2013

Indiana Perinatal Quality Improvement Collaborative Annual Report

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Indiana Perinatal Quality Improvement Collaborative

"The problem of infant mortality is one of the great social and economic problems of our day. A nation may waste its forest, its water power, its mines and to some degree even its land, but if it is to hold its own…its children must be conserved at any cost. On the physical, intellectual and moral strength of the children of today, the future depends."

-Julia Lathrop, MD, Director, Federal Children's Bureau, 1913

Introduction

Infant Mortality, defined as the death of a baby before its first birthday is recognized as the #1 indicator of health status in the world. For over 35 years, health care professionals, state health administrators, advocates and consumers have attempted to address the issue of infant mortality in Indiana with varying degrees of success. Despite these efforts, with the exception of 2008 when the infant mortality rate dipped slightly to 6.9 deaths per 1000 births, Indiana's infant mortality rate has remained above 7 deaths per 1000 births for 113 years.

With the election of Governor Mike Pence in 2012 and the appointment of Dr. William VanNess as the State Health Commissioner, a renewed emphasis on the issue of infant mortality has occurred. Having been briefed by MCH staff and having reviewed the most current perinatal data, Commissioner VanNess quickly identified reduction in infant mortality rates as the top priority for the Health Department for the next four years.

Building on the work that began with the Levels of Care Task Force (2011-2012), the Indiana Perinatal Quality Improvement Collaborative (IPQIC) began its official work in 2013. The vision of IPQIC is threefold:

- All perinatal care providers and all hospitals have an important role to play in assuring all babies born in Indiana have the best start in life.
- All babies in Indiana will be born when the time is right for both the mother and the baby.
- Through a collaborative effort, all women of childbearing age will receive risk appropriate health care before, during and after pregnancy.

In the diagram below, the infrastructure of IPQIC has been developed to support the articulated vision.

The report that follows will identify the roles and responsibilities of IPQIC's Governing Council and committees, the volunteers who have contributed their time and energy to move the agenda of mothers and babies forward, work products that have been developed during 2013, an overview of perinatal outcomes in 2011 (the most current data available) and the activities that will become 2014 priorities.

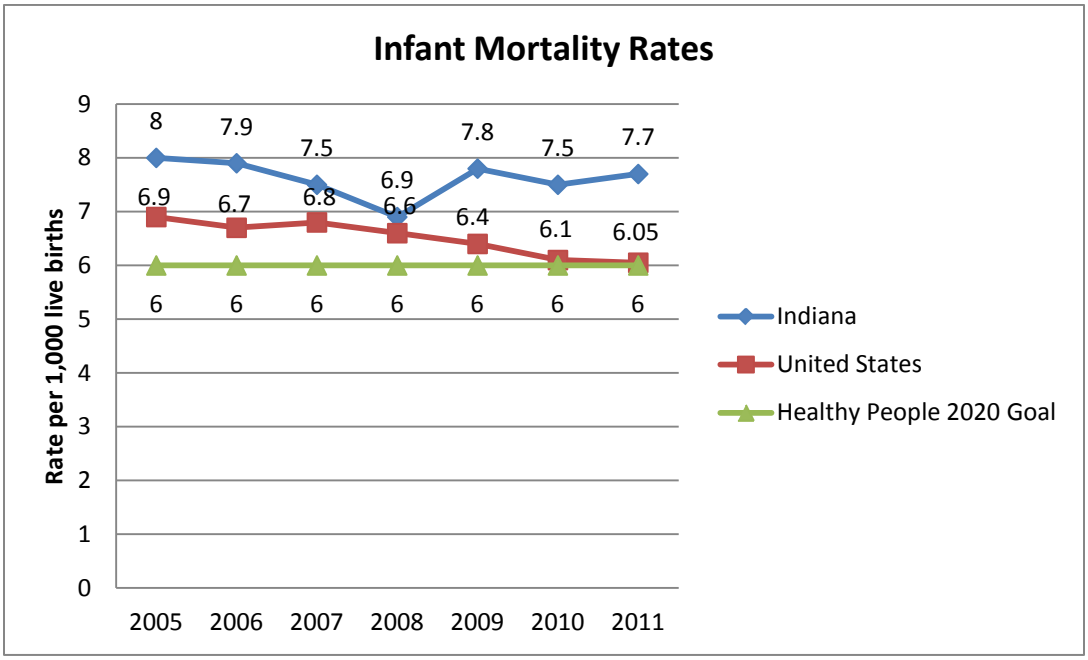
The completed work and ongoing activities of IPQIC are designed to complement the continuing efforts of the State Department of Health to address both infant mortality and morbidity in Indiana. The Indiana State Department of Health sponsored the first Infant Mortality Summit on November 1, 2013, with the goal of increasing the public's awareness of the issue of infant mortality and how the public and other partners can help effect changes in individual behavior. Over 500 legislators, state agency staff, health care professionals, public health advocates and consumers gathered to continue the important discussion of how to address this priority issue. In addition, ISDH has dedicated an additional $1,000,000 for local communities to develop creative ways to address the many causes of infant mortality and morbidity.

Indiana has a unique opportunity in 2014 and beyond to build on the work of those who have fought this good fight for many years. Marshalling the available resources and focusing on the identified outcome, Indiana can look forward to improved perinatal outcomes and "making mothers and babies count in Indiana".

Setting the Stage

In order to fully understand the importance of the work that is occurring through the efforts of the dedicated volunteers involved in the IPQIC and the ISDH/MCH staff, it is important to have a complete understanding of the current status of infant mortality in Indiana. Analysis of the most recent United States data (2010) found that Indiana had the seventh highest infant mortality rate.[1]

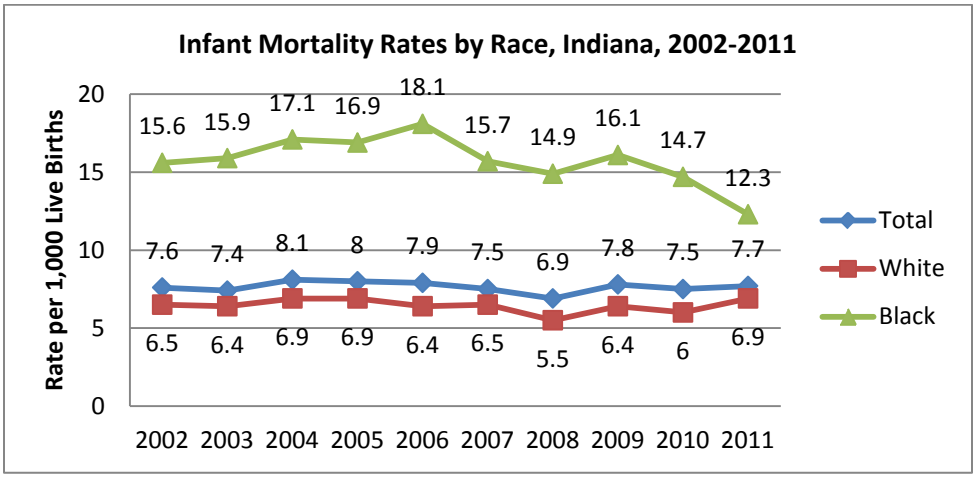
While the infant mortality rates in the United States have continued to fall and are now close to meeting the Healthy People 2020 goal, Indiana remains at a significantly higher level than the rest of the United States.



Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (August 12, 2013)
United States Original Source: Centers for Disease Control and Prevention National Center for Health Statistics
Indiana Original Source: Indiana State Department of Health, PHP, ERC, Data Analysis Team

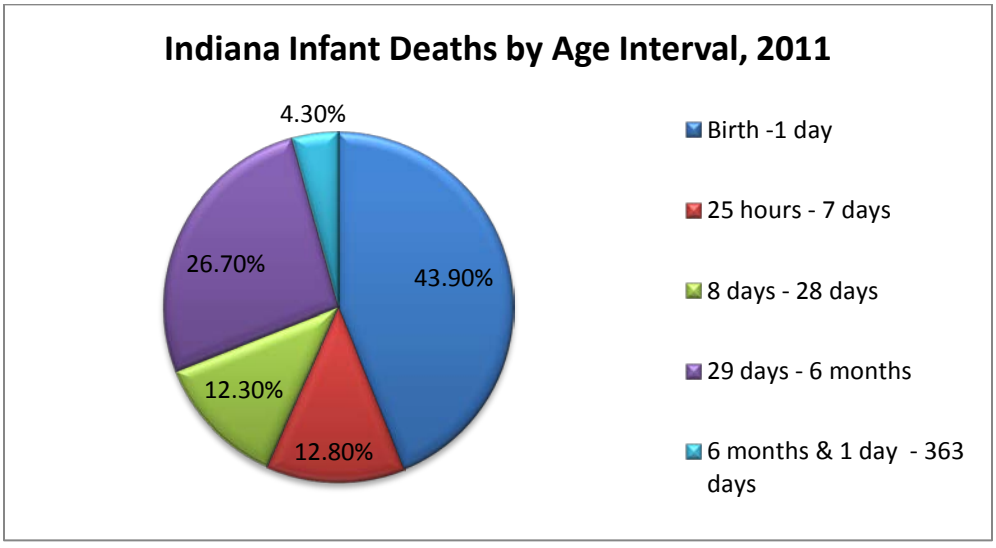
[1] National Vital Statistics Report, Vol. 61, Number 4

Indiana has made progress in reducing its black infant mortality rate dropping from a high of 18.1 to a low of 12.3. However in 2011 Indiana saw an increase in the rate of white infant mortality from 7.5 in 2010 to 7.7 in 2011. The disparity between the white and black rates remains a significant issue for Indiana.



Source: Indiana State Department of Health, ERC, Data Analysis Team, 2013

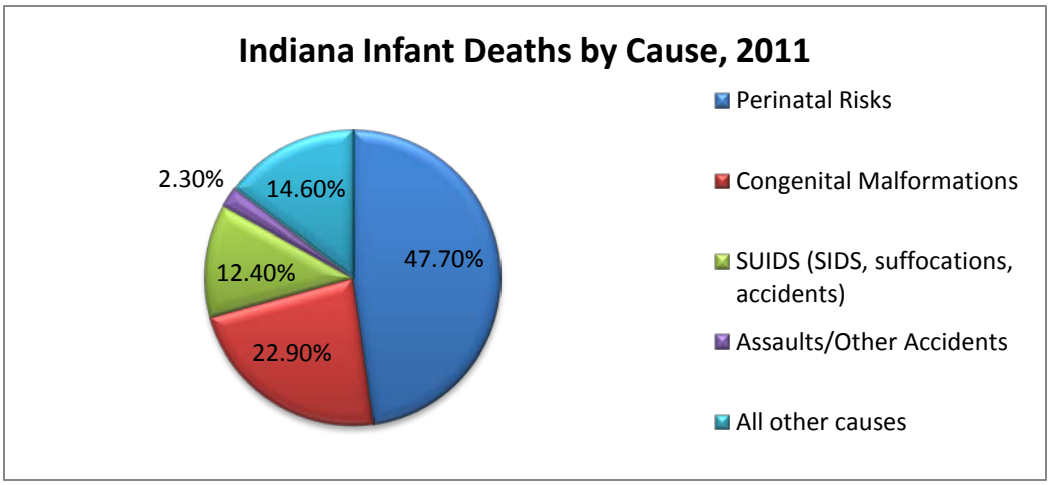
The following chart represents infant mortality in 2011 by age interval with the highest percentage of deaths occurring in the birth to one day interval.



Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division, January 2014

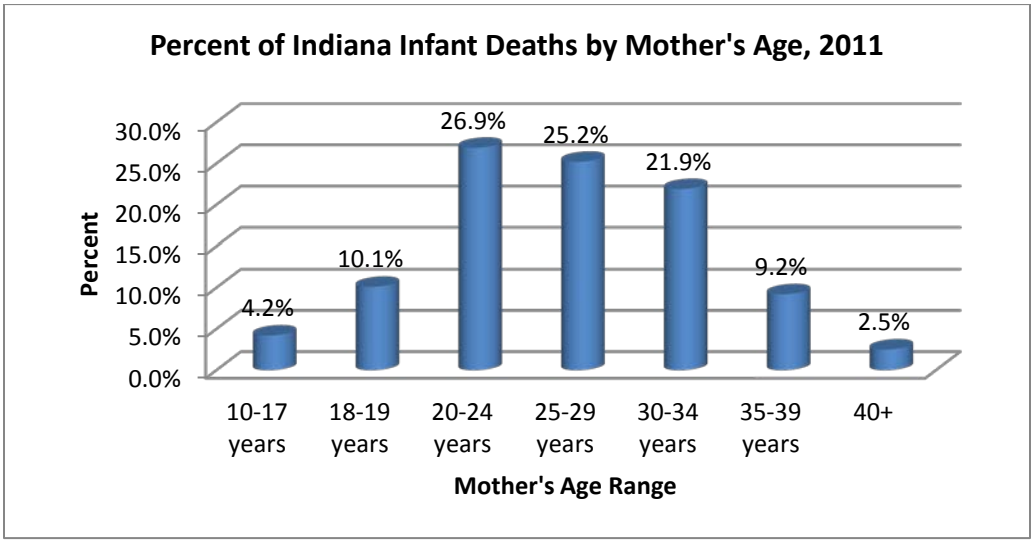
In examining the same data by cause of death, 47.7% of the deaths were as a result of perinatal risks including:

- Newborn affected by maternal factors and by complications of pregnancy, labor, and delivery;
- Slow fetal growth and fetal malnutrition;
- Disorders related to short gestation and low birthweight, not elsewhere classified;
- Disorders related to long gestation and high birthweight; and
- All other conditions specific to the perinatal period.



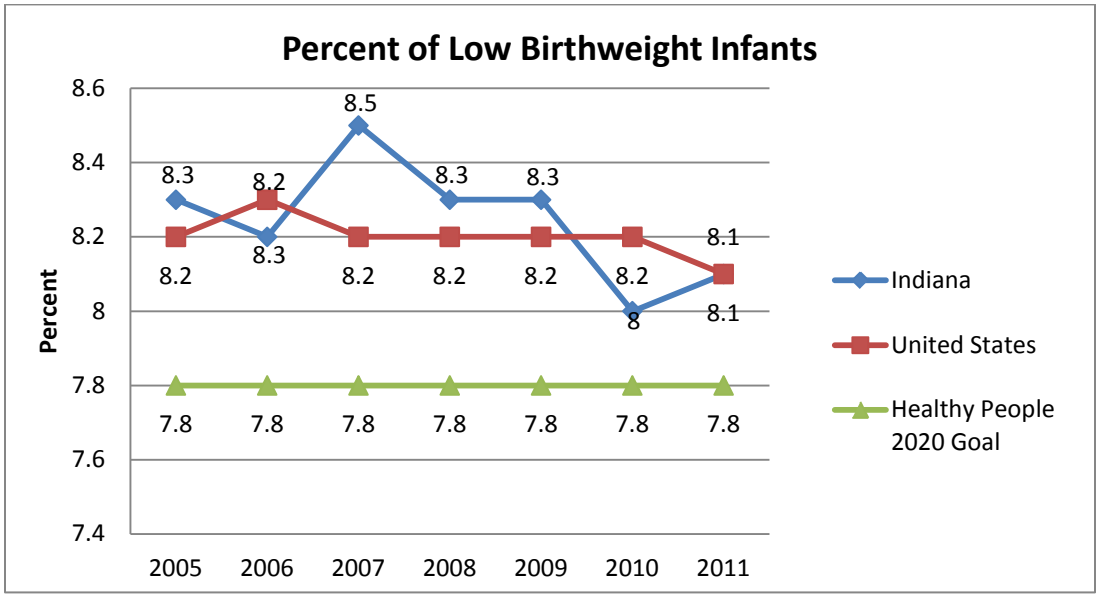
Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division, January 2014

Over 50% of the infants who died were born to women between the ages of 20-29.

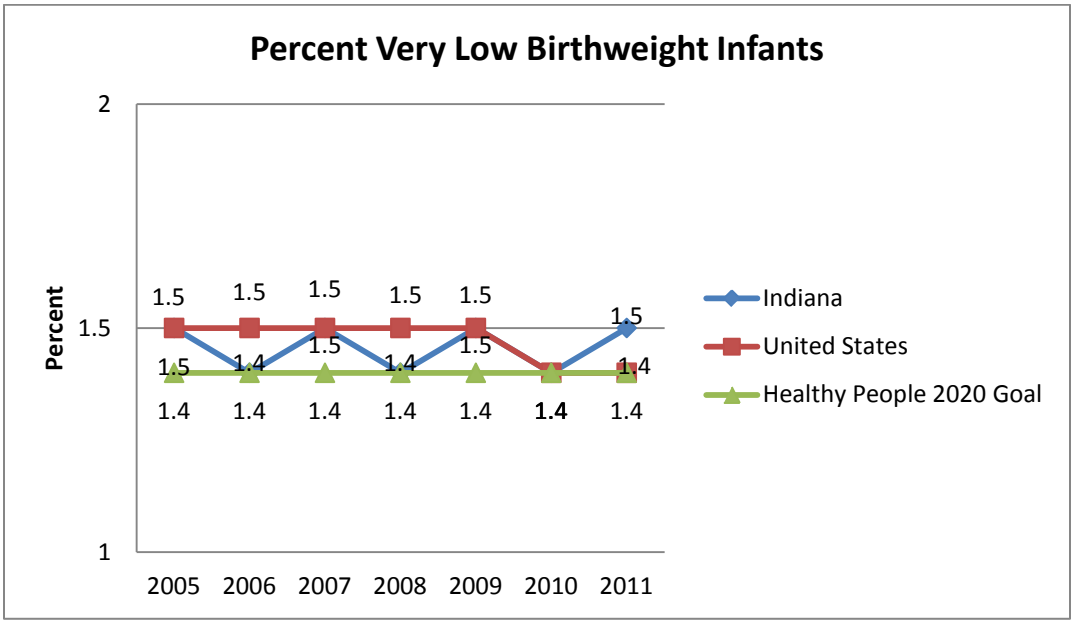


Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division, January 2014

When examining statistics for low birthweight (<2500 grams/5.5lbs.) and very low birthweight (<1500 grams/3.4 lbs), Indiana is more closely aligned with statistics for the United States. The most frequent cause of infant death is low birthweight/prematurity.

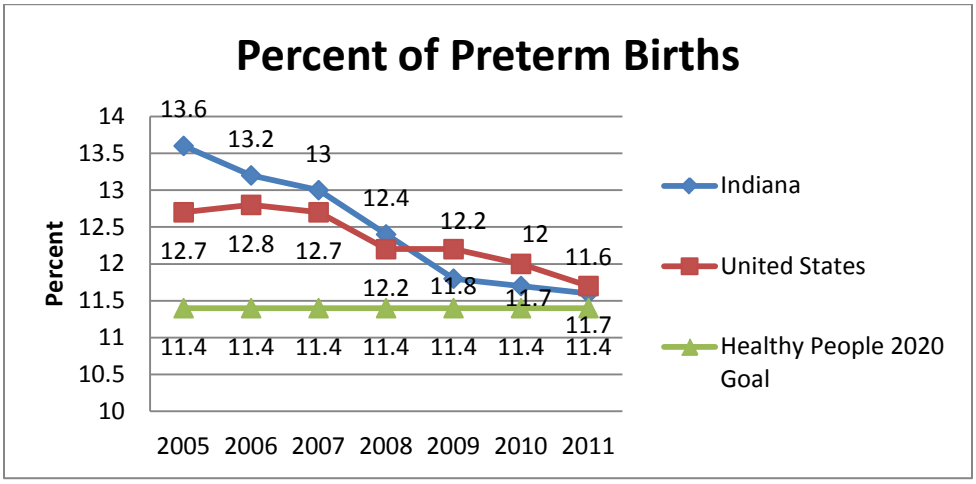


Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (October 3, 2013)
United States Original Source: Centers for Disease Control and Prevention National Center for Health Statistics
Indiana Original Source: Indiana State Department of Health, PHPC, ERC, Data Analysis Team



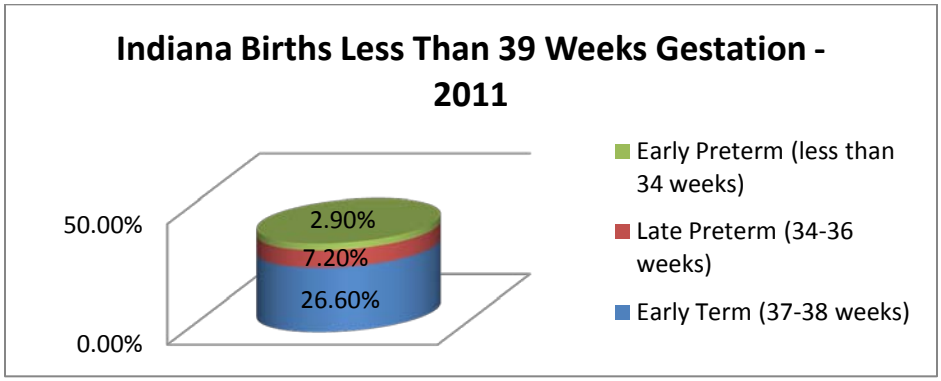
Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (August 12, 2013)
United States Original Source: Centers for Disease Control and Prevention National Center for Health Statistics
Indiana Original Source: Indiana State Department of Health, PHP, ERC, Data Analysis Team

Similar to low birthweight and very low birthweight, Indiana's statistics for preterm births are similar to those of the United States and close to the Healthy People 2020 goal.



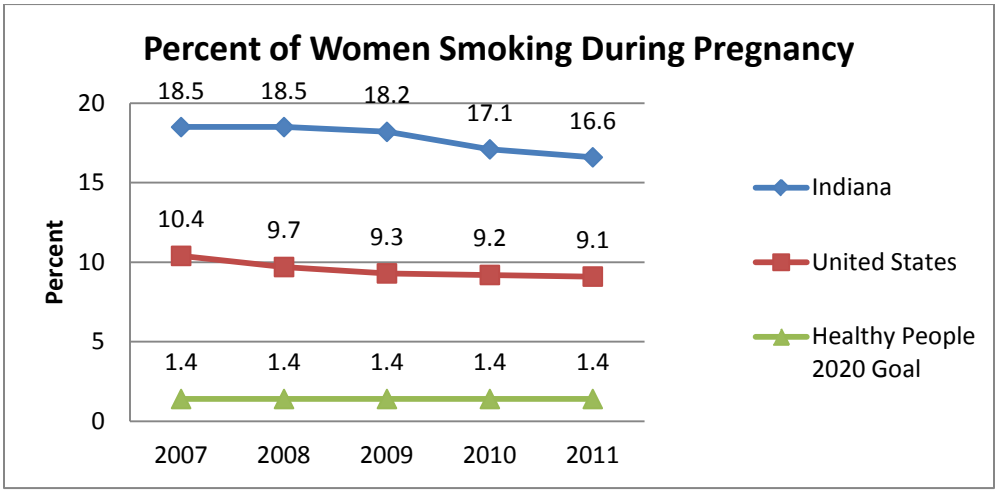
Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (August 12, 2013)
United States Original Source: Centers for Disease Control and Prevention National Center for Health Statistics
Indiana Original Source: Indiana State Department of Health, PHP, ERC, Data Analysis Team

In 2011, 26.6% of the preterm births occurred in the "early term" period which is 37-38 weeks gestation. Indiana experienced an increase in elective or non-medically indicated early term deliveries prior to 2011. Research shows that early term elective deliveries without medical or obstetrical indication is linked to neonatal morbidities with no benefit to the mother or infant. Neonatal morbidities include increased adverse outcomes and death, NICU admissions, adverse respiratory outcome, transient tachypnea of the newborn, newborn sepsis, treated hypoglycemia, CPR or ventilation and extended length of stay.



