



# **2009 Achievement**

*Regional Collaborative Database*



Southern New Jersey Perinatal Cooperative



*Southern New Jersey*

**PERINATAL COOPERATIVE**

*The Southern New Jersey Perinatal Cooperative is the New Jersey licensed maternal and child health consortium of health care providers and consumers serving pregnant women, infants, and children in the seven-county southern New Jersey region.*

## 2009 Achievement

### **Report of the Regional Collaborative Database**

Since its inception in 1981, SNJPC has recorded and documented trends in birth weight, mortality and transport in southern New Jersey and presented these findings in the Regional Collaborative Database. Members of the Cooperative have, as part of the agency's core mission, directed their efforts toward developing and maintaining a regional perinatal system which assures that high-risk mothers and infants receive optimal care. The effectiveness of these efforts is documented in the Regional Collaborative Database. This Database also follows ongoing concerns and identifies emerging problems.

The regionalization of perinatal services includes these core objectives:

- accessible quality care for pregnant women and newborns
- appropriate use of perinatal personnel and facilities
- assurance of reasonable cost effectiveness

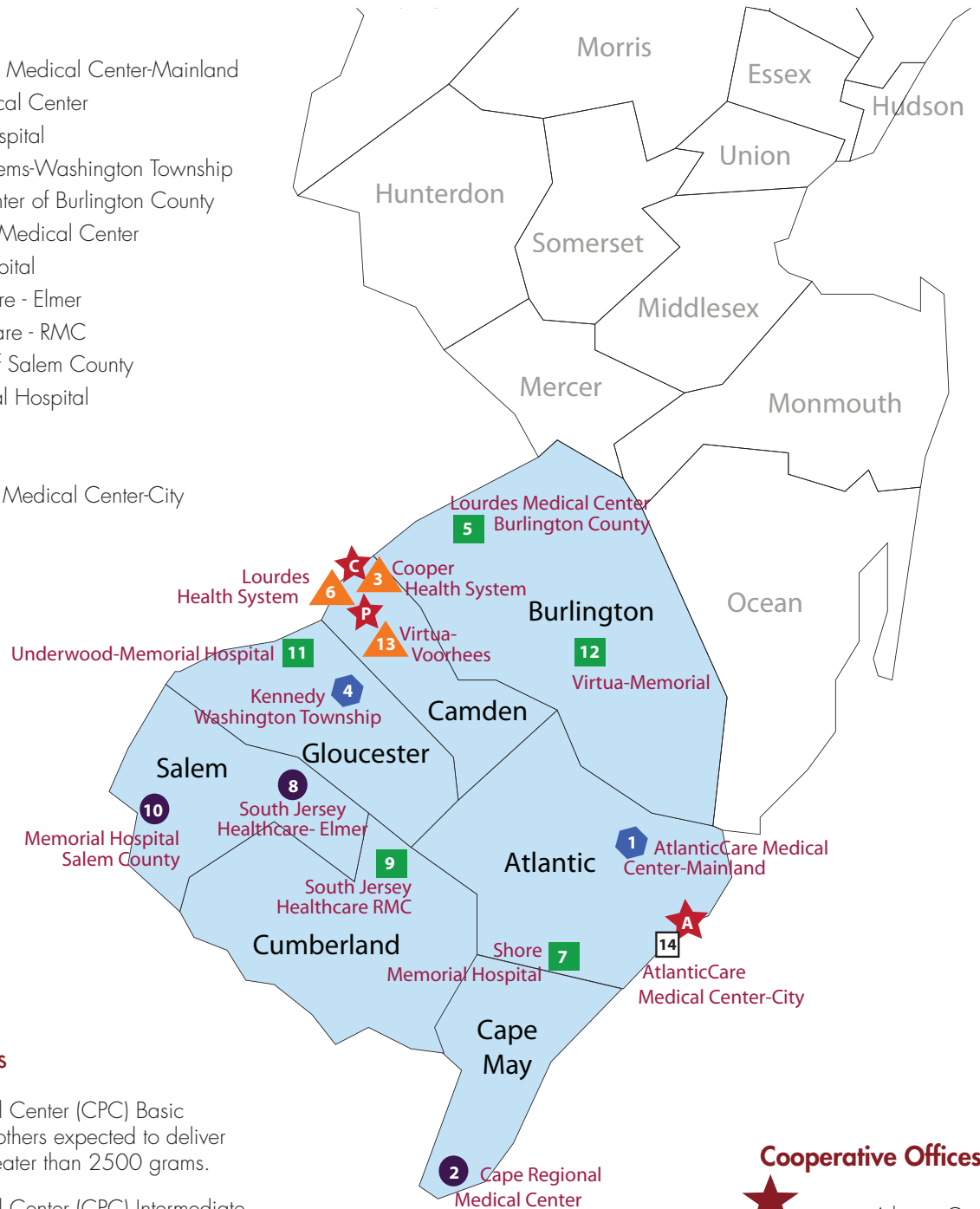
### **Thank You**

Production of the Regional Collaborative Database report is possible only through the support and assistance of the obstetrical and nursery staffs of our member hospitals. Their contributions are invaluable. We extend our gratitude to these individuals whose consistently high level of professionalism is the basis of the information in this report.





