

Preterm Labor: Fact, Fiction and Fantasy



San Antonio Prematurity Prevention Summit

Eugene C. Toy, MD

November 4, 2016



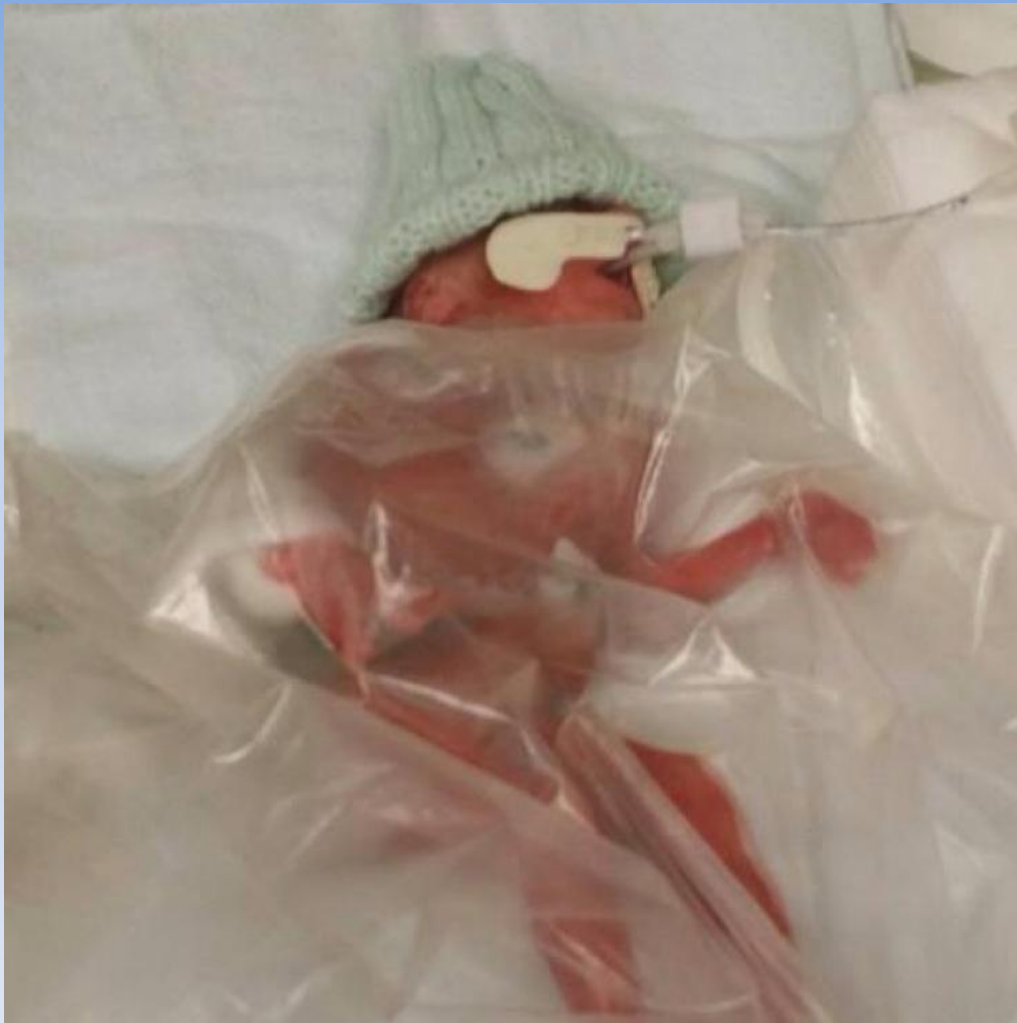
Objectives

- 1. Describe current status of scientific research, identifying causes and predictors, and treatment of preterm births**
- 2. Discuss how key findings will help in our local efforts to prevent prematurity**

No Financial Disclosures



Part I: Defining the Problem



Definition: Preterm Labor

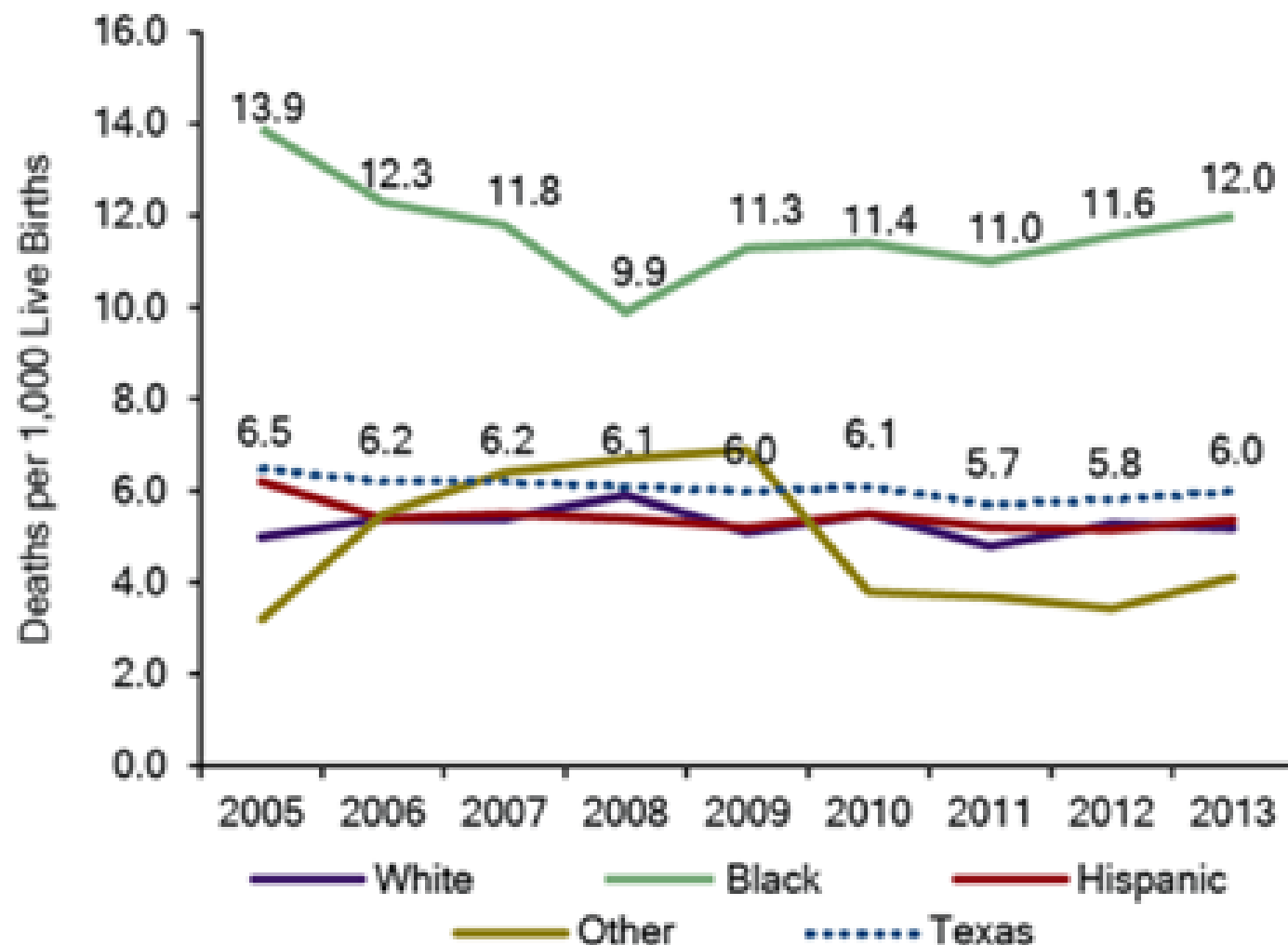
**Uterine Contractions – usually “regular”, AND
Cervical change or dil \geq 2 cm with eff \geq 80%**

- **Preterm Delivery: < 37 completed weeks**
 - Late preterm 34-36.9 weeks
 - About 2% < 32 weeks (1500g – VLBW)
- **Birthweight:**
 - LBW < 2500 grams
 - VLBW < 1500 grams
 - ELBW < 1000 grams

How Big a Problem?

- About 1 of 10 births is less than 37 weeks
- Nationally, PTB rate = 9.6%
- Texas: PTB rate = 10.3%
- This means nationally, about 500,000 preterm neonates/ yr
- In Texas, about 40,000 preterm infants/ yr

