

## V09.1 Special Report: Linked Trend Analysis – Maternal Obesity and Complications of Mothers, Fetuses and Newborns 2007-2009 (Q1)

### I. Introduction

In 2006, a new category of maternal ICD-9-CM diagnosis codes defined as **Other conditions or status of the mother complicating pregnancy, childbirth, or the puerperium (649)** became effective for use beginning with Q4 2006 discharges. **Obesity (Dx code 649.1)** is one of the conditions included in this category and the focus of this special report.

### II. Literature Overview of Topic

According to the National Institutes of Health obesity is defined as a Body Mass index (BMI) of 30 or greater.<sup>1</sup> Obesity has grown dramatically over the last 20 years and is the fastest growing health problem in the United States<sup>2</sup>. In 2009 the National Birth Defects Prevention Month and Folic Acid Awareness week made obesity prevention their focus due to the link of maternal obesity with certain birth defects. Obesity is more prevalent in lower-income and minority women.<sup>3</sup> Genetics, environment and socioeconomic status all influence the occurrence of obesity.<sup>4</sup>

<b>Obesity in Pregnancy Risks</b>
Spontaneous abortion after fertility treatment
Stillbirth
Preterm birth
Gestation hypertension
Preeclampsia
Gestational diabetes especially requiring insulin <sup>5</sup>
Fetal macrosomia
Cesarean delivery
Longer labor
Obstructive sleep apnea with extreme obesity <sup>6</sup>

Obesity in pregnancy has a variety of risk factors. With operative procedures women with obesity have a higher risk of pulmonary complications, excessive blood loss, greater operative time, wound infection, and endometritis.<sup>7, 8</sup> Dashe, et al (2009)<sup>9</sup> found that with an increasing maternal BMI there was a decrease of 20% in finding fetal anomalies during ultrasound when compared to normal weight pregnancies. A meta-analysis of pregnant women with obesity found that heart rate, blood pressure and other physiological parameters were diminished which reduce the ability of the mother to respond physiologically.<sup>10</sup> There is an association between obesity and decreased breastfeeding rates.<sup>11</sup>

It is recommended for women who have chosen surgical methods of weight reduction and are not currently obese that they wait 12 to 18 months after surgery before becoming pregnant.<sup>12</sup> Even after bariatric surgery the mother continues to be at risk for a cesarean delivery.<sup>13</sup>

Infants born to mothers with obesity have a higher prevalence of congenital anomalies including neural tube defects, oral clefts, heart anomalies, hydrocephaly and abdominal wall abnormalities.<sup>14</sup> One study found that fetuses of obese mothers become insulin resistant in utero.<sup>15</sup> Mothers who are obese entering pregnancy are likely to have infants with higher birth weight and macrosomia.<sup>16</sup> Some research is showing that the offspring of women with obesity are at risk for the development of obesity,

hypertension, dyslipidemia and glucose intolerance.<sup>17</sup> Another article suggested a relationship between maternal smoking and childhood obesity through age of 9-10 years of age.<sup>18</sup>

Morbid obesity (BMI  $\geq$  39) can be a serious safety concern in pregnancy. Anesthesia-related complications, including maternal mortality, are more frequent in pregnant women who are obese.<sup>19</sup> Obesity has an “additive” affect further complicating anesthesia including airway management, respiratory and cardiovascular systems. An advanced anesthesia consult is recommended prior to labor when possible.

Advance planning is very important when preparing to deliver an obese mother. Proper equipment can be an overlooked area for these high risk women. Some of the equipment challenges can include scale, straps for fetal monitoring, bed, OR table, long OR instruments, toilets, sequential compression stockings, stirrups for delivery, transfer devices, gowns and blood pressure cuffs to name a few. Due to the difficulty in managing fetal monitoring and needed assistance with turning/support and delivery, adequate nurse to patient ratio is important. One to 1 care during labor and 2 to 1 during second stage of labor should be considered. Bariatric beds are larger, so assessing if this bed can be accommodated through the door of the operating suite is important.<sup>20</sup>

Because of the increased risk of pregnancy complications, pre-conceptual care is encouraged. BMI during pregnancy is not reliable, so pre-pregnancy BMI should be utilized.<sup>21</sup> The American College of Obstetricians and Gynecologists (ACOG) surveyed practicing ACOG Fellows regarding obesity in pregnancy and found many of the Fellows knew of the Committee Opinion Obesity in Pregnancy recommendations. A little under half of the Fellows were aware of the association between obesity and stillbirth and less than 30 % were aware of the association between obesity and a greater risk of neural tube defects.<sup>22</sup>

A French study found that the cost of delivering and caring for obese mothers was higher than for lean mothers. Hospital care was five times higher in mothers who were overweight before pregnancy than for normal weight women. Obese women stayed in the hospital an average of 4.43 more days than lean mothers. Furthermore, infants of obese mothers were 3.5 times more likely to be admitted to the neonatal intensive care nursery.<sup>23</sup>

Obesity is a complication of pregnancy with risks to mother and infant. Teamwork, communication and interdisciplinary collaboration along with preplanning can promote safe and appropriate care to this population of high risk mothers and infants.

