Saving Lives: Preventing Preeclampsia With Low-Dose Aspirin

January 8, 2018

2 PM – 3:30 PM EST

This *Continuing Professional Education Program* is generously supported by the March of Dimes in partnership with

Paul Jarris, MD, MBA *(Moderator)*
Chief Medical Officer, Sr. Vice President Mission Impact, March of Dimes Foundation

Lisa Waddell, MD, MPH *(Moderator)*
Sr. Vice President Maternal Child Health & NICU Innovation, Deputy Medical Director, March of Dimes Foundation

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What is your background?

1. Academia or research
2. Clinical and public health
3. Pharmacist
4. Policy
5. Community based organization
6. Affected family or other

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Today's Speakers

Charlie Lockwood, MD, MHCM
Dean of the Morsani College of Medicine and Senior Vice President, University of South Florida Health, Professor, Obstetrics and Gynecology

Jodi Abbott, MD, MS
Assistant Dean of Patient Safety & Quality Improvement Education, Associate Professor Boston University School of Medicine Department of Ob/Gyn Boston Medical Center

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Preeclampsia: Definitions, Epidemiology, Etiology and Prevention with LDA

Charles J. Lockwood, MD

Professor of Obstetrics & Gynecology and Public Health

Dean, Morsani College of Medicine and SVP USF Health

University of South Florida

Disclosures

The content of my presentation in this activity will include discussion of use of generic low dose aspirin in pregnancy.

Learning Objectives

- To understand the prevalence of preeclampsia
- To appreciate risk factors for the disorder
- To know the optimal gestational age at initiation and dosage of low dose aspirin for the prevention of preeclampsia

Definitions

- Preeclampsia is defined as the new onset hypertension and proteinuria or hypertension and end-organ dysfunction ± proteinuria after 20 weeks in a previously normotensive woman (ACOG 2013)
- Chronic hypertension (CHTN) antedates pregnancy or presents before 20 weeks or persists longer than 12 weeks postpartum.

Definitions

- Superimposed preeclampsia is the new onset of proteinuria, end-organ dysfunction, or worsening or resistant hypertension after 20 weeks in a woman with CHTN.
- Eclampsia is the development of seizures in a woman with preeclampsia, in the absence of other relevant neurologic conditions.
- Gestational hypertension is hypertension without proteinuria or ther signs/symptoms of preeclampsia after 20 weeks, resolving by 12 weeks postpartum.

Epidemiology of Preeclampsia

- Complicates 3.4% of pregnancies with 2-fold higher prevalence in 1st pregnancy.
- Accounts for 9% of U.S. maternal deaths.
- Risk factor for future cardiovascular disease and metabolic disease in women
- Associated with stillbirth, IUGR and oligohydramnios in fetus.

(*Anath et al BMJ. 2013;347:f6564*)

Epidemiology of Preeclampsia

Risk Factors include:

1) Prior PE (RR 8.4; 95% CI: 7.1-9.9); if severe recurrence rate is 25 to 65%; if not severe, 5 to 7%.
2) Nulliparity (RR 2.1; 95% CI: 1.9-2.4)
3) Family Hx (RR 2.9; 95% CI: 1.7-4.9)
4) Multiple gestation (RR 2.9, RR 2.6-3.1)
5) Preexistent conditions:
    a) Type 1 DM (RR 3.7, 95% CI 3.1-4.3)
    b) CHTN (RR 5.1, 95% CI 4.0-6.5)*
    c) BMI > 30 (RR 5.1, 95% CI 4.0-6.5)*
    d) CRD (RR 1.8, 95% CI 1.5-2.1)

(*Bartsch E, et al. BMJ. 2016;353:i1753. PMID: 27094586*)

Etiology of Preeclampsia

1) Decidual inflammation and vasculopathy, increased activated macrophages, decreased uNK cells (e.g., SLE, CHTN, obesity, DM, nulliparity).
2) Shallow extravillous trophoblast invasion.
3) Failure of uterine spiral artery remodeling
4) Progressive relative placental hypoxia.
5) Release of placental anti-angiogenic substances (sFlt-1 and endoglin).

(*Lockwood et al, Am J Pathol. 2014;184:2549-59; Lockwood et al, Semin Thromb Hemost. 2011; 37:158-64; Li H et al, Placenta. 2005; 26:210-7; Levine RJ et al., N Engl J Med. 2004;350:672-83*)

Etiology of Preeclampsia

6) Systemic endothelial cell damage, decrease PgI2/TXA2, vasospasm, increased platelet aggregation and turnover and:
7) Hypertension ±
8) Renal glomeruloendotheliosis/proteinuria ±
9) End-organ damage (liver function abnormalities, ARDS, seizures, ARF, cardiomyopathy) ±
10) Fetal death, IUGR, oligohydamnios

(Lockwood et al, Am J Pathol. 2014;184:2549-59; Lockwood et al, Semin Thromb Hemost. 2011; 37:158-64; Li H et al, Placenta. 2005; 26:210-7; Levine RJ et al., N Engl J Med. 2004;350:672-83)

Prevention

Low dose aspirin (LDA) reduces frequency of PE, as well as preterm birth, and IUGR by 10-20% in moderate to high risk women.

Rationale:

1) PE associated with increased platelet turnover, decreased PgI2/TXA2.

2) PE is associated with systemic and/or decidual inflammation which is attenuated by PE (anti-NFκB effects).

(*Cadavid AP. Front Immunol. 017;8:261. PMID 28360907*)

Prevention

Key Studies: large RCTs

Study	Type of Study	Rate of PE in LDA vs. placebo	Stat.
Lancet. 1993;341 (8842):396	RCT in moderate to high risk Italian women (age extremes, CHTN, CKD, prior PE/IUGR, twins); LDA 50 mg	15.2% vs 19.3% (no difference in other APA)	NS
N Engl J Med. 1993; 329: 1213-8	RCT by NICHD MFMU in nulliparas; LDA 60 mg	4.6% vs. 6.3% (best in pts with increased sBP 5.6% vs. 11.9%)	0.05 0.01
Lancet. 1994;343(8898):619	RCT Prophylaxis for PE, IUGR (85%) or Tx PE or IUGR (15%); LDA 60 mg	6.7% vs. 7.6% (PTB 19.7 vs. 22.2%)	NS P <.003
N Engl J Med. 1998; 338: 701-5	RCT by NICHD MFMU in moderate to high risk women (IDDM, CHTN, twins, prior PE); LDA 81 mg	18% vs. 20% (no difference in other APA)	NS

Prevention

Key Studies: large RCTs and meta-analyses

Study	Type of Study	Rate of PE in LDA vs. placebo	Stat.
BJOB. 2003; 110(5):475-84	RCT nulliparas; LDA 100 mg	1.7% vs. 1.6% (higher IUGR < 3%ile in LDA group, no other difference in other APA)	NS
N Engl J Med. 2017;377(7): 613-22	RCT High risk based on: Uterine artery Dopplers, PAPP-A, PlGF, Ob/Med hx, BMI and MAP; LDA 150 mg	Preterm PE: 1.6% vs. 4.3% Any PE: 0.4 vs. 1.8% (no difference in other APA)	0.004 NS
Lancet. 2007; 369:1791-8	Meta-analysis of 32,217 pts; Antiplatelet agents	RR PE: 0.90 (0.84-0.97); RR sPE: 0.90 (0.83-0.98)	
Ann Intern Med. 2014; 160:695-703	USPSTF Systematic review of 23 “good quality” studies	RR PE: 0.76 (0.62 to 0.95) RR IUGR: 0.80(0.65-0.99) RR PTB: 0.86 (0.76-98) (no significant harms)	

Optimal Dose and EGA at Initiation

Roberge et al. systematic review and meta-analysis of RCTs comparing LDA to placebo or no Tx; 45 trials with 20,909 women randomized to 50 to 150 mg daily. Results stratified by GA at initiation ≤16 or >16 weeks.

Findings:

1. LDA ≤16 weeks markedly reduced PE (RR 0.57; 0.43-0.75), sPE (RR of 0.47; 0.26-0.83) and IUGR (RR of 0.56; 0.44-0.70) with dose-response effect up to 150 mg.
2. LDA initiated after 16 weeks had less beneficial for PE (RR 0.81; 95%CI: 0.66-0.99) and no effects for sPE or IUGR and no dose response effect.

(*Roberge S et al. Am J Ob Gyn. 2017;216(2):110-120 PMID: 27640943*)

Optimal Dose and EGA at Initiation

Mehere et al, examined individual participant data on 32,217 women recruited in 31 RCTs comparing LDA or other antiplatelet agents vs. either placebo or no Tx. Results stratified by GA at initiation of therapy < 16 weeks versus ≥ 16 weeks.

Findings: No significant difference among women randomized before vs. ≥ 16 weeks for PE (RR 0.90; 0.79-1.03 vs. 0.90; 95%CI: 0.83-0.98, respectively).

(*Meher S, et al. Am J Obstet Gynecol. 2017;216(2):121-8 PMID: 27810551*)

U.S. Preventive Services Task Force.

Recommends LDA (81 mg) as a preventive medication after 12 weeks gestation in women who had ≥ 1 high risk factor(s) and consideration of such treatment in patients with “several” moderate-risk factors.

(https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/low-dose-aspirin-use-for-the-prevention-of-morbidity-and-mortality-from-preeclampsia-preventive-medication accessed May 16, 2017)

U.S. Preventive Services Task Force.