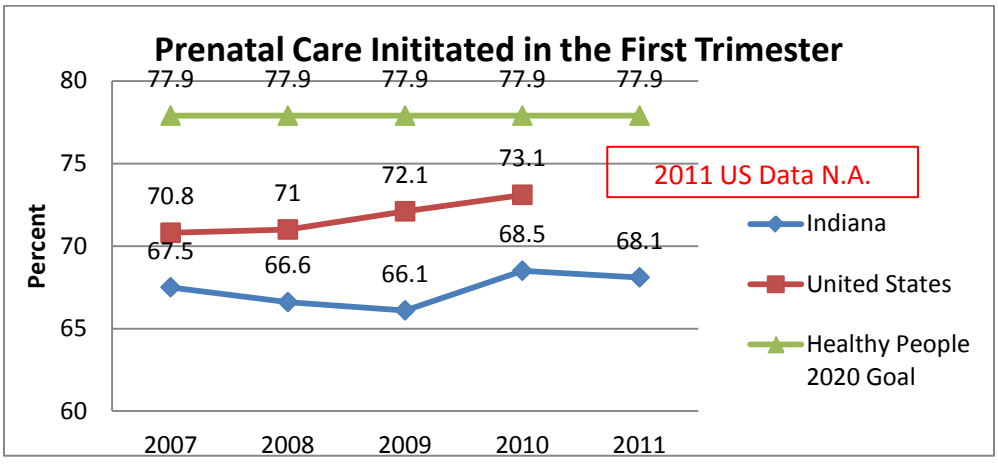
Note: Preterm births calculated using the Obstetric Estimate
Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (January 2014)

The Healthy People 2020 goal for the percent of women who smoke during pregnancy is 1.4%. In 2011, 16.6% of women in Indiana reported smoked during pregnancy compared to 9.1% of pregnant women in the United States. Smoking during pregnancy causes premature birth, certain birth defects, and is a risk factor for Sudden Infant Death Syndrome (SIDS).



Source: Indiana State Department of Health, Maternal & Child Health Epidemiology Division (October 3, 2013)
United States Original Source: Centers for Disease Control and Prevention National Center for Health Statistics
Note: 2011 Unites States data is preliminary
Indiana Original Source: Indiana State Department of Health, PHP, ERC, Data Analysis Team

Another area that Indiana lags behind the rest of the country is women receiving prenatal care in the first trimester. Data for the United States for 2011 is not yet available. The chart that follows documents the gap between Indiana and the rest of the country compared to the Healthy People 2020 goal.



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Indiana Original Source: Indiana State Department of Health, PHP, ERC, Data Analysis Team

IPQIC Governing Council

The Governing Council of the Indiana Perinatal Quality Improvement Collaborative (IPQIC) was specifically designed with two purposes:

- To serve as the Advisory Board to the State Health Commissioner; and
- To oversee the work of the IPQIC Committees.

The goal of the Governing Council is to support the improvement of perinatal outcomes through a collaborative effort to ensure that:

- All women of childbearing age will receive equitable and risk appropriate health care before, during and after pregnancy;
- All babies in Indiana will be born when the time is right for both the mother and the baby; and
- All perinatal care providers and all hospitals, regardless of level of care, have an important role to play in assuring the best start in life for Indiana's babies.

The Commissioner of the Health Department, Dr. William Van Ness, and the Executive Director of the Indiana Hospital Association, Douglas Leonard, serve as the co-chairs of the Council. Council membership was designed to represent the many stakeholder perspectives that participate in the perinatal health system. The following organizations[2] were invited to identify a representative from their organizations to participate in this initiative:

- Anthem Insurance;
- Indiana Chapter American Academy of Pediatrics;
- Indiana Chapter American College of Obstetrics & Gynecology;
- Indiana Chapter Association of Women's Health Obstetric & Neonatal Nurses;
- Indiana Academy of Family Physicians;
- Indiana Hospital Association;

[2] The individuals who represent these associations/organizations are contained in Appendix A.

- Indiana March of Dimes;
- Indiana Minority Health Coalition;
- Indiana Perinatal Network;
- Indiana Primary Health Care Association;
- Indiana Rural Health Association;
- Indiana State Medical Association;
- Indiana University School of Medicine, Department of Public Health;
- Indiana State Department of Health - Director, Maternal Child Health;
- Indiana State Department of Health –Director, Office of Primary Care;
- Indiana Department of Insurance;
- Indiana FSSA Division of Family Resources; and
- Indiana Office of Medicaid Policy & Planning.

The Council held its first organizational meeting in November of 2012. The first meeting focused on creating a common knowledge base regarding the scope and severity of infant mortality in Indiana. The initial work that the Council completed was the approval of the work scope for the first four committees. Draft roles and responsibilities as well as deliverables were reviewed and approved prior to the initial meeting of each committee.

The Council held five meetings in 2013. In addition to its work with the Commissioner on infant mortality initiatives, the Council has received the results of two major surveys:

- The current capacity of birthing hospitals to meet the 2012 AAP and ACOG Guidelines for Levels of Care (see Appendix D); and
- The current capacity of hospitals with in-house maternal fetal and/or neonatal transport teams (see Appendix E).

While the IPQIC project recognizes the critical issues related to social determinants and racial disparities and their influence on perinatal outcomes, the primary focus in Year One has been on infrastructure issues. In February, the Governing Council unanimously endorsed the *Indiana Perinatal Hospital Standards* (See Appendix B). The Standards were the product of two years of work conducted by stakeholders from hospitals, professional

associations, universities and state health officials to bring alignment of Indiana hospital standards with the national guidelines of the American College of Obstetrics and Gynecology (ACOG) and the American Academy of Pediatrics (AAP).

In November, the Governing Council unanimously endorsed a proposed certification process (see Appendix C) for birthing hospitals that would establish their designated level of care based on the *Indiana Perinatal Hospital Standards*.

In 2014, the Governing Council will have the opportunity to review additional work products coming out of the committees including:

- Quality Improvement initiatives;
- Maternal-Fetal and Neonatal Transport Standards; and
- Perinatal Centers of Excellence.

System Development Committee

The System Development Committee, chaired by Dr. Lee Learman, IU School of Medicine, and Dr. Niceta Bradburn, St. Vincent Women's Hospital, was charged by the Governing Council with three primary foci for 2013:

- Develop a strategic plan to implement and monitor the Indiana Perinatal Hospital Standards;
- Develop standardized procedures for stabilization, consultation and transport of high-risk pregnant women and neonates; and
- Develop standards and responsibilities for Perinatal Systems of Excellence.

The committee was composed of many of the same individuals who had participated in the original Levels of Care Task Force. Membership was reviewed to ensure that participants represented urban, suburban and rural counties as well as hospitals of all sizes and levels.

Because of the significant work entailed with the three foci, the committee established three subcommittees: System Implementation, Perinatal Transport and Perinatal Centers.

System Implementation

The System Implementation Subcommittee, co-chaired by Dana Watters, Bloomington Hospital and Chris Ryan, The Women's Hospital, Deaconess Hospital System, Newburgh, focused their efforts on the development of a Levels of Care certification process. The committee based their work on the results of a survey that was a self assessment by Indiana birthing facilities on the difference between their current status and the Guidelines for Perinatal Care developed by the American College of Obstetrics and Gynecology (ACOG) and the American Academy of Pediatrics (AAP). The charts below document the unmet expectations of Indiana birthing facilities based on the revised obstetric and neonatal guidelines.

Self-reported Level of Care	**Unmet Obstetric Expectations Based on Revised Guidelines**			
	0	1	2-3	4+
I	16	9	12	1
II	17	4	7	4
III	5	4	4	5
Total	**38**	**17**	**23**	**10**

Self-reported Level of Care	**Unmet Neonatal Expectations Based on Revised Guidelines**			
	0	1	2-3	4+
I	11	5	12	3
II	12	9	6	5
III	4	5	4	11
IV	2	-	-	-
Total	**29**	**19**	**22**	**19**

In addition, the committee reviewed 2011 birth certificate data that showed that 52% of low birth weight babies and 68% of very low birth weight babies in Indiana are born in Level III hospitals. The Healthy People 2020 goal for very low birthweight babies is 83.7% leaving Indiana with a gap of 15.7%. In addition, 42% of infants less than 35 weeks gestation were born outside a Level III Hospital in Indiana.

Because of these data and because Indiana has not had a formal process for designating levels of care, the implementation began the process of making recommendations regarding level of care certification to the Governing Council. The subcommittee members

reviewed the processes that other states used to ensure hospitals were providing risk appropriate care based on their capabilities. The resulting draft process (See Appendix C) was designed to be a supportive and provide each birthing hospital with the opportunity to seek certification at the level that is most appropriate for their resources and capabilities. The certification process will be implemented over several years beginning with several pilot sites to test the designed certification process. Once the documentation and onsite process is confirmed as having the desired result, certification will move to a voluntary stage until state regulatory language is in place to move to required status.

Perinatal Transport

The Perinatal Transport Subcommittee, chaired by Beth McIntire, St. Vincent Women's Hospital and Dr. James Cameron, Lutheran Hospital, Fort Wayne, initiated their committee work with the development of a survey to assess the status of in-house maternal-fetal and neonatal transport systems. Based on the survey responses, the committee was able to identify that Indiana had four maternal-fetal transport teams and fifteen neonatal transport teams, leaving significant portions of the state dependent on community ambulance and EMS services. The variance in team composition, quality assurance standards and standardized training was significant. The results of the survey (See Appendix E) validated the consensus of the committee that standards needed to be established to ensure that the transport of pregnant women and high-risk newborns was safe, medically appropriate and designed to promote quality outcomes for mothers and babies. The subcommittee created two workgroups: one focused on maternal-fetal transports and one focused on neonatal transports. Both workgroups developed a shared framework to identify and define the components of a high quality perinatal transport system that include:

- Personnel Licensure and Certification;
- Quality Assurance;
- Competencies;
- Equipment;
- Medication;
- Safety Measures; and

- Policies and Protocols.

The committee will finalize their recommendations for transport standards in 2014 and, if endorsed by the Governing Council, will begin the process of operationalizing the standards and developing supporting materials and resources.

Perinatal Centers

The Perinatal Centers Subcommittee, chaired by Dr. Maria Del Rio Hoover, St. Mary's Hospital Evansville and Dr. Renata Sawyer, Memorial Hospital, South Bend, was charged to develop standards and responsibilities for hospitals that would be designated as Perinatal Centers of Excellence. There is significant evidence that a statewide coordinated perinatal system of care will improve infant mortality and morbidity and reduce the cost of care for high risk newborns. The concept of regionalized Perinatal Centers and their affiliates has been implemented in other states. The first task the subcommittee took on was research into what other states had established and the various models that were in place. Based on the research the subcommittee has spent 2013 developing roles and responsibilities that reflect the culture and unique characteristics of the Indiana perinatal system. The Perinatal Center must meet the ACOG and AAP guidelines for a Level III Obstetric (OB) Unit and a Level III or IV Neonatal Unit. Its affiliate hospitals will meet the guidelines for Level I or II OB and for Level I, II and III. The Perinatal Center and its affiliates will be recognized as a Perinatal System of Excellence. The Level I or II OB and Level I,II and III neonatal units may be affiliated with more than one Perinatal Center. Necessary components to be a Perinatal Center that the committee has focused on include conference organization, in-service training, quality assurance metrics, supports for affiliate hospitals and quality improvement activities. The committee will finalize their recommendations for Perinatal Centers in 2014 and, if endorsed by the Governing Council, will begin the process of operationalizing the standards and responsibilities and developing an application process for any hospital wishing the Perinatal Center designation.

Quality Improvement Committee

The Quality Improvement Committee, along with the System Development Committee, were the first two committees to begin work in 2013. The Committee is chaired by Dr. Nancy Swigonski, I.U. School of Medicine and Kathy Wallace, Indiana Hospital Association. In its first year the committee focused their efforts on the following deliverables:

- Prioritize a statewide best practice to implement in the first year and communicate recommendations to the Governing Council and other appropriate IPQIC committees; and
- Develop recommendations for an ongoing Indiana Perinatal Quality Improvement entity that supports prenatal, perinatal, and postnatal providers in their work of improving perinatal outcomes and effectiveness.

The committee divided into two sub groups:

- Group 1 developed guidelines to support efforts in Indiana to reduce early elective deliveries prior to 39 weeks as their priority for 2013; and
- Group 2 is completing a comprehensive document that identifies the need for an ongoing quality improvement infrastructure to support improvement in perinatal outcomes and reduce infant mortality and morbidity in Indiana.

In November, 2013, Group 1 presented draft policies and procedures for decreasing non-medically indicated early deliveries to the Governing Council. The second group did an informal assessment of existing perinatal quality improvement initiatives in Indiana before begin to draft their recommendations. These groups will complete their initial work in early 2014 and will submit their work to the Governing Council for endorsement. Once this is complete, the committee will begin to identify their next projects for 2014-2015.

Data Committee

The start of the Data Committee was staggered to allow the first two committees to get established. Chaired by Joe Gibson, Marion County Health Department and Waldo Mikels-

Carrasco, University of Notre Dame, the committee was given the following roles and responsibilities by the Governing Council:

- Facilitate the accurate collection of data and analysis of data needs for the IPQIC and ISDH;
- Work with the Quality Improvement Committee to coordinate collection of population data and QI Project Data;
- Identify data gaps and how/where to obtain data;
- Advise and assist the IPQIC and ISDH on analysis strategies and techniques as needed; and
- Review progress and outcome measures on a regular basis and make policy recommendations regarding data to the IPQIC Governing Council.

The committee's activities have focused this year on:

- An examination of birth certificate data including timeliness, completion and the quality of information provided;
- The development of a common set of perinatal outcomes measures; and
- Collaboration with the System Development Committee regarding data elements that will be part of the Levels of Care certification process and metrics for regional perinatal centers.

Education Committee

The Education Committee, chaired by Minjoo Morlan, March of Dimes and Dr. Lauren Dungy-Poythress, was the last committee to be established in 2013. This was done deliberately to allow the other committees to develop products that could then be supported by resources developed or identified by the Education Committee. The committee was designed with the following outcomes for both health care professionals and consumers:

- Serve as a forum, clearinghouse and educational resource regarding perinatal issues for health care professionals and consumers;

- Increase awareness of infant mortality, preterm birth, preconception and interconception health care;
- Provide consistent evidence-based educational messages;
- Increase recognition of the influence of non-medical issues on perinatal outcomes;
- Make recommendations to IPQIC and ISDH regarding effective educational strategies for Indiana; and
- Work with ISDH and other IPQIC committees to disseminate consistent messages and quality practices to the broader Indiana perinatal community and general public.

The committee held its first meeting in July with subsequent face-to-face meetings in August, October and a conference call meeting in December. The committee decided to focus on the following short-term actions for the remainder of the calendar year:

1. Help promote the upcoming Infant Mortality Summit including a consistent consumer and professional message; and
2. Research consumer education messages from other states regarding the rationale and importance of hospital certification.

In 2014, the Committee will focus on early elective deliveries and smoking during pregnancy from both a consumer and provider perspective.

Summary

In its first year, the Indiana Perinatal Quality Improvement Collaborative has involved over 120 volunteers working with ISDH/MCH staff to improve the health care infrastructure serving the pregnant women and infants of Indiana. Indiana Hospital Perinatal Quality Standards have been approved and a method for certifying hospital levels of care has been developed and approved. A majority of the volunteers have expressed willingness to continue work on current projects or new projects in 2014. The research, planning and implementation efforts of the first year have resulted in the identification of key finance questions and necessitated the development of a Finance Committee which will begin its

work in 2014. Other IPQIC committees are engaged in exciting and significant work that are designed to ensure ongoing improvement of perinatal health outcomes in Indiana.

Appendix A: IPQIC Membership

Governing Council Membership		
William	VanNess, MD*	ISDH Commissioner
Douglas	Leonard*	Indiana Hospital Association
Ann	Alley	ISDH - Office of Primary Care
Bob	Bowman	ISDH - Maternal and Child Health
Mark	Gentry, MD	IN Chapter American College of Obstetrics and Gynecology
Tanya	Hand	Consumer, At-Large
Kitty	Herndon	IN AWHONN
Larry	Humbert	Indiana Perinatal Network
Nancy	Jewell	Indiana Minority Health Coalition
Don	Kelso	Indiana Rural Health Association
Carolyn	Lytle, MD	IN Chapter American Academy of Pediatrics
James	McIntire	IN State Medical Association
Minjoo	Morlan	IN March of Dimes
Phil	Morphew	IN Primary Health Care Association
Pat	Nolting	FSSA Office of Medicaid Policy and Planning
Risheet	Patel, MD	IN Academy of Family Physicians
Stephen	Robertson	IN Department of Insurance
Kimberly	Roop, MD	Anthem Medicaid
Gregory	Wilson, MD	IU School of Public Health
*	Co-Chair	

System Development Committee		
Shalin	Arnett, DO	Good Samaritan Hospital
Janet	Austin, RN	Clark Memorial Hospital
Harold	Bivins, MD	St. Vincent
Niceta	Bradburn, MD *	St. Vincent
Shellee	Bradtmiller	Dupont Hospital
Patti	Brahe	Parkview Hospital
Jeffrey	Brookes, MD	Parkview Hospital
Mindy	Brown	Lutheran Hospital
James	Cameron, MD	Northern IN Neonatal Associates
Brian	Carnes	ISDH
Michelle	Cherry	Community Hospital Munster
John	Clark	St. Vincent
Charles	Coffelt, BS, NREMT-P, CMTE	Care Ambulance Service
Maria	Del Rio Hoover, MD	St. Mary's Neonatal Clinic
Lauren	Dungy-Poythress, MD	
Denise	Hartman, RN	Community Hospital
Meagan	Hostetter	Lutheran Hospital
Gretchen	Huffman	EMSC
Larry	Humbert	Indiana Perinatal Network
Elizabeth	Kissinger	Dupont Hospital
Josh	Kreigh	IN Dept of Homeland Security
Lee A.	Learman, MD, PH.D. *	IU School of Medicine, Center for Women's Health
Janet	Leezer, MD	Northern IN Neonatal Associates
Elizabeth	McIntire, MSN, WHNP	St. Vincent
Teresa	Meece	Community Hospital Munster
Carla	Meyer, MS, BSN, RN	Community Hospital Munster

System Development Committee		
Shannon	Navarro	St. Joseph Hospital
Lori	Norton	Parkview Hospital
Laurie	O'Riley, RRT-NPS, EMT-P	IU Health
Lu-Ann	Papile, MD	Indiana University
Johnna	Paulson, MSN MHA RN	Terre Haute Regional Hospital
Chris	Ryan	The Women's Hospital
Renata	Sawyer, MD	Memorial Hospital, South Bend
Frank	Schubert, MD	IU Women's Healthcare
Laura	Sparks	Clark Memorial Hospital
Jeannine	Terrio	St. Mary's Hospital Women & Children
Michael	Thralls	IU Health
Michael	Trautman, MD	Indiana University
Lee	Turpen	American Medical Response
Kathy	Wallace	Indiana Hospital Association
Dana	Watters, MSN, RNC-OB	Bloomington Hospital
Robert	White, MD	Pediatrix Medical Group
*	Co-Chair	

Quality Improvement Committee		
Ann	Alley	ISDH - Office of Primary Care
Michele	Bierman	Union Hospital
Carol	Briley	FSSA - Office of Medicaid Policy and Planning
James	Cameron, MD	Northern IN Neonatal Associates
Kathy	Detweiler	Dupont Hospital
Joan	Duwve, MD	ISDH
John	Ellis, MD	MHS Indiana
Bill	Engle, MD	Riley Hospital
Karen	Greuter	Dupont Hospital
Lori	Grimm	Deaconess Hospital
Teresa	Herman, MD	Dupont Hospital
Kenneth	Herrmann, MD	Deaconess Hospital
Diane	Hesson, BSN, RNC-OB	IU Health North Hospital
Larry	Humbert	Indiana Perinatal Network
Dawn	Kackley, MSN, WHNP, RNC	Terre Haute Regional Hospital
Julie	Kathman	Bloomington Hospital
Debra	Kirkpatrick, MD	IU Women's Healthcare
David	Lambert	FSSA - OMPP
Joseph	Landwehr, MD	IU Health Ball Memorial
Pam	Lowe, MSN, RN	IU Health North Hospital
Joanne	Martin	Goodwill of Central Indiana
Minjoo	Morlan, MSW	IN March of Dimes
Phil	Morphew	IN Primary Health Care Association
Donna	Neufelder	St Mary's
Risheet	Patel, MD	Indiana Academy of Family Physicians
Sue Ann	Pflum	Wellpoint

Quality Improvement Committee		
Frank	Schubert, MD	IU Women's Healthcare
Laura	Sparks	Clark Memorial Hospital
Deb	Stiffler, PhD, RN, CNM	IU Center for Women's Excellence
Renee	Stratton	Riley Child Development Center
Daniel	Sunkel, MD	Women's Clinic
Nancy	Swigonski, MD *	Children's Health Services Research
Kathy	Wallace *	Indiana Hospital Association
Erin	Walsh	FSSA - Office of Medicaid Policy and Planning
Lacrisha	Whitley, RN	Reid Hospital
Louis	Winternheimer, MD	Raphael Health Center
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Katie	Gatz	ISDH
Joe	Gibson *	Marion County Public Health Dept
Susan	Goldsmith	C-Spring/Office of Medicaid Policy and Planning
Joe	Haddix	ISDH
Larry	Humbert	Indiana Perinatal Network
Nancy	Jewell	Indiana Minority Health Coalition
Waldo	Mikels-Carrasco*	University of Notre Dame
Sheryl	Mourey	St. Joseph Hospital
John	Mulvaney	C-Spring/Office of Medicaid Policy and Planning
Kathy	Sullender	Daviess Co Health Department
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*	Co-Chair	

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Lauren	Dungy-Poythress, MD *	
Carl	Ellison	Indiana Minority Health Coalition
Laura	Green	Lutheran Hospital
Tanya	Hand	
Janet	Leezer, MD	Northern IN Neonatal Associates
Minjoo	Morlan, MSW *	March of Dimes
Laura	Palmer MS, RD, CD	Purdue University
Rise	Ross Ratney	Healthy Start
Renata	Sawyer, MD	Memorial Hospital, South Bend
Janet	Schoonveld	Community Hospital
Deb	Stiffler, PhD, RN, CNM	IU Center for Women's Excellence
Daniel	Sunkel, MD	Women's Clinic
*	Co-chair	

Appendix B: Indiana Perinatal Hospital Standards

Standard	Title	Summary
I	Organization	Refers to the administration of a hospital's neonatal-perinatal programs.
II	Obstetrical Unit Capabilities	Refers to the resources of equipment, supplies, and personnel needed for the delivery unit within the hospital.
III	Obstetric Personnel	Describes the roles, responsibilities, and availability of obstetric personnel in the perinatal program.
IV	Obstetric Support Personnel	Describes the roles, responsibilities, and availability of the other personnel in the obstetric program.
V	Obstetric Equipment	Refers to the availability of specific equipment needed for the obstetric program.
VI	Obstetric Medications	Refers to the availability of specific medications needed for the obstetric program.
VII	Neonatal Unit Capabilities	Refers to the resources of equipment, supplies, and personnel needed for the neonatal units within the hospital.
VIII	Neonatal Personnel	Describes the roles, responsibilities, and availability of neonatal personnel in the neonatal program.
IX	Neonatal Support Personnel	Describes the roles, responsibilities, and availability of the other personnel in the neonatal and perinatal programs.
X	Neonatal Equipment	Refers to the availability of specific equipment needed for the neonatal program.
XI	Neonatal Medications	Refers to the availability of specific medications needed for the neonatal program.
XII	Universal Laboratory	Refers to the resources of the equipment, supplies, and personnel needed for the laboratory unit within the hospital.
XIII	Universal Education	Refers to educational requirements for all health care providers involved in providing neonatal-perinatal care in relation to their roles and responsibilities.
XIV	Performance Improvement	Describes the performance improvement process that is required for hospital neonatal-perinatal programs.
XV	Policies and Protocols	Identifies the administrative and medical policies and protocols that shall be in place for neonatal-perinatal programs.

DEFINITIONS

At the Site: on staff at the institution

Board-certified: Means a physician certified by an American Board of Medical Specialties Member Board or the American Osteopathic Association.

Immediately available: A resource available on site as soon as it is requested.

In-house: Physically present in the hospital

Programmatic responsibility: The writing, review and maintenance of practice guidelines; policies and procedures; development of operating budget (in collaboration with hospital administration and other program directors); evaluations and guiding of the purchase of equipment; planning, development and coordination of education programs (in-hospital and/or outreach as applicable); participation in the evaluation of perinatal care; and participation of perinatal quality improvement and patient safety activities.

Readily available: A resource for consults and assistance available within a short time after it is requested.

30 minutes: In-house within thirty (30) minutes. (Exceptions may occur for circumstances beyond an individual's control such as extraordinary weather or traffic impediments).

Levels of Care Chart Key

E Essential requirement for level of perinatal center

O Optional requirement for level of perinatal center

NA Not Applicable

OBSTETRICAL DEFINITIONS

Level 1

Level 1 hospitals have perinatal programs that provide basic care to pregnant women and infants, as described by these standards and as stated in Indiana Administrative Code (IAC) Title 410: Article 15. These hospitals provide delivery room and normal newborn care for stable infant's ≥ 35 0/7 weeks gestation. Maternal care is limited to term and near-term gestations that are maternal risk appropriate. A physician board certified or an active candidate for board certification in obstetrics/gynecology or family medicine provides programmatic management for obstetrical care services. These hospitals do not accept maternal transports.