Infant Mortality Rate in Texas by Race/Ethnicity, 2005-2013



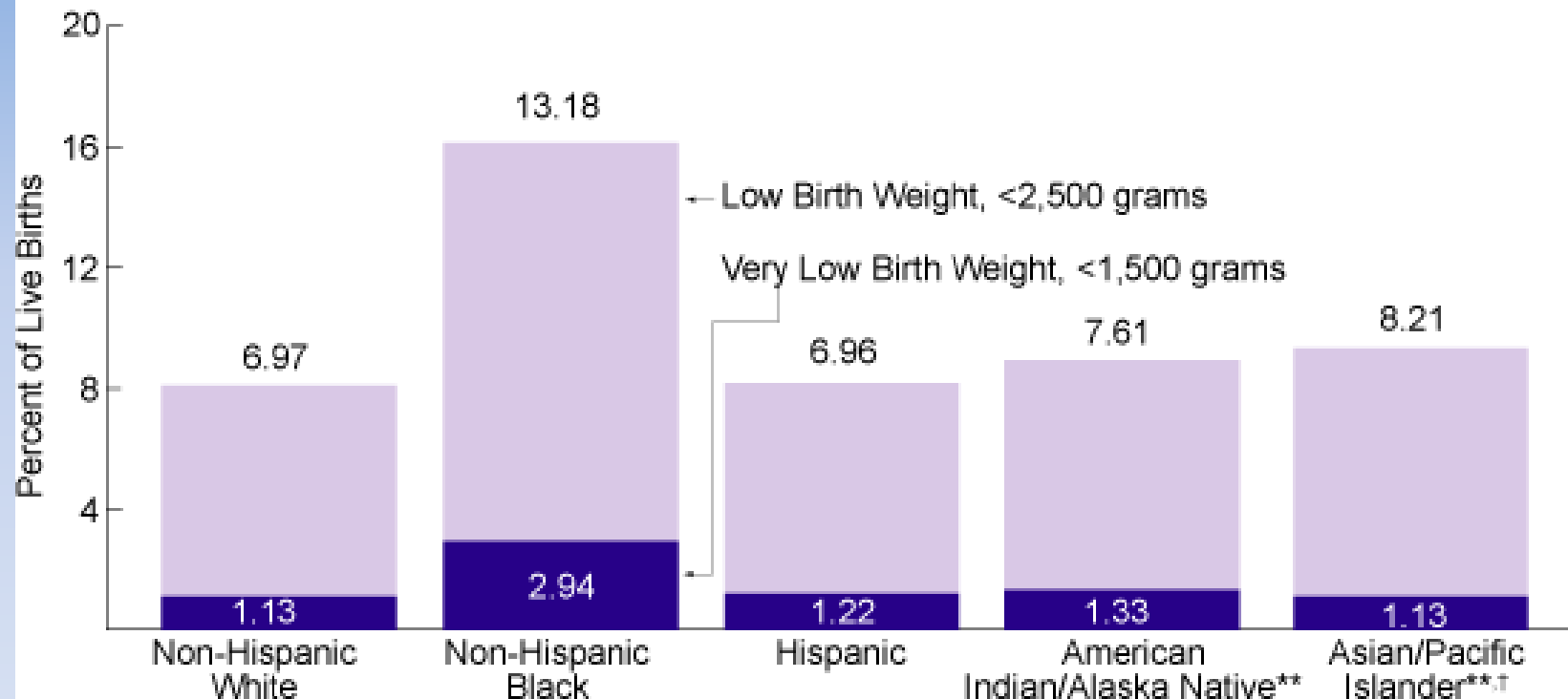
Source: 2005-2013 Birth & Death Files

Prepared by: Office of Program Decision Support

Sept 2015

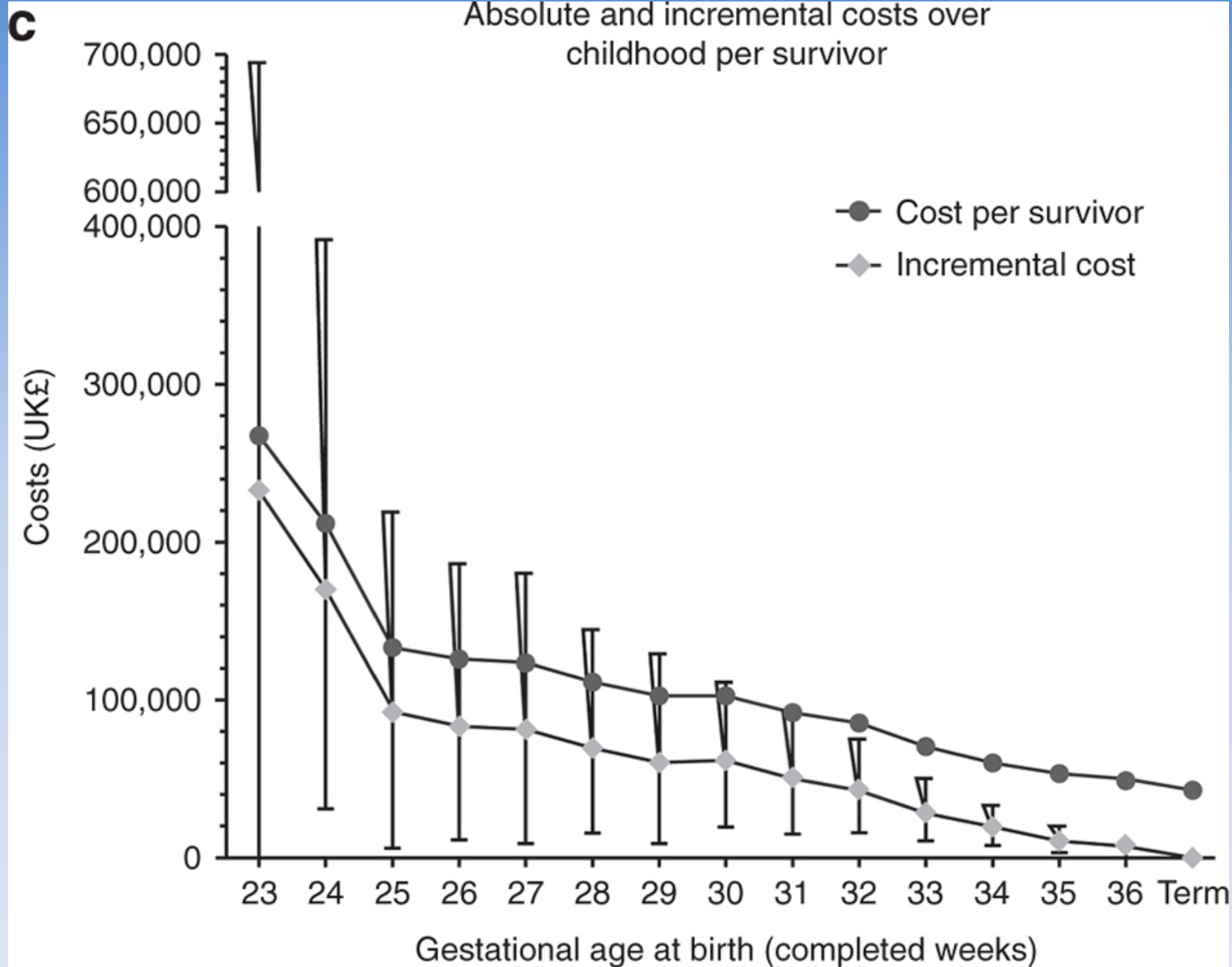
Incidence: PTB

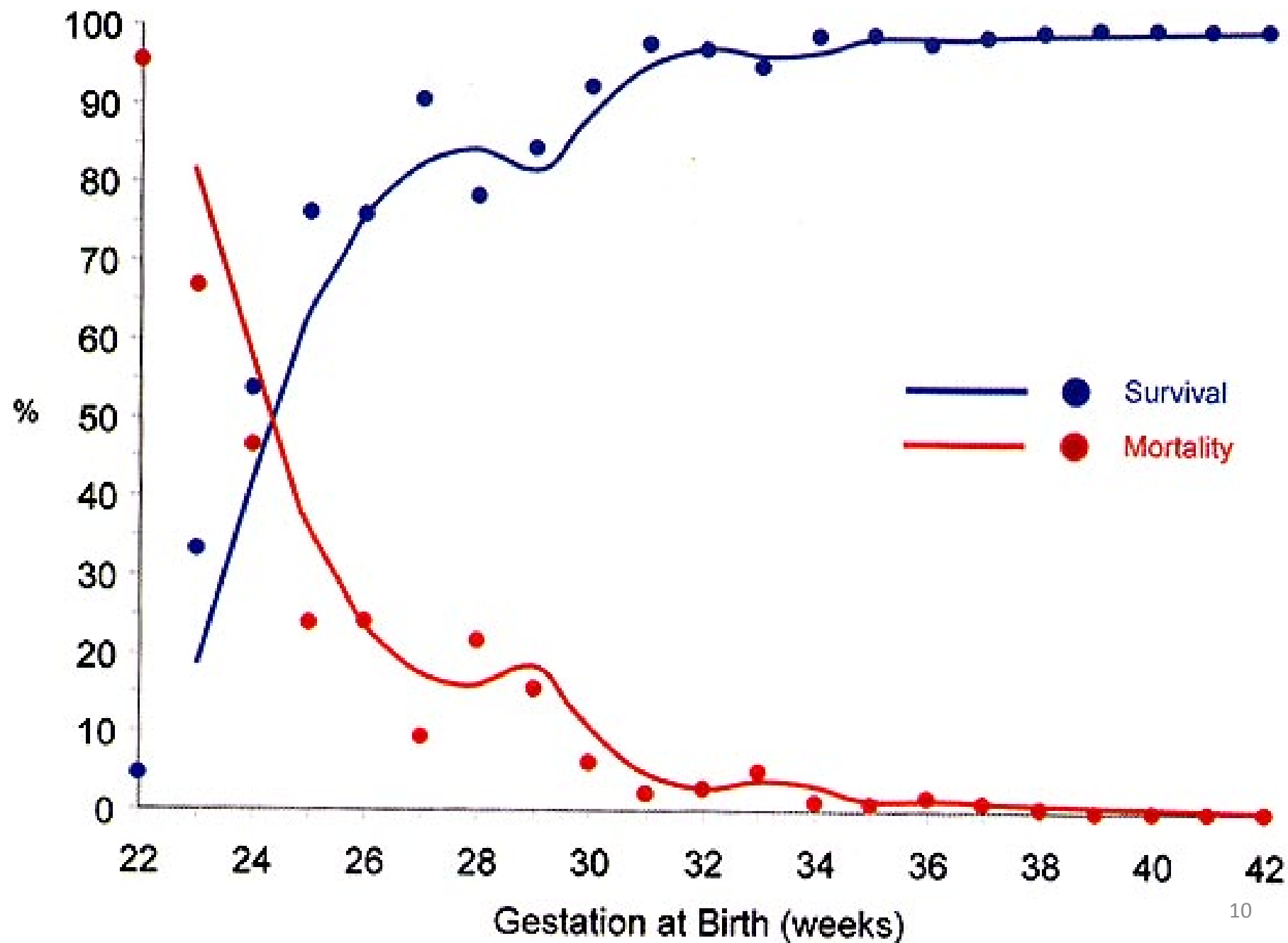
Low and Very Low Birth Weight, by Maternal Race/Ethnicity, 2012*

