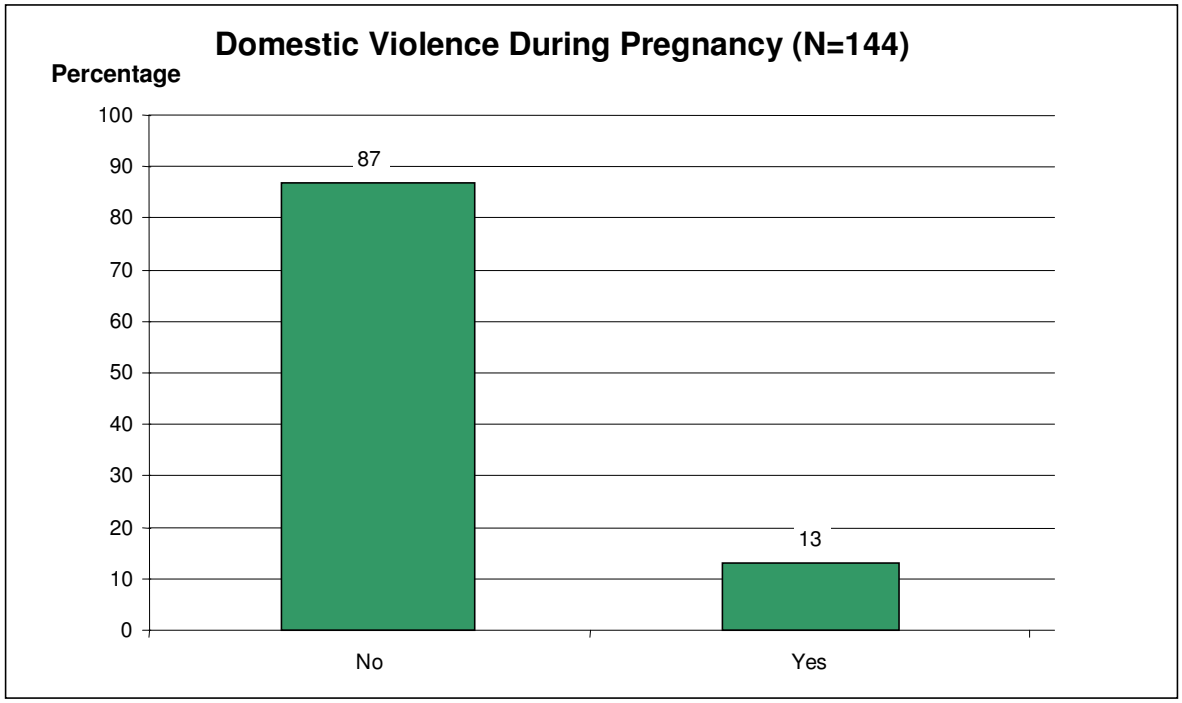

Age of Mother at Delivery (N=153)
Percentage
60
50
40
30
20
10
0
22
56
22
< 20 years
20-29 years
30+


Birth Weight Category (N=126)
Percentage
60
50
40
30
20
10
0
33
57
10
Very Low Birth Weight
Less than 1500 grams
Low Birth Weight
1500 to 2499 grams
Normal
2500 grams and greater

