

V10.1 Special Report: Linked Trend Analysis – Maternal Obesity and Complications of Mothers, Fetuses and Newborns

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 4th Quarter 2006 discharges. **Obesity (Dx code 649.1)** is one of the conditions included in this category. NPIC/QAS initially focused on obesity in a special report in October 2009.

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.¹ In industrialized countries almost one in five pregnant women are obese.² Obesity has grown dramatically over the last 20 years and is the fastest growing health problem in the United States. Approximately 72.5 million US adults are obese with an annual medical cost averaging \$1,429 more per person with obesity than persons of normal weight. In 2009, no state met the Healthy People 2010 obesity target of 15% with an actual increase in obesity among U.S. adults.³

Obesity in pregnancy carries risks for the mother and infant along with medical, surgical and technical challenges and complications (Table 1). Due to this risk, preconception assessment and counseling are strongly encouraged. Ideally, women should be encouraged to undertake a preconceptional weight reduction program.

The association between pregnancy and obesity is multifaceted for mothers and infants. High gestational weight gain is a strong predictor of 1-year postpartum weight retention.⁴ One study found that smoking during pregnancy may cause offspring to become obese or overweight.⁵ Further research is needed to understand these complicated relationships.

Table 1

Obesity Risks in Pregnancy and After Delivery

- Spontaneous abortion among women who undergo infertility treatment
- Hypertensive Disorders
- Preeclampsia
- Gestational diabetes especially requiring insulin
- Cesarean delivery (difficulty performing emergency cesarean delivery)
- Obstructive sleep apnea with extreme obesity
- Anesthesia Challenges: difficult epidural/spinal placement, intraoperative respiratory events from failed or difficult intubation
- Difficulty estimating fetal weight
- Difficulty obtaining external fetal heart rate and contraction patterns
- Excessive blood loss
- Operative time of > 2 hours
- Wound disruption and infection
- Endometritis

Obesity in Pregnancy Risks for Fetus or Infant

- Stillbirth
- Preterm birth
- Macrosomia
- Large for Gestational Age (increased risk for childhood obesity)
- Neural tube defect
- Low Apgar scores (score of 4-6)*
- Reduced breastfeeding initiation and duration**

Table References: (ACOG, 2010), except (Chen, et al, 2010), & (McGuire, et al, 2010**)*

The United Kingdom looked at all pregnancies with obesity and found that 27% of maternal deaths between 2003 to 2005 in the UK were obese.⁶ In 2008 the United Kingdom Centre for Maternal and Child Enquiries (CMACE) began a three-year national obesity project. In 2010 the United Kingdom published standards of maternity care for pregnant women with obesity which included pre-pregnancy, antenatal, intrapartum and postpartum care. Also, specific considerations were addressed including recommendations for facilities/equipment and education for health professionals.⁷

Through the Society of Obstetricians and Gynaecologists of Canada (SOGC) in February 2010 a SOGC Clinical Practice Guideline for Obesity in Pregnancy was developed.⁸ They found that even when women were identified with obesity this is not routinely followed by interventions such as behavioral weight loss treatments and specific counseling regarding exercise, diet and pregnancy weight gain. The Canadian recommendations for weight gain are based upon the mother's pre-pregnancy BMI. They are also suggesting a national strategy to address pre-pregnancy weight and inform women about the risk for themselves and their children.

When looking at 16 practice sites of obstetricians, nurse practitioners and certified nurse-midwives in Massachusetts most believed that obesity was an important issue in pregnancy, but few of the providers were compliant with clinical practice recommendations, 37% did not correctly report the minimum body mass index for obesity. Few practitioners routinely ordered glucose tolerance testing during the first trimester nor planned anesthesia or nutrition referrals for obese mothers. Interestingly, provider personal factors, such as confidence in counseling knowledge and self-body weight satisfaction, were important in determining frequency of the practitioner following practice recommendations for obese pregnant patients.⁹

One phenomenological study found that pregnant women with obesity experienced antenatal visits as frustrating, embarrassing and uncomfortable. They felt the focus of the visit was their weight and had concerns that equipment and gowns would not fit appropriately. These women were also concerned about their own and their infant's health. They also had fears about death and not being present for their infant. The women had further thoughts that their caregivers have negative feelings towards them. They feared that if they expressed their feelings with their caregivers they might risk receiving inadequate care. When the women received care that relieved their discomfort they experienced security and affirmation. The authors felt that caregivers need to be conscious about their personal feelings and attitudes about obesity.¹⁰

The issue of obesity in pregnancy is a worldwide problem with risks to both mothers and infants. Future development, distribution and utilization of obesity guidelines is needed in order to provide consistent, safe and evidence based practice for this high risk population.

III. Description of Tables and Graphs

The **V10.1 Special Report: Linked Trend Analysis – Maternal Obesity and Complications of Mothers, Fetuses and Inborns 2007 – 2010(Q1)** provides you with a three 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**, as well as the percent change from 2007-2009. The comparison group for this report is the NPIC/QAS Trend Data Base. The NPIC/QAS Trend Data Base is a subgroup of 43 hospitals that have participated in the NPIC/QAS 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: Total Deliveries in 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 deliveries for each category is also displayed where appropriate.

Section B1: Obesity complicating pregnancy, childbirth or the puerperium 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 B2: Type of delivery displays the count of vaginal deliveries without inductions, induced deliveries and c-section deliveries and the percent of total deliveries in each category.

