
HMA

HEALTH MANAGEMENT ASSOCIATES

*Delivery of Very Low Birth Weight Infants
Georgia:
Improving Performance*

PRESENTED TO THE
GEORGIA OBGYN SOCIETY

SEPTEMBER 2012

*Research and Consulting in the Fields of Health and Human Services Policy, Health Economics
and Finance, Program Evaluation, Data Analysis, and Health System Restructuring*

ATLANTA, GEORGIA • AUSTIN, TEXAS • BOSTON, MASSACHUSETTS • CHICAGO, ILLINOIS • COLUMBUS, OHIO • INDIANAPOLIS, INDIANA
LANSING, MICHIGAN • NEW YORK, NEW YORK • SACRAMENTO, CALIFORNIA • TALLAHASSEE, FLORIDA • WASHINGTON, DC

Contents

EXECUTIVE SUMMARY	i
I. INTRODUCTION.....	6
II. METHODOLOGY	6
III. BACKGROUND.....	7
A. National Performance Measure # 17.....	7
B. Performance Measure #17 - Georgia Trend	8
IV. FINDINGS.....	9
A. Georgia NPM #17 Data Analysis and Methodology Review	9
Current Georgia Methodology for NPM #17	9
Vital Records Data Analysis.....	10
HMA Analysis of CY 2009 Data.....	11
Regional Variation in VLBW Deliveries.....	11
Medicaid Data Analysis	14
Differences Between Medicaid and All Other Payors VLBW births.....	15
B. Addressing the Complete Picture of VLBW Births in Georgia.....	17
C. VLBW Data Integrity.....	17
D. Regional Perinatal System Factors	19
Georgia Regional Perinatal System.....	19
Role of the State Department of Public Health and System Leadership	20
Community Linkages	21
Role of RPC and Community Awareness of the System	22
Perinatal Data Collection, Analysis and Reporting.....	23
Hospital Designation	23
E. Individual Factors.....	24
F. Hospital Factors	24
G. Physician Factors.....	25
H. Payor Factors.....	27
Managing high risk deliveries.....	27
Paying for pregnancy services.....	27
Interaction with the RPS	28
V. CONCLUSIONS.....	29
VI. RECOMMENDATIONS.....	30
A. Recommendations to Improve Perinatal Data	30
B. Recommendations to Accurately Quantify Hospital Perinatal Capacity.....	31

C. Recommendations to Build a Strong, Team-Based Regional Perinatal System.....	32
D. Recommendations to Influence Providers in Appropriate Referral of VLBW Births to Level III Facilities	33
E. Other Recommendations.....	33

EXECUTIVE SUMMARY

The Georgia OBGyn Society contracted with Health Management Associates (HMA) to conduct an analysis of factors contributing to the state's low performance on the national maternal-child health measure related to very low birth weight infants (VLBW, defined as < 1,500 gm) and their delivery hospital within the state's Regional Perinatal System (RPS). The RPS designates and funds six Regional Perinatal Centers (RPCs) across the state.

HMA conducted extensive research, including a literature review, interviews with state and national maternal child health and region perinatal system experts, a survey of the state's OBGyn physicians, and analysis of four sources of data on VLBW births to Georgia residents.

Background

The Title V Maternal and Child Health Services Block Grant was established to fund and promote maternal and child health. All Title V state grantees must report annually to the federal government on 18 national performance measures (NPMs) related to maternal and child health. One of those measures focuses on the needs of the premature infant by measuring the percent of VLBW infants delivered at facilities for high-risk neonates (NPM #17). The national goal for this measure through 2010 was that 90% of VLBW infants be delivered at such facilities. In 2010, the State estimated Georgia's performance for delivery of VLBW infants in facilities for high-risk neonates as 72.9%. Performance was reported in the low to mid 70s range for several years prior. This compares to national baseline performance outcome of 76.1% for 2008.

Key Themes

From this research, HMA identified the following key themes, which are explored throughout the report.

- High functioning state-based regional perinatal systems are dependent on:
 - Regular, complete and validated data on all VLBW births and their outcomes, made available to state officials and local clinicians and administrators. This is especially true in states that allow hospitals to self-designate their perinatal capacities.
 - Quality improvement activities that engage local providers and RPC specialists in evaluating individual cases and trends.
- More VLBW births occur in Level III and Level IV hospitals when local physicians are well educated about the RPCs and their capacities. Many Georgia OBGyns are not well versed in the capacities of RPCs.
- Changes in hospital markets, especially the addition of neonatologists, NICUs, and neonatal transport units, have a measurable effect on where VLBW births occur. This is true across the nation and in Georgia.

Key Findings and Conclusions

- The effectiveness of Georgia's Regional Perinatal System is hampered by:
 - Changes in leadership, insufficient support to RPCs, and insufficient enforcement authority from the state.
 - Insufficient birth and outcome data, of unreliable quality.

- Under-developed relationships between RPCs and community hospitals of all perinatal levels.
- Performance for delivery of VLBW infants in facilities for high-risk neonates is highly variable by geography and payor. Urban areas with many Level III hospitals do better on this measure, while rural areas with fewer generally do less well.
- Using the approach to measurement recommended by HMA, the all-payor statewide average for delivery of VLBW infants in facilities for high-risk neonates was 75% for CY 2009.
 - Georgia Medicaid's performance was 84%.
 - Performance for all other payers was 67%.
- Georgia's commercial insurers have a strong stake in the outcomes of VLBW births. Engaging them in strengthening relevant policies and referral networks may result in significant improvement in the state's performance.
- In more than half (53%) of Georgia's VLBW births, the birth occurs outside of the RPS and the neonate is not transferred to an RPC. No entity in Georgia (except perhaps individual hospitals) is considering the appropriateness of delivery site or the birth outcomes of these babies.
- Georgia hospitals self-designate level of perinatal care, and there is evidence pointing to potential inaccuracies in these designations, which would influence delivery of VLBW infants in facilities for high-risk neonates.
- Except for the RPCs, the state does not require hospitals to operate equivalent levels of OB and NICU services, which may increase transport of VLBW infants.
- The Georgia RPS is generally lacking in strength and credibility. The System needs leadership and a stronger infrastructure.
 - A state-level Perinatal Advisory Committee and Regional Perinatal Action Teams are completely absent.
 - The RPCs do not have access to data on perinatal health for their regions, though they are theoretically responsible for ensuring good birth outcomes in their region.
 - Guidelines for consultation and transfer are not enforced.
 - All state guidelines and requirements for the operations of the RPS are voluntary, which compromises the ability of the RPCs to ensure high quality standards in their regions.
- Many of the state's OBGyn physicians are unaware of the RPCs in their regions and of RPC functions and services.
- Over time, additional improvements in VLBW birth outcomes could be made and sustained if hospitals and physicians were incentivized to direct VLBW deliveries and transports to the most desirable settings.

Recommendations

HMA makes the following series of recommendations, many of which fall under the leadership of the Georgia Department of Public Health and the Georgia OBGyn Society and its members across the state.

Recommendations to Improve Perinatal Data

1. Improve accuracy of the reported performance measure.

Georgia's Vital Statistics data are just one source of information about VLBW deliveries and neonatal care and are less reliable on some measures than other data sources. Georgia's RPS should make use of all sources of data and should compare elements across sources to obtain the most accurate information possible. Data should list hospital identifiers (including those for out-of-state border hospitals) and should allow matching mother and infant records; and where hospital designations cannot be determined, the state should consider eliminating those VLBW deliveries from the denominator in calculating NPM # 17. Data sources should include:

- Vital Statistics records
- Medicaid data (based on paid claims)
- Commercial insurance data (based on paid claims)
- Georgia Hospital Discharge Data Set maintained by the Georgia Hospital Association
- RPC data files and logs
- Hospital-specific perinatal transfer logs

Based on review and analysis of the Vital Records and the actual Medicaid data, HMA recommends a specific approach for calculating the performance measure, detailed in the report.

2. Produce and disseminate standard actionable data reports.

The state should track and report on neonatal transports and outcomes by birth hospital and delivering physician, among many other factors. As the culture shifts as it has elsewhere to "data for improvement, not data for judgment," data on all VLBW births should be presented by hospital and by payor source.

Recommendations to Accurately Quantify Hospital Perinatal Capacity

3. Implement the Georgia Perinatal Capacity Survey.

The state should implement its perinatal capacity survey as soon as possible. The draft should be amended to include questions about neonatal transport units, which are an emerging concern and absent in the draft version.

4. Establish verifiable perinatal hospital designation criteria for specifying the service level of perinatal hospitals.

The current self-attestation of perinatal service level is a weak system with current designations of several hospitals known to be erroneous. Confidence needs to be built through a formal designation process with credible designation criteria. Through administrative rule making, the Division of Facility Regulations should develop credible, verifiable designation criteria

5. Consider requiring equivalence between hospital obstetric and NICU services.

The state should study the findings of the capacity survey to determine the extent to which there is lack of equivalence of Level III OB and Level III NICU services within the same hospitals and should consider requiring equivalence of service level.

Recommendations to Build a Strong, Team-Based Regional Perinatal System

6. Build infrastructure to support a strong and credible RPS.

The State of Georgia and the Georgia OBGyn Society should recommit to the Regional Perinatal System and develop the necessary infrastructure to support a strong and credible System, including establishing a State Perinatal Advisory Committee structure that is proactive in making state-wide improvements in the RPS and developing regional Perinatal Action Teams that serve as regional planners/implementers empowered as rapid responders to emerging regional problems.

In the Atlanta region, once the Perinatal Action Team has built a level of trust and credibility among its stakeholders, consideration should be given to re-evaluating how the region's RPS funds are deployed, to assure that the funds are used in ways that most advance the desired birth outcomes.

7. Require RPCs to participate in hospital perinatal quality assurance committees.

Community hospital policies and practices related to perinatal care are often hidden from the RPCs, and RPC ability to participate in quality improvement is truly limited. The state should, through administrative rule making, develop RPS rules that acknowledge the value of the RPCs as content experts in perinatal care and require RPCs to participate as a member in affiliated hospital perinatal quality assurance/improvement committees and processes. The rules must include sanctions or penalties on hospitals that do not cooperate with the RPCs, which could include suspension of perinatal designation status or other measures.

8. Engage Medicaid, commercial insurers, and large employers as key stakeholders in the RPS.

Medicaid, the state's commercial insurers, and Georgia's State Health Benefit Plan have strong interest in reducing VLBW births, and should actively participate in statewide oversight and improvement of Georgia's RPS. They can all contribute data to enhance and validate the Vital Statistics data, build internal policies and analyses that support high quality perinatal outcomes, and create incentives and disincentives to hospitals and physicians that support desired outcomes. Participation of these stakeholders on a statewide perinatal council adds powerful, important leverage and resources.

Recommendations to Influence Providers in Appropriate Referral of VLBW Births to Level III Facilities

9. Launch an Informational Campaign on the RPS in conjunction with New Perinatal Guidelines.

There is a significant lack of awareness of the Regional Perinatal System among Georgia OBGyns. "Guidelines for Perinatal Care" is currently under revision by ACOG and APA. The new guidelines should be used to inform revisions of the Georgia Guidelines. An educational campaign launched in conjunction with the release of Georgia's new Guidelines and any new administrative rules made or in place to strengthen the program would be well timed and worthwhile.

10. Incentivize hospitals and physicians to direct VLBW deliveries to appropriate level of care.

Once Georgia's perinatal data are reliable and transparent, the State and Georgia payors should consider a system of incentives to direct VLBW deliveries and neonatal transports to the most desirable settings. Considerations could include volume, timely transport, and outcomes. Example of incentives would include enhanced payment, withheld payment, network participation, and a quality rating system. Incentives that are collaboratively developed among payors and address the same requirements would be more powerful than separate initiatives.

Other Recommendations

11. Medicaid should develop policies and procedures to ensure early risk factor identification and access to prenatal care and case management services for pregnant women, including:

Delivery of Very Low Birth Weight Infants Georgia: Improving Performance

- Promote early identification of women at risk of VLBW.
- Provide early access to aggressive case management services and prenatal care.
- Provide quicker access to case management services and prenatal care in the managed care setting by enrolling eligible pregnant women sooner.
- Develop interventions to identify early risk factors and provide access to case management interventions and prenatal care for undocumented women.

I. INTRODUCTION

Over 30 years of experience in the perinatal regionalization of care for very low birth weight (VLBW) infants born at highly specialized hospitals, most commonly designated as level III perinatal centers, has proven to reduce infant deaths and improve birth outcomes. A national goal was established in the Healthy People 2010 project that 90% of all VLBW babies be born in Level III hospitals. Georgia has lagged in progress toward that goal. The Georgia Department of Public Health engaged the Georgia OBGyn Society (GOGS) to assist in the study of factors contributing to this lack of progress.

The GOGS contracted with Health Management Associates (HMA) to conduct an analysis of factors contributing to the state's low performance on the national maternal-child health measure related to VLBW infants and their delivery hospital within the state's Regional Perinatal System. This report describes HMA's research methodology, provides background on the performance measure, summarizes HMA's findings of multiple factors that likely affect performance on this measure, including Georgia's Regional Perinatal System (RPS), and presents recommendations to improve this performance measure and ultimately improve health outcomes for very low birth weight infants born in Georgia.

II. METHODOLOGY

HMA conducted a literature review on the topic.¹ Relevant findings from the literature and references are cited in the report where appropriate.

We reviewed state documents related to Georgia's Regional Perinatal System, and also documents from New York State's system.²

We conducted a survey of potentially referring OBGyn providers attending the GOGS annual meeting to assess familiarity and understanding of the Regional Perinatal System in Georgia.

We conducted extensive interviews with:³

- Maternal-child health experts from the Centers for Disease Control and Prevention and the states of New York, Louisiana, and Tennessee.
- Maternal-child health leaders in Georgia's Department of Public Health.
- Maternal and neonatal transport coordinators, outreach specialists, and a neonatologist from Georgia Regional Perinatal Centers.
- OBGyns from rural Georgia hospitals (in a focus group).
- OBGyns from Atlanta hospitals (in a focus group).
- Mothers who delivered VLBW infants in Georgia.
- Author of a comprehensive national study of the performance measure funded by the Maternal and Child Health Bureau of HRSA.
- Leadership from the National Perinatal Information Center, which processes data from GA's Regional Perinatal Centers.

HMA obtained and compared reimbursement policies for pregnancy and delivery services from Medicaid, Medicaid Managed Care Organizations, United, Cigna, and Blue Cross Blue Shield of Georgia.

¹ The complete literature review is included as Attachment A.

² A complete list of documents reviewed is included as Appendix B.

³ A complete list of interviewees and key summaries are included as Appendix C and D.

HMA also obtained and analyzed birth records from Georgia Vital Statistics, Medicaid claims data for births to Georgia Medicaid beneficiaries (including those in managed care), and claims for VLBW infants born to Georgia state employees enrolled in the State Health Benefit Plan.