High Risk Group	Moderate Risk Group	Low Risk
History of prior PE, particularly if associated with adverse pregnancy outcome (e.g., IUGR, preterm birth, stillbirth)	Adverse Obstetrical history (IUGR, low birthweight infant, other prior adverse outcome or inter-pregnancy interval >10 yrs)	Prior uncomplicated pregnancy and term delivery
Type 1 or 2 diabetes	Obesity (BMI > 30 kg/m^2)	
CHTN	Nulliparity	
Autoimmune disease (SLE, APPA syndrome)	Sociodemographic factors (AA race, low SES)	
Multifetal pregnancy	Age ≥ 35 years	
Renal disease	Family history of PE in first degree relative)	

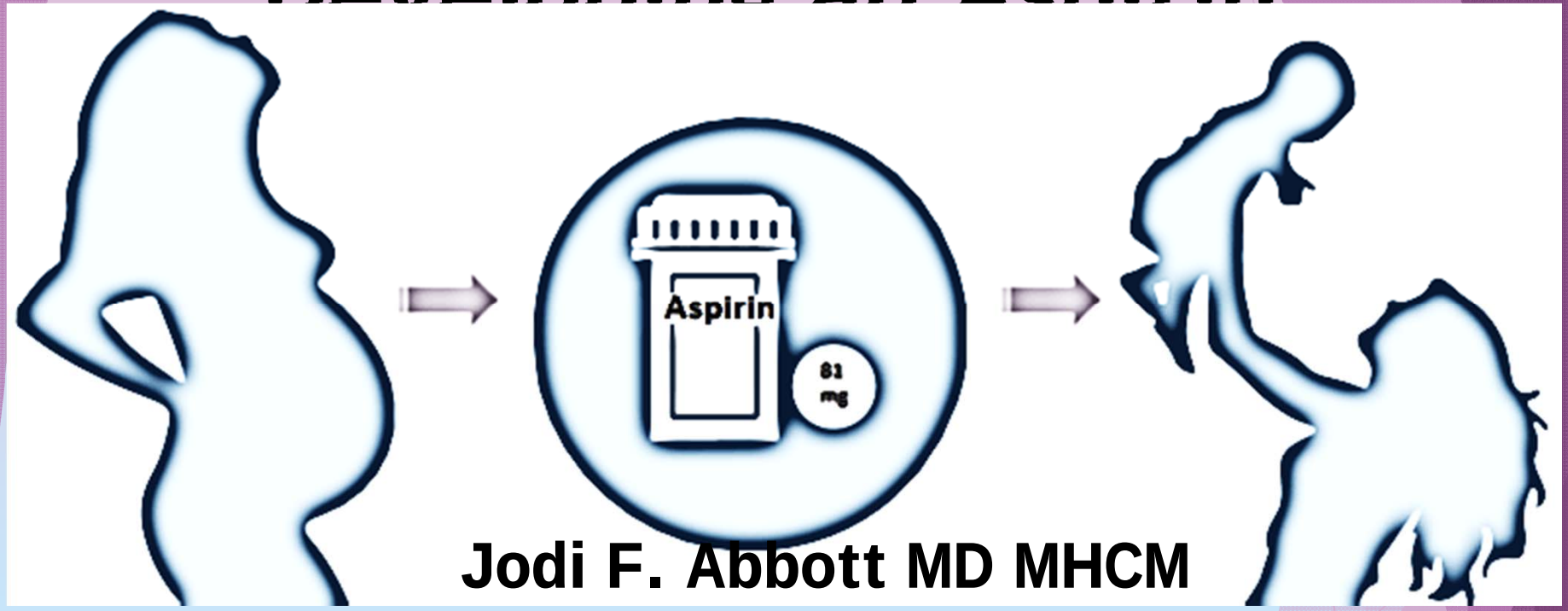
ACOG Practice Advisory (July 2016)

- 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)
- Initiate aspirin (81mg) between 12-28 weeks

My Recommendations

Tx women with any of the USPSTF high risk factors or women with 2 or more of the USPSTF moderate risk factors with LDA either 81 mg or 122 mg (a tablet and a half) once a day starting at 12 to 14 weeks.

Saving Lives: Developing an Aspirin



Jodi F. Abbott MD MHCM

jabbott@bu.edu

Asst. Dean for Patient Safety and Quality Improvement

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BOSTON MEDICAL CENTER

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Boston University School of Medicine

Learning Objectives
At the Completion of this talk attendees will:

1) Understand barriers to the implementation of medical knowledge into clinical practice, and those specific to implementing aspirin in pregnancy

2) Discuss prevention of medically indicated preterm birth nationally and locally as one opportunity to reduce racial disparities in preterm birth

3) Utilize the tools of quality improvement to develop strategies to implement aspirin broadly and locally

Financial disclosures

My Aspirin Project is supported by a grant

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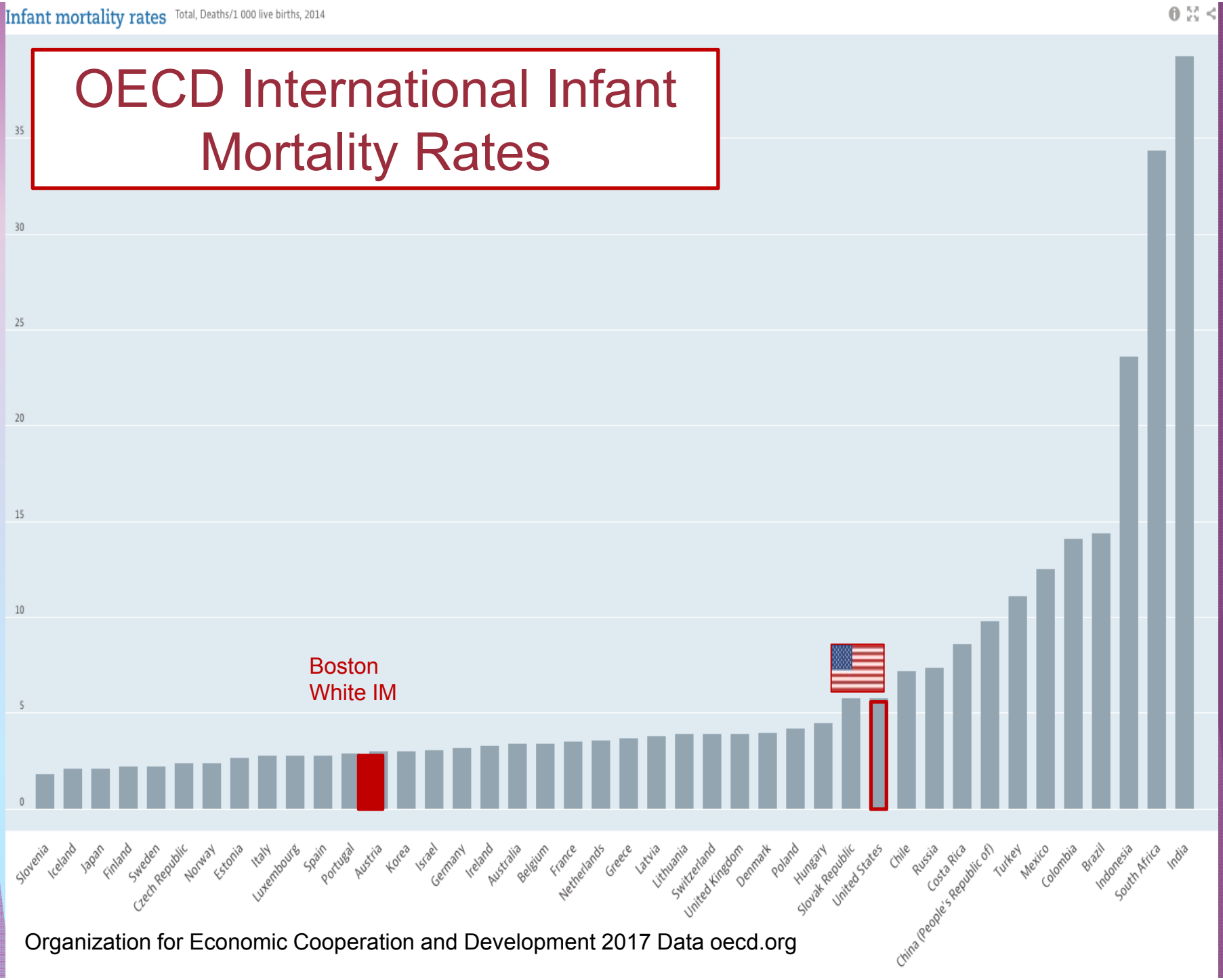
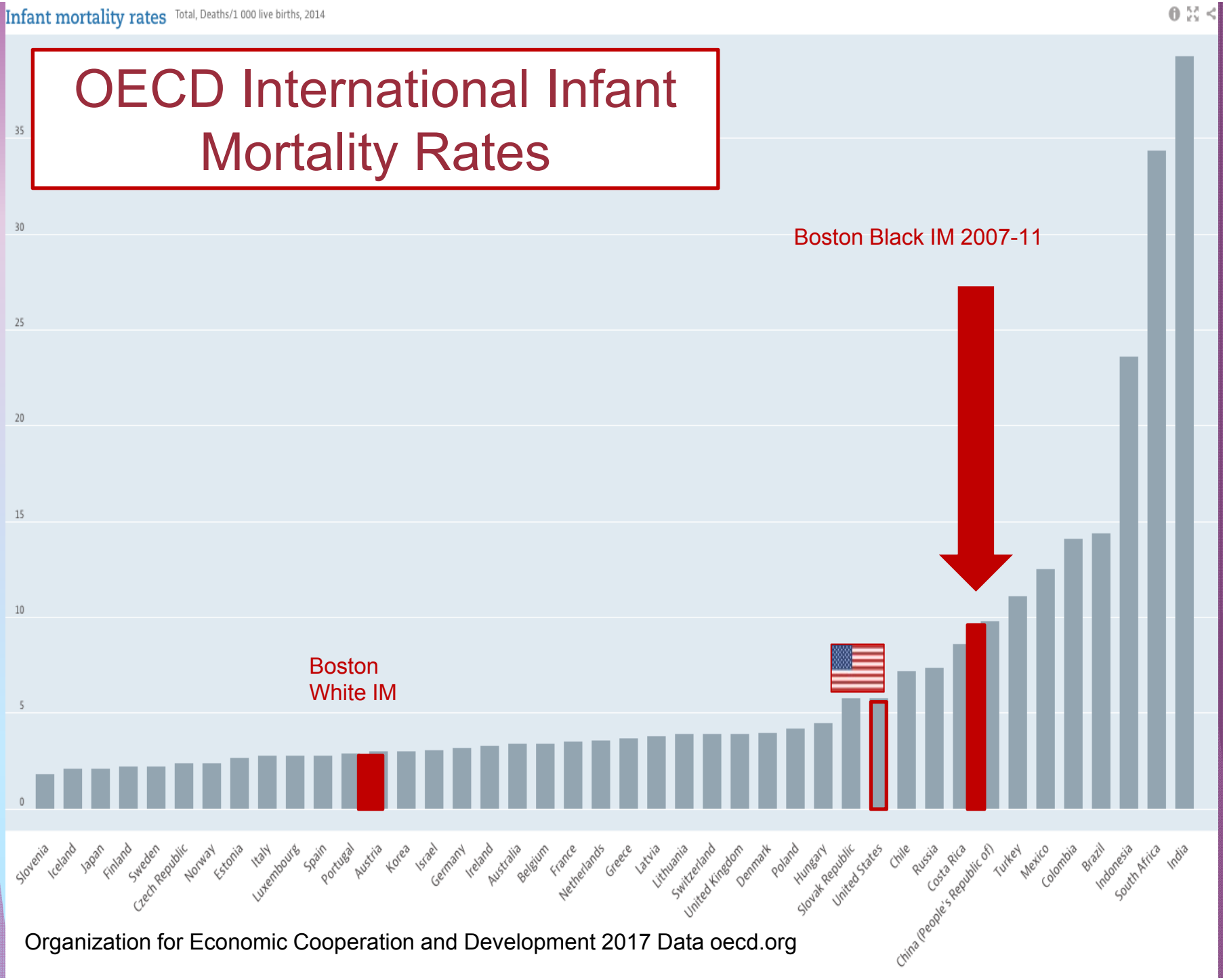
OECD International Infant Mortality Rates