Section C: Distribution of BMI coding – cases with dx code 649.1x 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 D: Maternal Medical Complications displays deliveries coded with one or more of the following medical complications: hypertension complicating pregnancy, childbirth or the puerperium (642.x); diabetes (250.x) or diabetes mellitus (648.0); abnormal glucose tolerance/gestational diabetes (648.8); and bariatric surgery status complicating pregnancy, childbirth or the puerperium (649.2).

Section E: Maternal Complications of Labor displays deliveries coded with one or more of the following complications of labor: abnormality of forces of labor (661.x except for 661.3) and early onset of delivery (644.2x).

Section F: Maternal Postpartum Complications displays the deliveries coded with postpartum hemorrhage (666.x) and deliveries coded with mental disorders (648.4). The coding for mental disorders includes the range of behavioral health issues (e.g. postpartum depression and nondependent abuse of alcohol and drugs).

Section G: Fetal Complications displays the deliveries coded with excessive fetal growth (656.6).

Section H1: Linked Inborn Analysis 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 H2: Linked Inborn Complications displays the number of linked inborns coded with one or more of the following complications: 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); injury to brachial plexus palsy or paralysis (767.6); feeding problems in newborn (779.3); syndrome of the infant of a diabetic mother (775.0); neonatal hypoglycemia (775.6); respiratory distress syndrome (769.x); birthweight < 2500 grams and APGAR 5 < 7.

Graphs 1-5 display the following variables with trendlines: average length of stay; c-sections; hypertension; and mental disorders. 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

- ¹ The National Institute of Health. Calculate Your Body Mass Index on-line calculator. <http://www.nhlbisupport.com/bmi/>
- ² McGuire, W., Dyson, L., & Renfrew, M. (2010). Maternal obesity: consequences for children, challenges for clinicians and carers. *Seminars in Fetal & Neonatal Medicine*, 15, 108-112.
- ³ Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report (MMWR). (2010). Vital signs: state-specific obesity prevalence among adults-United States, 2009. 59(30), 951-955.
- ⁴ Phelan, S. (2010). Pregnancy: a teachable moment for weight control and obesity prevention. *American Journal of Obstetrics & Gynecology, Clinical Opinion*, 135.e1-135.e8.
- ⁵ Ino, T. (2010). Maternal smoking during pregnancy and offspring obesity: meta-analysis. *Pediatrics International*, 52, 94-99.
- ⁶ Knight, M., Kurinczuk, J.J., Spark, P., & Brocklehurst, P. on behalf of the UK Obstetric Surveillance System. (2010). Extreme obesity in pregnancy in the United Kingdom. *Obstetrics and Gynecology*, 155, (5), 989-997.
- ⁷ Fitzsimons, K.J. & Modder, J. (2010). Setting maternity care standards for women with obesity in pregnancy. *Seminars in Fetal & Neonatal Medicine*, 15, 100-107.
- ⁸ Davis, G.A., Maxwell, C., McLeod, L., Maternal Fetal Medicine Committee & Clinical Practice Obstetrics. (2010). Obesity in pregnancy. SOGC Clinical Practice Guideline No. 239, February. *Journal of Obstetrics and Gynaecology Canada*. 165-173.
- ⁹ Herring, S.J., Platek, D.N., Elliott, P., Riley, L.E., Stuebe, A.M., & Oken, E. (2010). Addressing obesity in pregnancy: what do obstetric providers recommend? *Journal of Women's Health*, 19,(1), 65-70.
- ¹⁰ Nyman, V.M., Prebensen, A.K., Flensner, G.E. (2010). Obese women's experiences of encounters with midwives and physicians during pregnancy and childbirth. *Midwifery*, 26, 424-429.

Table 1 References

- The American College of Obstetricians and Gynecologists Committee Opinion; Obesity in Pregnancy. Number 315, September 2005.
- Chen, M., McNiff, C., Madan, J., Goodman, E., Davis, J.M., & Dammann, O. (2010). Maternal obesity and neonatal apgar scores. *The Journal of Maternal-Fetal Medicine*, 23(1), 89-95.
- McGuire, W., Dyson, L., & Renfrew, M. (2010). Maternal obesity: consequences for children, challenges for clinicians and carers. *Seminars in Fetal & Neonatal Medicine*, 15, 108-112.

**V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and
Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)**

NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
A. Total Deliveries									
Hospital	3,202		3,083		3,081		828		
Trend Data Base Average	5,167		5,071		4,882		1,133		
B1. Obesity complicating pregnancy, childbirth or the puerperium - dx code 649.1x	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries	Count	% of Total Deliveries	
Hospital									
Total Deliveries	78	2.4%	94	3.0%	114	3.7%	45	5.4%	51.9%
<i>For cases without 649.1x</i>	3,124	97.6%	2,989	97.0%	2,967	96.3%	783	94.6%	-1.3%
Average Total Charge	\$20,675		\$21,541		\$22,281		\$32,533		7.8%
<i>For cases without 649.1x</i>	\$14,418		\$15,310		\$16,345		\$18,039		13.4%
Average Length of Stay	4.7		4.6		4.6		7.0		-3.0%
<i>For cases without 649.1x</i>	3.4		3.3		3.3		3.5		-2.1%
Average Total Charge per day	\$4,394		\$4,719		\$4,875		\$4,677		10.9%
<i>For cases without 649.1x</i>	\$4,300		\$4,690		\$4,980		\$5,233		15.8%
Trend Data Base Average									
Total Deliveries	98	1.9%	113	2.2%	137	2.8%	35	3.1%	48.2%
<i>For cases without 649.1x</i>	5,069	98.1%	4,959	97.8%	4,745	97.2%	1,097	96.9%	-0.9%
Average Total Charge	\$14,978		\$15,537		\$16,907		\$18,293		12.9%
<i>For cases without 649.1x</i>	\$11,492		\$12,178		\$13,137		\$14,159		14.3%
Average Length of Stay	3.8		3.8		3.9		3.9		2.1%
<i>For cases without 649.1x</i>	2.9		3.0		3.0		3.0		1.7%
Average Total Charge per day	\$3,989		\$4,193		\$4,482		\$4,815		12.4%
<i>For cases without 649.1x</i>	\$3,907		\$4,128		\$4,406		\$4,724		12.8%