## SNJPC Member Hospitals and Offices

### Member Hospitals

- 1 AtlanticCare Regional Medical Center-Mainland
- 2 Cape Regional Medical Center
- 3 Cooper University Hospital
- 4 Kennedy Health Systems-Washington Township
- 5 Lourdes Medical Center of Burlington County
- 6 Our Lady of Lourdes Medical Center
- 7 Shore Memorial Hospital
- 8 South Jersey Healthcare - Elmer
- 9 South Jersey Healthcare - RMC
- 10 Memorial Hospital of Salem County
- 11 Underwood-Memorial Hospital
- 12 Virtua Memorial
- 13 Virtua Voorhees
- 14 AtlantiCare Regional Medical Center-City



### Hospital Designations

-  Community Perinatal Center (CPC) Basic provides care for mothers expected to deliver infants weighing greater than 2500 grams.
-  Community Perinatal Center (CPC) Intermediate provides care for mothers expected to deliver infants weighing greater than 1500 grams.
-  Community Perinatal Center (CPC) Intensive provides care for mothers expected to deliver infants weighing greater than 1000 grams.
-  Regional Perinatal Center (RPC) provides full range of services for high risk mothers and newborns

### Cooperative Offices

 Atlantic City  
2922 Atlantic Avenue  
Atlantic City, NJ 08401

Camden City  
2600 Mt. Ephraim Avenue  
Camden, NJ 08104

Pennsauken - MAIN OFFICE  
2500 McClellan Avenue  
Pennsauken, NJ 08109

## Regional Hospital Summary

	BASICS		INTERMEDIATES		INTENSIVES		RPCs		REGION	
	Actual	Rate%	Actual	Rate%	Actual	Rate%	Actual	Rate%	Actual	Rate%
TOTAL BIRTHS IN HOSPITAL (live + stillbirths)	1130		7742		3990		9052		21873	
LIVE BIRTHS IN HOSPITAL	1125		7686		3969		8976		21681	
NEONATAL MORTALITY	2	1.778	21	2.732	19	4.787	78	8.690	98	4.520
LBW - LIVE BIRTHS <2501 GM	58	5.16%	496	6.45%	374	9.42%	975	10.86%	1817	8.38%
LBW - NEONATAL MORTALITY	2	34.483	19	38.306	19	50.802	76	77.949	92	50.633
VLBW - LIVE BIRTHS<1501 GM	9	0.80%	54	0.70%	65	1.64%	286	3.19%	359	1.66%
VLBW - NEONATAL MORTALITY	2	222.222	19	351.852	18	276.923	70	244.755	88	245.125
ELBW - LIVE BIRTHS<1001GM	5	0.44%	30	0.39%	41	1.03%	157	1.75%	178	0.82%
ELBW - NEONATAL MORTALITY	2	400.000	19	633.333	17	414.634	68	433.121	83	466.292
ELBW2-LIVE BIRTH(500-1000)	4	0.36%	18	0.23%	31	0.78%	118	1.31%	136	0.63%
ELBW2 - NEONATAL MORTALITY	1	250.000	7	388.889	7	225.806	32	271.186	42	308.824
ELBW3-LIVE BIRTH(751-1000)	1	0.09%	7	0.09%	20	0.50%	51	0.57%	65	0.30%
ELBW3 - NEONATAL MORTALITY	0	0.000	1	142.857	2	100.000	2	39.216	8	123.077
FETAL MORTALITY > 499 GM	5	4.429	25	3.247	14	3.524	39	4.345	119	5.469
FETAL MORTALITY > 2500 GM	2	1.871	7	0.973	2	0.556	9	1.124	22	1.106
MATERNAL TRANSPORTS (% of total births+trans)	43	3.67%	66	2.10%	25	0.62%	4	0.04%	424	1.90%
NEONATAL TRANSPORTS (% of live births)	39	3.47%	24	1.61%	37	0.93%	82	0.91%	310	1.42%
NEONATAL MORTALITY AFTER TRANSPORTS (% of live births)	1	0.09%	4	0.05%	1	0.03%	2	0.02%	13	0.06%
LIVE BIRTHS OUTSIDE HOSP	5	0.44%	16	0.21%	19	0.48%	22	0.24%	64	0.29%



## Electronic Birth Certificate

The New Jersey Electronic Birth Certificate (EBC) system is one of the most comprehensive perinatal data systems in the country. It contains birth record information and perinatal data for each birth that occurs in the birthing facilities in New Jersey.

The current EBC resides on each hospital's network and is voluntarily reported to the Cooperative for regional analysis. This analysis focuses on key risk factors and outcomes from more than 250 individual pieces of data on each delivery. The partnership between SNJPC and its member hospitals has led to improved use of EBC in the internal QI systems at our member hospitals and the development of needed programs region-wide.

### *Disclaimer*

The EBC data in the following charts represents births that occur in Cooperative member facilities. Information is limited to those who delivered in or were transferred to a regional facility. This is hospital reported information and is not to be considered official or population based. These data are preliminary and are not considered official by the New Jersey Department of Health and Senior Services and may not be represented as such.

The accuracy of the data contained in this report is dependent upon the completeness and reliability of the information recorded by each EBC birth facility. Moreover, the accuracy of residence information is somewhat limited because it depends on information provided by the mother. A common source of residence error is confusion between mailing and residence address since it is possible to have a postal address with a city/county location that is different from the mother's actual residence.

## Distribution of Births

The birthrate for South Jersey is depicted in Figure 1. The annual number of births peaked in 1990. Since 1999, the number of births in South Jersey hospitals has been flat. Throughout the decade, the largest variation was 1800 births (between 2002 and 2007). There was even less variation in total births in the last five years. The widest variation during this period was 1000 births between 2004 and 2007.

