

**National Governor's
 Association Learning
 Network Conference
 2012 AAP Levels of Neonatal Care**

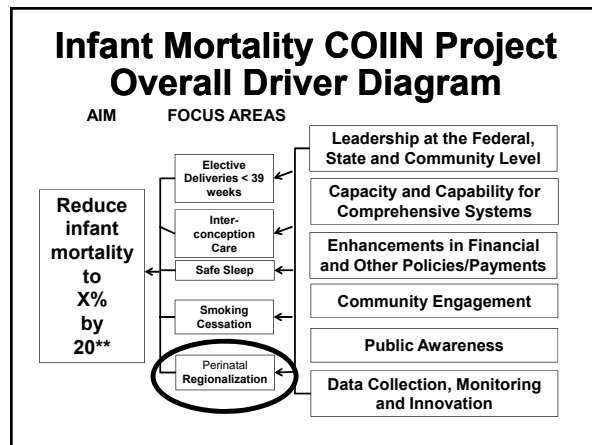
**State of Champions
 Alabama's Campaign for Healthier Babies**

**RSA Activity Center
 Montgomery, Alabama
 Friday, January 10, 2014**

**National Governor's
 Association Learning
 Network Conference
 2012 AAP Levels of Neonatal Care**

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- Topics to be Discussed**
- Alabama's Collaborative Improvement and Innovations Network (COIIN) to reduce Infant Mortality
 - Definitions: Fetal death / Neonatal death / Infant Mortality
 - Infant Mortality: A Neonatologists Perspective
 - 2012 AAP Levels of Neonatal Care



- Infant Mortality**
- About 25,000 infants die each year in the United States
 - Short of 4 million births
 - The infant mortality rate is an estimate of the number of infant deaths for every 1,000 live births
 - US infant mortality rate 5.98 death per 1,000 births in 2012
 - Alabama mortality rate 8.9 deaths per 1,000 births in 2012

- Live Birth**
- The complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy, which, after such expulsion or extraction, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, regardless of whether the umbilical cord has been cut or the placenta is attached

Fetal Death

- Death before the complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy, that is not an induced termination of pregnancy
- For statistical purposes, fetal deaths are further subdivided as:

Fetal Death

- “Early” 20–27 weeks' gestation or
- “Late” ≥28 weeks' gestation
- The term “stillbirth” is also used to describe fetal deaths at 20 weeks' gestation or more
- Fetuses that die in utero before 20 weeks' gestation are categorized specifically as miscarriages

Infant Death

- A live birth that results in death within the first year (<365 days) is defined as an infant death
- Infant deaths are further subdivided as early neonatal (<7 days), late neonatal (7-27 days), neonatal (<28 days), or post-neonatal (28-364 days)

Perinatal Death

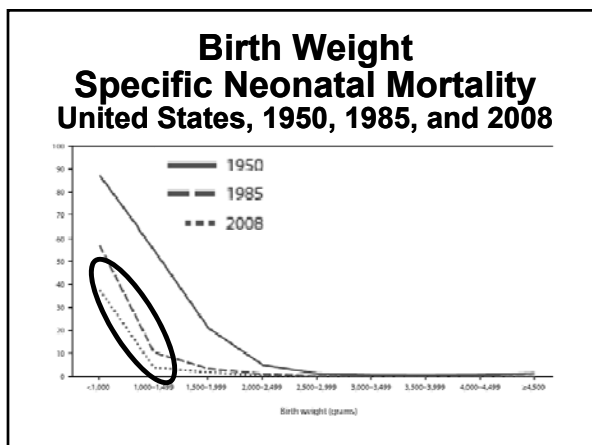
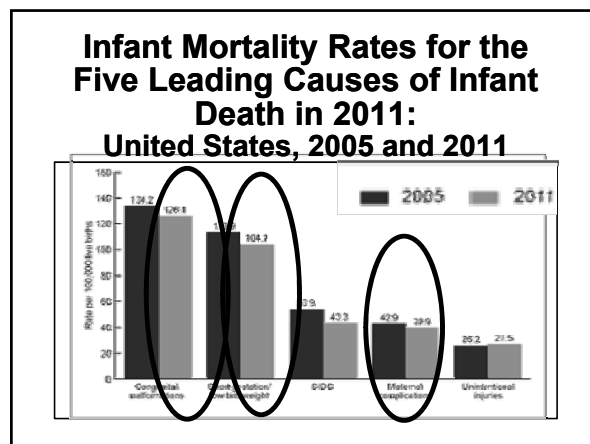
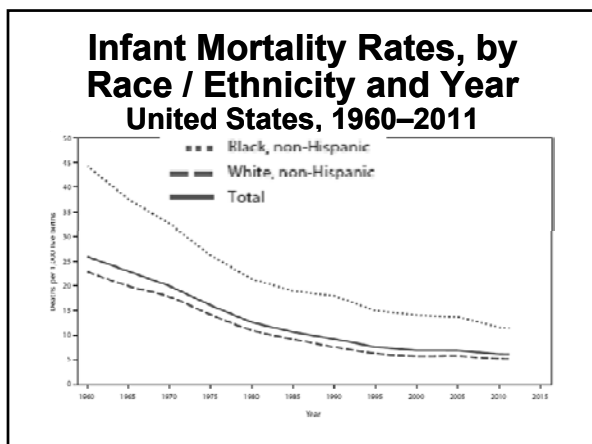
- Three definitions of perinatal deaths are in use:
- Perinatal death, definition I, includes infant deaths that occur at less than 7 days of age and fetal deaths with a stated or presumed period of gestation of 28 weeks or more