V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)

NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
B2. Type of Delivery - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Vaginal Deliveries without Inductions									
Hospital	31	39.7%	42	44.7%	45	39.5%	18	40.0%	-0.7%
<i>For cases without 649.1x</i>	1,952	62.5%	1,831	61.3%	1,718	57.9%	424	54.2%	-7.3%
Trend Data Base Average	25	25.0%	30	25.2%	35	25.7%	8	25.0%	2.7%
<i>For cases without 649.1x</i>	2,643	50.1%	2,423	48.4%	2,281	48.2%	497	47.1%	-3.9%
Inductions *									
Hospital	9	11.5%	18	19.1%	25	21.9%	8	17.8%	90.1%
<i>For cases without 649.1x</i>	443	14.2%	424	14.2%	515	17.4%	142	18.1%	22.4%
Trend Data Base Average	24	24.3%	27	25.2%	35	26.0%	10	28.8%	7.2%
<i>For cases without 649.1x</i>	1,003	19.6%	993	20.6%	1,014	21.2%	246	22.2%	8.0%
C-Section Deliveries									
Hospital	39	50.0%	37	39.4%	49	43.0%	20	44.4%	-14.0%
<i>For cases without 649.1x</i>	806	25.8%	812	27.2%	808	27.2%	240	30.7%	5.6%
Trend Data Base Average	61	62.0%	67	60.7%	84	59.5%	21	58.1%	-3.9%
<i>For cases without 649.1x</i>	1,729	34.2%	1,729	35.0%	1,675	35.1%	392	35.5%	2.7%
C. Distribution of BMI coding - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Hospital									
Deliveries with Obesity BMI 30 - 38.9 (278.00)	42	53.8%	56	59.6%	74	64.9%	23	51.1%	20.6%
<i>For cases without 649.1x</i>	0	0.0%	1	0.0%	1	0.0%	0	0.0%	--
Deliveries with Morbid Obesity BMI >= 39 (278.01) (> 125% Ideal Body Weight)	35	44.9%	34	36.2%	38	33.3%	20	44.4%	-25.7%
<i>For cases without 649.1x</i>	1	0.0%	1	0.0%	2	0.1%	0	0.0%	109.4%
Deliveries without 278.00 or 278.01	1	1.3%	4	4.3%	2	1.8%	2	4.4%	36.8%
<i>For cases without 649.1x</i>	3,123	100.0%	2,987	99.9%	2,964	99.9%	783	100.0%	-0.1%
Trend Data Base Average									
Deliveries with BMI 30 - 38.9 (278.00)	44	49.9%	55	49.4%	72	54.4%	19	56.2%	9.0%
<i>For cases without 649.1x</i>	7	0.1%	4	0.1%	3	0.0%	0	0.0%	-60.3%
Deliveries with Morbid Obesity BMI >= 39 (278.01) (> 125% Ideal Body Weight)	35	36.2%	42	40.4%	49	37.3%	14	37.9%	2.9%
<i>For cases without 649.1x</i>	4	0.1%	3	0.1%	2	0.1%	0	0.0%	-44.0%
Deliveries without 278.00 or 278.01	20	14.0%	15	10.3%	16	8.4%	3	5.9%	-39.6%
<i>For cases without 649.1x</i>	5,058	99.8%	4,951	99.9%	4,740	99.9%	1,097	100.0%	0.1%