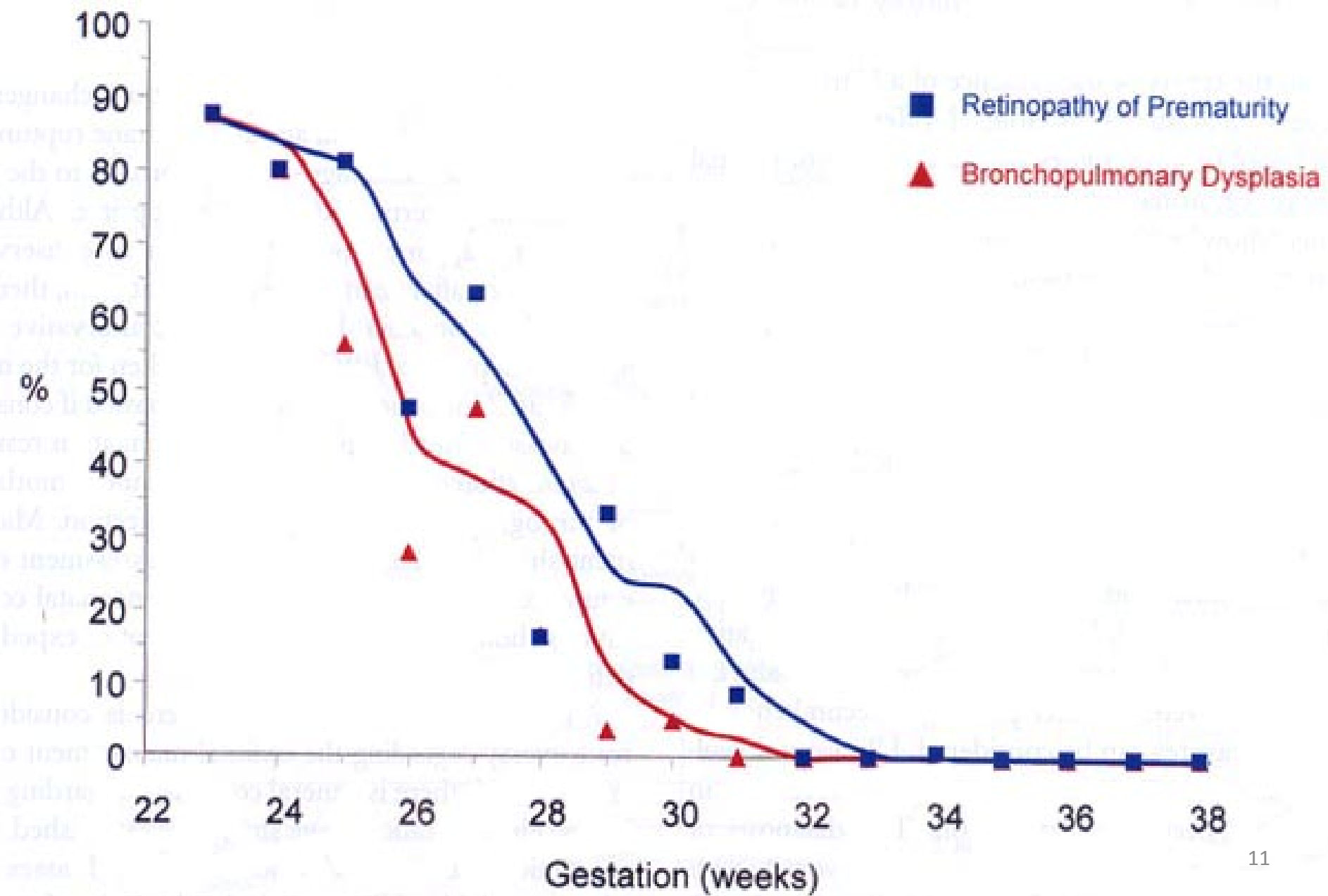


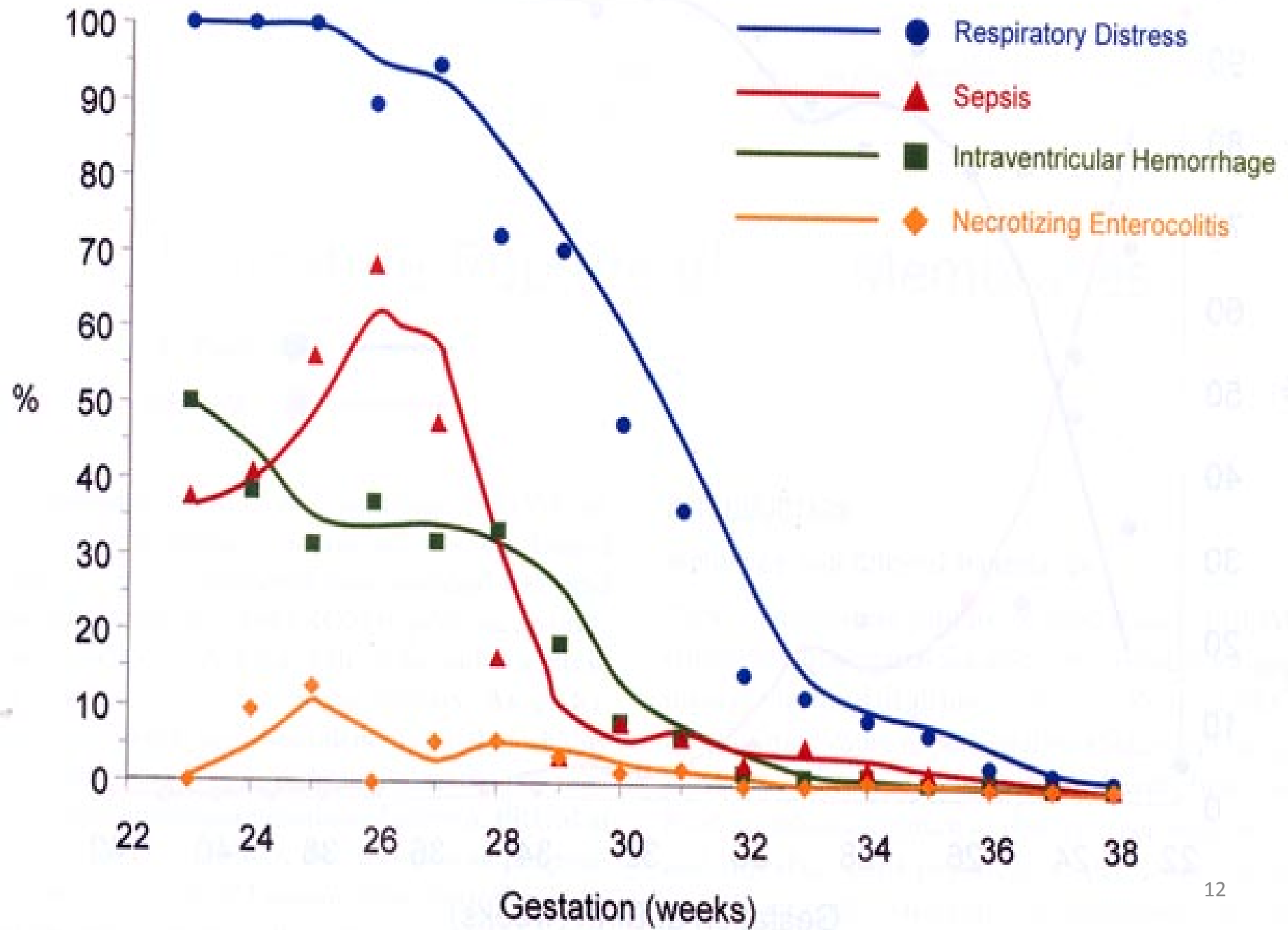
*Data for 2012 are preliminary. **Includes Hispanics. †Separate data for Asians and Native Hawaiians and Other Pacific Islanders not available.

Source: Hamilton BE, Martin JA, Ventura SJ. Births: Preliminary data for 2012. National vital statistics reports; vol 62 no 3. Hyattsville, MD: National Center for Health Statistics. 2013.









Neonatal deaths
among preterm
babies in 2010

Survivors with
neurodevelopmental
disability in those
born preterm in 2010

641,500

780,000
babies
< 28 wk
gestational age

72,400 children
(52% of survivors)

699,400

1.6 million babies
28–31 wk
gestational age

210,400 children
(24.5% of survivors)

644,700

12.6 million babies
32–36 wk
gestational age

629,900 children
(5% of survivors)

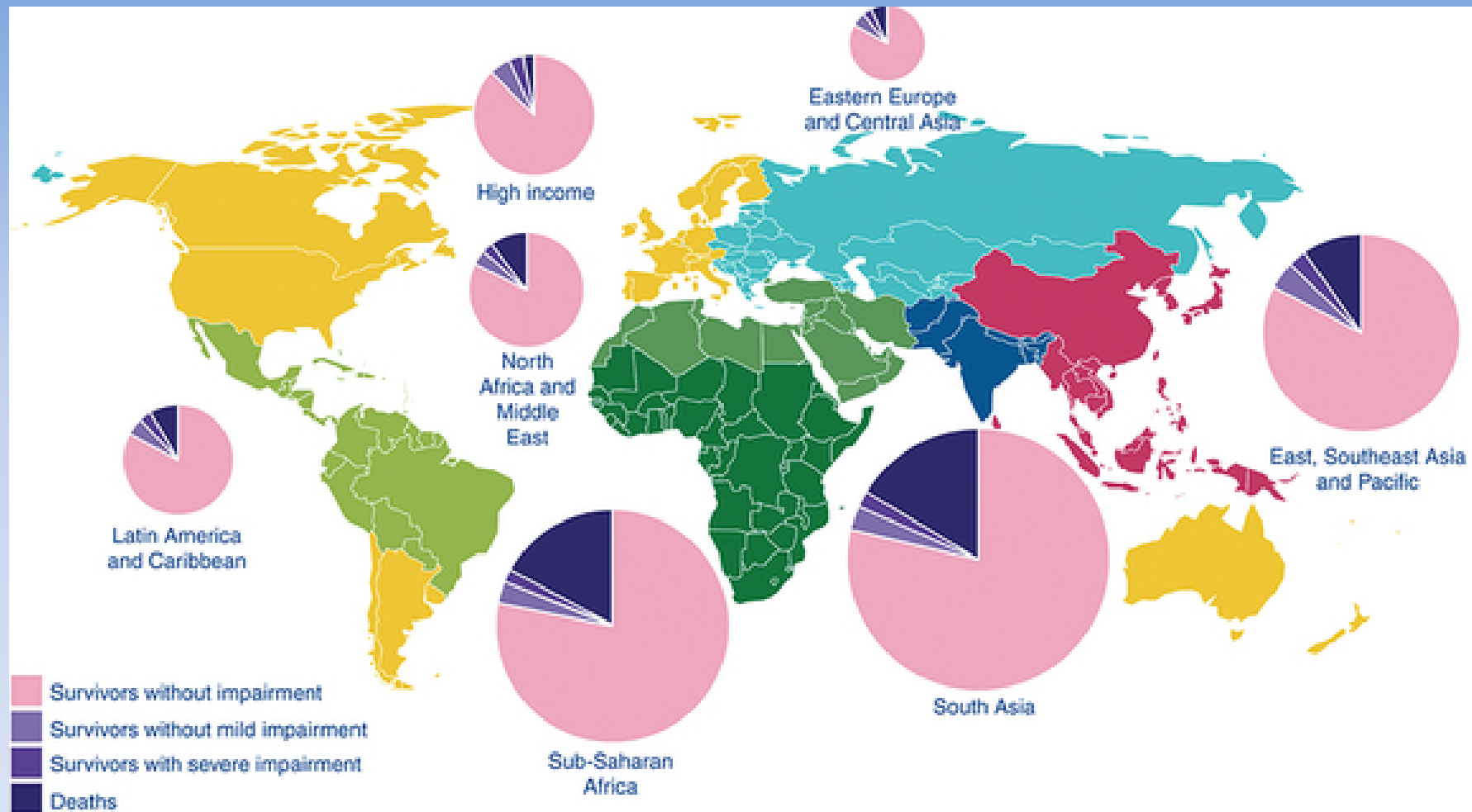
Other long-term effects, e.g., higher risk of non communicable disease

Increased health and care load later in life

Family support after death

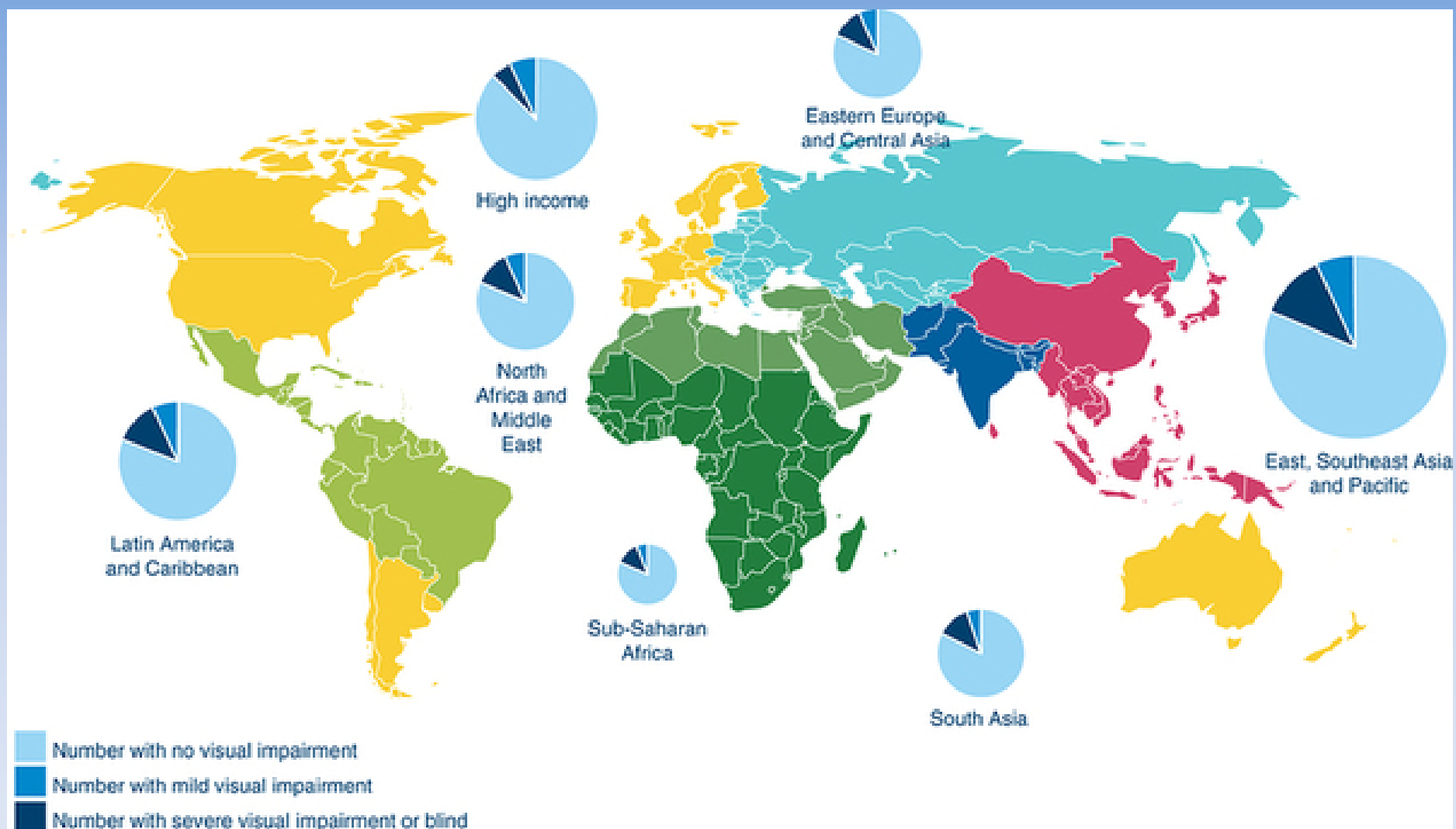
Care for children with disability,
family support

