Community-Based Prematurity Prevention
The Kentucky Experience

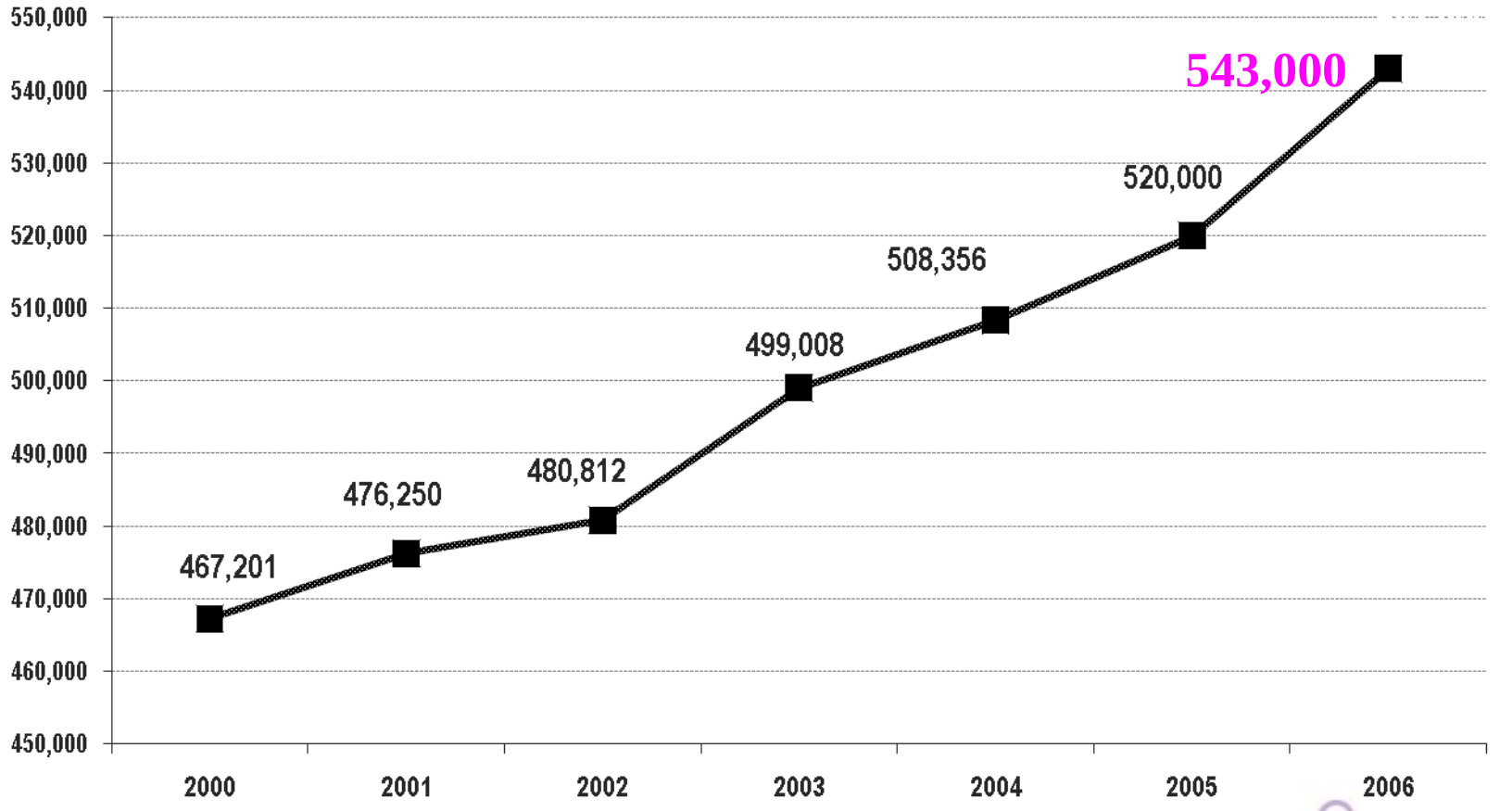
with

"Healthy Babies are Worth the Wait"

Ruth Ann Shepherd, MD, FAAP
Director, Division of Maternal & Child Health
Kentucky Department for Public Health

Kentucky
UNBRIDLED SPIRIT™

U. S. Preterm Births 2000-2006



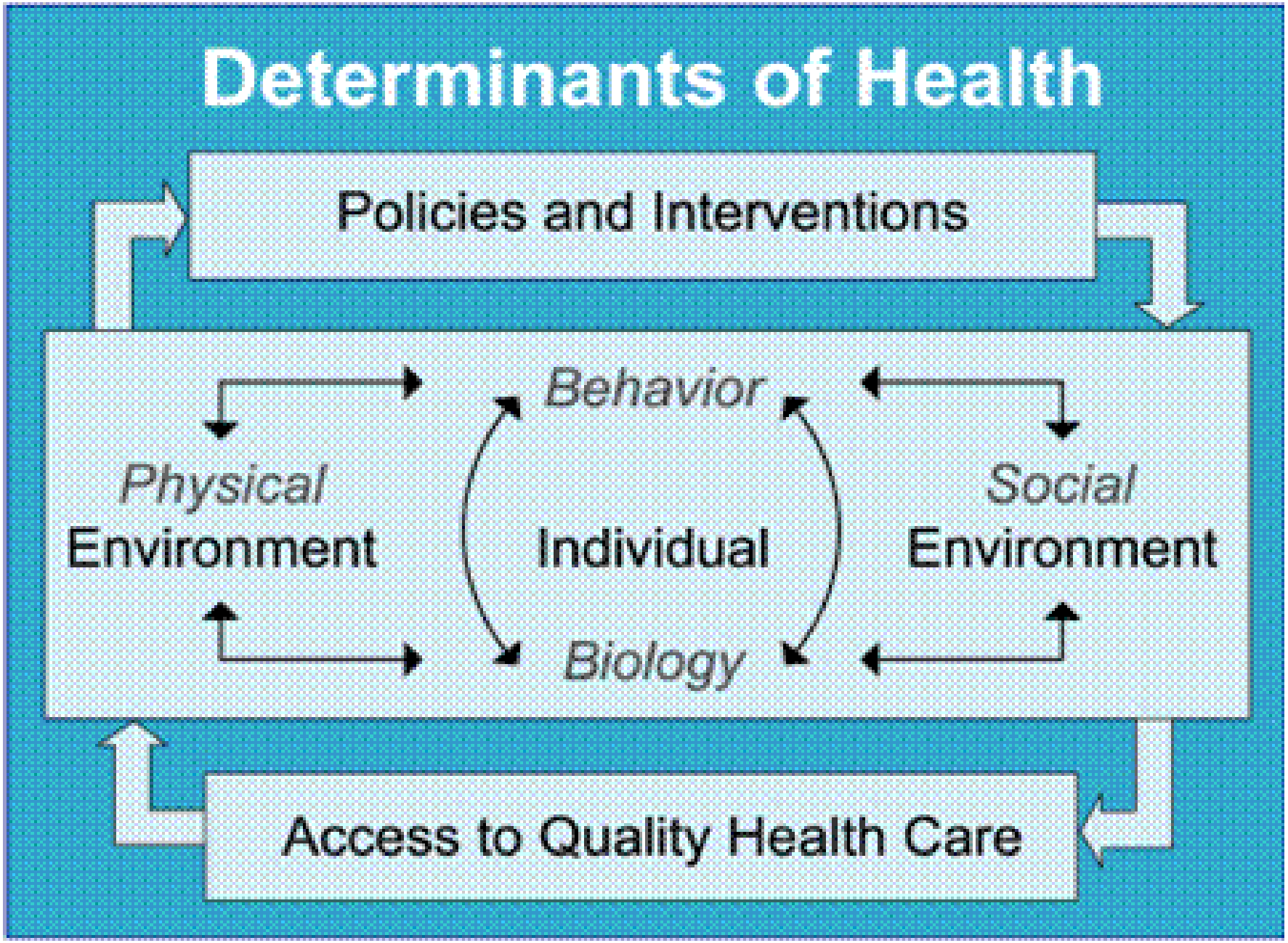
Source: National Center for Health Statistics,
Prepared by March of Dimes, Perinatal Data Center, 2008.

A Community-Based Initiative to Prevent Preterm Birth

- A 'real world', ecological design using bundling of evidence-based clinical and public health interventions in different health care settings (academic, private, clinic-based)