At various points in this research process, HMA conferred with GOGS and the Georgia Department of Public Health and used their input to frame further exploration.

III. BACKGROUND

A. National Performance Measure - Delivery of VLBW Infants in Facilities for High-Risk Nonates (# 17)

Over the last few decades, birth weight-specific survival has improved significantly, especially among low birth-weight (LBW <2500 g) and very low birth weight (VLBW <1500 g) infants.⁴ This is due largely to the development of neonatal intensive care coupled with widespread implementation of regional perinatal systems.^{5,6} For over 30 years, guidelines for perinatal regionalization have recommended that very low birth weight infants be born at highly specialized hospitals, most commonly designated as level III perinatal centers.⁷

Community based health care providers are expected to consult regional specialists and refer patients for the most appropriate level of care based on neonatal, fetal, and maternal risk. The most vulnerable newborn infants would receive specialized care in perinatal center neonatal intensive care units (NICUs). Ideally, these infants would have been transferred in utero, as neonatal death rates are reduced when high-risk infants are born in hospitals with Level III NICUs.^{8,9,10}

The Title V Maternal and Child Health Services Block Grant was established to fund and promote maternal and child health. Title V was authorized in 1935 as part of the Social Security Act and is administered by the Maternal and Child Health Bureau, which is part of the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS). The Title V Program goals include:¹¹

- Reduce the infant mortality rate.
- Provide and ensure access to comprehensive prenatal and postnatal care.
- Increase the number of children receiving health assessments and follow-up diagnostic and treatment services.

⁴ MacDorman M, Rowley D, Iyasu S, et al., editors. Infant Mortality In: From Data to Action. Washington, DC; US Department of Health and Human Services, Public Health Services, and Centers for Disease Control, National Center for Health Statistics 1994. P 231-249.

⁵ Carmichael S, Iyasu S, Hatfield-Timajchy K. Cause-specific trends in neonatal mortality among black and white infants, United States, 1980-95. *Maternal Child Health Journal*. 1998;2(2): 67-76.

⁶ Lowry, F. "Preemies Not Born in Specialized Level III Hospitals More Likely to Die." *Medscape Medical News*. <http://www.medscape.com/viewarticle/727799>

⁷ Committee on Perinatal Health. *Toward Improving the Outcome of Pregnancy: Recommendation for the Regional development of Maternal and Perinatal Services*. White Plains, NY: March of Dimes National Foundation, 1976.

⁸ Kollee L, Brand R, Schreveder A, et al. Five-year outcome of preterm and very low birth weight infants: a comparison between maternal and neonatal transport. *Obstetrics Gynecology* 1992; 80:635-638.

⁹ Powell S, Holt V, Hickok O, et al. Recent changes in delivery site of low birth weight infants in Washington: impact on birth weight-specific mortality. *Am J Obste Gynecol* 1995;173 (5): 1585-1592.

¹⁰ Menard, M, and Liu Q, Holgren E, et al. Neonatal mortality for very low birth weight deliveries in South Carolina by level of hospital perinatal service." *Am j Obstet Gynecol* 1998;179:374-381.

¹¹ U.S. Department of Health and Human Services, Health Resources and Services Administration website.

<http://mchb.hrsa.gov/programs/titlevgrants/index.html>

- Provide and ensure access to preventive and child care services as well as rehabilitative services for certain children.
- Implement family-centered, community-based, systems of coordinated care for children with special healthcare needs.
- Provide toll-free hotlines and assistance in applying for services to pregnant women with infants and children who are eligible for Medicaid.

All Title V state grantees must report annually to HRSA on 18 national performance measures (NPMs) related to maternal and child health.

Delivery of VLBW infants in facilities for high-risk neonates (NPM #17) focuses on the needs of the premature infant by measuring the percent of very low birth weight (VLBW) infants delivered at facilities for high-risk neonates. The national goal for this measure through 2010 was that 90% of VLBW infants will be delivered at facilities for high-risk neonates. This goal was based on the Healthy People 2010 goals and objectives for health promotion and disease prevention established by HHS. The Healthy People 2020 goal for this measure was lowered to 83.7%, which represents a 10% improvement over the national baseline performance of 76.1% for 2008.

A review of the literature revealed that several different factors affect appropriateness of VLBW delivery location. These include regional perinatal system factors, hospital factors, payor factors, and individual factors. Each of these factors will be addressed sequentially in the report with greater emphasis placed on factors that appear to have greater influence. States with strong regional perinatal systems tend to have higher rates of appropriate VLBW delivery location. Individual factors such as adequate prenatal care and place of residence play a significant role in delivery location. Other factors reported in the literature are less conclusive but in some cases may have a significant effect on appropriateness of VLBW delivery location. For example, for managed care payors, it appears that network composition and reimbursement policies have the potential to either support or undermine a system of perinatal regionalization.

B. Georgia Trend

In July 2011, Georgia submitted its Title V report to HHS, which includes the annual indicators for the measure over a five-year period. For CY 2006 through CY 2008, the report includes final estimates; however, for CY 2009 and CY 2010 the estimates are provisional, as complete data were reported as not available. The report shows performance indicators in the mid to low 70% range, which is well below the Title V goal of 90%. Table 1 shows Georgia’s reported outcomes for CY 2006 through CY 2010.

Year	Indicator
CY 2006	74.9
CY 2007	73.1
CY 2008	74.6
Est. CY 2009	73.4
Est. CY 2010	72.9
2010 National Goal	90.0
<i>Source: Georgia Department of Community Health, Maternal and Child Health Services. Title V Block Grant State Narrative for Georgia -Application for 2012 and Annual Report for 2010.</i>	

IV. FINDINGS

In order to assess state and national trends for this measure, HRSA funded a report published in 2010 that found that the all-state reported rate and most individual state rates did not reach the 90% goal, and that state performance had changed very little since 2000.¹² The all-state reported rate was 74.2% in 2000 and remained relatively unchanged by 2007/2008, when the reported rate was 74.5%.

By 2007/2008, only six states achieved the Healthy People 2010 goal of 90%: Oregon, Nevada, Iowa, Rhode Island, Vermont, and New York. Among all states and participating jurisdictions, 23 had improved rates, 15 had only a slight change, and 14 had rates that were lower. According to the report, Georgia was among those states with a negative absolute percent change (-3.4%).

The report also noted significant challenges associated with accurate performance measurement, both within and across states. This is crucial, as the accuracy of the measurement can be a barrier to appropriate interventions and assessment of state-specific progress. State-to-state comparison can also be misleading, as data integrity and methodology vary by state. In particular, measurement problems occur in accurately determining which hospitals are facilities for high-risk neonates and in accurately accounting for births to state residents that occur in other states.

While the original Healthy People 2010 target for this measure was 90%, the Healthy People 2020 target was reduced to 83.7%. The target setting method for 2020 was 10% improvement from baseline, recognizing that a 90% national target may have been overly ambitious. (<http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26>)

A. Georgia Data Analysis and Methodology Review

Table 2 provides detail on Georgia's reported calculation and outcomes for CY 2006 through CY 2010. For CY 2006 through CY 2008, the indicators are final; however, for CY 2009 and CY 2010 the

Annual Objective and Performance Data	2006	2007	2008	Est. 2009	Est. 2010*
Annual Objective*	76.5	77.0	77.5	70.0	73.4
Annual Indicator**	74.9	73.1	74.6	73.4	72.9
Numerator	1,920	1,931	2,013	2,025	2,062
Denominator	2,563	2,641	2,697	2,757	2,827
Data Source***				Vital Records	
Note: It is not clear if Georgia measure includes births to Georgia residents delivering out of state.					
*Explanation for the 2009 objective set at 70 is not available.					
**Data were unavailable for 2009 and 2010; provisional estimates were developed using a linear projection with data from 2000 through 2008.					
***2006 and 2007 date source not shown in the Georgia report.					
Source: Georgia Department of Community Health, Maternal and Child Health Services. Title V Block Grant State Narrative for Georgia -Application for 2012 and Annual Report for 2010. Published July 2011.					

estimates are provisional, as complete data were not available. The report shows performance indicators in the mid to low 70% range.

Current Georgia Methodology

The current methodology for calculating Georgia's performance is based on Georgia Vital Records data. However, the actual calculation methodology is unclear. It appears that the numerator consists of reported VLBW deliveries at Level III and Level IV facilities, and the denominator consists of all identified VLBW deliveries. Georgia's Vital Records system does not accommodate tracking specific out-of-state

¹² Freeman, Victoria. "Very low birth weight babies delivered at facilities for high-risk neonates: a review of Title V national performance measure 17." University of North Carolina at Chapel Hill. April 8, 2010.

hospitals. It is not clear if out-of-state deliveries are included in the calculation or if any other adjustments were made. The calculation for the 2009 and 2010 estimates was not available but is described as a linear estimate using data from 2000 through 2008. HMA discussed the calculation methodology with DPH; however, since the staff responsible for this calculation is new, they were unable to explain or document the previous calculation methodology.

There are three important factors to consider in terms of assessing the reliability of the performance estimates:

- Vital Records data for VLBW deliveries are not validated against hospital discharge or Medicaid data. Therefore, the extent to which the data are reliable and representative of Georgia deliveries is not clear. This is an issue in measuring progress and establishing meaningful policy and interventions to improve the measure.
- The methodology does not account for VLBW births to Georgia residents delivering out of state. This is an important consideration given the proximity of out-of-state facilities for high-risk pregnant women who reside close to the Georgia state line in rural areas of the state with limited access to medical care. For example, the northwestern portion of Georgia is rural and does not have many nearby in-state Level III hospitals, but Erlanger Hospital is a level IV facility just across the Georgia state line in Chattanooga, Tennessee. Georgia Medicaid considers Erlanger as an “in-state” provider because of its proximity to the State line.
- The methodology does not adjust for deliveries where the Vital Records data indicate the perinatal facility level is unknown. Including deliveries at unknown perinatal facility levels skews Georgia’s actual performance results by increasing the denominator. By validating against the hospital discharge and/or Medicaid data, it is possible to reduce the number of deliveries with an unknown perinatal facility designation.

Vital Records Data Analysis

HMA requested CY 2008 and 2009 Vital Records data for VLBW deliveries by perinatal facility level and payor source. Table 3 compares the initial data findings for the measure. DPH provided out-of-state data; however, it was considered unreliable, so HMA conducted the Vital Records analysis based on VLBW deliveries to Georgia residents occurring in-state. As noted, for a significant portion of the records, the facility perinatal designation was unknown. For example, in CY 2009 for 8% of the records (212 of 2,596) the facility designation was missing or unknown. If measure is calculated excluding the “unknown” cases, the CY 2009 measure increases from 69% to 75.1%. The extent to which this is an issue related to data completion and adjustments over time is not clear. Also, note that the CY 2008 the performance indicator was reported to HHS as a final estimate; however, HMA could not replicate the calculation using Vital Records data.

Data address Level III and Level IV facilities. Level IV facilities are the state’s six Regional Perinatal Centers (RPCs), and Level III facilities are other Georgia hospitals that have self-designated as providing Level III perinatal services. For purposes of calculating NPM #17, VLBW deliveries at Level III and IV facilities are combined.

	CY 2008		CY 2009	
	Indicator Data	NPM #17 Outcome	Indicator Data	NPM #17 Outcome
Numerator: Total VLBW Deliveries at Level III & IV Facilities	1,914		1,791	
Denominator: Total VLBW Deliveries (does not include out-of-state)	2,785	68.7%	2,596	69.0%
Adjust for VLBW Deliveries with Missing or Unknown Facility Designation	(167)		(212)	
Revised Denominator	2,618	73.1%	2,384	75.1%

HMA Analysis of CY 2009 Data

HMA conducted further analysis on CY 2009 data that allowed comparison with Medicaid and State Health Benefit Plan (SHBP) data. Note that all HMA analyses *exclude* VLBW births for which the facility designation is unknown.

Table 4 arrays CY 2009 VLBW births by facility level, omitting facilities with an unknown designation. The resulting calculation increases the state’s reported 2009 performance of 73.4% by 1.6 percentage points. Using this methodology, 75% of VLBW births occurred at Level III and IV facilities.

	Number	Percent
Level I Perinatal Facility	94	4%
Level II Perinatal Facility	480	20%
Level III Perinatal Facility	1,077	45%
Level IV Perinatal Facility	714	30%
Not born in a Perinatal Facility	19	1%
Total	2,384	100%
NPM #17 Indicator (Levels III & IV)	1,791	75%

Regional Variation in VLBW Deliveries

Figure 1 illustrates the distribution of VLBW births across the state’s perinatal regions. CY 2009 Vital Records data show variation in measured performance among Perinatal Regions. While the Atlanta region uses the regional perinatal center (RPC) least often compared to the other regions, it has the highest performance outcome at 79% and handles the majority of the VLBW deliveries (Table 5).