Organization for Economic Cooperation and Development 2017 Data oecd.org

OECD International Infant Mortality Rates



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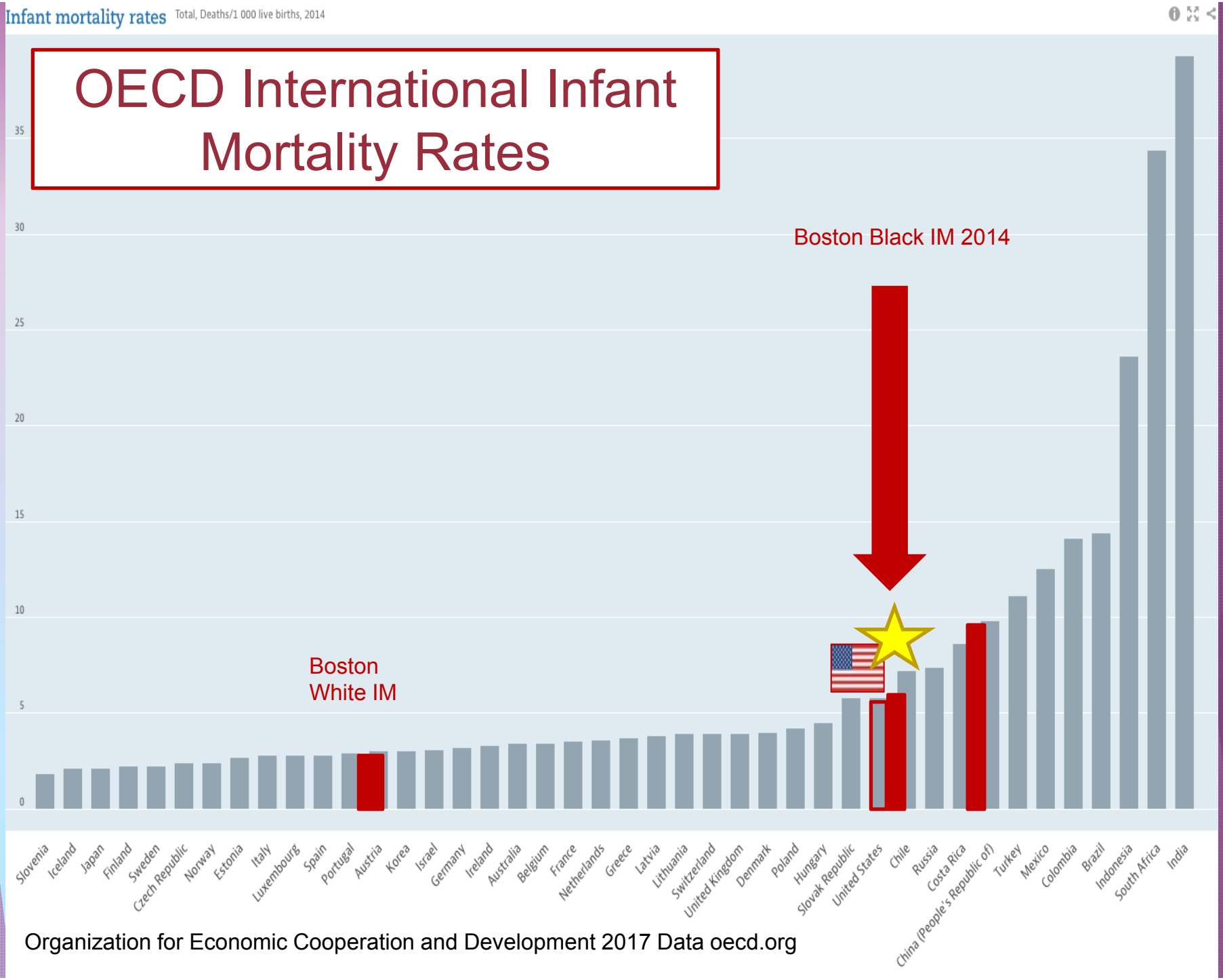
OECD International Infant Mortality Rates



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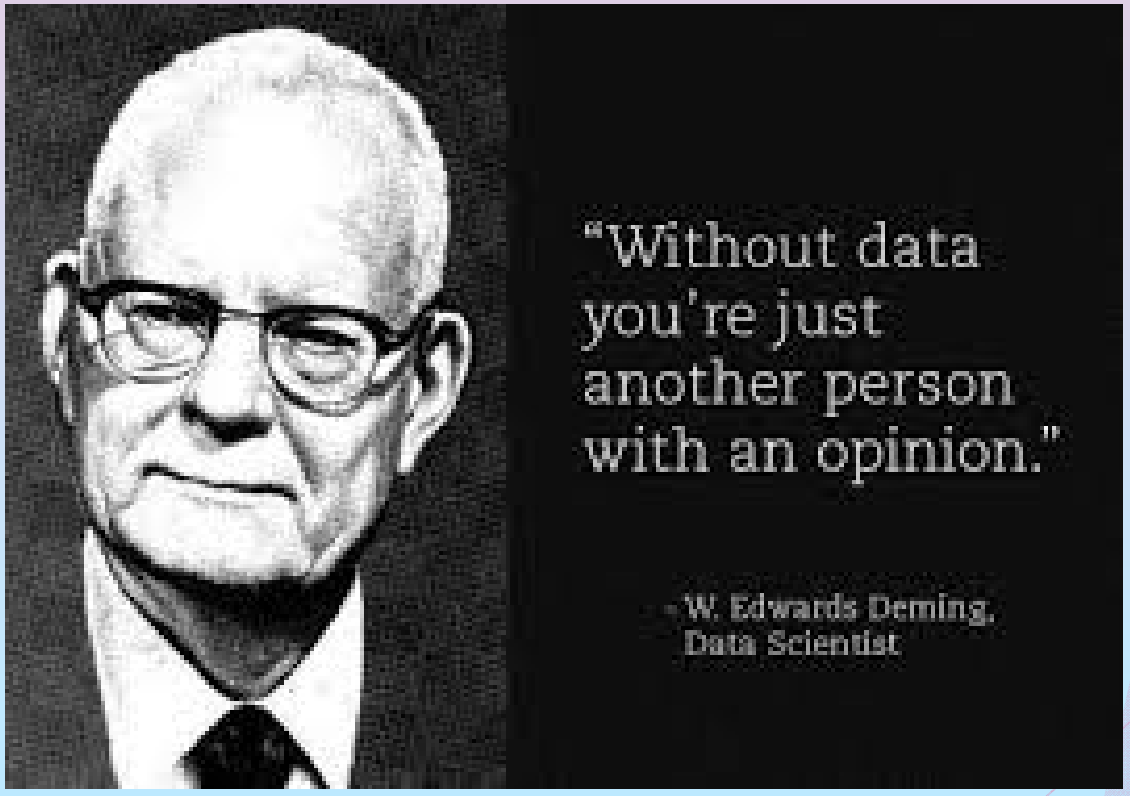
US Preterm Birth Rate Rises for the 2nd year in a row

2017 March of Dimes Premature Birth Report Card shows moms and babies face higher risk of preterm birth based on race and zip code

White Plains, NY | Wednesday, November 1, 2017

W. Edwards Deming
Gandhi of Quality Improvement



Epidemiology

International

- 4.6% and 1.4% deliveries for preeclampsia and eclampsia
- 10 to 15% of maternal deaths are associated with preeclampsia and eclampsia

National

- Preeclampsia in 2-5% of all pregnancies in the U.S.
- Leading cause of maternal morbidity and up to 19% maternal mortality
- Rates of hypertension in pregnancy are increasing

BMC

- Approximately 30% of [illegible] pr[illegible] G[illegible]TN and/or IUGR
- Ap[illegible]ately 40% of [illegible]ths ar[illegible] pr[illegible] Gestational HTN and/or IUGR

33%

40%

Lo, Jamie, John F. Mission, "Hypertensive disease of pregnancy and maternal mortality," *Current Opinion in Obstetrics and Gynecology,* 25(2): 124-132, April 2013.
Mammaro, Alessia, Sabina Carrara, Alessandro Cavaliere, "Hypertensive disorders of pregnancy," *Journal of Prenatal Medicine,* 3(1):1-5, 2009.
Moodley, J. "Maternal Deaths due to Hypertensive Disorders in Pregnancy: Saving Mothers Report 2002–2004." *Cardiovascular Journal of Africa,* 18.6 (2007): 358–361.
Abalos E, Cuesta C, Grosso AL, et al. Global and regional estimates of preeclampsia and eclampsia: a systematic review. Eur J Obstet Gynecol Reprod Biol 2013; 170:1.
Duley L. The global impact of pre-eclampsia and eclampsia. Semin Perinatol 2009; 33:130.
Carroll, I.M., Yang, Q.Z., Sandhu, K.A., Vragovic, O., Abbott, J. (2017). 381: Indications for preterm birth in an Urban safety net hospital. American Journal of Obstetrics & Gynecology. 216(1) S229-S230.

- New England's Largest Safety Net hospital
- 50% Families have an income <$20,000 (Federal Poverty Level)
- 30% non English Speaking
- 68% Speak language other than English at home
- 68% of our patients identify as Hispanic/Black or Black
- We deliver 70% of Black and Latina women in the City of Boston

Racial Differences in Prevalence

African American women are more likely to have preeclampsia/ hypertensive disease in pregnancy

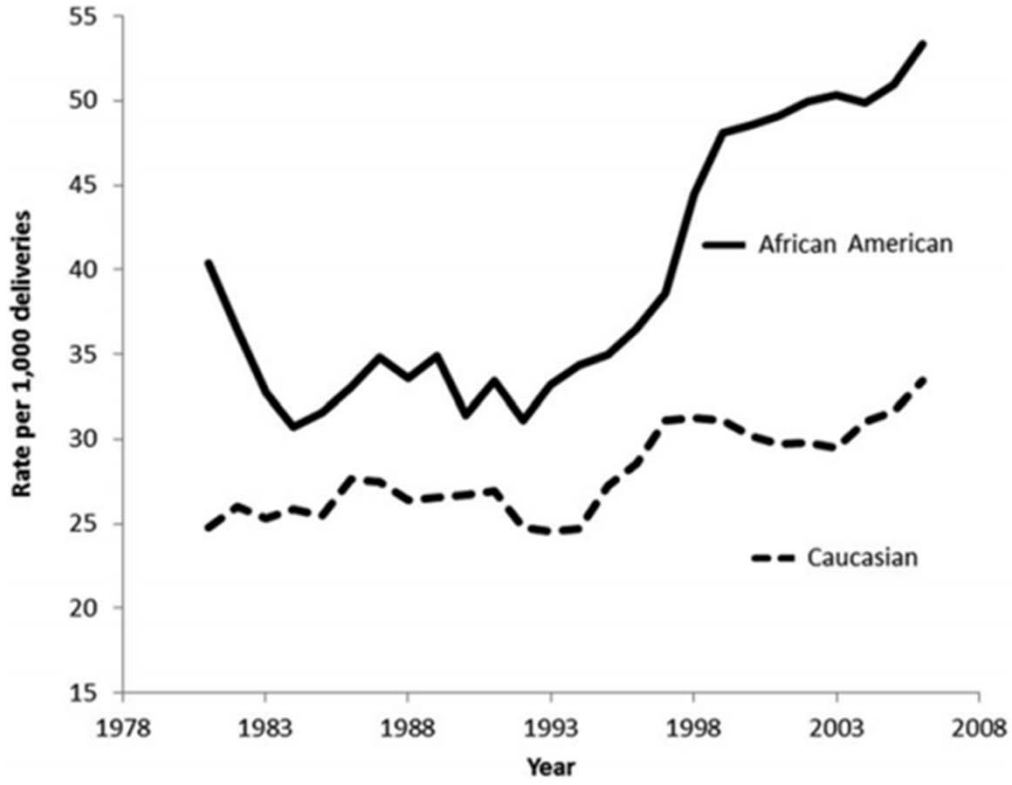


FIG. 2. Three-year rolling averages of preeclampsia rates by race. The 3-year rolling averages of preeclampsia rates are shown for African Americans and Caucasians. African American rates are in bold. Caucasian rates are dashed.