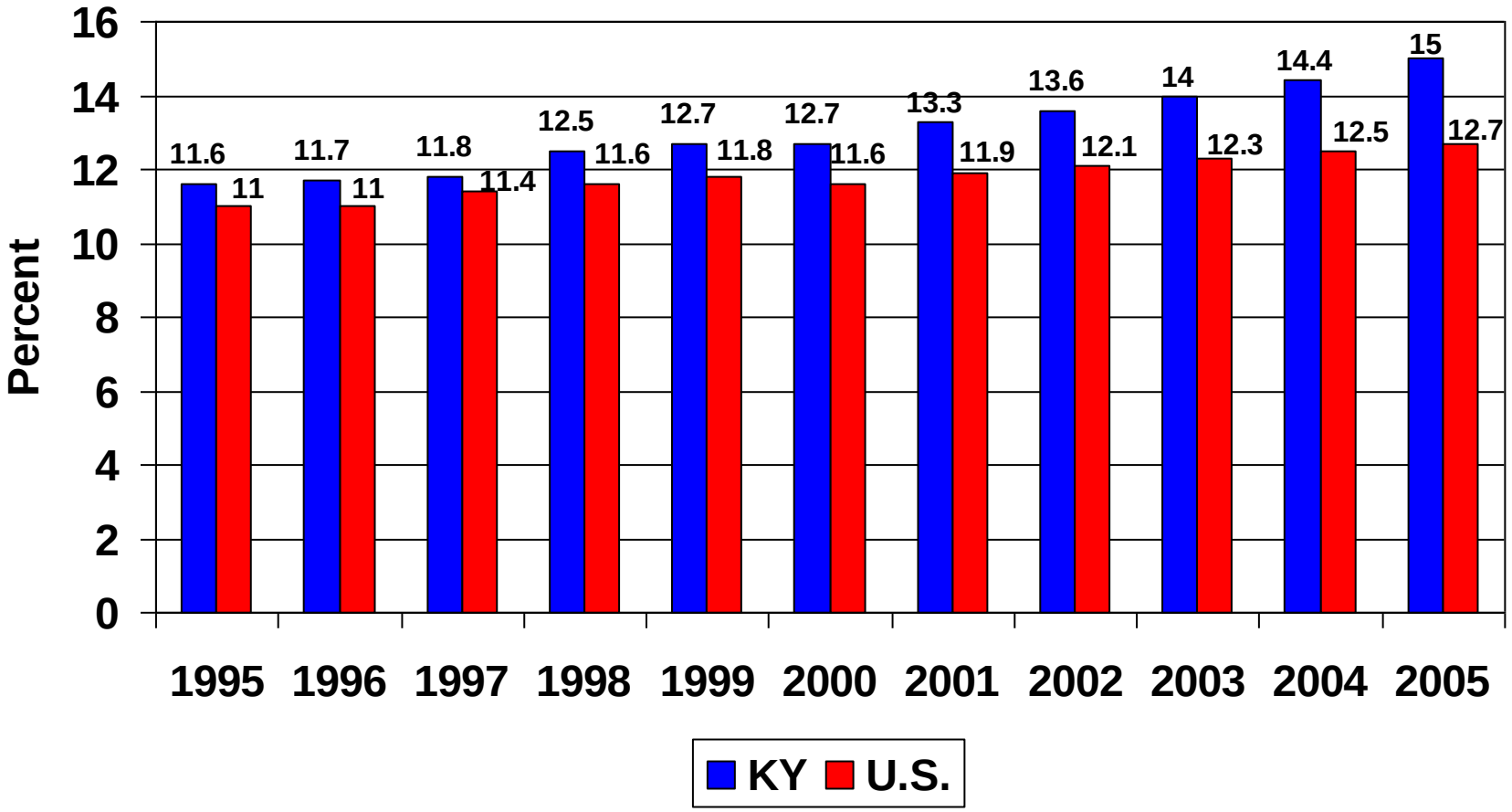
- An innovative, multi-dimensional intervention program designed to prevent "preventable" preterm birth in subgroups of the population where interventions have a likelihood of success in a reasonable period of time

Dr. Karla Damus



www.healthypeople.gov

Percent of Live Births that were Preterm*; Kentucky and U.S.



*Preterm birth is defined as any live birth occurring <37 completed weeks gestation

Data Source: March of Dimes Peristats & National Center for Health Statistics

Healthy Babies ARE WORTH THE WAIT®

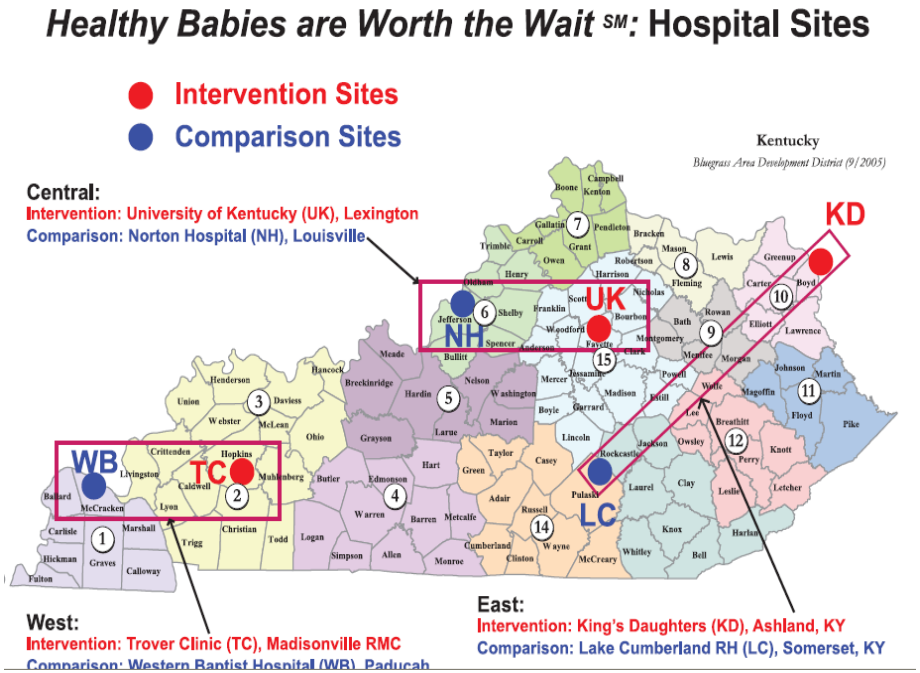
A Prematurity Prevention Partnership

July 2005-June 2006	July 2006-June 2007	July 2007-December 2009
Baseline	Planning - Training	Implementation

CONCEPTS/DESIGN:

- Ecological "real world" design
- "Bundled" medical and public health interventions
- Based on improving community systems of care and support
- Targeting "preventable" preterm birth

GOAL: 15% reduction



Keys to Community-Based Prematurity Prevention

- DATA → ACTION
  - Can we do better with what we know now?
- RESEARCH → "REAL WORLD"
  - Implement Best Available Evidence
- SILOS → SYSTEMS
  - Comprehensive, coordinated clinical and public health services
- MEDICAL MODEL → ECOLOGICAL MODEL
  - Multiple determinants of health; Prematurity as a public health problem
- RELATIONSHIPS → RESULTS
  - We CAN do better with what we know now

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Data ⇨ Action

We know enough now to do better

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Data ⇨ Action

- Data determines the focus

  Late preterm was driving the increase PTB rates

- Develop the Data

  Consumer & provider surveys, focus groups, ACOG survey, policy and environment surveys

- Data quality matters

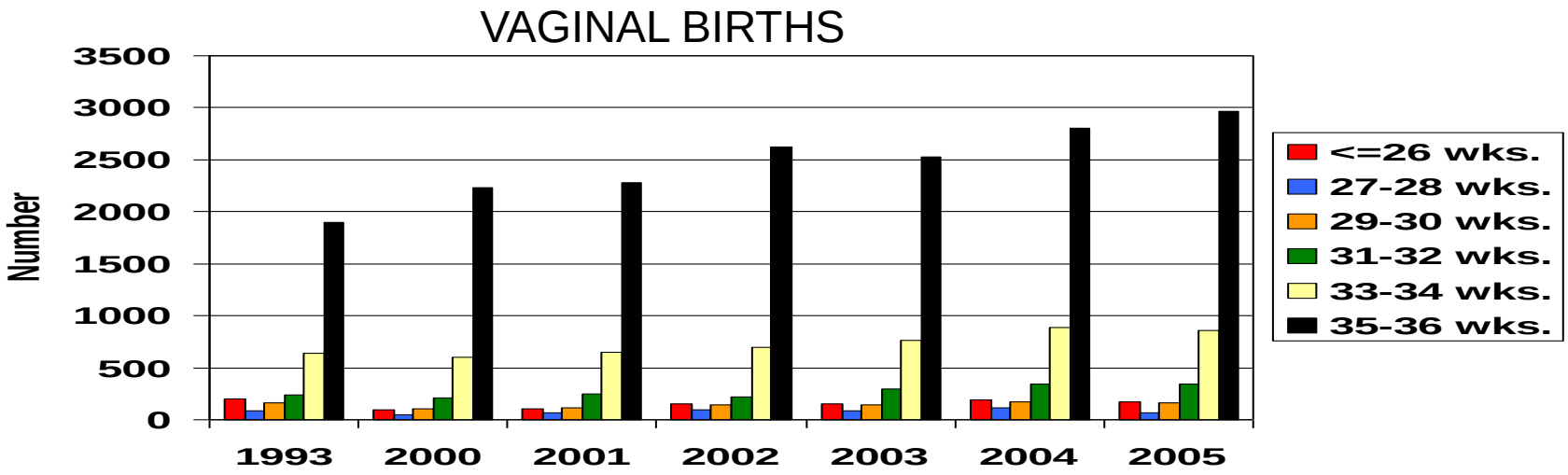
  Data Definitions, consistent collection