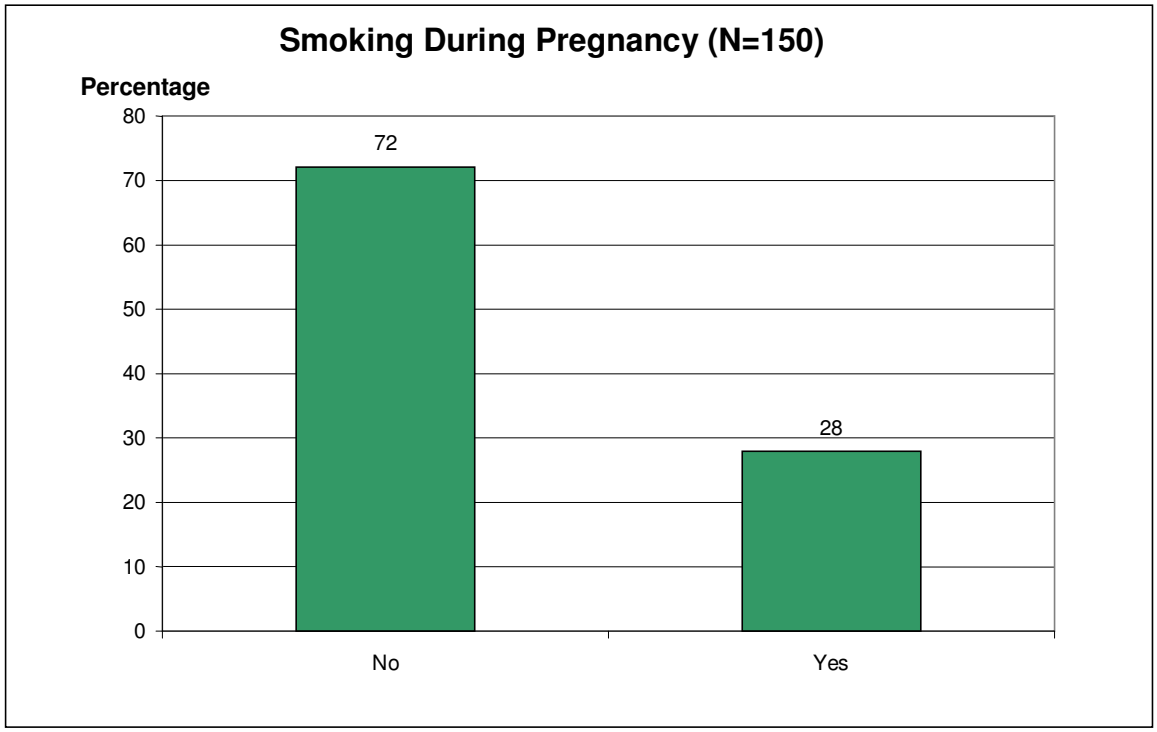

Adequacy of Prenatal Care (N=155)
Percentage
60
50
40
30
20
10
0
56
19
4
4
17
Adequate
Intermediate
Inadequate
No Care
Unknown
Adequacy of Prenatal Care was based on the Kessner Index.

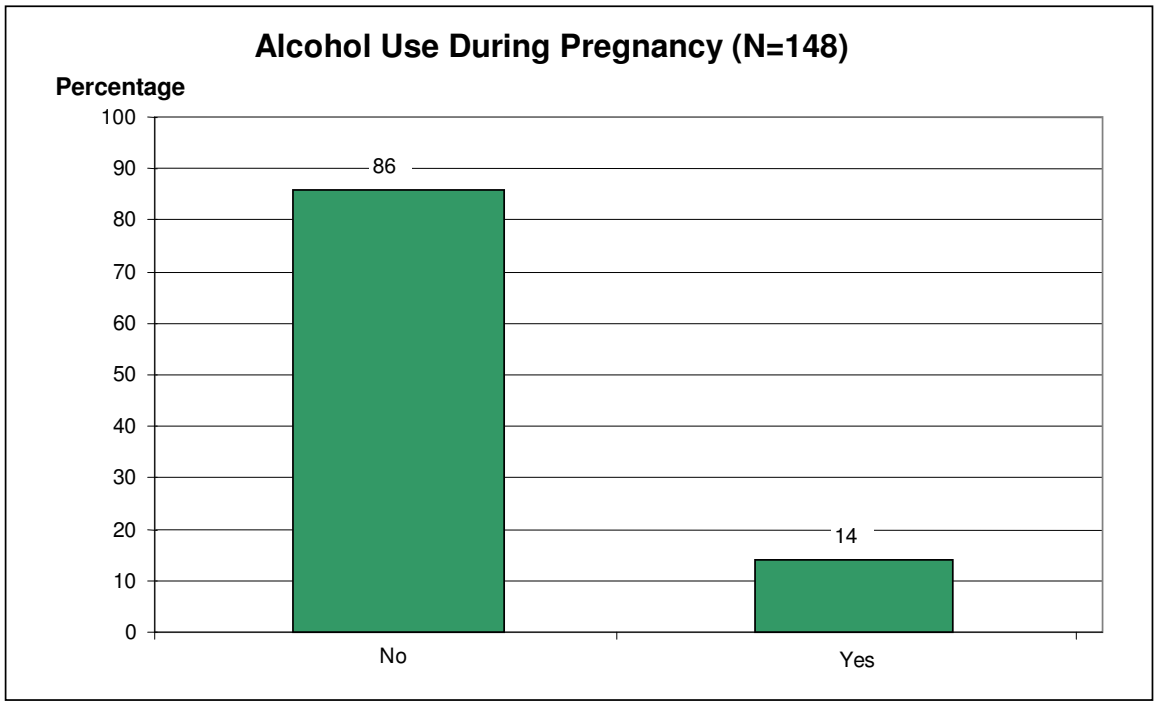

Gestational Age at Birth (N=151)
Percentage
100
90
80
70
60
50
40
30
20
10
0
91
9
Preterm
Full Term