### III. Description of Tables and Graphs

The **V09.1 Special Report: Linked Trend Analysis – Maternal Obesity and Complications of Mothers, Fetuses and Inborns 2007 – 2009(Q1)** provides you with a two year and one quarter trend analysis of the coded complications of mothers whose delivery discharge record included diagnosis code **649.1x, Obesity Complicating Pregnancy, Childbirth and the Puerperium**, compared to mothers without **diagnosis code 649.1x**. The comparison group for this report is the NPIC Trend Data Base. The NPIC Trend Data Base is a subgroup of 39 hospitals that have participated in the NPIC database for at least five years. This trend analysis begins with CY 2007 because **diagnosis code 649.1x** only became effective for use beginning with Q4 2006 discharges. If your hospital has not participated for the entire trend period or has not completed validation of your data, this trend analysis will only display data points for those years for which we have complete validated data.

**Section A** of the accompanying table displays the total deliveries for the hospital and the trend database average for the period of analysis.

**The remaining sections (B - H) display hospital data and trend database averages for deliveries with and without Dx code 649.1x. The number of cases and percentage of total for each category is also displayed where appropriate.**

**Section B** displays total deliveries and their average total charge, average length of stay, and average total charge per day. The number of deliveries with and without the obesity code is shown as a percentage of total deliveries. **Section B** also displays the count of induced deliveries and c-section deliveries and the percent of total in each category.

Lastly, **Section B** displays the number of deliveries with **Dx code 278.00, Obesity (BMI 30 – 38.9), or Dx code 278.01, Morbid Obesity (BMI ≥ 39) > 125% Ideal Body Weight (IBW)**. The use of an additional Dx code specifying body mass index is suggested when using **Dx code 649.1x**. The number of deliveries which were not coded with **278.00 or 278.01** is also displayed.

**Section C: Maternal Medical Complications** displays deliveries coded with one or more of the following medical complications: hypertension complicating pregnancy; diabetes; abnormal glucose tolerance; gestational diabetes; bariatric surgery; and tobacco use disorder.

**Section D: Maternal Complications of Labor** displays deliveries coded with one or more of the following complications of labor: abnormality of forces of labor; obstructed labor; complications of the administration of anesthetic or other sedation; infection of the amniotic cavity; early onset of delivery.

**Section E: Maternal Postpartum Complications** displays the deliveries coded with postpartum hemorrhage and deliveries coded with postpartum depression.

**Section F: Fetal Complications** displays the deliveries coded with excessive fetal growth and deliveries coded with polyhydramnios.

**Section G** begins the linked portion of this obesity analysis. This section shows the number of inborns linked to a mother with and without **Dx code 649.1x** and the percentage of inborns linked to a mother with and without the code as a percent of total deliveries. The inborns are linked to their mother using the mother's medical record number that appears on the baby's record in the hospital's NPIC/QAS data submission. The analysis will only display data for cases where we were able to establish a link (i.e. when mother's medical record number is not missing or invalid on the baby's record). **We encourage hospitals to provide the most complete linking data possible for future linked analyses.**

**Section H: Inborn Complications** displays the number of linked inborns coded with one or more of the following complications: bulbus cord anomalies and other congenital anomalies of the heart and circulatory system; fracture of the clavicle; injury to brachial plexus; feeding problems in newborn; syndrome of the infant of a diabetic mother; neonatal hypoglycemia; respiratory distress syndrome; and birthweight < 2500 grams.

**Graphs 1-5** display the following variables with trendlines: average length of stay; c-sections; hypertension; tobacco use disorder and postpartum depression. Each graph includes two displays: the variable with **code 649.1x** and the variable without **649.1x**. Below each graph is a table which includes all the data displayed for the trend analysis period; the trend database average rate; the hospital's rate with upper and lower confidence intervals and the hospital's count of numerator and denominator cases for each year. For each trendline, we indicate whether there is a significant upward or downward trend, or if it is stable over time.

#### IV. References

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- <sup>1</sup> The National Institute of Health. Calculate Your Body Mass Index on-line calculator. <http://www.nhlbisupport.com/bmi/>
- <sup>2</sup> The American College of Obstetricians and Gynecologists. (2007). *Guidelines for women's health care a resource manual* (3<sup>rd</sup> ed.). Washington, DC: ACOG.
- <sup>3</sup> The American College of Obstetricians and Gynecologists Committee Opinion; The Role of the Obstetrician-Gynecologist in the Assessment and Management of Obesity Number 319, October 2005.
- <sup>4</sup> James, D.C. & Maher, M.A. (2009). Caring for the extremely obese. *Maternal Child Nursing*, 34(1), 24-30.
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- <sup>17</sup> Position from the American Dietetic Association and American Society for Nutrition: Obesity, Reproduction, and Pregnancy Outcomes. (2009). *Journal of the American Dietetic Association*, May.
- <sup>18</sup> Suzuki, K., Ando, D., Sato, M., Tanaka, T., Kondo, N. & Yamagata, Z. (2009). The association between maternal smoking during pregnancy and childhood obesity persists to age of 9-10 years. *Journal of Epidemiology*, 19(3), 136-142.
- <sup>19</sup> Roofthoof, E. (2009). Anesthesia for the morbidly obese parturient. *Current Opinion Anesthesiology*, 22, 341-346.

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<sup>20</sup> Simpson, K.R. (2008). Extreme obesity as a patient safety risk during labor and birth. *Maternal Child Nursing*, 33(3), 196.