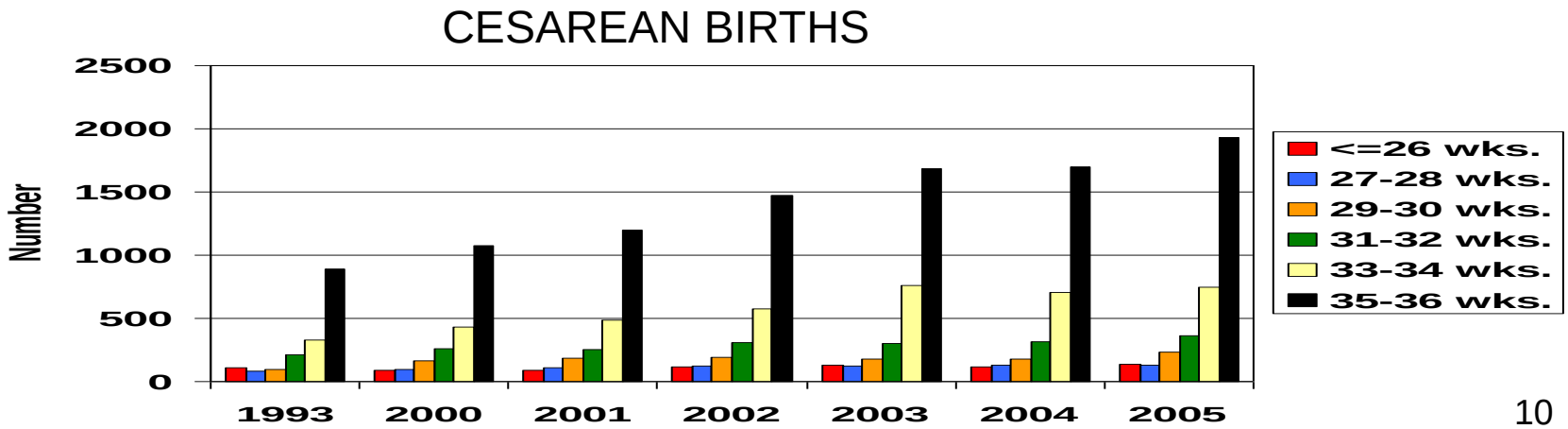
- Local Data drives improvement

  Don’t wait for vital statistics file

  Use or adapt existing data sources

KENTUCKY SINGLETON PRETERM BIRTHS
Trends 1993-2005

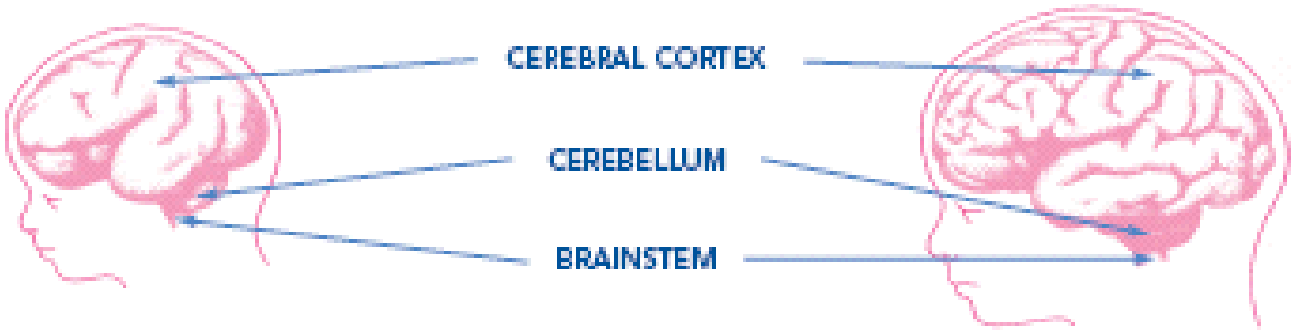




Materials for Professionals

Brain Growth Matters

The brain of a 35 week-old baby is smaller and much less developed than the brain of a baby at 40 weeks.



35 WEEK BRAIN	BRAIN FUNCTION	40 WEEK BRAIN
• Smooth, less developed; fewer circuits and connections	• CEREBRAL CORTEX: site of thinking, reason, learning, motor control, language	• More developed, more circuits and connections
• Small, only about 1/2 the size it will be at term	• CEREBELLUM: where the brain controls balance & coordination, social functioning, hand skills	• Grows and develops to almost double the size from 34 weeks
• Underdeveloped shows up as babies who have apnea – forget to breathe at times	• BRAINSTEM: lowest part of the brain where automatic actions of the body are controlled, like breathing, temperature, swallowing	• More developed – babies born at 40 weeks rarely forget to breathe.

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Example Intervention Site
Late Preterm Birth
Monthly Comparisons
(percent of deliveries)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YR Avg
2006	11	10	10	11	18	13	11	20	13	8	16	10	**13**
2007	14	21	13 launch	12	10	11	12	11	7	9	8	13	**12**
2008	12	12	12	11	14	13	10	8	10	10	10	11	**11**
2009	6	7	7	13	19	7	6	9	8	11	6	11	**9**

Before implementation of an official dept policy

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Research ⇨ Real World

Implement best available evidence

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Research ⇨ Real World

- State of the Science: Grand Rounds (quarterly), Resource centers: Epidemology, latest research, Brain Growth, morbidity in LPTB
- ACOG Guidelines (induction, elective C/S, 17P, cervical length, *antenatal steroids*, etc.)
- Aggressive Treatment of Infections, STI, BV
- Patient Safety (Steve Clark, Kathleen Simpson)
- Quality Improvement, provider feedback
- Centering Pregnancy/ Group prenatal care
- *Smoking Cessation (5A's)*
- Psychosocial screening & referral
- Oral Health Screening & referral
- Breastfeeding
- Evidence-based home visiting models

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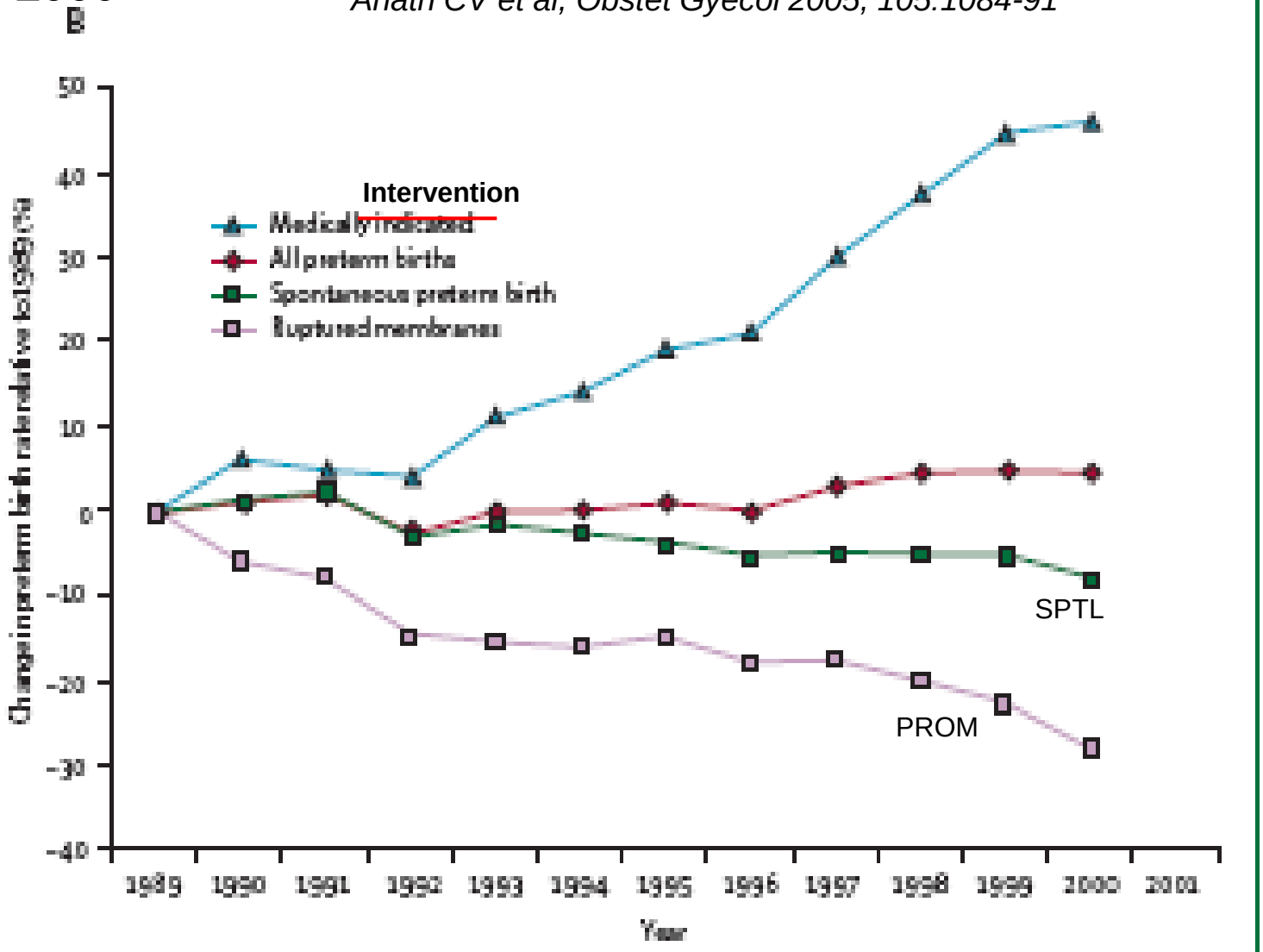
•Reasons for singleton Preterm births in the U.S. 1989-2000

Anath CV et al, Obstet Gyecol 2005; 105:1084-91



ACOG Committee Opinion # 404

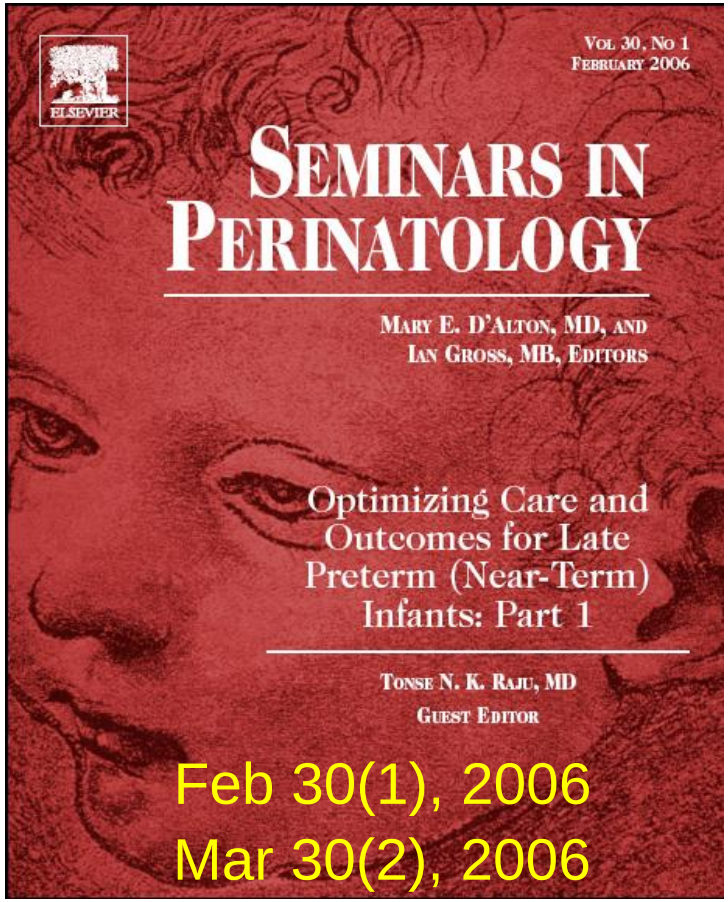
Late Preterm Infants, April 2008

- **Late preterm infants often are mistakenly believed to be as physiologically and metabolically mature as term infants. However, compared with term infants, late–preterm infants are at higher risk than term infants of developing medical complications, resulting in higher rates of infant mortality, higher rates of morbidity before initial hospital discharge, and higher rates of hospital readmission in the first months of life.**