Level 2

Level 2 obstetrical services have perinatal programs that provide specialty care to pregnant women and infants, as described by these standards. These hospitals provide delivery room and acute specialized care for infant's ≥1,500 grams **AND** ≥ 32 0/7 weeks gestation. Maternal care is limited to term and preterm gestations that are maternal risk appropriate. A board certified obstetrician has responsibility for programmatic management of obstetrical services. These hospitals may receive maternal referrals within the guidelines of their level.

Level 3

Level 3 hospitals have obstetrical programs that provide subspecialty care for pregnant women and infants, as described by these standards. These hospitals provide acute delivery room and neonatal intensive care unit (NICU) care for high-risk mothers and infants <1,500 grams ***OR*** <32 0/7 weeks gestation. Maternal care spans the range of normal term gestation care to the management of complex maternal complications and prematurity. A board-certified obstetrician has responsibility for the program of obstetrical services. A board certified maternal-fetal medicine specialist has responsibility for programmatic management of high-risk obstetrical services. Level 3 obstetrical hospitals accept risk appropriate maternal transports. In

accepting maternal transports the level of neonatal care required for an anticipated delivery and care of the neonate must be in place.

STANDARD I. ORGANIZATION-GOVERNING BOARD RESPONSIBILITIES

1.1 The hospital's Board of Directors, administration, and medical and nursing staffs shall demonstrate commitment to its specific level perinatal center designation and to the care of perinatal patients. This commitment shall be demonstrated by a Board resolution that:

a) The hospital agrees to meet the Indiana Perinatal System Standards for its specific level of designation through its commitment to the financial, human, and physical resources and to the infrastructure that is necessary to support the hospital's level of care designation.

b) The hospital agrees to conduct internal auditing and attestation using screening forms provided by the Indiana State Department of Health (ISDH). Once the ISDH form is completed, it is to be signed by the CEO to verify that information submitted is true and accurate.

c) The hospital assures that all perinatal patients shall receive medical care commensurate with the level of the hospital's designation.

d) The hospital agrees to be responsible for credentialing, licensing and training of all neonatal and obstetrical staff based on the hospital's designated level of care. The hospital is also responsible for ensuring that all health care workers maintain current licenses, registration or certification, and keep documentation of this information with the ability to have the material available within a reasonable amount of time. 410 IAC 15-1.4-1

e) The hospital agrees to have written medical staff policies and procedure to address emergent neonatal and obstetrical emergencies, initiating treatment and referring when appropriate. The hospital will be able to provide immediate life saving measures and have the appropriate staff readily available to care for emergent neonatal and obstetric patient needs, including timely assessment, stabilization, and treatment prior to transfer. Transfers should be arranged when needed along with copies of the patients' records and treatments provided to the accepting facility 410 IAC 15-1.4-1

STANDARD II. OBSTETRICAL UNIT CAPABILITIES	I	II	III
2.1 The hospital shall demonstrate its capability of providing uncomplicated and complicated obstetrical care through written standards, protocols, guidelines and training including the following:			
a) Managing unexpected obstetrical and neonatal problems.	E	E	E
b) Providing fetal monitoring, including internal scalp electrode monitoring.	E	E	E
c) Initiating an emergent cesarean delivery within 30 minutes of the decision to operate.	E	E	E
d) Selecting and managing obstetrical patients at a maternal risk level appropriate to its capability.	E	E	E
e) Providing critical care services appropriate for obstetrical patients, as demonstrated by having a critical care unit and a board-certified critical care specialist, readily available on a 24-hour basis.	NA	NA	E
f) Assuring availability of anesthesia, radiology, ultrasound, laboratory, and blood bank services on a 24-hour basis.	E	E	E
g) Determining the level of competence and qualifications required for staff to assume clinical responsibility for neonatal resuscitation 24 hours a day and 7 days a week.	E	E	E
h) Initiating maternal transports to an appropriate level.	E	E	E
i) Having a written plan for accepting level based maternal transports	NA	E	E
j) Having written plan for consultation and transfer arrangements.	E	E	E
2.2 Hospital shall follow current CDC/ACOG recommendations regarding induction of labor, Group B streptococci (GBS) treatment, and HIV treatment.	E	E	E
2.3 The hospital shall have genetic diagnostic and counseling services or policy for consultation referrals for these services in place.	O	E	E
2.4 The hospital shall have a laboratory capable of performing fetal lung maturity tests.	O	E	E
2.5 The hospital shall have a full range of invasive maternal monitoring available to the delivery area, including equipment for central venous pressure and arterial pressure monitoring.	O	O	E

STANDARD III. OBSTETRIC PERSONNEL	I	II	III
3.1 A provider board-certified or an active candidate for board-certification in obstetrics/gynecology or family medicine shall be a member of the medical staff and have responsibility for programmatic management of obstetrical services.[1]	E	NA	NA
3.2 A provider board-certified in obstetrics/gynecology shall be a member of the medical staff and have responsibility for programmatic management of obstetrical services.	O	E	E
3.3 A provider (or providers) board-certified or an active candidate for board-certification in maternal-fetal medicine, shall be a member of the medical staff and have responsibility for programmatic management of high-risk obstetrical services.	NA	O	*E*
3.4. A board-certified nurse-midwife with obstetrical privileges may be a member of the obstetrical staff in collaboration with a licensed physician with obstetrical privileges.	0	0	0
3.5 A provider board-certified or an active candidate for board-certification in anesthesiology shall be a member of the medical staff and have responsibility for programmatic management of obstetrical anesthesia services.	E	E	E
3.6 If hospital provides anesthesia, the service should meet the needs of the patients served, within the scope of the service offered, in accordance with acceptable standards of practice, and under the direction of a qualified physician (IAC 410 15-1.6-1). Anesthesia personnel should be available as listed below:	E	E	E
a) A qualified provider in anesthesiology or a certified registered nurse anesthetist (CRNA) under the direction of an operating practitioner or qualified physician shall be readily available to the delivery area when a patient is in active labor.	O	E	E
b) A qualified provider in anesthesiology or a certified registered nurse	O	O	E

[1] It is the responsibility of the hospital boards to establish criteria for credentialing and privileging within the perinatal area.

STANDARD III. OBSTETRIC PERSONNEL	I	II	III
anesthetist (CRNA) under the direction of an operating physician or qualified physician, shall be present in-house 24 hours a day and readily available to the delivery area.			
3.7 The hospital shall have appropriately qualified medical staff available to read ultrasounds 24 hours a day.	E	E	E
3.8 The hospital shall have a physician on the medical staff with privileges for providing critical interventional radiology services for obstetrical patients.	O	O	E
3.9 A hospital perinatal program shall have:			
a) A registered nurse with advanced obstetrical experience and a master's degree identified for staff education.[2].	O	O	E
b) An Advanced Practice Nurse (A Clinical Nurse Specialist (CNS) or Nurse Practitioner (NP)): a registered nurse with a master's degree who, through study and supervised practice at the graduate level, has become expert in the theory and practice of obstetric nursing.	O	O	E
3.10 The hospital shall have appropriately qualified nursing personnel in adequate numbers to meet the needs of each patient in accordance with the care setting including: a) A registered nurse with demonstrated training and experience in the assessment, evaluation and care of patients in labor present at all deliveries. b) A registered nurse skilled in the recognition and nursing management of the complications of labor and delivery readily available if needed to the labor and delivery unit 24 hours a day. c) A registered nurse skilled in the recognition and management of complications in women and newborns readily available to the obstetrical unit 24 hours a day. d) A registered nurse with demonstrated training and experience in the assessment, evaluation and care of newborns readily available to the unit	E	E	E
3.11 A qualified provider or certified nurse-midwife (with obstetrical privileges) with appropriate training and expertise shall be readily available to the	E	E	E

[2] Guidelines for Perinatal Care, 6th edition, p.32

STANDARD III. OBSTETRIC PERSONNEL	I	II	III
delivery area when a patient is in active labor.			
3.12 At least one person capable of initiating neonatal resuscitation shall be present at every delivery.	E	E	E
3.13 The hospital will establish internal guidelines for obtaining consultation with a physician board-certified in maternal-fetal medicine 24 hours a day.	E	E	E
3.14 The hospital shall have a maternal-fetal medicine physician on the medical staff in active practice and, if needed, in house within 30 minutes[3]	O	O	E
3.15 The hospital shall have appropriate personnel available within 30 minutes for emergency cesarean sections.	E	E	E
3.16 Hospitals offering a trial of labor for patients with a prior cesarean delivery must have immediately available anesthesia, cesarean section, and neonatal resuscitation capability during the trial of labor.	E	E	E
3.17 A provider board-certified or an active candidate for board certification in obstetrics/gynecology or family medicine (with obstetrical privileges) shall be readily available to the delivery area when a patient is in active labor.	O	E	NA
3.18 A provider board-certified or an active candidate for board-certification in obstetrics/gynecology shall be present in-house 24 hours a day and immediately available to the delivery area when a patient is in active labor.	NA	O	E
3.19 A provider board-certified or an active candidate for board certification in anesthesiology or a nurse-anesthetist shall be readily available so that cesarean delivery may be initiated per hospital protocol.	E	E	E
3.20 The maternity service has immediate access to the hospital's laboratory services including 24-hour capability to provide blood group, Rh type, cross-matching, antibody testing and basic emergency laboratory evaluations, and either ABO-Rh-specific or O-Rh-negative blood and fresh frozen plasma and cryoprecipitate at the facility at all times.	E	E	E

[3] This standard intends to assure timely assessment and intervention for pregnant women with rapidly deteriorating clinical status related to underlying medical conditions that are not routinely encountered by board-certified OB/GYNs, such as cardiovascular collapse, respiratory failure and neurologic compromise. Hospitals with 24/7 in-house intensivists may request a waiver of this standard.

STANDARD III. OBSTETRIC SUPPORT PERSONNEL	I	II	III
4.1 The hospital shall have appropriately qualified pharmacy personnel in adequate numbers to meet the needs of each patient in accordance with the care setting including: IAC 15-1.5-7(3)	E	E	E
a) Registered pharmacist available for telephone consultation 24 hours per day and 7 days per week.	E	NA	NA
b) Registered pharmacist available 24 hours per day and 7 days per week.	O	E	E
c) Registered pharmacist with experience in perinatal/neonatal pharmacology available 24 hours per day and 7 days per week.	NA	O	E
4.2 The hospital shall have at least one registered dietitian or nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of both women and neonates at high risk	O	E	E
4.3 The hospital shall provide lactation support per AWHONN and ILCA recommendation: a) Level I 1.3 FTE per 1000 deliveries per year b) Level II 1.6 FTE per 1000 deliveries per year c) Level III 1.9 FTEs per 1000 deliveries	E	E	E
4.4 The hospital shall have a licensed social worker or RN Case Manager with experience in psychosocial assessment and intervention with women and their families readily available to the perinatal service.	E	E	E
4.5 The hospital shall have at least one staff member with expertise in bereavement responsible for the hospital's bereavement activities, including a systemic approach to ensuring that individuals in need receive the appropriate services.	O	E	E
4.6 A registered nurse shall supervise licensed practical nurses and other licensed patient care staff who demonstrate knowledge and clinical competence in the nursing care of women, fetuses, and newborns during labor, delivery, and the postpartum and neonatal periods.	E	E	E
4.7 Blood bank technicians shall be immediately available 24 hours a day.	O	E	E

STANDARD III. OBSTETRIC EQUIPMENT	I	II	III
5.1 The hospital shall have equipment for performing interventional radiology services for obstetrical patients.	O	O	E
5.2 The hospital will have the following equipment available and the capability to use as indicated. :			
a) Non-stress and stress testing	E	E	E
b) Ultrasonography examinations	E	E	E
c) Amniocentesis	O	E	E
d) Portable obstetric ultrasonography equipment, with the services of appropriate support staff, shall be available in the delivery area	O	E	E
e) Cardioversion/defibrillation capability for mothers	E	E	E
f) Resuscitation equipment for mothers	E	E	E
g) Adult bag and mask systems capable of delivering a controlled concentration of oxygen	E	E	E
h) Orotracheal tubes, endotracheal tubes in a range of sizes for adult intubation	E	E	E
i) Wall suction and aspiration equipment	E	E	E
j) Laryngoscopes	E	E	E
k) Blood pressure cuffs in full range of sizes, for manual and machine use	E	E	E
l) Pulse oximeter	E	E	E
m) Arterial blood gas machine	E	E	E
n) Fiberoptic scopes for awake intubation	E	E	E
o) Arterial line kits	NA	O	E
p) Central venous line kits	NA	O	E
q) Invasive hemodynamic monitoring equipment	NA	NA	E
r) Adult echocardiography equipment	NA	NA	E
s) Individual oxygen, air O2 blended and humidified capability, and suction outlets	E	E	E
t) Emergency call system	E	E	E

STANDARD VI. OBSTETRIC MEDICATIONS	I	II	III
6.1 All emergency resuscitation medications and equipment needed to initiate and maintain resuscitation shall be present in the delivery area in accordance with Advanced Cardiac Life Support (ACLS), Neonatal Resuscitation Program.	E	E	E
6.2 The following medications shall be in the delivery area or immediately available to the delivery area: a) Oxytocin (Pitocin) b) Methylergonovine (Methergine) c) 15-methyl prostaglandin F2 (Prostin) d) Misoprostol e) Carboprost tromethamine (Hemabate) f) Narcotics g) Antibiotics h) Magnesium sulfate i) Naloxone j) Lorazepam	E	E	E

NEONATAL SECTION - DEFINITIONS

THESE STANDARDS REFLECT THE REVISED AAP POLICY STATEMENT ON LEVELS OF NEONATAL CARE 2012[4]

Level I

Hospitals have neonatal programs that provide a basic level of care to infants who are low risk, as described by these standards. These hospitals provide normal newborn care for infants ≥35 0/7 weeks gestation who are physiologically stable. They must have the capabilities to perform neonatal resuscitation at every delivery and to evaluate and provide routine

[4] The AAP Committee on Fetus and Newborns issued the Policy Statement on Levels of Neonatal Care on August 27, 2012.
www.pediatrics.org/cgi/doi/10.1542/peds.2012-1999
PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

postnatal care for healthy newborn infants. Level I hospitals must be able to stabilize newborn infants who are less than 35 weeks of gestation or who are ill until they can be transferred to a facility at which specialty neonatal care is provided. Board certified pediatricians or family physicians with privileges for newborn resuscitation supervise these units. These neonatal units do not provide pediatric subspecialty or neonatal surgical specialty services. These hospitals do not receive primary infant or maternal referrals.

Level II

Hospitals have neonatal programs that provide specialty care to infants, as described by these standards. These hospitals must have the ability to provide care for stable or moderately ill infants ≥1,500 grams **AND** ≥32 0/7 weeks gestation with problems that are expected to resolve rapidly and not anticipated to need subspecialty-level services on an urgent basis. These hospitals must have the ability to provide assisted conventional ventilation or continuous positive airway pressure or both for brief durations, generally less than 24 hours. Level II nurseries must have the ability to stabilize infants born before 32 weeks gestation and weighing less than 1500 grams until transfer to a neonatal intensive care facility. Level II nurseries must have equipment and personnel continuously available to provide ongoing care as well as to address emergencies. These hospitals do not receive primary infant transports. The hospital shall have a written plan for accepting or transferring mothers or neonates as "back transports" for ongoing convalescent care, including criteria for accepting the patient and patient information on the required case. These neonatal units are supervised by a board-certified pediatrician, and have prearranged consultative agreements with a level III or IV center.

Level III

Hospitals provide subspecialty care for infants as described by these standards. These hospitals provide acute and comprehensive NICU care for infants who are born at ≤32 weeks gestation and ≤ 1500 grams at birth, or have medical or surgical conditions regardless of gestational age or weight. Designation of Level III care should be based on clinical experience as demonstrated by large patient volume, increasing complexity of care, and availability of pediatric medical subspecialists and pediatric surgical specialists[5]. Pediatric surgical specialists (including anesthesiologists with pediatric experience) should

[5] According to the AAP policy statement *"Although little debate exists on the need for advanced neonatal services for the most immature and surgically complex neonates, ongoing controversies exist regarding which facilities are qualified to provide these services and what is the most appropriate measure for such qualification. These issues are, in general, based on the need for comparison of facility experience (measured by patient volume or census), location (inborn/outborn deliveries, regional perinatal center, or children's hospital) or case-mix (including stillbirths, delivery room deaths, and complex congenital*

perform all procedures in newborn infants. Pediatric ophthalmology services and an organized program for the monitoring, treatment, and follow-up of retinopathy of prematurity should be readily available in Level III nurseries. The neonatal units are supervised by Board-certified neonatologists and offer continuous availability of neonatologists. Neonatal units provide a full range of respiratory support that may include conventional ventilation, and/or inhaled nitric oxide, and/or high-frequency ventilation if suitable equipment and properly trained personnel are available. Pediatric medical subspecialty services may be provided onsite or consultation may be provided at a closely related institution which allows for emergency transport within a reasonable time between institutions. Pediatric surgical and anesthesiology subspecialists may be on site or at a closely related institution to perform major surgeries. Neonatal care capability includes advanced imaging, with interpretation on an urgent basis that includes computed tomography, magnetic resonance imaging, and echocardiography. Level III perinatal hospitals accept risk-appropriate maternal and neonatal transports. The hospital shall have a written plan for accepting or transferring mothers or neonates as "back transports" for ongoing convalescent care, which includes criteria for accepting the patient and patient information on the required case.

Level IV

Hospitals provide comprehensive subspecialty neonatal care services, as described by these standards. These hospitals provide acute NICU care for infants of all birth weights and gestational ages. In addition, the neonatologists assist in the management of fetuses who are extremely premature or have complex problems that render significant risk of preterm, delivery, and postnatal complications. The neonatal units are supervised by Board-certified neonatal-perinatal subspecialists and offer continuous availability of neonatologists. Advanced modes of neonatal ventilation and life-support are provided, including high frequency ventilation, inhaled nitric oxide and/or extracorporeal membrane oxygenation (ECMO). These neonatal units provide a full range of medical pediatric subspecialty services. Additionally, a full range of pediatric subspecialty surgical services and pediatric anesthesiologists are available at the site, including pediatric cardio-thoracic open-heart surgery and pediatric neurosurgery. Level IV perinatal hospitals accept maternal and neonatal transports. These hospitals facilitate transport and provide outreach education.

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anomalies)." There is an expectation that the next review of the AAP Levels of Neonatal Care policy statement will indicate appropriate patient volume for each level of neonatal care.
The AAP Policy Statement on Levels of Neonatal Care, August 27, 2012. www.pediatrics.org/cgi/doi/10.1542/peds.2012-1999

STANDARD VII. NEONATAL UNIT CAPABILITIES	I	II	III	IV
7.1 The hospital shall demonstrate its capability of providing neonatal care through written standards, protocols, guidelines, and training, that include the following:				
a) Providing resuscitation and stabilization of unexpected neonatal problems according to the most current Neonatal Resuscitation Program (NRP) guidelines.	E	E	E	E
b) Selecting and managing neonatal patients at a neonatal risk level appropriate to its capability.	E	E	E	E
c) Managing all neonatal patients including those requiring advanced modes of neonatal ventilation and life-support; pediatric subspecialty services; and pediatric subspecialty surgical services at the site or a closely related institution by prearranged consultative agreement.	NA	NA	E	NA
d) Managing all neonatal patients including those requiring advanced modes of neonatal ventilation and life-support; pediatric medical subspecialty services; and pediatric subspecialty surgical services such as pediatric cardio–thoracic open-heart surgery and pediatric neurosurgery within the institution.	NA	NA	NA	E
7.2 The hospital shall have equipment for performing interventional radiology services for neonatal patients.	NA	NA	O	E
7.3 The following medications shall be immediately available to the neonatal units:				
a) Antibiotics, anticonvulsants, and emergency cardiovascular drugs.	E	E	E	E
b) Surfactant, prostaglandin E1.	O	0	E	E
7.4 Hospital shall follow current CDC/AAP/ACOG recommendations related to the care of the newborn including but not limited to such areas as: Group Streptococci, HIV, positioning, circumcision.	E	E	E	E

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV
8.1 The hospital shall have appropriately qualified neonatal medical staff personnel, available as listed below for each level of care.				
a) The hospital shall have consulting relationships in place with a pediatric cardiologist, a surgeon and an ophthalmologist who has experience and expertise in neonatal retinal examination.	O	E	NA	NA
b) The hospital shall have access to pediatric ophthalmology services	NA	O	E	E
c) The hospital shall have availability to perform stat and routine cardiac echo and EEGs 24 hours a day and 7 days a week, and available interpretation for stat cardiac echo within 1 hour and for routine studies within 24 hours.	NA	O	E	E
d) The hospital shall have prompt and readily available access to a full range of pediatric medical subspecialists, pediatric surgical specialists, anesthesiologists with pediatric experience, and pediatric ophthalmologists at the site or at a closely related institution by prearranged consultative agreement.	NA	O	E	NA
e) The hospital shall maintain a full range of pediatric medical subspecialists, pediatric surgical subspecialists, and anesthesiologists with pediatric experience at the site.	NA	O	O	E
f) The hospital shall be located within an institution with the capability to provide on-site pediatric surgical care of complex congenital or acquired conditions.	NA	NA	NA	E
8.2 A provider board-certified in pediatrics or family medicine shall be a member of the medical staff, have privileges for neonatal care, and have responsibility for programmatic management for neonatal unit services.	E	NA	NA	NA
8.3 A provider board-certified in pediatrics or in neonatal-perinatal medicine shall be a member of the medical staff, have privileges for neonatal care, and have responsibility for neonatal unit services.	O	E	NA	NA
8.4 A provider(s) board-certified in neonatal-perinatal medicine shall be a member of the medical staff and have full-time responsibility for neonatal special care or intensive care unit services.	NA	O	E	E
8.5 The hospital shall have prearranged consultative agreements with a	E	E	NA	NA

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV
board-certified neonatologist 24 hours a day.				
8.6 Neonatal Resuscitation Program (NRP) trained professional(s) shall be immediately available to the delivery and neonatal units.	E	E	E	E
8.7 A provider who has completed postgraduate pediatric training, a nurse practitioner, family physician or physician assistant with privileges for neonatal care appropriate to the level of the nursery shall be available when an infant requires Level II neonatal services such as FiO2>40%, assisted ventilation, or cardiovascular support.	NA	E	NA	NA
8.8 A Pediatrician who has completed pediatric residency training, a nurse practitioner or physician assistant with adequate NICU training and experience, with privileges for neonatal care appropriate to the level of the nursery, shall be physically present in-house 24 hours a day and assigned to the delivery area and neonatal units and not shared with other units in the hospital.	NA	O	E	E
8.9 A board-certified provider or an active candidate for board-certification in neonatology shall be available to be present in-house within 30 minutes.	NA	O	E	E
8.10 The hospital shall have:				
a) The hospital shall have a prearranged written plan with a neurodevelopmental follow-up clinic or neurodevelopmental practice.	O	O	E	NA
b) A neurodevelopmental follow-up clinic or practice	O	O	O	E
8.11 The hospital shall have a provider on the medical staff with privileges for providing critical interventional radiology services for neonatal patients.	O	O	O	E
8.12 The hospital shall have appropriately qualified neonatal personnel in adequate numbers to meet the needs of each patient in accordance with the care setting:				
a) A readily available, in-house registered nurse with demonstrated training and experience in the assessment, evaluation and care of normal newborns.	E	E	E	E
b) A registered nurse skilled in the recognition and nursing management of the neonate with complications on the unit 24 hours a day.	NA	E	NA	NA

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV
c) An Advanced Practice Nurse (A Clinical Nurse Specialist (CNS) or Nurse Practitioner (NP)): a registered nurse with a master's degree who, through study and supervised practice at the graduate level, has become expert in the theory and practice of neonatal nursing.	NA	O	E	E
d) A Neonatal Nurse Practitioner (NNP) who manages a caseload of neonatal patients with consultation, collaboration, and medical supervision by a neonatologist and may exercise independent judgment in the assessment and diagnosis of infants and in the performance of certain delegated procedures.	NA	O	O	O
8.13 The hospital shall have respiratory therapists who are:				
a) Experienced in the delivery of continuous positive airway pressure and/or mechanical ventilation or both readily available.	NA	E	E	E
b) Skilled in neonatal ventilator care and management assigned to the NICU and not shared with other units when any patient is receiving assisted positive pressure ventilation, high-frequency ventilation, and/or inhaled nitric oxide 24 hours a day.	NA	NA	E	E
8.14 A hospital providing neonatal surgical services shall have nurses on staff with special expertise in perioperative management of neonates.	NA	NA	E	E
8.15 The hospital shall provide lactation support per AWHONN and ILCA recommendation: a) Level I 1.3 FTE per 1000 deliveries per year b) Level II 1.6 FTE per 1000 deliveries per year c) Level III and IV 1.9 FTEs per 1000 deliveries	E	E	E	E
8.16 The hospital shall have a full-time International Board Certified Lactation Consultant with experience in lactation support for the mother of a preterm infant.	NA	O	E	E
8.17 The hospital shall have a licensed social worker or RN Case Manager, with experience in psychosocial assessment and intervention with women and their families who is:				

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV
a) Readily available	E	E	E	E
b) Dedicated to the perinatal service.	O	O	E	E
8.18 The hospital shall have Physical Therapist and/or Occupational Therapist, with additional Continuing Education Units in the area of neonatal care, as a member of the interdisciplinary care team.	NA	O	E	E
8.19 The hospital shall have a Speech Therapist, with additional Continuing Education Units in the area of neonatal care, as a member of the interdisciplinary care team.	NA	O	E	E
8.20 The hospital perinatal and neonatal nursing services shall have a director that is registered nurse with a Master's or higher level degree and experience in obstetric or neonatal nursing care for low and high-risk patients who is responsible for management activities in the maternity and newborn care units.[6]	O	E	E	E
8.21 A hospital perinatal program shall have a registered nurse with advanced neonatal experience and a master's degree identified for staff education.	O	O	E	E
8.22 A hospital perinatal program shall have at least one registered dietitian or nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of neonates at high risk	O	O	E	E
8.23 The hospital shall have appropriately qualified pharmacy personnel in adequate numbers to meet the needs of each patient in accordance with the care setting including: IAC 15-1.5-7(3)	E	E	E	E
a) Registered pharmacist available for telephone consultation 24 hours per day and 7 days per week.	E	NA	NA	NA
b) Registered pharmacist available 24 hours per day and 7 days per week.	NA	E	E	E
c) A hospital perinatal program shall have pharmacy personnel with pediatric expertise who can work to continually review their systems and processes of medication administration to ensure that patient care policies	O	O	E	E

[6] Guidelines for Perinatal Care 6th ed., pg. 32

STANDARD VIII. NEONATAL PERSONNEL	I	II	III	IV
are maintained.				