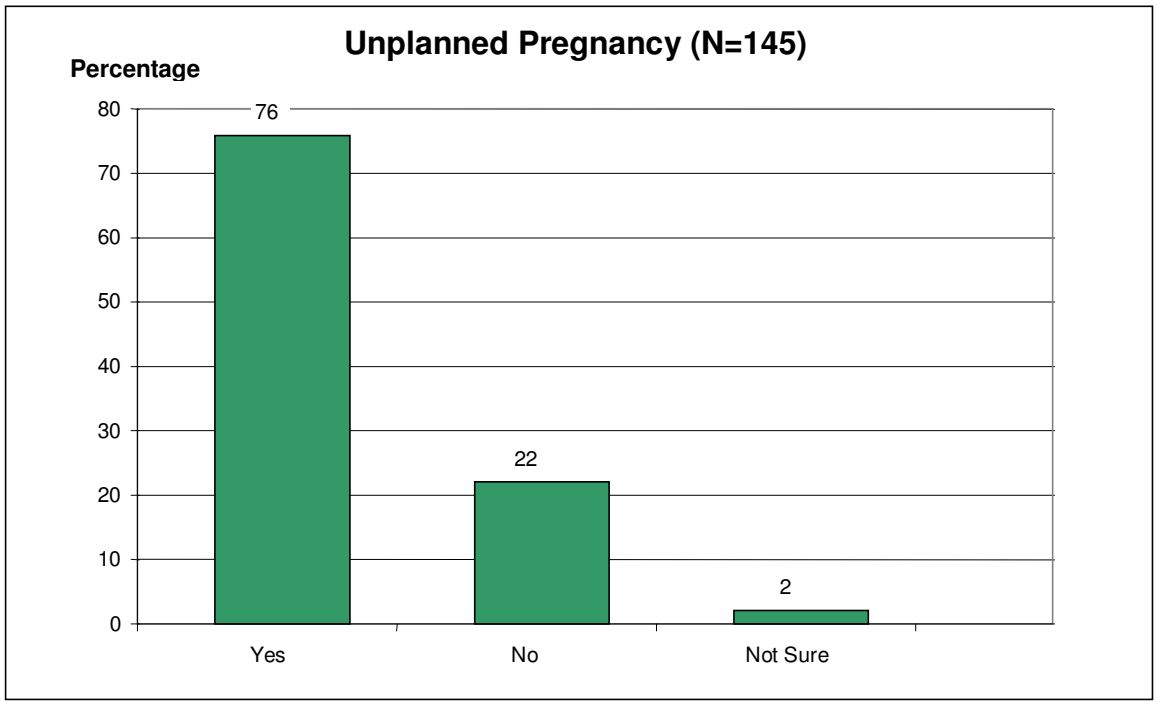

Mental Health Issues (N=144)
Percentage
60
50
40
30
20
10
0
56
44
No
Yes

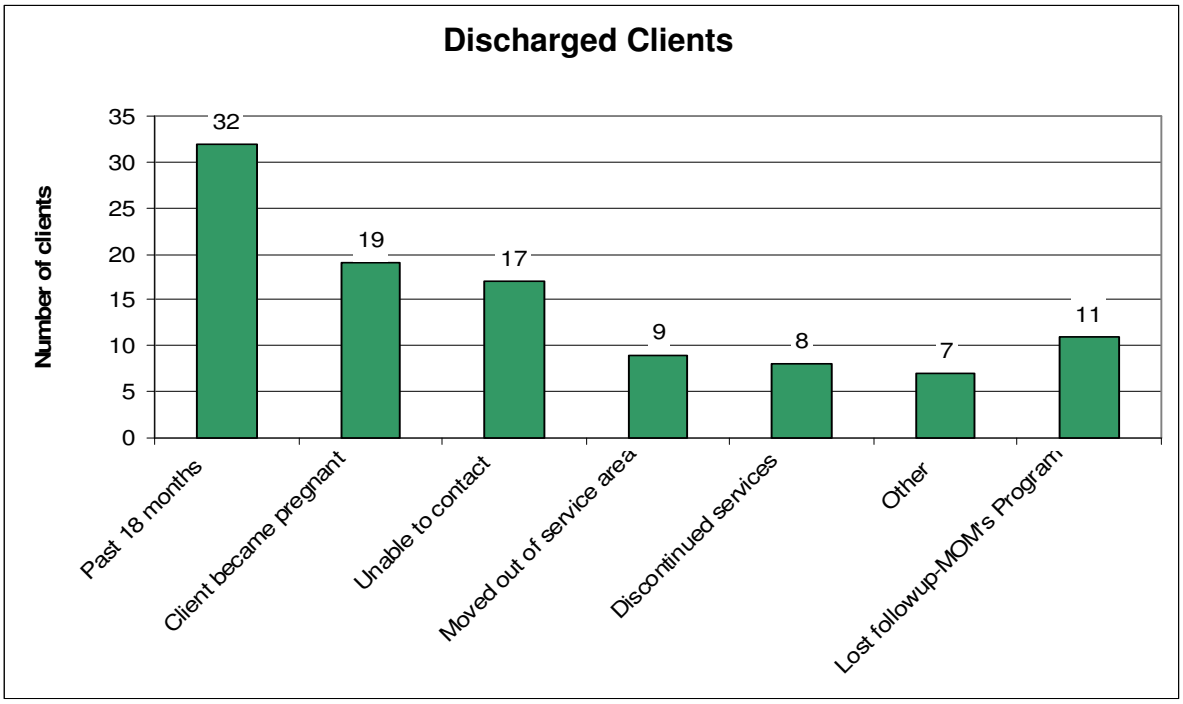

Domestic Violence During Pregnancy (N=144)
Percentage
100
90
80
70
60
50
40
30
20
10
0
87
13
No
Yes


Street Drug Use During Pregnancy (N=145)
Percentage
90
80
70
60
50
40
30
20
10
0
81
19
No
Yes


Smoking During Pregnancy (N=150)
Percentage
80
70
60
50
40
30
20
10
0
72
28
No
Yes


Alcohol Use During Pregnancy (N=148)
Percentage
100
90
80
70
60
50
40
30
20
10
0
86
14
No
Yes





Other Participant Characteristics for Eligible Pregnancy Outcomes:
Average Birth Weight (Grams) – 1764.6
Average Gestational age (weeks) – 31.1

IC Program Outcomes

One of the main goals of the IC Program is to increase birth spacing. The graph above demonstrates that 32% of clients in the IC Program are discharged because they have achieved ideal birth spacing of at least 18 months post delivery. These results are extremely positive considering that most of the clients are very transient and 76% had a previous unplanned pregnancy.