- **Preterm delivery should occur only when an accepted maternal or fetal indication for delivery exists.**

Statement developed jointly with AAP Committee on Fetus & Newborn

July 2005- Invitational NICHD Workshop on Near Term/Late Preterm births (34-36 weeks)



SPECIAL ARTICLE

Optimizing Care and Outcome for Late-Preterm (Near-Term) Infants: A Summary of the Workshop Sponsored by the National Institute of Child Health and Human Development

Tonse N. K. Raju, MD[a], Rosemary D. Higgins, MD[a], Ann R. Stark, MD[b], Kenneth J. Leveno, MD[c]

[a]National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland; [b]Division of Neonatology, Department of Pediatrics, Baylor College of Medicine, Houston, Texas; and [c]Department of Obstetrics and Gynecology, University of Texas Southwestern Medical Center, Dallas, Texas

The authors have indicated they have no financial relationships relevant to this article to disclose.

Peds, 118(3):1207-14, 2006

Clinics in Perinatology, Dec 2006
Editors: Lucky Jain, Tonse Raju

Late Preterm Infant Morbidity in the Neonatal Period

- Late Preterms were 7X more likely to have newborn morbidity than term infants. Newborn morbidity rate doubled for each gestational week earlier than 38 weeks
- The proportion of morbidity among late preterm infants was relatively high across the board, ranging from 18.1% to 27.8%
- The independent effect of late preterm birth on morbidity was 7X stronger than any of the selected maternal conditions

Shapiro-Mendosa CK et al. Pediatrics 2008, 121:e223-e232

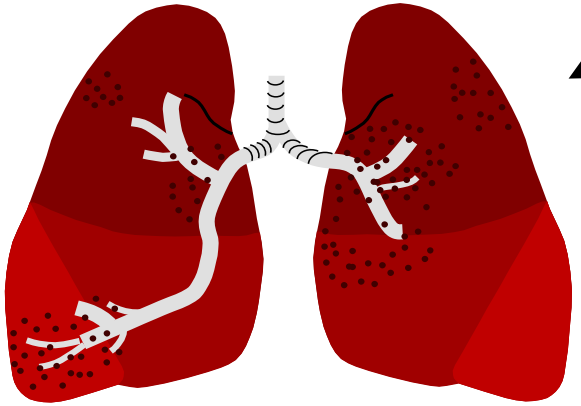
Lung Transition to Life Outside the Womb

Onset of labor triggers
Decrease of Fetal lung
Fluid secretion

Mechanical Forces
"Vaginal Squeeze"

?

?



ENaC activation
Specificity,
number

Transition from
Fluid-filled to
Air filled Lung

Surfactant to
coat alveoli

Steroids before birth enhance maturation

Adapted from
Jain L and Eaton DC.
Sem Perinatol 30:34-43

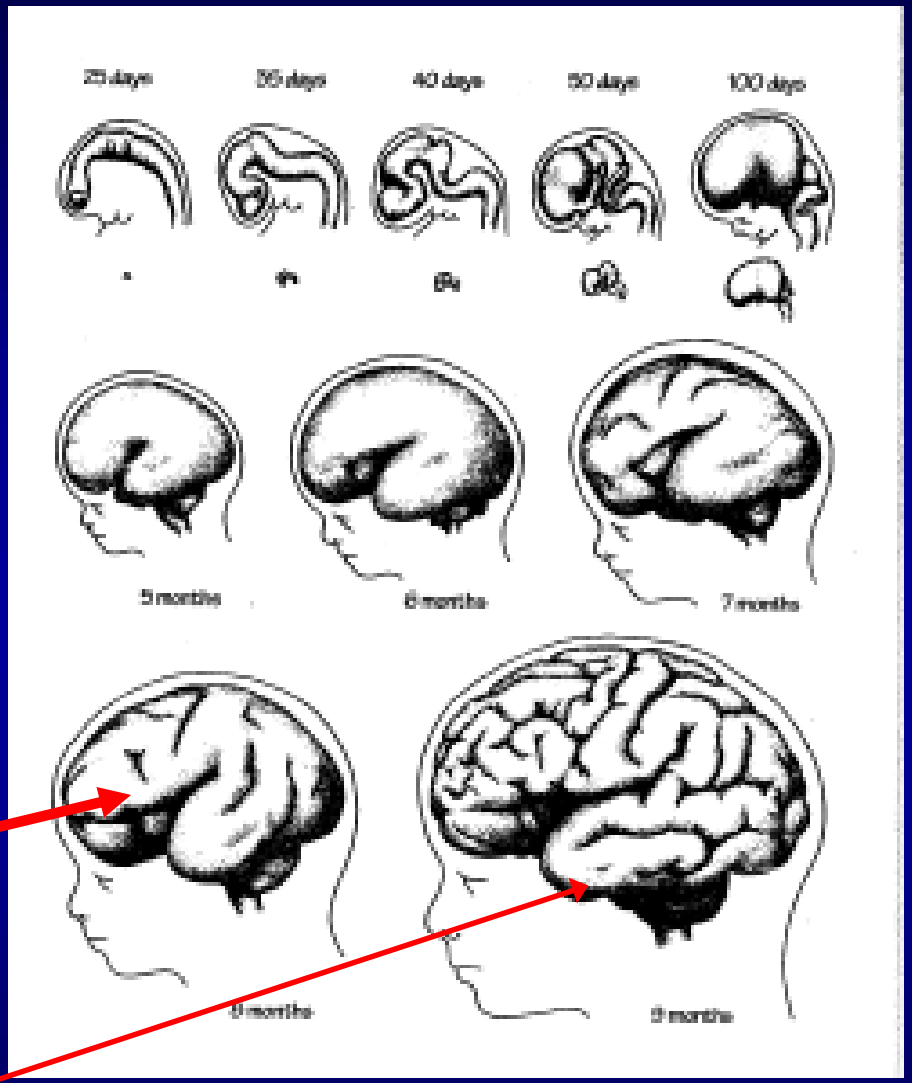
ACOG Practice Bulletin, Number 107 August 2009 Induction of labor

- Reinforced no elective induction or C/S should be done prior to 39 weeks gestation
- Specific criteria for establishing gestational age should be followed
- A mature fetal lung test result before 39 weeks of gestation, in the absence of appropriate clinical circumstances, is not an indication for delivery. (see Bates, 2009)

Development of the Human Brain through Gestation

- The Brain is the last major organ system to develop
- Lower functions mature first, cortex last

Brain at 35 wks weighs only 2/3 what it will weigh at term



Cowan WM. Sci Am 241:113, 1979

The Late Preterm Infant – Brain Development: Brainstem

THE BRAINSTEM CONTROLS AUTOMATIC FUNCTIONS

TERM INFANTS show mature:

- **Rhythmic Respiration**
- **Temperature regulation**
- **Coordination of suck/swallow/breathe**

LATE PRETERM INFANTS Symptoms of immaturity:

- **Apnea**
- **Poor temp control**
- **Feeding problems**

- Darnall RA, Ariagno RL, Kinney HC. The Late Preterm Infant and the Control of Breathing, Sleep, and Brainstem Development: A Review. Clin Perinatol 33(2006): 883-914
- Hunt CE. Ontogeny of Autonomic Regulation in Late Preterm Infants Birn at 34-37 weeks Postmenstrual Age. Semin Perinatol 30 (2006): 73-76

The Late Preterm Infant – Brain Development: Cerebellum

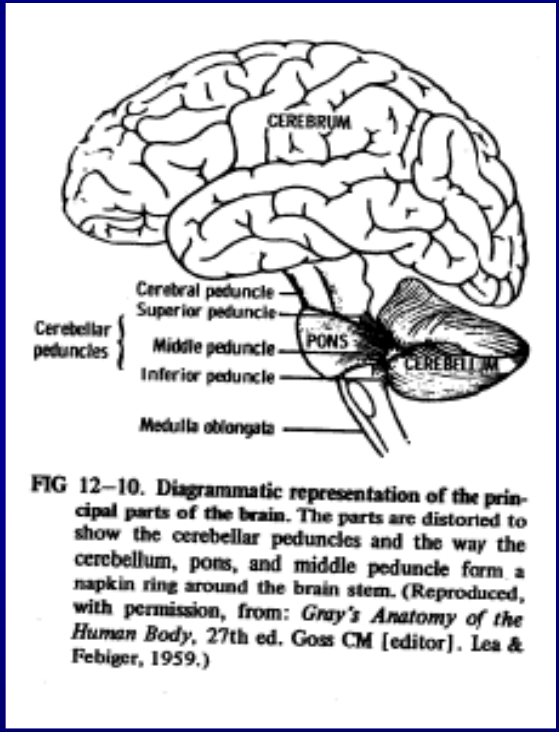


FIG 12–10. Diagrammatic representation of the principal parts of the brain. The parts are distorted to show the cerebellar peduncles and the way the cerebellum, pons, and middle peduncle form a napkin ring around the brain stem. (Reproduced, with permission, from: *Gray's Anatomy of the Human Body*, 27th ed. Goss CM [editor]. Lea & Febiger, 1959.)