While the number of births in the seven county region has fluctuated very little over the past five years, the shift in regional demographics has resulted in intercounty variations during the same period (Table I). Births in hospitals in Atlantic, Cape May and Cumberland Counties increased; two hospital systems in these counties, AtlantiCare and South Jersey Healthcare, consolidated obstetrical services into one of their divisions during this period. During the same period births in hospitals in Camden and Gloucester counties remained relatively unchanged. In response to this Kennedy Health system closed its Stratford division, consolidating obstetrical services at its Washington Township campus.

During the same period there has been a significant decline in the number of births in hospitals in Burlington and Salem counties. Because of this, it is not surprising that two hospitals in these counties, Our Lady of Lourdes Burlington County and Memorial Hospital of Salem County, have informed the Department of Health and Senior Services of their intention to discontinue obstetrical services.

As expected, the closure of the obstetrical service at AtlantiCare City Division in 2007 has been accompanied by an increase in maternal transports between the ER at City Division and AtlantiCare Mainland Division. In 2009, there were 198 transports: 132 of the transported mothers were preterm, and 66 were at term. This is not an

**Live Births 1984-2009**

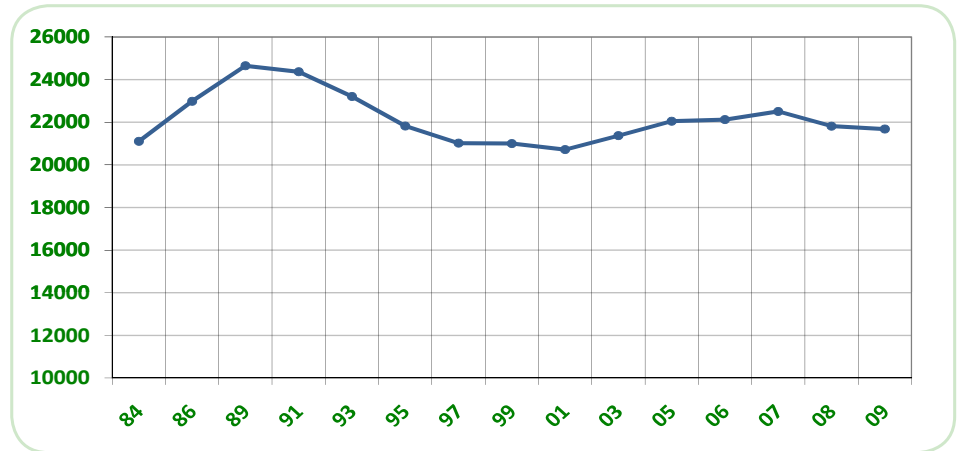


Figure 1

Hospital Births By County	2004	2009	5 yr (04-09) % change
Atlantic County	3622	3889	7.37%
Burlington County	3201	2972	-7.15%
Camden County	9101	9137	0.40%
Cape May County	510	568	11.37%
Cumberland County	2062	2203	6.84%
Gloucester County	2396	2355	-1.71%
Salem County	614	557	-9.28%

Table I

unexpected finding, since at the time of discontinuing obstetrical services at City Division, AtlantiCare agreed to provide transportation for pregnant women as needed from the ER at City Division to the Mainland Division.

The closure of the obstetrical services at Kennedy Health System Stratford Division had a similar but much less significant effect on maternal transports. In 2009, there were 28 transports: 21 of the transported mothers were preterm, and seven were at term.

## Birthweight Trends

As can be seen in Figure 2, a greater proportion of infants weighing less than 5.5 lbs. was born in 2009 than in the baseline year of 1984, (8.38% vs. 6.8%). Table II depicts the increased birth rates of the last 20 years for infants weighing 1501-2500 grams, 1001 -1500 grams and those infants weighing less than 1000 grams at birth. Although we continue to depict regional progress since the inception of SNJPC a more relevant comparison is one that compares our current experience to that of the late 1990's.

Changes in medical management and the coordination provided by perinatal regionalization since 1995 set the stage for the increased birthrate of very small babies since the late 1990s. Technological and medical advances now permit the birth of many tiny, premature infants who would have died prior to delivery just 15-20 years ago, when the SNJPC database was first developed. The higher incidence of multiple births (twins, triplets, etc.) associated with fertility treatment also accounts for some of the increase in the number of small infants. Since 1999, the incidence of low birthweight (LBW) infants has been fairly stable (between 8% and 9% annually.)

### Extremely Low Birthweight

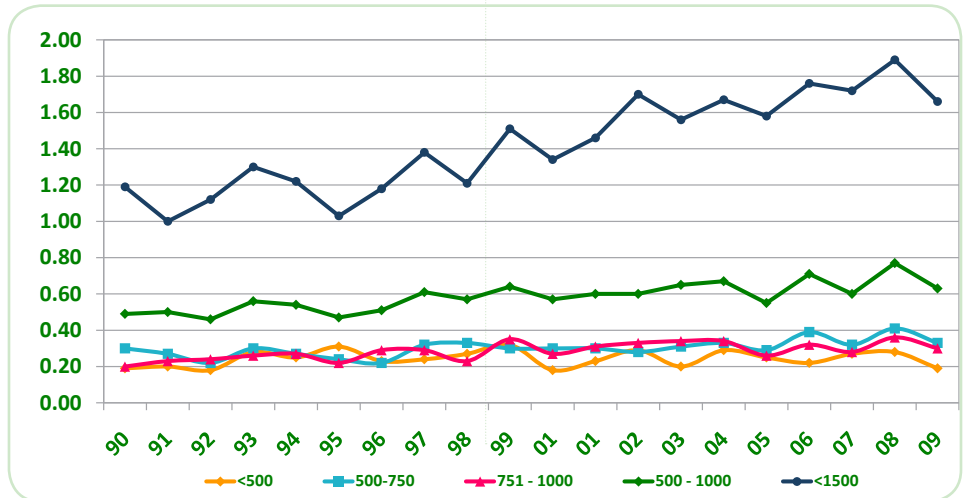


Figure 2

### Birthweight Distribution

Weight Groups	1984	2004	2005	2006	2007	2008	2009
< 2501 g	6.80%	8.55%	8.43%	8.99%	9.1%	8.75%	8.38%
< 1501 g	1.19%	1.67%	1.58%	1.76%	1.72%	1.89%	1.66%
<1001 g	0.64%	.96%	.8%	.93%	0.87%	1.06%	.82%