PTB: A World-wide Problem

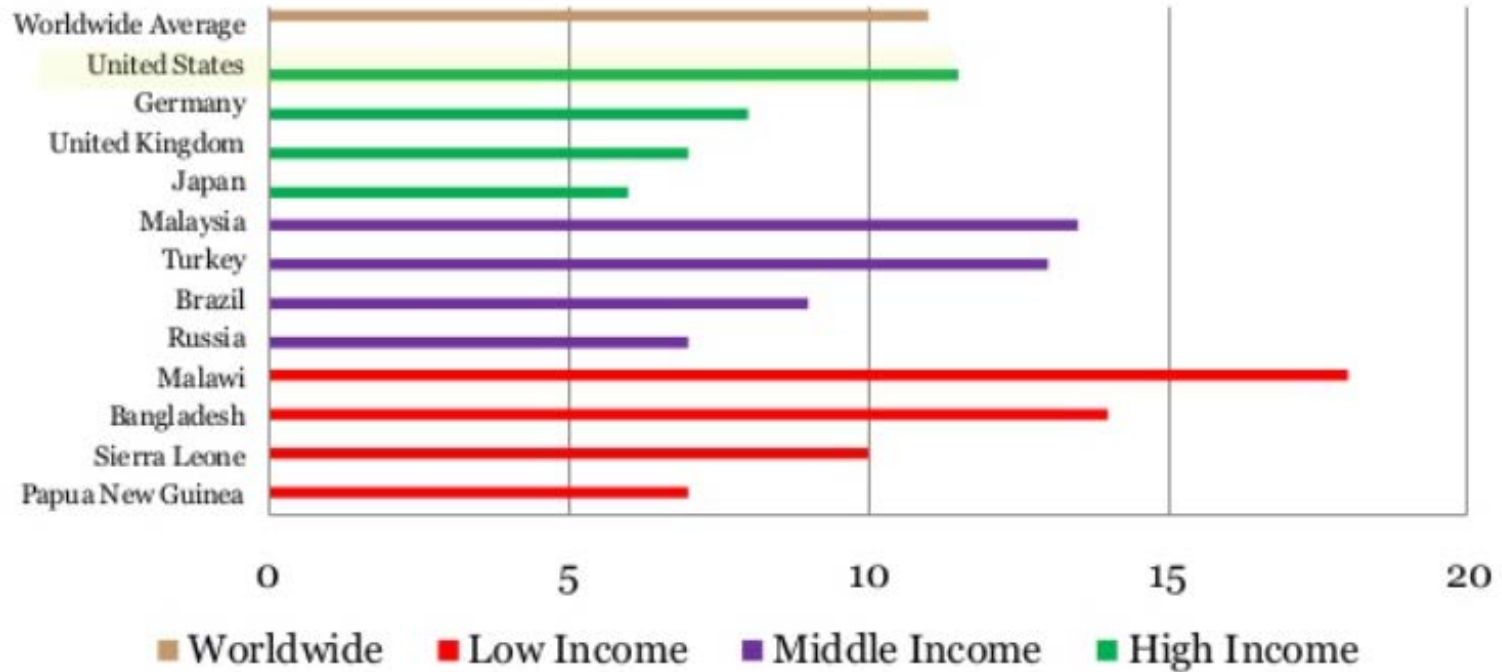


Estimates shown are all from the 3 step compartmental model outlined in this article. Note that the mortality estimates here refer to all deaths in preterm babies, not preterm specific complications as a direct cause of death, which the United Nations estimates at one million deaths and GBD2010 suggests 900,000. Furthermore, a compartmental model and case fatality risk (CFR) are more uncertain for cause of death estimation. Given these considerations the estimates are consistent with an estimate of preterm birth as risk factor for neonatal mortality, but a full comparative risk analysis is the next step. GBD, global burden of disease.

PTB: Visual Impairment

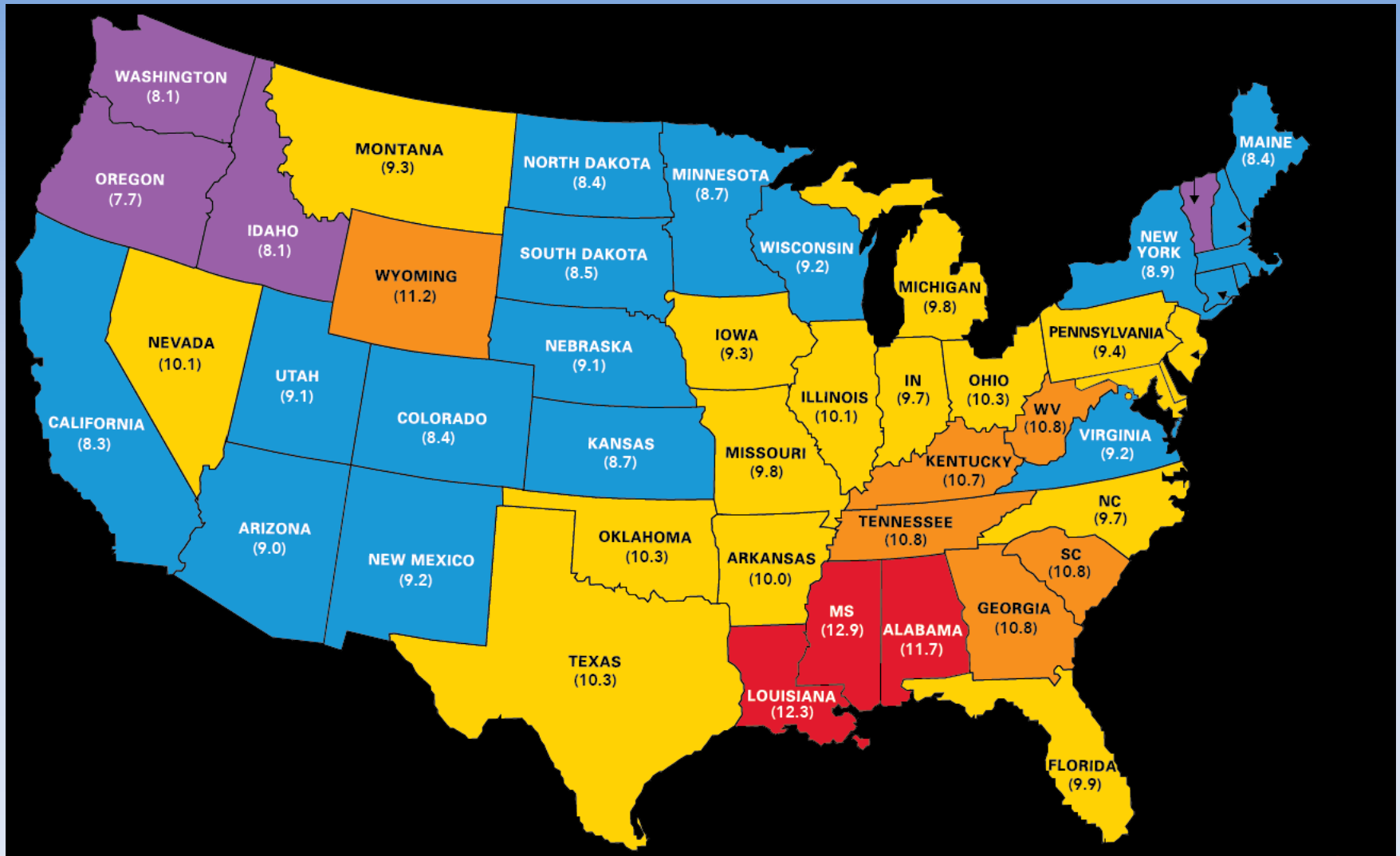


US PTB vs World



Source: <http://www.nature.com/news/pre-term-births-on-the-rise-1.10556>

March of Dimes 2015 Report Card



City	Rate	Grade	City	Rate	Grade	City	Rate	Grade
Albuquerque, NM	10.1	C	Fresno, CA	10.2	C	Oklahoma City, OK	10.0	C
Anaheim, CA	8.5	B	Glendale, AZ	10.1	C	Omaha, NE	10.1	C
Anchorage, AK	9.1	B	Grand Rapids, MI	10.2	C	Orlando, FL	10.0	C
Arlington, TX	11.2	D	Greensboro, NC	10.4	D	Oxnard, CA	7.8	A
Atlanta, GA	11.5	F	Honolulu, HI	9.9	C	Philadelphia, PA	11.2	D
Aurora, CO	9.1	B	Houston, TX	10.8	D	Phoenix, AZ	10.0	C
Austin, TX	10.0	C	Indianapolis, IN	10.8	D	Pittsburgh, PA	10.4	D
Bakersfield, CA	9.3	C	Irving, TX	8.7	B	Portland, OR	7.2	A
Baltimore, MD	12.2	F	Jacksonville, FL	10.8	D	Raleigh, NC	8.9	B
Baton Rouge, LA	13.0	F	Jersey City, NJ	12.0	F	Reno, NV	8.8	B
Birmingham, AL	13.1	F	Kansas City, MO	9.3	C	Riverside, CA	8.6	B
Boston, MA	9.3	C	Knoxville, TN	11.0	D	Rochester, NY	10.2	C
Brownsville, TX	10.1	C	Laredo, TX	8.8	B	Sacramento, CA	8.5	B
Buffalo, NY	11.4	D	Las Vegas, NV	10.5	D	Salt Lake City, UT	9.6	C
Charlotte, NC	10.0	C	Lexington-Fayette, KY	10.3	C	San Antonio, TX	11.5	F
Chicago, IL	10.4	D	Lincoln, NE	8.2	B	San Bernardino, CA	9.7	C
Chula Vista, CA	9.1	B	Long Beach, CA	8.7	B	San Diego, CA	8.3	B
Cincinnati, OH	11.8	F	Los Angeles, CA	9.3	C	San Francisco, CA	8.6	B
Cleveland, OH	13.7	F	Louisville, KY	10.5	D	San Jose, CA	8.3	B
Colorado Springs, CO	10.0	C	Lubbock, TX	12.0	F	San Juan*, PR	9.8	C
Columbus, OH	11.6	F	Memphis, TN	13.7	F	Santa Ana, CA	8.2	B
Corpus Christi, TX	11.4	D	Mesa, AZ	8.6	B	Seattle, WA	8.1	A
Dallas, TX	10.3	C	Miami, FL	11.3	D	Shreveport, LA	18.8	F
Denver, CO	8.4	B	Milwaukee, WI	10.8	D	Spokane, WA	8.6	B
Des Moines, IA	9.6	C	Minneapolis, MN	8.8	B	St. Louis, MO	12.5	F
Detroit, MI	13.0	F	Modesto, CA	8.3	B	St. Paul, MN	8.0	A
District of Columbia	10.4	D	Nashville, TN	10.1	C	Stockton, CA	10.2	C
Durham, NC	9.9	C	New Orleans, LA	12.1	F	Tacoma, WA	8.4	B
El Paso, TX	11.1	D	New York, NY	8.9	B	Tampa, FL	10.9	D
Fayetteville, NC	10.9	D	Newark, NJ	12.2	F	Toledo, OH	10.4	D
Fontana, CA	8.5	B	Norfolk, VA	11.0	D	Tucson, AZ	8.9	B
Fort Wayne, IN	10.2	C	North Las Vegas, NV	10.3	C	Tulsa, OK	12.4	F
Fort Worth, TX	10.1	C	Oakland, CA	8.2	B	Virginia Beach, VA	9.3	C
						Wichita, KS	9.7	C