CEREBELLUM

- **–Volume of the Cerebellum at 34 weeks is only 55% of that at term**
- **–Preterm Birth alters cerebellar growth and autoregulation**
- **–Function related to**
  - **•Fine motor control**
  - **•Coordination**
  - **•Motor sequencing**
  - **•Cognition & language**
  - **•Social function & learning**

Adams- Chapman I. Neurodevelopmental Outcome of the Late Preterm Infant. Clin Perinatol 33(2006): 947-964

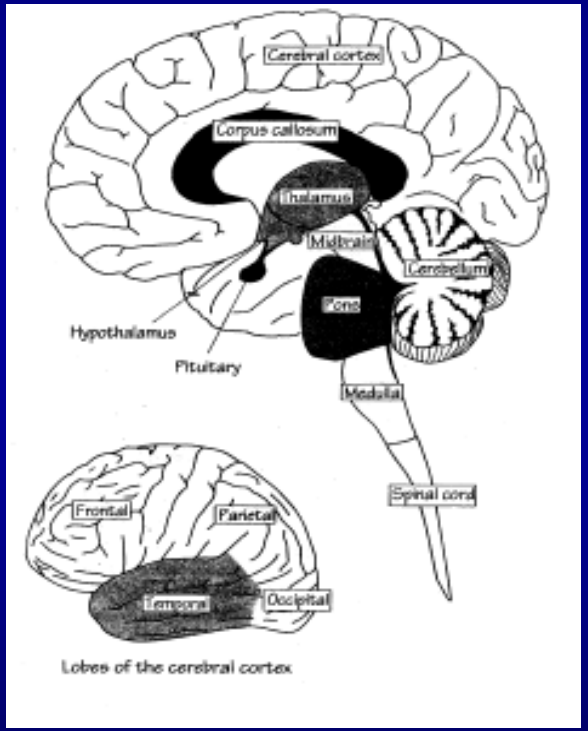
The Late Preterm Infant – Brain Development: White Matter

- **Volume of the white matter increases 5-fold from 35-41 weeks**

- PeriVentricular Leukomalacia precedes the onset of active myelin sheath synthesis – pre-oligodendrocytes

- PVL assoc with cognitive and behavior abnormalities correlates with preferential injury to pre-OL

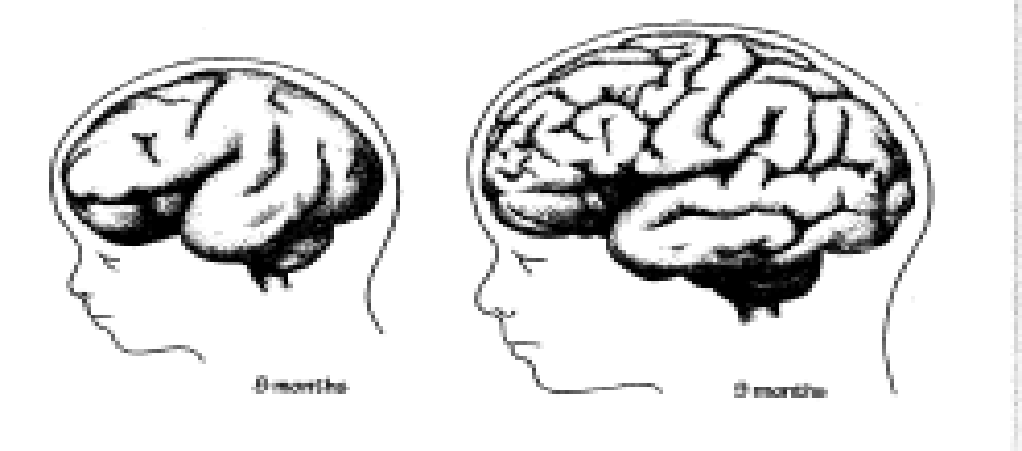
-In the Late Preterm Infant, PreOL predominate in white matter



Kinney HC. The Near-Term (Late Preterm) Human Brain and Risk for Periventricular Leukomalacia: A Review. Semin Perinatol 30 (2006): 81-88

The Late Preterm Infant – Brain Development: Cerebral Cortex

- CEREBRAL CORTEX Volume at 34 weeks is only 53% of the volume at term
- Cortex is where we think and do higher order functions – cognition, perception, reason, motor control
- Brain is in the "Period of Organization" [Hard-wiring]



Healthy Babies are Worth the Wait—
Part 2…

"A growing body of research suggests that the contribution a healthy pregnancy makes to optimal brain development might be comparable to that of appropriate interaction between parents and children once they are born, and therefore warrants greater attention to efforts to promote high quality prenatal care and other public health strategies to support and educate pregnant women."

Thompson & Nelson, 2001. American Psychologist 56(1):5-15

Concerns about Late Preterm Brain Development And Potential Impact

"Because one out of 11 births in this country is a late preterm birth, and

since the brain of the late preterm infant is less mature than that of the term infant,

even a minor increase in the rate of neurologic disability and scholastic failure in this group can have a huge impact on the health care and educational systems."

Raju TNK. Epidemiology of Late Preterm Births. Clin Perinatol 33 (2006) 751-763

Mortality in the Late Preterm

- Late preterm infants were 3 times more likely than term infants to die in the first year of life
- Even excluding congenital anomalies, infant mortality rates for late preterm infants were 2.6 times higher than in term infants
    - Early Neonatal (<7 days) 6X more likely to die
    - Late Neonatal 3 X more likely
    - Post Neonatal: 2X more likely
- Late preterm infants are 8.5 times more likely to die with a diagnosis of respiratory distress in the early neonatal period
- Late preterm infants are twice as likely as term infants to die of SIDS

Tomashek, KM, Shapiro-Mendose CK, Davidoff MJ, Petrini JR. Differences in Mortality between Late-Preterm and Term Singleton Infants in the United States, 1995-2002. *J Pediatr 2007:151:450-6*

Late Preterm Outcomes: Childhood

- **Increased risk of ADHD and other clinically significant behavior problems**
  - Linnet KM et al Arch Dis Child 2006; 91:655-60
  - Gray RF et al Pediatrics 2004; 114:736-43
  - McCormick et al Pediatrics 1996; 97:18-25

- **Increased cognitive dysfunction and learning problems**
  - VanBaar AL. Pediatrics 2009; 124:251-7
  - Chyi LJ et. al. J Pediatr 2008: 153:25-31
  - Saigal S, et al. Lancet 2008;371:261-69
  - Pietz et al early Hum Dev 2004;79:131-43

Late Preterm Outcomes: Childhood

- **Increased risk Cerebral Palsy and Mental Retardation**
  - Petrini et al. J Peds, 2008
  - Moster et al. NEJM 2008; 359:262-73
  - Himmelman et al. Acta Paediatr; 2005;94:287-94
  - Moster et al. JAMA 2010; 304(9):976-982
    (relative risk of CP 3.7 at 37 weeks)
  - Talge NM et al Pediatrics 2010; 124:1124-1131
    (2-3X incr risk IQ<85)

Late Preterm Infants: Outcomes as Young Adults

Compared to infants born at term, Late Preterm have:

- **Increased risk Schizophrenia and mental disorders (RR1.6)**
- **40% increased risk for medical disability that severely limits working capacity as an adult**
- **Long-term neurologic handicap due to prematurity measured in young adults (age 23-29)**

Moster et al. NEJM 2008; 359:262-73

Lindstrom K et al. Pediatr 120:70, 2007

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 8, 2009 VOL. 360 NO. 2

Timing of Elective Repeat Cesarean Delivery at Term and Neonatal Outcomes

Alan T.N. Tita, M.D., Ph.D., Mark B. Landon, M.D., Catherine Y. Spong, M.D., Yinglei Lai, Ph.D., Kenneth J. Leveno, M.D., Michael W. Varner, M.D., Atef H. Moawad, M.D., Steve N. Caritis, M.D., Paul J. Meis, M.D., Ronald J. Wapner, M.D., Yoram Sorokin, M.D., Menachem Miodovnik, M.D., Marshall Carpenter, M.D., Alan M. Peaceman, M.D., Mary J. O'Sullivan, M.D., Baha M. Sibai, M.D., Oded Langer, M.D., John M. Thorp, M.D., Susan M. Ramin, M.D., and Brian M. Mercer, M.D., for the Eunice Kennedy Shriver NICHD Maternal–Fetal Medicine Units Network*

ABSTRACT

BACKGROUND

Because of increased rates of respiratory complications, elective cesarean delivery is discouraged before 39 weeks of gestation unless there is evidence of fetal lung maturity. We assessed associations between elective cesarean delivery at term (37 weeks of gestation or longer) but before 39 weeks of gestation and neonatal outcomes.

METHODS

We studied a cohort of consecutive patients undergoing repeat cesarean sections performed at 19 centers of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal–Fetal Medicine Units Network from 1999 through 2002. Women with viable singleton pregnancies delivered electively (i.e., before the onset of labor and without any recognized indications for delivery before 39 weeks of gestation) were included. The primary outcome was the composite of neonatal death and any of several adverse events, including respiratory complications, treated hypoglycemia, newborn sepsis, and admission to the neonatal intensive care unit (ICU).