Table II

Weight Groups	1988	2009	%Change
1501-2500 g	5.43%	6.72%	23.8%
1001-1500 g	0.65%	0.83%	27.7%
<1001 g	0.63%	0.82%	30.2%

Table III

# Achievement 2009

## ELBW/VLBW Birthrate Comparison

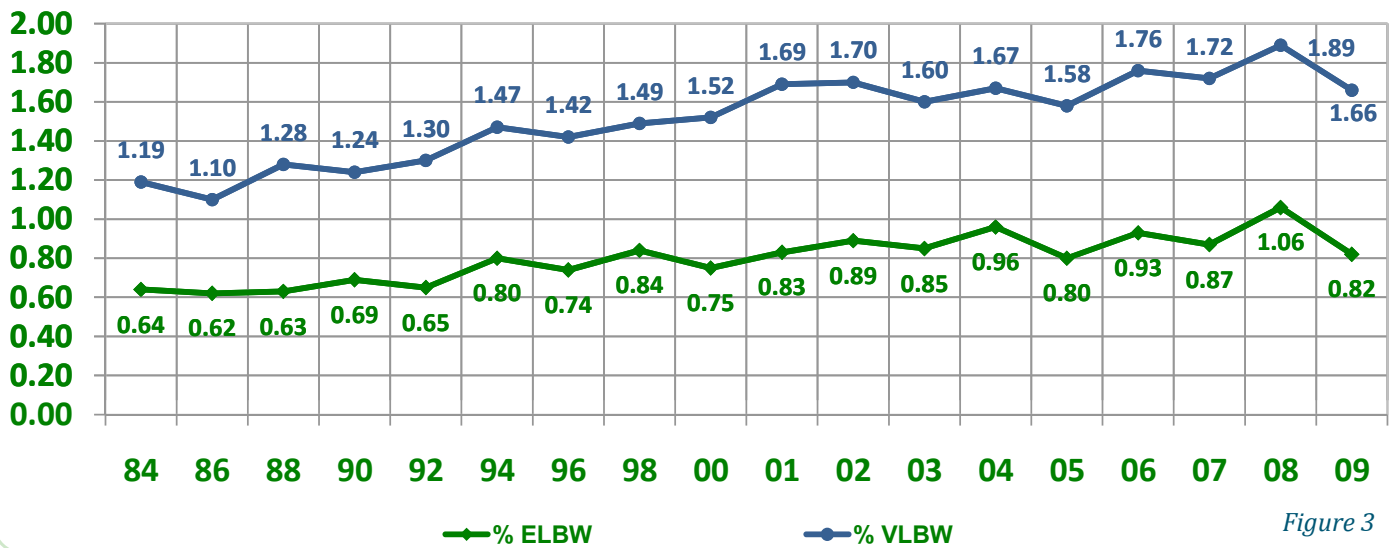


Figure 3

In 2009, 355 (1.66%) of the babies born in member hospitals were categorized as VLBW (Very Low Birth Weight) because they weighed less than 1500 grams (3.3 lbs). This group of infants is of particular interest because they are the most vulnerable and have the most influence on the neonatal mortality rate. When examined over time, the birth rate of small infants has remained relatively stable since 1999. Throughout the decade, the average birthrate of VLBW infants was 1.69%; the range was 1.52% in 2000 and 1.89% in 2008. (Figure 3)

Of particular interest is the subset of the tiniest infants who weigh less than 2 lbs. (1000 grams). These babies are referred to as Extremely Low Birth Weight (ELBW). The birthweight trends for these small infants from the baseline year to the present are shown in Figure 3. Although there have been changes year to year, an examination of ten years of data shows that the average birthrate of ELBW infants is 0.88%; in 2005 and the range was 0.80% and in 2008 in was 1.06%. In 2009, 178 infants, (0.82% of the total births in the region) weighed less than 1000 grams.

## ELBW Distribution

	1984	2004	2005	2006	2007	2008	2009
<b>CPC Basic</b>	10	5	5	8	1	3	5
<b>CPC Intermediate</b>	37	26	33	36	34	30	19
<b>CPC Intensive</b>	29	56	16	16	20	41	24
<b>RPC</b>	59	118	121	146	141	157	130
<b>Region</b>	135	205	175	206	196	231	178

Table IV

One of the consistent findings in the SNJPC Regional Database Report has been the effectiveness of the regional maternal transport system in assuring that few of the infants weighing less than 2 lbs are born at community hospitals without NICU's. Although every CPC (Community Perinatal Centers) Intermediate and CPC Basic hospital is appropriately staffed and equipped to stabilize and care for tiny infants, having to transport these babies to a hospital with a NICU is a risk that can be avoided if their mothers can be transported prior to delivery.

Early identification, referral and transport of high-risk mothers helped to insure that most of the smallest infants who benefit the most from specialized neonatal care are born at hospitals with these services. Table IV depicts the great change in which these infants are born since the first year these data were collected (when only 65% of the infants weighing 1 and 2 lbs. were born at hospitals with NICUs). In 2009, 88% of the tiniest infants were born at Regional Perinatal Centers (RPCs) and CPCs-Intensive.