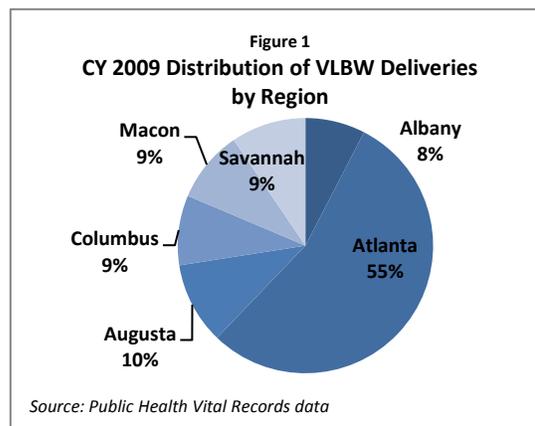
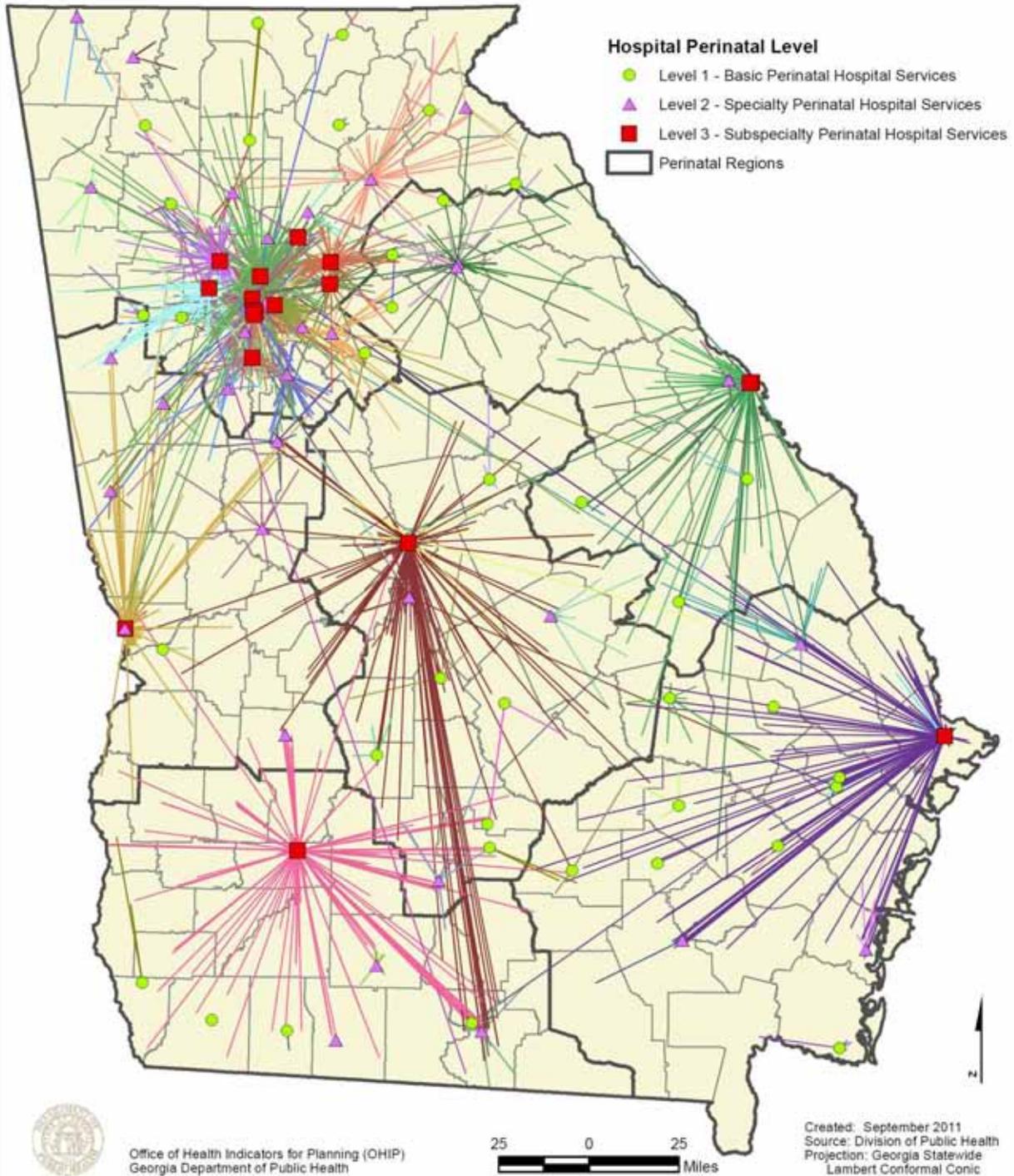


Table 5 CY 2009 In-State VLBW Deliveries by Facility Designation Public Health Vital Records Data (excludes cases where designation is unknown and does not account for transfers between regions)						
Perinatal Facility Level	Albany	Atlanta	Augusta	Columbus	Macon	Savannah
Level I	3%	2%	5%	1%	7%	13%
Level II	20%	18%	28%	21%	26%	17%
Level III	0%	72%	45%	13%	2%	0%
Level IV	77%	7%	21%	63%	65%	68%
Not in a Perinatal Facility	0%	1%	0%	2%	0%	1%
Total	100%	100%	100%	100%	100%	100%
NPM # 17 (Levels III & IV)	77%	79%	66%	76%	67%	69%

To illustrate the pattern of VLBW deliveries by region and perinatal facility level, DPH mapped the 2009 VLBW vital records data. Each line represents a VLBW birth, from the mother’s zip code to the delivery hospital. Mothers delivering out of state are not shown. The map shows the wide availability of Level III hospitals in the Atlanta region, the most urban area of the state, as opposed to the more limited availability in the other five more rural regions. Another striking observation displayed on the map is that many mothers residing in southern Georgia bypass the Albany RPC to actually deliver at a far greater distance at Macon’s RPC.

2009 VLBW Deliveries at Perinatal Facilities



Medicaid Data Analysis

Medicaid is the primary payor source for the majority of births in Georgia. Between CY 2006 and CY 2009, Medicaid on average paid for 57% of all Georgia births.¹³ Beginning in June 2006, Georgia Medicaid began contracting with three full-risk managed care companies to provide comprehensive health care services to low-income women and children, pregnant women, and women with breast or cervical cancer. The companies are referred to as care management organizations or CMOs. On average for 2008 to 2010, 65% of all Medicaid deliveries were covered by CMOs; the remaining 35% were covered by the traditional fee-for-service system.¹⁴

Women who deliver in the fee-for-service system include undocumented pregnant women, women who became pregnant while eligible under a disability related Supplemental Security Income (SSI) category, and low-income pregnant women who became Medicaid-eligible too late in their pregnancy to be covered by the CMOs. Medicaid enrollees eligible for the CMO program have 30 days from enrollment to choose a CMO. Once the women have chosen a CMO, the system can take up to another 30 days to effect the change, which means they may not begin receiving care in the CMO system for 30 to 60 days. The result has been that pregnant women entering Medicaid late in their pregnancies are more likely to deliver while still covered by the fee-for-service system and with little or no access to case management.

Medicaid data can be assumed more reliable than Vital Records data because they are reported from claims submitted by hospitals and validated on pre- and post- payment bases. Claims data are reviewed by both Medicaid’s contracted CMOs and the Department of Community Health for accuracy of payment in terms of member eligibility, provider eligibility, verification of care, etc. In addition, the data identify out-of-state deliveries by Georgia residents participating in Medicaid.

HMA requested Medicaid data for CY 2009 VLBW deliveries identified by payor source (fee-for-service or CMOs), hospital location (including out-of-state hospitals), and the mother’s category of eligibility including Emergency Medicaid Assistance for undocumented pregnant women. DCH provided data using hospital diagnostic related codes associated with VLBW infants and pregnant women delivering VLBW infants.

In 2009, Medicaid covered nearly 58% of births in the state and 45% of VLBW births (Table 6).

As illustrated in Table 7, 84% of Medicaid VLBW births were in Level III or IV facilities, for births within and outside of

Georgia. Facility designation was missing in only 1% of the Medicaid VLBW births. When calculation of deliveries for VLBW infants in facilities for high-risk neonates is adjusted for this 1%, the percentage of births in an appropriate level facility is 85% for the Medicaid population.

Total Births	141,332	Total GA VLBW Births	2,596
Total Births - Medicaid	81,737	Total GA VLBW Medicaid	1,166
% Medicaid	57.8%	VLBW % Medicaid	44.9%
Source: Total Births and Total VLBW Births: GA Department of Public Health OASIS Data System Query. Note - OASIS shows only deliveries in GA, it does not show deliveries by GA residents in out of state hospitals.			
Source Medicaid: GA Department of Community Health, Decision Support System Medicaid Delivery Report.			

¹³ Based on Medicaid data from the Georgia Department of Community Health and for total births using data from the Georgia Department of Public Health Vital Records data queried in the Online Analytical Statistical Information System.

¹⁴ Georgia Department of Community Health, Decision Support System query in response to a December 2010 HMA open records request.

	All GA Medicaid VLBW Births		GA Medicaid VLBW Births – In-State Only	
Level I Perinatal Facility	7	1%	7	1%
level II Perinatal Facility	171	14%	168	14%
Level III Perinatal Facility	452	38%	451	39%
Level IV Perinatal Facility	556	46%	526	45%
Not born at Perinatal Facility	0	0%	0	0%
Unknown	15	1%	14	1%
Total	1201	100%	1166	100%
NPM #17 Indicator (Levels III & IV)	1,008	84%	977	84%
NPM #17 Indicator (Levels III & IV) – adjusted for Unknown	1,008	85%	977	85%

The following are some additional findings for Medicaid VLBW deliveries (Table 8):

- For Medicaid VLBW deliveries by payor type, 67.4% of deliveries were covered by fee-for-service (FFS) and 32.6% were covered by CMOs. However, 65% of all Medicaid births occur within the CMOs and only 35% in FFS. Though not within the scope of this research, this finding has implications related to more aggressive case finding and earlier engagement in prenatal care and case management.
- 81.4% of all CMO VLBW deliveries occurred at Level III and IV facilities; the comparable figure for FFS was 82.7%.
- 115 SSI-eligible women who participated in the Georgia Better Health Care (GBHC) delivered at Level III and IV facilities. The indicator for GBHC was 95%. The Georgia Better Health Care Program was eliminated in FY 2012.
- Undocumented pregnant women account for 30% of all Medicaid VLBW deliveries and 34% of the deliveries in Level III and IV settings. The actual delivery, but not prenatal care or case management, is covered by Medicaid. This is because undocumented pregnant women are eligible only for emergency medical care. The delivery is paid for in Medicaid FFS. Performance for this group is similar to the Medicaid group as a whole, 85%.

All Medicaid	85%
SSI –Eligible and in GBHC	95%
CMO	81.4
FFS	83%
Undocumented Pregnant Women - FFS	85%

Differences Between Medicaid and All Other Payors VLBW births

As stated previously, in 2009, Medicaid covered nearly 58% of births in the state and 45% of VLBW births. Since Medicaid’s emergency medical assistance category covers all births to undocumented women, it can be assumed that commercial insurance and self-pay cover all births that Medicaid does not. Based on this assumption, commercial insurance and self pay covers 42% of the State’s births and 66% of VLBW births. Accordingly, commercial payors have a very high stake in where VLBW deliveries occur and their associated outcomes. By subtracting Medicaid births (using Medicaid data) from the births in Vital Records, we are able to construct with reasonable accuracy a picture of VLBW deliveries to payors other than Medicaid.

As stated, Georgia’s overall performance on the measure (using Vital Records data adjusted for deliveries where the perinatal facility level is unknown) is 75%. Using Medicaid data, performance for births covered by Medicaid is much higher at 85%. The residual estimation of performance for births covered by all other payor types is thus well below the state average, at 67%. This result has significant implications for the state’s commercial payors—in the cost of VLBW deliveries at less than optimal facilities and in morbidity and mortality of VLBW babies. Table 9 illustrates this analysis.

	Statewide Average		Vital Records Non-Medicaid Payors ¹⁵		Medicaid	
	Number	% of Payor Total	Number	% of Payor Total	Number	% of Payor Total
Level I	94	4%	87	7%	7	1%
Level II	480	20%	312	26%	168	15%
Level III	1077	45%	626	51%	451	39%
Level IV	714	30%	188	15%	526	46%
Non Perinatal Facility	19	1%	9	1%	0	0%
Total ¹⁶	2384	100%	1222	100%	1152	100%
NPM #17 Indicator (Levels III & IV)	1791	75%	814	67%	977	85%

To further understand this finding, HMA requested CY 2009 data for the Georgia State Health Benefit Plan (SHBP), which is the commercial insurance coverage for Georgia state government employees. The data showed that there were 6,914 deliveries covered by the SHBP or 4.9% of all Georgia deliveries, which included 45 VLBW deliveries or 0.7% of all VLBW births. Eleven percent (11%) of the VLBW deliveries occurred at a Level IV facility outside of Georgia. The data indicate that the SHBP performance on the measure is 60% for in-state deliveries only; when the out-of-state deliveries are factored in, the performance indicator improves to 71% (Table 10). HMA recognizes that the SHBP analysis involves very small numbers. Nonetheless, the finding that VLBW births to SHBP members is

	In-State		Include Out	
	In-State VLBW Delivery	%	of State VLBW Delivery	%
Level I	2	5%	2	4%
Level II	11	28%	11	24%
Level III	22	55%	22	49%
Level IV	5	13%	10	22%
Total	40	100%	45	100%
NPM #17 Indicator (Levels III & IV)	27	60%	32	71%

¹⁵ Births in the Non-Medicaid category consists of commercial insurance (46%), unknown payor source (37%), self-pay (5%), Champus (4%), other (6%); and other governmental (2%).

¹⁶ The Non-Medicaid payor source plus the Medicaid payor totals so not add up to the total because the non-perinatal facility was adjusted down to reflect the identification of Medicaid deliveries through the actual Medicaid data.

considerably below Medicaid performance reinforces a call for the state's commercial insurers to conduct further analysis and become advocates in Georgia's Regional Perinatal System.

B. Addressing the Complete Picture of VLBW Births in Georgia

The Georgia Department of Public Health tracks VLBW health outcome information only on births at RPCs or transfers to them. No data are collected and little is known about the outcomes for more than half of VLBW infants born in the state.

	#	%
Statewide Total VLBW infants	2,531	100%
Born at RPCs	921	36%
VLBW infants transferred to RPCs	263	10%
Total VLBW infants born and/or treated at RPCs	1,184	47%
VLBW infants not born or treated at RPCs	1,347	53%
Source: Data submitted by GA RPCs to National Perinatal Information Center		

As shown in Table 11,¹⁷ more than a third of VLBW births occurred at RPCs. In addition, 10% of VLBW infants not born at RPCs were transferred to RPCs for neonatal care. In all, 47% of VLBW infants were treated at the state's RPCs.

However, more than half of VLBW infants born in Georgia in 2008 had no contact with an RPC.

Thus their birth outcomes are not evaluated by the state's Regional Perinatal System. These data raise two important questions. First, of the 263 VLBW infants transferred to RPCs, how many of them could/should have been *born* at the RPC but instead were born at another hospital and transferred later? Next, of the 1,347 VLBW babies *not born at or transferred to* an RPC (53%), what were the outcomes of their birth location and/or transfers? As shown in the analysis of 2009 VLBW data, the state and its public and commercial payers all have a strong interest in the answers to these questions.

The administrative data set maintained by the Georgia Hospital Association contains answers to the questions. Many state Regional Perinatal Systems use these data to identify trends or outliers among specific hospitals or hospital systems that warrant further analysis. Georgia has not explored hospital-specific VLBW trends or outliers among more than half of its VLBW infants, which is a significant shortcoming of the state's Regional Perinatal System.

C. VLBW Data Integrity

Georgia faces numerous challenges in analyzing its performance related to delivery of VLBW infants in facilities for high-risk neonates because of problems with available data and different approaches to its use that have been noted.

A comparison of the Vital Records payor-source data for Medicaid to the actual DCH Medicaid data shows notable discrepancies. The total number of VLBW deliveries adjusted for unknown facility levels is relatively close. However, the Vital Records data shows 6% of Medicaid deliveries with an unknown perinatal facility level while the Medicaid data shows only 1%. In addition, the deliveries by perinatal level are quite different and result in markedly different outcomes for the measure. The Vital Records data, adjusted for unknown perinatal facility designation, shows performance as 69%, while the actual Medicaid data shows 85% (Table 12).