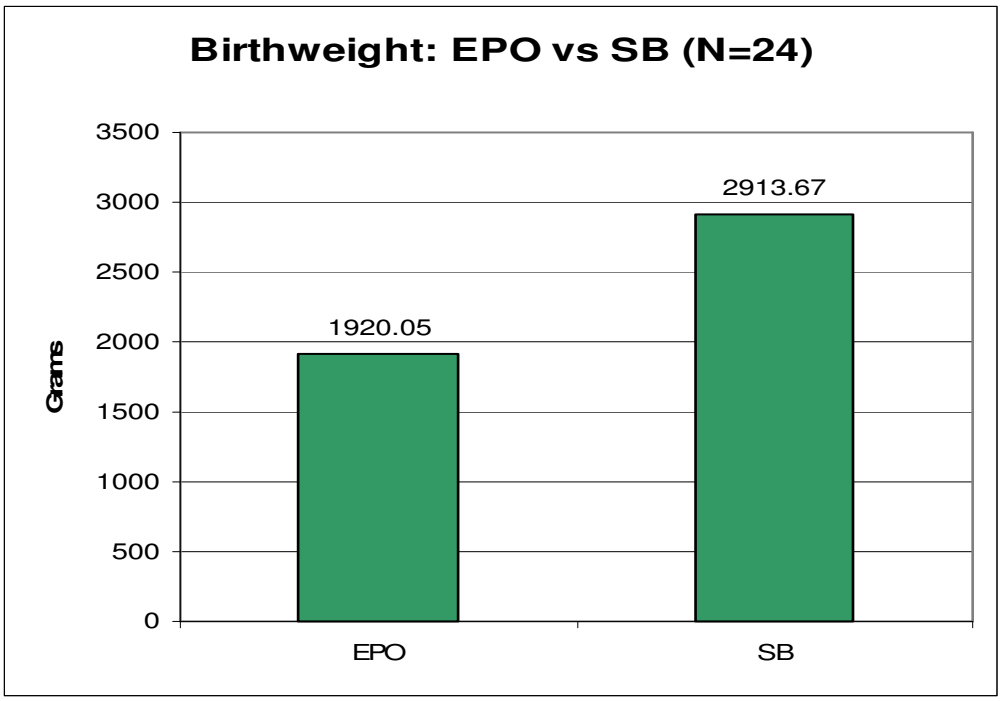
KCHD staff captures client subsequent birth outcome information from vital birth records. This information is especially important when looking at the outcomes of this program. Subsequent birth data was available for 27 of the 156 women enrolled from March 2007 through September 30, 2010. In conducting the analysis of subsequent birth outcomes, KCHD relied solely on variables available in the birth certificate registry (i.e. Medicaid status, number of prenatal care visits). Although it is understood multiple factors in a woman's life contribute to positive birth outcomes (i.e. mental health, social support), our methods did not allow for the collection of this information. Consequently, our ability to draw conclusions on the relationship between participation in the IC Program and positive subsequent birth outcomes is limited. Despite this limitation, the analysis of this small sample of births to IC clients reflects positive anticipated outcomes based on the IC Program model and adhering to program fidelity.

