V08.3 SPECIAL REPORT: ENHANCED MOTHER/ BABY LINKED ANALYSIS: Inductions by Gestational Age

The Special Report that accompanied our V08.2 quarterly report looked at Inductions by Gestational Age. There was a very positive response to that Report and interest in taking the analysis a step further to focus on just those deliveries ≥ 37 weeks and < 39 weeks completed gestation. This enhanced V08.3 Report provides that focus in Section F – I. We welcome your comments.

Background

ACOG Practice Bulletin Number 10, November 1999 states "…induction of labor has merit as a therapeutic option when the benefits of expeditious delivery outweigh the risks of continuing the pregnancy. The benefits of labor induction must be weighed against the potential maternal or fetal risks associated with this procedure. ….Indications for induction of labor are not absolute but should take into account maternal and fetal conditions, gestational age, cervical status and other factors."

Inductions prior to 39 completed weeks gestation have come under greater scrutiny, particularly when the medical indication is unclear.

ACOG provides examples of valid indications for labor inductions such as:

- Abruptio placentae
- Chorioamnionititis
- Fetal demise
- Pregnancy- induced hypertension
- Premature rupture of membranes
- Post term pregnancy
- Maternal medical conditions (e. g . diabetes mellitus, renal disease, chronic pulmonary disease, chronic hypertension)
- Fetal compromise(e.g. severe fetal growth restriction, isoimmunization)
- Preeclampsia, eclampsia

ACOG states that "labor also **may** be induced for logistic reasons, for example risk of rapid labor, distance from the hospitals, or psychosocial indications" **as long as** it is determined that the fetus is at least 39 completed weeks gestation.

This is a continuation of the analysis that was included with the V08.2 quarterly report distribution. It is designed to profile your hospital's delivered cases with an induction code, link those mothers with their infants, determine the infant's coded or numeric gestational age and review the distribution of coded reasons for the induction based on the translation of the above list into ICD-9-CM codes. (The translation of the list appears in the Glossary of this Report. **We welcome your feedback on additional indications that you think should be included on this list.**)

Isolating those inductions < 39 weeks gestation **with** a medical indication and looking at the count and percent of **remaining cases** is an important exercise that we hope will provide you with an opportunity to better understand your data and the care at your hospital. **This quarter, we have refined the analysis to focus on inductions ≥ 37 weeks and < 39 weeks gestation.** Please do not hesitate to request the medical record numbers of those cases that were induced before 39

weeks and do not have a medical indication from the Glossary list. Your NPIC/QAS liaison can provide you the list for your cases along with their submitted diagnosis codes.

Comments and questions regarding this analysis should be directed to Sandra Boyle, Director of Membership Services (sboyle@npic.org) or Annemarie D'Abrosca, Senior Analyst/Hospital Liaison (adabrosca@npic.org) at 401-274-0650.

Analysis

The **V08.3 Linked Mother/Baby Analysis: Inductions by Gestational Age** presents data on mothers who have an induction linked to their baby for the period 10/1/07-9/30/08. It is important to note that this linkage is only possible if the mother's medical record number is included as part of the baby's record on the hospital's NPIC/QAS data submission. This allows NPIC/QAS to track neonatal outcomes back to maternal records and vice versa.

Section A. Linked Delivery/Inborn Analysis begins by displaying the number of total deliveries for the period, the percent delivered by c-section, total deliveries with induction codes and deliveries with induction codes as a percent of total deliveries. The analysis then goes on to show the total count of inborn singletons, total inborn singletons linked to a delivered mother and the number of inborn singletons linked to a delivered mother as a percent of total deliveries.

The remaining portion of Section A details the total number of inborn singletons linked to a mother with an induction code and displays inborn singletons linked to a mother with an induction code as a percent of total deliveries with induction codes.