¹⁷ HMA wishes to acknowledge and thank the National Perinatal Information Center for these data and associated analysis and recommendations

Table 12 Data Variations for CY 2009 Medicaid VLBW In-State Deliveries				
Perinatal Facility Level	Vital Records Data for Medicaid		DCH Actual Medicaid Data	
Level I	53	4%	7	1%
Level II	287	24%	168	14%
Level III	408	34%	451	39%
Level IV	381	32%	526	45%
Not Born in a Perinatal Facility	10	1%		0%
Unknown	70	6%	14	1%
Total	1209	100%	1166	100%
Total Adjusted For Unknown	1139		1152	
NPM #17 Indicator (Levels III & IV)	789	65%	977	84%
NPM #17 Indicator (Levels III & IV) – adjusted for Unknown	789	69%	977	85%

DPH has acknowledged that the payor-source designation in the Vital Records data is not reliable and that for VLBW deliveries in 2009, 20% had an unknown payor source. The comparison to the actual Medicaid data also indicates that DPH’s measurement is probably underestimating Georgia performance, especially since Medicaid comprises a large portion of the VLBW deliveries and its data are reliable.

Additional data integrity challenges include all the following.

- In the Vital Records data, about 8% of the records for VLBW deliveries do not show a hospital designation. When the births with undesignated hospitals are included in the calculation, the performance measurement changes considerably.
- Vital Records data for births at RPCs are understated. In CY 2008, Vital Records indicate 754 VLBW births at the RPCs, but the data submitted by the RPCs to the National Perinatal Information Center show 921 VLBW births, a difference of more than 20%.
- The payor source in the Vital Records data is often not indicated and is not used for payment purposes; it is considered unreliable.
- The Vital Records system has not assigned hospital codes to hospitals heavily used by Georgia residents but located outside the state. Accordingly, measurement cannot include VLBW births to Georgia residents that occur at hospitals outside of Georgia. These include Erlanger Medical Center in Tennessee (Level IV designated perinatal center), Greenville Memorial Hospital in South Carolina (Level III facility) and Tallahassee Memorial Medical Center in Florida ((Level III facility) that are considered “in-state” by Georgia Medicaid.
- The state does not make use of other sources of data, including Medicaid and commercial insurance claims data, administrative data from the Georgia Hospital Discharge Data Set,¹⁸ RPC data files and logs, and hospital-specific perinatal transfer logs.

Georgia struggles to have a single authoritative source and methodology for accurate calculation of the performance measure. An agreed-upon combination of data sources, elements, and approach could paint a far more accurate and complete picture than the Vital Records data alone.

¹⁸ Maintained by the Georgia Hospital Association

D. Regional Perinatal System Factors

Georgia Regional Perinatal System

Established in 1970 under Legislative Authority Title XIX and Title V of the Social Security Act, the Georgia Regional Perinatal Care Network was intended to assure the availability of and access to comprehensive prenatal care and specialized obstetric and newborn care. Georgia’s Department of Public Health’s Family Health Branch administers the State’s Title V block grant program. The Department of Public Health was established as its own entity in July 2011. Prior to that, and for only three years, Public Health was a division of the Department of Community Health. Before that, Public Health was a Division in the Department of Human Resources.

The state is divided into six perinatal regions with one Regional Perinatal Center (RPC) located in each region. According to state officials responsible for the RPS, the designated Regional Perinatal Centers are all Level III facilities, with varying levels of subspecialty care capabilities from IIIA, IIIB, IIIC. However, Vital Records differentiates Regional Perinatal Centers as Level IV. For data presentation, we have used “Level IV” to indicate RPC, but we use “Level III” for Regional Perinatal Centers and other Level III facilities in the narrative. This discrepancy should be addressed by the state to ensure appropriate and consistent reference to service level of the RPCs.

Table 13 identifies Regional Perinatal Centers (Level IV) and self-designated Level III hospitals in each region.

Region	Level III	Level IV
Albany		Phoebe Putney Memorial Hospital
Atlanta	Atlanta Medical Center	Grady Memorial Hospital*
	Children's Health Care of Atlanta - Scottish Rite	
	DeKalb Medical Center	
	Emory Eastside Medical Center	
	Emory John's Creek Hospital	
	Emory University Hospital - Midtown*	
	Gwinnet Medical Center	
	Northside Hospital	
	Piedmont Hospital	
	Southern Regional Medical Center	
	WellStar Cobb Hospital	
	WellStar Kennestone Hospital	
Augusta	University Hospital	Medical College of Georgia
Columbus		The Medical Center
Macon		Medical Center of Central Georgia
Savannah		Memorial Health University Medical Center
*Grady Memorial Hospital subcontracts with Emory University Hospital -Midtown for NICUs as part of the Atlanta Designated Regional Perinatal Center network.		

According to the most recent State Guidelines,¹⁹ each RPC is expected to maintain Level III (Subspecialty Care Status). In addition to the Level III capability for management of high-risk perinatal conditions, the RPC provides consultative, outreach, transport, and support services to all facilities within the region. State funding is provided to enhance designated Level III hospital service and ensures access to highly trained perinatal personnel and intensive care facility for any pregnant woman and newborn in Georgia.

The services RPCs are expected to provide the highest level of comprehensive prenatal health care services for pregnant women, their fetuses, and neonates of all risk categories; consultation and transport support; coordination and assurance of follow-up medical care for maternal and neonatal patients; outreach and educational support to ensure high quality perinatal care in the region; compilation, analysis, and evaluation of perinatal data from the RPC and perinatal hospitals in the region; coordination of perinatal health care in the region; and evaluation of new methods and technologies of perinatal health.²⁰

This high-risk Maternal and Neonatal Program is jointly funded by the state and federal government. Including both federal and state contributions, the total annual budget for the Program is approximately \$20 million. This budget has remained at this rate for many years. The funding is split into benefit dollars (\$15 million) and administrative dollars (\$5 million). The benefit dollars compensate hospitals for direct care costs for uninsured and patients with coverage gaps. The administrative dollars support the perinatal system infrastructure, including costs associated with outreach, education, transportation.

The funding is divided amongst the RPCs based on an algorithm that accounts for patient volume and acuity. Starting in 1991, each RPC contracted with the National Perinatal Information Center/Quality Analytic Services (NPIC/QAS) to apply the funds distribution algorithm and operate the reporting system.

Role of the State Department of Public Health and System Leadership

During much of the history of the RPS in Georgia, the administering department has had a strong leadership role, though according to staff at the RPCs, this has not been the case for the last several years.

The State of Georgia's Perinatal Advisory Committee was disbanded many years ago. Planning for the RPS became incumbent upon state employees without the formal input from a diverse group of key stakeholders. While the regions appear to have some affiliations with public health and other key stakeholders in their regions, there does not appear to be a formal regional committee structure that plans and acts on problems that arise in local hospitals.

The State of Tennessee has a particularly long history of a well-functioning perinatal committee of 21 members set by statute and appointed by the Commissioner. Many volunteers participate in several workgroups to ensure timely revisions to guidelines, etc. The State of Virginia has a good model for active Regional Perinatal Councils that use regional data to drive local improvements in perinatal care.

An important role of the state is to develop leadership, share best practices, and provide resources to enable the RPCs to function optimally in their regions. The Administering Department has a specific set of responsibilities as it relates to their contractual relationship with the RPCs.²¹ The State must monitor

¹⁹ Georgia Department of Community Health. "Core Requirements and Guidelines for Designated Regional Perinatal Centers: State of Georgia." 2006.

²⁰ Georgia Department of Community Health. "Core Requirements and Guidelines for Designated Regional Perinatal Centers: State of Georgia." 2006.

²¹ "Specific Contractor Responsibilities for the Regional Perinatal System Contract"

the contracts; perform at least one site visit to ensure requirements are met; provide technical assistance and consultation as needed; collaborate with a contractor to utilize data submitted to NPIC; provide funding to RPCs for perinatal services and program staff; conduct financial and/or programmatic audits of RPCs as needed; and withhold funding if a contractor fails to comply with requirements.

Under the heading of “monitoring contracts,” the State’s role in facilitating and supporting regional leadership and communication is spelled out and includes many sub-responsibilities. These include collecting and reviewing RPC plans and reports; participating in quarterly meetings with the regional directors and outreach educators; providing site visits, technical assistance, and consultation as needed; and collaborating with RPCs to utilize data submitted to NPIC.

HMA confirmed that the state collects plans and reports; however, the RPCs do not typically receive feedback or a response to their submissions. The state has not convened the regional directors and outreach coordinators for several years, with the exception of the directors being convened two years ago to meet the new State Director of Maternal and Child Health. While the nurse outreach coordinators decided to convene their quarterly meetings on their own, the state does not participate in these meetings. January 2007 was the last time the state convened a meeting of RPC staff with NPIC to utilize data submitted by the RPCs.

Coordinating and providing actionable data to the regions is an important role of the state. The regions are required to work collaboratively with public health district to develop and implement a regional perinatal plan based on data analysis of significant community trends and issues derived from public health data and a review of best practices to address the issues. RPCs indicate that the State Public Health Department does not provide data required for cohort level planning, though the RPCs are theoretically responsible for the cohort in their region.

Though required to, the state has not convened RPC regional directors and outreach coordinators for several years, except to meet the new State Director of Maternal and Child Health. The State also does not provide data required for cohort level planning, though the RPCs are responsible for the cohorts in their regions.

In terms of clinical services, the RPCs have been certified to meet certain clinical standards with a review every two years to ensure that standards are upheld. The RPCs have historically conducted peer reviews with one another, and recommendations to improve services had traditionally accompanied such audits. In Spring 2010, a team from the state conducted the review; however, to date, no feedback has been provided to the RPCs. While this may not be the sentiment of all RPCs, long time lead staff at one RPC observed, “We’ve been floundering for many years.”

Community Linkages

RPCs develop written agreements with hospitals in their region for consultation and transport. Neither the RPC agreements with hospitals nor the State Guidelines for perinatal care are legally binding. The RPCs feel they do not have the authority to hold hospitals accountable for data sharing, record review, and compliance with clinical standards. Several of the RPCs expressed concern that the guidelines “lack hard and fast rules; everything is voluntary.”

There is particular frustration among RPCs in obtaining maternal medical record information from community hospitals that have transferred a newborn. This makes it impossible for the RPC to know if the mother was inappropriately held and delivered in the lower level hospital. As mentioned in the previous section, RPCs also do not have access to data on all births in the region; they are only aware of

deliveries or neonatal transports referred to them. Thus, an RPC is unaware of VLBW deliveries and outcomes within their regions.

Each RPC is to have a minimum of one OB outreach education coordinator and one neonatal outreach education coordinator. These are nurses with Level III clinical skills in their area of expertise and demonstrated competence in teaching. Time commitments to in-house responsibilities are not to exceed 10% of their time. This staff conducts an annual educational needs assessment, sets annual goals and objectives for each hospital based on needs assessment, and submits a report to the state annually. They provide at least one educational opportunity to each hospital per year, and an annual report of outreach activity is submitted.

There are significant barriers to RPC's involvement in quality improvement with affiliated hospitals, stemming in part from the need to maintain collegial relationships. Staff from many RPCs concurred: "RPCs can't identify a problem within a facility and provide an educational program on it; hospitals would quickly not let us in at all." They describe their outreach and education as strictly "consumer driven," meaning that the RPC typically provides education on topics that were specifically requested by hospitals. One RPC staff noted that the RPC perinatologist/medical director is reluctant to press the affiliated hospitals to include him in case reviews and quality activities, as the delicate relationships with referring physicians could be damaged.

In other states, there is a different dynamic. In New York, RPC staff has worked to facilitate the development of hospital perinatal quality assurance committees from separate and distinct committees for OB and pediatrics. The state empowers the RPCs to conduct quality improvement visits to hospitals; to review appropriateness and timeliness of any and all maternal-fetal and newborn transfers, as well as outcomes of patients retained at the affiliate hospital who met the criteria for transfer to a higher level of care; to review serious adverse perinatal events of occurrences and outcomes at the affiliate including reviews of maternal and neonatal deaths; to serve on the affiliate hospitals' quality assurance committees; and to provide education based on identified needs.

Role of RPC and Community Awareness of the System

As described elsewhere in this report, RPCs are expected to maintain Level III Subspecialty Care Status for the management of high-risk perinatal conditions. In addition, the RPCs are to provide consultative, outreach, transport and support services to all facilities within the region. State funding is provided to enhance designated Level III hospital service and ensure access to highly trained perinatal personnel and intensive care facility for any pregnant woman and newborn in the State of Georgia.

14% of Georgia OBGyns surveyed in August 2011 did not know the name of the Regional Perinatal Center serving their region.

39% did not know other hospitals designated as Level IIIs located near their practice.

24% did not know if a high risk maternal transport service operated in their region.

Though the RPCs in the State of Georgia were designated as such decades ago, there is significant lack of awareness of the RPCs and their role among potentially referring OBGyns. In August 2011, HMA distributed a survey to all 134 physician attendees at the Georgia OBGyn Society Conference. A total of 57 surveys were returned, yielding a 43% response rate. Fourteen percent (14%) of survey respondents indicated that they did not know the name of the Regional Perinatal Center serving their region. Thirty nine percent (39%) indicated that they did not know other hospitals designated as Level IIIs located near their practices. Twenty four percent (24%) did not know if there was a high-risk maternal transport service operating in the region.

Lack of familiarity with the Regional Perinatal System appears significant in impeding optimal transfer of high-risk mothers to subspecialty perinatal centers in Georgia. A recent study tested the hypothesis that the promotion of guidelines recommending the transfer of high-risk mothers to subspecialty perinatal centers reduces morbidity and mortality through the reduction of preterm infants delivered at non-tertiary maternity hospitals. After implementing hospital-based educational and community programs emphasizing the importance of maternal transfer, researchers conducted a population-based cohort study of all live births delivered at maternity hospitals in greater Cincinnati. The researchers found that promoting the guidelines to physicians correlated with a decrease in VLBW births at hospitals without tertiary perinatal and neonatal care. One quarter of VLBW births occurred in lower level hospitals before the training, and just 11.8% occurred in lower level hospitals after physician education.²²

Perinatal Data Collection, Analysis and Reporting

As noted elsewhere, Georgia does not make use of data related to the 53% of VLBW births that do not involve the RPCs. RPCs have little or no information on many of the VLBW deliveries at hospitals in their regions.

Each of Georgia's RPCs contracts with the National Perinatal Information Center (NPIC) for data analysis and reporting. NPIC prepares and disseminates quarterly reports (about 100 data tables) to the Medical Directors and principle liaisons within the RPCs. Individual RPC data is compared with the sub-group of Georgia RPCs, as well as to the database of all NPIC members.

Although the RPCs receive data regarding their own hospital from NPIC, they do not have access to data from affiliated hospitals in their region. While RPCs are theoretically responsible for the performance of their region, they are limited in their ability to make data-driven decisions.