Table V depicts some of the risk factors that were associated with VLBW births in 2009. Very low birth weight is associated with risk factors such as multiple births, substance abuse, and inadequate prenatal care.

In data reflective of national reports, black women in South Jersey continue to have a higher proportion of low birthweight babies. Table II shows that while 20% of the births in the region were to black women, a higher proportion (37%) of the VLBW births were black. Since low birthweight is closely associated with infant mortality, reducing the incidence of VLBW infants born to black women is essential to

reducing the racial disparity that has long challenged the perinatal healthcare community.

The association between no prenatal care and late entry to care and the occurrence of low birthweight is quite clear in Table II. Although only 1% of pregnant women did not receive prenatal care, the no prenatal care rate for women delivering VLBW infants was 7%.

The table also shows that inadequate prenatal care, substance abuse, and multiple births (twins, triplets) are more likely to result in the birth of a VLBW infant. Maternal risks such as

hypertension and pre-eclampsia can also be associated with decreased birth weight.

<b>Southern Region</b>	<b>ALL</b>	<b>&lt;1501 grams</b>	<b>&gt;1500 grams</b>
<i>Live Births to residents</i>	<b>21245</b>	350	20895
Mother's race: White	<b>61%</b>	45%	62%
Mother's race: Black	<b>20%</b>	37%	19%
Mother's ethnicity: Hispanic	<b>22%</b>	22%	22%
1st trimester entry to prenatal care	<b>75%</b>	62%	75%
No prenatal care	<b>1%</b>	7%	1%
Used tobacco during pregnancy	<b>13%</b>	16%	13%
Used alcohol during pregnancy	<b>2%</b>	1%	2%
Used drugs during pregnancy	<b>3%</b>	8%	3%
Plurality of 2 or more	<b>4%</b>	27%	4%
Mother's age less than 20 years	<b>9%</b>	9%	9%
Mother's age 35 years or greater	<b>15%</b>	18%	15%
Primigravida	<b>29%</b>	29%	29%
Maternal risk: Hypertension in pregnancy	<b>4%</b>	7%	4%
Maternal risk: Pre-eclampsia	<b>1%</b>	8%	1%

Table V

## Risk Assessment

The Perinatal Risk Assessment (PRA) tool is used to collect demographic, perinatal, other medical and psychosocial factors on patients at entry to prenatal care, creating a source of uniform prenatal data collected on entry to care. The PRA is an easy-to-use form that includes risk factors identified by all of the NJ-based Managed Care Organizations (MCOs) in partnership with NJ State Health and Human Services staff, provider representatives and community stakeholders. The PRA is sensitive enough to identify women who will benefit from additional resources during their pregnancies in order to improve the likelihood of a healthy baby.

Risk assessment is conducted during pregnancy to identify women who are at high risk for fetal or infant death or infant morbidity. Early identification and intervention are keys to prevention. Because of this risk assessment is conducted at the first prenatal visit and updated throughout the course of prenatal care.

The goal of risk assessment is to prevent or treat conditions associated with poor pregnancy outcomes and to assure linkage to appropriate services and resources through referral.

Additionally, these data can be linked to statewide data sets, such as the Electronic Birth Certificate program to assess the relationship among risks, interventions and outcomes, and to identify gaps in services.

In the Southern Region, providers in each county have begun using the PRA. Of the 2009 births in the Southern Region, 1646 were to women screened with the PRA. The PRA has been used in Camden since 2007. The majority of forms completed in 2009 was for births to women in Camden.

SNJPC has matched the PRA to the EBC data for Camden residents. Tables VI and VII show the relationships among selected variables and these birth outcomes.

Camden City LBW Risk		
Gestational Age Groups	Gestational Diabetes, Multiple Gestation, IUGR or Prior LBW	
	No Risk (746)	Risk Present (90)
<32 weeks	70.8%	29.2%
32-36 weeks	76.3%	23.8%
37-38 weeks	86.4%	13.6%
>38 weeks	93.0%	7.0%

Table VI

Camden City LBW Risk*		
Gestational Age Groups	Current Pregnancy Risk Factors	
	No Risk (534)	Risk Present (302)
<32 weeks	29.2%	70.8%
32-36 weeks	61.3%	38.8%
37-38 weeks	59.2%	40.8%
>38 weeks	67.5%	32.5%

Table VII

More than 85% of Camden residents and nearly 70% of all women screened in the Southern Region who delivered live births prior to 32 weeks gestation in 2009 screened positive for at least one prenatal risk factor on the PRA. One hundred percent of those with losses had some risk identified on the PRA.

Although no single risk factor can be used to predict poor outcomes, the PRA presents a combination of risk factors that can help identify women in greatest need of intervention.

### \*Aggregate Health Risk Factors

Age <18 or >35	Fetal Abnormality
Prior LBW	Group B Strep
History of PROM	Pyelonephritis
Cervical Incompetence	PIH
Multiple Gestation	UTI
IUGR	Abnormal AFP
Bleeding during Current Pregnancy (1st, 2nd or 3rd trimester)	

## Neonatal Mortality

The regional neonatal mortality rate trend since 1984 can be seen in Figure 4.

At 4.52 deaths per 1000 live births, the 2009 neonatal mortality rate (NMR) is the lowest it has been since in the 25 years that SNJPC has tracked regional trends. Since 1999, the NMR has been less than 6.5 and the average NMR for infants of all weights was 5.6 deaths per 1000 live births.