RESULTS

Of 24,077 repeat cesarean deliveries at term, 13,258 were performed electively; of these, 35.8% were performed before 39 completed weeks of gestation (6.3% at 37 weeks and 29.5% at 38 weeks) and 49.1% at 39 weeks of gestation. One neonatal death occurred. As compared with births at 39 weeks, births at 37 weeks and at 38 weeks were associated with an increased risk of the primary outcome (adjusted odds ratio for births at 37 weeks, 2.1; 95% confidence interval [CI], 1.7 to 2.5; adjusted odds ratio for births at 38 weeks, 1.5; 95% CI, 1.3 to 1.7; P for trend <0.001). The rates of adverse respiratory outcomes, mechanical ventilation, newborn sepsis, hypoglycemia, admission to the neonatal ICU, and hospitalization for 5 days or more were increased by a factor of 1.8 to 4.2 for births at 37 weeks and 1.3 to 2.1 for births at 38 weeks.

CONCLUSIONS

Elective repeat cesarean delivery before 39 weeks of gestation is common and is associated with respiratory and other adverse neonatal outcomes.

From the University of Alabama at Birmingham, Birmingham (A.T.N.T.); Ohio State University, Columbus (M.B.L.); Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD (C.Y.S.); George Washington University Biostatistics Center, Washington, DC (Y.L.); the University of Texas Southwestern Medical Center, Dallas (K.J.L.); University of Utah, Salt Lake City (M.W.V.); University of Chicago, Chicago (A.H.M.); University of Pittsburgh, Pittsburgh (S.N.C.); Wake Forest University School of Medicine, Winston-Salem, NC (P.J.M.); Thomas Jefferson University, Philadelphia (R.J.W.); Wayne State University, Detroit (Y.S.); University of Cincinnati, Cincinnati, and Columbia University, New York (M.M.); Brown University, Providence, RI (M.C.); Northwestern University, Chicago (A.M.P.); University of Miami, Miami (M.J.O.); University of Tennessee, Memphis (B.M.S.); University of Texas Health Science Center, San Antonio (O.L.); the University of North Carolina, Chapel Hill (J.M.T.); University of Texas Health Science Center, Houston (S.M.R.); and Case Western Reserve University, Cleveland (B.M.M.). Address reprint requests to Dr. Tita at the Department of Obstetrics and Gynecology, Division of Maternal–Fetal Medicine, University of Alabama at Birmingham, 619 19th St. South, Birmingham, AL 35249, or at alan.tita@obgyn.uab.edu.

*The other members of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Maternal–Fetal Medicine Units Network are listed in the Appendix.

N Engl J Med 2009;360:111-20.

Elective cesarean delivery before 39 wks is *common*- 35.8% in network centers

And is associated with respiratory and other adverse neonatal outcomes, increased risk 2-4X:

At 38 wks OR 1.2-2.1

At 37 wks OR 1.8-4.2

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Decreasing Elective Deliveries Before 39 Weeks in an Integrated Health Care System

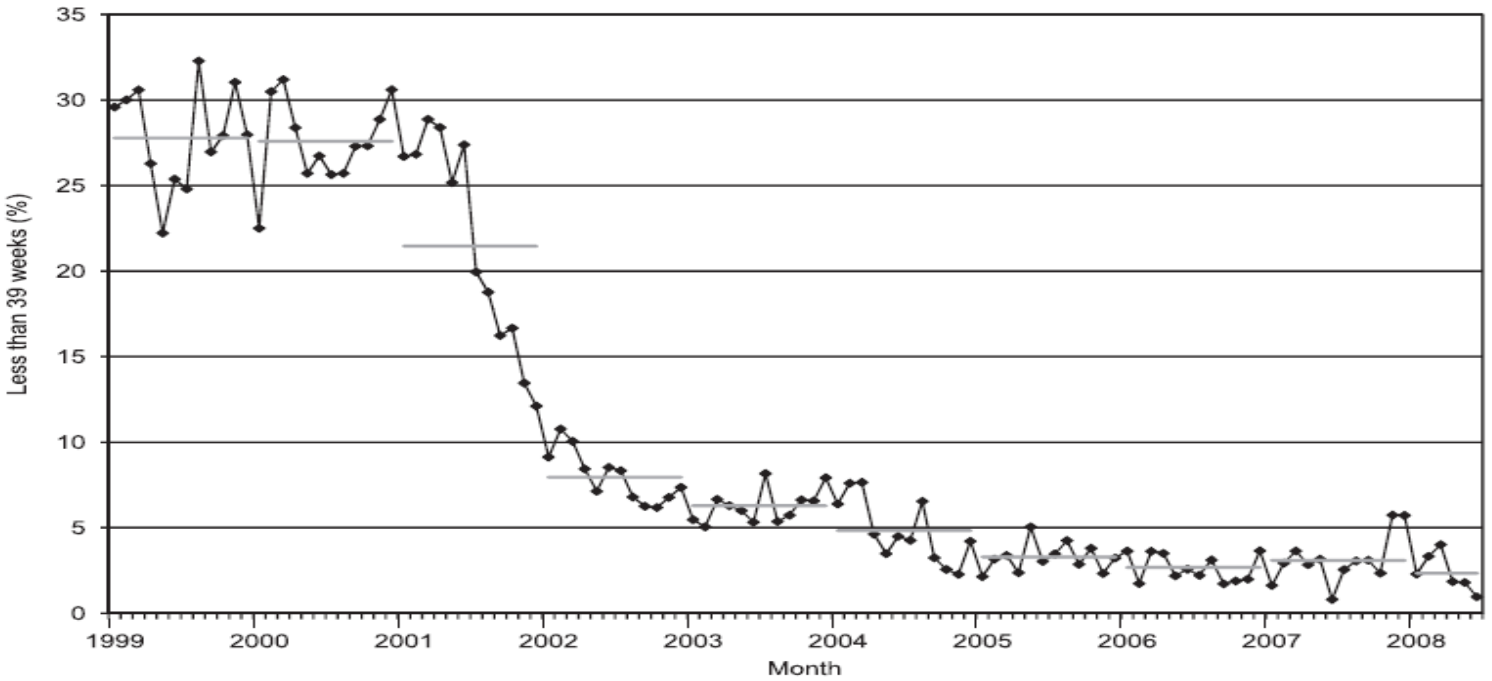

Fig. 3. Percent of elective deliveries before 39 weeks of gestation. Data from Intermountain Healthcare.
Oshiro. Decreasing Elective Deliveries Before 39 Weeks. Obstet Gynecol 2009.

Oshiro, BT. Obstet Gynecol 113(4): 804 - 810 April 2009

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Silos ⇨ Systems

"Comprehensive, coordinated, integration of clinical and public health systems of care"

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Silos ⇨ Systems

- Convene the Partners
  - Hospitals and Health depts as community health leaders
  - Don't really know what services the other provides
- Describe best practices
  - Don't let perfect be the enemy of good
- Determine the gaps
  - Prenatal classes, oral health, MNT, Substance abuse
- What can we do better now?
  - Fax referral form, exchanging staff, co-locating services, consistent information; referrals to health dept services

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Evidence-Based Home Visiting and Preterm Birth

Health Access Nurturing Development Services

- Voluntary, intensive weekly home visitation
- Overburdened, first time moms
  or first time dads
- Regardless of income
- Prenatal to two years of age
- Strengths-based, build resilience in families
- Designed to improve both health & social outcomes
- Mix of professionals and paraprofessionals