New York State has a particularly sophisticated and accessible perinatal data system. In 2006, state regulations for a Statewide Perinatal Data System (SPDS) were finalized. The SPDS includes two data systems: a Core module that includes birth data and quality improvement data, and a NICU module comprised of information on every neonate in NICUs across the state. These web-based data systems provide access to standardized sets of statistical summary reports to enable RPC's and affiliate hospitals to monitor key indicators of the quality of their perinatal care. Both data systems provide access to data files that can be used for more targeted analyses of trends and issues relevant to individual hospitals or interactions between all hospitals in the regional network.²³

Hospital Designation

Georgia has a state certification process for designating Regional Perinatal Centers. Once designated, a clinical peer review of each RPC must be completed every two years for the RPC to maintain its status. The peer review process was generally well received, as peers were seen as credible with respect to their ability to assess program requirements to maintain designation and to make informed recommendations. The peer review process was replaced by a state-level audit in May 2010. It is unknown whether the peer review process will be discontinued. All other hospitals in Georgia have a perinatal service level that has been self-designated and unmonitored.

In a state with a high-functioning RPS, performance on the measure more accurately describes the degree to which VLBW infants are born in appropriate settings. In states with de-regionalization and/or states that allow hospitals to self-designate perinatal levels, as in Georgia, measurement can be less informative. Designations as Level II or III have less meaning, as they are not tied to explicit capacities. A study of the volume of *all* VLBW deliveries, birth outcomes, and neonatal transports paints a much more

²² Binder, S., Hil K., Meinen-Derr, J. et al. Increasing VLBW deliveries at subspecialty perinatal centers via perinatal outreach. *Pediatrics*. 2010.

²³ Ibid.

accurate picture of the appropriateness of care for VLBW births. In response to pressure from the state to create such a picture for Georgia, David Goodman, the Centers for Disease Control and Prevention, conducted an analysis of all VLBW births at Georgia's Level II and III hospitals 2002-2007. He assessed trends in volume and neonatal deaths and found the following:

- Three hospitals that were designated as Level II were functioning, based on their volume of VLBW deliveries and their outcomes, as Level III hospitals.
- Nine Level II hospitals were functioning at less than Level II performance.
- Hospital volume in the middle-range hospitals shifted over the period, but the shift was to both higher- and lower-volume hospitals.
- All hospitals designated as Level III had sufficient volume of VLBW births, but the mortality levels at a few were not in accordance with Level III status.

Dr. Goodman's findings indicated that a thorough and timely evaluation of the hospitals with questionable performance should follow, to better understand the capacities of those facilities.

In its FY 2011 annual report to HRSA, the state indicated that a Perinatal Capacity Survey had been drafted and would be distributed to all Level II and III facilities during FY 2012. Information collected through this survey is intended to allow analysis of maternal and infant outcomes based on facility characteristics independent of and/or in conjunction with each facility's self-designated level of care. The state is in the process of developing the capacity survey, which promises to improve understanding of the spectrum and complexity of perinatal services offered across the State.

RPCs are required to have equivalence in Level III OB and NICU services. In Georgia, others hospitals can operate Level III OB services and a lower-level NICU, or vice versa. This lack of equivalence in service levels within the hospital contributes to increased need for transfers, which sometimes do not take place when they might otherwise be recommended. The State of Louisiana recently mandated and enforced equivalence for Level III perinatal hospitals. All Level III perinatal hospitals must have Level III capability on the OB and the NICU side. Several hospitals rose to the challenge of making improvements needed to meet this requirement, while only two hospitals decided to bow out of the market.

E. Individual Factors

A study in Georgia examined place of delivery of VLBW infants, associated maternal characteristics and the potential impact on neonatal mortality. The strongest predictor of birth hospital level was the mother's county of residence. Eighty-nine percent of infants born to women residing in counties with subspecialty care hospitals delivered at those hospitals, compared with 53% of infants born to women who resided in a non-adjacent county. Women were also more likely to deliver outside subspecialty care if they had less than adequate prenatal care.²⁴

F. Hospital Factors

Hospitals in Georgia, like those across the country, continually evolve through mergers, closures, partnerships, and changes in service lines. Georgia has several large health systems, and all have changed during the past ten years and will likely continue to change. As elsewhere, Georgia's hospitals have added neonatology and NICU services in recent years, and some have developed neonatal transport units.

²⁴ Samuelson, JL, Buehler, JW, Norris, D, Sadek, R. "Maternal characteristics associated with place of delivery and neonatal mortality rates among very-low-birthweight infants, Georgia." *Paediatric and perinatal epidemiology* 2002 Oct; 16(4): 305-13.

Since the 1980s, changes in local hospital perinatal services have been recognized as a significant contributor to de-regionalization of Regional Perinatal Systems.²⁵ Specifically, numerous studies have documented that addition of midlevel NICUs and hiring of perinatologists directly result in VLBW births shifting from both higher- and lower-level facilities to hospitals with new midlevel NICUs.²⁶ Shifts in hospital market share can reduce volume in high-performing tertiary centers, which weakens the whole RPS. The tension between local hospital economics and public health outcomes related to VLBW births is obvious and potentially contentious, especially in states where public health oversight and authority is weak.

Because research clearly demonstrates that VLBW infants experience significantly better outcomes when born in tertiary centers, changes in a region's perinatal services require careful scrutiny. Obvious changes in the hospital market that warrant monitoring include changes in NICU services, neonatal transport services, perinatology/MFM staff, and neonatologists. Less obvious changes should also be considered, including significant modifications in payor contracting and mergers and acquisitions within local, state, or national hospital systems. Both of these have the potential to significantly alter incentives to transport high-risk deliveries to Level III facilities or to the RPC.

*"Much progress has been made over the last four decades to help improve the outcomes in (VLBW births), but **diffusion** of these neonatal care technologies and knowledge has not been shown to improve infant outcomes and can worsen them as high-risk deliveries are drawn away from high-level units."*
Haberland et al

Georgia does not track any of these factors and is unable to assess their effect on where VLBW infants are born. The state's system of self-designation does not hold hospitals accountable for compliance with AAP/ACOG standards in NICUs or transport services. The RPCs are not formally made aware of planned changes to capacity or staff within local hospitals and do not verify reported designations. As noted, local hospitals do not report birth data or outcomes to the RPCs. In summary, Georgia does not regularly monitor or address changes in hospital services and capacities or their impact on VLBW births and outcomes.

One RPS reported that a local hospital had initiated a new neonatal transport unit that was picking up infants before the RPS transport unit arrived.

G. Physician Factors

Preferred practice dictates that VLBW births be referred from lower-level hospitals to a Level III facility, and where more than one Level III facility operates, to the RPC when its specialized perinatal services are indicated. In reality, physicians decide which patients to transfer and to where, and many factors influence their decisions. In conducting focus groups and other research, HMA noted numerous factors that influence an OBGyn's decision to transport a mother expecting a VLBW infant.

First and foremost, the mother's condition determines the delivering physician's decision to transport. Precipitous deliveries often preclude transport. Mothers with complex medical conditions may require antenatal care at a Level III facility and subsequent planned delivery at that facility. But beyond clearly defined situations, transfer decisions often involve many grey areas.

²⁵ Wall et al, Hospital Factors and Nontransfer of Small Babies: A Marker of Deregionalized Perinatal Care? *Journal of Perinatology* (2004) 24, 351-359

²⁶ Same as above and Haberland et al, Effect of Opening Midlevel Neonatal Intensive Care Units on the Location of Low Birth Weight Births in California June 2006

In Georgia, many Level II and III hospitals now employ OBGyns with advanced perinatology/maternal-fetal medicine specialization, many of whom consult but do not deliver. As a result, the delivering physician has more options available to keep and manage the high risk mother, which reduces the likelihood of transfer. Some physicians reported that growth in sub-specialization of maternal fetal medicine has diffused the technologies and knowledge necessary to manage high-risk mothers, but it has also incentivized doctors to “keep” mothers they are capable of delivering, which may conflict with the best interest of the infant.

All OBGyns from outside of Atlanta reported that they refer to the Level III or II hospitals where they have relationships, most often from their residencies. The facility may or may not be the RPC in the region. When perinatologists come and go, it becomes much more challenging for the local OB to establish working relationships and feel comfortable referring to Level III hospitals. Also, because Georgia hospitals self-designate, the referring OBGyn cannot be certain of the NICU capacity at the facility, which may not be adequate for the VLBW infant.

As noted earlier, the map of Georgia’s VLBW data illustrate rural facilities that transfer patients to Level III facilities in other regions and further from their own RPCs. HMA did not evaluate individual cases, which could show clinical indications for such transfers. However, we were told that certain hospitals and physicians continue to object to the facilities designated by the state as the regional RPC, which was done decades ago, and refuse to use the RPCs. In the most egregious example reported, a specific physician with a financial interest in a hospital reportedly makes transfer decisions that nursing staff do not support and retaliates against any objections made by nursing staff.

Rural OBGyns also reported that where they transfer is highly dependent on the availability of NICU beds. RPCs are charged with finding NICU beds and delivery services when they cannot accept a VLBW birth. However, if a rural OBGyn has strong relationships with a Level III facility that is not the RPC, and that facility has no NICU beds, the rural provider must “shop” for a provider and facility to deliver the mother. This takes time and is disconcerting to the mother and the doctor.

Another phenomenon involves pediatricians. As reported by the RPCs, the OB and pediatrician may confer on delivering a high risk mother and, especially in cases “on the border” of VLBW, the pediatrician may feel competent in managing the newborn. However, over the course of a few days, one of two scenarios can occur: other pediatricians who are on call must cover the infant and do not feel clinically competent to address the infant’s needs, or the infant’s condition worsens. In both cases, the infant has been compromised and would have been better served if delivered at a Level III hospital instead of transported after birth.

The OBGyns practicing in and around Atlanta noted that they had “all been trained at Grady” and felt their clinical competencies match that of Grady providers, which reduces their need to use the RPC. As a result, they refer only those mothers on Medicaid or who are uninsured and that need highly specialized medical management. This is reflected in Grady’s birth data: Grady’s VLBW volume is diminishing while its maternal and infant acuity is increasing. This negatively skews its outcome data in comparison to its neighboring Level III facilities.

One RPS reported that pediatricians call for RPS neonatal transport before delivery, where OBs opt to deliver the mother knowing that the infant is high risk.

Based on the literature and focus groups with Georgia OBGyns, it is evident that hospitals pressure OBGyns subtly or otherwise to deliver high-risk mothers, in order to generate revenue or to keep the hospital birth volume above a certain threshold. This is especially likely in urban areas where NICUs are nearby. In one example, an RPC cited that pediatricians will call for RPC neonatal transport before the mother delivers, knowing that the

newborn cannot be appropriately cared for at the delivery hospital, and attempting to assure that the neonate is treated by NICU staff quickly.

As noted elsewhere, the growing presence of neonatologists greatly influences the likelihood of a VLBW birth remaining at a non-RPC hospital. In particular, the effect of opening a midlevel NICU reduces VLBW births in Level III facilities and possibly affects infant mortality, morbidity, and cost. In summary, numerous factors affect when and where a delivering provider chooses to refer a VLBW delivery; they are complex and change over time.

H. Payor Factors

As noted, Medicaid pays for 57% of the births to women residing in Georgia. The initial review of Vital Records data indicated that the CY 2009 Medicaid measured performance was 66%; however, using actual Medicaid data shows that the CY 2009 measured performance was 85%. It did not matter whether the Medicaid payor source was fee-for-service or managed care; both payor types performed the same.

Commercial carriers cover the other half of Georgia's births. The largest carriers are Aetna, United, Cigna, and Blue Cross. Each contracts with and credentials hospitals and doctors separately. Using the Vital Records data, the HMA review of non-Medicaid payor sources, including commercial, showed a measured outcome of 66%. This outcome was reinforced by looking at the Georgia State Employee Health Insurance program (commercial) outcomes, which was 60% for in-state VLBW births and 71% when births in out-of-state facilities were included.

HMA does not believe that the state, payors, or hospitals are aware of the substantive discrepancy among payors and should explore options for improving payor identification. This is an important consideration for establishing effective policy and accurately measuring progress.

Managing high-risk deliveries

Medicaid CMOs and commercial carriers operate care management programs to manage complex and costly cases. Each operates a high-risk maternity program that interacts with women to maximize positive birth outcomes and reduce cost. Each program includes the referral of high-risk pregnant women to hospitals with specialized perinatal services and NICUs. However, HMA was not able to determine whether any of the programs are knowledgeable about or use the state's RPS. Also, based on a review of facility credentialing practices of a few payors, it did not appear that payors seek compliance with or verification of the AAP/ACOG guidelines for perinatal care. Georgia's payors do not appear to leverage their roles to verify hospital self-designation of perinatal services, though they certainly could.

Paying for pregnancy services

Medicaid, its CMOs, and commercial carriers all pay for maternity care in a very similar manner, though at different rates. As is the standard practice across the country, all Georgia payors provide a "bundled" fee to a physician providing prenatal, delivery, and postpartum care. The fee is determined by when the mother enters care/the number of prenatal visits, vaginal versus Caesarean delivery, and a few other factors. Where a mother is cared for prenatally by one doctor but delivered by another, which is often the case in high-risk births, the fees are unbundled and go to both providers; however, the bulk of the payment goes to the delivering provider. Particularly for Medicaid cases, this leaves very little payment for as much as nine months of prenatal service.

In conducting interviews across the state, HMA heard from several sources (though not physicians) that OBGyns sometimes elect not to transfer a high-risk mother so that they will receive the full maternity care payment. This is counter-intuitive, given physician aversion to malpractice risk, and was not

supported by the OBGyns in the focus groups. Nonetheless, the issue was identified by several sources as a contributor VLBW infants not being born at Level III facilities.

Another payment issue involves “back transport.” When a baby is in a NICU far from the mother’s home, transfer to a lower-level nursery closer to home is often an option once the baby is stable and in “feeder” status. For the last few weeks of hospitalization the baby can be safely treated close to home, which has many advantages for the family. HMA heard from several sources that getting authorization from payors, especially Medicaid, for such “back transport” is difficult. Medicaid policy permits transfer back to a lower level of care but requires a contractual agreement between the two hospitals involved, as well as prior authorization for the transfer.²⁷

Interaction with the RPS

As noted, it is not clear to what degree Georgia’s payors are knowledgeable about the state’s RPS. This is furthered by the state’s lack of a Perinatal Advisory Committee or other body that engages multiple stakeholders in evaluating perinatal services. Commercial payers reported that they do not consider RPC status when contracting with hospitals and do not build networks that must include an RPC. One Medicaid MCO does not contract with Grady Hospital, the RPC in Atlanta. Georgia payors also do not receive data from the state illustrating where VLBW deliveries occur and are not engaged by the RPS or RPCs in any fashion that HMA could determine.