<sup>21</sup> James, D.C. & Maher, M.A. (2009). Caring for the extremely obese. *Maternal Child Nursing*, 34(1), 24-30.

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NPIC ID: SAMPLE	2007				2008				Q1 2009			
<b>A. Total Deliveries</b>												
Hospital	3,154				3,061				701			
Trend Data Base Average	5,307				5,247				1,238			
<b>B. Obesity complicating pregnancy, childbirth or the puerperium - Dx code 649.1x</b>	<b>Cases with 649.1x</b>		<b>Cases without 649.1x</b>		<b>Cases with 649.1x</b>		<b>Cases without 649.1x</b>		<b>Cases with 649.1x</b>		<b>Cases without 649.1x</b>	
	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries
<b>Hospital</b>												
Total Deliveries	84	2.7%	3,070	97.3%	103	3.4%	2,958	96.6%	13	1.9%	688	98.1%
Average Total Charge	\$22,055		\$14,216		\$21,953		\$15,789		\$17,452		\$15,974	
Average Length of Stay	5.1		3.3		4.8		3.4		3.3		3.3	
Average Total Charge per day	\$4,308		\$4,343		\$4,595		\$4,601		\$5,276		\$4,891	
<b>Trend Data Base Average</b>												
Total Deliveries	104	2.0%	5,203	98.0%	120	2.3%	5,127	97.7%	31	2.5%	1,207	97.5%
Average Total Charge	\$15,570		\$11,968		\$16,132		\$12,653		\$16,189		\$13,293	
Average Length of Stay	3.8		2.9		3.8		2.9		3.7		3.0	
Average Total Charge per day	\$4,152		\$4,062		\$4,351		\$4,298		\$4,340		\$4,489	
	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases
<b>Inductions *</b>												
Hospital	12	14.3%	412	13.4%	18	17.5%	443	15.0%	2	15.4%	113	16.4%
Trend Data Base Average	25	23.6%	1,019	19.6%	29	26.7%	1,012	20.4%	7	24.7%	245	20.3%
<b>C-Section Deliveries</b>												
Hospital	40	47.6%	791	25.8%	45	43.7%	790	26.7%	4	30.8%	178	25.9%
Trend Data Base Average	64	61.7%	1,762	33.8%	71	59.0%	1,783	34.7%	18	53.8%	420	34.6%
<b>Hospital</b>												
Deliveries with Obesity BMI 30 - 38.9 (278.00)	50	59.5%	0	0.0%	70	68.0%	3	0.1%	10	76.9%	0	0.0%
Deliveries with Morbid Obesity BMI >= 39 (278.01) (> 125% Ideal Body Weight)	33	39.3%	1	0.0%	28	27.2%	0	0.0%	3	23.1%	0	0.0%
Deliveries without 278.00 or 278.01	1	1.2%	3,069	100.0%	5	4.9%	2,955	99.9%	0	0.0%	688	100.0%
<b>Trend Data Base Average</b>												
Deliveries with BMI 30 - 38.9 (278.00)	47	51.1%	7	0.1%	60	50.5%	5	0.1%	16	51.2%	2	0.1%
Deliveries with Morbid Obesity BMI >= 39 (278.01) (> 125% Ideal Body Weight)	36	34.7%	4	0.1%	44	39.0%	3	0.1%	11	36.0%	1	0.1%
Deliveries without 278.00 or 278.01	21	14.3%	5,192	99.8%	16	10.5%	5,119	99.9%	4	7.9%	1,205	99.8%

\* 73.01 - Induction of labor by artificial rupture of membranes; 73.1 - Other surgical induction of labor; or 73.4 - Medical induction of labor, excluding medication to augment active labor