Section B displays the **gestational age distribution of inborn singletons linked to a mother with an induction code.** Gestational age can be determined two ways: as a submitted numeric field or by the ICD-9-CM code 765.2, a companion code to 765.0 (Extreme Immaturity) or 765.1(Prematurity). The use of a **fifth digit on code 765.2** specifies a gestational age range for the following ranges:

765.20	Unspecified weeks of gestation
765.21	Less than 24 completed weeks of gestation
765.22	24 completed weeks of gestation
765.23	25-26 completed weeks of gestation
765.24	27-28 completed weeks of gestation
765.25	29-30 completed weeks of gestation
765.26	31-32 completed weeks of gestation
765.27	33-34 completed weeks of gestation
765.28	35-36 completed weeks of gestation
765.29	37 or more completed weeks of gestation

Cases that do not contain these codes may have the numeric gestational age submitted by the hospital as a discreet variable on the infant's record on the data file.

Section C pertains to only the **inborn singletons with submitted *numeric* gestational age linked to a mother with an induction code.** The submitted numeric gestational age is used in this section of the special analysis because ICD-9-CM coding categories only specify up to 37 or more completed weeks of gestation. In order to determine the number of cases that are less than 39 weeks, the submitted numeric gestational must be used. **Hospitals are encouraged to send NPIC/QAS the numeric gestational age as part of their quarterly data submission or as a separate supplemental file.**

This section displays the total number of inborn singletons with submitted *numeric* gestational age who could be linked to a mother with an induction code, the total number of inborn singletons with submitted numeric gestational age <39 weeks linked to a mother with an induction code, and inborn singletons < 39 weeks as a percent of total inborn singletons with submitted numeric gestational age linked to a mother with an induction code. The numeric gestational age distribution of inborn singletons <39 weeks linked to a mother with an induction code is also shown.

Section D displays inductions <39 weeks with listed medical indication for induction. The list of medical indications appears in the Glossary of this Report and was developed from the ACOG Practice Bulletin Number 10 along with clinical input from the North Carolina Perinatal Safety Initiative. The total induced deliveries linked to inborn singletons with numeric gestational age <39 weeks and the percent delivered by c-section is shown. The total number of linked inductions <39 weeks with listed medical indication for induction and percent of total linked inductions <39 weeks is also displayed. The distribution of linked inductions < 39 weeks by listed medical indication is shown in descending order, ranked by the database. The categories are mutually exclusive.

Section E displays inductions <39 weeks *without* a listed medical indication for induction. The count and percentage of cases < 39 weeks linked to an induced mother is also displayed.

Sections F-I are new to the analysis this quarter. Section F displays inductions ≥ 37 weeks and < 39 weeks with listed medical indication for induction. The total induced deliveries linked to inborn singletons with submitted numeric gestational age ≥ 37 weeks and < 39 weeks and the percentage of these cases that were delivered by c-section is shown. The number of linked inductions ≥ 37 weeks and < 39 weeks with listed medical indication for induction and percent of total linked inductions ≥ 37 weeks and <39 weeks is also displayed. The distribution of linked inductions ≥37 weeks and < 39 weeks by listed medical indication is shown in descending order, ranked by the database. The categories are mutually exclusive.

Section G displays inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother with a listed medical indication for induction. The section displays the total number of inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother with a listed medical indication for induction, their average length of stay and the total number of these cases admitted to the Special Care Nursery - defined as having days or charges in the Neonatal Intermediate Care or Neonatal Intensive Care inpatient accommodation areas. It also displays the percentage of the inborn singletons ≥37 weeks and <39 weeks linked to a mother with a medical indication for induction admitted to Special Care and their average length of stay in the Special Care area.

Section H displays inductions ≥37 weeks and <39 weeks *without* a medical indication for induction. The count and percentage of cases ≥37 weeks and <39 weeks linked to an induced mother is also displayed.