²⁷ GA Medicaid; Part II Policies and Procedures for Hospitals Services; Section 903.2 Services Available Through Contractual Shared Agreement

V. SUMMARY and CONCLUSIONS

In 2010, the state estimated Georgia's performance for delivery of VLBW infants in facilities for high-risk neonates (NPM #17) was 72.9% and reported in the low- to mid-70s range for the last several years. Data are less reliable on some measures than others; disparate data sources need to be coordinated to improve accuracy of reporting on this measure. Out-of-state births were not included in the state's calculation; several border hospitals should be considered and treated as "in-state" providers, as they are in the Medicaid program. In addition, data should be adjusted for deliveries where the perinatal facility level is unknown.

Performance on the measure is highly variable by geography and payor. Urban areas with many Level III hospitals do better on this measure, while rural areas with fewer generally do less well. Using the recommended approach to measurement, the all payor statewide would average 75%, while Georgia Medicaid's performance was 84% and performance for all other payers was 67%. Engaging commercial insurers in strengthening relevant policies and referral networks may result in significant improvement in the state's performance.

No entity beyond, perhaps, individual hospitals is considering the appropriateness of delivery site or the birth outcomes of more than half (53%) of Georgia's VLBW births, as these occur outside of the RPCs and are not reported on or tracked.

Georgia hospitals self-designate level of perinatal care, and there is evidence pointing to potential inaccuracies in these designations, which would influence the performance measure as well. Non-RPCs have no requirement for equivalence for level of OB/NICU services, which may increase transport of VLBW infants.

The literature indicates that the strength of the Regional Perinatal System is associated with performance on this measure. The Georgia RPS is lacking in strength and credibility. The System needs leadership and a stronger infrastructure. A state-level Perinatal Advisory Committee and Regional Perinatal Action Teams are completely absent. The RPCs do not have access to data on perinatal health for their regions, though they are theoretically responsible for ensuring good birth outcomes in their region. A high-yield activity for the state would be to produce and disseminate actionable data reports for a State Perinatal Advisory Committee and Regional Perinatal Action Teams.

Guidelines for consultation and transfer are not enforced, resulting in inappropriate delivery location of VLBW infants. In the short run, inconsistencies of perinatal service level and practice patterns should be evaluated and resolved as soon as possible. All State guidelines and requirements for the operations of the RPS are voluntary, which compromises the ability of the RPCs to ensure high quality standards in their regions. The Regional Perinatal System and the role of the RPCs could be strengthened through several specific administrative rules.

A large proportion of the state's OBGyn physicians are unaware of the RPC in their region, and an informational campaign, in conjunction with the release of updated perinatal guidelines, is indicated. Over time, additional improvements could be made and sustained if hospitals and physicians were incentivized to direct VLBW deliveries and transports to the most desirable settings.

VI. RECOMMENDATIONS

HMA makes the following series of recommendations, many of which fall under the leadership of the Department of Public Health and the Georgia OB/Gyn Society and its members across the state.

A. Recommendations to Improve Perinatal Data

1. Improve accuracy of the reported performance measure.

Georgia's Vital Statistics data are just one source of information about VLBW deliveries and neonatal care, and they are less reliable on some measures than other data sources. Georgia's RPS should make use of all sources of data and should compare elements across sources to obtain the most accurate information possible. Data should list hospital identifiers (including those for out-of-state border hospitals); the system should allow matching mother and infant records; and where hospital designations cannot be determined, the state should consider eliminating those VLBW deliveries from the denominator in calculating the measure. Data sources should include:

- Vital Statistics records
- Medicaid data (based on paid claims)
- Commercial insurance data (based on paid claims)
- Georgia Hospital Discharge Data Set maintained by the Georgia Hospital Association
- RPC data files and logs
- Hospital-specific perinatal transfer logs

Based on a review and analysis of the Vital Records and the actual Medicaid data, the following approach is recommended for calculating the measure.

1. **Data Set Validation and Adjustment:** The Vital Records data for VLBW deliveries should be validated and adjusted using, at the very least, actual Medicaid data. Use of the Georgia Hospital Association Discharge data is also recommended.
2. **Numerator Adjustment:** The estimate of Level III and IV deliveries should be adjusted to reflect the actual Medicaid data for deliveries at these facilities. Validated out-of-state deliveries should be included in the calculation as well.
3. **Denominator Adjustment:** The total state VLBW deliveries should be adjusted to reflect those deliveries where the perinatal facility level is available and should drop records where the facility designation is unknown.
4. **Reporting to HHS:** The calculation methodology, including data set validation and numerator/denominator adjustments, should be clearly noted in the annual report submitted to HHS.

The recommended calculation methodology, which incorporates the actual Medicaid data and adjustments, is illustrated below, using CY 2009 data.

Table 14: Recommended Approach to Georgia NPM #17 Calculation, CY 2009			
Calculation Steps	Numerator Level III and IV Deliveries	Denominator Total VLBW Deliveries	NPM #17 Indicator
Step 1: Total Vital Records (validated data)	1791	2596	69%
Step 2: Adjust for Deliveries with an Unknown Perinatal Designation		-212	
Revised Calculation	1791	2384	75%
Step 3: Add in Validated Out of State Deliveries*	31	31	
Revised Calculation	1822	2415	75%
*Represents Medicaid out of state deliveries in Level III and IV facilities.			

2. Produce and disseminate standard actionable data reports

A state RPS should assure that sufficient and reliable data are available to conduct aggregate and case-specific analyses that can identify emerging trends and issues that warrant corrective action. Georgia’s RPS is not able to provide this degree of oversight or assurance, because it does not track hospital services and capacities or VLBW births, transports, and outcomes at hospitals other than the RPCs. The state should be able to track and report on neonatal transports and outcomes by birth hospital and delivering physician, among many other factors.

As the culture shifts as it has elsewhere to “data for improvement, not data for judgment,” data on all VLBW births should be presented by hospital and by payor source. These data need to be regularly disseminated to the new entities recommended below (i.e., State Perinatal Advisory Board, regional Perinatal Action Teams), Regional Perinatal Centers, public health, hospitals, payors, and other key stakeholders to inform state-wide and regional perinatal system planning and improvement.

B. Recommendations to Accurately Quantify Hospital Perinatal Capacity

3. Implement the Georgia Perinatal Capacity Survey

The state should implement its perinatal capacity survey as soon as possible. The draft should be amended to include questions about neonatal transport units, which are an emerging concern and absent in the draft version. Stakeholders across the state should use the survey findings coupled with the administrative data set and local RPC knowledge to immediately evaluate and resolve inconsistency of perinatal service level and practice patterns.

4. Establish verifiable perinatal hospital designation criteria service levels of perinatal hospitals.

The current self-attestation of perinatal service level is weak system, with current designations of several hospitals known to be erroneous. Confidence needs to be built through a formal designation process with credible designation criteria. Through administrative rule-making, the Division of Facility Regulations should develop credible, verifiable designation criteria. Verification can occur by direct observation/survey but could also be accomplished through evaluation of administrative data, which is less costly. In any case, re-designation should be required every 3 to 5 years, and the addition or

deletion of key services should be required annually. This will be a lengthy process but will contribute greatly to the credibility of Georgia's RPS.

5. Consider requiring equivalence between hospital obstetric and NICU services

The state should study the findings of the capacity survey to determine the extent to which there is lack of equivalence of Level III OB and Level III NICU services within the same hospitals. An ideal state of equivalence would reduce the need for transfer of VLBW (and other babies.) Based on findings, consider requiring equivalence of service level.

C. Recommendations to Build a Strong, Team-Based Regional Perinatal System

6. Build infrastructure to support a strong and credible RPS

The State of Georgia and the Georgia OBGyn Society should recommit to the Regional Perinatal System and develop the necessary infrastructure to support a strong and credible system. Georgia should establish a State Perinatal Advisory Committee structure that is proactive in making state-wide improvements in the RPS, and regional Perinatal Action Teams that serve as regional planners/implementers empowered as rapid responders to emerging regional problems. GOGS can and should be involved at all levels.

The Perinatal Advisory Committee should include representation of the RPS Directors, payors, association representatives, data analysts, researchers, and other key stakeholders. They would regularly review statewide data that includes *all* VLBW deliveries and transports, recommend system improvements, and provide advice on system infrastructure and major activity, e.g., administrative rules required to strengthen the system, revisions of guidelines and protocols, criteria and processes for hospital designation, and development of an informational campaign.

The regional Perinatal Action Teams should consist of RPC representatives, local public health departments, rotating OBGyns from the region, and other key stakeholders. The State should provide these teams with actionable data to enable them to develop and implement a regional plan to improve perinatal health. They teams will also identify issues in need of correction with individual hospitals and be empowered to be rapid responders to these problems, with adequate back-up as needed from the state.

In the Atlanta region, once the Perinatal Action Team has built a level of trust and credibility among its stakeholders, consideration should be given to re-evaluating how the region's RPS funds are deployed, to assure that the funds are used in ways that most advance the desired birth outcomes.

7. Require RPCs to participate in hospital perinatal quality assurance committees.

Community hospital policies and practices related to perinatal care are often hidden from the RPCs, and so RPCs ability to participate in quality improvement is truly limited. The state should, through administrative rule-making, develop RPS rules that acknowledge the value of the RPCs as content experts in perinatal care, and require RPCs to participate as a member in affiliated hospital perinatal quality assurance/improvement committees and processes.

Creating and strengthening perinatal quality assurance/improvement committees will require an investment of time on behalf of the RPCs and affiliated hospitals. Integrating RPC staff into the membership of such committees will be a change in culture that will take time but will be catalyzed by such rule making. This investment of effort will enable the RPCs to be viewed as the content experts they are—with a credible, state-sanctioned and substantive role in improving perinatal care.

The rules must include sanctions or penalties on hospitals that do not cooperate with the RPCs, which could include suspension of perinatal designation status or other measures.

8. Engage Medicaid, commercial insurers, and large employers as key stakeholders in the RPS

Medicaid, the state's commercial insurers, and Georgia's State Health Benefit Plan have strong interest in reducing VLBW births, assuring that deliveries take place in the highest available level of care and assuring that VLBW infants born in facilities that cannot accommodate their needs are transferred as quickly as possible. Birth outcomes and cost are both dependent on all these concerns. Therefore Medicaid, the commercial payors, and large employers should actively participate in statewide oversight and improvement of Georgia's RPS.

These stakeholders can all contribute data to enhance and validate the Vital Statistics data. Payors can also build internal policies and analyses that support high quality perinatal outcomes and can create incentives and disincentives to hospitals and physicians that support desired outcomes. Participation of these stakeholders on a statewide perinatal council adds powerful, important leverage and resources.

D. Recommendations to Influence Providers in Appropriate Referral of VLBW Births to Level III Facilities

9. Launch an Informational Campaign on the RPS in Conjunction with New Perinatal Guidelines.

There is a significant lack of awareness of the Regional Perinatal System among Georgia OBGyns. Given the effectiveness of strategic informational campaigns on improving Performance Measure 17, Georgia should undertake such a campaign.

"Guidelines for Perinatal Care," a joint project by ACOG and the American Academy of Pediatrics, is currently under revision and is planned to be released in the coming months. These Guidelines should be used to inform revisions of the Georgia Guidelines. An educational campaign launched in conjunction with the release of Georgia's new Guidelines and any new administrative rules made or in place to strengthen the program would be well-timed and worthwhile.

10. Incentivize hospitals and physicians to direct VLBW deliveries to appropriate level of care.

Once Georgia's perinatal data are reliable and transparent, the State and Georgia payors should consider a system of incentives to direct VLBW deliveries and neonatal transports to the most desirable settings. Considerations could include volume, timely transport, and outcomes. Example of incentives would include enhanced payment, withheld payment, network participation, and a quality rating system. Incentives that are collaboratively developed among payors and address the same requirements would be more powerful than separate initiatives.

E. Other Recommendations

11. Medicaid should develop policies and procedures to ensure early risk factor identification and access to aggressive case management services for pregnant women.

Since 65% of healthy babies delivered in Medicaid participate in the CMOs while only 35% of VLBW babies do so, Medicaid should develop policies and procedures to:

- Promote early identification of women at risk of VLBW deliveries both in the managed care and fee-for-service setting.

- Provide early access to aggressive case management services and prenatal care in both the managed care and fee-for-service setting.
- Provide quicker access to case management services and prenatal care in the CMO setting by enrolling eligible pregnant women sooner.

In addition, since 30% of all Medicaid VLBW deliveries are to undocumented pregnant women, Medicaid should work with DPH to develop interventions to identify early risk factors and provide access to case management interventions and prenatal care for this population.

VII. Appendices

Appendix A:

Literature Review

Literature Review: VLBW Babies Born in Regional Perinatal Centers

Background

Over the last few decades, birth weight-specific survival has improved significantly, especially among low birth-weight (LBW <2500 g) and very low birth weight (VLBW <1500 g) infants.¹ This is due largely to the development of neonatal intensive care coupled with widespread implementation of regional perinatal systems.^{1 1} For over 30 years, guidelines for perinatal regionalization have recommended that very low birth weight infants be born at highly specialized hospitals, most commonly designated as level III perinatal centers.¹

Community based health care providers are expected to consult regional specialists and refer patients for the most appropriate level of care based on neonatal, fetal and maternal risk. The most vulnerable newborn infants would receive specialized care in perinatal center neonatal intensive care units (NICUs). Ideally, these infants would have been transferred in utero as neonatal death rates are reduced when high-risk infants are born in hospitals with Level III NICUs.^{1 1 1}

Maternal and Child Health (MCH) Title V grantees are charged with assessing each State's response and success in meeting the needs of the women and children they serve. In so doing, they are required to report on 18 National Performance Measures. National Performance Measure #17 – the percent of very low birth weight infants delivered at facilities for high-risk neonates – specifically addresses the needs of the very low birth weight infant in an effort to reduce morbidity and mortality.

The purpose of this literature review is to identify factors that prevent successful maternal transport of appropriate women to perinatal centers thereby limiting gains in survival among very low birth weight infants. This review will guide further exploration of factors and solutions specific to the State of Georgia for the purpose of improving performance on Measure #17.

Literature

As part of this literature review, 16 journal articles were reviewed. Medline and Academic OneFile data bases were used with key words "low birth weight survival," "maternal transfer," "regional perinatal system." Articles were limited to "English," "United States," and the "last 20 years." Journal articles were carefully selected for relevance. In addition, 4 national and state reports were reviewed. Using the Google search engine, an internet search was conducted for relevant national and state reports using the key words indicated above.

Findings

The themes that emerged from the literature were that several different factors may affect appropriate, successful maternal transfer. These include regional perinatal system factors, hospital factors, managed care factors and individual factors. Each of these will be addressed sequentially.

Perinatal System Factors

To ensure that high risk women have access to appropriate levels of care, many states have implemented a regionalized perinatal system with maternal transport to ensure that they and their premature infant have access to highly specialized hospitals. Regional perinatal systems typically have a set of designated subspecialty perinatal centers, guidelines recommending transfer of high-risk mothers to these centers, affiliation agreements with community birthing hospitals, and education and outreach to ensure appropriate referral.