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NPIC ID: SAMPLE	2007				2008				Q1 2009			
	Cases with 649.1x		Cases without 649.1x		Cases with 649.1x		Cases without 649.1x		Cases with 649.1x		Cases without 649.1x	
C. Maternal Medical Complications (not mutually exclusive)	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases
<b>Hypertension complicating pregnancy, childbirth and the puerperium (642.x)</b>												
Hospital	27	32.1%	301	9.8%	35	34.0%	274	9.3%	2	15.4%	84	12.2%
Trend Data Base Average	36	32.9%	525	10.2%	42	34.2%	525	10.4%	11	31.1%	132	10.9%
<b>Diabetes (250.x) or Diabetes Mellitus (648.0)</b>												
Hospital	8	9.5%	29	0.9%	8	7.8%	25	0.8%	0	0.0%	8	1.2%
Trend Data Base Average	8	7.1%	58	1.2%	8	6.6%	55	1.2%	2	6.4%	13	1.2%
<b>Abnormal Glucose Tolerance/Gestational Diabetes (648.8)</b>												
Hospital	16	19.0%	206	6.7%	21	20.4%	176	6.0%	4	30.8%	48	7.0%
Trend Data Base Average	17	16.9%	309	5.8%	18	15.8%	294	5.4%	4	11.3%	71	5.7%
<b>Bariatric surgery status complication pregnancy, childbirth or the puerperium (649.2)</b>												
Hospital	0	0.0%	6	0.2%	3	2.9%	5	0.2%	0	0.0%	2	0.3%
Trend Data Base Average	1	1.0%	5	0.1%	2	1.6%	6	0.1%	0	0.7%	1	0.1%
<b>Tobacco use disorder complicating pregnancy, childbirth or the puerperium (649.0)</b>												
Hospital	11	13.1%	135	4.4%	13	12.6%	169	5.7%	2	15.4%	30	4.4%
Trend Data Base Average	8	6.7%	133	3.4%	9	6.8%	140	3.6%	3	7.5%	36	3.9%
<b>D. Maternal Complications of Labor (not mutually exclusive)</b>	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases
<b>Abnormality of forces of labor (661.x except for 661.3)</b>												
Hospital	6	7.1%	99	3.2%	5	4.9%	115	3.9%	1	7.7%	24	3.5%
Trend Data Base Average	14	13.7%	451	7.9%	15	12.6%	459	8.2%	4	10.9%	109	8.1%
<b>Obstructed labor (660.x)</b>												
Hospital	5	6.0%	205	6.7%	4	3.9%	173	5.8%	2	15.4%	42	6.1%
Trend Data Base Average	6	5.3%	209	4.3%	6	4.8%	211	4.2%	2	5.3%	49	4.2%
<b>Complications of the administration of anesthetic or other sedation in labor and delivery (668.x)</b>												
Hospital	1	1.2%	18	0.6%	0	0.0%	21	0.7%	1	7.7%	1	0.1%
Trend Data Base Average	0	0.3%	16	0.4%	1	0.6%	14	0.3%	0	0.5%	4	0.3%
<b>Infection of amniotic cavity (658.4)</b>												
Hospital	3	3.6%	77	2.5%	3	2.9%	51	1.7%	1	7.7%	10	1.5%
Trend Data Base Average	3	2.9%	151	2.6%	4	2.6%	153	2.6%	1	3.2%	35	2.6%
<b>Early onset of delivery (644.2x)</b>												
Hospital	13	15.5%	318	10.4%	15	14.6%	270	9.1%	2	15.4%	68	9.9%
Trend Data Base Average	13	12.2%	503	10.4%	16	12.1%	501	10.3%	4	12.0%	122	10.2%

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NPIC ID: SAMPLE	2007		2008		Q1 2009			
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<b>E. Maternal Postpartum Complications (not mutually exclusive)</b>	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases
<b>Postpartum hemorrhage (666.x)</b>								
Hospital	10	11.9%	142	4.6%	3	2.9%	97	3.3%
Trend Data Base Average	4	3.6%	185	3.3%	4	2.9%	174	3.1%
<b>Postpartum depression (648.4)</b>								
Hospital	16	19.0%	170	5.5%	10	9.7%	163	5.5%
Trend Data Base Average	9	8.2%	178	3.9%	10	9.5%	191	4.1%
<b>F. Fetal Complications (not mutually exclusive)</b>								
<b>Excessive fetal growth (656.6)</b>	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases
Hospital	12	14.3%	71	2.3%	8	7.8%	43	1.5%
Trend Data Base Average	9	7.7%	131	2.4%	10	7.4%	136	2.4%
<b>Polyhydramnios (657.0)</b>								
Hospital	1	1.2%	28	0.9%	3	2.9%	24	0.8%
Trend Data Base Average	2	1.6%	38	0.7%	2	1.5%	40	0.8%

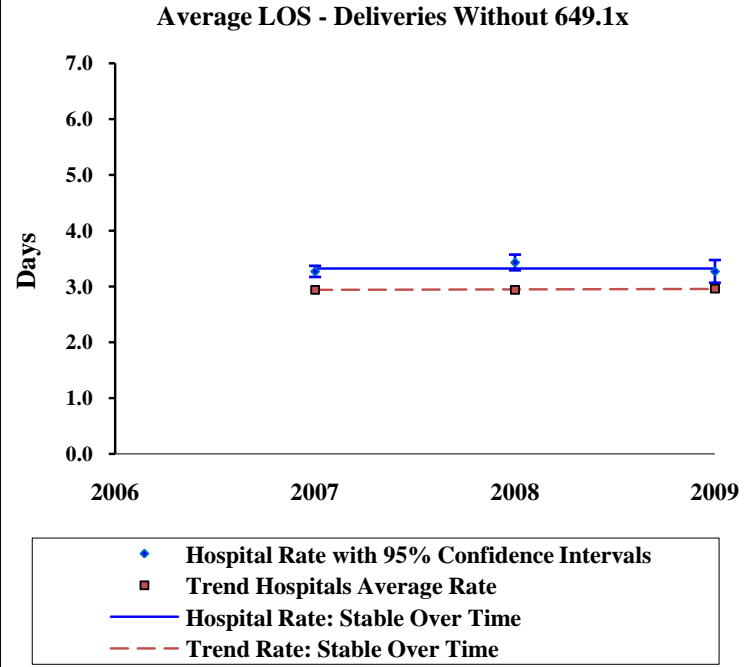
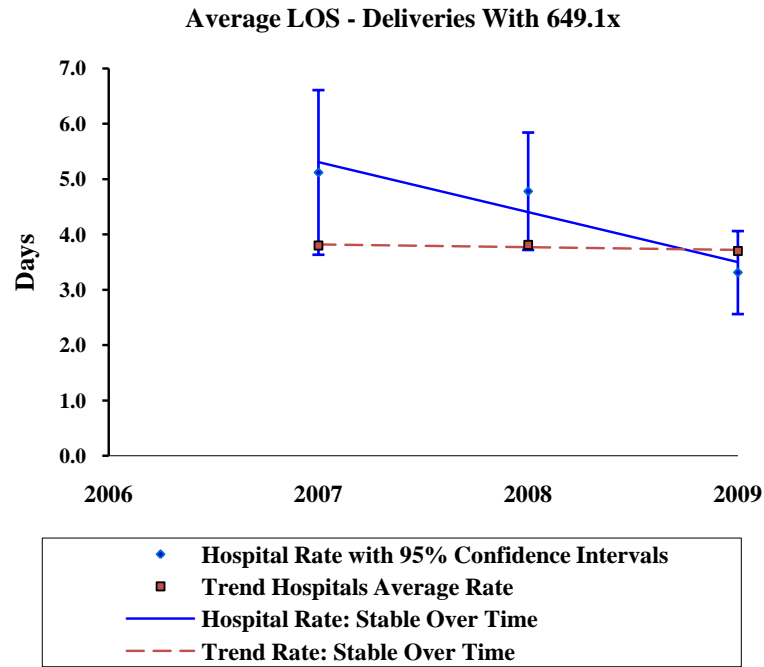