Section I displays inborn Singletons ≥37 weeks and <39 weeks linked to a mother without a medical indication for induction. The section displays the total number of inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother without a listed medical indication for induction, their average length of stay and the total number of these cases admitted to the Special Care Nursery - defined as having days or charges in the Neonatal Intermediate Care or Neonatal Intensive Care inpatient accommodation areas. It also displays the percentage of the inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother without a medical indication for induction admitted to Special Care and their average length of stay in the Special Care area.

NPIC/QAS is pleased to provide you with the medical record numbers of maternal or infant cases of interest. Please contact Sandra Boyle (sboyle@npic.org) or Annemarie D'Abrosca (adabrosca@npic.org); they will be happy to assist you.

V08.3 Special Report: Enhanced Linked Mother/Baby Analysis
Inductions by Gestational Age

	Hospital SAMPLE	Subgroup Average	Database Average
A. Linked Delivery/Inborn analysis			
Total Deliveries	1,680	3,456	4,611
Percent delivered by C-section	39.0%	34.1%	34.4%
Total Deliveries with induction codes	281	726	912
Deliveries with induction codes as a percent of total deliveries	16.7%	21.0%	19.8%
Total Inborn Singletons	1,603	3,370	4,514
Total Inborn Singletons linked to a delivered mother	1,510	2,581	3,674
Inborn Singletons linked to a delivered mother as a percent of total deliveries	89.9%	74.7%	79.7%
Total Inborn Singletons linked to a mother with an induction code	246	544	749
Inborn Singletons linked to a mother with an induction code as a percent of total deliveries with induction codes	87.5%	75.0%	82.1%
B. Gestational age distribution of Inborn Singletons linked to a mother with an induction code			
Total linked cases	246	544	749
Distribution of linked cases by submitted numeric GA or coded GA [1]			
≥ 37 weeks	84.6%	91.0%	93.6%
35 - 36 weeks	7.3%	5.2%	4.0%
33 - 34 weeks	4.5%	2.3%	1.5%
31 - 32 weeks	1.2%	0.8%	0.4%
< 31 weeks	2.4%	0.6%	0.4%
Unspecified (ICD-9-CM code 765.20)	0.0%	0.0%	0.0%

1 - ICD-9-CM code 765.2x (weeks of gestation) uses a fifth digit to specify GA range.

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Inductions by Gestational Age

	Hospital SAMPLE	Subgroup Average	Database Average
C. Inborn Singletons with submitted numeric GA linked to a mother with an induction code [2]			
Total Inborn Singletons with submitted numeric GA linked to a mother with an induction code	246	599	990
Total Inborn Singletons with submitted numeric GA < 39 weeks linked to a mother with an induction code	95	191	292
Inborn Singletons with submitted numeric GA < 39 weeks linked to a mother with an induction code as a percent of total Inborn Singletons with submitted numeric GA linked to a mother with an induction code	38.6%	31.9%	29.5%
Gestational age distribution of Inborn Singletons with submitted numeric GA < 39 weeks linked to a mother with an induction code			
Total linked cases	95	191	292
Distribution of linked cases by submitted numeric GA			
≥ 37 and < 39 weeks	60.0%	69.8%	77.0%
35 - 36 weeks	18.9%	19.8%	15.1%
33 - 34 weeks	11.6%	6.5%	5.0%
31 - 32 weeks	3.2%	2.2%	1.5%
< 31 weeks	6.3%	1.8%	1.3%

2 - PLEASE NOTE: This analysis is ONLY conducted on cases where submitted numeric GA is provided by your hospital. If your hospital does not provide numeric GA data or only partial GA data on inborns, we encourage you to do so.