A recent national study funded by the Maternal Child Health Bureau, Health Research and Services Administration, identified barriers to improvement of Performance Measure #17. Twenty States were highlighted; a sample of high performing states, moderately and low performing states were selected to participate. Barriers were identified by State Maternal Child Health Program officials through interviews. Those related to the states' Regional Perinatal Systems are identified below.

- 1- Hospitals do not transport the mother when newborn transport is available and efficient.
- 2- Competition among hospitals has led to establishment of neonatal intensive care services that do not meet all the criteria for Level III designation for perinatal care.
- 3- Barriers to transport may originate with the Level III hospital; a lack of available obstetric or NICU beds and/or communication barriers may prevent the transfer of a mother before delivery.
- 4- Providers at some Level II hospitals believe they can provide appropriate care for pregnant women and their VLBW infants.
- 5- Some VLBW infants at the high end of the VLBW weight range are being delivered and cared for in hospitals other than Level III because providers feel confident that the infant will not need aggressive care and can be managed locally.¹

Some of the issues identified above should be addressed in regional perinatal center regulations or guidelines, such as indication for maternal transfer or appropriate hospital designations. Other issues have to do with the referring provider, perhaps a lack of familiarity with regional perinatal center guidelines or provider perception that particular factors outweigh the importance of adhering to the guidelines.

A recent study tested the hypothesis that the promotion of guidelines recommending the transfer of high-risk mothers to subspecialty perinatal centers reduces morbidity and mortality through the reduction of preterm infants delivered at non-tertiary maternity hospitals. After implementing hospital-based educational and community programs emphasizing the importance of maternal transfer, researchers conducted a population-based cohort study of all live births delivered at maternity hospitals in greater Cincinnati. The researchers concluded that the local promotion of guidelines coincided with a

decrease in infants born with birth weights less than 1500 g and at less than 32 weeks gestation delivered at hospitals without tertiary perinatal and neonatal care from 25% to 11.8% between the two study periods.¹

Hospital Factors

A study in Illinois of hospital factors related to non-transfer of small babies identified birth in a Level II+ hospital, high Medicaid revenues, high Health Maintenance Organizations (HMO) revenues, and status as a teaching hospital as factors independently associated with non-transfer. The study suggests careful consideration of the role of hospital factors in perinatal de-regionalization in order to preserve the improvements in maternal and infant outcomes associated with regionalized perinatal care.¹

Managed Care Factors

A study in upstate New York investigated the effect of managed care on perinatal transports for publicly funded women. The researchers found that the unadjusted probability of maternal transfer was 28% lower among women enrolled in Medicaid Managed Care versus those with Medicaid Fee for Service. After adjusting for clinical variables influencing maternal transfer and hospital level, women in managed care were 44% less likely to be transferred. Newborns were transferred at similar rates regardless of managed care status. Despite a particularly strong regionalized perinatal system in New York State where written protocols for transfer between institutions are established, Medicaid Managed Care status was found to be a significant independent predictor for maternal transfer in upstate New York.¹

Another study in the state of Washington sought to explore the issue of the effect of managed care on perinatal regionalization. At three points in time, over the course of seven years, an analysis was performed by hospital level to evaluate the association between change in HMO penetration per hospital and change in proportion of LBW and VLBW deliveries in those hospitals. Researchers found that the changes in HMO penetration at the hospital level were not significantly associated with an increasing proportion of LBW or VLBW deliveries at non-level III hospitals, rather, in some analyses, increasing HMO penetration was significantly associated with decreasing LBW and VLBW deliveries at non-level III hospitals.¹

Individual Factors

Individual factors of the pregnant woman may have an effect on maternal transfer rates. For example, some women deliver premature and precipitously, in which case, the stability of the mother makes it such that transporting the neonate is most appropriate. In addition, some mothers delivering VLBW infants should not be transported because the fetuses have conditions incompatible with life. In addition, the high number of VLBW deliveries in a Level II hospital may reflect, in part, community preference for that specific hospital. It has been suggested that helping upgrade the services at preferred hospitals honors community choice and may be a better way to improve perinatal care.¹

A study in Georgia examined place of delivery of VLBW infants, associated maternal characteristics and the potential impact on neonatal mortality. The strongest predictor of birth hospital level was the

mother's county of residence. Eighty-nine percent of infants born to women residing in counties with subspecialty care hospitals delivered at these hospitals, compared with 53% of infants born to women who resided in a non-adjacent county. Women were also more likely to deliver outside subspecialty care if they had less than adequate prenatal care. The level of perinatal care at the birth hospital influenced neonatal mortality rate, with a range from 132.1/1000 to 283/1000. The highest death rates were for infants born at hospitals offering the lowest level of care. The study concluded that potentially 16-23% of neonatal deaths among VLBW infants could have been prevented if 90% of infants born outside subspecialty care were delivered at the recommended level.¹

Conclusions

Birth weight-specific survival has improved significantly, especially among low birth-weight (LBW <2500 g) and very low birth weight (VLBW <1500 g) infants over the last three decades due largely to the development of neonatal intensive care coupled with widespread implementation of regional perinatal systems. States with strong regional perinatal systems tend to have higher maternal transport rates. Individual factors such as adequate prenatal care and place of residence play a significant role in delivery in subspecialty care. Other issues in the literature are less conclusive but may have a significant effect on maternal transfer, for example managed care factors. It appears that depending on the networks, reimbursement and other managed care policies, the penetration of managed care has the potential to either support or undermine a system of perinatal regionalization.

Appendix B:

Documents Reviewed

In addition to journal articles and documents reviewed for the literature review, the following additional documents were reviewed as well.

Of or Specifically Relating to Georgia RPS:

“Georgia Five Year Needs Assessment for the Maternal Child Health Title V Block Grant.” Georgia Department of Community Health, July 15, 2010.

“Core Requirements and Guidelines for Designated Regional Perinatal Centers: State of Georgia.” Georgia Department of Human Resources Division of Public Health. July 2006.

“Perinatal Quality: Measures Related to Infant Mortality.” (Presentation.) David Goodman, PhD. Georgia Department of Community Health. 2010.

“Reexamining Perinatal Services in the State of Georgia.” Jatinder Bhatia, MD and Bruce Work, MD. The Medical College of Georgia for the Directors of the Regional Perinatal Centers. [undated; 2009 or 2010.]

“Plan to Improve Performance Measure 17”, p. 109 – 111 from unknown source document. Georgia Department of Community Health. 2010.

RPC documents: Sample 2012 RPC Annual Plan, Sample 2012 Annual Outreach and Education plan, 2012 Budget Justification Template.

“Georgia Perinatal Program: The Regional Perinatal Health Care Delivery System Assessment and Recommendations,” World Health Organization Collaborating Center in Perinatal Care, November 1998.

GA Managed Care Policy/Procedure Manuals

Georgia Medicaid - Hospital Back Transfer Reimbursement Policy

Part II Policies and Procedures for Hospitals Services

903.2 Services Available Through Contractual Shared Agreement

Contract between Georgia DCH and Care Management Companies for the Provision of Services to Georgia Families, October 2012.

http://dch.georgia.gov/00/channel_title/0,2094,31446711_102898636,00.html

Georgia Medicaid CMO Plan specific hospital transfer policies and maternity reimbursement policy and rates. These documents are proprietary and therefore confidential.

Of or Specifically Relating to NYS RPS:

NYS Regulations: Perinatal Regional System, Part 721; Regional Perinatal Centers: Detailed Standard Work Plan 4/1/11 – 3/31/14; Regional Perinatal Center Contract Development Guidance, 4/1/10 – 3/31/11.

Appendix C:

List of Key Informant Interviewees

Laura Arthur, RN, MSN
Maternal Outreach and Maternal Transport

Medical College of Georgia

Augusta, GA

Wanda Barfield, MD
Director, Division of Reproductive Health

Centers for Disease Control and Prevention

Atlanta, GA

Mary Jane Barrentine, RN
M&I Program Coordinator

Medical College of Georgia

Augusta, GA

Theresa Chapple-McGruder, PhD, MPH
Director- Office of Epidemiology

Maternal and Child Health Program

Georgia Department of Public Health

Atlanta, Georgia

Pat Cota, RN, MS
Executive Director

Georgia OBGYN Society

Suwanee, GA

Seema Csukas, MD, PhD

Medical Director

Maternal and Child Health Program

Georgia Department of Public Health

Atlanta, GA

Sarah Dismuke, BSN, RNC

Maternal Transport Coordinator

Medical Center of Central Georgia

Macon, GA

Victoria Freeman, RN, DrPH

Child Health Services Program

Sheps Center for Health Services Research

U of North Carolina

Chapel Hill, NC

Gordon R. Freymann, MPH

Director, Office of Health Indicators for Planning
(OHIP)

Georgia Department of Public Health

Atlanta, GA

Margaret Funk, RN

Neonatal Transport Coordinator

Phoebe Putney Memorial Hospital

Albany, GA

Dave Goodman, MS, PHD

Senior Scientist

MCH Epidemiology Program

Centers for Disease Control and Prevention

Atlanta, GA

Beth Lambertz-Guimaraes, MSN, RNC
Maternal Outreach Coordinator
Medical Center of Central Georgia
Macon, GA

Acquenet Jackson, BSN, RNC-OB, C-EFM
Perinatal Outreach Nurse Educational Specialist
Regional Perinatal Center
Grady Health System
Atlanta, GA

Louis Levy, MD
Director of Neonatal Services
Columbus Regional Healthcare
Columbus, GA

Linda McCollum, PhD, ARNP
Regional Outreach Coordinator
Emory Regional Perinatal Center
Atlanta, GA

Catherine McGuire, MS
Perinatal Regionalization Program Manager
Bureau of Maternal and Child Health
NYS Department of Health
Albany, NY

Margaret Major
Director of Women's Health and Genetics
Tennessee Department of Health
Nashville, TN

Robert Maupin, MD
Medical Consultant, Maternal and Child Health
Louisiana Department of Health and Hospitals
Office of Public Health, New Orleans, LA

Sandra Mobley, PhD
Assistant Professor
Medical College of Georgia
Augusta, GA

Janet H. Muri, MBA, President
National Perinatal Information Center/
Quality Analytic Services
Providence, RI

Chinelo Ogbuanu, MD, MPH, PhD
Senior MCH Epidemiologist
Maternal and Child Health Program
Georgia Department of Public Health
Atlanta, GA

Missy Page, MPH
Title V Coordinator, Office of Title V and
Integration
Maternal and Child Health Program
Georgia Department of Public Health
Atlanta, GA

Leeanne Raga
Health Program Administrator 2
Bureau of Maternal and Child Health
NYS Department of Health
Albany, NY

Steve Ross, Director of Perinatal Outreach
Regional Perinatal Center
Albany Medical Center
Albany, NY

Amy Zapata
Director of Maternal and Child Health
Louisiana Department of Health and Hospitals
Office of Public Health
New Orleans, LA

Ruth Simmons, Quality Specialist
Regional Perinatal Center
Albany Medical Center
Albany, NY

Dr. Al Brann
Professor of Pediatrics
Emory University School of Medicine
Atlanta, GA

Marcy Tankersley, MSN
Maternal Transport
Phoebe Putney Memorial Hospital
Albany, GA

Dr. William Sexton
Egleston Children's Hospital
Atlanta, GA

Thomson Reuters on behalf of the
Georgia Department of Community Health
Administrator Medicaid and SHBP Decision
Support Systems
Atlanta, GA

Arianne B. Weldon, MPH
MCH Title V Administrator and Director, Office
of Title V and Integration MCH
Georgia Department of Public Health
Atlanta, GA

Kaprice Welsh, CNM, MSN, MPH
Clinical Liaison
Georgia OBGYN Society
Suwanee, GA

Appendix D:

Summary of Regional Perinatal Center Staff Interviews

The following are issues that emerged from interviews with representative staff of Regional Perinatal Centers (RPCs) in Georgia. Interview questions focused on the identification of issues and strategies to improve the rate of VLBW infants born in Level III perinatal centers. A total of nine staff were interviewed and included: nurse educator, perinatal and maternal outreach coordinators, maternal and neonatal transport coordinators, neonatology. Five of the six RPCs were represented in the interviews conducted in September/October 2011.

1. Significant barriers to RPC's involvement in quality improvement with referring hospitals stemming from the need to maintain collegial relationships. "[RPC] can't identify a problem within a facility and provide an in-service on it; hospitals would quickly not let us in at all."
2. Absence of a State role and/or an oversight Council to hold parties accountable for data sharing, record review, and compliance with clinical standards.
3. Hospital market influences on referring, transporting: hospitals adding neonatologists, hospitals developing neonatal transport services, hospitals referring within their own systems rather than the Regional Perinatal System, lower level hospitals inappropriately keeping births and then transporting the babies (this is a hospital and OB issue as both need the births to keep their numbers up.)
4. Payment issues: lower level hospitals keep births for delivery payment and "no one wants to accept back-transport because Medicaid won't pay for it."
5. GA system allows hospital self-designation; some designations are perceived to be inaccurate and there are no required audits/certification for designation.
6. RPS "lacks hard and fast rules, everything is voluntary," e.g., no mandate for hospitals to share information/data with RPC which presents challenges to accessing maternal records from referring hospitals so they can't even determine if there should have been a maternal transfer.
7. RPCs need current, accurate data – where women deliver, where they come from, who cared for them, maternal co-morbidities, infant outcomes – to be able to improve locally. For example, RPCs don't receive data on birth outcomes; "if a hospital holds a Mom inappropriately for delivery and VLBW baby dies, we have no way of knowing."

8. RPCs believe they do not currently have needed leadership, advocacy or support at the State level. “The State is not even convening RPC quarterly meetings.”
9. RPCs have concerns about the limited perinatal case management in the State and its contribution to poor birth outcomes.

Appendix E:

OBGYN Physician Survey Results

Conference Participant Survey: Delivery Location of VLBW Newborns

Summary of Responses

134 physicians attended the Georgia OBGYN Society Conference in August 2011. This survey was distributed to all attendees. A total of 57 surveys were returned yielding a 42.5% response rate. Not all questions were answered on every survey. While the majority of survey respondents refer patients to higher levels of care for delivery and/or neonatal services, fifteen survey respondents indicated that they practiced at a Level III perinatal hospital, and an additional 5 physicians likely practiced at a Level III perinatal hospital.

1. In what counties do the majority of your patients live?

Survey respondents care for patients residing in sixty-six counties representing every perinatal region in the State.