Breathett K, Muhlestein D, Foraker R, Gulalti M. Differences in preeclampsia rates between African American and Caucasian women: Trends from the National Hospital Discharge Survey. *J Womens Health.* 2014;23:886.

Racial Disparities in Comorbidities, Complications, and Maternal and Fetal Outcomes in Women with Preeclampsia/Eclampsia

- A retrospective cohort analysis using data from the National Inpatient Sample (NIS) from 2004 to 2012
- They identified 1,175,046 weighted patient discharges with preeclampsia/ eclampsia. The incidence of preeclampsia was 6.04% in African American women, compared to 2.58% in Hispanic women and 3.75% among white women (p <0.0001)

	Race		
	White	**Black**	**Hispanic**
Unadjusted OR (95% CI)			
Maternal Mortality	1.0 [Reference]	3.70 [2.19, 6.24]	1.81 [0.98, 3.36]
Intrauterine Fetal Death	1.0 [Reference]	2.78 [2.49, 3.11]	1.22 [1.08, 1.39]
Adjusted OR* (95% CI)			
Maternal Mortality**	1.0 [Reference]	2.85 [1.38, 5.53]	1.44 [0.74, 2.79]
Intrauterine Fetal Death‡	1.0 [Reference]	2.45 [2.14, 2.82]	0.96 [0.82, 1.13]

** Adjusted for age group, median household income, hospital region, teaching status, mode of delivery, multiparity, diabetes (with and without complications), year, preexisting hypertension, obesity and payer type

‡ Adjusted for age group, median household income, hospital region, teaching status, mode of delivery, multiparity, diabetes (with and without complications), year, obesity and payer type

Shahul S, Tung A, Minhaj M, Nizamuddin J, Wenger J, Mahmood E, Mueller A, Shaefi S, Scavone B, Kociol RD, Talmor D, Rana S: Racial Disparities in Comorbidities, Complications, and Maternal and Fetal Outcomes in Women With Preeclampsia/eclampsia. Hypertens Pregnancy **34**: 506-515, 2015

Annals of Internal Medicine | CLINICAL GUIDELINE

Low-Dose Aspirin Use for the Prevention of Morbidity and Mortality From Preeclampsia: U.S. Preventive Services Task Force Recommendation Statement

Michael L. LeFevre, MD, MSPH, on behalf of the U.S. Preventive Services Task Force*

The USPSTF recommends the use of aspirin (81mg) as preventive medication after 12 weeks of gestation in women who are at high (>8%) risk for preeclampsia.

Henderson, JT, Low-dose aspirin use for the prevention of morbidity and mortality from preeclampsia: A systematic evidence review for the U.S. preventive services task force, Ann Int Med, 2014; 160 (10): 695-703.

JRSM
JOURNAL OF THE ROYAL SOCIETY OF MEDICINE

J R Soc Med. 2011 Dec; 104(12): 510–520.
doi: 10.1258/jrsm.2011.110180
PMCID: PMC3241518

The answer is 17 years, what is the question: understanding time lags in translational research

Zoë Slote Morris,[1] Steven Wooding,[2] and Jonathan Grant[2]

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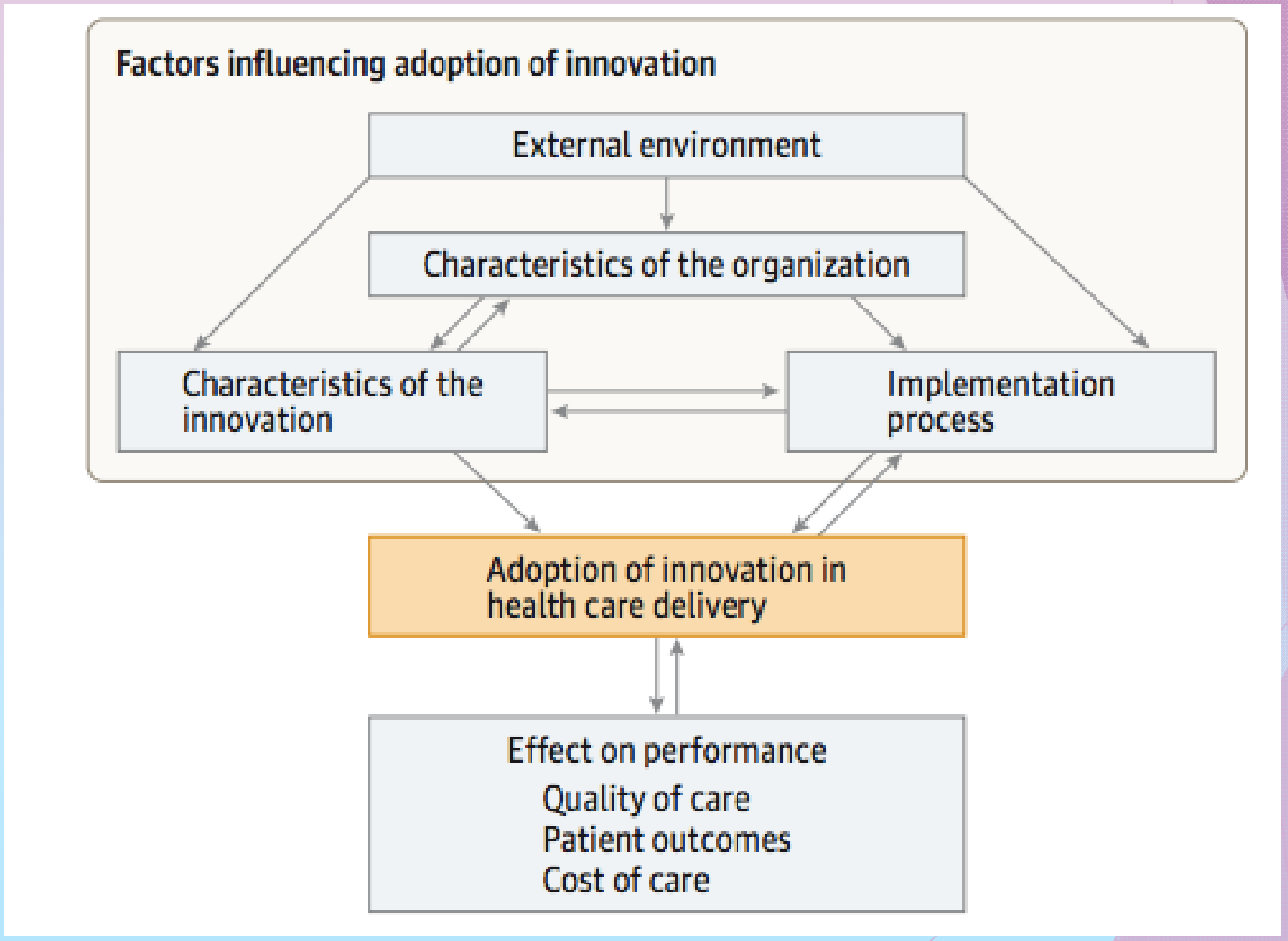
See editorial "Knowledge, lost in translation" in volume 104 on page 487.

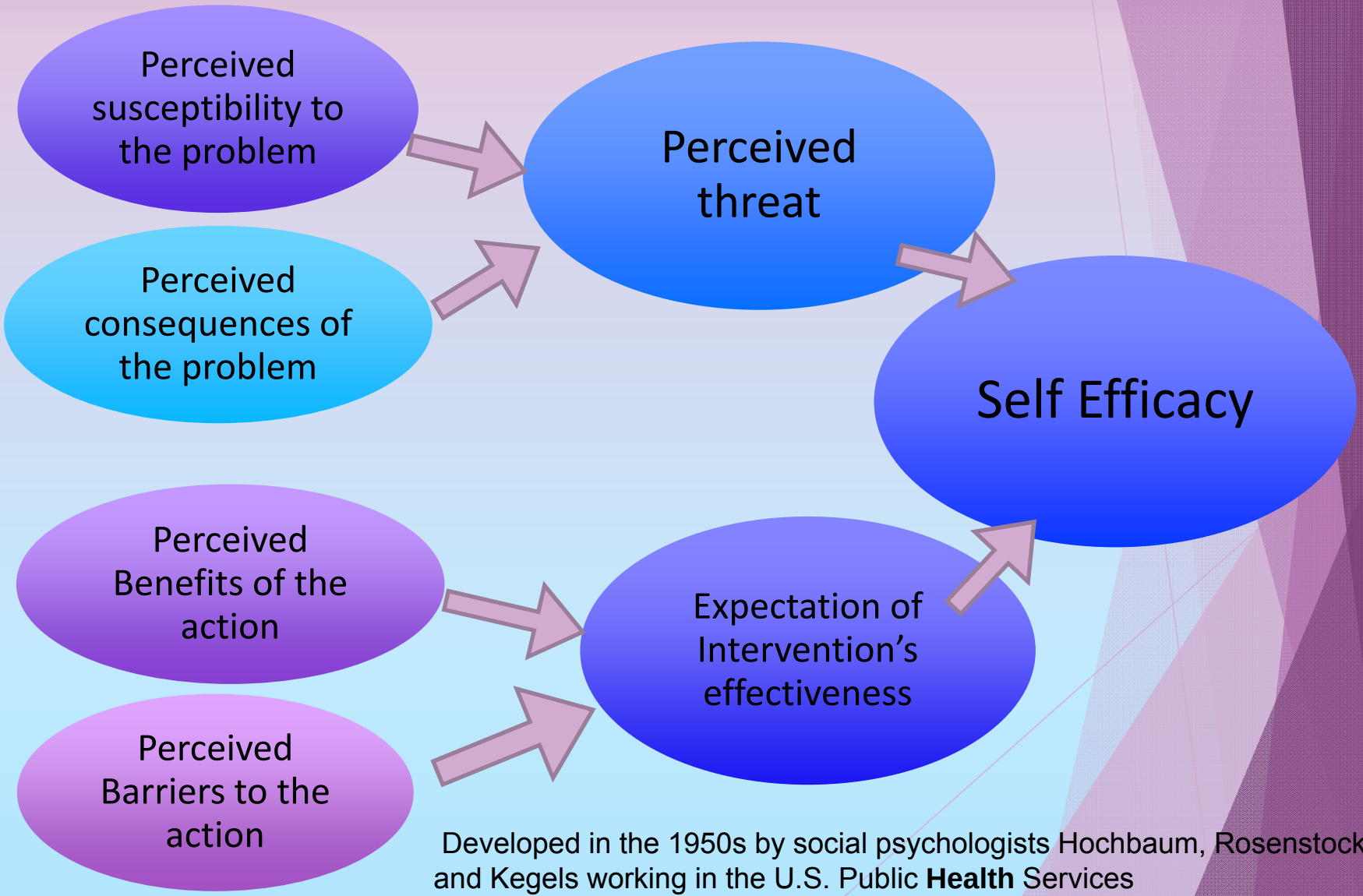
This article has been cited by other articles in PMC.