STANDARD IX. NEONATAL SUPPORT PERSONNEL	I	II	III	IV
9.1 Portable ultrasonography for newborns, with the services of appropriate support staff, shall be available to the neonatal units.	O	E	E	E
9.2 Computed tomography (CT) capability, with the services of appropriate support staff, shall be available on campus.	O	O	E	E
9.3 Magnetic resonance imaging (MRI) capability, with the services of appropriate support staff, shall be available on campus.	O	O	E	E
9.4 Neonatal echocardiography equipment and experienced technician with interpretation by pediatric cardiologist shall be immediately available.	O	O	E	E
9.5 The hospital shall have a pediatric cardiac catheterization laboratory and appropriate staff.	O	O	O	E
9.6 Portable x-ray equipment, with the services of appropriate support staff, shall be available to the neonatal units.	E	E	E	E
9.7 Blood bank technicians shall be present in-house 24 hours a day.	O	E	E	E

STANDARD X. NEONATAL EQUIPMENT	I	II	III	IV
10.1 The hospital shall obtain and maintain current equipment and technology, as described in these standards, to support optimal neonatal care for the level of care of the hospitals designation.	E	E	E	E
10.2 The hospital shall have all of the following equipment and supplies immediately available for existing patients and for the next potential patient: a) O2 analyzer b) stethoscope c) intravenous infusion pumps with appropriate drug libraries d) radiant heated bed in delivery room and available in the neonatal units	E	E	E	E

STANDARD X. NEONATAL EQUIPMENT	I	II	III	IV
e) oxygen hood with humidity f) pediatric bag and masks capable of delivering a controlled concentration of oxygen to the infant g) orotracheal tubes h) aspiration equipment i) laryngoscope j) umbilical vessel catheters and insertion tray k) cardiac monitor l) pulse oximeter m) phototherapy unit n) Doppler blood pressure for neonates o) cardioversion/defibrillation capability for neonates p) resuscitation equipment for neonates q) individual oxygen, air O2 blended and humidified capability, and suction outlets for mothers and neonates r) emergency call system s) bowel bags				

STANDARD XI. NEONATAL MEDICATION	I	II	III	IV
11.1 The following medications shall be immediately available to the neonatal units:				
a) antibiotics, anticonvulsants, and emergency cardiovascular drugs	E	E	E	E
b) surfactant, prostaglandin E1	O	O	E	E
11.2 Emergency medications, as listed in the Neonatal Resuscitation Program of the American Academy of Pediatrics/ American Heart Association (AAP/AHA), shall be immediately available in the delivery area and neonatal units	E	E	E	E

JOINT STANDARDS APPLY UNIVERSALLY

STANDARD XII. LABORATORY
12.1 The programmatic leaders of the perinatal service in conjunction with the hospital laboratory leaders will agree on processing and reporting times to ensure that these are appropriate for samples drawn from obstetric and neonatal patients with specific consideration for the acuity of the patient and the integrity of the samples.
12.2 The hospital laboratory shall demonstrate the capability to immediately receive process and report urgent/emergent obstetric and neonatal laboratory requests.
12.3 The hospital laboratory shall have a process in place to report critical results to the obstetric and neonatal services.
12.4 The hospital shall have available the equipment and trained personnel to perform a Pulse Oximetry assessment and newborn hearing screening prior to discharge on all infants born at or transferred to the institution as required by the State of Indiana Universal Newborn Hearing Screening, Diagnosis, and Intervention Guidelines. (410 IAC 3)
12.5 The hospital shall have molecular, cytogenic, and biochemical genetic testing available or written policy for consultation and referral in place.
12.6 All hospitals performing point of care laboratory testing will follow the rules established by CLIA and Indiana Administrative Code.

STANDARD XIII. EDUCATION
13.1 The hospital shall have identified minimum competencies for obstetrical clinical staff, not otherwise credentialed, that are assessed prior to independent practice and on a regular basis thereafter.
13.2 The hospital shall provide continuing education programs for physicians, nurses, and ancillary members of the perinatal team concerning the treatment and care of obstetrical and neonatal patients. • Conduct team training in perinatal areas to teach staff to work together and communicate effectively • Provide lactation and breastfeeding education for all members of the perinatal team. • For high risk events such as shoulder dystocia, emergency cesarean delivery, maternal hemorrhage and neonatal resuscitation, conduct clinical drills to help staff prepare for high risk, high complexity events with low rate of occurrence • Conduct drill debriefings to evaluate team performance and identify areas for improvement for high risk events

STANDARD XIII. EDUCATION

- Educate nurses, residents, nurse midwives and delivering physicians to use standardized terminology to communicate all categories of fetal heart rate monitor tracings.
- Identify specific triggers for responding to changes in the mother's, fetus's or newborn's vital signs and clinical condition and develop and use protocols and drills for responding to changes such as preeclampsia, hemorrhage, or neonatal shock.

13.3. A hospital that accepts maternal and/or neonatal primary transports shall provide the following to the referring hospital/providers:

a) Guidance on indications for consultation and referral of patients at high risk.
b) Information about alternative sources for specialized care not provided by the accepting hospital.
c) Guidance on the pre-transport stabilization of patients.
d) Feedback on the pre-transport care of patients.
e) Clear communication between sending and receiving personnel.
f) Once the patient has reached the receiving hospital, information regarding the patient's condition, and care given during transport should be sent back to the referring provider and referring hospital staff.
g) Regularly scheduled conferences with referral and receiving hospitals that may include the following topics:
    - Review of major perinatal conditions, their medical and nursing management.
    - Review of fetal monitoring, including maternal-fetal outcomes, toward a goal of standardizing nomenclature and patient care.
    - Review of perinatal outcomes and complications.
    - Review of patient and referring provider satisfaction data, complaints and compliments.
h) Perinatal outreach education provided jointly by neonatal and obstetric physicians, nurses, APN's, PA's and other perinatal staff. Responsibilities would include:
    - Assess referral hospital educational needs.
    - Plan curricula.
    - Teach, implement and evaluate programs.
    - Analyze and use perinatal data.
    - Provide patient follow-up to referring community personnel.
    - Maintain informative working relationships with community personnel and outreach team members.

13.4 The Perinatal team member:

- Acquires knowledge and experiences that reflect current evidenced based practice in order to maintain skills and

STANDARD XIII. EDUCATION
competence appropriate for his or her specialty area, role, and practice setting. • Participates in and maintains professional records of educational activities required to provide evidence of competency. • Maintains licensure and certification as mandated by state licensing boards, health care facilities and accrediting agencies. • Maintains certification within the specialty area of practice as appropriate, as a mechanism to demonstrate special knowledge. • Participates in lifelong learning, including educational activities related to evidence based practice, knowledge acquisition, safety and professional issues. • Has knowledge of relevant practice parameters and guidelines of other organizations that focus on the delivery of health care services to women and newborns.
13.5 The hospital shall have a written plan for assuring registered nurse/patient ratios as per current Guidelines For Perinatal Care, or Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) nurse patient ratios.

STANDARD XIV. PERFORMANCE IMPROVEMENT
14.1 The hospital shall have a multidisciplinary continuous quality improvement program for improving maternal and neonatal health outcomes that has initiatives to promote patient safety including safe medication practices, Universal Protocol to prevent procedural errors, and educational programs to improve communication and team work.
14.2 The hospital staff shall conduct internal perinatal case reviews that include all maternal, intrapartum fetal and neonatal deaths, and all maternal neonatal transports.
14.3 The hospital shall utilize a multidisciplinary forum to conduct periodic performance reviews of perinatal program. This review shall include a review of trends, all deaths, all transfers, all very low birth weight infants, problem identification and solution, issues identified from the quality management process, and systems issues.

STANDARD XV. POLICIES AND PROTOCOLS
15.1 The hospital shall have written policies and protocols for the initial stabilization and continuing care of all obstetrical and neonatal patients appropriate to the level of care rendered at its facility.
15.2 The hospital shall have obstetrical and neonatal resuscitation protocols.
15.3 The hospital medical staff credentialing process shall include documentation of competency to perform obstetrical and

STANDARD XV. POLICIES AND PROTOCOLS
neonatal invasive procedures appropriate to its designated level of care.
15.4 The hospital shall have a written plan for accepting or transferring mothers or neonates as "back transports" for ongoing convalescent care, including criteria for accepting the patient and necessary patient information.
15.5 The hospital shall have policies that allow families (including siblings) to be together in the hospital following the birth of an infant and that promote parental involvement in the care of the neonate including care of the neonate in the NICU (exceptions can be made under certain circumstances).
15.6 All hospitals shall have an appropriate newborn screening program in place according to Federal and State Law.
15.7 All hospitals shall have in place policies and protocols to address emergency preparedness for the obstetric and neonatal areas.
15.8 The hospital shall have written policies and procedures on local anesthesia (IAC 410:15-1.6-1, f, 2)

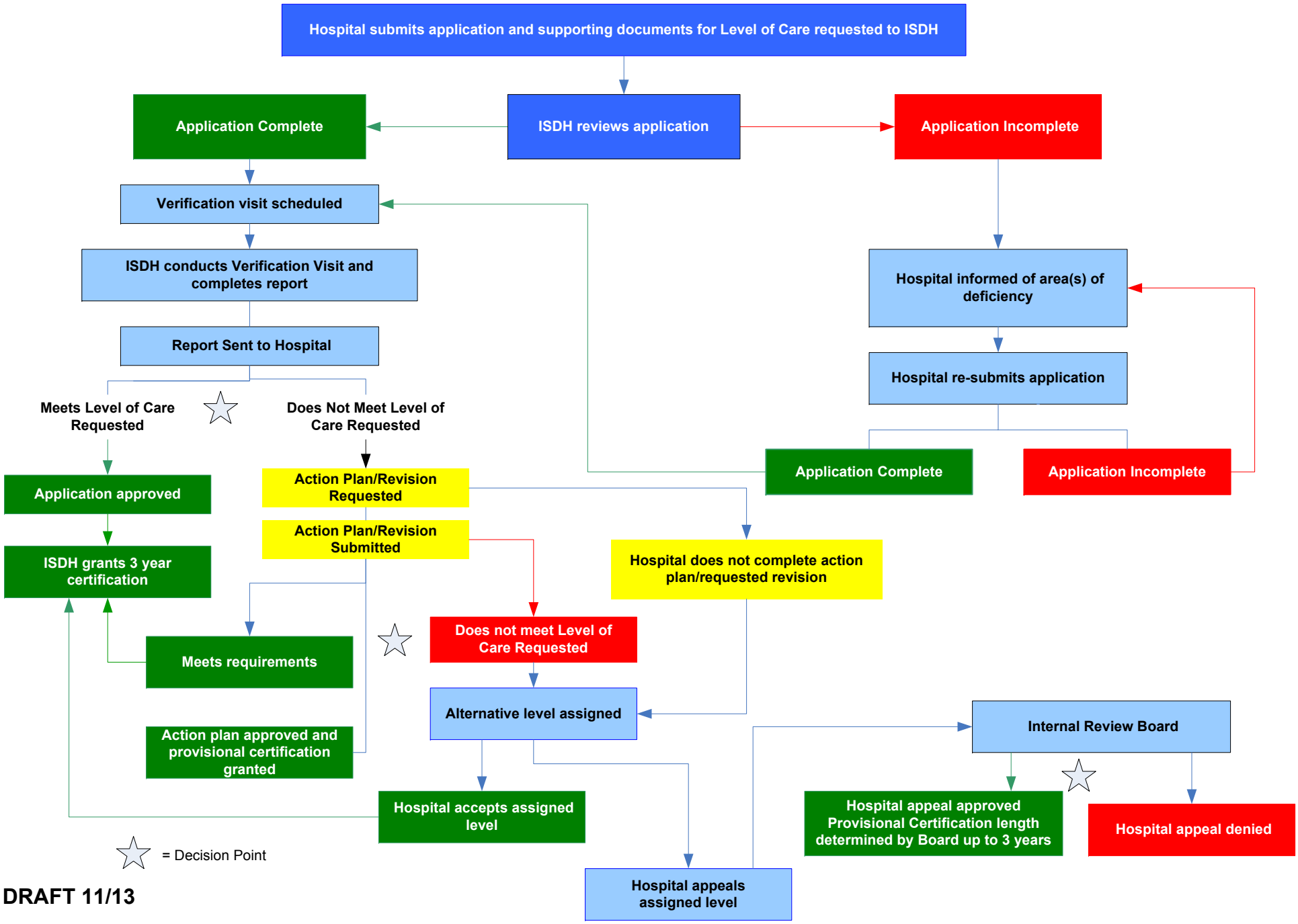
Resources
American Academy of Pediatrics www.aap.org • Guidelines for Perinatal Care 6th Edition • Perinatal Continuing Education Program • Neonatal Resuscitation Program • Guidelines for Air and Ground Transport of Neonatal and Pediatric Patients • Levels of Neonatal Care: Committee on Fetus and Newborn Pediatrics; originally published online August 27, 2012 http://pediatrics.aappublications.org/content/early/2012/08/22/peds.2012-1999
American Association of Critical Care Nurses (AACN) www.aacn.org
American College of Nurse Midwives (ACNM) www.midwife.org

Resources
American Congress of Obstetricians and Gynecologists www.acog.org • Current Guidelines for Perinatal Care
Association of Perioperative Registered Nurses www.aorn.org
Association of Women's Health Obstetric & Neonatal Nurses (AWHONN) www.awhonn.org • Fetal Heart Rate Monitoring Program • Perinatal Orientation Education Program • Neonatal Orientation Education Program • Guidelines for Professional Registered Nurse Staffing for Perinatal Units • Standards for Perinatal Nursing Practice and Certification in Canada
CDC Center for Disease Control www.cdc.gov
Indiana Code Article 15 Hospital Licensure Rules. Rule 1.4. Governing Board Responsibilities. 410 IAC 15-1.4-a Governing Board.
Indiana Mothers Milk Bank www.immilkbank.org
Indiana Perinatal Network (IPN) www.indianaperinatal.org
Indiana State Department of Health (ISDH) www.in.gov/isdh
International Lactation Consultants Association (ILCA) www.ilca.org
Healthstream www.healthstream.com
March of Dimes www.marchofdimes.com
National Association of Neonatal Nurses (NANN) www.nann.org
NICHD Eunice Kennedy Shriver National Institute of Child Health and Human Development www.nih.gov/about/almanac/organization/nichd.htm
Occupational Health and Safety Administration (OSHA) www.osha.gov
Peri-facts University of Rochester www.urmc.rochester.edu/ob-gyn/education/peri-facts
Sugar & Safe Care, Temperature, Airway, Blood Pressure, Lab Work, Emotional Support (S.T.A.B.L.E.) Program www.stableprogram.org
The Joint Commission www.jointcommission.org

Appendix C: Proposed Certification Process

Indiana Perinatal Standards of Care
Levels of Care Certification Process
Obstetrics: Levels I, II, III
Neonatal: Levels I, II, III, IV

DRAFT 11/13



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Appendix D: Levels of Care Survey Results

Levels of Care Hospital Survey 2012

SurveyMonkey

1. Hospital Name

	Response Count
	94
answered question	**94**
skipped question	**1**

2. Contact Person:

		Response Percent	Response Count
Name:		**100.0%**	**94**
Credentials:		96.8%	91
Title:		98.9%	93
Address:		**100.0%**	**94**
City:		**100.0%**	**94**
ZIP:		**100.0%**	**94**
Email Address:		**100.0%**	**94**
Phone Number:		96.8%	91
	answered question		**94**
	skipped question		**1**

3. Current Self Reported Level of Care - OB:

	Response Percent	Response Count
I	**44.1%**	**41**
II	35.5%	33
III	20.4%	19
	answered question	**93**
	skipped question	**2**

4. Current Self Reported Level of Care - Newborn

	Response Percent	Response Count
I	**36.6%**	**34**
IIA	22.6%	21
IIB	11.8%	11
IIIA	7.5%	7
IIIB	19.4%	18
IIIC	2.2%	2
	answered question	**93**
	skipped question	**2**

5. Number of births in calendar year 2011:

	Response Count
	92
answered question	**92**
skipped question	**3**

6. Average monthly census:

		Response Percent	Response Count
Normal newborn nursery (if applicable)		85.9%	73
NICU/SCN		**89.4%**	**76**
		answered question	**85**
		skipped question	**10**

7. Does your hospital currently belong to:

	Yes	No	Rating Count
Vermont Oxford Network	22.2% (20)	**77.8% (70)**	90
NICHD Neonatal Network	10.1% (9)	**89.9% (80)**	89
		answered question	**93**
		skipped question	**2**

8. 2.1 The hospital shall demonstrate its capability of providing uncomplicated and complicated obstetrical care through written standards, protocols, guidelines and training including the following:

	Yes	No	Rating Count
a) Managing unexpected obstetrical and neonatal problems.	**98.9% (90)**	1.1% (1)	91
b) Providing fetal monitoring, including internal scalp electrode monitoring.	**100.0% (90)**	0.0% (0)	90
c) Initiating an emergent cesarean delivery within 30 minutes of the decision to operate.	**100.0% (91)**	0.0% (0)	91
d) Selecting and managing obstetrical patients at a maternal risk level appropriate to its capability.	**100.0% (91)**	0.0% (0)	91
e) Providing critical care services appropriate for obstetrical patients, as demonstrated by having a critical care unit and a board-certified critical care specialist, readily available on a 24-hour basis.	**69.2% (63)**	30.8% (28)	91
f) Assuring availability of anesthesia, radiology, ultrasound, laboratory, and blood bank services on a 24-hour basis.	**95.6% (87)**	4.4% (4)	91
g) Determining the level of competence and qualifications required for staff to assume clinical responsibility for neonatal resuscitation 24 hours a day and 7 days a week.	**98.9% (90)**	1.1% (1)	91
h) Initiating maternal transports to an appropriate level.	**100.0% (91)**	0.0% (0)	91
i) Having a written plan for accepting level based maternal transports	**51.6% (47)**	48.4% (44)	91

j) Having written plan for consultation and transfer arrangements.	**83.3% (75)**	16.7% (15)	90

Comments:	17
answered question	**91**
skipped question	**4**

9. 2.2 Hospital shall follow current CDC/ACOG recommendations regarding induction of labor, Group B streptococci (GBS) treatment, and HIV treatment.

		Response Percent	Response Count
Yes		**96.7%**	**88**
No		3.3%	3
	Comments:		5
	answered question		**91**
	skipped question		**4**

10. 2.3 The hospital shall have genetic diagnostic and counseling services or policy for consultation referrals for these services in place.

		Response Percent	Response Count
Yes		**68.5%**	**61**
No		31.5%	28
	Comments:		15
	answered question		**89**
	skipped question		**6**

11. 2.4 The hospital shall have a laboratory capable of performing fetal lung maturity tests.

		Response Percent	Response Count
Yes		**59.6%**	**53**
No		40.4%	36
		Comments:	21
		answered question	**89**
		skipped question	**6**

12. 2.5 The hospital shall have a full range of invasive maternal monitoring available to the delivery area, including equipment for central venous pressure and arterial pressure monitoring.

		Response Percent	Response Count
Yes		**55.6%**	**50**
No		44.4%	40
		Comments:	15
		answered question	**90**
		skipped question	**5**

13. 3.1 A provider board-certified or an active candidate for board-certification in obstetrics/gynecology or family medicine shall be a member of the medical staff and have responsibility for programmatic management of obstetrical services.* *It is the responsibility of the hospital boards to establish criteria for credentialing and privileging within the perinatal area.

		Response Percent	Response Count
Yes		98.9%	88
No		1.1%	1
		Comments:	1
		answered question	89
		skipped question	6

14. 3.2 A provider board-certified in obstetrics/gynecology shall be a member of the medical staff and have responsibility for programmatic management of obstetrical services.

		Response Percent	Response Count
Yes		88.8%	79
No		11.2%	10
		Comments:	3
		answered question	89
		skipped question	6

15. 3.3 A provider (or providers) board-certified or an active candidate for board-certification in maternal-fetal medicine, shall be a member of the medical staff and have responsibility for programmatic management of high-risk obstetrical services.

	Response Percent	Response Count
Yes	42.5%	37
No	**57.5%**	**50**
	Comments:	19
	answered question	**87**
	skipped question	**8**

16. 3.4 A board-certified nurse-midwife with obstetrical privileges may be a member of the obstetrical staff in collaboration with a licensed physician with obstetrical privileges.

	Response Percent	Response Count
Yes	40.9%	36
No	**59.1%**	**52**
	Comments:	18
	answered question	**88**
	skipped question	**7**

17. 3.5 A provider board-certified or an active candidate for board-certification in anesthesiology shall be a member of the medical staff and have responsibility for programmatic management of obstetrical anesthesia services.

		Response Percent	Response Count
Yes		**91.0%**	**81**
No		9.0%	8
		Comments:	2
		answered question	**89**
		skipped question	**6**

18. 3.6 If hospital provides anesthesia, the service should meet the needs of the patients served, within the scope of the service offered, in accordance with acceptable standards of practice, and under the direction of a qualified physician (IAC 410 15-1.6-1). Anesthesia personnel should be available as listed below:

	Yes	No	Rating Count
a) A qualified provider in anesthesiology or a certified registered nurse anesthetist (CRNA) under the direction of an operating practitioner or qualified physician shall be readily available to the delivery area when a patient is in active labor.	**98.9% (88)**	1.1% (1)	89
b) A qualified provider in anesthesiology or a certified registered nurse anesthetist (CRNA) under the direction of an operating physician or qualified physician, shall be present in-house 24 hours a day and readily available to the delivery area.	40.4% (36)	**59.6% (53)**	89
		Comments:	12
		answered question	**89**
		skipped question	**6**

19. 3.7 The hospital shall have appropriately qualified medical staff available to read ultrasounds 24 hours a day.

		Response Percent	Response Count
Yes		**88.9%**	**80**
No		11.1%	10
		Comments:	5
		answered question	**90**
		skipped question	**5**

20. 3.8 The hospital shall have a physician on the medical staff with privileges for providing critical interventional radiology services for obstetrical patients.