Appling	Dekalb (9)	Marion
Bacon	Dooley	Mitchell
Banks	Dougherty (2)	Monroe(2)
Berrien	Effingham (2)	Morgan (2)
Barrow (2)	Elbert (5)	Muscogee (2)
Bibb (2)	Fayette	Oconee (3)
Brooks	Forsyth(5)	Ogelthorpe (2)
Bryan	Fulton (20)	Richmond (2)
Bullouch	Grady	Spalding
Camden	Greene (3)	Stewart
Charlton	Gwinnett (7)	Sumter
Chatham(5)	Habersham	Thomas
Cherokee	Harris	Talbot
Clay	Hart	Toombs
Clinch (2)	Houston	Taylor
Clarke (5)	Jackson (3)	Troup(2)
Cobb (3)	Jones (3)	Walton (2)
Colquitt (2)	Lee(2)	Wayne
Cook	Liberty (2)	Wilkes
Colquitt (2)	Long	Ware
Crawford	Lowndes	
Dawson	Macon	
Decatur	Madison (3)	

2. Do you know which Regional Perinatal Center serves your practice area? Name the center.

Yes (49) No (8)

Memorial Health University Medical Center – Savannah (10)

Grady (9) – but Piedmont has Level III nursery

Columbus Regional Medical Center (6)

Northside (5)

Phoebe Putney (5)

Medical College of Georgia (3)

Medical Center of Central Georgia (1)

Atlanta (4)

Children’s Medical Center

Dekalb Medical Center

Charter

Kennestone

3. Do you know which additional hospital/s near your practice are designated Level 3

Perinatal? Yes (36) No (14)

4. Is there a high risk maternal transport service operated in your region?

Yes (39) No (6) Don’t Know (11)

5. To which hospital do you typically transfer your high risk maternal patients?

Don’t transfer: work at a Level III hospital (15)

Northside Hospital (11)

Phoebe Putney (5)

Medical Center of Central GA (5)

Memorial [Health University Medical Center] Savannah (2)

Columbus Regional Medical Center (4)

Grady (3)

Medical College of GA (1)

Atlanta Medical Center

Baptist Hospital in Jacksonville or, if Medicaid/Wellcare – Savannah Memorial

Atlanta Hospitals (not my referral designation)

EUH Midtown vs. Grady depending on financial status

Piedmont

Athens Regional

Macon

6. Excluding precipitous deliveries, what are the most common reasons that mother is not transferred?

N/A – [survey respondents indicated that they practiced in Level III hospital] (8)

N/A – [no reason provided] (7)

Not an issue (2), doesn't happen (1), never a problem - Macon accepts everything (1), can't remember last time transfer did not take place (1).

Patient not stable (2), non-reassuring maternal or fetal status (1), unsafe for mother (1), active labor - too late to transfer (1)

Lack of acceptance at a Level III facility (2), nursery is full (1)

Family support system (1).

Failure to recognize preterm labor (1).

Maternal desires: only transfer when baby requires surgery, otherwise mom is given option to deliver in locally and have baby transferred (1).

7. What most frequent conditions during pregnancy would lead you to make referral/transport?

Preterm labor (22), preterm rupture of membranes (26), extreme prematurity (1), medical condition that warrants preterm delivery (before 36 weeks) with the need for a higher level nursery (1).

Need for surgery after delivery (5), congenital condition of the fetus (2), congenital heart disease (2), congenital anomalies (2), cardiac defect (1), threatened delivery (1), fetal stress or maldevelopment (1), abdominal wall defects where surgery is necessary (1).

Severe preeclampsia (5), PIH (2), gestational hypertension (2), severe toxemia (1), **medical complications of mother** (2), MI (1), HELLP (1), active HIV (1), maternal HRC (1), sickle cell anemia (1).

N/A (5)

8. If you could change on thing in Georgia to improve the likelihood of high risk mothers delivering at designated Level 3 Perinatal Hospitals, what would it be?

Improved prenatal outreach (1), better maternal compliance (1), education of mothers to know to be able to get to level III Centers (1), earlier prenatal care (1), education of patients about preterm labor signs and symptoms (1), availability of more local triage facilities (1), improve access to **prenatal care** (1), improve access to care by OBGYNs in underserved areas (1), improved transportation to improve access to prenatal care/education (1).

More Level III centers (3), more Level III nurseries with MFM and neonatology coverage (1), education and expand development of Level III hospitals (1).

Improve **communication** with centers (1), easier and better communication between Level I, II, III centers (1), make it easier – contact person (1), better “hotline” communication for

identification and central access to transfer (1), have help and connection for entire state (1).

Doctors willing to accept high risk patients at the last minute (1), mandatory **acceptance** of all requests for transfer (1), possibly publish names of physicians at Level II Centers willing to accept transfers (1), make sure MDs at Level III hospitals are accessible to community MD and have relationship (1).

Better **transport services** (2), Transport teams (1), Statewide transport network (1).

Earlier and more frequent referral to perinatal consultant (1), improve **training program** – outreach (1), earlier presentation of patient (1), education of community MD's to initiate transfer (1).

Greater acceptance and easier transfer of high-risk mother's to come to tertiary center earlier (1), "Mothers houses" where high risk moms could live/stay during their pregnancy (1).

Decrease risks for preterm delivery -- access to long acting reversible contraceptives, improve sexuality education in schools, increase birth intervals, reduce economic and racial disparities so more women have access to care. (1)

Set criteria agreed upon for transfer (1)

Other (non-specific): Increased transfers, Prenatal transfer, Education.

Appendix F:

Summary of OBGyn Physician Focus Groups

HMA conducted two focus groups with members of the Georgia OBGyn Society, at its annual meeting. One group was comprised of physicians practicing in rural areas, and the other was physicians practicing in or around Atlanta.

Rural Focus Group

Six physicians participated, three from the Atlanta perinatal region, and three from the Columbus perinatal region. No practitioners from the Albany, Savannah, Macon, or Augusta perinatal regions. Brenda Fitzgerald, MD, Georgia Commissioner of Public Health, also attended.

The following were identified as major reasons for maternal transfers not occurring when clinically appropriate, items in bold were identified as the most significant contributors:

- **Lack of relationship with OB at level III facility willing to accept patient and do delivery**
- **Uneducated patients coming into prenatal care late**
- Don't have enough time to make necessary arrangements before delivery is imminent (Noted that transfers can take several hours or more to set up, considering calls, consults, paperwork, and transport time)
- Duration of necessary transport
- Availability of NICU beds
- Patient refusal to transfer; aversion to the "big city"
- No prenatal care – can't determine gestational age
- Diminishing public health staff available to teach mothers about early stages of labor, need for prenatal care. This ties with late entry into Medicaid and/or prenatal care, and results in uneducated patients, which contribute to problem with transports.
- Weather in the mountains
- No staff (nurse, pediatrician, or OB) available to transport with the mother
- In some instances where there is sufficient neonatal/pediatric support, the Regional Perinatal Center "allows" a local hospital to keep neonates of 32 weeks gestation or greater in the Level II facility.
- "Rules" on gestational age and transfer are not widely known.

Atlanta/Urban Focus Group

Seven physicians attended, all practice in Atlanta area; three were credentialed in Maternal Fetal Medicine. All but one OBGyn trained at Grady. All deliver at Level III hospitals, one from Grady. Two are perinatologists, one from Northside. No Emory OB faculty present Brenda Fitzgerald, MD, Georgia Commissioner of Public Health, also attended.

Major reasons identified for maternal transfers not occurring when clinically appropriate, item in bold identified as the most significant contributor:

- **Network issues with Medicaid managed Care organizations**
- OBGyns not aware of the regional perinatal system
- Some private hospitals don't take Medicaid
- Inadequate or changing relationships between referring and receiving providers
- Some level II hospitals are capable of keeping women delivering infants at 32-34 weeks gestation
- Patient choice, among "tricky" patients who shop among the urban centers

Other comments HMA found significant:

- "Now we need to ask what insurance the woman has, because the delivering doc/hospital may not accept it."
- "A woman may not want to transfer because the hospital may take Medicaid but the OB doesn't and the woman will have to self-pay."
- "Medicare won't pay unless the hospital has a certain volume, docs (mom and baby) get stiffed for their work but hospital gets paid."
- "Referring docs may choose to keep 32 – 35 weekers for reimbursement."
- "'Rogue neonatologists' are an issue in urban centers, they want to keep babies."
- "If it's a sick patient, we accept her. Administration doesn't like it."
- "It's a disaster."

Appendix G:

Case Study of a Model Regional Perinatal System: New York State

New York State

New York State established a Regional Perinatal System in the 1980s, and recommitted to it in the 1990s, undertaking a multi-year process to strengthen the system. The Maternal Child Health Performance Measure #17 for New York State has improved steadily since 2000; as of 2007, the rate is 89.7%, among the highest nationally.¹

In the late 1990s, the Department convened an ad hoc work group, including physicians, health insurers, professional associations such as the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP), and the major hospital associations the Healthcare Association of NYS (HANYS), the Greater NY Hospital Association (GNYHA), and the NYC Health and Hospitals Corporation to review perinatal designation in the state. The group recommended that geographically designated, coordinated systems of perinatal health care be established, and it developed new designation criteria, Hospital Code revisions and new regulations governing perinatal designation and care. The process was as transparent as possible with printing of draft regulations in the State register twice with opportunities for public comment.

The RPS is now codified in state regulation that includes criteria for hospital designation based on AAP/AGOG guidelines. All obstetrical hospitals were formally re-designated and finalized in 2002 as either a Level I, II, III or Regional Perinatal Center based on standard criteria (Refer to accompanying documents: Perinatal Regionalization System, Part 721.) A Department data review prior and post perinatal re-designation determined that while the number of VLBW births remained constant, the number of VLBW neonates born at higher-level perinatal hospitals increased. The mortality rate among VLBW babies has also declined since re-designation.

State regulations for the Perinatal Regionalization System were finalized in 2005 with Regional Perinatal Centers continuing to serve as the backbone of the System. RPCs affiliate with a network of perinatal hospitals in their regions and have an affiliation agreement that specifies the relationship. While they provide consultation and coordinate transfers, a primary focus of the RPCs in New York State is data-driven quality improvement. RPCs are required to participate in the review of information and data for quality improvement purposes and this is outlined in their affiliation agreements with local hospitals.

In 2006, State regulations for a Statewide Perinatal Data System (SPDS) were finalized. The SPDS includes two data systems: a Core module that includes birth data and quality improvement data, and a NICU module comprised of information on every neonate in NICUs across the state. These web-based data systems provide access to standardized sets of statistical summary reports to enable RPC's and affiliate hospitals to monitor key indicators of the quality of their perinatal care. Both data systems provide access to data files that can be used for more targeted analyses of trends and issues relevant to

individual hospitals or among all hospitals in the regional network.¹ (Refer to accompanying document: Perinatal Regionalization System, Part 721.)

State work plan guidelines charge RPCs with conducting quality improvement visits to hospitals; reviewing appropriateness and timeliness of maternal-fetal and newborn transfers, as well as outcomes of patients retained at the affiliate hospital who met the criteria for transfer to a higher level of care; reviewing serious adverse perinatal events of occurrences and outcomes at the affiliate including reviews of maternal and neonatal deaths; serving on the affiliate hospitals' quality assurance committees; and providing education based on identified needs. (Refer to accompanying document: Regional Perinatal Centers: Detailed Standard Work Plan, 4/1/11 – 3/31/14.)

Hospitals are required to implement quality improvement recommendations made by its affiliated RPC. In the event of a disagreement related to a recommendation, the hospital and the RPCs follow the dispute resolution process outlined in their agreement. While it is anticipated that perinatal systems will be collegial, collaborative and cooperative, the Department can enforce through Regulation. Only once in the last 5 years has the Department initiated a formal complaint investigation.

In addition, New York State supports regional Comprehensive Prenatal-Perinatal Services Networks -- community-based organizations that mobilize the local service system to improve perinatal health. The RPCs along with these perinatal networks serve to co-direct Regional Perinatal Forums. These Forums involve hospital and community stakeholders and work to identify and address local perinatal health issues. Unfortunately, due to fiscal constraints, activities associated with the Forums have been scaled back during the current contract cycle.

The comprehensive role of the RPCs is set forth in the State's contract and requires the RPCs to meet three basic objectives:

- 1- Quality of Care Objective: Improvement the quality of care provided at the RPC and its perinatal affiliates through outreach services and quality of care reviews at each affiliate.
- 2- Data Objective: Improve the quality, timeliness and uses of perinatal data at the RPC and at each affiliated hospital.
- 3- Regional Perinatal Forum Objective: Continue to develop preventive perinatal health agenda and strategies through leadership in Regional Perinatal Forums. (Refer to accompanying document: "Regional Perinatal Center Contract Development Guidance, 4/1/10 – 3/31/11.)

In conclusion, a combination of factors contribute to New York State's high performance in ensuring VLBW babies are born in Level III or Level IV perinatal centers. Key among these are the strength of the Regional Perinatal System which includes formal, standardized State designations of obstetrical hospitals; a robust State-wide data system for perinatal health and regulations requirements its use; RPC's emphasis on local, data-driven quality improvement efforts; a strong State Department of Health that has the authority to support the RPC's quality improvement recommendations to local hospitals; and organized community-based efforts to improve perinatal health.

The Statewide Perinatal Data System greatly enhanced the work the Regional Perinatal Centers have been able to do. While the affiliate hospitals have access to several standard reports, the RPC in the Albany, NY area (Albany Medical Center) began running the standard data reports for all their affiliated hospitals, sending them regularly to hospital leadership. “RPC site visits always start out with a 15-20 minute data review. When we first started doing this, you could hear crickets; now the affiliates are really discussing the data and requesting customized data reports to support their improvement efforts.”

The Albany area RPC staff report that the State regulation of having an RPC representative serve as a “member of the QA Committee has really strengthened the relationships.” Prior to the regulations, many of the hospital QA committees had met in silos and the RPC helped them form perinatal QA sub-committees recognizing that the policy and practice decisions effecting both the mother and baby need to be made together. The presence of RPC staff on this committee provides an opportunity to really get to know the hospital leadership. RPC staff report: “The biggest thing is having a face at *their* table; it’s not just us coming in for a site visit with our own agenda. When we are unable to attend a QA meeting, we request a de-identified summary of the meeting minutes like any other member. Now that hospital staff has come to trust and value us, they will sometimes request a site visit. This never would have happened five years ago.” Because of the relationship the RPC staff has been able to develop, they’re “willing to challenge hospital staff in constructive ways.” They also report that “the hospitals don’t seem to hold back their criticism of us either; but it’s all good.”

Additional Information Sources:

Catherine McGuire and LeeAnne Raga, Perinatal Regionalization Program, Bureau of Maternal and Child Health, NYS Department of Health.

Steve Ross, Director of Perinatal Outreach; and Ruth Simmons, Quality Specialist. Albany Medical Center (Regional Perinatal Center.)

¹ Georgia Department of Public Health. “Georgia Perinatal Capacity Survey DRAFT.” 2011.