Framework for Analyzing the Adoption of Innovations



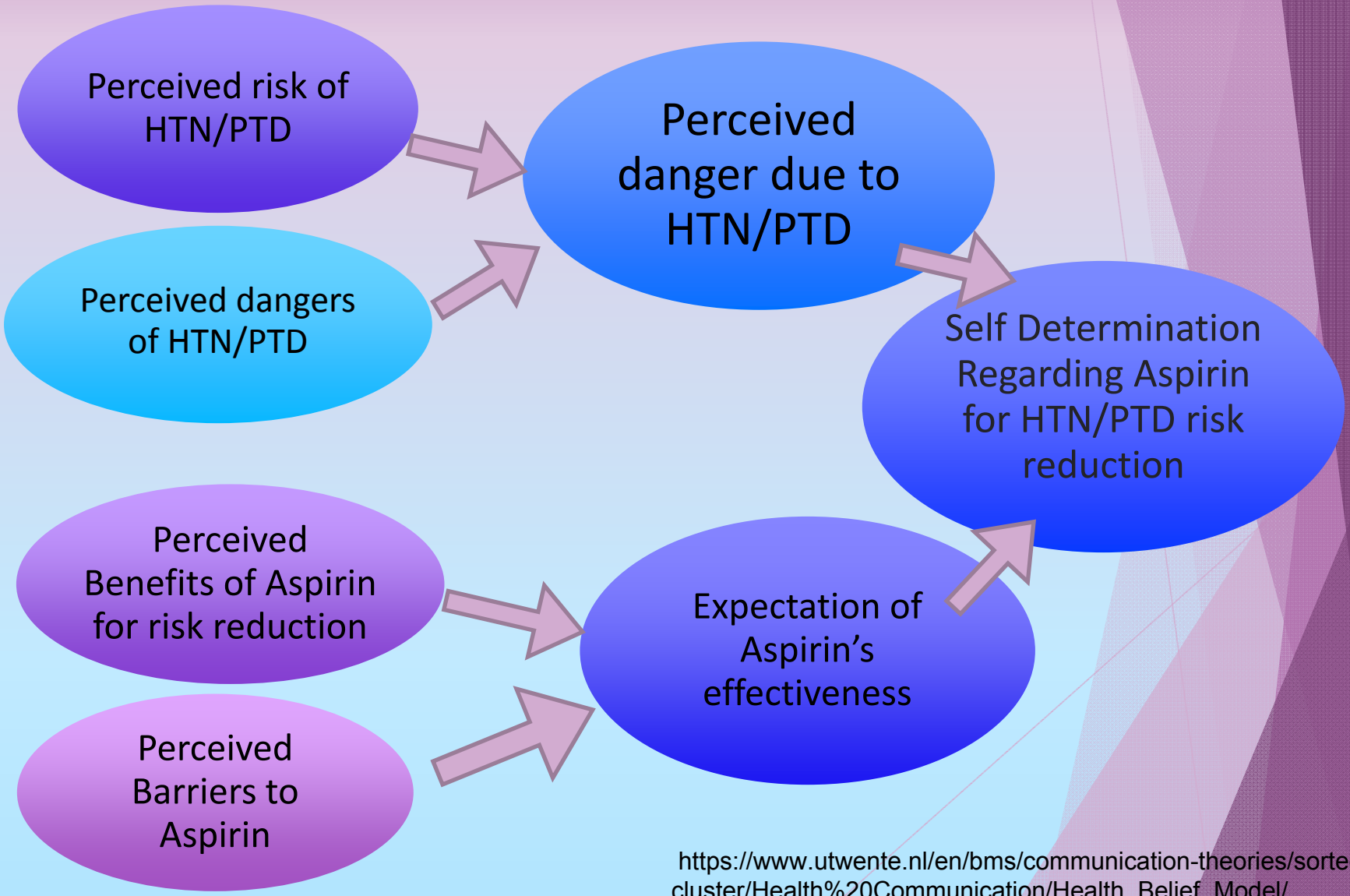
Fisher, Elliott S., Stephen M. Shortell, and Lucy A. Savitz. "Implementation science: A potential catalyst for delivery system reform." *JAMA* 315.4 (2016): 339-340.

Health Belief Model of Self Efficacy



Developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public **Health** Services

Health Belief Model Applied to Aspirin



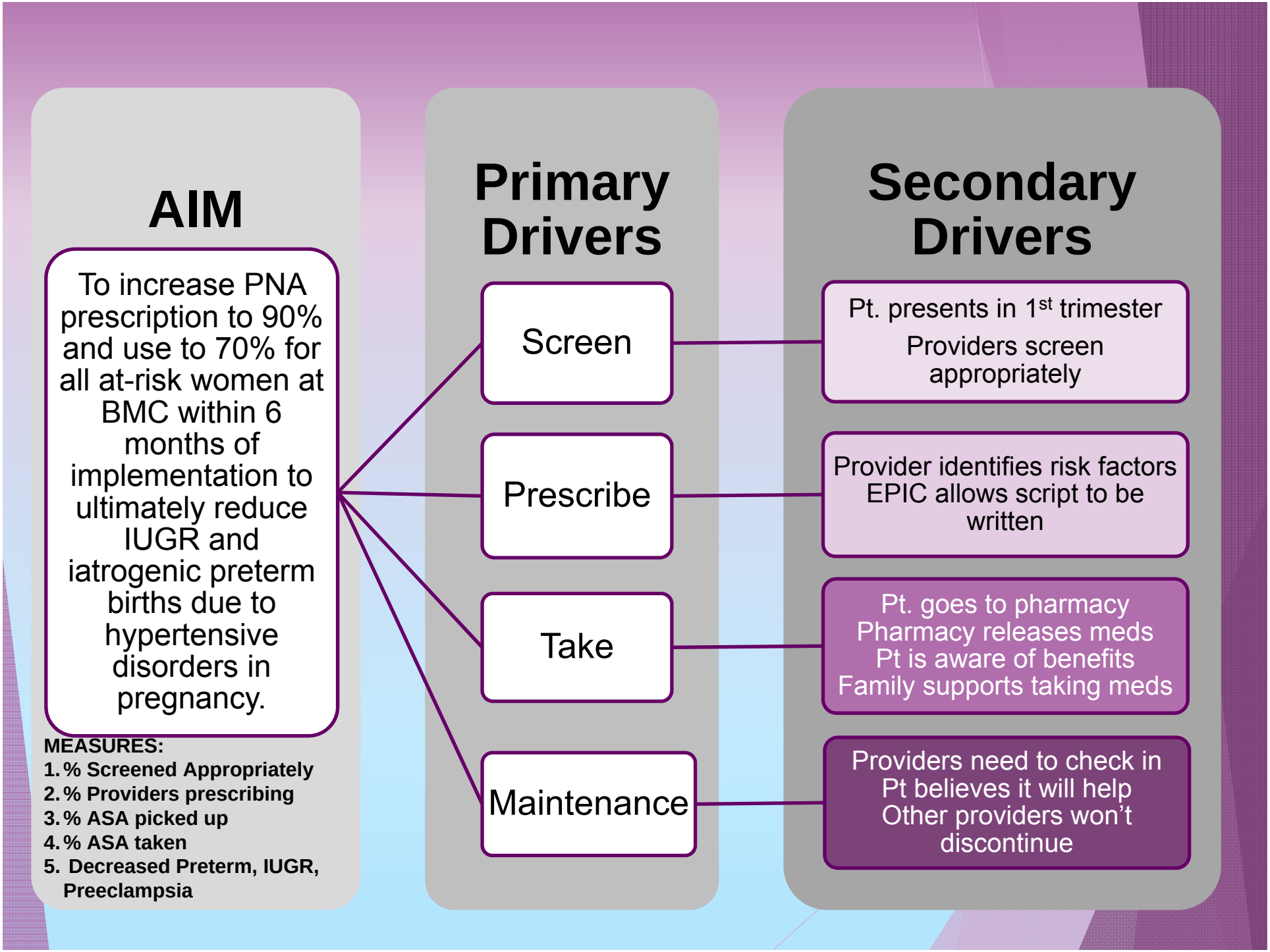
https://www.utwente.nl/en/bms/communication-theories/sorted-by-cluster/Health%20Communication/Health_Belief_Model/

GOAL

To reduce the rates of iatrogenic preterm birth and IUGR due to hypertensive disease in pregnancy

AIM

To increase PNA prescription to 90% of high risk women by September 30, 2107


AIM
To increase PNA prescription to 90% and use to 70% for all at-risk women at BMC within 6 months of implementation to ultimately reduce IUGR and iatrogenic preterm births due to hypertensive disorders in pregnancy.
MEASURES:
1. % Screened Appropriately
2. % Providers prescribing
3. % ASA picked up
4. % ASA taken
5. Decreased Preterm, IUGR, Preeclampsia
Primary Drivers
Screen
Prescribe
Take
Maintenance
Secondary Drivers
Pt. presents in 1st trimester
Providers screen appropriately
Provider identifies risk factors
EPIC allows script to be written
Pt. goes to pharmacy
Pharmacy releases meds
Pt is aware of benefits
Family supports taking meds
Providers need to check in
Pt believes it will help
Other providers won't discontinue

Pt. presents in 1st trimester
Providers screen appropriately

- Pt knows she is pregnant and calls for prenatal care
- BMC needs available slots for appointment
- Pt has access to care to see provider in 1st trimester

- Educating providers 1:1 on importance of screening
- Students working with providers in Intake and Centering to screen patients
- Creating educational video and materials for providers
- Screening tool created for providers on EPIC
- Research team email reminder 1x/month regarding initiative to providers
- Provider documents results of screen on EPIC