How Risk Reduction and Health Promotion Strategies influence Health Development

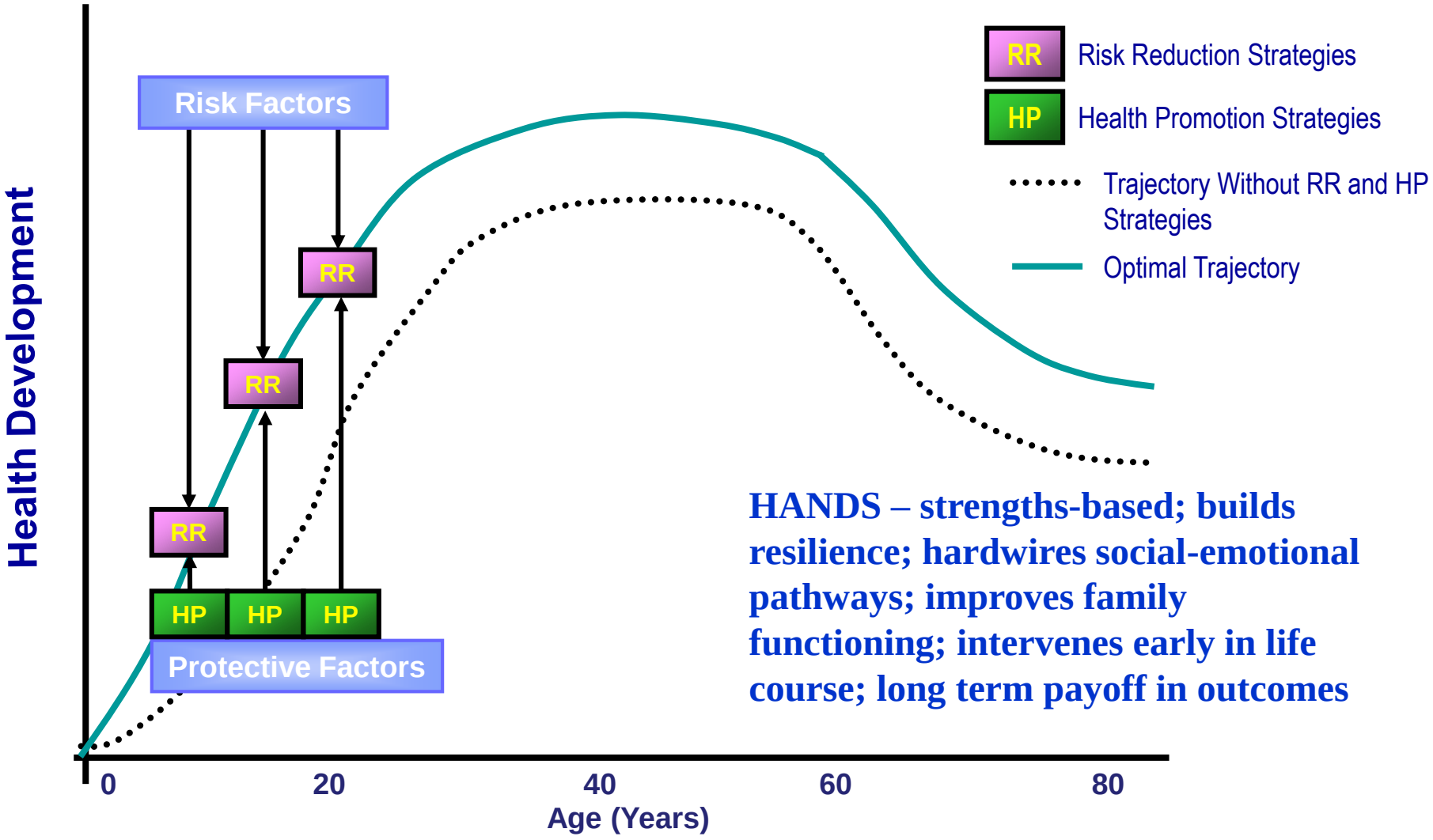
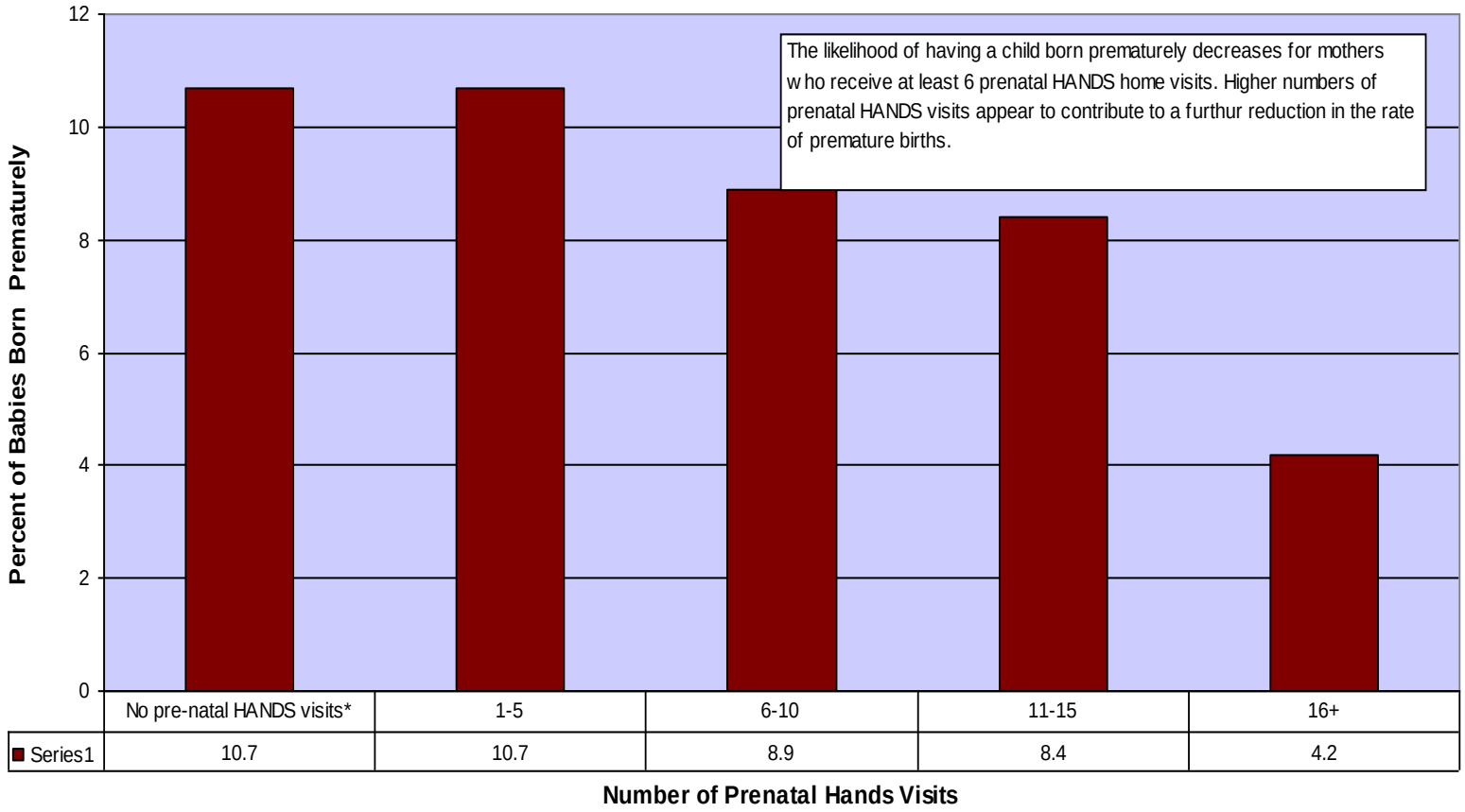


FIGURE 4: This figure illustrates how risk reduction strategies can mitigate the influence of risk factors on the developmental trajectory, and how health promotion strategies can simultaneously support and optimize the developmental trajectory. In the absence of effective risk reduction and health promotion, the developmental trajectory will be sub-optimal (dotted curve). From: Halfon, N., M. Inkelas, and M. Hochstein. 2000. The Health Development Organization: An Organizational Approach to Achieving Child Health Development. *The Milbank Quarterly* 78(3):447-497.

PREMATURITY in HANDS Participants

Prematurity and Number of Prenatal HANDS Home Visits
(based on 2000-2003 data for all teen mothers with no prior pregnancies, n=19,369)



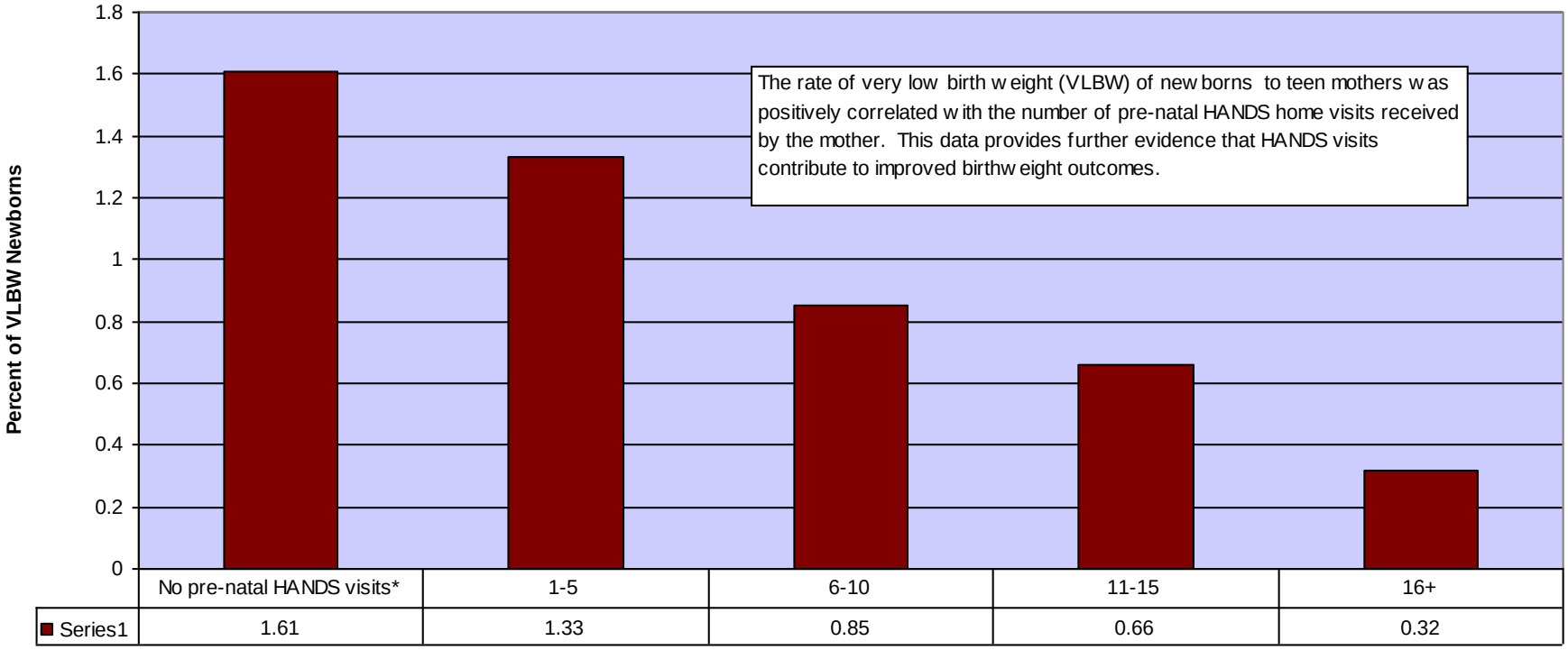
Note: May include families who received subsequent post-natal HANDS visits.

Data sources: Kentucky Vital Statistcs Data and HANDS participant database

VLBW

Very Low Birth Weight (<1500 grams) by Prenatal HANDS Home Visits

(based on 2000-2003 data for all teen mothers with no prior pregnancies, n=19,369)



	No pre-natal HANDS visits*	1-5	6-10	11-15	16+
Series1	1.61	1.33	0.85	0.66	0.32

Note: May include families who received subsequent post-natal HANDS visits.

Data sources: Kentucky Vital Statistcs Data and HANDS participant database

R.E.A.C.H. of Louisville, Inc.

Resources for Education, Adaptation, Change and Health, Inc.