2015 PREMATURE BIRTH REPORT CARD

Texas	Preterm Birth Rate 10.3%	Grade C
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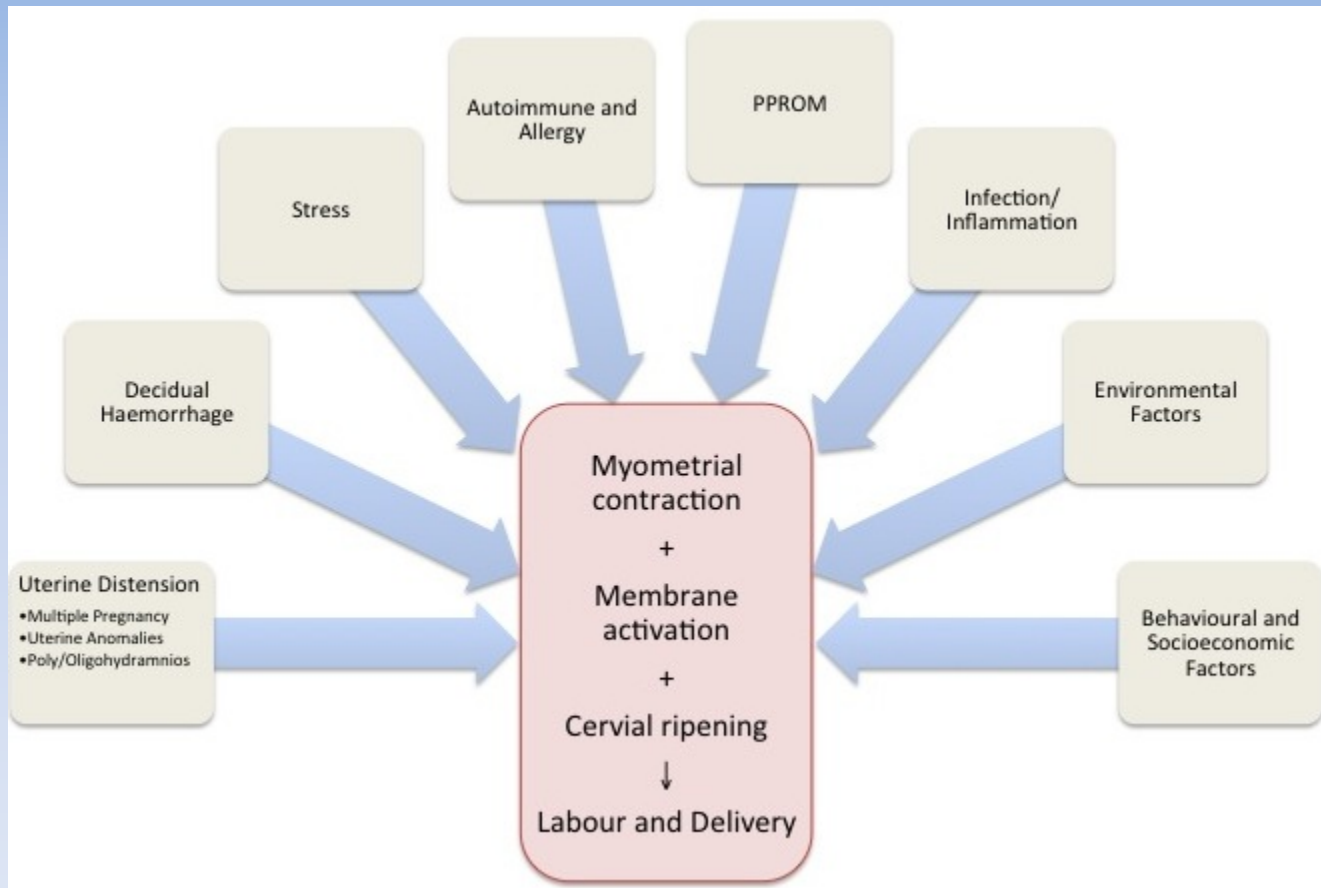
The March of Dimes Prematurity Campaign aims to reduce preterm birth rates across the United States. Premature Birth Report Card grades are assigned by comparing the 2014 preterm birth rate in a state or locality to the March of Dimes goal of 8.1 percent by 2020. The Report Card also provides city or county and race/ethnicity data to highlight areas of increased burden and elevated risks of prematurity.

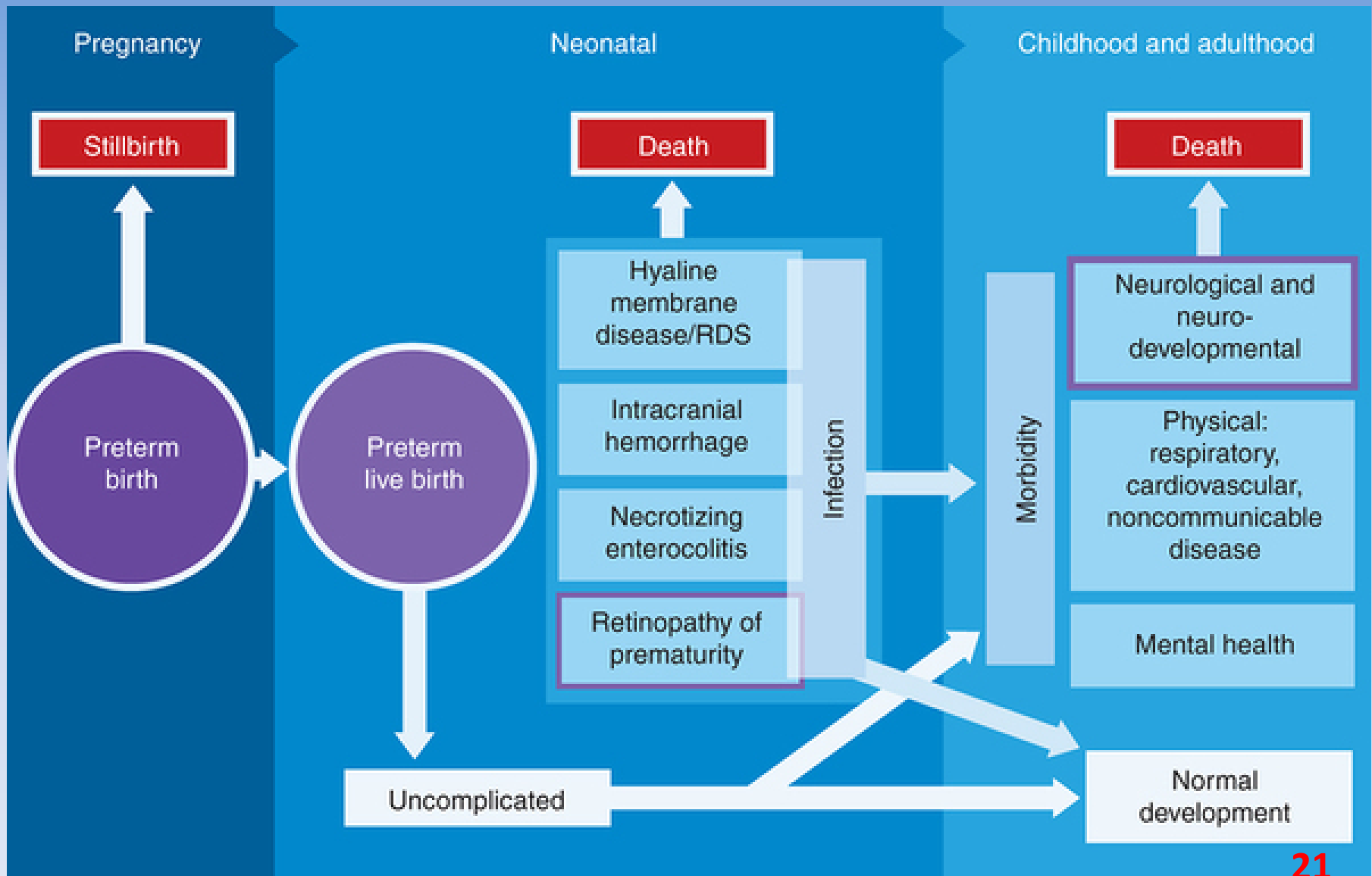
CITIES

Cities with the greatest number of births are graded based on their 2013 preterm birth rates. The status indicator shows whether the 2013 city rate is higher (●), lower (●), or the same (●) as the 2013 state rate (10.4%).

City	Preterm birth rate	Grade	Status
Houston	10.8%	D	●
San Antonio	11.5%	F	●
Dallas	10.3%	C	●
Austin	10.0%	C	●
Fort Worth	10.1%	C	●
El Paso	11.1%	D	●

PART II: IDENTIFYING CAUSES





Prediction/Recurrence

- Prior PTD @ (23-27 wks) 27%
- Prior PPRROM 13.5%

FIRST BIRTH	SECOND BIRTH	SUBSEQUENT PRETERM BIRTH (%)
Not preterm		4.4
Preterm		17.2
Not Preterm	Not Preterm	2.6
Preterm	Not Preterm	5.7
Not preterm	Preterm	11.1
Preterm	Preterm	28.4

Pathogenesis

- **Spontaneous PTB: preterm labor, PPRROM, or cervical insufficiency**
 - 80% of Preterm births are spontaneous
 - Of these, 2/3 are Preterm labor
 - 1/3 are PPRROM
- **Pathogenic processes is complex**
 - Maternal or fetal hypothalamic pituitary axis
 - Infectious etiologies
 - Hemorrhage behind placenta, into decidua
 - Uterine distention (hydramnios, twins)

Hypothalamic-Pituitary Axis

- Based on observation of normal labor
 - HPA axis may activate prematurely
- **Major maternal physical/psychologic stress**
- Stress of uteroplacental unit
- Mechanism
 - CRH release
 - Fetal ACTH increases
 - Estrogens elevation, which then leads to more myometrial gap junctions (myometrial recruitment)

Inflammation

- Clinical/subclinical chorioamnionitis
 - Up to 50% of preterm birth < 30 wks GA
- Proinflammatory mediators
 - maternal/fetal inflammatory response
 - Activated neutrophils/macrophages
 - TNF alpha, interleukins (6)
- Bacteria
 - Degradation of fetal membranes
 - Prostaglandin synthesis

Prediction of Preterm Delivery

- History: Current and Historical Risk Factors
- Mechanical
 - Uterine contractions
 - Home uterine activity monitoring
- Biochemical
 - Fetal fibronectin
- Ultrasound
 - Cervical length

Fetal fibronectin-

Glycoprotein in amnion, decidua,
cytotrophoblast

Increased levels secondary to
breakdown of the chorionic-decidual
interface

Inflammation, shear, movement

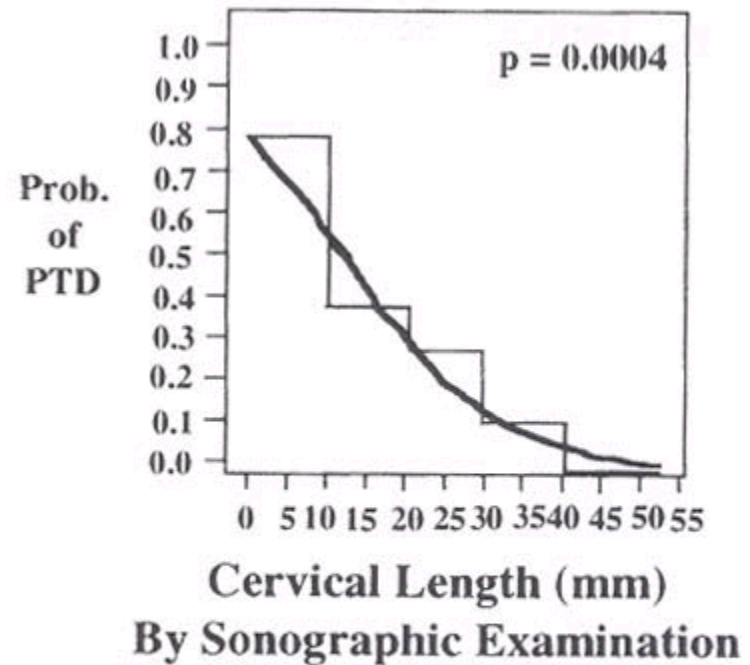
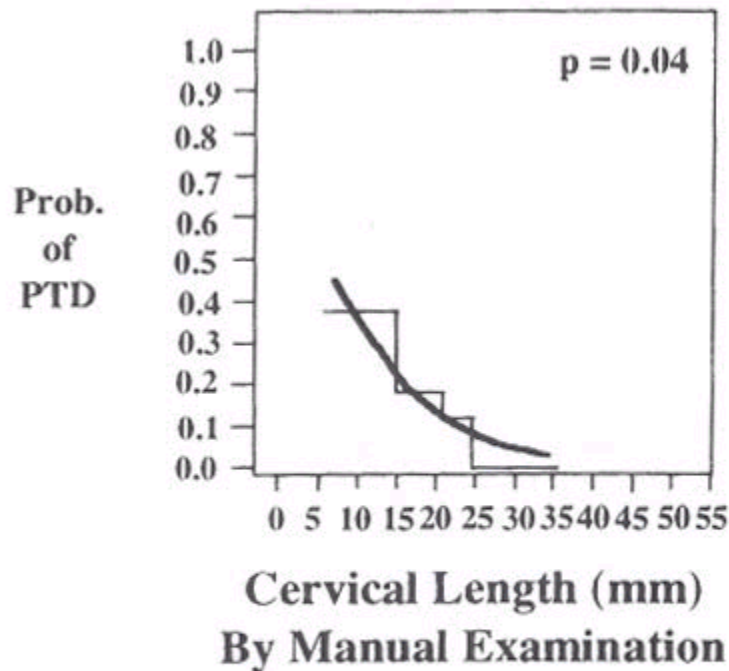
FFN Predictive Value within 7 and 14 days