		Response Percent	Response Count
Yes		**52.3%**	**45**
No		47.7%	41
		Comments:	9
		answered question	**86**
		skipped question	**9**

21. 3.9 A hospital perinatal program shall have:

	Yes	No	Rating Count
a) a registered nurse with advanced obstetrical experience and a master’s degree identified for staff education. (Guidelines for Perinatal Care, 6th edition, p.32)	34.4% (31)	**65.6% (59)**	90
b) an Advanced Practice Nurse (a Clinical Nurse Specialist [CNS] or Nurse Practitioner [NP]): a registered nurse with a master's degree who, through study and supervised practice at the graduate level, has become expert in the theory and practice of obstetric nursing.	34.4% (31)	**65.6% (59)**	90
		Comments:	21
		answered question	**90**
		skipped question	**5**

22. 3.10 The hospital shall have appropriately qualified nursing personnel in adequate numbers to meet the needs of each patient in accordance with the care setting including:

	Yes	No	Rating Count
a) A registered nurse with demonstrated training and experience in the assessment, evaluation and care of patients in labor present at all deliveries.	**100.0% (90)**	0.0% (0)	90
b) A registered nurse skilled in the recognition and nursing management of the complications of labor and delivery readily available if needed to the labor and delivery unit 24 hours a day.	**100.0% (90)**	0.0% (0)	90
c) A registered nurse skilled in the recognition and management of complications in women and newborns readily available to the obstetrical unit 24 hours a day.	**100.0% (90)**	0.0% (0)	90
d) A registered nurse with demonstrated training and experience in the assessment, evaluation and care of newborns readily available to the unit	**100.0% (89)**	0.0% (0)	89
		Comments:	1
		answered question	**90**
		skipped question	**5**

23. 3.11 A qualified provider or certified nurse-midwife (with obstetrical privileges) with appropriate training and expertise shall be readily available to the delivery area when a patient is in active labor.

		Response Percent	Response Count
Yes		96.6%	85
No		3.4%	3
		Comments:	2
		answered question	88
		skipped question	7

24. 3.12 At least one person capable of initiating neonatal resuscitation shall be present at every delivery.

		Response Percent	Response Count
Yes		100.0%	90
No		0.0%	0
		Comments:	2
		answered question	90
		skipped question	5

25. 3.13 The hospital will establish internal guidelines for obtaining consultation with a physician board-certified in maternal-fetal medicine 24 hours a day.

	Response Percent	Response Count
Yes	**88.6%**	**78**
No	11.4%	10
	Comments:	7
	answered question	**88**
	skipped question	**7**

26. 3.14 The hospital shall have a maternal-fetal medicine physician on the medical staff in active practice and, if needed, in house within 30 minutes.* (This standard intends to assure timely assessment and intervention for pregnant women with rapidly deteriorating clinical status related to underlying medical conditions that are not routinely encountered by board-certified Ob/Gyn's, such as cardiovascular collapse, respiratory failure and neurologic compromise. Hospitals with 24/7 in-house intensivists may request a waiver of this standard.)

	Response Percent	Response Count
Yes	30.2%	26
No	**69.8%**	**60**
	Comments:	16
	answered question	**86**
	skipped question	**9**

27. 3.15 The hospital shall have appropriate personnel available within 30 minutes for emergency cesarean sections.

		Response Percent	Response Count
Yes		**100.0%**	**88**
No		0.0%	0
		Comments:	0
		answered question	**88**
		skipped question	**7**

28. 3.16 Hospitals offering a trial of labor for patients with a prior cesarean delivery must have immediately available anesthesia, cesarean section, and neonatal resuscitation capability during the trial of labor.

		Response Percent	Response Count
Yes		**82.1%**	**69**
No		17.9%	15
		Comments:	23
		answered question	**84**
		skipped question	**11**

29. 3.17 A provider board-certified or an active candidate for board certification in obstetrics/gynecology or family medicine (with obstetrical privileges) shall be readily available to the delivery area when a patient is in active labor.

	Response Percent	Response Count
Yes	**97.7%**	**86**
No	2.3%	2
Comments:		2
answered question		**88**
skipped question		**7**

30. 3.18 A provider board-certified or an active candidate for board-certification in obstetrics/gynecology shall be present in-house 24 hours a day and immediately available to the delivery area when a patient is in active labor.

	Response Percent	Response Count
Yes	31.5%	28
No	**68.5%**	**61**
Comment:		12
answered question		**89**
skipped question		**6**

31. 3.19 A provider board-certified or an active candidate for board certification in anesthesiology or a nurse-anesthetist shall be readily available so that cesarean delivery may be initiated per hospital protocol.

	Response Percent	Response Count
Yes	**94.4%**	**84**
No	5.6%	5
	Comments:	1
	answered question	**89**
	skipped question	**6**

32. 3.20 The maternity service has immediate access to the hospital's laboratory services including 24-hour capability to provide blood group, Rh type, cross-matching, antibody testing and basic emergency laboratory evaluations, and either ABO-Rh-specific or O-Rh-negative blood and fresh frozen plasma and cryoprecipitate at the facility at all times.

	Response Percent	Response Count
Yes	**95.4%**	**83**
No	4.6%	4
	Comments:	5
	answered question	**87**
	skipped question	**8**

33. 4.1 The hospital shall have appropriately qualified pharmacy personnel in adequate numbers to meet the needs of each patient in accordance with the care setting including: IAC 15-1.5-7(3)

	Yes	No	Rating Count
a) Registered pharmacist available for telephone consultation 24 hours per day and 7 days per week.	**100.0% (89)**	0.0% (0)	89
b) Registered pharmacist available 24 hours per day and 7 days per week.	**77.3% (68)**	22.7% (20)	88
c) Registered pharmacist with experience in perinatal/neonatal pharmacology available 24 hours per day and 7 days per week.	**54.0% (47)**	46.0% (40)	87
		Comments:	10
		answered question	**89**
		skipped question	**6**

34. 4.2 The hospital shall have a registered dietician or other health care professional with knowledge of and experience in adult parenteral / enteral nutrition management on staff.

		Response Percent	Response Count
Yes		**100.0%**	**88**
No		0.0%	0
		Comments:	0
		answered question	**88**
		skipped question	**7**

35. 4.3 The hospital shall provide lactation support per AWHONN and ILCA recommendation. How many lactation FTE (International Board Certified Lactation Consultant [IBCLC]) does your hospital employ?

	Response Count
	88
answered question	**88**
skipped question	**7**

36. 4.4 The hospital shall have a licensed social worker or RN Case Manager with experience in psychosocial assessment and intervention with women and their families readily available to the perinatal service.

		Response Percent	Response Count
Yes		**93.3%**	**83**
No		6.7%	6
		Comments:	4
		answered question	**89**
		skipped question	**6**

37. 4.5 The hospital shall have at least one staff member with expertise in bereavement responsible for the hospital's bereavement activities, including a systemic approach to ensuring that individuals in need receive the appropriate services.

		Response Percent	Response Count
Yes		**85.4%**	**76**
No		14.6%	13
		Comments:	7

answered question	**89**
skipped question	**6**

38. 4.6 A registered nurse shall supervise licensed practical nurses and other licensed patient care staff who demonstrate knowledge and clinical competence in the nursing care of women, fetuses, and newborns during labor, delivery, and the postpartum and neonatal periods.

		Response Percent	Response Count
Yes		**87.1%**	**74**
No		12.9%	11
		Comments:	20

answered question	**85**
skipped question	**10**

39. 4.7 Blood bank technicians shall be immediately available 24 hours a day.

		Response Percent	Response Count
Yes		**98.9%**	**87**
No		1.1%	1
		Comments:	1
		answered question	**88**
		skipped question	**7**

40. 5.1 The hospital shall have equipment for performing interventional radiology services for obstetrical patients.

		Response Percent	Response Count
Yes		**62.7%**	**52**
No		37.3%	31
		Comments:	8
		answered question	**83**
		skipped question	**12**

41. 5.2 The hospital will have the following equipment available and the capability to use as indicated:

	Yes	No	Rating Count
a) Non-stress and stress testing	**100.0% (89)**	0.0% (0)	89
b) Ultrasonography examinations	**100.0% (89)**	0.0% (0)	89
c) Amniocentesis	**88.8% (79)**	11.2% (10)	89
d) Portable obstetric ultrasonography equipment, with the services of appropriate support staff, shall be available in the delivery area	**97.8% (87)**	2.2% (2)	89
e) Cardioversion / defibrillation capability for mothers	**97.8% (87)**	2.2% (2)	89
f) Resuscitation equipment for mothers	**100.0% (89)**	0.0% (0)	89
g) Adult bag and mask systems capable of delivering a controlled concentration of oxygen	**100.0% (89)**	0.0% (0)	89
h) Orotracheal tubes, endotracheal tubes in a range of sizes for adult intubation	**100.0% (89)**	0.0% (0)	89
i) Wall suction and aspiration equipment	**100.0% (89)**	0.0% (0)	89
j) Laryngoscopes	**100.0% (89)**	0.0% (0)	89
k) Blood pressure cuffs in full range of sizes, for manual and machine use	**100.0% (89)**	0.0% (0)	89
l) Pulse oximeter	**100.0% (89)**	0.0% (0)	89
m) Arterial blood gas machine	**97.7% (86)**	2.3% (2)	88
n) Fiberoptic scopes for awake intubation	**94.3% (83)**	5.7% (5)	88
o) Arterial line kits	**91.0% (81)**	9.0% (8)	89

p) Central venous line kits	**95.5% (85)**	4.5% (4)	89
q) Invasive hemodynamic monitoring equipment	**84.3% (75)**	15.7% (14)	89
r) Adult echocardiography equipment	**89.9% (80)**	10.1% (9)	89
s) Individual oxygen, air O2 blended and humidified capability, and suction outlets	**100.0% (89)**	0.0% (0)	89
t) Emergency call system	**100.0% (89)**	0.0% (0)	89
		Comments:	6

answered question	**89**
skipped question	**6**

42. 6.1 All emergency resuscitation medications and equipment needed to initiate and maintain resuscitation shall be present in the delivery area in accordance with Advanced Cardiac Life Support (ACLS), Neonatal Resuscitation Program.

		Response Percent	Response Count
Yes		**98.8%**	**81**
No		1.2%	1
		Comments:	4

answered question	**82**
skipped question	**13**

43. 6.2 The following medications shall be in the delivery area or immediately available to the delivery area:

	Yes	No	Rating Count
a) Oxytocin (Pitocin)	**100.0% (89)**	0.0% (0)	89
b) Methylergonovine (Methergine)	**98.9% (88)**	1.1% (1)	89
c) 15-methyl prostaglandin F2 (Prostin)	**84.7% (72)**	15.3% (13)	85
d) Misoprostol	**100.0% (88)**	0.0% (0)	88
e) Carboprost tromethamine (Hemabate)	**100.0% (88)**	0.0% (0)	88
f) Narcotics	**100.0% (89)**	0.0% (0)	89
g) Antibiotics	**100.0% (89)**	0.0% (0)	89
h) Magnesium sulfate	**100.0% (89)**	0.0% (0)	89
i) Naloxone	**100.0% (88)**	0.0% (0)	88
j) Lorazepam	**100.0% (88)**	0.0% (0)	88
		Comments:	3

answered question	**89**
skipped question	**6**

44. 7.1 The hospital shall demonstrate its capability of providing neonatal care through written standards, protocols, guidelines, and training, that include the following:

	Yes	No	Rating Count
a) Providing resuscitation and stabilization of unexpected neonatal problems according to the most current Neonatal Resuscitation Program (NRP) guidelines.	**100.0% (90)**	0.0% (0)	90
b) Selecting and managing neonatal patients at a neonatal risk level appropriate to its capability.	**98.9% (89)**	1.1% (1)	90
c) Managing all neonatal patients including those requiring advanced modes of neonatal ventilation and life-support; pediatric subspecialty services; and pediatric subspecialty surgical services at the site or a closely related institution by prearranged consultative agreement	**60.7% (54)**	39.3% (35)	89
d) Managing all neonatal patients including those requiring advanced modes of neonatal ventilation and life-support; pediatric medical subspecialty services; and pediatric subspecialty surgical services such as pediatric cardio-thoracic open-heart surgery and pediatric neurosurgery within the institution	20.0% (18)	**80.0% (72)**	90
		Comments:	18
		answered question	**90**
		skipped question	**5**

45. 7.2 The hospital shall have equipment for performing interventional radiology services for neonatal patients.

		Response Percent	Response Count
Yes		43.2%	38
No		**56.8%**	**50**
		Comments:	8
		answered question	**88**
		skipped question	**7**

46. 7.3 The following medications shall be immediately available to the neonatal units:

	Yes	No	Rating Count
a) Antibiotics, anticonvulsants, and emergency cardiovascular drugs.	**96.7% (87)**	3.3% (3)	90
b) Surfactant, prostaglandin E1.	**64.0% (57)**	36.0% (32)	89
		Other (please specify)	9
		answered question	**90**
		skipped question	**5**

47. 7.4 Hospital shall follow current CDC/AAP/ACOG recommendations related to the care of the newborn including but not limited to such areas as: Group Streptococci, HIV, positioning, circumcision.

		Response Percent	Response Count
Yes		**96.7%**	**87**
No		3.3%	3
		Comments:	4
		answered question	**90**
		skipped question	**5**

48. 8.1 The hospital shall have appropriately qualified neonatal medical staff personnel, available as listed below:

	Yes	No	Rating Count
a) The hospital shall have consulting relationships in place with a pediatric cardiologist, a surgeon and an ophthalmologist who has experience and expertise in neonatal retinal examination.	**79.8% (71)**	20.2% (18)	89
b) The hospital shall have access to pediatric ophthalmology services.	**69.3% (61)**	30.7% (27)	88
c) The hospital shall have availability to perform stat and routine cardiac echo and EEGs 24 hours a day and 7 days a week, and available interpretation for stat cardiac echo within 1 hour and for routine studies within 24 hours.	**60.7% (54)**	39.3% (35)	89
d) The hospital shall have prompt and readily available access to a full range of pediatric medical subspecialists, pediatric surgical specialists, anesthesiologists with pediatric experience, and pediatric ophthalmologists at the site or at a closely related institution by prearranged consultative agreement	**57.3% (51)**	42.7% (38)	89
e) The hospital shall maintain a full range of pediatric medical subspecialists, pediatric surgical subspecialists, and anesthesiologists with pediatric experience at the site	12.4% (11)	**87.6% (78)**	89
f) The hospital shall be located within an institution with the capability to provide on-site pediatric surgical care of complex congenital or acquired conditions	16.9% (15)	**83.1% (74)**	89
		Comments;	11

answered question	89
skipped question	6

49. 8.2 A provider board-certified in pediatrics or family medicine shall be a member of the medical staff, have privileges for neonatal care, and have responsibility for programmatic management for neonatal unit services.

	Response Percent	Response Count
Yes	90.7%	78
No	9.3%	8
Comments:		5

answered question	86
skipped question	9

50. 8.3 A provider board-certified in pediatrics or in neonatal-perinatal medicine shall be a member of the medical staff, have privileges for neonatal care, and have responsibility for neonatal unit services.

	Response Percent	Response Count
Yes	78.6%	66
No	21.4%	18
Comments:		8

answered question	84
skipped question	11

51. 8.4 A provider(s) board-certified in neonatal-perinatal medicine shall be a member of the medical staff and have full-time responsibility for neonatal special care or intensive care unit services.

	Response Percent	Response Count
Yes	48.3%	43
No	**51.7%**	**46**
	Comments:	2
	answered question	**89**
	skipped question	**6**

52. 8.5 The hospital shall have prearranged consultative agreements with a board-certified neonatologist 24 hours a day.

	Response Percent	Response Count
Yes	**83.5%**	**71**
No	16.5%	14
	Comments:	12
	answered question	**85**
	skipped question	**10**

53. 8.6 Neonatal Resuscitation Program (NRP) trained professional(s) shall be immediately available to the delivery and neonatal units.

	Response Percent	Response Count
Yes	**100.0%**	**88**
No	0.0%	0
	Comments:	1
	answered question	**88**
	skipped question	**7**

54. 8.7 A provider who has completed postgraduate pediatric training, a nurse practitioner, family physician or physician assistant with privileges for neonatal care appropriate to the level of the nursery shall be available when an infant requires Level II neonatal services such as FiO2>40%, assisted ventilation, or cardiovascular support.

	Response Percent	Response Count
Yes	**75.3%**	**64**
No	24.7%	21
	Comments:	9
	answered question	**85**
	skipped question	**10**

55. 8.8 A Pediatrician who has completed pediatric residency training, a nurse practitioner or physician assistant with adequate NICU training and experience, with privileges for neonatal care appropriate to the level of the nursery, shall be physically present in-house 24 hours a day and assigned to the delivery area and neonatal units and not shared with other units in the hospital.

	Response Percent	Response Count
Yes	19.3%	17
No	**80.7%**	**71**
	Comments:	14
	answered question	**88**
	skipped question	**7**

56. 8.9 A board-certified provider or an active candidate for board-certification in neonatology shall be available to be present in-house within 30 minutes.

	Response Percent	Response Count
Yes	49.4%	43
No	**50.6%**	**44**
	Comments:	5
	answered question	**87**
	skipped question	**8**

57. 8.10 The hospital shall have:

	Yes	No	Rating Count
a) a prearranged written plan with a neurodevelopmental follow-up clinic or neurodevelopmental practice	44.2% (38)	**55.8% (48)**	86
b) a neurodevelopmental follow-up clinic or practice	28.7% (25)	**71.3% (62)**	87
		Comments:	8
		answered question	**89**
		skipped question	**6**

58. 8.11 The hospital shall have a provider on the medical staff with privileges for providing critical interventional radiology services for neonatal patients.

		Response Percent	Response Count
Yes		24.1%	21
No		**75.9%**	**66**
		Comments:	6
		answered question	**87**
		skipped question	**8**

59. 8.12 The hospital shall have appropriately qualified neonatal personnel in adequate numbers to meet the needs of each patient in accordance with the care setting:

	Yes	No	Rating Count
a) A readily available, in-house registered nurse with demonstrated training and experience in the assessment, evaluation and care of normal newborns.	**100.0% (89)**	0.0% (0)	89
b) A registered nurse skilled in the recognition and nursing management of the neonate with complications on the unit 24 hours a day.	**95.5% (85)**	4.5% (4)	89
c) An Advanced Practice Nurse (a Clinical Nurse Specialist [CNS] or Nurse Practitioner [NP]): a registered nurse with a master's degree who, through study and supervised practice at the graduate level, has become expert in the theory and practice of neonatal nursing	34.1% (30)	**65.9% (58)**	88
d) A Neonatal Nurse Practitioner (NNP) who manages a caseload of neonatal patients with consultation, collaboration, and medical supervision by a Neonatologist and may exercise independent judgment in the assessment and diagnosis of infants and in the performance of certain delegated procedures.	27.0% (24)	**73.0% (65)**	89
		Comments:	7

answered question	**89**
skipped question	**6**

60. 8.13 The hospital shall have respiratory therapists who are:

	Yes	No	Rating Count
a) experienced in the delivery of continuous positive airway pressure and/or mechanical ventilation or both readily available	**93.3% (83)**	6.7% (6)	89
b) skilled in neonatal ventilator care and management assigned to the NICU and not shared with other units when any patient is receiving assisted positive pressure ventilation, high-frequency ventilation, and/or inhaled nitric oxide, 24 hours a day	26.1% (23)	**73.9% (65)**	88
		Comments:	10

answered question	**89**
skipped question	**6**

61. 8.14 A hospital providing neonatal surgical services shall have nurses on staff with special expertise in perioperative management of neonates.

	Response Percent	Response Count
Yes	14.1%	12
No	**85.9%**	**73**
	Comments:	20

answered question	**85**
skipped question	**10**

62. 8.15 The hospital shall provide lactation support per AWHONN and ILCA recommendation. How many lactation FTE (International Board Certified Lactation Consultant [IBCLC]) does your hospital employ?

	Response Count
	87
answered question	**87**
skipped question	**8**

63. 8.16 The hospital shall have a full-time International Board Certified Lactation Consultant with experience in lactation support for the mother of a preterm infant.

		Response Percent	Response Count
Yes		**55.2%**	**48**
No		44.8%	39
	Comments:		18
answered question			**87**
skipped question			**8**

64. 8.17 The hospital shall have a licensed social worker or RN Case Manager, with experience in psychosocial assessment and intervention with women and their families who is:

	Yes	No	Rating Count
a) readily available	**92.0% (80)**	8.0% (7)	87
b) dedicated to the perinatal service	36.4% (32)	**63.6% (56)**	88
		Comments:	7

answered question	**89**
skipped question	**6**

65. 8.18 The hospital shall have Physical Therapist and/or Occupational Therapist with additional Continuing Education Units in the area of neonatal care, as a member of the interdisciplinary care team.

	Response Percent	Response Count
Yes	42.0%	37
No	**58.0%**	**51**
	Comments:	5

answered question	**88**
skipped question	**7**

66. 8.19 The hospital shall have a Speech Therapist, with additional Continuing Education Units in the area of neonatal care, as a member of the interdisciplinary care team.

		Response Percent	Response Count
Yes		37.5%	33
No		**62.5%**	**55**
		Comments:	5
		answered question	**88**
		skipped question	**7**

67. 8.20 The hospital perinatal and neonatal nursing services shall have a director that is a registered nurse with a Master's or higher level degree and experience in obstetric or neonatal nursing care for low and high-risk patients who is responsible for management activities in the maternity and newborn care units (Guidelines for Perinatal Care 6th ed., pg. 32).

		Response Percent	Response Count
Yes		36.0%	32
No		**64.0%**	**57**
		Comments:	22
		answered question	**89**
		skipped question	**6**

68. 8.21 A hospital perinatal program shall have a registered nurse with advanced neonatal experience and a master's degree identified for staff education.

	Response Percent	Response Count
Yes	29.2%	26
No	**70.8%**	**63**
	Comments:	22
	answered question	**89**
	skipped question	**6**

69. 9.1 Portable ultrasonography for newborns, with the services of appropriate support staff, shall be available to the neonatal units.

	Response Percent	Response Count
Yes	**84.9%**	**73**
No	15.1%	13
	Comments:	4
	answered question	**86**
	skipped question	**9**

70. 9.2 Computerized tomography (CT) capability, with the services of appropriate support staff, shall be available on campus.

		Response Percent	Response Count
Yes		**88.6%**	**78**
No		11.4%	10
		Comments:	2
		answered question	**88**
		skipped question	**7**

71. 9.3 Magnetic resonance imaging (MRI) capability, with the services of appropriate support staff, shall be available on campus.

		Response Percent	Response Count
Yes		**83.9%**	**73**
No		16.1%	14
		Comments:	3
		answered question	**87**
		skipped question	**8**

72. 9.4 Neonatal echocardiography equipment and experienced technician with interpretation by pediatric cardiologist shall be immediately available.

	Response Percent	Response Count
Yes	**50.0%**	**44**
No	**50.0%**	**44**
	Comments:	10
	answered question	**88**
	skipped question	**7**

73. 9.5 The hospital shall have a pediatric cardiac catheterization laboratory and appropriate staff.

	Response Percent	Response Count
Yes	5.6%	5
No	**94.4%**	**84**
	Comments:	2
	answered question	**89**
	skipped question	**6**

74. 9.6 Portable x-ray equipment, with the services of appropriate support staff, shall be available to the neonatal units.

	Response Percent	Response Count
Yes	**100.0%**	**89**
No	0.0%	0
Comments:		1
answered question		**89**
skipped question		**6**

75. 9.7 Blood bank technicians shall be present in-house 24 hours a day.

	Response Percent	Response Count
Yes	**97.8%**	**87**
No	2.2%	2
Comments:		1
answered question		**89**
skipped question		**6**

76. 10.1 The hospital shall obtain and maintain current equipment and technology, as described in these standards, to support optimal neonatal care for the level of care of the hospitals designation.