Since low birth weight is the single most important factor contributing to neonatal mortality SNJPC monitors the relationship between the incidence of LBW and NMR. Despite the increase in the incidence of low birth weight infants since 1984, the neonatal mortality has decreased for every birthweight category above 500 grams. Several categories exhibit dramatic decreases.

Although the annual birth rate of extremely small babies has significantly increased in the two decades the data have been tracked, the mortality rate for small infants continues to decrease. As can be seen in Table VIII the mortality rate for LBW, VLBW and ELBW infants decreased 30-40 percent.

The information concerning specific subsets of tiny infants helps explain these trends. Since we have tracked regional data there has been a 40% decrease in the mortality rate for smaller infants weighing between 1 and 1.5 lbs. (500-750g) has fallen 40%. During the same period, the mortality rate for the subgroup of infants weighing between 1.5 and 2 lbs (750-1000g) decreased 65% from 350 to 123 per 1000 live births from 1984 to 2009. (Table IX.)

Neonatal Mortality 1984-2009

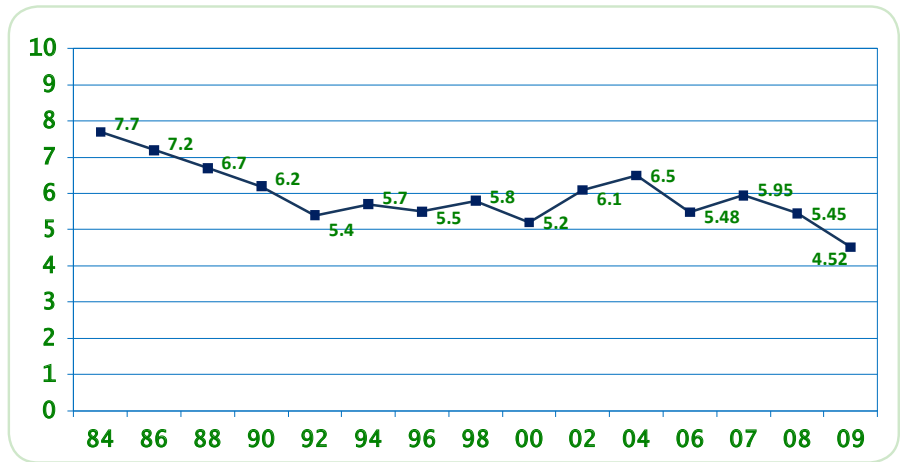


Figure 4

Neonatal Mortality Rate Birthweight Distribution

Weight Group	Baseline	2009	%Change
Overall	7.68	4.52	-41.1%
<2501 g (LBW)	86.53	50.63	-41.5%
<1501 g (VLBW)	424.6	245.12	-42.3%
<1001 g (ELBW)	666.67	466.29	-30.1%

Table VIII

Neonatal Mortality Rate Trends

	1984	2003	2004	2005	2006	2007	2008	2009
Overall	7.68	5.19	6.53	5.41	5.48	6.04	5.45	4.52
1501-2500 g	15.24	5.87	6.78	3.32	6.26	7.22	4.68	2.74
1001-1500 g	45.30	26.49	25.97	34.88	27.47	36.65	16.29	27.62
500 -1000 g	554.46	345.32	386.64	330.58	343.95	333.33	272.18	308.82
751 -1000 g	350.88*	180.56	194.49	87.71	197.18	126.98	63.29	123.07
500-750 g	785.71*	522.39	549.30	546.87	465.12	513.89	455.56	478.87

\*1989 data

Table IX

## Fetal Mortality

In addition to programs aimed at reducing neonatal mortality, the Cooperative has also coordinated educational and consultation activities directed at reducing the fetal mortality rate (FMR).

The FMR is reported in two ways: deaths of all fetuses weighing more than 500 grams and the subset of fetal deaths in later pregnancy when the fetus weighs more than 2500 grams.

The fetal mortality rate for births over 500 grams rose sharply in 2009, from 3.75 per 1000 births in 2008 to 5.47 in 2009. The increase in perinatal loss was striking at the RPCs where the rate rose from 4.3 to 6.2 per 1000 births. The fetal loss rate has been historically higher at RPCs than at the CPCs primarily because of the high-risk maternal population cared for in the RPCs. The significant increase in maternal transports that occurred in 2009 may have contributed

to the increase in the FMR at the RPCs.

Despite this, the late pregnancy loss remained low at the RPCs. The FMR by hospital service level in 2009 is depicted in Figure 6. Since 1984, the FMR among infants weighing more than 2500 grams a marker of late pregnancy complications and management, decreased 51%. The overall rate of 1.1 losses per 1000 births for this group is unchanged from 2008.