Study group	Delivery <7 days		Delivery <14 days	
	Sensitivity	Specificity	Sensitivity	Specificity
	95% CI	95% CI	95% CI	95% CI
All studies	71 (57-84)	89 (84-93)	67 (51-82)	89 (85-94)
Women with preterm labor	77 (67-88)	87 (84-91)	74 (67-82)	87 (83-92)
Asymptomatic	63 (26-90)	97 (97-98)	51 (33-70)	96 (92-100)

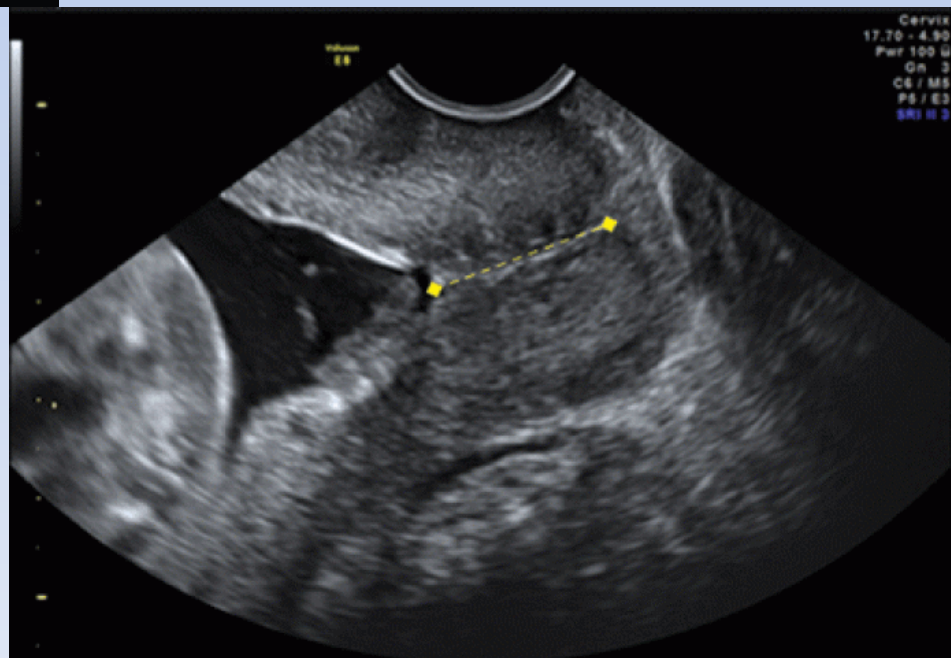
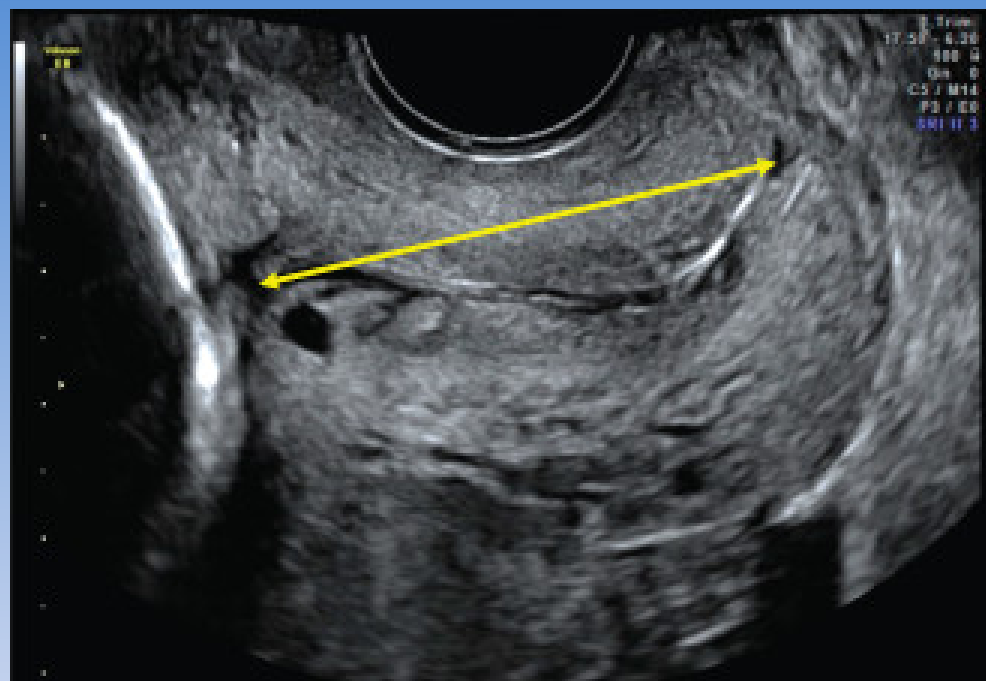
Fetal fibronectin vs. Clinical assessment of Preterm Labor

Parameter	Sensitivity (%)	PPV (%)	NPV (%)
Fetal fibronectin	93	29	99
Cervical dilatation >1 cm	29	11	94
Uterine Contraction Pattern Analysis	42	9	94

Sonographic assessment of cervical length



Curved thick line, Logistic regression analysis of cervical length by manual and ultrasonographic cervical examination; thin line, empiric risk for preterm delivery by manual and ultrasonographic cervical lengths by 5 to 10 mm categories. Prob. of PTD, Probability of preterm delivery.



Risk Factors for Preterm Birth

Non-modifiable

Prior spontaneous preterm birth

African-American ethnicity

Young or older Age (<18 or >40 y)

Poor nutrition/low prepregnancy weight

Low socioeconomic status

Prior cervical surgery or anomaly

Maternal vascular disorder

Cervical dilatation (>2 cm) or effacement (>80%)

Distended uterus (multiple pregnancy, polyhydramnios), or uterine anomaly, fibroid

Modifiable

Little or no prenatal care

Substance abuse

Tobacco use

Short interpregnancy interval

Significant Anemia

Bacteriuria/urinary tract infection

? Genital infection

? Strenuous work

? High personal stress

Risk factors for preterm birth

Stress

- Single women
- Low socioeconomic status
- Anxiety
- Depression
- Life events (divorce, separation, death)
- Abdominal surgery during pregnancy

Occupational fatigue

- Upright posture (Prolonged)
- Use of industrial machines
- Physical exertion
- Mental or environmental stress

Excessive or impaired uterine distention

- Multiple gestation
- Polyhydramnios
- Uterine anomaly or fibroids

Risk Factors: PTB

Cervical factors

- History of second trimester abortion
- History of cervical surgery
- Premature cervical dilatation or effacement

Infection

- Sexually transmitted infections
- Pyelonephritis
- Systemic infection
- Bacteriuria
- Periodontal disease

Placental pathology

- Placenta previa
- Abruption
- Vaginal bleeding

Risk factors for preterm birth

Miscellaneous

- Previous spontaneous preterm delivery
- Substance abuse
- Smoking
- Maternal age (<18 or >40 years)
- African-American race
- Poor nutrition, Low BMI
- Inadequate or no prenatal care
- Anemia (hemoglobin <10 g/dL)
- Low level of educational achievement
- ?Hereditary factors

Fetal factors

- Congenital anomaly
- Growth restriction

PART III: STRATEGY FOR PREVENTION

- We will use polleverywhere – pull out your phone!
- Text the message “Eugenetoy” to the number: 22333

 Text **EUGENETOY** to **22333** once to join, then **A, B, or C**

Definitions

 Text **EUGENETOY** to **22333** once to join, then **A, B, or C**

- **Fact:** a true piece of information, something that is actual and indisputable
- **Fiction:** something that is invented, imagined, a made-up story
- **Fantasy:** a supposition based on no solid foundation, illusion, imagination especially when extravagant or unrestrained

Practice Q1

- The Houston Texans will win the superbowl in 2017.

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Practice Q2.

- The San Antonio Spurs are the best franchise in NBA history.

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San Antonio Spurs
officially become 'best'...

3

THINGS FOR YOU

1

KHL player accidentally punches ref in the face...

2

Here's the 2017 F1 calendar

3

Hunter Renfroe becomes first player to crush HR...

210K SHARES

San Antonio Spurs officially become 'best' franchise in NBA history

No team in NBA history has a better winning percentage than the San Antonio Spurs.

Nobody has a better winning percentage than the San Antonio Spurs in all NBA history. Carolyn Kaster / AP

Is your network walking dead?

REVIVE YOUR WI-FI WITH SD-LAN FROM AEROHIVE

43



Mar 3, 2015 at 12:01p ET



19

The term "best" is obviously subjective, but numbers do not lie. There's no arguing with wins and losses. And thanks to another absolutely dreadful season from the Los Angeles Lakers, the [San Antonio Spurs](#) now boast the highest winning percentage for any franchise in NBA history.

According to the [San Antonio Express-News'](#) [Dan McCarney](#), the Spurs are mere decimal points ahead of the Lakers, with the Boston Celtics, Phoenix Suns and Seattle Supersonics/Oklahoma City Thunder rounding out the top five. The Spurs, the report said, actually passed the Lakers a couple of weeks ago.

The Spurs have quietly climbed their way to the top on the strength of 15 straight 50-win seasons, an NBA record. While that streak is in jeopardy this year — the Spurs would have to win 14 of their last 23 games to get there again, likely but not a given — their win pct of 61.0 is right in line with their historic rate. Which is pretty telling in and of itself: Winning roughly two out of every three games is an average year for the Spurs.

Championships are nice, and the Spurs are clearly well-versed in winning them. But only one organization can have the all-time highest winning percentage at any given moment. Bow down to San Antonio. For now, anyway.



19

NBA'S ALL-TIME WINNINGEST TEAMS

TEAM	W-L	PCT.	NBA TITLES
San Antonio Spurs/Dallas Chaparrals (since 1976)	1,920-1,207	.614	5
Los Angeles/Minneapolis Lakers (since 1948)	3,213-2,050	.610	16
Boston Celtics (since 1946)	3,156-2,215	.588	17
Phoenix Suns (since 1968)	2,091-1,694	.552	0
Seattle SuperSonics/OKC Thunder (since 1967)	2,072-1,794	.536	1

(h/t: [San Antonio Express-News](#))

[Celtics](#) | [NBA](#) | [Thunder](#) | [Spurs](#) | [Lakers](#) | [\[+\]](#)

Practice Q3

- The Cleveland Cavaliers will win another NBA title in 2017.

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Cleveland Cavaliers vs. Atlanta Hawks Preseason Game Recap: Starter-less Cavs Fall in Atlanta

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5 Reasons the Cleveland Cavaliers Will Repeat as NBA Champions in 2017

By Justin Benjamin

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Updated: September 16, 2016

Litmos® Learning Software - Over 4 Million Satisfied Users

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The 2016-2017 NBA season is set to tip off in a little over a month and teams are getting ready to get on the floor. Since the **Cleveland Cavaliers** won its first franchise championship in June, the NBA landscape has changed dramatically.

Multiple players have moved around and a few teams have stepped up to the next level. Nonetheless, we still believe the Cavaliers are in prime position to repeat as champions. Here are the top five reasons why the Cavaliers will repeat in 2017.

1. No More Coaching Drama

ABOUT JUSTIN BENJAMIN

Justin's enormous respect for LeBron James has ignited him to write for the King and the Cavs. His all-around analysis and heart for the game has made him a premiere NBA writer and proud staff writer for Cavaliers Nation.