		Response Percent	Response Count
Yes		**100.0%**	**84**
No		0.0%	0
		Comments;	0
		answered question	**84**
		skipped question	**11**

77. 10.2 The hospital shall have all of the following equipment and supplies immediately available for existing patients and for the next potential patient:

	Yes	No	Rating Count
a) O2 analyzer	**100.0% (89)**	0.0% (0)	89
b) Stethoscope	**100.0% (89)**	0.0% (0)	89
c) Intravenous infusion pumps with appropriate drug libraries	**96.6% (86)**	3.4% (3)	89
d) Radiant heated bed in delivery room and available in the neonatal units	**100.0% (89)**	0.0% (0)	89
e) Oxygen hood with humidity	**100.0% (89)**	0.0% (0)	89
f) Pediatric bag and masks capable of delivering a controlled concentration of oxygen to the infant	**100.0% (89)**	0.0% (0)	89
g) Orotracheal tubes	**100.0% (89)**	0.0% (0)	89
h) Aspiration equipment	**100.0% (89)**	0.0% (0)	89
i) Laryngoscope	**100.0% (89)**	0.0% (0)	89
j) Umbilical vessel catheters and insertion tray	**100.0% (89)**	0.0% (0)	89
k) Cardiac monitor	**95.5% (85)**	4.5% (4)	89
l) Pulse oximeter	**100.0% (89)**	0.0% (0)	89
m) Phototherapy unit	**98.9% (88)**	1.1% (1)	89
n) Doppler blood pressure for neonates	**68.5% (61)**	31.5% (28)	89
o) Cardioversion/defibrillation capability for neonates	**75.0% (66)**	25.0% (22)	88
p) Resuscitation equipment for neonates	**100.0% (89)**	0.0% (0)	89
q) Individual oxygen, air O2			

blended and humidified capability, and suction outlets for mothers and neonates	**97.8% (87)**	2.2% (2)	89
r) Emergency call system	**100.0% (89)**	0.0% (0)	89
s) Bowel bags	**71.3% (62)**	28.7% (25)	87
		Comments:	6
		answered question	**89**
		skipped question	**6**

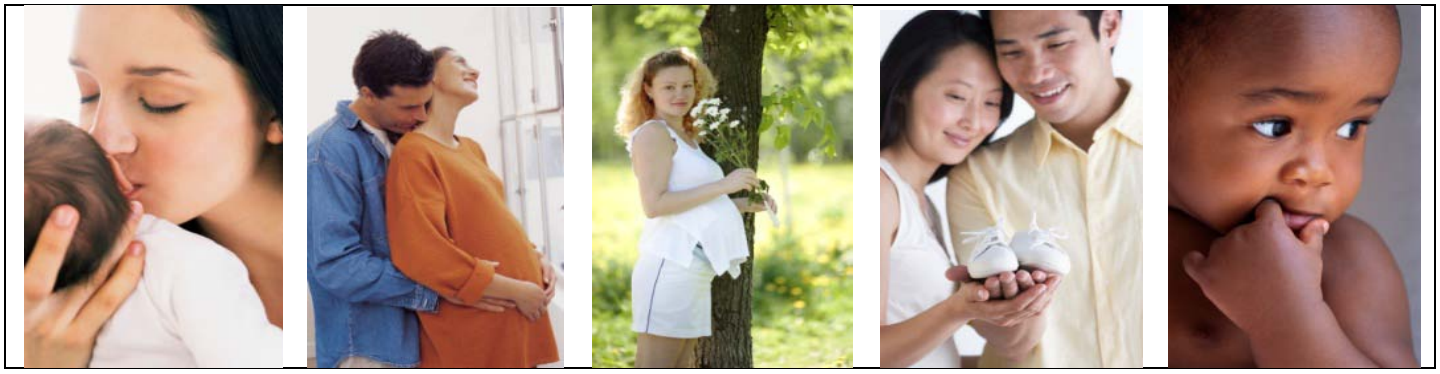
78. 11.1 The following medications shall be immediately available to the neonatal units:

	Yes	No	Rating Count
a) antibiotics, anticonvulsants, and emergency cardiovascular drugs	**98.9% (88)**	1.1% (1)	89
b) surfactant, prostaglandin E1	**64.4% (56)**	35.6% (31)	87
		Comments:	8
		answered question	**89**
		skipped question	**6**

79. 11.2 Emergency medications, as listed in the Neonatal Resuscitation program of the American Academy of Pediatrics/ American Heart Association (AAP/AHA), shall be immediately available in the delivery area and neonatal units.

		Response Percent	Response Count
Yes		**97.8%**	**87**
No		2.2%	2
		Comments:	1
		answered question	**89**
		skipped question	**6**

Appendix E: Transport Survey Results



Indiana Perinatal Quality Improvement Collaborative
Transport Survey Results

July 2013

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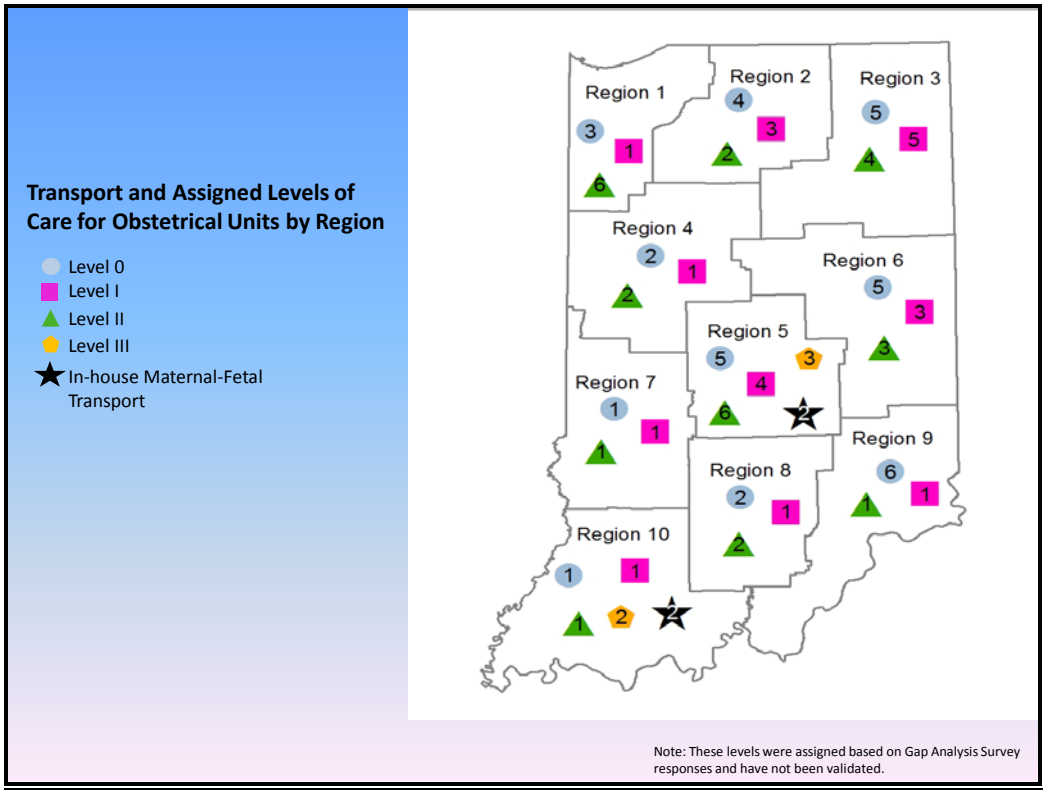
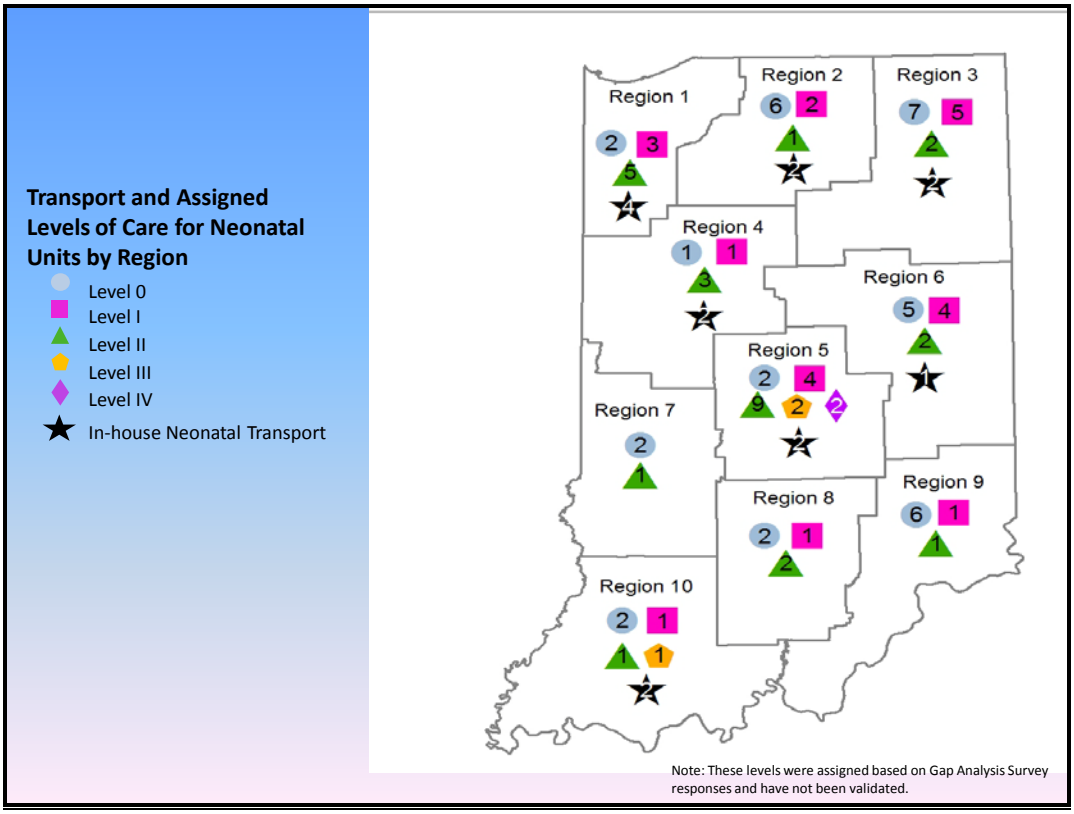
OVERVIEW

In the Spring of 2013, a survey was distributed to all Indiana delivery hospitals to assess their capacity to provide transport services for the maternal-fetal and neonatal population. The questions were developed by members of the System Development Committee, Transport Subcommittee who are part of the Indiana Perinatal Quality Improvement Collaborative (IPQIC). The draft survey was piloted by five hospitals to ensure questions were clearly articulated and choice of answers was reflective of current practice.

In Phase One, the survey was sent directly to the nurse manager and the CEO of the 93 delivery hospitals in Indiana. Surveys were returned by eighty-nine hospitals. All hospitals provided demographic information and identified whether they had in-house (physically present) maternal-fetal or neonatal transport teams. If the hospitals did not have an in-house team they were excused from completing the remainder of the survey. For purpose of analysis, the extended survey was focused on the hospitals with in-house transport teams. In Phase Two, the surveys will be distributed to Ambulance Services identified by hospitals without in-house transport teams.

Fifteen hospitals identified themselves as having in-house transport teams. All fifteen had neonatal in-house transport teams and four of the fifteen hospitals had maternal-fetal transport teams. The regions represented in the following two maps are the Indiana Emergency Preparedness Regions.



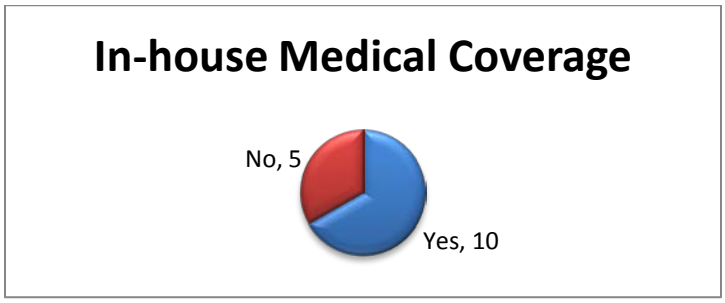


The questions and the responses of the hospitals to each of the survey questions are included in the following areas: Neonatal Transports, Maternal-Fetal Transports, Policies and Procedures and Quality Improvement.

NEONATAL TRANSPORT

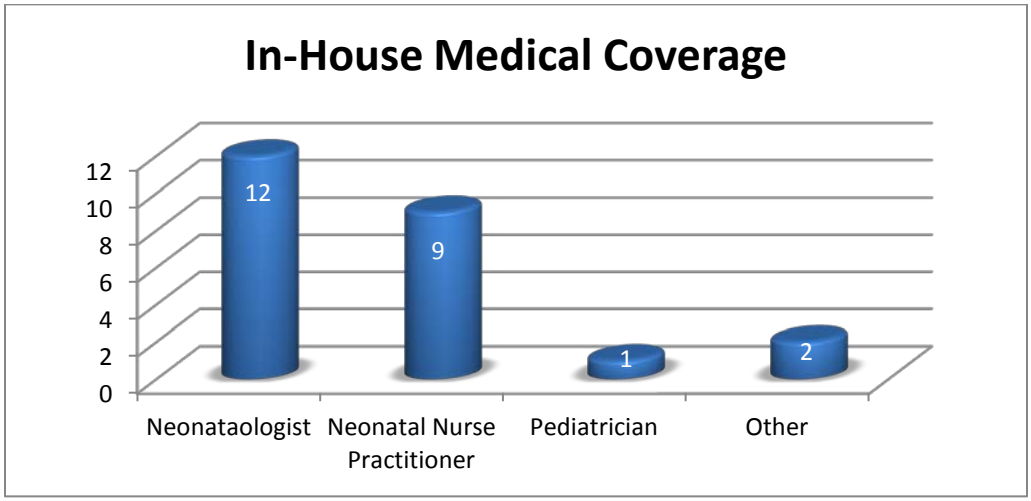
1. Do you have in-house medical coverage 24/7/365?

Ten of the fifteen hospitals indicated they had in-house medical coverage 24/7/365. The other five hospitals identified that coverage was available within 30 minutes.



2. Who provides the in-house medical coverage? Check all that apply.

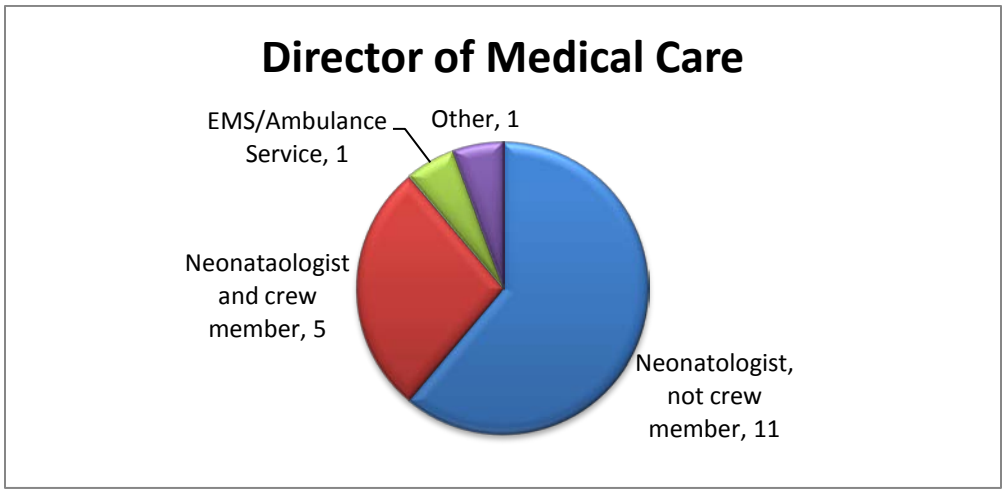
The majority of hospitals (12) indicated that the neonatologist provided the in-house medical care. Nine hospitals identified the neonatal nurse practitioner as also providing coverage. One hospital indicated that a pediatrician provided in-house coverage. Other responses included an obstetrician-anesthesiologist and another indicated a neonatologist that was within 15 minutes of the hospital.



3. Who directs the medical care during neonatal transports? Check all that apply.

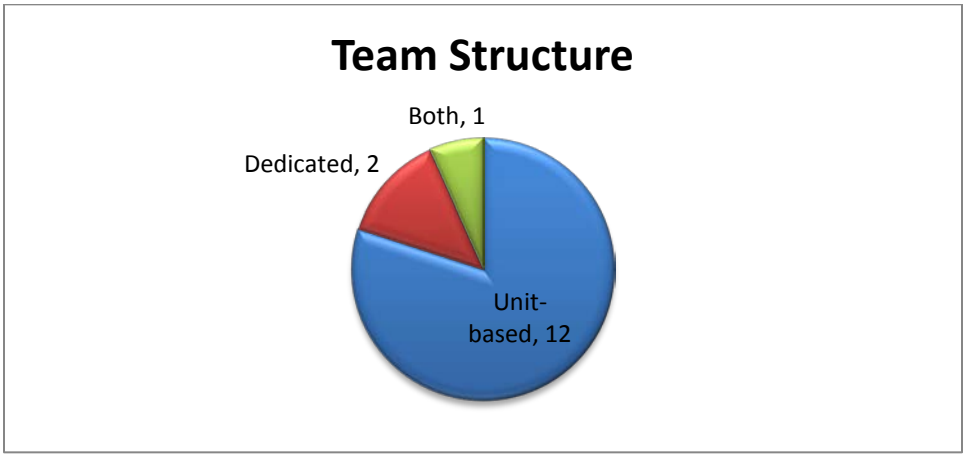
Eleven hospitals identified the neonatologist but not a crew member as directing the medical care. Five hospitals identified that the neonatologist is sometimes part of the crew.

One hospital indicated that the EMS/Ambulance Service directs the care. One other hospital identified a pediatrician as directing medical care.



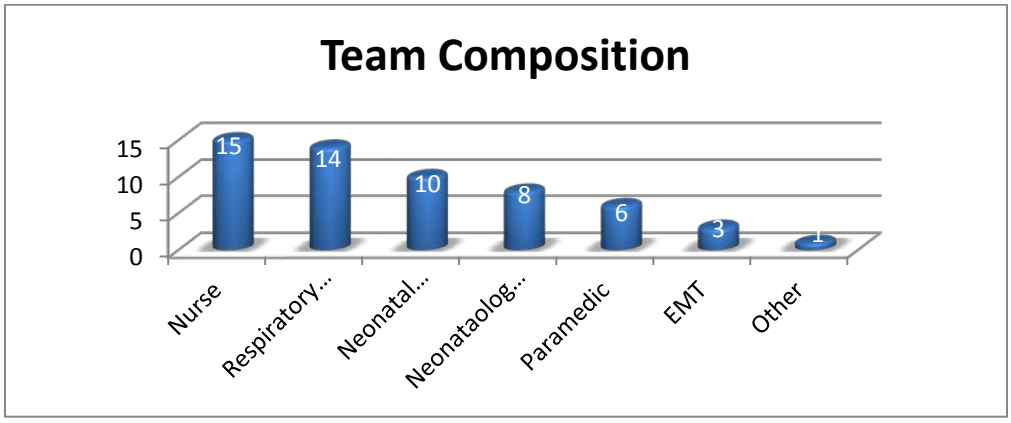
4. Is the neonatal transport team dedicated or unit-based?

A dedicated transport team is defined as a team based either in the receiving facility whose primary responsibility is critical care transport or in a freestanding transport service not affiliated with a hospital. Members of a dedicated team do not carry a patient assignment. A unit-based transport team is staffed by NICU personnel who, between transports, have patient assignments or are responsible for other patient care or unit needs. Two hospitals responded they had dedicated transport teams, twelve hospitals indicated they had unit-based teams and one hospital indicated that they use both types of teams.



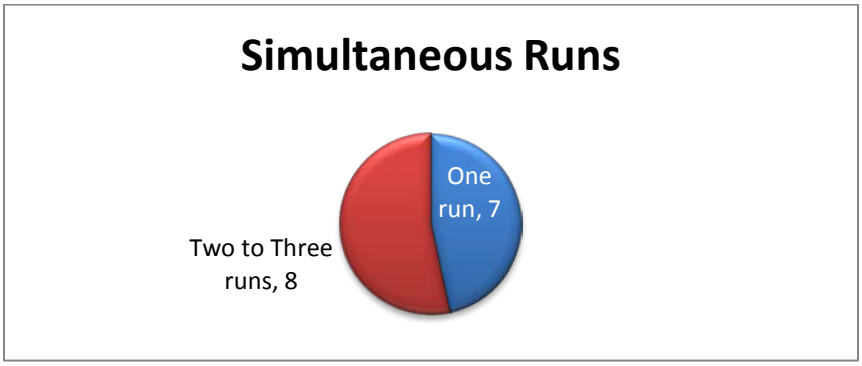
5. Who staffs the neonatal transport team?

Hospitals were asked to identify who staffs the transport team. The most frequent responses were a nurse (15 hospitals) and a respiratory therapist (14 hospitals). One hospital indicated they also use a private ambulance crew.



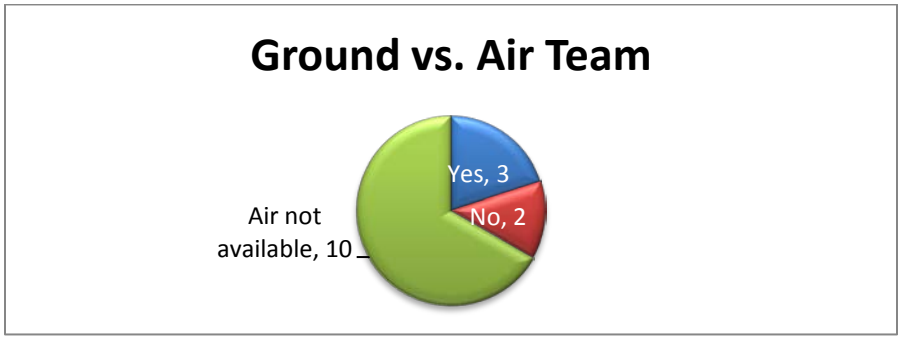
6. How many simultaneous neonatal transport runs can you support?

Eight hospitals indicated they could do two to three simultaneous neonatal transport runs. The other seven hospitals indicated that they could only support one run at a time.



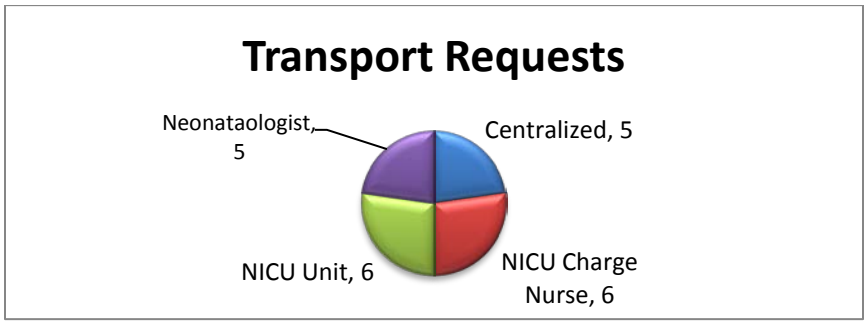
7. Are your neonatal transport teams the same for ground as for air?

The majority of hospitals indicated that air transport is not available. Three hospitals indicated that the teams were the same while two hospitals indicated that the teams were different.



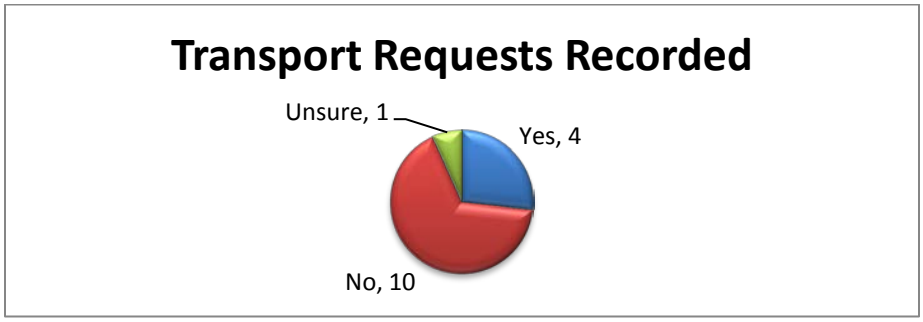
8. How do requests for neonatal transport come into your facility? Check all that apply.

Based on the responses, requests for transports come into hospitals in a variety of ways. Six hospitals indicated that requests come directly to the NICU charge nurse. Six hospitals indicated that the requests come directly to the NICU unit. Five hospitals indicated that transport requests come into a centralized transfer/communication center and five hospitals contact the neonatologist directly with their transport request.



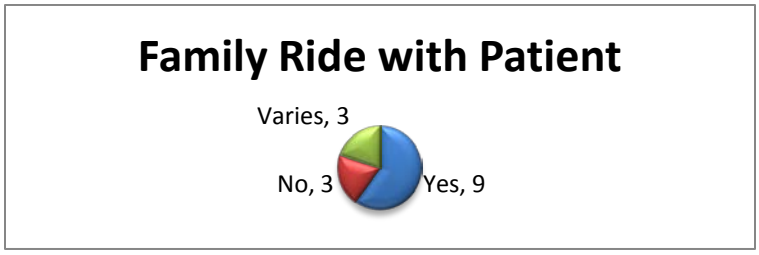
9. Are the transport requests recorded?