Provider identifies risk factors
EPIC allows script to be written

- Provider is educated on USPSTF guideline of risk factors
- Provider remembers and asks patient about risk factors
- Provider lists patient RF's or # of RF's
- Provider prescribes script for patients who qualify for PNA
- Provider overrides EPIC message on Aspirin contraindication in pregnancy

- EPIC message about Aspirin C/I removed

Pt. goes to pharmacy
Pharmacy releases meds
Pt is aware of benefits
Family supports taking meds

- Provider tells pt to go to pharmacy to pick up med
- Pt believes PNA is important for her to take requires adequate pt education

- Pharmacy surveyed about preconceptions on Aspirin prescription in pregnancy
- Pharmacy educated on initiative of PNA for HTN in pregnancy
- Pharmacy believes in PNA safety in pregnancy
- Pharmacy filling prescription of Aspirin even though it is offered OTC

- Pharmacy and Provider educate pt on PNA benefits, when/how to take PNA
- Remove pharmacy stickers about Aspirin contraindication in pregnancy

- Gather family thoughts on Aspirin use in pregnancy
- Develop patient/family education material (flier and videos) to educate on PNA use and continuing in pregnancy

Providers need to check in
Pt believes it will help
Other providers won't discontinue

- Follow up phone call with patient within 48-72 hours of screening for PNA
- Confirm with pharmacy prescription filled
- Early and frequent education throughout pregnancy via education materials and from pharmacy, providers, research assistants
- Postpartum pt education in women with HTN about prevention in future pregnancies
- Check in at each clinic visit to confirm pt continuing PNA
- Educating providers not to continue PNA (through delivery?)

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Effective Practice and Organisation of Care

Trusted evidence.
Informed decisions.
Better health.

Classification of Professional interventions

- DISTRIBUTION OF EDUCATIONAL MATERIALS
- EDUCATIONAL MEETINGS
- LOCAL CONSENSUS PROSESSES
- LOCAL OPINION LEADERS
- PATIENT MEDIATED INTERVENTIONS; NEW INFORMATION FROM PATIENT COLLECTED INFORMATION
- AUDIT AND FEEDBACK
- REMINDERS (PROMPTS)
- MARKETING
- MASS MEDIA

EPOC TAXONOMY: Cochrane Effective Practice and Organization of Care

Cochrane
Effective Practice and Organisation of Care

Trusted evidence.
Informed decisions.
Better health.

Classification of Professional interventions

- DISTR
- EDU
- LOC
- LOC
- PATI
  INFO
- AUD
- REM
- MAR
- MASS

ECTED

Most Effective:

HARD STOPS IN THE EHR
AUDIT AND FEEDBACK

EPOC TAXONOMY: Cochrane Effective Practice and Organization of Care

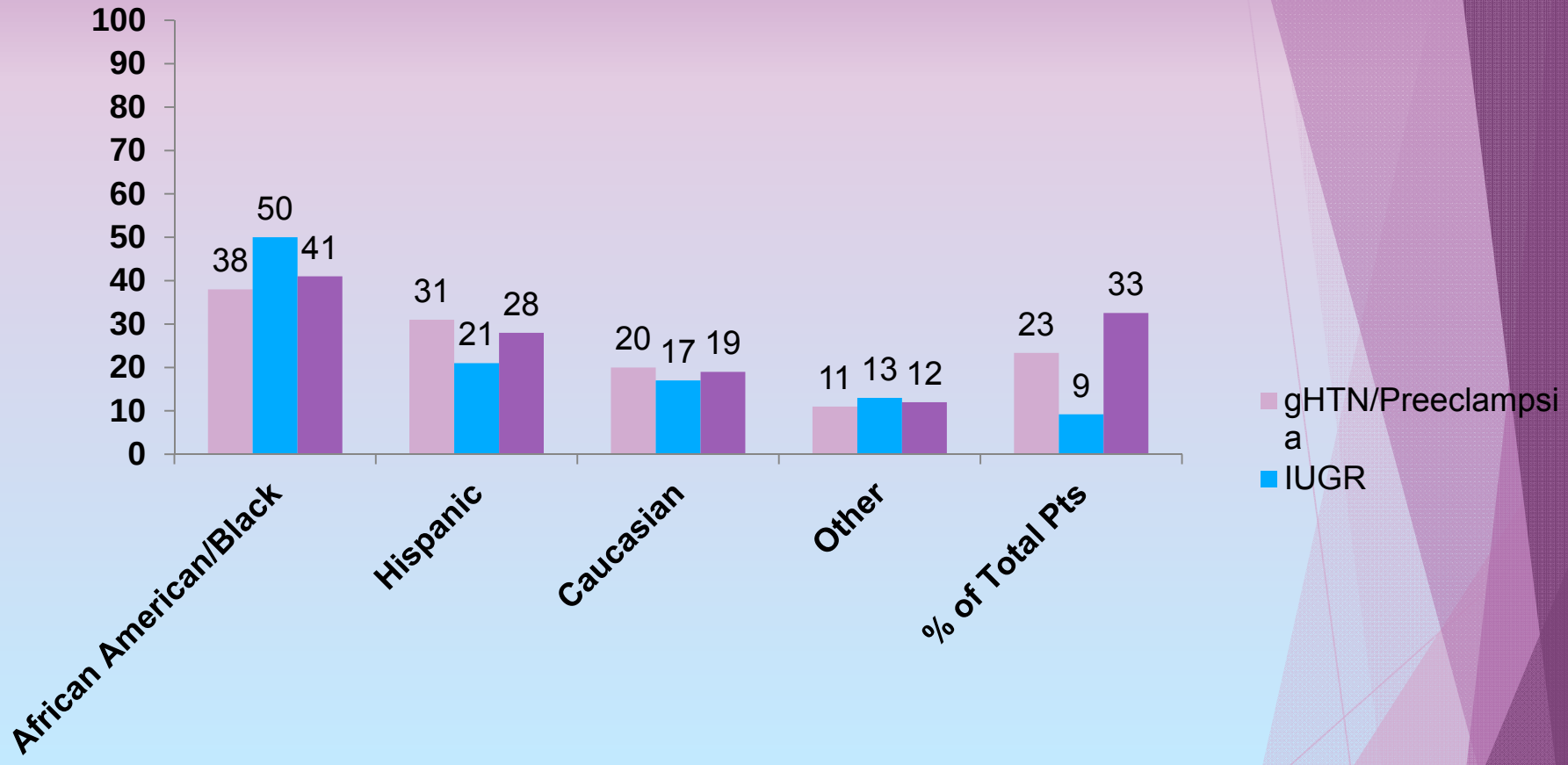
GOAL

To reduce the rates of iatrogenic preterm birth and IUGR due to hypertensive disease in pregnancy

AIM

To increase PNA prescription to 90% of high risk women by September 30, 2017

% pts by race with gHTN, preeclampsia, IUGR



RAW NUMBERS			
N=261 charts reviewed	gHTN/Preeclampsia	IUGR	Total
African American/Black	23	12	35
Hispanic	19	5	24
Caucasian	12	4	16
Other	7	3	10
Total	61	24	85

PERCENTAGE			
	gHTN/Preeclampsia	IUGR	Total
African American/Black	38	50	41
Hispanic	31	21	28
Caucasian	20	17	19
Other	11	13	12
% of Total Pts	23	9	33

Preeclampsia, gHTN, and/or IUGR in current pregnancy

- 83 cases of the following:
  - 24 cases of preeclampsia
  - 37 cases of gHTN
  - 24 cases of IUGR

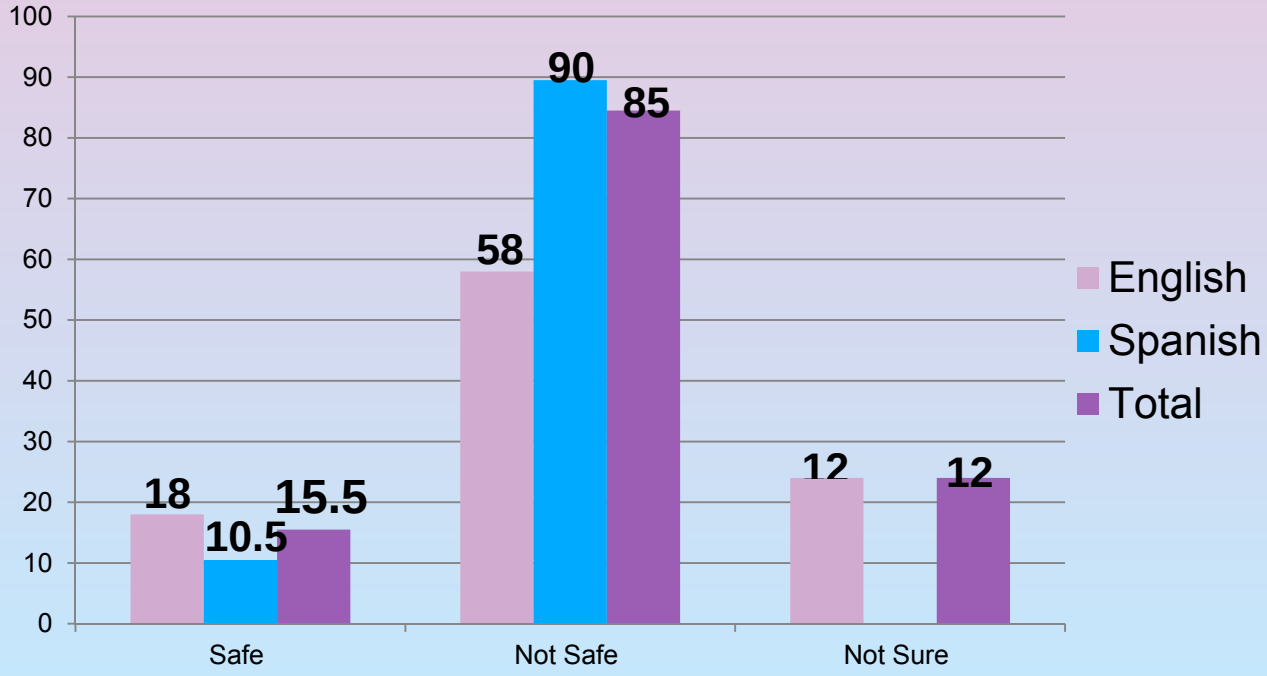
60% patients had potentially preventable complications if on prenatal aspirin

- 79 of these patients qualified for PNA

71% of qualified pts with IUGR and/or preeclampsia or gHTN were *not* on Prenatal Aspirin