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Q1

- **Q1. Psychological Stress Can Lead to PTB**

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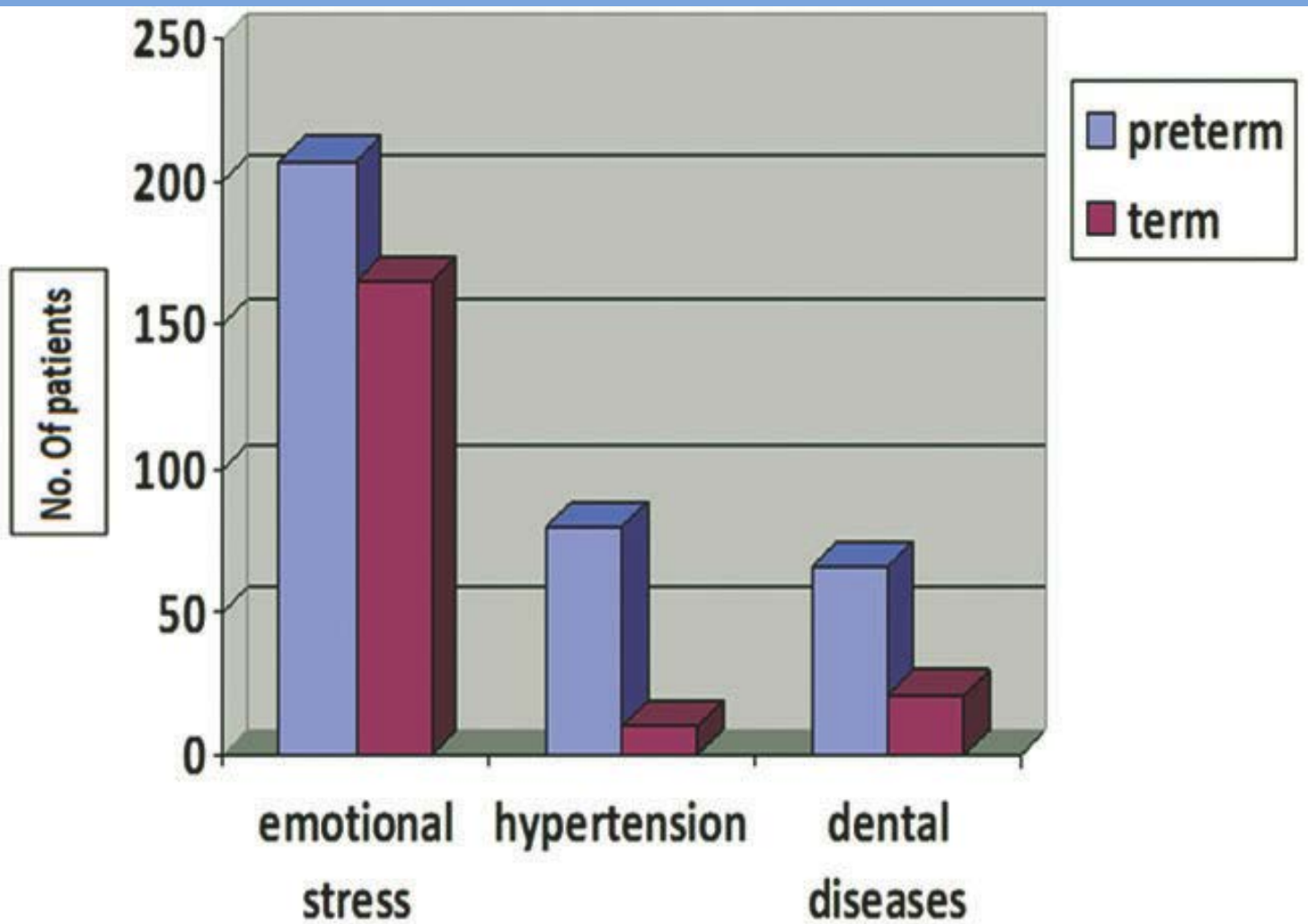


Figure: Frequency of dental diseases, hypertension and stress experienced by case and control group.

Q2. Early Prenatal Care

- Early Prenatal Care leads to lower PTB.

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Prenatal Care in South America

Country	Unadjusted		Adjusted for Gestational Age Only		Adjusted for All Covariates	
	β (SE) for BW	OR [95% CI] for LBW	β (SE) for BW	OR [95% CI] for LBW	β (SE) for BW	OR [95% CI] for LBW
Brazil	37.90*** (3.63)	0.85*** [0.83,0.88]	16.60*** (1.67)	0.94*** [0.92,0.96]	19.85*** (2.30)	0.92*** [0.90,0.94]
Argentina	30.08*** (3.82)	0.85*** [0.81,0.89]	12.50*** (2.42)	0.96* [0.91,1.00]	14.74*** (2.48)	0.95*** [0.91,0.99]
Chile	51.16*** (7.1)	0.77*** (0.04)	23.74*** (5.53)	0.91 [0.80,1.03]	26.01*** (5.36)	0.87*** [0.80,0.94]
Venezuela	14.94** (3.83)	0.93*** [0.87,0.97]	13.44** (3.02)	0.94*** [0.90,0.98]	11.18*** (1.85)	0.95*** [0.93,0.97]
Ecuador	14.25** (5.04)	0.93** [0.88,0.99]	13.22** (2.79)	0.95 [0.88,1.02]	15.26** (5.93)	0.91* [0.82,1.01]
Colombia	28.07*** (8.07)	0.86*** [0.81,0.92]	15.13** (6.56)	0.92** [0.85,0.996]	21.82*** (5.19)	0.91*** [0.89,0.94]
Bolivia	24.03*** (4.78)	0.79*** [0.76,0.81]	13.94** (4.03)	0.84*** [0.81,0.88]	9.06*** (1.68)	0.89*** [0.86,0.92]
Uruguay	63.15*** (1.94)	0.78*** (0.73,0.84]	41.0*** (1.09)	0.87*** [0.84,0.90]	35.64*** (2.45)	0.89*** [0.87,0.91]

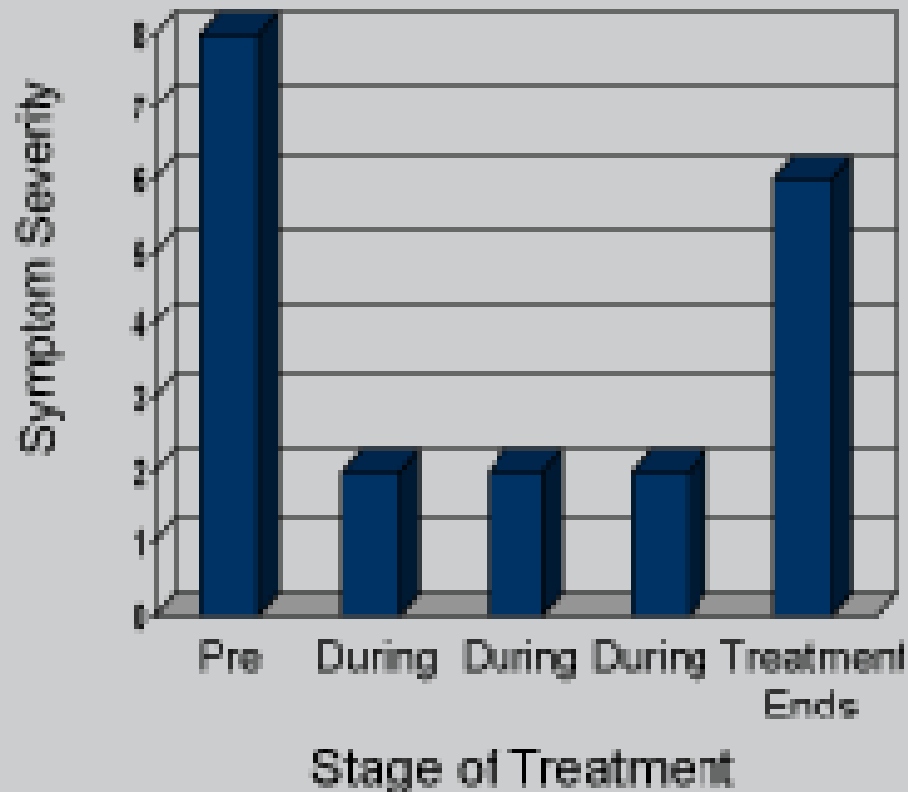
Notes: *, **, and *** indicate $p < 0.1$, $p < 0.05$, and $p < 0.01$ respectively. The sample sizes for OLS regressions for BW are the same as those listed in Table 1. Some covariates (e.g. certain hospital fixed effects) with very few observation frequencies that predicted LBW perfectly were automatically dropped with their observations from the logistic regression model to improve model convergence and fit, resulting in a slightly smaller sample size for the logistic regression than the OLS in all countries except Chile.

doi:10.1371/journal.pone.0091292.t002

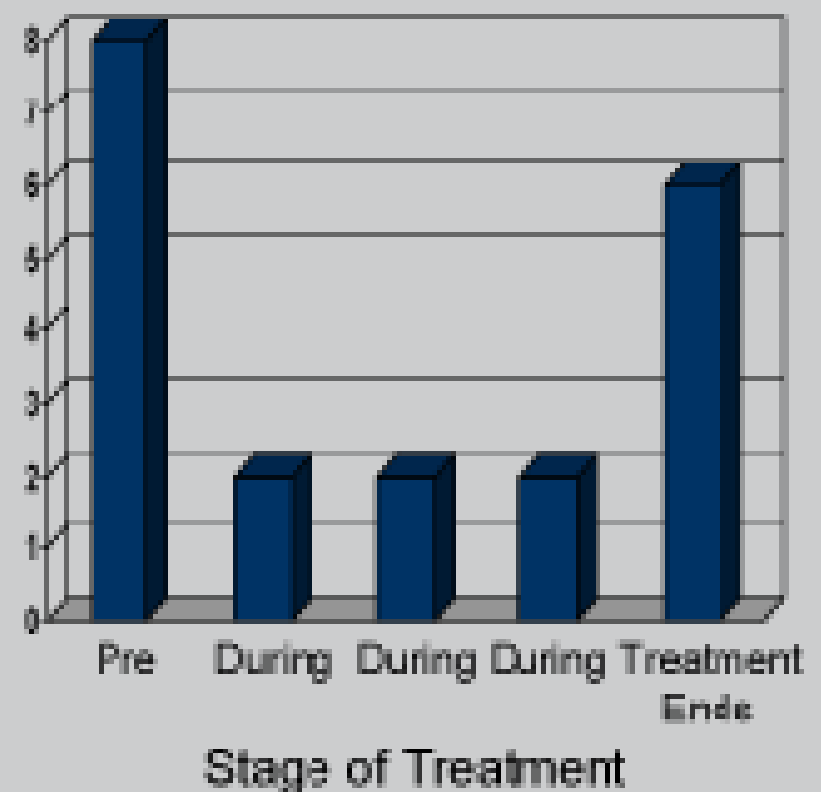
Strategy	Possible reduction in PTB	Level of evidence
Prevent non-medically indicated late preterm/early term birth	55% (11)	III-3
Progesterone supplementation	45% (12)	I
Cervical cerclage	20% (13)	III-1
Tobacco control		
Prevent smoking in pregnancy	20% (14)	III-2
Smoke-free legislation	10% (15)	III-3
Judicious use of fertility treatments	63% (16)	I
Dedicated preterm birth prevention clinics	13% (17)	III-2

Ongoing Treatment

Hypertension Treatment



Addiction Treatment



Prenatal Care

- This is a complicated question.
- We know that by decreasing uninsured women, PTB is reduced (in 37 states)
- We know that reducing smoking decreases PTB
- We know that increasing interpregnancy interval works
- We know that better IVF (less multiples) works
- We know that cervical cerclage works
 - Iams NEJM 2014

Progesterone for History of PTB

- 17 alpha OH Progesterone
 - Women with prior PTB (singleton) 24 – 26 wks
 - (16 – 20 wks) – 36 weeks
- Reduces the risk of recurrent preterm birth
 - < 37 wks 36% vs 55%
 - < 35 wks 21% vs 31%
 - < 32 wks 11% vs 20%

Q3. Low Dose Aspirin

- **Low Dose Aspirin Reduces Preterm Birth.**

 Text **EUGENETOY** to **22333** once to join, then **A, B, or C**

- **A. Fact**
- **B. Fiction**
- **C. Fantasy**



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Practice Advisory on Low-Dose Aspirin and Prevention of Preeclampsia: Updated Recommendations



July 11, 2016

Current ACOG recommendations regarding the use of low-dose aspirin for the prevention of preeclampsia are based on the cumulative efforts of the Task Force on Hypertension in Pregnancy; the Task Force report was issued by ACOG in November 2013 (1). That report was based on an extensive review of the available evidence at that time. In that report, the use of low-dose aspirin, beginning in the late first trimester, was suggested for women with a history of early-onset preeclampsia and preterm delivery at less than 34 0/7 weeks of gestation, or in women with more than one prior pregnancy complicated by preeclampsia.