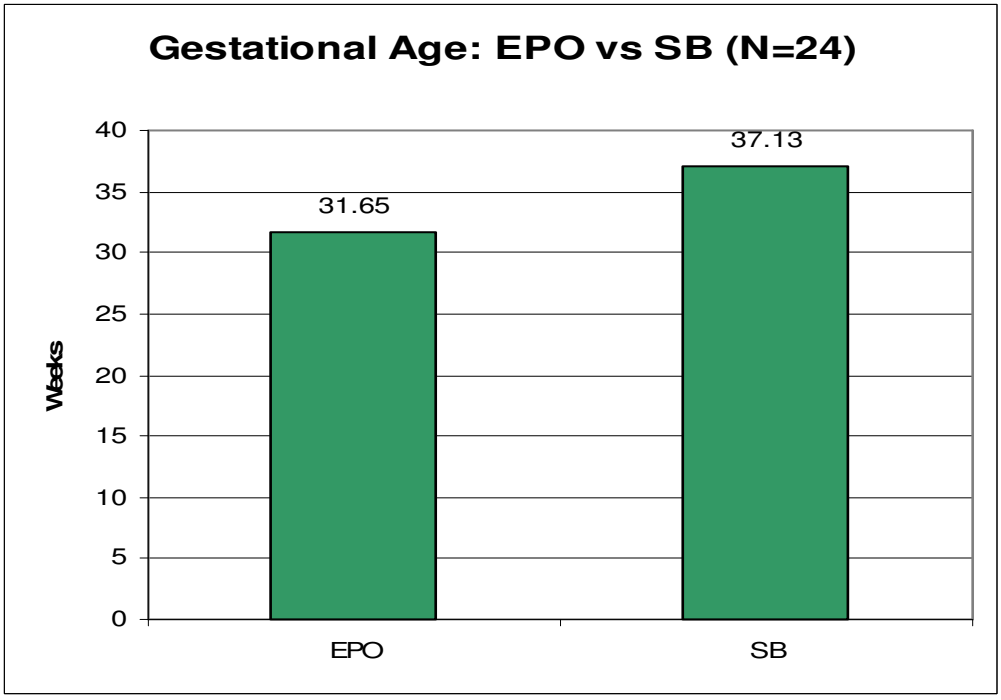
Table 1: Client Subsequent Birth Outcomes
EPO=Eligible Pregnancy Outcome
SB=Subsequent Birth
PTB=Preterm Birth
LBW=Low Birth Weight

EPO/SB	Client	Pregnancy Outcome	Birth Weight (grams)	Gestational Age (weeks)	NICU Admission (Y/N)	Approximate time between deliveries (months)
EPO	1	PTB	2410	36	N	
SB	1	Baby Delivered	2948	37	N	22.4
EPO	2	LBW	2070	37	N	
SB	2	Baby Delivered	2778	38	N	29.4
EPO	3	LBW	2296	38	N	
SB	3	Baby Delivered	2723	38	N	22.7
EPO	4	LBW/PTB	1899	34	Y	
SB	4	Baby Delivered	2807	39	N	15.3
EPO	5	LBW/PTB	765	24	Y	
SB	5	Baby Delivered	2693	37	N	19.7
EPO	6	LBW/PTB	1531	32	Y	
SB	6	Baby Delivered	2240	36	N	22.1
EPO	7	Stillbirth	N/A	21	N	
SB	7	Baby Delivered	3459	38	N	22.2
EPO	8	LBW/PTB	992	27	Y	
SB	8	Baby Delivered	2466	36	N	11.6
EPO	9	LBW/PTB	1077	30	Y	
SB	9	Baby Delivered	3317	39	N	19.1
EPO	10	LBW/PTB	2041	35	Y	
SB	10	Baby Delivered	3515	38	N	12.9