Perinatal Death

- Perinatal death, definition II, includes infant deaths that occur at less than 28 days of age and fetal deaths with a stated or presumed period of gestation of 20 weeks or more

Perinatal Death

- Perinatal death, definition III, includes infant deaths that occur at less than 7 days of age and fetal deaths with a stated or presumed gestation of 20 weeks or more



Perinatal Regionalization Background

- In 1976 March of Dimes report “Toward Improving the Outcome of Pregnancy” (TIOP I)

Perinatal Regionalization Background

- The TIOP I was the first report that included criteria that stratified maternal and neonatal care into 3 levels of complexity and recommended referral of high-risk patients to higher-level centers with the appropriate resources and personnel to address the required increased complexity of care

Perinatal Regionalization Background

- In 2004, the AAP defined neonatal levels of care, including 3 distinct levels with subdivisions in 2 of the levels
- Level I centers provided basic care
- Level II centers provided specialty care, with further subdivisions of IIA and IIB centers

Perinatal Regionalization Background

- Level III centers provided subspecialty care for critically ill newborn infants with subdivisions of level IIIA, IIIB, and IIIC facilities
- Data published since the 2004 statement have informed the development of the levels of care in this new policy statement

What Does The Data Show Regarding Levels of Care and Infant Mortality?

- A meta-analysis of the published literature from 1978 to 2010 clearly demonstrates improved outcomes for VLBW infants and infants <32 weeks' gestational age born in level III centers

What Does The Data Show Regarding Levels of Care and Infant Mortality?

- Lasswell et al reviewed 41 English-language US and international studies, which included >113,000 VLBW infants and found that VLBW infants born at non-level III hospitals had a 62% increase in odds of neonatal or pre-discharge mortality compared with those born at level III hospitals

What Does The Data Show Regarding Levels of Care and Infant Mortality?

- Adjusted odds ratio [aOR], 1.62; 95% confidence interval [CI], 1.44-1.83

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What Does The Data Show Regarding Levels of Care and Infant Mortality?

- Subset comparisons of studies identifying infants <32 weeks' gestation and extremely low birth weight (ELBW) infants (<1,000 g) demonstrated similar effects (aOR, 1.55; 95% CI, 1.21–1.98; aOR, 1.64; 95% CI, 1.14–2.36, respectively)

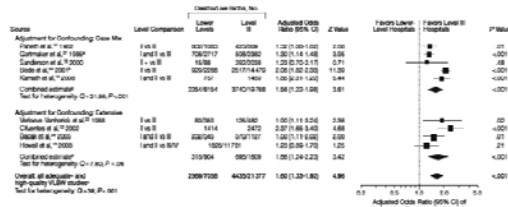
What Does The Data Show Regarding Levels of Care and Infant Mortality?

- When only higher-quality studies were included, the findings were consistent (VLBW aOR, 1.60; 95% CI, 1.33–1.92; <32 weeks' gestation aOR, 1.42; 95% CI, 1.06–1.88; ELBW aOR, 1.80; 95% CI, 1.31–2.36)

What Does The Data Show Regarding Levels of Care and Infant Mortality?

- The effect of level of care on VLBW mortality did not vary by decade of publication the risk of death for VLBW infants born in level I or II facilities remained higher than those born within a level III facility

Meta-analysis of Adequate and High-quality Publications on VLBW Infants

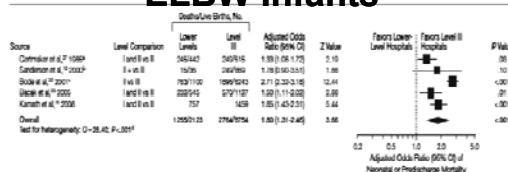


Level III indicates adjustment for demographic and/or socioeconomic status variables; extensive indicates adjustment for case mix plus maternal/perinatal risk factors and infant illness severity; CI indicates confidence interval; Size of data markers indicates size of study population.

COMMITTEE ON FETUS AND NEWBORN Pediatrics
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Meta-analysis of Adequate and High-quality Publications on ELBW Infants



CI indicates confidence interval; size of data markers indicates size of study population.