A systematic evidence review was conducted by the U.S. Preventive Services Task Force (USPSTF) and published as a clinical guideline in September 2014 (2,3). In this guideline, the USPSTF recommended the use of low-dose aspirin after 12 weeks of gestation in women at high-risk of preeclampsia. Although the ACOG recommendations also address women at high-risk (criteria listed above), the criteria for determining high-risk in the USPSTF recommendations are more expansive. In the [USPSTF recommendations](#), women are considered to be at high-risk for preeclampsia if one or more of the following risk factors are present:

- History of preeclampsia, especially if accompanied by an adverse outcome
- Multifetal gestation
- Chronic hypertension
- Diabetes (Type 1 or Type 2)
- Renal disease
- Autoimmune disease (such as systematic lupus erythematosus, antiphospholipid syndrome)

The USPSTF review also identified “moderate” risk factors, for which low-dose aspirin might be considered if several moderate risk factors are present, although the evidence to support low-dose aspirin in the setting of moderate risk factors is uncertain (3). It is important to recognize that other organizations recommend consideration of low-dose aspirin in women at risk for preeclampsia, although the risk-factor criteria may vary somewhat (4,5).

ACOG Recommendations

- ACOG supports the recommendation to consider the use of **low-dose aspirin (81 mg/day), initiated between 12 and 28 weeks of gestation, for the prevention of preeclampsia**, and recommends using the high-risk factors as recommended by the USPSTF:
- History of preeclampsia, especially if accompanied by an adverse outcome
- Multifetal gestation
- Chronic hypertension
- Diabetes (Type 1 or Type 2)
- Renal disease
- Autoimmune disease (such as systematic lupus erythematosus, antiphospholipid syndrome)

Q4.

- We know that periodontal disease is associated with PTB.
- **Screening and treating periodontal disease reduces PTB.**



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- **A. Fact**
- **B. Fiction**
- **C. Fantasy**



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Answer

- Randomized trials have not demonstrated reduction in sPTB when women with periodontal disease have been treated
- Maternal Oral Therapy to Reduce Obstetric Risk Study (1800 women) studied
- Bottom line: FICTION

Q5. Asymptomatic Bacteruria

- We know that asymptomatic bacteruria is associated with sPTB.



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Q5. Pregnant women screened for asymptomatic bacteruria and treated will have a reduction in sPTB.

- A. Fact
- B. Fiction
- C. Fantasy



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Asymptomatic Bacteruria

- **Meta-analysis of 14 RCT's comparing antibiotic treatment v placebo or no Rx shows that**
 - Reduces incidence of pyelonephritis (OR 0.07 with 95% CI 0.05-0.10)
 - Clears ASB
 - Reduces sPTB (OR 0.60, 95%CI: 0.45-0.80)
- **VERDICT: FACT**

Q6. CT and GC

- We know that infection plays a major role in sPTB.

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Q6. The identification and treatment of gonorrhea and chlamydial infections reduces sPTB.

- A. Fact
- B. Fiction
- C. Fantasy



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GC and CT

- There is no evidence that the treatment of GC or CT reduces sPTB, or prolongs pregnancy.
- One controlled trial on treatment of CT showed no reduction in PTB.
- VERDICT: Fiction
- It's good practice to screen for them
- ADDENDUM: Treating Trichomonas doesn't affect PTB

Q7. Nutrition

- We know that malnutrition is associated with sPTB.
- **Q7. Use of nutritional supplements reduces sPTB.**
- **A. Fact**
- **B. Fiction**



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Nutrition

- Based on a study of zinc supplementation if pregnancy, a small but significant reduction in PTB was shown (RR 0.86)
- Rationale: zinc is needed for protein synthesis, cellular division; zinc def associated with fetal loss, IUGR, LBW. Zinc supplementation assoc with increased Progesterone, better immunity
- Fish Oil Trials in Pregnancy (FOTIP) – 860 women – lower risk of del before 34 weeks (0.69, 95%CI: 0.49-0.99), no effect < 37 weeks
- VERDICT: ? FACT

Q8.

- Q8. Progesterone injections reduces PTB in patients with prior sPTB.
- A. Fact
- B. Fiction
- C. Fantasy



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Neonatal Outcomes

Outcome	17P	Placebo	RR	95% CI
BW < 2500	27.2%	41.1%	0.66	0.51 – 0.87
IVH	1.3%	5.2%	0.25	0.08 – 0.82
NEC	0%	2.6%	NA	NA
Suppl O ₂	14.9%	23.8%	0.62	0.42 – 0.92

Progesterone

- Meis trial (NEJM) randomized 459 pts with documented hx of prior sPTB to weekly 17OHP vs placebo
- VERDICT: FACT

Maternal Outcomes				
	17P	Plac.	RR	CI
N	306	153		
< 37 w	36.3%	54.9%	0.66	.54 - .81
< 35 w	20.6%	30.7%	0.67	.48 - .93
< 32 w	11.4%	19.6%	0.58	.37 - .91

Current Recommendations

- **Short Cx, no prior PTB = Vag progesterone**
- **Prior sPTB = 17 OHP**
- **Prior sPTB AND short Cx = Cerclage**
- **Asymptomatic short cx & no hx PTB = ?
Progesterone?**

– AJOG 2012 and ACOG Pract Bull 130, 2012

Q9. Spacing out pregnancies

- We know that increasing interpregnancy intervals associated with decreased sPTB



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Q9. Efforts to increase access to contraception and increase interpregnancy interval decrease sPTB.

- **A. Fact**
- **B. Fiction**
- **C. Fantasy**



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Inter-pregnancy Interval (IPI)

- IPI < 8 months = 2.3 x increased sPTB, and goes up to 3.5-fold if < 4 months
- If IPI < 6 months, increased PTB < 34 weeks
 - OR 3.6 (95%CI 1.5-9.0)
 - IPI of 18-24 months had lowest risk of PTB, SGA and maternal complications

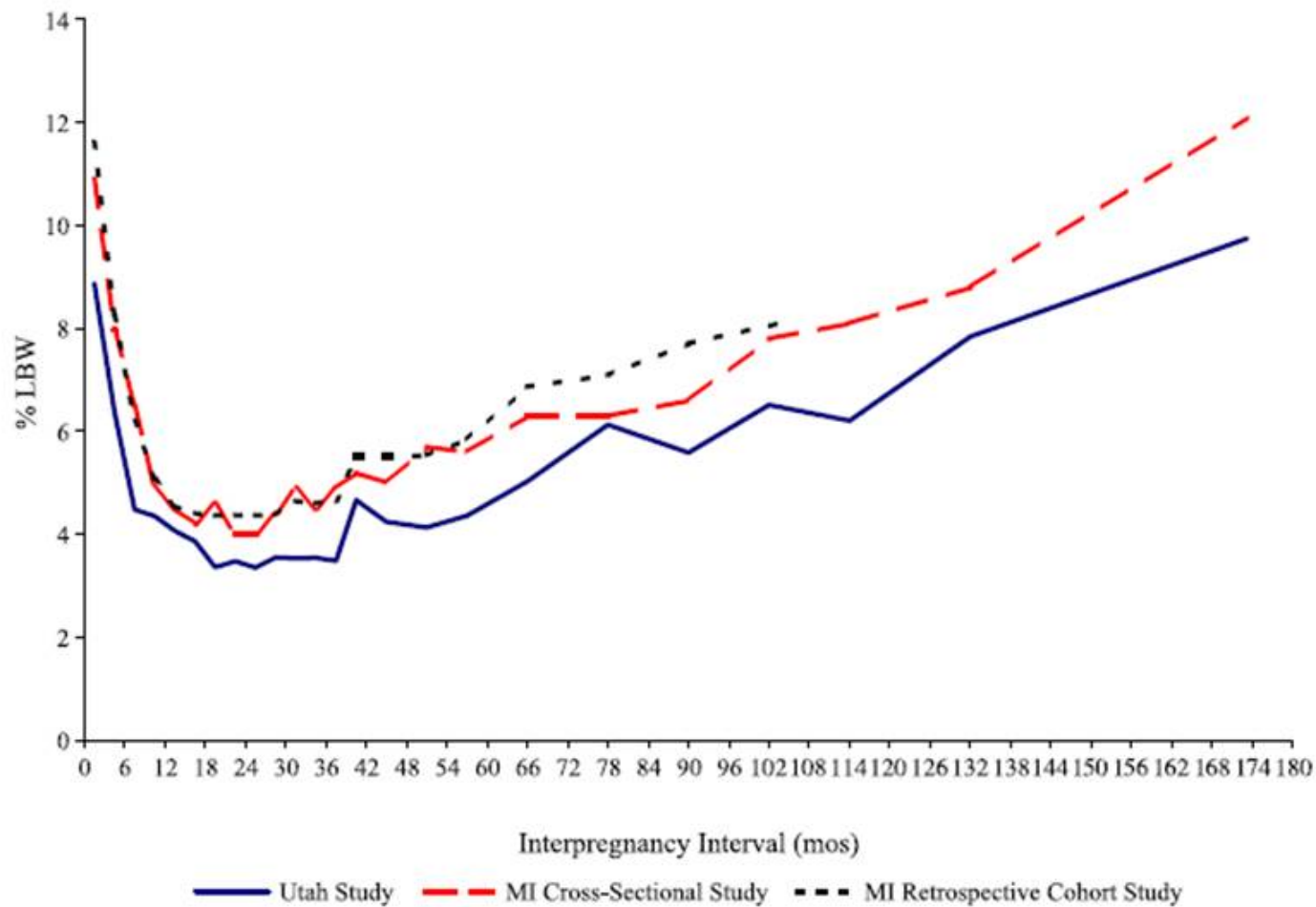


Figure 1 Relationship between interpregnancy interval and low birth weight (LBW): summary of three recent U.S. studies [16,17,20].

Q10

- **Do reducing early elective deliveries decrease sPTB?**
- Answer: Somewhat in late preterm births, although the data is mixed due to incomplete non-uniform enforcement, logistic difficulties.
- Most impact on early term deliveries

Q11. Miscellaneous

- Q11. Do any of the following work?

Bedrest, prophylactic antibiotics, hydration, uterine activity monitors to prevent sPTB.

- A. Fact
- B. Fiction
- C. Fantasy

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Q11. Miscellaneous

- None of the stated work: Bedrest, prophylactic antibiotics, hydration, uterine activity monitors to prevent sPTB.
- VERDICT: Fantasy

TABLE 2**Interventions to
reduce preterm
birth³**

- Quality improvement efforts aimed at eliminating early elective deliveries
- Smoking cessation
- Reduction in multiple gestations
- Progesterone supplementation to reduce recurrence
- Group prenatal care
- Cerclage
- Low-dose aspirin prophylaxis to reduce preeclampsia
- Optimal interpregnancy intervals
- Reduction in teen pregnancy

Conclusions: What Works

- Decreasing tobacco and substance abuse
- Access to contraception and increased interpregnancy interval
- Early PNC to ID and treat ASB, ID and treat high risk conditions
- Low dose ASA in hypertensive disease
- 17P for hx or prior STB
- Cerclage when indicated
- Medical coverage