EPO	11	PTB	2551	36	N	
SB	11	Baby Delivered	3232	37	N	15.3
EPO	12	Miscarriage	N/A	20	N	
SB	12	Baby Delivered	2183	33	N	N/A
EPO	13	LBW/PTB	680	27	Y	
SB	13	Baby Delivered	3100	38	N	13.5
EPO	14	LBW/PTB	2296	36	Y	
SB	14	Baby Delivered	3856	40	N	13.2
EPO	15	PTB	2665	34	Y	
SB	15	Baby Delivered	2948	35	N	23.2
EPO	16	PTB	2580	34	N	
SB	16	Baby Delivered	3450	38	N	25.0
EPO	17	PTB	2501	36	Y	
SB	17	Baby Delivered	3005	38	N	20.9
EPO	18	LWB/PTB	1503	30	Y	
SB	18	Baby Delivered	3520	40	N	18.3
EPO	19	PTB	2501	36	N	
SB	19	Baby Delivered	3231	39	N	26.4
EPO	20	Stillbirth	N/A	24	N	
SB	20	Baby Delivered	2410	34	Y	24.4
EPO	21	Stillbirth	2501	38	N	
SB	21	Baby Delivered	2948	38	N	20.8
EPO	22	LBW/PTB	1332	28	Y	
SB	22	Baby Delivered	3742	38	N	22.8
EPO	23	Miscarriage	N/A	15	N	
SB	23	Baby Delivered	2551	36	N	10.5
EPO	24	Stillbirth	2240	22	N	
SB	24	Baby Delivered	1446	32	Y	N/A
EPO	25	Miscarriage	N/A	18	N	
SB	25	Baby Delivered	3884	40	N	N/A
EPO	26	PTB	2580	36	N	
SB	26	Baby Delivered	2875	38	N	14.8
EPO	27	LBW/PTB	1230	28	Y	
SB	27	Baby Delivered	1219	30	Y	10.1

In order to determine whether there were statistically significant changes in birth outcomes among IC clients with a subsequent birth, a paired t-test analysis was performed using SPSS 16.0 software. Twenty-seven women had a subsequent birth after being enrolled in the program. Birth weight and gestational age information was available on both births for 24 of the 27 clients. Data comparing average values for selected birth outcomes for the 24 clients who have since had a subsequent birth are presented in the following graphs. There was a statistically significant increase ($p<0.05$) in mean birth weight from 1920.05 grams to 2913.67 grams. The second chart presents a statistically significant increase ($p <0.05$) in mean gestational age among IC clients from 31.65 weeks during their eligible pregnancy outcome (EPO) to 37.13 weeks during their subsequent birth (SB).





Other Significant Program Outcomes

Based on data presented in Table 1*: Client Subsequent Birth Outcomes;* additional program outcomes were identified as represented in Table 2. The IC Program saw an increase in pregnancy intervals, a significant decrease in NICU admissions, and 0 stillbirths or miscarriage. The overall goal of the IC Program is to prevent infant deaths.

Table 2:

Time Between Deliveries	21 of 26 waited 12 or more months before getting pregnant.
NICU Admissions	Before the program = 13 of 27 or (48%), After the program = 3 of 27 or (11%)
Stillbirth or Miscarriage	Before the program = 6 of 27 or (22%), After the program = 0 of 27 or (0%)

Support Services

In addition to case management, IC clients receive wellness, dental, and family planning support services. Research supports interventions related to obesity, oral health, and family planning improve subsequent birth outcomes and maternal health. Following are descriptions of the IC program support services that were offered in 2010.

Wellness Program

According to the CDC, maternal obesity during pregnancy is associated with many complications such as cesarean delivery, macrosomia (a newborn with an excessive birth weight), preeclampsia (high blood pressure during pregnancy), gestational diabetes mellitus, fetal death, and possible birth defects. The purpose of the wellness program is to encourage healthy eating and access to fresh fruits and vegetables, as well as to increase physical activity among IC clients. Women in the wellness program received a pedometer and tracked their steps daily as a reminder to be physically active. Women received encouragement from their case manager as well as an incentive for completing their step log. Women in the wellness program also received coupons for the South East Area Farmer's Market and recipes that featured in season produce and then tracked their daily fruit and vegetable consumption. This program continues to be well received by clients. Data on Body Mass Index (BMI) is collected on all IC clients during enrollment. Obesity is an area that demands attention and allocation of additional resources for IC client interventions to ensure women are at a healthy weight before conception.