* 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

**V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and
Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)**

NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
D. Maternal Medical Complications (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Hypertension complicating pregnancy, childbirth or the puerperium (642.x)									
Hospital	26	33.3%	33	35.1%	43	37.7%	17	37.8%	13.2%
<i>For cases without 649.1x</i>	314	10.1%	278	9.3%	328	11.1%	98	12.5%	10.0%
Trend Data Base Average	34	33.6%	39	34.3%	48	33.5%	13	36.5%	-0.2%
<i>For cases without 649.1x</i>	511	10.2%	512	10.5%	509	10.8%	130	11.8%	5.6%
Diabetes (250.x) or Diabetes Mellitus (648.0)									
Hospital	8	10.3%	9	9.6%	12	10.5%	7	15.6%	2.6%
<i>For cases without 649.1x</i>	35	1.1%	29	1.0%	25	0.8%	3	0.4%	-24.7%
Trend Data Base Average	7	7.1%	7	6.5%	9	6.5%	3	7.3%	-9.1%
<i>For cases without 649.1x</i>	57	1.2%	54	1.2%	49	1.2%	11	1.1%	1.4%
Abnormal Glucose Tolerance/Gestational Diabetes (648.8)									
Hospital	12	15.4%	17	18.1%	19	16.7%	7	15.6%	8.3%
<i>For cases without 649.1x</i>	186	6.0%	161	5.4%	182	6.1%	56	7.2%	3.0%
Trend Data Base Average	16	15.8%	17	15.2%	21	15.2%	6	15.9%	-4.3%
<i>For cases without 649.1x</i>	307	6.0%	285	5.6%	282	5.9%	67	6.0%	-1.5%
Bariatric surgery status complication pregnancy, childbirth or the puerperium (649.2)									
Hospital	1	1.3%	3	3.2%	1	0.9%	1	2.2%	-31.6%
<i>For cases without 649.1x</i>	8	0.3%	4	0.1%	4	0.1%	0	0.0%	-47.3%
Trend Data Base Average	1	1.1%	2	1.6%	2	1.2%	1	2.5%	12.3%
<i>For cases without 649.1x</i>	5	0.1%	6	0.1%	6	0.1%	1	0.2%	40.0%
E. Maternal Complications of Labor (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Abnormality of forces of labor (661.x except for 661.3)									
Hospital	4	5.1%	8	8.5%	4	3.5%	1	2.2%	-31.6%
<i>For cases without 649.1x</i>	89	2.8%	117	3.9%	100	3.4%	27	3.4%	18.3%
Trend Data Base Average	13	14.1%	15	13.0%	17	12.0%	5	12.8%	-15.1%
<i>For cases without 649.1x</i>	432	7.8%	432	7.8%	418	7.8%	96	8.0%	0.3%
Early onset of delivery (644.2x)									
Hospital	12	15.4%	16	17.0%	19	16.7%	11	24.4%	8.3%
<i>For cases without 649.1x</i>	329	10.5%	275	9.2%	295	9.9%	88	11.2%	-5.6%
Trend Data Base Average	13	12.3%	15	12.2%	17	12.4%	4	12.1%	1.0%
<i>For cases without 649.1x</i>	486	10.2%	488	10.4%	451	10.0%	104	10.2%	-2.4%

**V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and
Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)**

NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
F. Maternal Postpartum Complications (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Postpartum hemorrhage (666.x)									
Hospital	10	12.8%	5	5.3%	5	4.4%	1	2.2%	-65.8%
<i>For cases without 649.1x</i>	143	4.6%	105	3.5%	133	4.5%	28	3.6%	-2.1%
Trend Data Base Average	4	3.4%	4	2.7%	5	3.3%	1	2.8%	-1.3%
<i>For cases without 649.1x</i>	177	3.2%	165	3.0%	150	3.1%	42	3.4%	-2.8%
Mental Disorders (648.4) *									
Hospital	19	24.4%	9	9.6%	11	9.6%	8	17.8%	-60.4%
<i>For cases without 649.1x</i>	172	5.5%	143	4.8%	151	5.1%	63	8.0%	-7.6%
Trend Data Base Average	8	8.4%	9	7.9%	12	8.4%	3	9.6%	-0.2%
<i>For cases without 649.1x</i>	174	3.9%	185	4.1%	183	4.5%	47	4.9%	15.3%
G. Fetal Complications (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Excessive fetal growth (656.6)									
Hospital	14	17.9%	9	9.6%	10	8.8%	3	6.7%	-51.1%
<i>For cases without 649.1x</i>	71	2.3%	41	1.4%	61	2.1%	13	1.7%	-9.5%
Trend Data Base Average	8	8.1%	10	8.5%	11	7.7%	3	7.8%	-4.5%
<i>For cases without 649.1x</i>	133	2.6%	137	2.8%	129	2.7%	29	2.8%	2.0%

* - Mental Disorders includes the range of behavioral health issues (e.g. postpartum depression, nondependent abuse of alcohol and drugs).