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	Cases with 649.1x	Cases without 649.1x	Cases with 649.1x	Cases without 649.1x	Cases with 649.1x	Cases without 649.1x
<b>G. Linked Inborn Analysis</b>	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases
<b>Hospital</b>						
Total inborns linked to a mother	86	3,086	103	3,016	13	684
Inborns linked to a mother as a percent of total deliveries *	102.4%	100.5%	100.0%	102.0%	100.0%	99.4%
<b>Trend Data Base Average</b>						
Total inborns linked to a mother	100	4,577	109	4,401	27	1,005
Inborns linked to a mother as a percent of total deliveries *	96.2%	88.0%	90.8%	85.8%	87.2%	83.2%
<b>H. Inborn Complications (not mutually exclusive)</b>	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases	Count % of Total Cases
<b>Bulbus cordis anomalies and anomalies of cardiac septal closure (745.x); Other congenital anomalies of heart (746.x); Other congenital anomalies of circulatory system (747.x)</b>						
Hospital	5 5.8%	55 1.8%	4 3.9%	56 1.9%	0 0.0%	2 0.3%
Trend Data Base Average	5 8.1%	118 3.2%	5 4.1%	115 2.8%	1 2.4%	20 1.5%
<b>Fracture of clavicle (767.2)</b>						
Hospital	0 0.0%	12 0.4%	0 0.0%	8 0.3%	0 0.0%	2 0.3%
Trend Data Base Average	0 0.1%	12 0.2%	0 0.1%	11 0.2%	0 0.1%	3 0.2%
<b>Injury to brachial plexus; palsy or paralysis (767.6)</b>						
Hospital	0 0.0%	3 0.1%	1 1.0%	5 0.2%	0 0.0%	0 0.0%
Trend Data Base Average	0 0.1%	5 0.1%	0 0.2%	5 0.1%	0 0.2%	1 0.1%
<b>Feeding problems in newborn (779.3)</b>						
Hospital	6 7.0%	192 6.2%	13 12.6%	212 7.0%	2 15.4%	49 7.2%
Trend Data Base Average	7 5.8%	182 4.2%	7 4.2%	167 3.4%	1 3.7%	35 3.1%
<b>Syndrome of the "infant of a diabetic mother" (775.0)</b>						
Hospital	6 7.0%	32 1.0%	10 9.7%	26 0.9%	1 7.7%	11 1.6%
Trend Data Base Average	6 6.3%	47 1.3%	6 5.3%	40 1.1%	1 4.0%	11 1.0%
<b>Neonatal hypoglycemia (775.6)</b>						
Hospital	2 2.3%	41 1.3%	4 3.9%	62 2.1%	0 0.0%	10 1.5%
Trend Data Base Average	4 3.5%	76 1.9%	4 2.3%	85 1.8%	1 2.3%	17 1.3%
<b>Respiratory distress syndrome (769.x)</b>						
Hospital	1 1.2%	30 1.0%	2 1.9%	36 1.2%	0 0.0%	9 1.3%
Trend Data Base Average	5 4.0%	119 3.5%	5 2.8%	108 2.8%	1 1.7%	17 1.6%
<b>Birthweight &lt; 2500 grams</b>						
Hospital	10 11.6%	302 9.8%	17 16.5%	290 9.6%	1 7.7%	61 8.9%
Trend Data Base Average	14 14.8%	484 13.4%	15 11.1%	464 10.9%	3 8.5%	96 8.7%