Ten hospitals responded that the transport requests were not recorded. Four hospitals responded that the transport requests were recorded and one respondent was unsure.



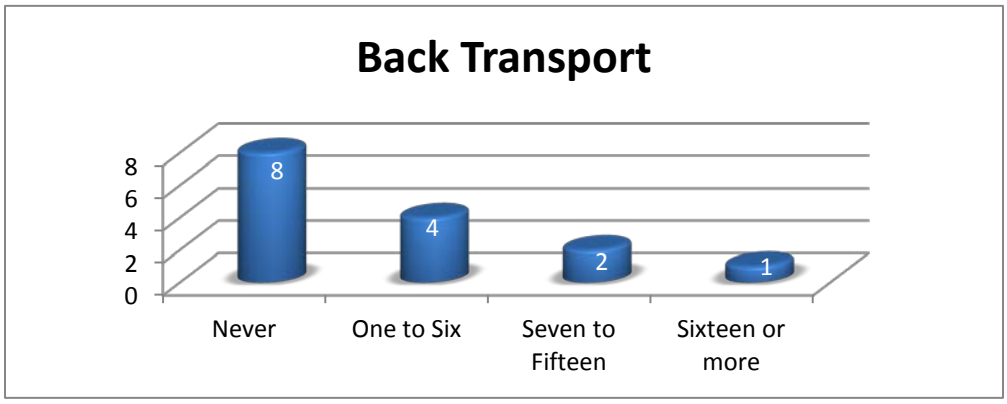
10. Do you allow the family to ride along with the patient?

The major of respondents (9 hospitals) indicated they do not allow the family to ride along with the patient. Three hospitals responded yes and three more hospitals indicated that sometimes they allow the family to ride along.



11. On an annual basis, how many transported babies do you send back to the referral hospital?

The majority of hospitals (8) indicated that they never send babies back to the referral hospital. Four hospitals reported they send back between 1 and 6 babies. Two hospitals reported they send 7 to 15 babies back and one hospital sends over 16 babies back to the referring hospital.



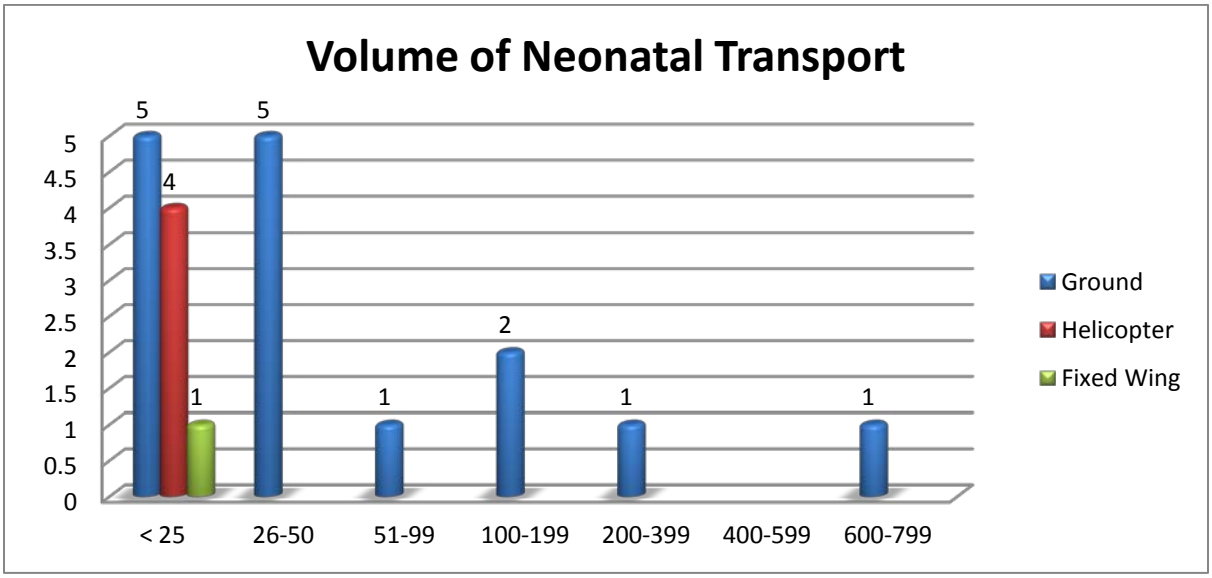
When asked to describe the challenges and/or barriers to back transport of infants, respondents identified the following:

- Family reluctance, availability of receiving hospital to accept infant, occasionally insurance;
- Insurance approval for return transport services to a comparable or lower level of care;
- Mothers are discharged from the hospital. The referring hospital does not have a unit to sustain the infant;
- Various reasons - receiving physician not interested. Parent comfortable with unit;
- Infants that we have transported to our facility have been local from other area hospitals. Patients have been discharged to home.
- Most transports are received from Level 1 facilities that do not currently have the capability to provide step down care to these babies;
- Most of the infants that we receive from outlying hospitals do not have a NICU to go back to. When we receive infants back, we have trouble with insurance paying for either the transport back or the care after coming back since it is a lower level of care;
- Insurance, inability for referring facility to provide appropriate medical care; and
- Authorization for payors.
- The staff of the other hospital is uneasy taking care of these patients. It is an education issue. Plus they would have to increase staff which they might not have. Some parents would rather stay at SMMC than go back despite the drive.

- Insurance issue, we would support this but the referral hospital would not receive reimbursement.

12. How many neonatal transports are done each year?

The following chart represents the responses from the fifteen hospitals regarding the volume of transports on an annual basis.

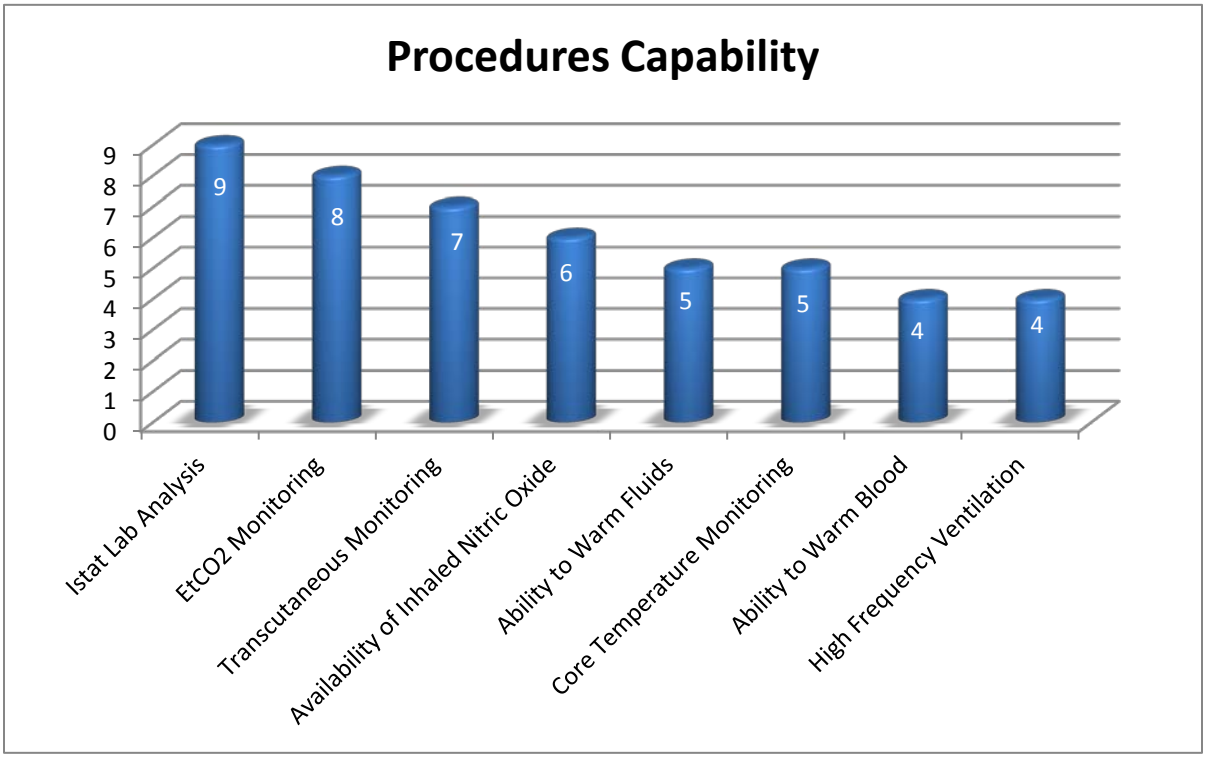


13. What percentage of neonatal transports are on the following?

	# of Respondents	Average	Range
Mechanical Ventilation	10	22%	5% - 50%
CPAP	11	24%	1% - 60%
Nasal Canula	12	51%	20% - 100%
High Frequency Ventilation	3	7%	1% - 10%

14. Does your neonatal transport team have the following capability? Check all that apply.

There were no procedures that all fifteen hospitals identified. Istat Lab Analysis received the most responses from the hospitals with neonatal transport teams.



15. Indicate the medications that you neonatal transport team has with them during a run. Check all that apply.

Epinephrine is the only medication that all 15 hospitals have with them on a transport run. Fourteen hospitals have Ampicillin and Gentamicin on a transport run.

Medication	# of Hospitals	Medication	# of Hospitals
Ampicillin	14	Versed	12
Gentamicin	14	Fentanyl	10
Dopamine	13	Morphine	9
Dobutamine	10	Prostaglandin	9
Epinephrine	15	Vecuronium	8
Milrinone	3	Surfactant	12
Phenobarbital	12	Other	3

The other drugs that were identified include the following:

- Atropine;
- Calcium Gluconate 100mg/ml(10%);
- Narcan;
  Sodium bicarbonate 4.2% 2.5meq/5ml;
- GlucaGen 1mg;
- Lanoxin 100mcg;
- Furosemide 20mg(10mg/ml);
- Claforan 1g,
- Lorazepam 2mg/ml,
- Phytonadione injectable 1 mg per 0.5ml,
- Erythromycin opthalmic, preservative free 1%
- Lidocaine HCL 10mg/ml

Only two hospitals indicated that they routinely carry blood products on a transport run. The blood product that the neonatal team carries is PRBCs.

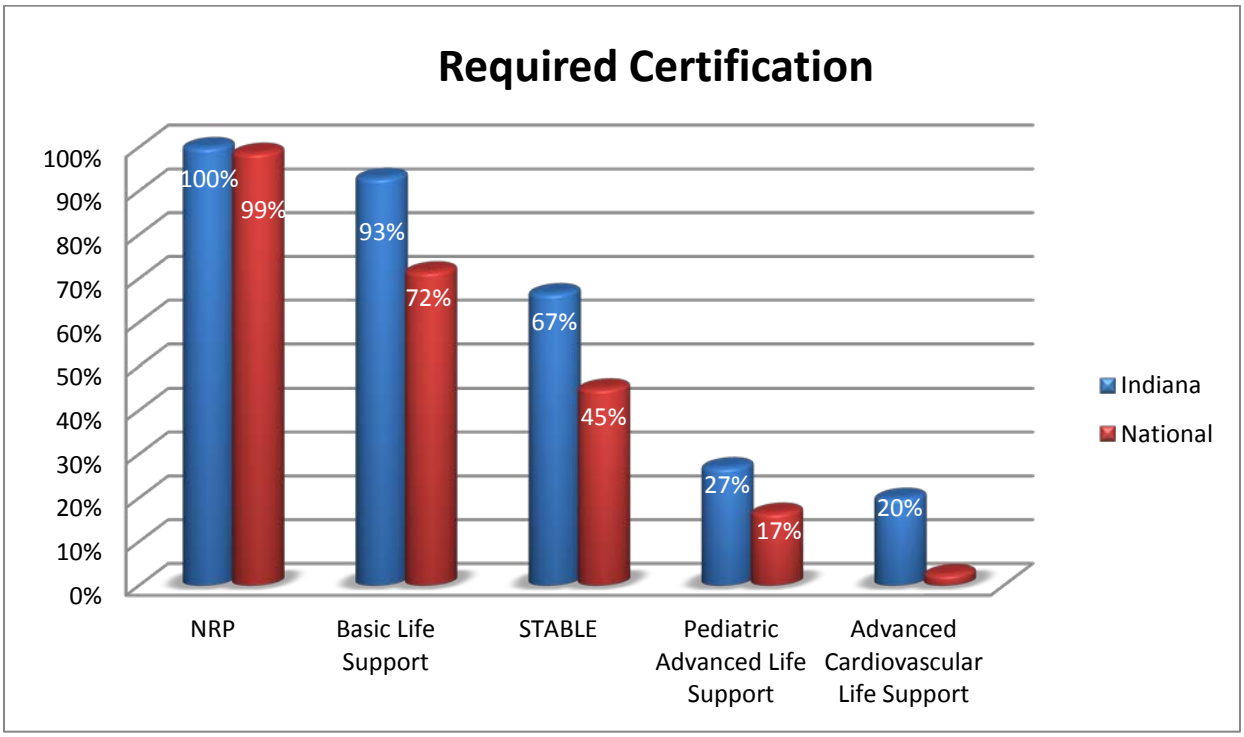
16. What procedures are allowed on neonatal transports? Check all that apply.

All fifteen hospitals allow Bag-mask PPV, Endotracheal intubation, Conventional mechanical ventilation and Needle aspiration of the chest on neonatal transports. The number of hospitals that allow the remainder of the procedures are varied.

Procedure	# of Hospitals	Procedure	# of Hospitals
Bag-mask PPV	15	Needle Aspiration of the Chest	15
LMA Placement	10	Chest Tube Placement	10
Oral Airway Placement	13	Umbilical Artery Catheterization	12
Endotracheal Intubation	15	Peripheral Arterial Puncture	12
Use of CO2 Detector	14	Peripheral Arterial Line Placement	10
Conventional Mechanical Ventilation	15	Intraosseous Needle Placement	4
Surfactant Administration	14	Initiate intravenous fluid and independently adjust rate	9
High-Frequency Ventilation	5	Independent Medication Ordering	6
Nitric Oxide Therapy	7	Umbilical venous catheters	11

17. What certifications do you require for your neonatal transport team? Check all that apply.

All fifteen hospitals require the Neonatal Resuscitation Program certification and fourteen hospitals require Basic Life Support. In the chart below, Indiana transport teams are compared to the results of a national survey[1] that looked at certification patterns for neonatal transport teams.



[1]Karlsen, KA, Trautman, M. and Smith, S. "National Survey of Neonatal Transport Teams in the United States", *Pediatrics*, Volume 128, Number 4, (October 2011)

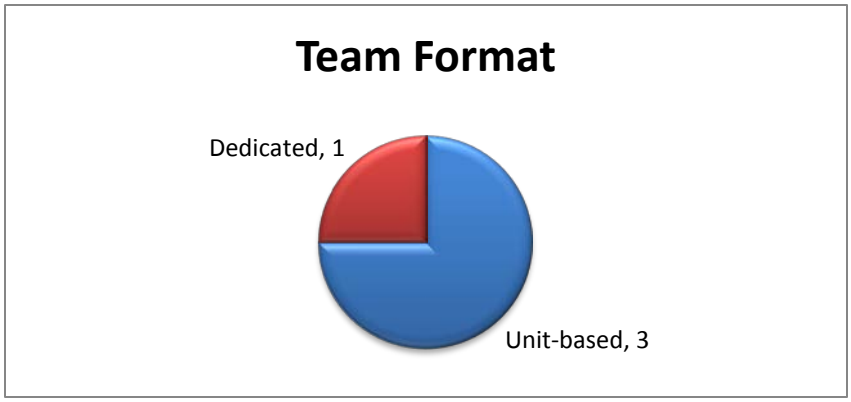
MATERNAL-FETAL TRANSPORT

1. Do you have in-house Obstetric coverage 24/7/365?
All four hospitals responded that they have 24/7/365 Obstetric coverage.

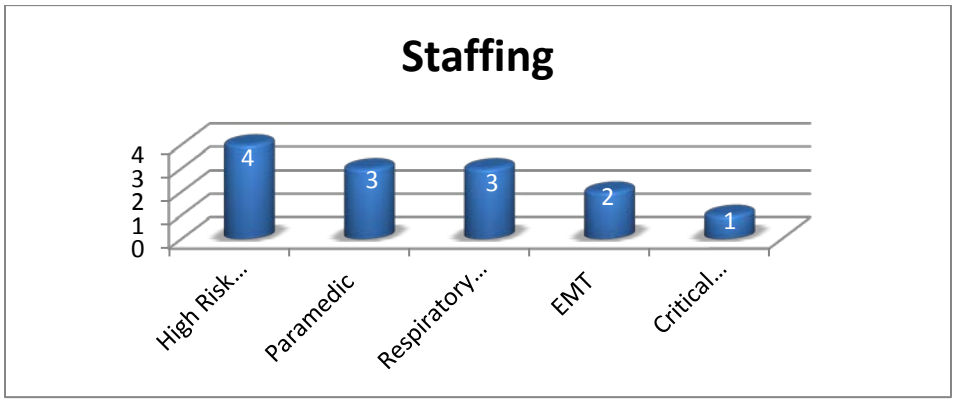
2. Do you have privileged in-house maternal fetal medicine coverage for inpatient management?
Three hospitals responded they have privileged in-house coverage. The remaining hospital responded that a maternal fetal medicine physician conducts rounds daily and is on call after hours.

3. Who directs the medical care during your maternal-fetal transport?
All four hospitals responded that the maternal fetal medicine physician directs care during transports.

4. Is your hospital's Maternal-Fetal transport team dedicated or unit-based?
A dedicated transport team is defined as a team based either in the receiving facility whose primary responsibility is critical care transport or in a freestanding transport service not affiliated with a hospital. Members of a dedicated team do not carry a patient assignment. A unit-based transport team is staffed by personnel who, between transports, have patient assignments or are responsible for other patient care or unit needs. One respondent indicated they had a dedicated team and the other three indicated their teams were unit-based.

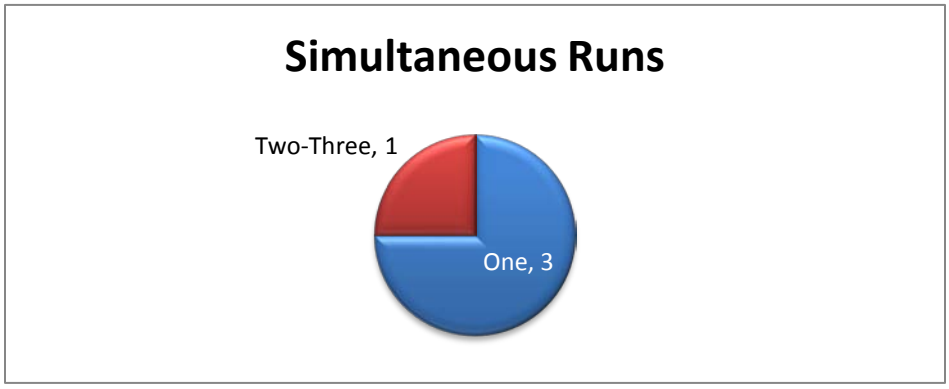


5. Who staffs the Maternal-Fetal transport team?
All four hospitals include a high risk Obstetric Nurse as a member of the transport team. Three hospitals use respiratory therapists and paramedics on the team. Two hospitals include Emergency Medical Technicians and one uses a Critical Care Transport Nurse. Other team members identified included a private ambulance crew.

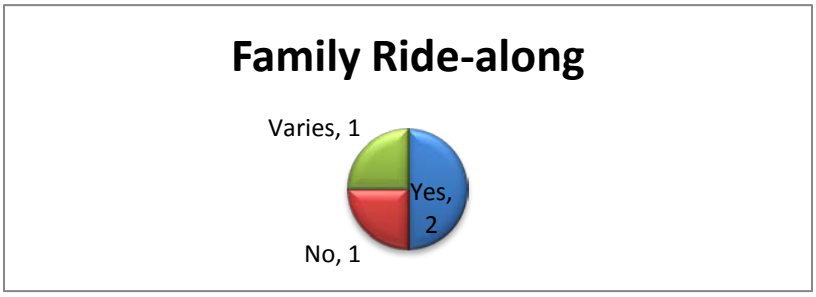


6. Are your Maternal-Fetal transport teams the same for ground as for air?
Three respondents indicated that the teams were different while one indicated the teams are the same. Staffing differences included a Flight RN, a Flight Medic, and a paramedic with obstetric training.

7. How many simultaneous transport runs can you support?
Three respondents are limited to one run while one respondent can do two to three runs.

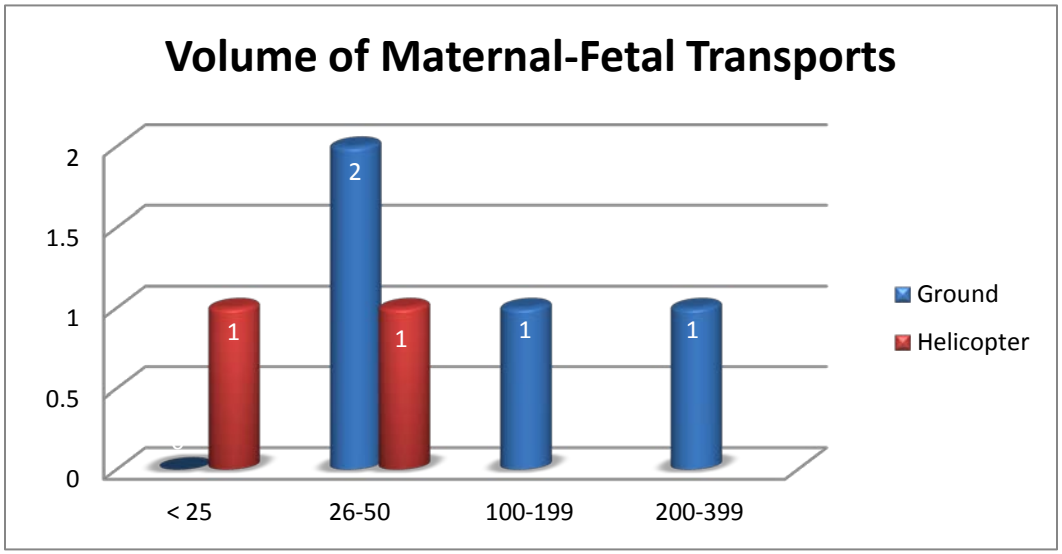


8. Do you allow the family to ride along with the patient?
Two respondents allow the family to ride along, one respondent answered no and one respondent indicated that it varies.



9. How many Maternal-Fetal transports are done each year?

The following chart represents the responses from the four hospitals regarding the volume of transports on an annual basis.



10. Please check the medications your Maternal-Fetal transport team during a run. Check all that apply.

There were only four medications in common to all four respondents.

Medication	# of Respondents	Medication	# of Respondents
Ampicillin	2	Magnesium Sulfate 40gm/1000ml premix (1)	4
Calcium Gluconate 10% 1000mg/10mi vial	4	Milrinone	2
Gentamicin	2	Misoprostol 200mcg tabs (4)	2
Dopamine	3	Morphine 10mg/ml vial	3
Dobutamine	2	Nifedipine 10mg caps (4)	2
Epinephrine	3	Oxytocin 10 units/ml 1ml vial (2)	4
Fentanyl	3	Oxytocin 20 units/1000 ml LR(1)	1
Furosemide 40mg/4ml vial	3	Phenobarbital	2
Hydralazine 20mg/ml1 mlvial	3	Terbutaline 1mg/ml 1 ml vial (2)	3

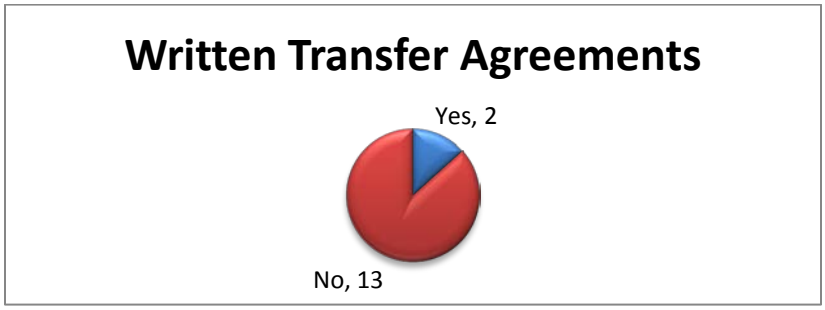
Medication	# of Respondents	Medication	# of Respondents
Indomethacin 50 mg caps	2	Tums Calcium Carbonate 500mg chewtabs (2)	1
Labetalol 100mg/20ml vial	2	Other	3
Lactated Ringers 1000ml (1)	4		

Other medications that were identified include: Labetalol 5mg /ml, 20ml vials (3); Promethazine 25mg/ml; Nubain 10mg/ml; Lorazepam2mg/ml; and ACLS drug.