Silos ⇨ Systems

- Improve referral linkages --Screening and referral is not enough
  - Recruited dentists to accept pregnant medicaid patients
  - Fax referral allowed proactive contact
  - Staff located in linking agency
- Coordination and consistent messages
  - Smoking cessation classes (coordination)
  - Consistent messages at all contacts
- Co-location of services/ Access
  - Oral Health: Dental chair in Women's Center
  - Substance abuse: placed social worker in local OB offices

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Medical Model → Ecological Model

Multiple Determinants of Health

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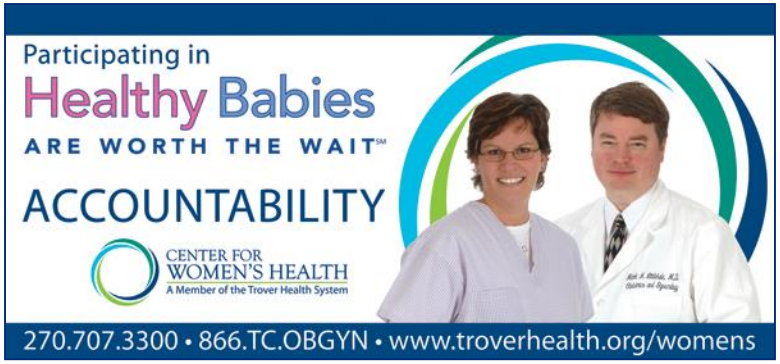
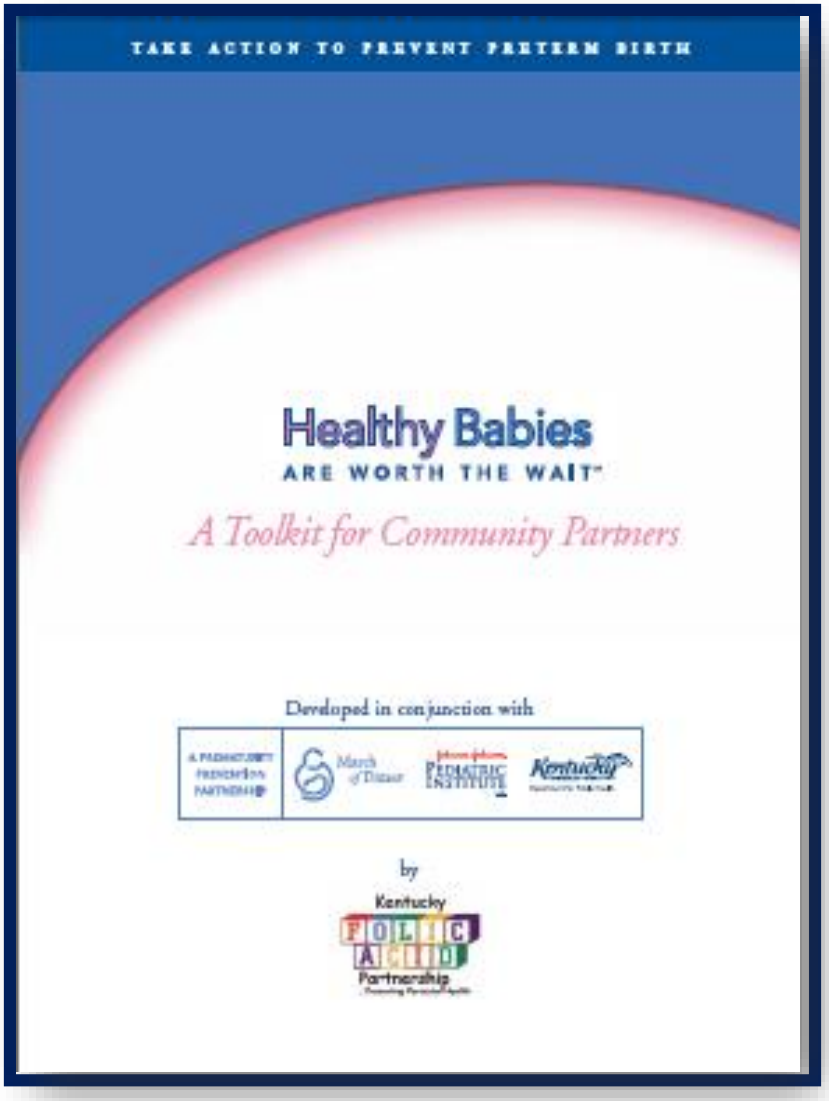
Ecological Influences on Health

COMMUNITY MESSAGES

- **Full Term is about 40 weeks**
- **Unless there are medical complications, women should try to carry pregnancy to a full 40 weeks, because….**
- **Much of the brain development happens in those last 4-6 weeks of pregnancy**
- **Preventing prematurity improves the lives of families and communities**
- **Available at www.kfap.org (The KY Folic Acid Partnership)**



Example billboard



What Do Women think is Term?

- **Goldenberg et al, 2009. Women's Perceptions Regarding the Safety of Birth at Various Gestational Ages. Obstet Gynecol 2009. 114:1254-8**
- **Survey of 650 women enrolled in an insurance plan who had recently had a baby**

  "At what gestational age do you believe a baby is considered full term:

  - **Responses of </=37 weeks 45.7%**
  - **38 weeks 29.1%**
  - **39-40 weeks (correct response) 25.2%**
- **92% thought that giving birth before 39 wks was safe**

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Relationships → Results

We can do better

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Relationships ⇨ Results

- Share and Celebrate

  - annual all-site meetings; scholarships to other mtgs.

- Small wins add up

  Process measures – local measures of LPTB, referrals, stories

  -C/S rates incr 2%, smoking decreased 10%

- Making a Difference motivates

Percent Change in Preterm and Late Preterm Birth Rates US, KY and Selected Contiguous States, 2006-2008

	Preterm (<37 wks)					Late preterm (34-36 wks)				
	2006	2007	2008	% Chng 06-07	% Chng 07-08	2006	2007	2008	% Chng 06-07	% Chng 07-08
United States	12.8	12.7	12.3	-0.8	-3.1	9.1	9.0	8.8	-1.1	-2.2
Kentucky	15.1	15.2	14	0.7	-7.9	10.9	11.0	10.2	0.9	-7.3
Tennessee	14.8	14.2	13.5	-4.1	-4.9	10.3	10.0	9.7	-2.9	-3.0
Virginia	12	12.1	11.3	0.8	-6.6	8.6	8.6	8.1	0.0	-5.8
West Virginia	14	13.9	13.7	-0.7	-1.4	10.3	9.9	10	-3.9	1.0
Indiana	13.2	12.9	12.4	-2.3	-3.9	9.5	9.3	8.9	-2.1	-4.3
Ohio	13.3	13.2	12.6	-0.8	-4.5	9.4	9.2	8.7	-2.1	-5.4

Source: NCHS 2010

Percent Change in Program Eligible Preterm Birth Rates at HBWW Sites 2006-2010

	Preterm (<37 wks)							
	2006	2007*	2008*	2009*	2010**	% Chng 07-08	% Chng 08-09	% Chng 09-10
Intervention East	15.6	15.4	14.4	13.6	13.6	-6.5	-5.6	0
Intervention West	14.8	16.9	15.5	14.0	13.9	-8.3	-9.7	-0.7
Intervention Central	13.3	14.4	13.9	15.1	11.7	-3.5	8.6	-22.5
Combined Intervention	14.4	15.3	14.4	14.3	12.9	-5.9	-0.7	-9.8
Comparison East	14.4	10.1	9.5	14.4	11.4**	-5.9	51.6	-20.8**
Comparison Central	21.3	19.4	17.4	18.2	17.0**	-10.3	4.6	-6.6**
Comparison West	12.5	11.6	10.2	13.3	10.6**	-12.1	30.4	-20.3**
Combined Comparison	16.6	14.4	13.1	15.9	13.8	-9.0	+21.4	-13.2**

Sustained effect

**Program Intervention March 2007 thru Dec 2009*

***** Comparison sites began HBWW interventions in January 2010***

Data Source: Healthy Babies are Worth the Wait program data; singleton, inborn deliveries only

Percent Change in Program Eligible Late Preterm Birth Rates HBWW Sites 2006-2010

	LATE PRETERM (34-36 wks)							
	2006	2007*	2008*	2009*	2010**	% Chng 07-08	% Chng 08-09	% Chng 09-10
Intervention East	13.3	12.1	11.4	10.8	10.2	-5.8	-5.3	-5.6
Intervention West	11.0	12.2	12.5	11.3	11.7	2.5	-9.6	3.5
Intervention Central	9.1	9.8	8.6	10.9	8.0	-12.2	26.7	-26.6
Combined Intervention	10.9	11.1	10.5	10.9	9.6	-5.4	+3.8	-11.9
Comparison East	11.7	8.3	8.3	12.3	9.2**	0	48.2	-25.2**
Comparison Central	14.9	13.1	12.5	12.3	11.2**	-4.6	-1.6	-8.9**
Comparison West	10.8	9.0	9.0	11.1	9.2**	0	23.3	-17.1**
Combined Comparison	12.7	10.5	10.3	12.0	10.2**	-1.9	+16.5	-15.0**

Sustained effect

Rest of KY had slight increase LPTB

**Program Intervention March 2007 thru Dec 2009*

***** Comparison sites began HBWW interventions in January 2010***

Data Source: Healthy Babies are Worth the Wait program data; singleton, inborn deliveries only

Keys to Community-Based Prematurity Prevention

- DATA → ACTION
  - Apply what we know now
- RESEARCH → "REAL WORLD"
  - Implement Best Available Evidence
- SILOS → SYSTEMS
  - Comprehensive, coordinated clinical and public health services
- MEDICAL MODEL → ECOLOGICAL MODEL
  - Multiple determinants of health,Prematurity as a public health problem
- RELATIONSHIPS → RESULTS
  - We CAN do better now

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