COMMITTEE ON FETUS AND NEWBORN Pediatrics
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**From the American Academy of
Pediatrics Policy Statement
Levels of Neonatal Care
Committee on Fetus And Newborn**

- Lu-Ann Papile, MD, Chairperson
(Alberquerque, NM)
- Jill E. Baley, MD (Cleveland, OH)
- William Benitz, MD (San Francisco, CA)
- James Cummings, MD (Albany, NY)
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**From the American Academy of
Pediatrics Policy Statement
Levels of Neonatal Care
Committee on Fetus And Newborn**

- Praveen Kumar, MD (Jackson, MS)
- Richard A. Polin, MD (New York, NY)
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Level I

- Well - newborn nursery
- Provide neonatal resuscitation at every delivery
- Evaluate and provide postnatal care to stable term newborn infants
- Stabilize and provide care for infants born 35 to 37 weeks gestation who remain physiologically stable

Level I

- Stabilize newborn infants who are ill and those born at <35 weeks gestation until transfer to a higher level of care
- Provider types: Pediatricians, family physicians, nurse practitioners, and other advanced practice registered nurses

Level II Neonatal (Specialty):

- Level I capabilities plus:
 - Provide care for infants born > 32 weeks gestation and weighing >1500 grams who have physiologic immaturity or who are moderately ill with problems that are expected to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis

Level II Neonatal (Specialty):

- Provide care for infants convalescing after intensive care
- Provide mechanical ventilation for brief duration (<24 hours) or continuous positive airway pressure or both

Level II Neonatal (Specialty):

- Stabilize infants born before 32 weeks gestation and weighing less than 1,500 grams until transfer to a neonatal intensive care facility
- Must have the following equipment: portable chest X-ray, blood gas laboratory

Level II Neonatal (Specialty):

- Provider types:
 - Level I health care providers plus
 - Pediatric hospitalists
 - Neonatologist
 - Neonatal nurse practitioners

Level III NICU (Sub-specialty):

- Level II capabilities plus:
 - Provide sustained life support
 - Provide comprehensive care for infants <32 weeks gestation and weighing <1,500 grams and infants born at all gestational ages and birth weights with critical illness

Level III NICU (Sub-specialty):

- Provide prompt and readily available access to a full range of
 - Pediatric medical subspecialists,
 - Pediatric surgical specialists,
 - Pediatric anesthesiologists, and
 - Pediatric ophthalmologists

Level III NICU (Sub-specialty):

- Provide a full range of respiratory support than may include conventional and/or high-frequency ventilation and inhaled nitric oxide
- Perform advanced imaging, with interpretation on an urgent basis, including computed tomography, MRI, and echocardiography

Level III NICU (Sub-specialty):

- Provider types:
 - Level II health care providers plus:
 - Pediatric medical subspecialists
 - Pediatric anesthesiologists
 - Pediatric surgeons, and
 - Pediatric ophthalmologists

Level IV Regional NICU: NICU Levels of Care

- Level III capabilities plus:
 - Located within an institution that has the capability to provide ECMO and surgical repair of complex congenital cardiac malformations that require cardiopulmonary bypass

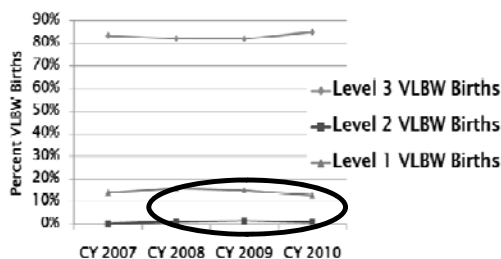
Level IV Regional NICU: NICU Levels of Care

- Maintain a full range of:
 - Pediatric medical subspecialists
 - Pediatric surgical subspecialists
 - Pediatric anesthesiologists at the site
 - Facilitate transport and provide outreach education

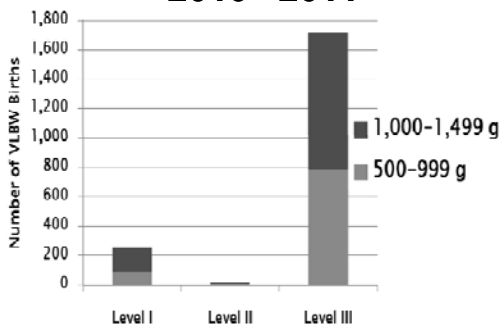
Perinatal Regionalization

- Working to ensure hospitals are aware of the 2012 AAP Levels of Neonatal Care guidelines
- 86% of very low birth weight infants are born at the appropriate level of care for gestational age and weight in Alabama with the goal being 90%

% VLBW by Level of Care 2007 – 2010



VLBW Births By Level of Care: 2010 – 2011



Top 10 Level 1 and 2 Hospitals with The Highest Number of VLBW Infants: 2010 - 2011

Level 1		Level 2	
Hospital	#	Hospital	#
Hospital A-1	30	Hospital A-2	14
Hospital B-1	21	Hospital B-2	
Hospital C-1	16	Hospital C-2	
Hospital D-1	15	Hospital D-2	
Hospital E-1	13	Hospital E-2	
Hospital F-1	13	Hospital F-2	
Hospital G-1	13	Hospital G-2	
Hospital H-1	11	Hospital H-2	
Hospital I-1	11	Hospital I-2	
Hospital J-1	11	Hospital J-2	