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Inductions by Gestational Age

	Hospital SAMPLE	Subgroup Average	Database Average
D. Inductions < 39 weeks with listed medical indication for induction [3]			
Total induced deliveries linked to Inborn Singletons with submitted numeric GA < 39 weeks	95	191	292
Percent of Total induced deliveries linked to Inborn Singletons with submitted numeric GA < 39 weeks delivered by C-section	22.1%	16.6%	17.3%
Linked Inductions < 39 weeks with listed medical indication for induction	75	139	190
Linked Inductions < 39 weeks with listed medical indication for induction as a percent of total linked inductions < 39 weeks	78.9%	72.5%	65.2%
Distribution of linked inductions < 39 weeks by listed medical indication (Percent of total in descending order, ranked by database, mutually exclusive categories)			
Hypertension, Pregnancy-related/Eclampsia/Pre-Eclampsia	49.3%	49.8%	48.7%
Problems associated with Amniotic Cavity and Membranes	22.7%	28.0%	29.3%
Fetal Compromise	24.0%	16.7%	16.1%
Maternal Medical Conditions/Other Complications	1.3%	3.9%	3.1%
Abruptio Placenta	2.7%	1.4%	1.5%
Fetal Distress	0.0%	0.4%	1.3%
E. Inductions < 39 weeks without listed medical indication for induction			
Linked Inductions < 39 weeks without listed medical indication for induction	20	53	101
Linked Inductions < 39 weeks without listed medical indication for induction as a percent of total linked inductions < 39 weeks	21.1%	27.5%	34.8%

3 - Medical Indication List appears in Glossary

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Inductions by Gestational Age

	Hospital SAMPLE	Subgroup Average	Database Average
F. Inductions ≥ 37 weeks and < 39 weeks [1] with listed medical indication for induction [2]			
Total induced deliveries linked to Inborn Singletons with submitted numeric GA ≥ 37 weeks and < 39 weeks	57	133	224
Percent of Total induced deliveries linked to Inborn Singletons with submitted numeric GA ≥ 37 weeks and < 39 weeks delivered by C-section	21.1%	14.9%	15.8%
Linked Inductions ≥ 37 weeks and < 39 weeks with listed medical indication for induction	43	89	132
Linked Inductions ≥ 37 weeks and < 39 weeks with listed medical indication for induction as a percent of total linked inductions ≥ 37 weeks and < 39 weeks	75.4%	67.0%	58.7%
Distribution of linked inductions ≥ 37 weeks and < 39 weeks by listed medical indication (Percent of total in descending order, ranked by database, mutually exclusive categories)			
Hypertension, Pregnancy-related/Eclampsia/Pre-Eclampsia	37.2%	47.0%	46.9%
Problems associated with Amniotic Cavity and Membranes	25.6%	27.7%	27.3%
Fetal Compromise	34.9%	19.4%	19.4%
Maternal Medical Conditions/Other Complications	0.0%	4.5%	3.5%
Fetal Distress	2.3%	0.4%	1.6%
Abruptio Placenta	0.0%	1.0%	1.3%

1 - PLEASE NOTE: This analysis is ONLY conducted on cases where submitted numeric GA is provided by your hospital. If your hospital does not provide numeric GA data or only partial GA data on inborns, we encourage you to do so.

2 - Medical Indication List appears in Glossary

V08.3 Special Report: Enhanced Linked Mother/Baby Analysis
Inductions by Gestational Age

	Hospital SAMPLE	Subgroup Average	Database Average
G. Inborn Singletons ≥ 37 weeks and < 39 weeks linked to a mother with listed medical indication for induction			
Total inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother with listed medical indication for induction	43	89	132
Average Length of Stay	3.2	2.5	2.6
Total Admitted to Special Care	15	13	21
Percent of total inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother with listed medical indication for induction admitted to Special Care	34.9%	14.8%	16.3%
Average Length of Stay for those admitted to Special Care	6.2	5.0	5.0
H. Inductions ≥ 37 weeks and < 39 weeks without listed medical indication for induction			
Linked Inductions ≥ 37 weeks and < 39 weeks without listed medical indication for induction	14	44	93
Linked Inductions ≥ 37 weeks and < 39 weeks without listed medical indication for induction as a percent of total linked inductions ≥ 37 weeks and < 39 weeks	24.6%	33.0%	41.3%
I. Inborn Singletons ≥ 37 weeks and < 39 weeks linked to a mother without listed medical indication for induction			
Total inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother without listed medical indication for induction	14	44	93
Average Length of Stay	1.6	1.9	2.1
Total Admitted to Special Care	2	4	7
Percent of total inborn singletons ≥ 37 weeks and < 39 weeks linked to a mother without listed medical indication for induction admitted to Special Care	14.3%	8.3%	8.0%
Average Length of Stay for those admitted to Special Care	1.5	2.9	3.8