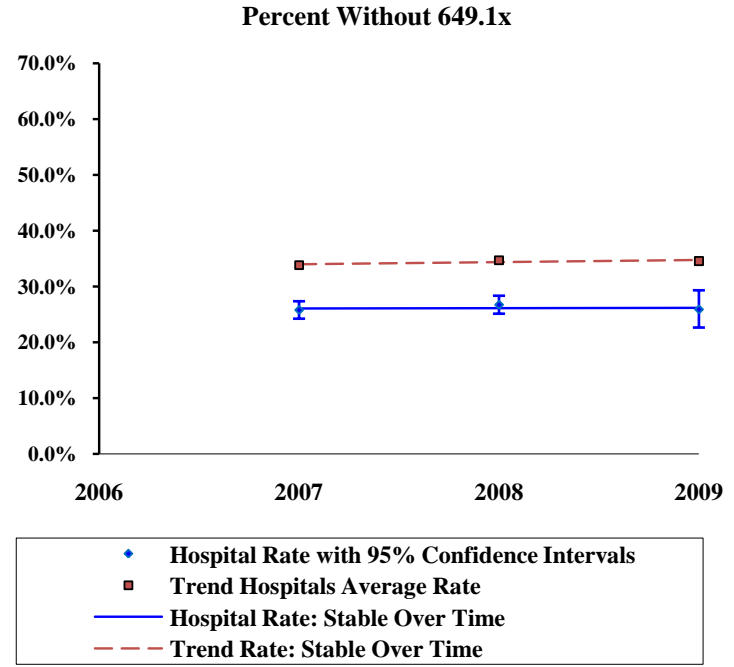
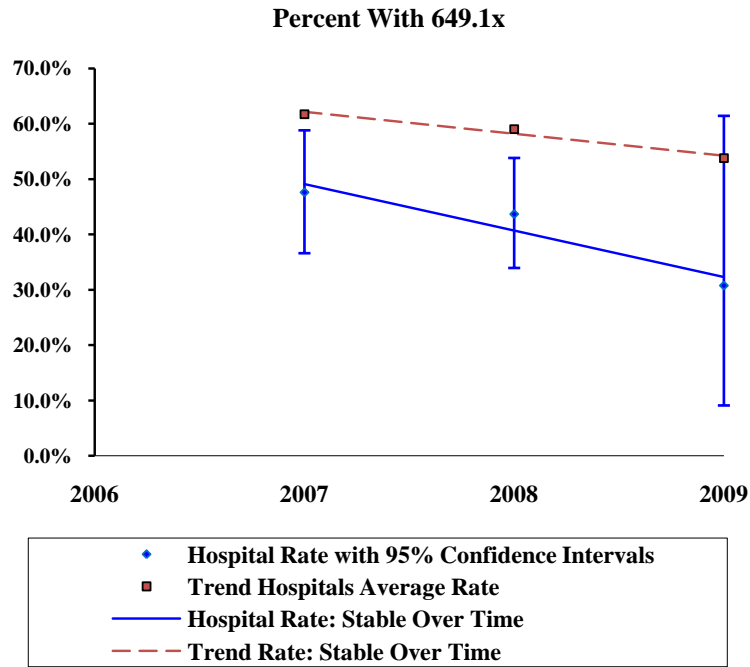
\* - May be greater than 100% due to multiple births

**Graph 1: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns  
 Length of Stay for Deliveries with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium  
 2007-2009 (Q1) with Trendlines  
 NPIC ID: SAMPLE**



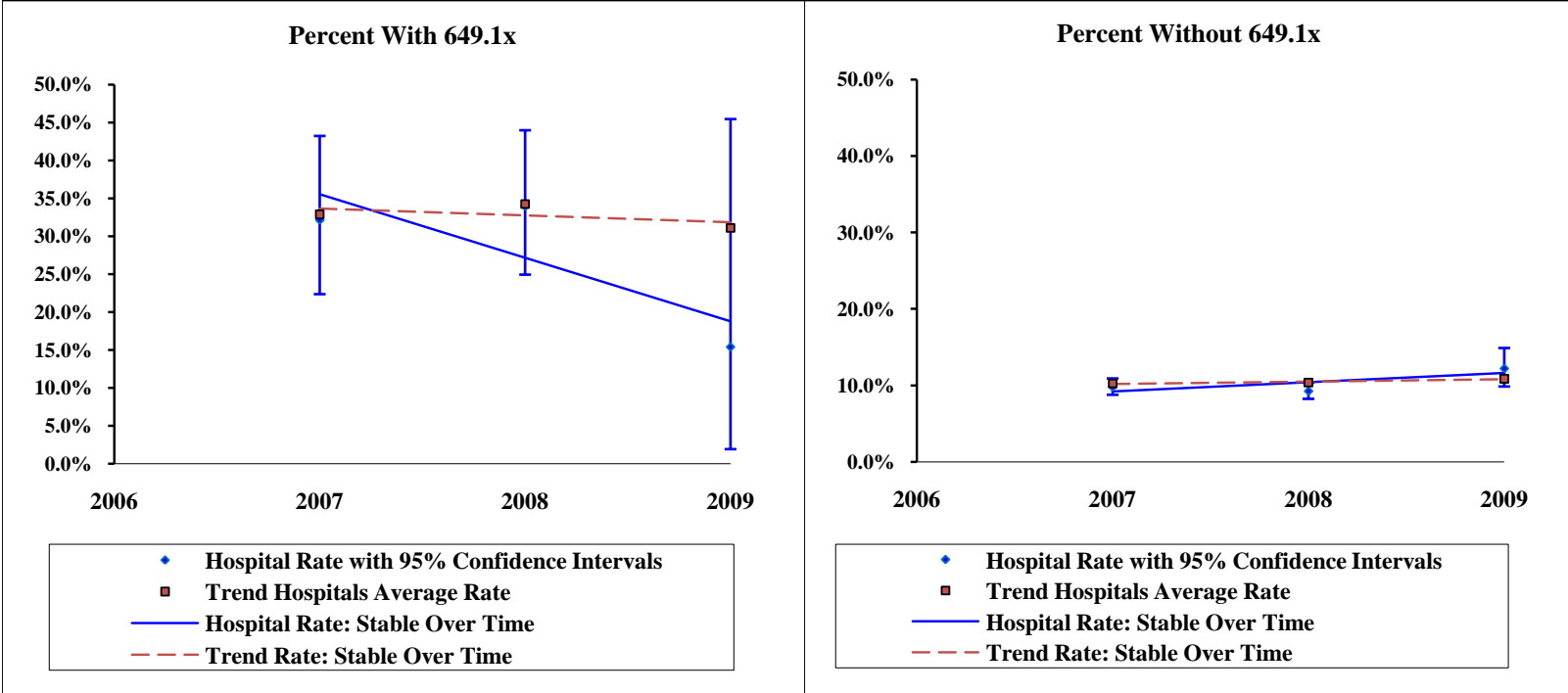
	2007		2008		2009 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Average	3.8	2.9	3.8	2.9	3.7	3.0
Hospital Average	5.1	3.3	4.8	3.4	3.3	3.3
Hospital Numerator	430	10,039	492	10,146	43	2,250
Hospital Denominator	84	3,070	103	2,958	13	688
Lower CI	3.6	3.2	3.7	3.3	2.6	3.1
Upper CI	6.6	3.4	5.8	3.6	4.1	3.5