**V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and
Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)**

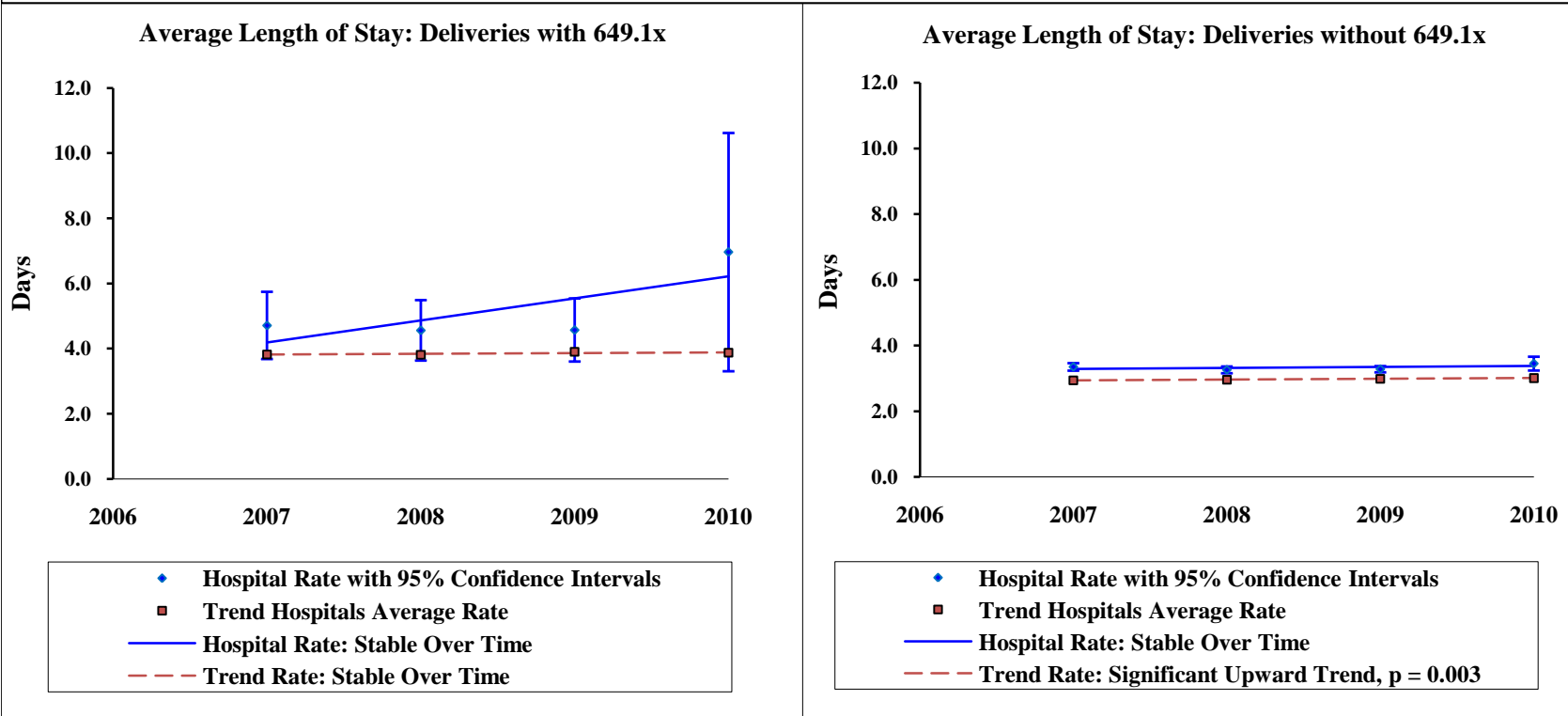
NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
H1. Linked Inborn Analysis - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Hospital									
Total inborns linked to a mother	79		96		113		42		
<i>For cases without 649.1x</i>	3,142		3,022		2,985		776		
Inborns linked to a mother as a percent of total deliveries *		101.3%		102.1%		99.1%		93.3%	-2.2%
<i>For cases without 649.1x *</i>		100.6%		101.1%		100.6%		99.1%	0.0%
Trend Data Base Average									
Total inborns linked to a mother	93		110		138		33		
<i>For cases without 649.1x</i>	4,474		4,616		4,478		1,029		
Inborns linked to a mother as a percent of total deliveries *		95.1%		97.9%		100.7%		93.1%	5.8%
<i>For cases without 649.1x *</i>		88.3%		93.1%		94.4%		93.8%	6.9%
H2. Linked Inborn Complications (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
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)									
Hospital	4	5.1%	4	4.2%	4	3.5%	0	0.0%	-30.1%
<i>For cases without 649.1x</i>	56	1.8%	49	1.6%	47	1.6%	8	1.0%	-11.6%
Trend Data Base Average	5	8.0%	5	4.7%	7	5.0%	1	4.1%	-38.4%
<i>For cases without 649.1x</i>	119	3.2%	124	3.0%	121	2.6%	24	2.2%	-18.2%
Injury to brachial plexus; palsy or paralysis (767.6)									
Hospital	1	1.3%	1	1.0%	0	0.0%	0	0.0%	--
<i>For cases without 649.1x</i>	3	0.1%	2	0.1%	2	0.1%	3	0.4%	-29.5%
Trend Data Base Average	0	0.1%	0	0.2%	0	0.3%	0	0.6%	211.1%
<i>For cases without 649.1x</i>	5	0.1%	5	0.1%	5	0.1%	1	0.1%	-11.3%
Feeding problems in newborn (779.3)									
Hospital	5	6.3%	17	17.7%	11	9.7%	2	4.8%	53.8%
<i>For cases without 649.1x</i>	183	5.8%	206	6.8%	194	6.5%	64	8.2%	11.6%
Trend Data Base Average	6	5.4%	6	4.5%	9	5.8%	2	5.8%	7.8%
<i>For cases without 649.1x</i>	169	3.9%	169	3.6%	171	3.9%	53	4.1%	-0.5%

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

**V10.1 Special Report: Linked Trend Analysis - Maternal Obesity and
Complications of Mothers, Fetuses and Inborns 2007 - 2010 (Q1)**