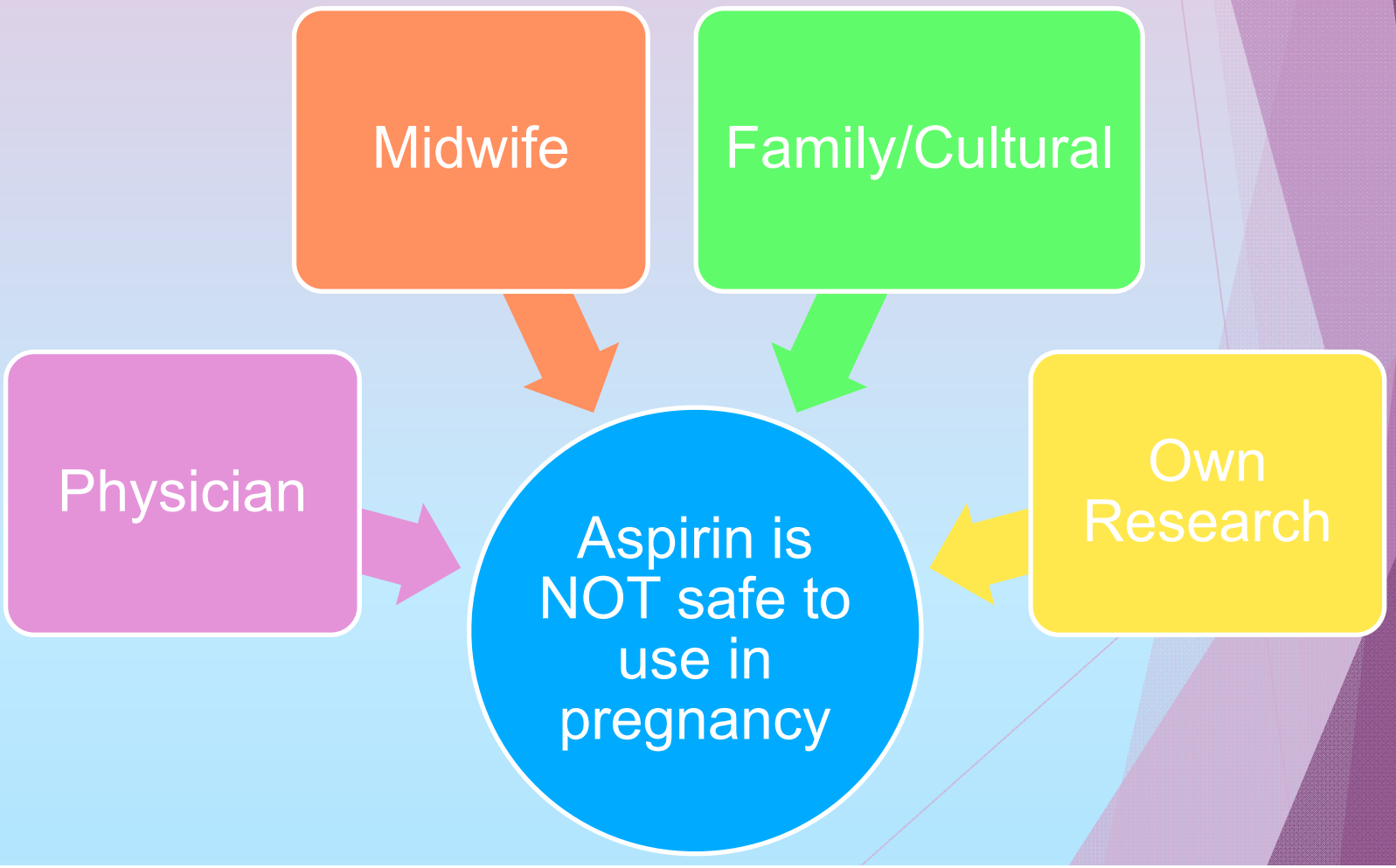
Patient Survey Data

% of surveyed about aspirin safety in pregnancy?



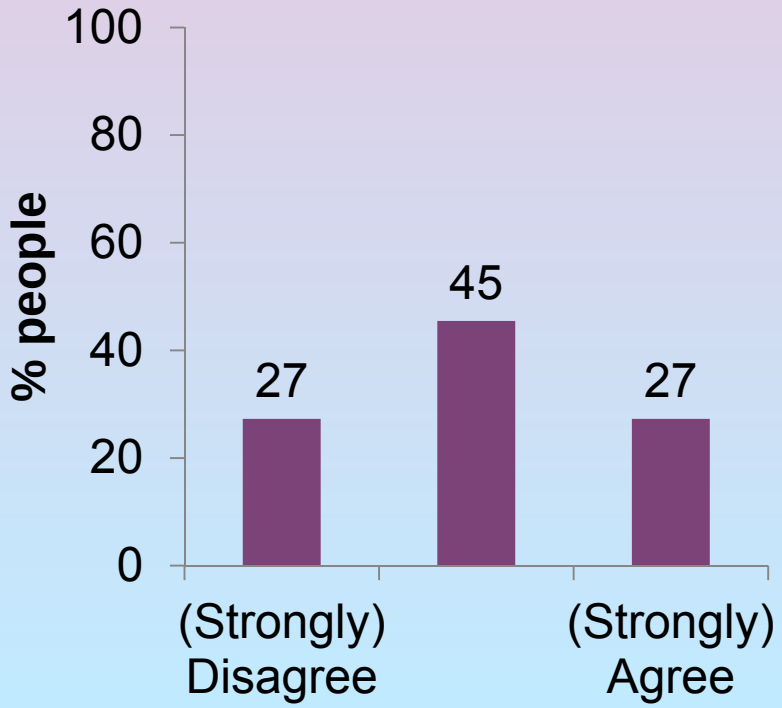
Language	Safe	Not Safe	Not Sure
English	9	29	12
Spanish	2	17	0
Grand Total	11	46	12

Causes of "aspirin in pregnancy-is-unsafe" preconceived notions

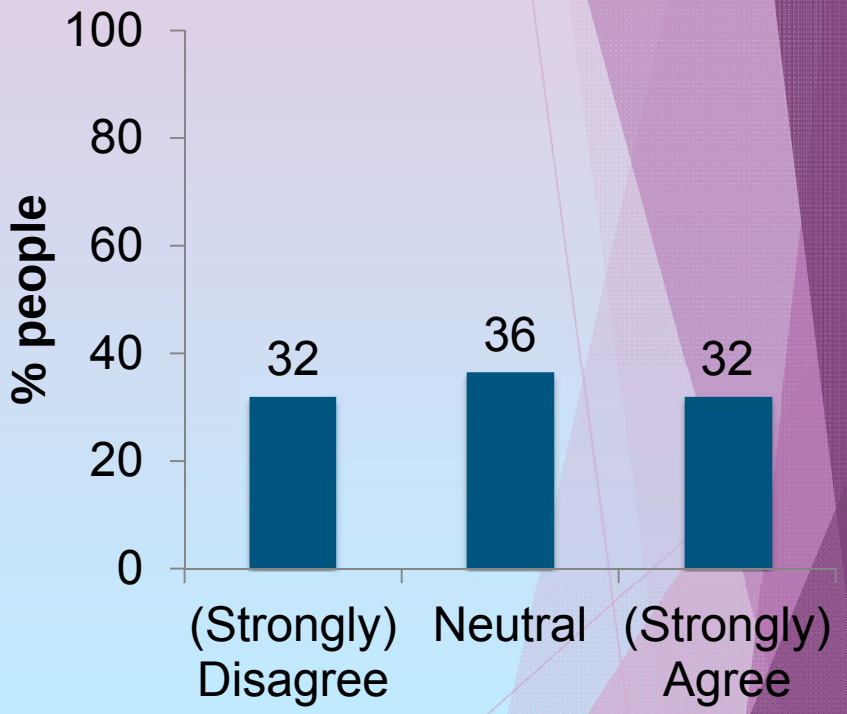


Pharmacist Survey Data

Low Dose Aspirin is safe in pregnancy…



Low Dose Aspirin can prevent hypertensive disease in pregnancy…

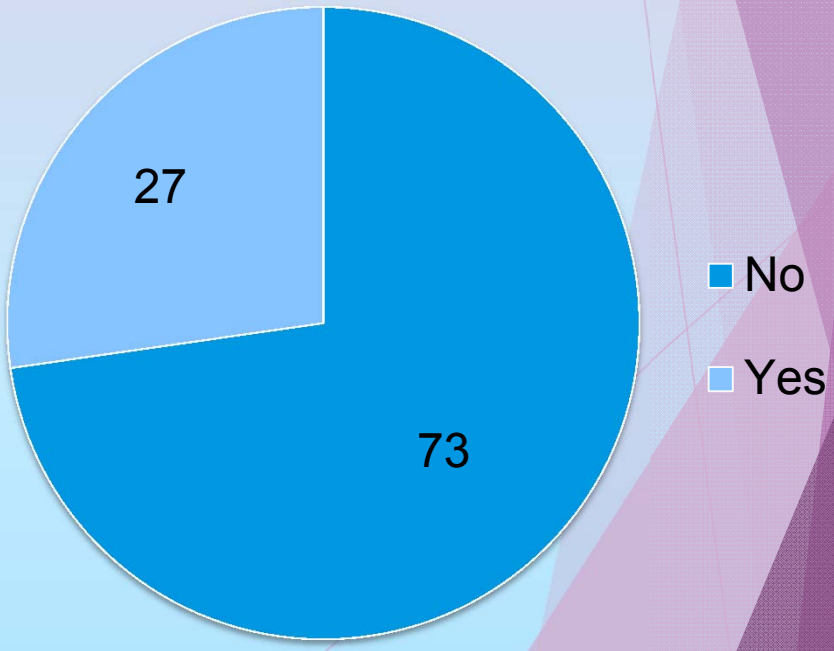


Hesitations in filling prescription?