Brush Up for Baby

The American Dental Association states that premature delivery and low birth weight are closely associated with infant morbidity, mortality, and long-term health complications. In recent years, researchers have suggested that maternal bacterial infections, such as those caused by periodontal disease, may be potential risk factors for preterm birth and low birth weight infants.

As part of the IC Program, eligible clients can be enrolled in the Brush Up for Baby (BUFB) Program through their nurse case manager. The BUFB Program takes place at Baxter Health Center. Women receive multiple visits for their dental cleanings as well as appointments for extractions, restorations and root canals. Women receive one on one attention from a dental hygienist that is focused on the importance of caring for their teeth and gums. This program is delivered in partnership with Strong Beginnings (Federal Healthy Start Program).

Dental care for eligible women started in 2007. Women are eligible if they:

- Are in the IC Program or Strong Beginnings
- Have signs of periodontal disease
- Have not seen a dentist in > 1 year and
- Do not currently have access to a dentist.

Long-term goal:

- Reduce African American prematurity, low birth-weight and infant mortality.

Short-term objectives:

- Reduce the rate of periodontal disease.
- Empower women to care for their dental health and that of their children.

Since the beginning of the BUFB Program, 88 women have received intake appointments at Baxter for the BUFB program.

20 new women started the intake process:

- 15 new women completed the intake process from October 1, 2009- September 30, 2010
- The women ranged in age from 22 to 40 years old.
- 93% (14) women receive Medicaid

Time since last dental appointment:

7% (1) had seen a dentist within the past year
20% (3) 1year
33% (5) 5 years
33% (5) more than 5 years
7% (1) more than 10 years

At-Risk Status:

67% had previous preterm or low birth weight infants

Services provided to BUFB clients including patients from previous groups who were finishing treatment in the past year: 81 restorations, 16 extractions, 2 root canals, and 56 hours of hygiene time for prophy/education appointments.

Gingival Health of the 15 women at the time of intake:

80% (12) Gingivitis
7% (1) slight periodontal disease
7% (1) moderate periodontal disease
7% (1) advanced periodontal disease

Treatment:
61 restorations
6 extractions

The diagnosis of disease is determined from the observation of tissue color, shape, bleeding on probing, x-ray and pocket depth resulting from infectious assault on the tissues. With treatment there is some pocket resolution but the tissue does not grow back, nor does the bone supporting the teeth. Therefore, dental staff document improvement in health by noting changes in tissue color and bleeding on probing. Dental staff also document success in education and interest by noting changes in plaque levels, oral hygiene habits, and the patients' own comments at completion of program.

Of the women who completed surveys:

- 80% reported increased oral health knowledge including the effect of oral health to general health, how to prevent decay with diet and improved hygiene, parents' role in infant and toddler oral health.
- Of those with dental anxiety, 100% felt increased comfort.
- 100% were very satisfied with the program.

Psycho-social issues:
The most difficult issue continues to be maintaining contact with the clients for several months in order to complete the program. Two mothers continued through the program under extremely difficult circumstances. One mother had just delivered twins prematurely. During the course of the program both infants were hospitalized with one child eventually going home while the other child died at four months of age. The other mother had a child who was badly burned and needed ongoing medical care.

Family Planning

The Kent County Infant Health Initiative partners with Planned Parenthood of West and Northern Michigan (PPWNM) to provide family planning services to Interconception clients and other high risk women. Typically these are women who often fall between the cracks of various family planning support programs (including Plan First! and Title X) and lack a medical home. Family planning prevents sexually transmitted infections and unintended pregnancy and reduces the number of abortions, low birth weight babies, and infant deaths. Family planning allows women to make informed choices about the number, spacing and timing of their pregnancies and maintain their reproductive health.