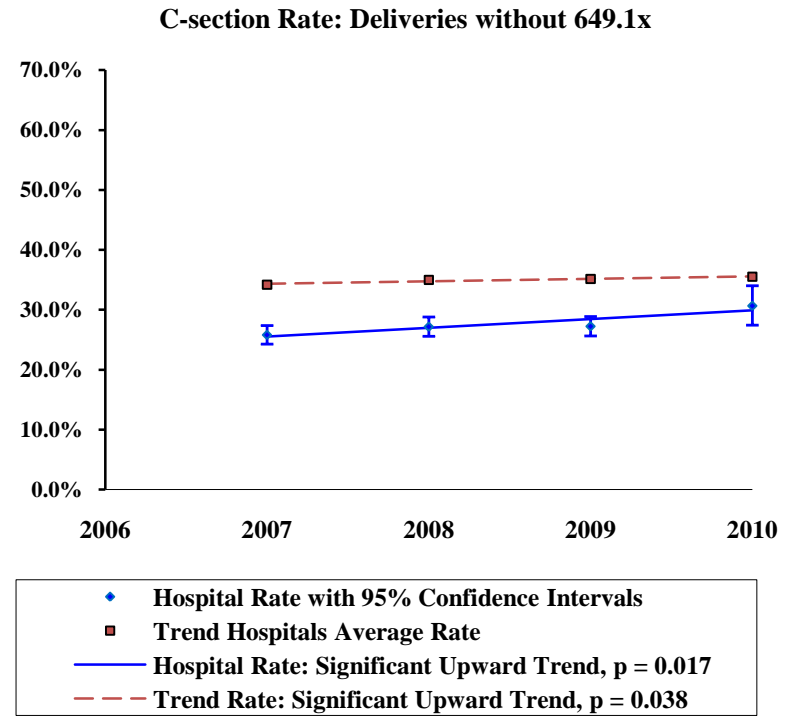
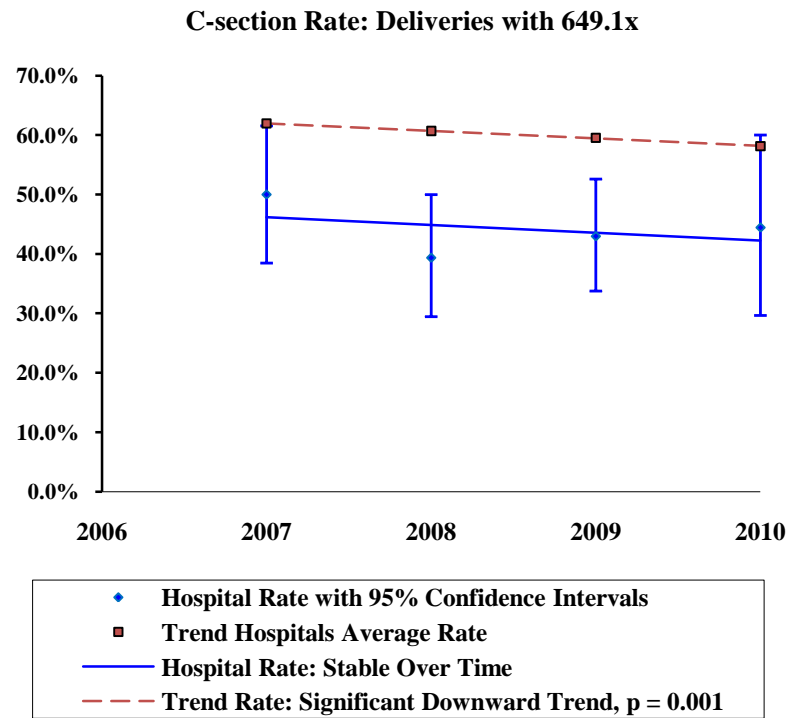
NPIC ID: SAMPLE	2007		2008		2009		2010 (Q1)		Pct Change 07 - 09
H2. (continued) Linked Inborn Complications (not mutually exclusive) - cases with dx code 649.1x	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	Count	% of Total Cases	
Syndrome of the "infant of a diabetic mother" (775.0); Neonatal hypoglycemia (775.6)									
Hospital	11	13.9%	19	19.8%	12	10.6%	6	14.3%	-23.7%
<i>For cases without 649.1x</i>	77	2.5%	83	2.7%	89	3.0%	23	3.0%	21.7%
Trend Data Base Average	8	8.6%	10	9.0%	11	8.0%	2	6.6%	-7.6%
<i>For cases without 649.1x</i>	120	3.1%	134	3.2%	125	2.8%	26	2.4%	-8.9%
Respiratory distress syndrome (769.x)									
Hospital	1	1.3%	2	2.1%	2	1.8%	1	2.4%	39.8%
<i>For cases without 649.1x</i>	35	1.1%	35	1.2%	30	1.0%	7	0.9%	-9.8%
Trend Data Base Average	5	4.4%	5	3.0%	8	5.5%	1	4.5%	24.2%
<i>For cases without 649.1x</i>	119	3.5%	115	3.0%	111	2.7%	20	1.9%	-22.3%
Birthweight < 2500 grams									
Hospital	10	12.7%	18	18.8%	18	15.9%	3	7.1%	25.8%
<i>For cases without 649.1x</i>	309	9.8%	269	8.9%	284	9.5%	78	10.1%	-3.3%
Trend Data Base Average	13	13.4%	14	11.9%	18	11.7%	4	12.1%	-12.7%
<i>For cases without 649.1x</i>	472	13.1%	492	11.8%	479	10.9%	104	9.9%	-16.7%
Apgar 5 < 7 (excludes 0)									
Hospital	2	2.6%	2	2.1%	6	5.3%	3	6.7%	105.3%
<i>For cases without 649.1x</i>	65	2.1%	68	2.3%	75	2.5%	9	1.1%	21.5%
Trend Data Base Average	2	1.4%	2	1.7%	3	2.2%	1	1.4%	51.8%
<i>For cases without 649.1x</i>	58	1.2%	59	1.3%	58	1.3%	11	1.1%	4.9%