**Fetal Mortality Rate**

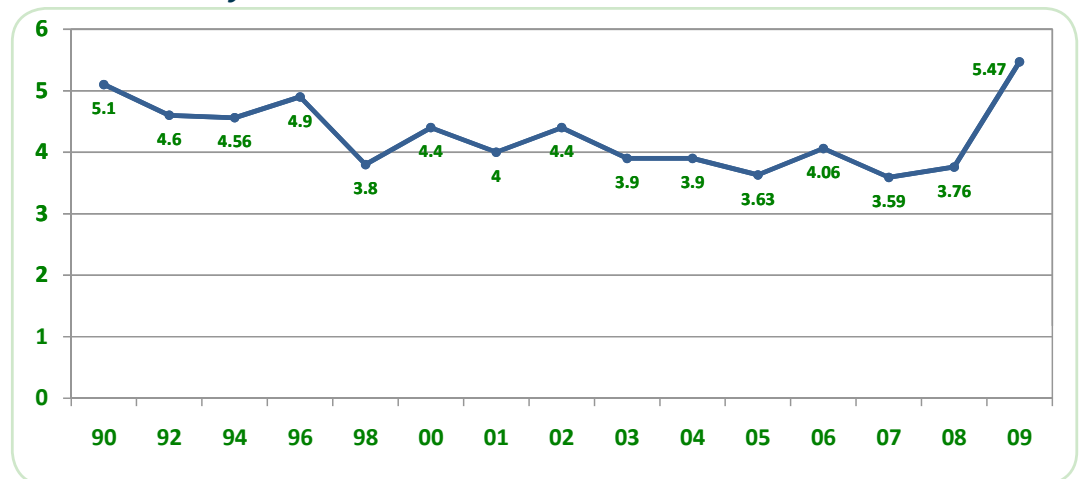


Figure 5

**Fetal Mortality**

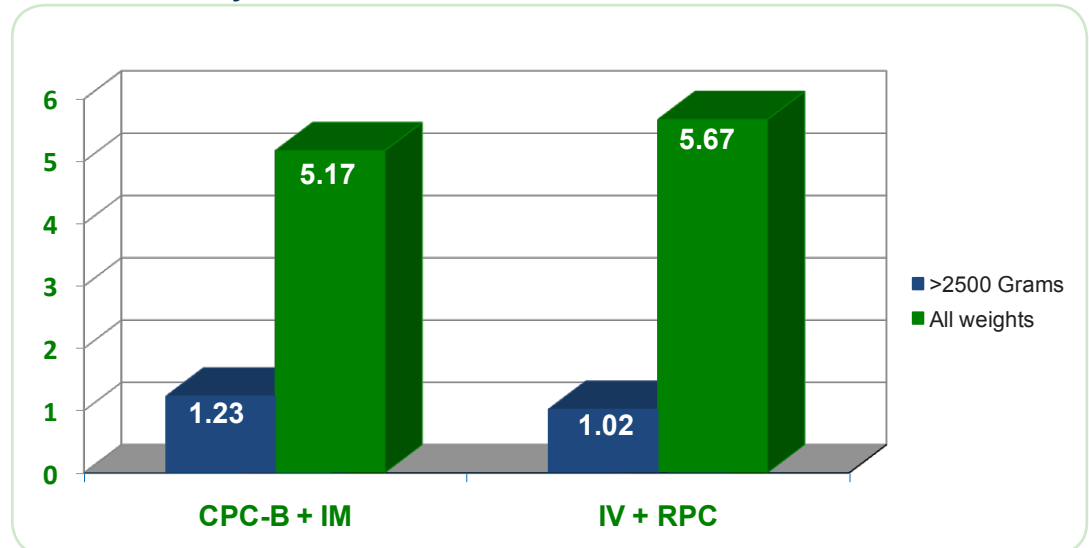


Figure 6

## Transport Patterns

Maternal transport patterns have contributed to the reduction in the mortality rate for ELBW infants. Survival rates for tiny infants, those weighing less than 1500 grams, are improved when they are born at a hospital with a Neonatal Intensive Care Unit (NICU).

In 2009, 465 pregnant women were transported to high-risk perinatal centers. The proportion of these transports going to South Jersey RPCs has consistently exceeded

90%. (Figure 7) Eighty percent of the mothers transported to the perinatal centers were 33 weeks gestation or less. This trend corresponds to the decreased incidence of small babies born in hospitals without NICUs and the increased survival of tiny infants.

In 2009, 310 infants were transported from South Jersey hospitals for neonatal intensive care (Figure 8). The effectiveness of the maternal transport system can be seen in the fact that only 25% of these transported

infants weighed less than 1500 grams. Additionally 55% of the transported infants weighed more than 2500 grams. Many of the larger term or close to term infants who are transported required surgery or other specialized care. The fact that there are many more pediatric subspecialists in Philadelphia than South Jersey partially explains the fact that 73% of the neonatal transports from South Jersey hospitals went to neonatal units in Philadelphia or Delaware.