Women in the Family Planning Program receive a comprehensive annual exam and one year of a birth control method. In fiscal year 2010, 50 women were in the program. There is a huge need for this program, but 50 was the maximum number of women PPWNM could enroll due to IC Program budget reductions

Of these 50 women:

AGE

- 1 was under the age of 15
- 28 were 15-19
- 11 were 20-29
- 10 were 30 and over

Ethnicity

- 19 were Hispanic
- 17 were white
- 9 were black
- 2 were multiracial
- 3 did not report

Birth Control Method

- 20 women chose to use oral contraceptives
- 14 women chose Depo Provera
- 4 women chose to use condoms, foam, jelly or cream
- 3 women chose to get an IUD
- 5 women chose the Patch (Ortho-Evra)
- 4 women chose the Ring (NuvaRing)

At the end of the grant period, PPWNM reported that 62% of women continued as PPWNM clients and are continuing on their contraceptive method of choice. Of the 38% who have not returned for continued service and contraceptive supplies, only one reported she was planning a pregnancy. Two other women had their records transferred to Cherry Street Health Services for on-going care. The remaining clients in this group were lost to follow-up.

Program Direction

Despite limited resources, the Kent County Infant Health Initiative was able to proceed in delivering service and is tracking program outcomes related to client subsequent births for two consecutive years. In 2011, the IC Program will enroll 50 more high risk women, enroll up to 30 more women in the Brush Up for Baby Program and enroll 50 more women in family planning services at PPWNM. With grant funding from the Genesee County Legacy grant, the IC Program has expanded services to Cherry Street Health Services MIHP Program and was able to expand the number of clients served through KCHD MIHP Program.

Cost Benefit

KCHD program staff identified variables to calculate the cost benefit of delivering the IC Program. One of the first variables is the direct client support service cost for the program (detailed in the chart below) which equals $952/client.

Item	Cost per client
Enrollment/case management	$365
Enrollment tote bag containing health items and incentives	$10
Gift cards for Family Planning Incentive (maximum amount)	$125
Wellness Program (including farmers' market coupons, blood pressure/cholesterol screening and incentives)	$75
Dental Care (average per client)	$200
Family Planning (covering comprehensive exam and birth control for 12 months)	$177
Total	**$952**

A second variable is the cost benefit of increasing the number of planned pregnancies as evident by increasing birth spacing to 12-18 months, and the resulting subsequent healthy births for IC clients. Subsequent birth data was available for 24 clients that received interconception care. Program analysis from the client outcome data displayed on *Pages13- 14*, indicates a statistically significant increase ($p<0.05$) in mean birth weight from 1920.05 grams to 2913.67 grams. Data analysis also indicates a statistically significant increase ($p <0.05$) in mean gestational age among IC clients from 31.65 weeks during their eligible pregnancy outcome (EPO) to 37.13 weeks during their subsequent birth (SB). Two of the outcome indicators for the IC Program are increased gestational age to prevent preterm births and increased birth weight. The cost benefit of preventing preterm and low birth weight babies bodes very strongly for the economic savings in a community. The average first-year medical costs, including both inpatient and outpatient care, were about 10 times greater for preterm infants ($32,325) than for full-term infants ($3,325) *(Preterm Birth: Causes, Consequences and Prevention, a report published by the Institute of Medicine in 2006)*. For every $952 spent per client in direct cost for client support services, the cost savings or return on investment for preventing a preterm birth is $31,373.

Program Savings (Value)

Prevention Program Costs	Treatment Costs	Savings
$952	$32,325	$31,373

The treatment costs are 34 times higher than the prevention costs.

A third variable is the cost benefit of delivering preventative dental care as a support service for IC clients. The average cost per client for dental care is $200. Research supports a direct link between preventing periodontal disease and its association with preventing preterm births. An area Periodontist reported that a moderate case of treating periodontal disease would cost between $1200 and $1500 to treat, and a severe case could cost $3000 to $4000. If patients see a dentist regularly and take preventative action to improve their dental health, this cost will be much less. For every $200 spent per client on dental care, the cost savings or return on investment is $1,150 in preventing moderate periodontal disease, and a cost savings of $3,300 for preventing severe cases of periodontal disease.

In fiscal year 2011-2012, KCHD staff will identify additional program measures, cost benefit variables, and continue to track data on client subsequent birth outcomes. The selected variables in this report are not exhaustive and don't include administrative/overhead costs to run the IC Program. The variables were selected based on information available to support the cost of providing direct services and interconception care case management to high-risk women with adverse pregnancy outcomes. The purpose of the analysis is to demonstrate the amount of direct savings for resources invested, and to demonstrate program value to clients and key stakeholders.

Kent County Infant Health Initiative: Interconception Care Program
Final Report 2010

Produced by the Kent County Health Department
Health Education and Promotion Section with support from the
Epidemiology/Communicable Disease Unit

Copies of this publication are available on the World Wide Web at www.accesskent.com/health/

Kent County Health Department
700 Fuller NE
Grand Rapids, MI 49503
(616) 632-710