Graph 1: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns
Average LOS for Deliveries with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium
2007-2010 (Q1) with Trendlines
SAMPLE



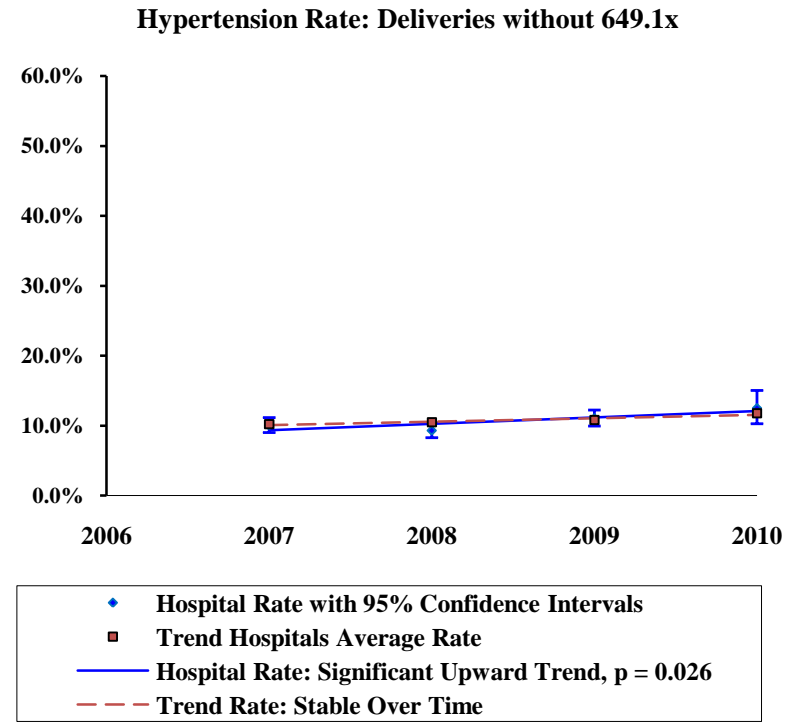
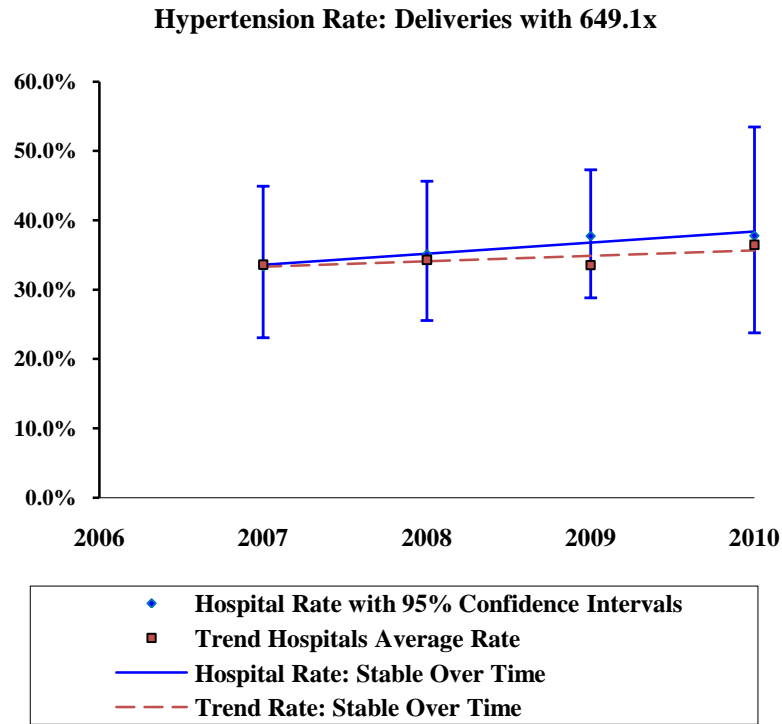
	2007		2008		2009		2010 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Average	3.8	2.9	3.8	3.0	3.9	3.0	3.9	3.0
Hospital Average	4.7	3.4	4.6	3.3	4.6	3.3	7.0	3.5
Hospital Num (Days)	367	10,465	429	9,744	521	9,732	313	2,701
Hospital Denom (Cases)	78	3,124	94	2,989	114	2,967	45	783
Lower CI	3.7	3.2	3.6	3.2	3.6	3.2	3.3	3.2
Upper CI	5.7	3.5	5.5	3.4	5.5	3.4	10.6	3.7

**Graph 2: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:
C-section Rates for Deliveries with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium
2007-2010 (Q1) with Trendlines
SAMPLE**