### Maternal Transports

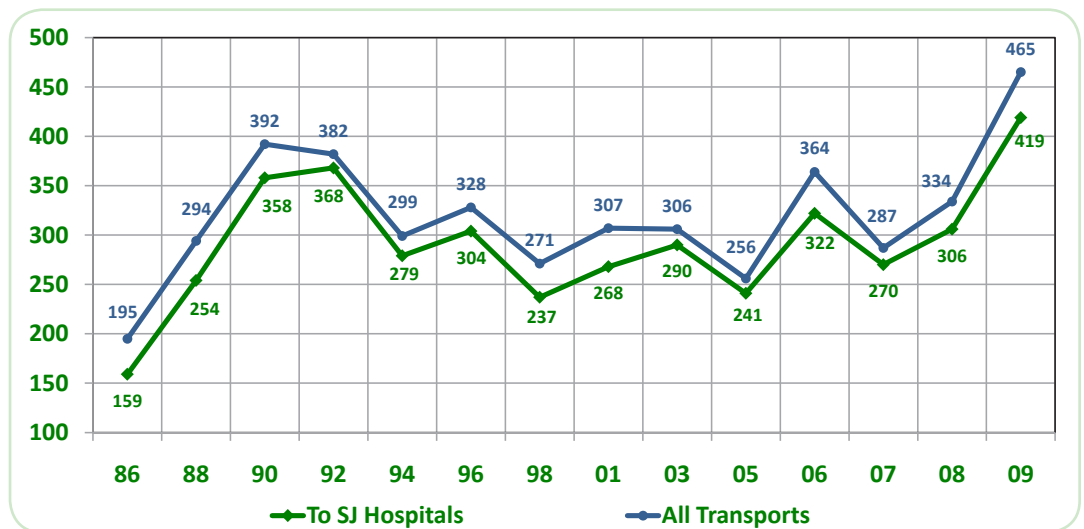


Figure 7

### Neonatal Transports

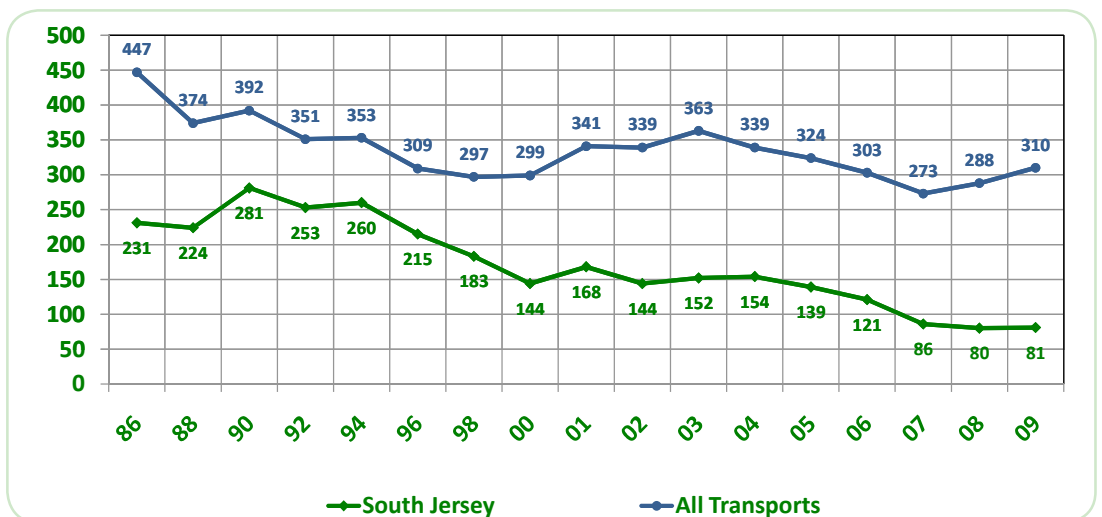


Figure 8

## Infants Born Outside the Hospital

The regional database also tracks the number of infants born outside of hospitals. These are emergency births and include births at home, in transit or in the hospital emergency room. This number does not include planned home deliveries.

In 1988, the number of births outside the hospital rose sharply and continued until 1993 when the trend was reversed. This rate has remained very low for the past decade (Figure 9).

Although the majority of these infants are full term, they are, as a group, at increased risk. The fetal and neonatal mortality risk is higher for these infants than those born in the hospital with appropriate care and support. Because of this, surveillance continues to determine preventable causes of these occurrences.

**Outside Birth Trend**

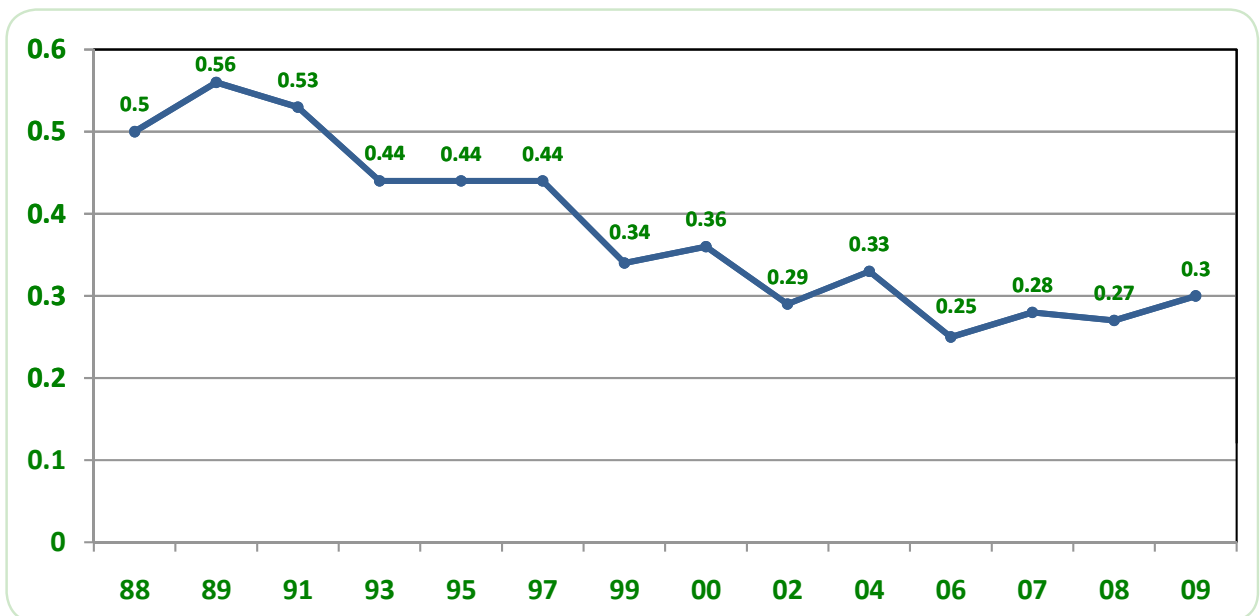


Figure 9



## **2009 Regional Perinatal Database for South Jersey**

*Providing the information to connect effort with results*



*Southern New Jersey*

**PERINATAL COOPERATIVE**

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