POLICIES AND PROCEDURES

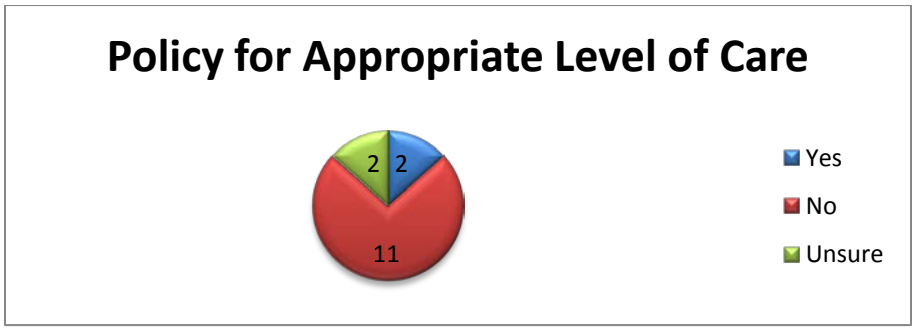
1. Does your hospital have written inter-facility transfer agreements with referral hospitals?

Thirteen of the respondents indicated they did not have written agreements. Two respondents replied yes to the question.



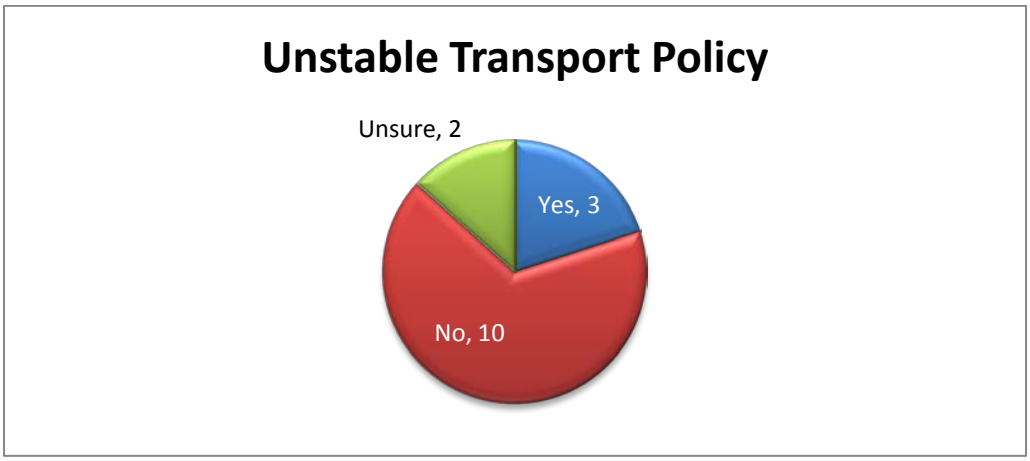
2. Do you have a written policy/protocol in place if, upon arrival, a patient exceeds the level of care your facility and/or your team can provide?

Only two respondents indicated they had a written policy when a patient exceeds the level of care that a hospital can provide.



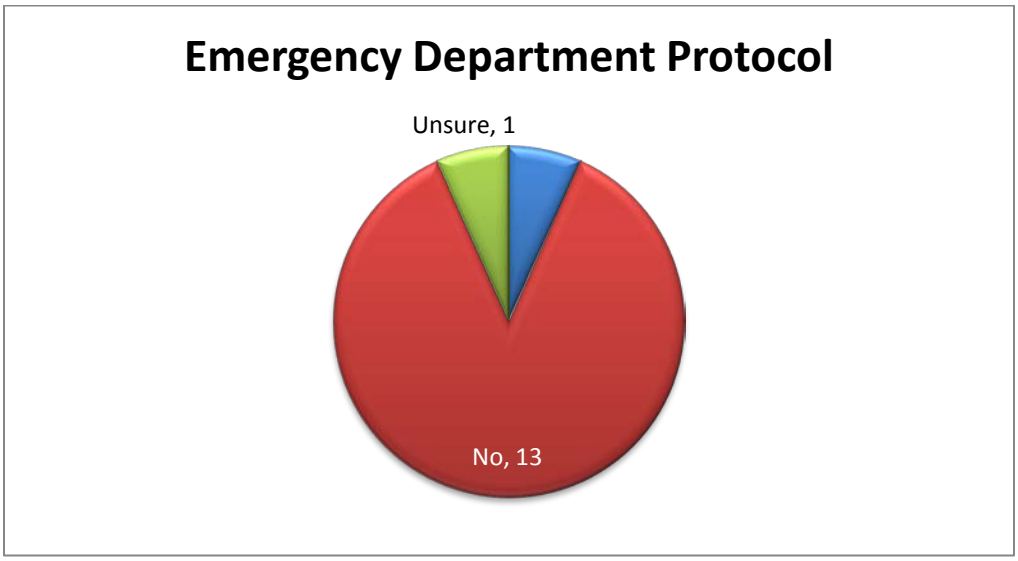
3. Do you have a written policy in place if the transport team determines the patient and/or her fetus is unstable for transport?

Three hospitals have a written policy that identified procedures when the patient is unstable for transport. Ten hospitals did not have a written policy and two hospitals were unsure.

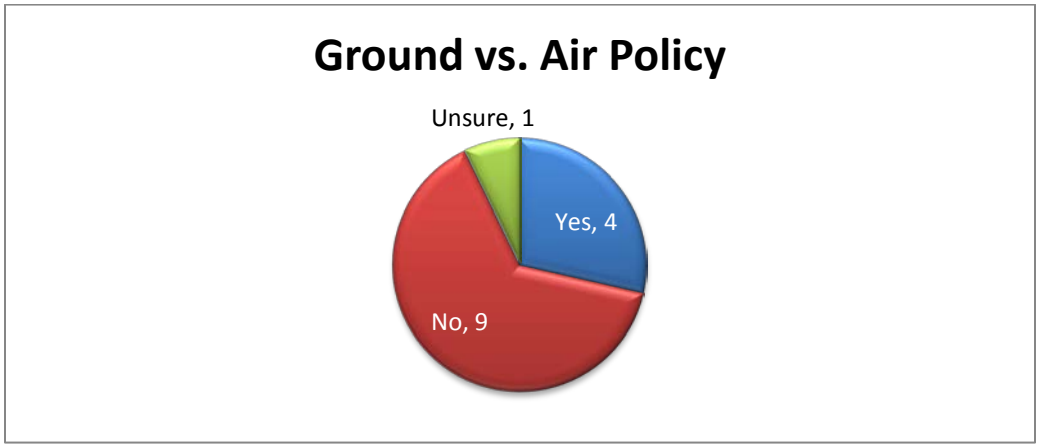


4. Do you have a written policy/protocol if your patient is in an Emergency Department at a non-delivering facility and the mother and/or her fetus is unstable for transport to your facility?

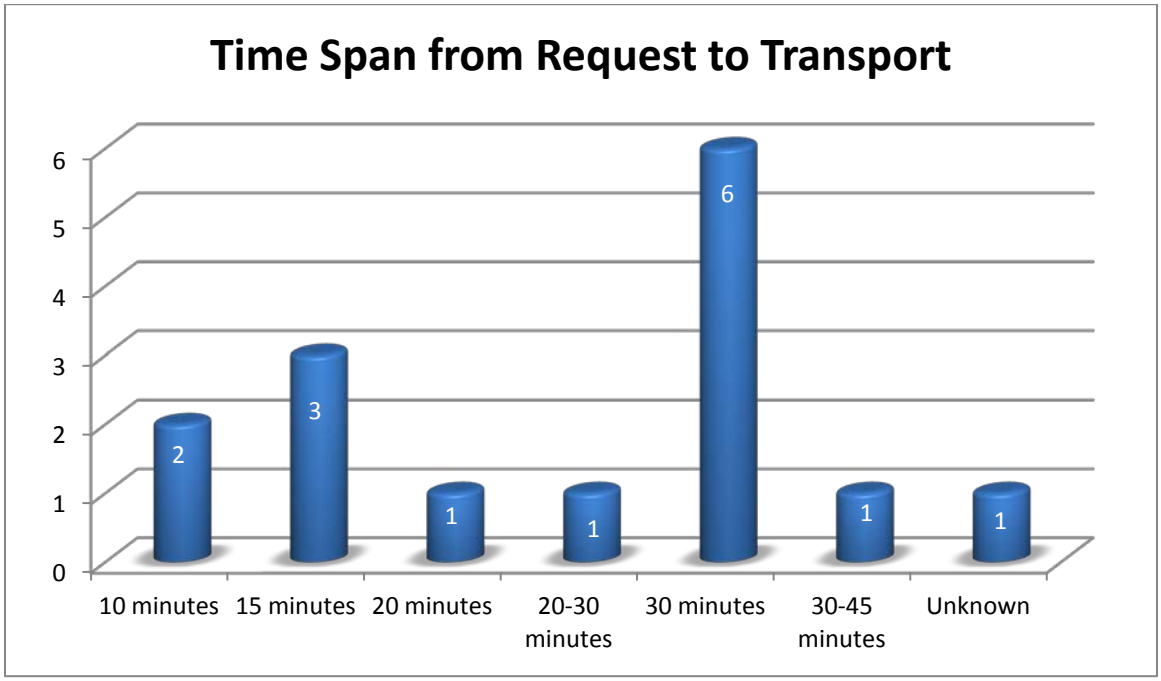
Only one hospital indicated they had a policy for this situation. One additional hospital indicated they were unsure if there was a policy.



5. Do you have a written policy or guidelines for transporting by ground vs. air?
Four hospitals indicated they have a policy that guides whether transport is by air or ground. Nine hospitals do not have policy or guidelines and one hospital was unsure.

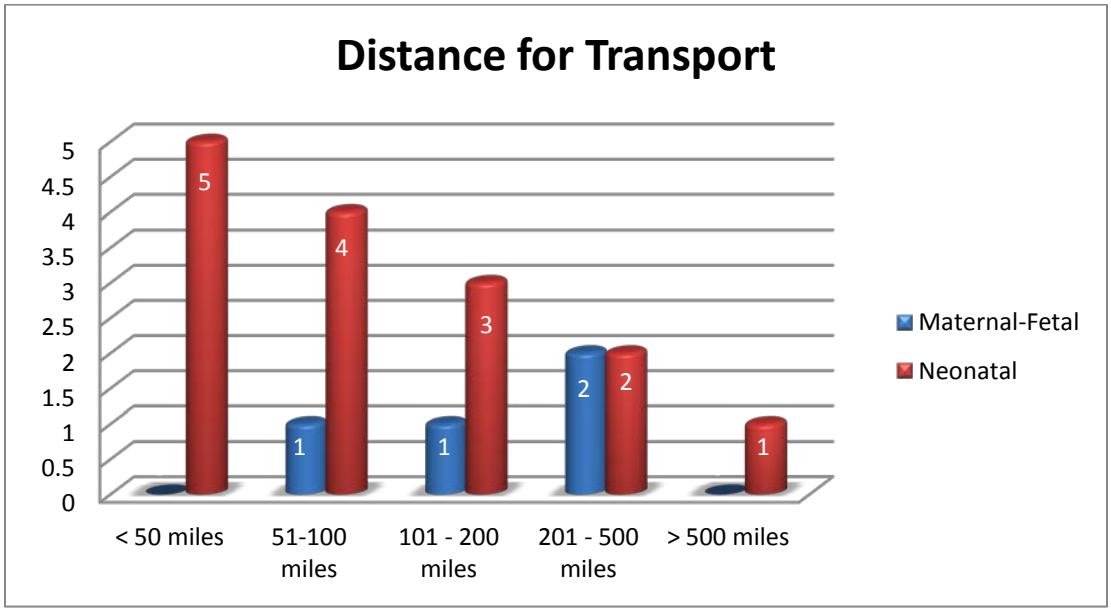


6. How long does your transport team have from the time a call is received to the time it leaves?
The amount of time from when a call for transport is received until the team leaves ranged from 10 minutes to 45 minutes.



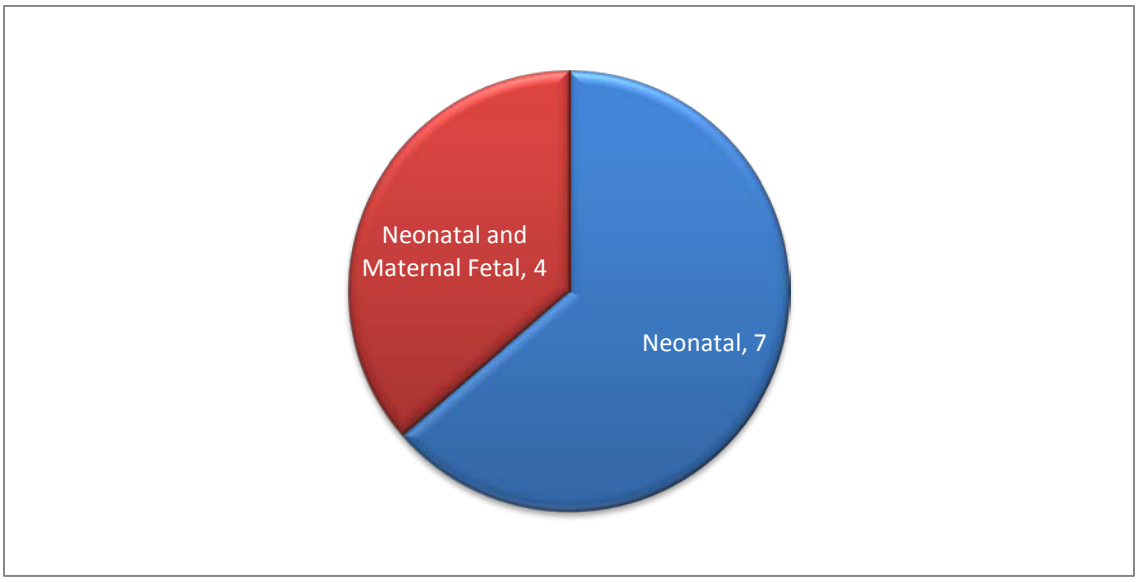
7. How far does your transport team go to transport patients?

The majority of hospitals responded that their teams travel under 100 miles for transporting a patient.



8. Which of your transport teams go across state lines?

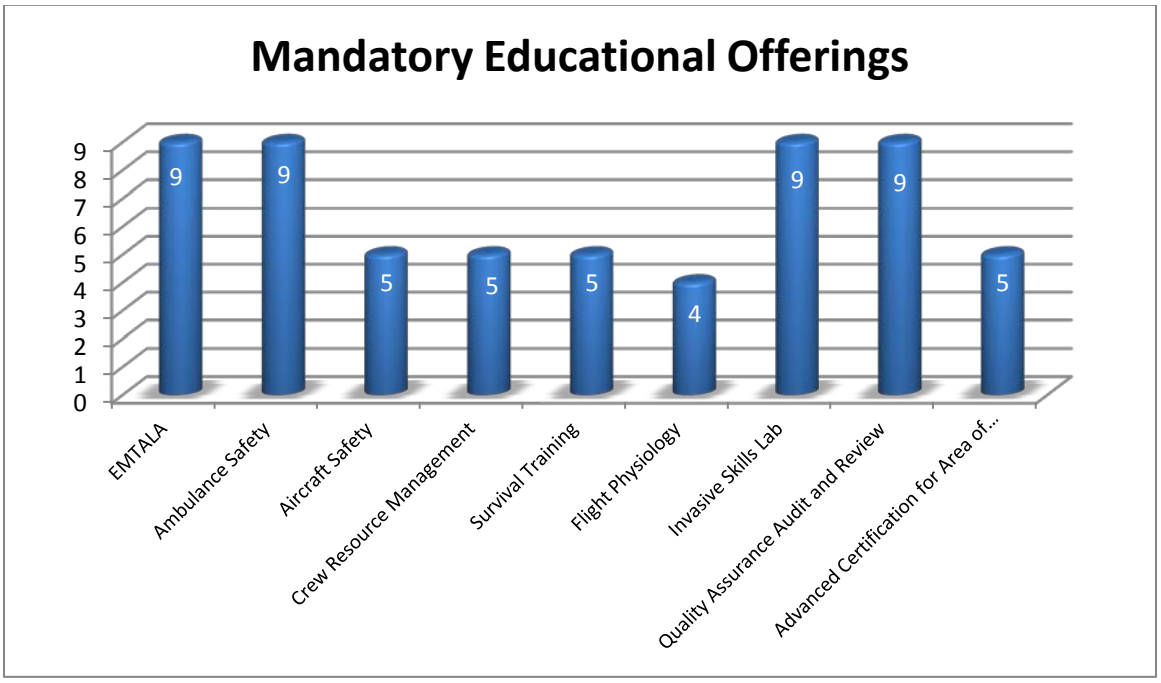
Seven hospitals responded that their neonatal transport teams go across state lines. Four hospitals responded that both their maternal-fetal and neonatal teams cross state lines.



QUALITY IMPROVEMENT

1. Do your transport teams have mandatory educational offerings on the following topics? Check all that apply.

The educational offerings that had the most responses (9 hospitals) were EMTALA, Ambulance Safety, Invasive Skills Lab and Quality Assurance Audit and Review.



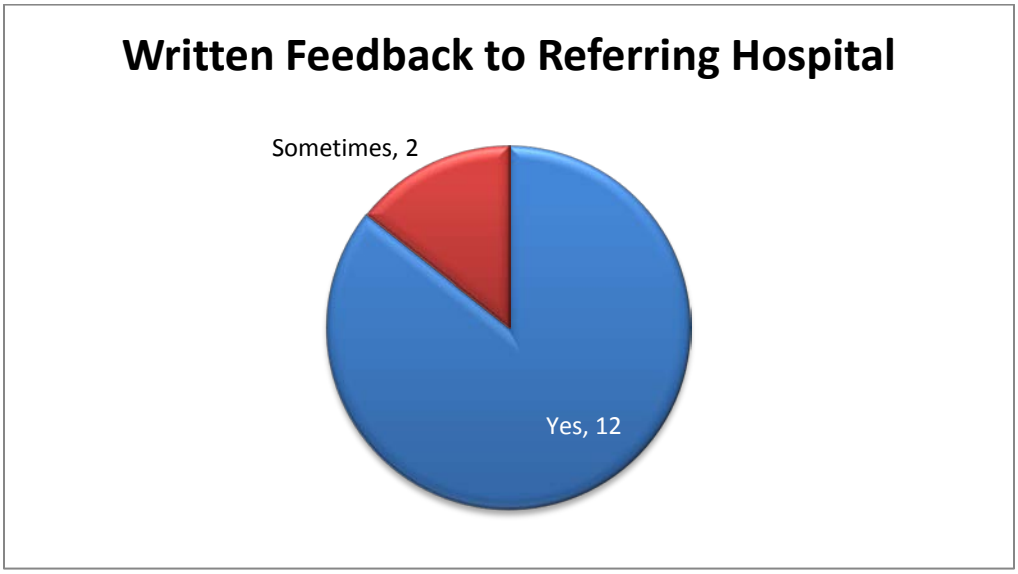
2. Do you incorporate simulation-based education into the continuing education of our transport teams?

Ten hospitals indicated that the used simulation-based education with their transport teams. When asked to describe their use of simulation and the frequency of its use, hospitals identified the following:

- On hire and quarterly;
- Once yearly - a skills lab for all skills;
- Monthly simulation training - staff expected to attend once a year;
- Two times a year;
- Included with NRP and occasional mock codes; and
- Annual education days include simulation for emergent situations for all RNs and RTs.

3. Does your hospital provide written and/or verbal feedback on transports to the referring hospital/nursing staff?

Twelve hospitals responded that they do provide feedback to the referring hospital.



4. If yes, how soon after transport?

When asked how soon they provide feedback to the referring hospital, seven hospitals responded they provide feedback in 1-3 days. One hospital indicated feedback is provided when the referring hospital contacts them. Another hospital indicated they contact the referring hospital upon arrival, after 24 hours and then weekly.

5. Which of the following quality assurance activities do you track and evaluate on a regular basis?

The most commonly identified (11 hospitals) quality assurance activity was delays in transport. The Indiana data was also compared to the results of unit-based data from the national survey.[2]

Activities	Indiana N=15 (%)	National N=229 (%)
We do not regularly assess quality assurance activities	8 (53.3)	39 (17.0)
Adherence to protocol-directed care	3 (20.0)	53 (23.1)
Deviations from protocol care	5 (33.3)	60 (26.2)
Discuss deviations from protocol-directed care with involved team members	5 (33.3)	96 (41.9)
Delay in transport	11 (73.3)	177 (77.3)
Respiratory arrest from team arrival at referring hospital	3 (20.0)	56 (24.5)
Respiratory arrest during transport	3 (20.0)	73 (31.9)
Hypoxemic event during transport	2 (13.3)	46 (20.1)
Hypercarbic event during transport	2 (13.3)	33 (14.4)
Unsuccessful intubation attempt	6 (40.0)	73 (31.9)
Obstruction of endotracheal tube any time during transport	4 (26.7)	44 (19.2)
Accidental extubation during transport	7 (46.7)	85 (37.1)
Need for intubation after departure from referring hospital	5 (33.3)	60 (26.2)
Pneumothorax during transport	6 (40.0)	63 (27.5)
Hypotension (for gestational age) during transport	3 (20.0)	50 (21.8)
Hypothermia in the pre-transport period	4 (26.7)	56 (24.5)
Hypothermia during transport	3 (20.0)	77 (33.6)
Hyperthermia during transport	3 (20.0)	49 (21.4)
Unsuccessful intravenous transport	3 (20.0)	54 (23.6)
Unsuccessful umbilical catheter placement	3 (20.0)	49 (21.4)
Medication error by transport team	8 (53.3)	103 (45.0)
Equipment malfunction or failure	9 (60.0)	144 (62.9)
Vehicle mishap	9 (60.0)	109 (47.6)
Death before transport	5 (33.3)	65 (28.4)
Death during transport	7 (46.7)	86 (37.6)

[2] Pediatrics, Volume 128, Number 4 (October 2011)

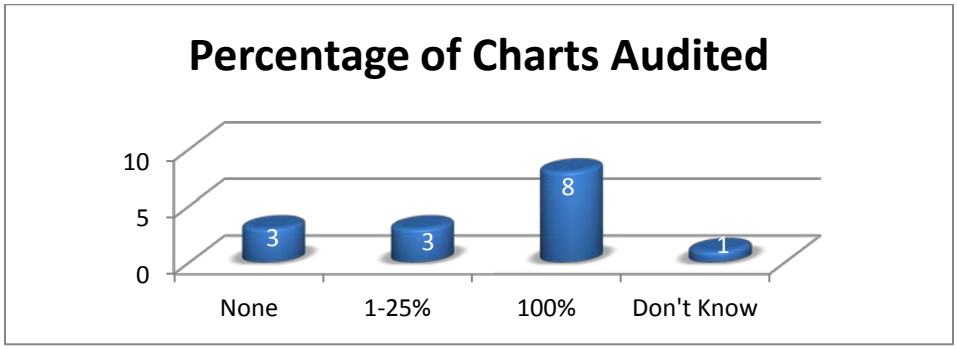
6. Does your hospital regularly assess mortality related to neonatal transport? Check all that apply.

Four hospitals indicated they do not regularly assess mortality related to transport. Three hospitals responded they did not know whether mortality related to transport was assessed. Two hospitals did not respond. One hospital assesses mortality within 6-12 hours of a completed transport and two assess within 24-48 hours of completed transported. These numbers were compared to data from the national survey.

	Indiana N=15 (%)	National N=229 (%)
We do not regularly assess mortality related to transport	4 (26.7)	100 (43.7)
Within 6-12 hours of completed transport	1 (7.0)	13 (5.7)
Within 24-48 hours of completed transport	2 (13.3)	31 (13.9)
Within 1 week to 1 month of completed transport	0	13 (5.6)
Within remainder of hospitalization	3 (20.0)	28 (12.2)
I don't know	3 (20.0)	43 (18.8)

7. Approximately what percentage of transport charts are audited for Quality Improvement?

Eight hospitals responded that 100% of charts are audited, Three hospitals indicated that between 1-25% were audited, three indicated that none are audited and one indicated they did not know.



8. Does your Medical Director participate in the audit process?

Nine hospitals indicated the Medical Director does participate. Two hospitals responded no and two didn't know.