**Graph 2: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:  
C-sections with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium  
2007-2009 (Q1) with Trendlines  
NPIC ID: SAMPLE**



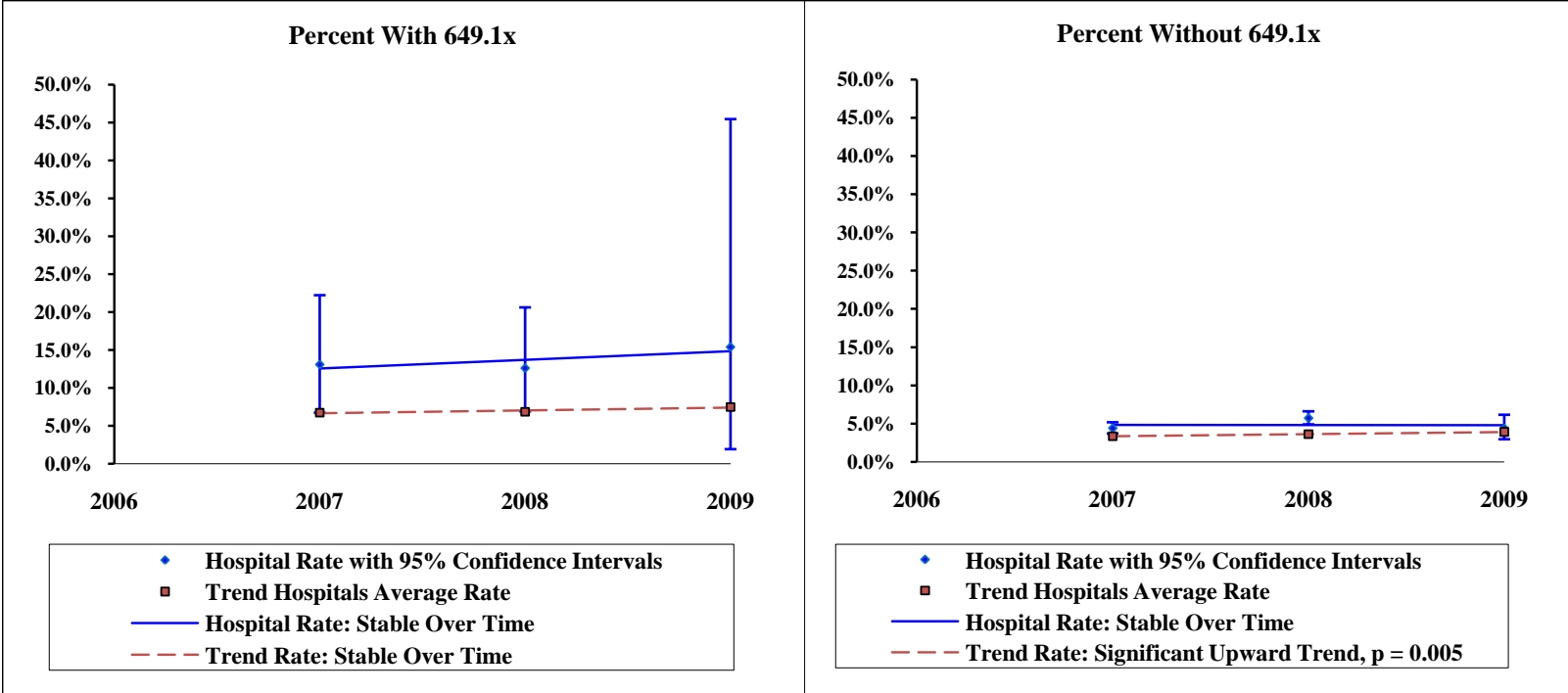
	2007		2008		2009 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	61.7%	33.8%	59.0%	34.7%	53.8%	34.6%
Hospital Rate	47.6%	25.8%	43.7%	26.7%	30.8%	25.9%
Hospital Numerator	40	791	45	790	4	178
Hospital Denominator	84	3,070	103	2,958	13	688
Lower CI	36.6%	24.2%	33.9%	25.1%	9.1%	22.6%
Upper CI	58.8%	27.4%	53.8%	28.3%	61.4%	29.3%