Glossary for the Linked Mother/Baby Analysis: Inductions by Gestational Age

1. Deliveries with Induction Codes

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

2. Gestational Age

The ICD-9-CM code 765.2x (weeks of gestation) is used in tandem with codes 765.0x (Extreme Immaturity) and 765.1x (Prematurity) and uses a fifth digit to specify GA range. Cases that do not have 765.2x both have the numeric GA submitted on the hospital's data file. If not, the GA will default to ≥ 37 weeks only for Section B of this analysis.

765.20 Unspecified weeks of gestation
765.21 Less than 24 completed weeks of gestation
765.22 24 completed weeks of gestation
765.23 25-26 completed weeks of gestation
765.24 27-28 completed weeks of gestation
765.25 29-30 completed weeks of gestation
765.26 31-32 completed weeks of gestation
765.27 33-34 completed weeks of gestation
765.28 35-36 completed weeks of gestation
765.29 37 or more completed weeks of gestation

3. Hypertension, Pregnancy-related /Eclampsia /Pre-Eclampsia

Maternal Codes:

642.0x Benign essential hypertension complicating pregnancy, childbirth and the puerperium
642.1x Hypertension secondary to renal disease, complicating pregnancy, childbirth, and the puerperium
642.2x Other pre-existing hypertension complicating pregnancy, childbirth and the puerperium
642.3x Transient hypertension of pregnancy
642.4x Mild or unspecified pre-eclampsia
642.5x Severe pre-eclampsia
642.6x Eclampsia
642.7x Pre-eclampsia or eclampsia superimposed on pre-existing hypertension
642.9x Unspecified hypertension complicating pregnancy, childbirth, and the peurperium

Neonatal Codes:

760.0 Maternal hypertensive disorders (fetus or newborn affected by maternal conditions classifiable to 642)

4. Fetal Compromise

Maternal Codes:

655.7x Decreased fetal movements
655.8x Other known or suspected fetal abnormality, not elsewhere classified
656.1x Rhesus Isoimmunization
656.2x Isoimmunization from other and unspecified blood-group incompatibility
656.4x Intrauterine death, fetal demise
656.5x Poor fetal growth

Neonatal Codes:

764.9x Fetal growth retardation, unspecified (IUGR)

5. Problems Associated with the Amniotic Cavity or Membranes

Maternal Codes:

657.0x Polyhydramnios
658.0x Oligohydramnios
658.1x Premature rupture of membrane
658.2x Delayed delivery after spontaneous or unspecified rupture of membranes
658.4x Infection of amniotic cavity

Neonatal Codes:

761.1 Premature rupture of membranes
761.2 Oligohydramnios
761.3 Polyhydramnios
762.7 Chorioamnionitis

6. Maternal Medical Conditions / Other Complications

518.81 Acute respiratory failure
646.2x Unspecified renal disease in pregnancy, without mention of hypertension
648.0x Diabetes Mellitus
649.4x Epilepsy complicating pregnancy, childbirth or the puerperium
669.13 Shock during or following labor and delivery; antepartum

7. Abruptio Placenta

Maternal Codes:

641.0x Placenta previa without hemorrhage
641.2x Premature separation of placenta

Neonatal Codes:

762.1 Other forms of placental separation and hemorrhage

8. Fetal Distress

Maternal Codes:

656.3x Fetal distress
656.8x Other specified fetal and placental problems

Neonatal Codes:

768.2 Fetal distress before onset of labor, in liveborn infant