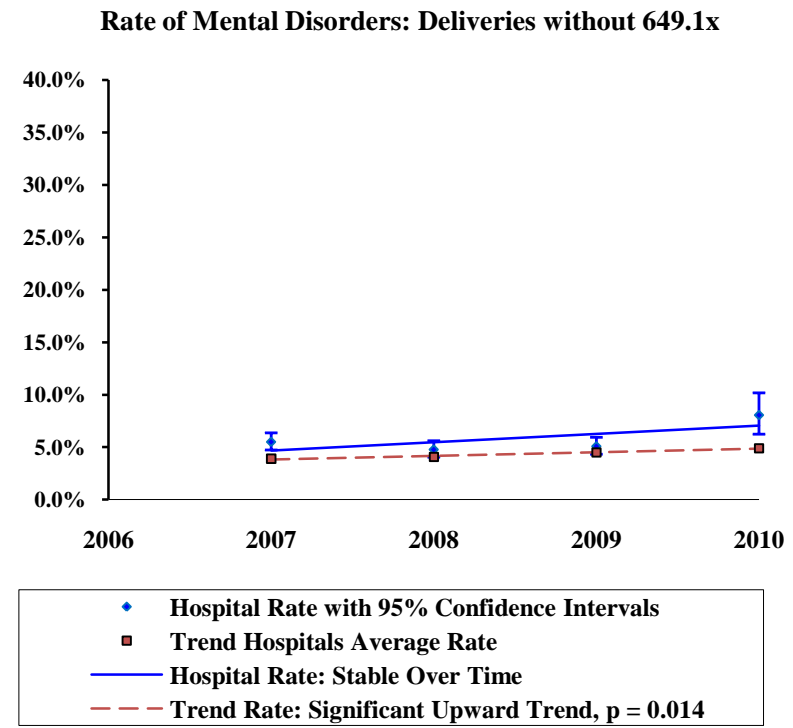
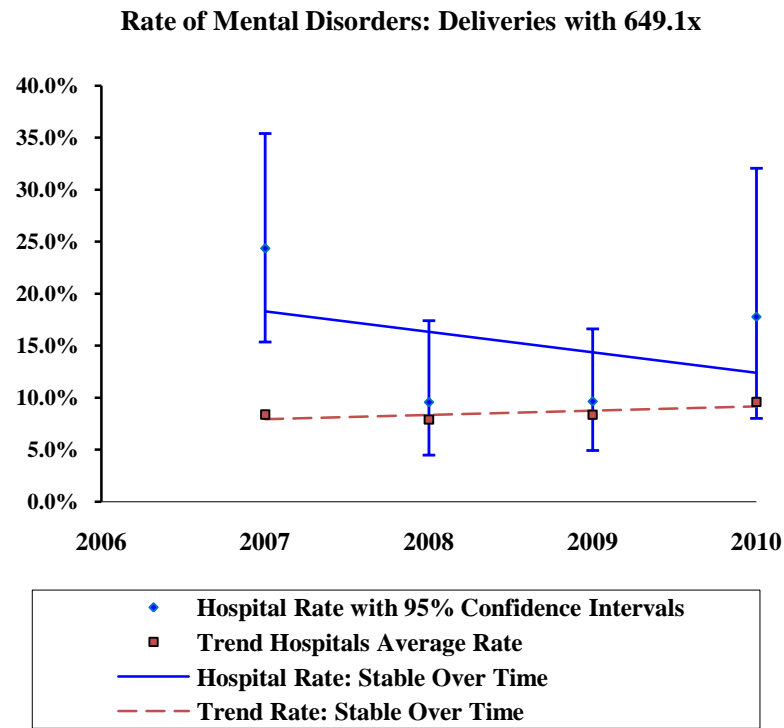
	2007		2008		2009		2010 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	62.0%	34.2%	60.7%	35.0%	59.5%	35.1%	58.1%	35.5%
Hospital Rate	50.0%	25.8%	39.4%	27.2%	43.0%	27.2%	44.4%	30.7%
Hospital Numerator	39	806	37	812	49	808	20	240
Hospital Denominator	78	3,124	94	2,989	114	2,967	45	783
Lower CI	38.5%	24.3%	29.4%	25.6%	33.7%	25.6%	29.6%	27.4%
Upper CI	61.5%	27.4%	50.0%	28.8%	52.6%	28.9%	60.0%	34.0%

**Graph 3: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:
Hypertension Rates for Deliveries with and without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium
2007-2010 (Q1) with Trendlines
SAMPLE**



	2007		2008		2009		2010 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	33.6%	10.2%	34.3%	10.5%	33.5%	10.8%	36.5%	11.8%
Hospital Rate	33.3%	10.1%	35.1%	9.3%	37.7%	11.1%	37.8%	12.5%
Hospital Numerator	26	314	33	278	43	328	17	98
Hospital Denominator	78	3,124	94	2,989	114	2,967	45	783
Lower CI	23.1%	9.0%	25.5%	8.3%	28.8%	9.9%	23.8%	10.3%
Upper CI	44.9%	11.2%	45.6%	10.4%	47.3%	12.2%	53.5%	15.0%

**Graph 4: Linked Maternal Obesity and Complications of Mothers, Fetuses and Inborns:
Rate of Mental Disorders*-Deliveries with & without Dx code 649.1x: Obesity complicating pregnancy, childbirth or the puerperium
2007-2010 (Q1) with Trendlines
SAMPLE**



	2007		2008		2009		2010 (Q1)	
	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1	With 649.1	Without 649.1
Trend Rate	8.4%	3.9%	7.9%	4.1%	8.4%	4.5%	9.6%	4.9%
Hospital Rate	24.4%	5.5%	9.6%	4.8%	9.6%	5.1%	17.8%	8.0%
Hospital Numerator	19	172	9	143	11	151	8	63
Hospital Denominator	78	3,124	94	2,989	114	2,967	45	783
Lower CI	15.3%	4.7%	4.5%	4.0%	4.9%	4.3%	8.0%	6.2%
Upper CI	35.4%	6.4%	17.4%	5.6%	16.6%	5.9%	32.1%	10.2%

* - Mental Disorders includes the range of behavioral health issues (e.g. postpartum depression, nondependent abuse of alcohol and drugs).