**Graph 3: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:  
Hypertension with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium  
2007-2009 (Q1) with Trendlines  
NPIC ID: SAMPLE**



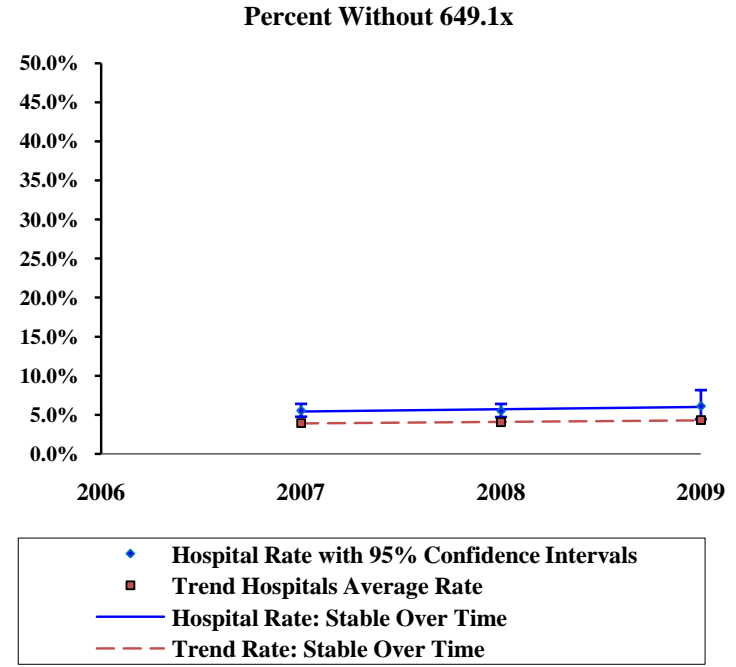
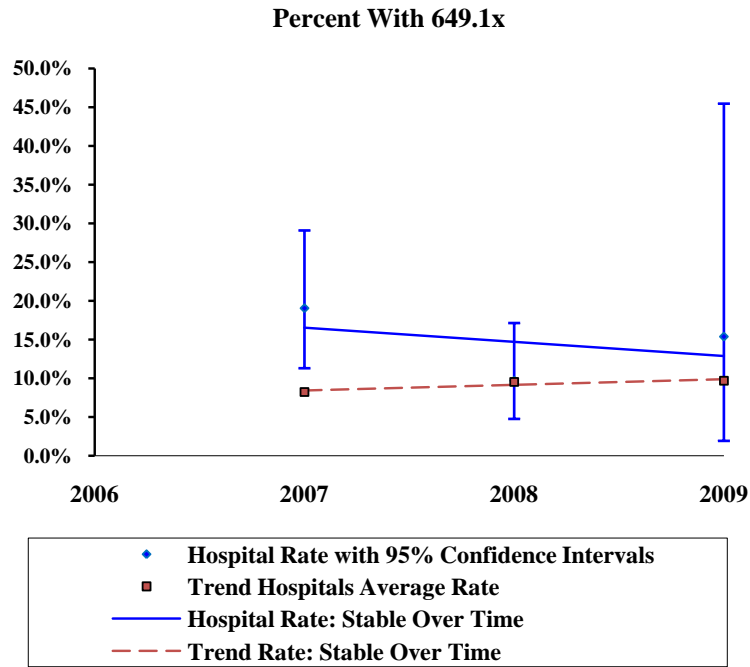
	2007		2008		2009 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	32.9%	10.2%	34.2%	10.4%	31.1%	10.9%
Hospital Rate	32.1%	9.8%	34.0%	9.3%	15.4%	12.2%
Hospital Numerator	27	301	35	274	2	84
Hospital Denominator	84	3,070	103	2,958	13	688
Lower CI	22.4%	8.8%	24.9%	8.2%	1.9%	9.9%
Upper CI	43.2%	10.9%	44.0%	10.4%	45.4%	14.9%

**Graph 4: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:  
Tobacco use disorder with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium  
2007-2009 (Q1) with Trendlines  
NPIC ID: SAMPLE**



	2007		2008		2009 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	6.7%	3.4%	6.8%	3.6%	7.5%	3.9%
Hospital Rate	13.1%	4.4%	12.6%	5.7%	15.4%	4.4%
Hospital Numerator	11	135	13	169	2	30
Hospital Denominator	84	3,070	103	2,958	13	688
Lower CI	6.7%	3.7%	6.9%	4.9%	1.9%	3.0%
Upper CI	22.2%	5.2%	20.6%	6.6%	45.4%	6.2%

**Graph 5: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:  
Postpartum depression with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium  
2007-2009 (Q1) with Trendlines  
NPIC ID: SAMPLE**



	2007		2008		2009 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	8.2%	3.9%	9.5%	4.1%	9.7%	4.3%
Hospital Rate	19.0%	5.5%	9.7%	5.5%	15.4%	6.1%
Hospital Numerator	16	170	10	163	2	42
Hospital Denominator	84	3,070	103	2,958	13	688
Lower CI	11.3%	4.8%	4.8%	4.7%	1.9%	4.4%
Upper CI	29.1%	6.4%	17.1%	6.4%	45.4%	8.2%