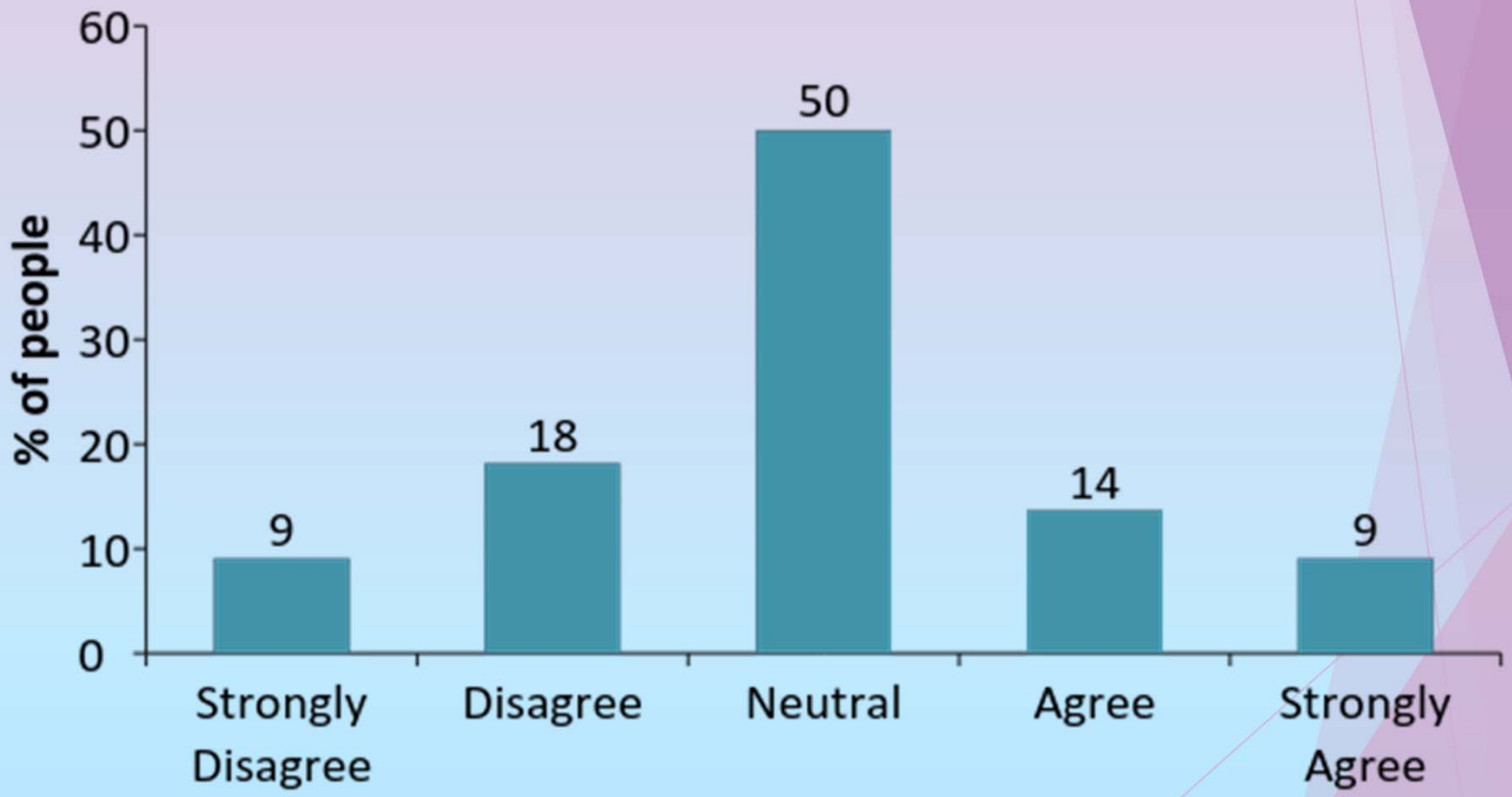
- < 30% report feeling (very) comfortable filling a prescription of aspirin for a patient who is pregnant

- Self-reported hesitations
  - Bleeding, harm to fetus, risk vs. benefit, lack of knowledge

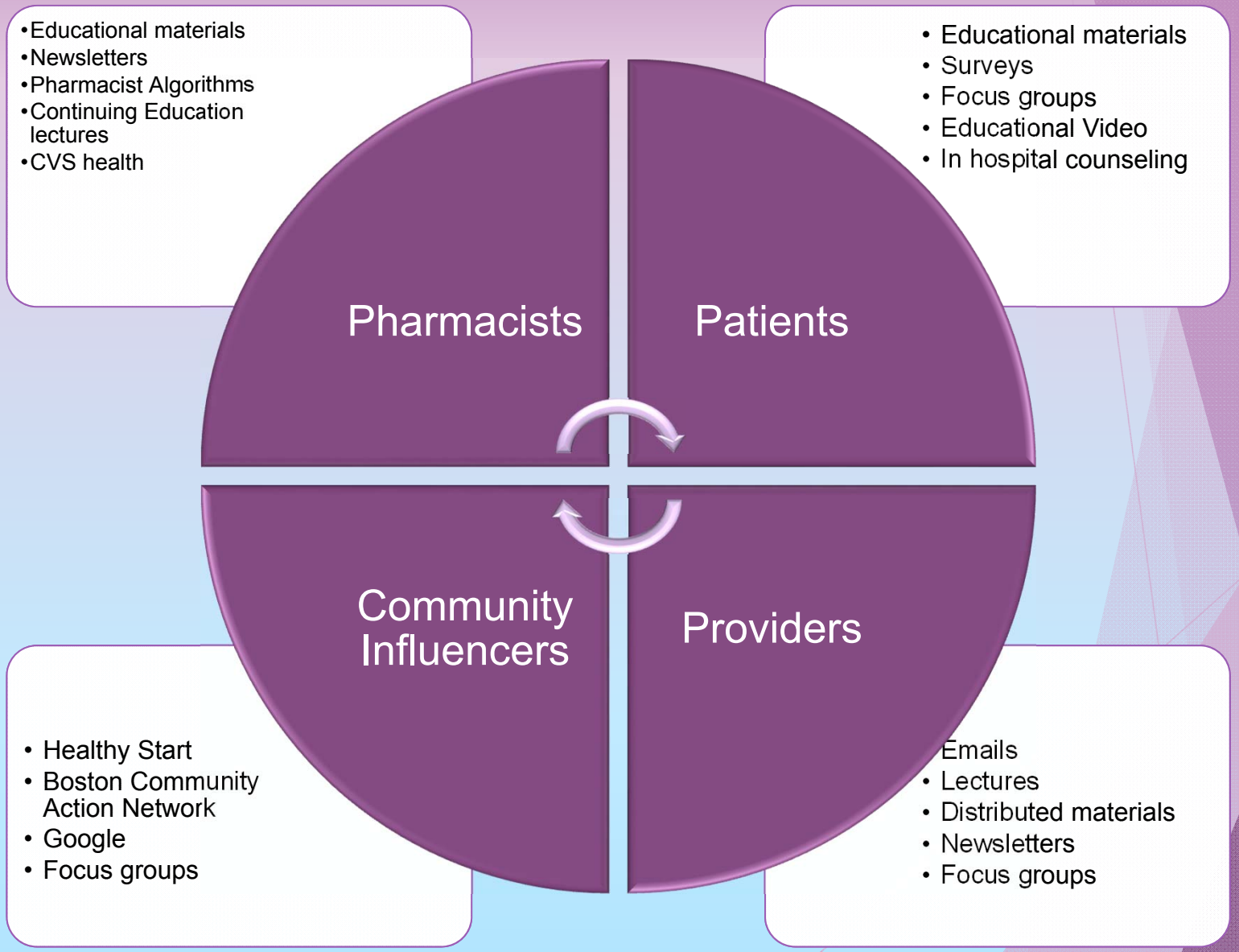
% aware of USPSTF guidelines for Aspirin in pregnancy to prevent hypertensive disorders of pregnancy?



If a pregnant patient came to my pharmacy with a prescription for aspirin (81mg), I would feel comfortable dispensing her prescription



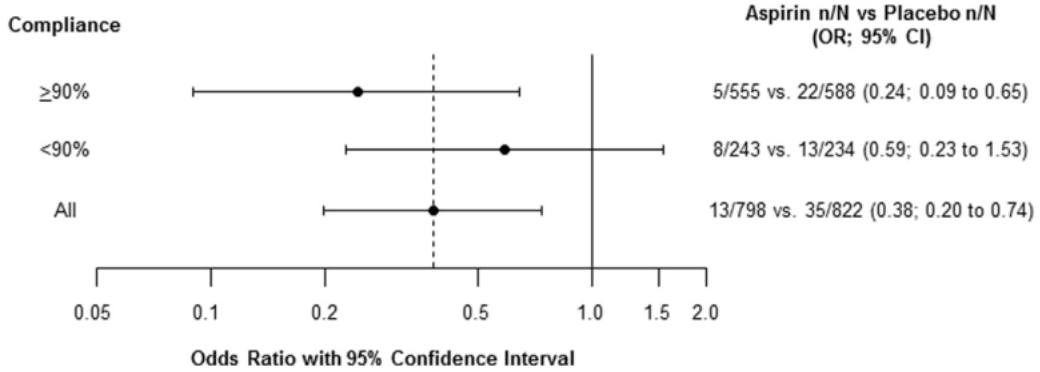
Stakeholder Directed Implementations



AJOG American Journal of Obstetrics & Gynecology

Aspirin for Evidence-Based Preeclampsia Prevention trial: influence of compliance on beneficial effect of aspirin in prevention of preterm preeclampsia

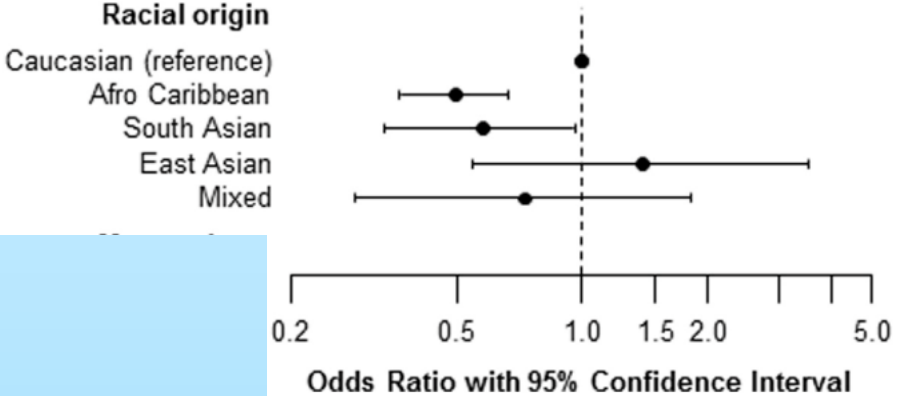
FIGURE 2
Aspirin effect on preterm preeclampsia in compliance subgroups



Odds ratio (OR) for preterm preeclampsia in aspirin group with 95% confidence intervals (CI) in total population and subgroups with compliance of <90% and ≥90%.

Wright et al. Aspirin treatment compliance determines efficacy in preeclampsia reductior

FIGURE 3
Effect of maternal factors on compliance of ≥90%



obstetric and medical history on compliance of ≥90%.

SYSTEMATIC REVIEW | OPEN ACCESS | OPEN PEER REVIEW

Patient-mediated knowledge translation (PKT) interventions for clinical encounters: a systematic review

Anna R. Gagliardi, France Légaré, Melissa C. Brouwers, Fiona Webster, Elizabeth Badley and Sharon Straus

Implementation Science 2016 11:26 | https://doi.org/10.1186/s13012-016-0389-3 | © Gagliardi et al. 2016

Received: 28 November 2015 | Accepted: 23 February 2016 | Published: 29 February 2016

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Table of Contents

Abstract

- 694 studies of which 16 were eligible
- Interventions
  - Print material
  - Electronic material
  - Counseling
- Offered in addition to physician consultation
  - Before During or After
- All studies were focused on knowledge activation
- All studies showed positive benefit
  - Knowledge
  - Decision Making
  - Communication
  - Behavior

Index Pregnancy Interventions at Boston Medical Center

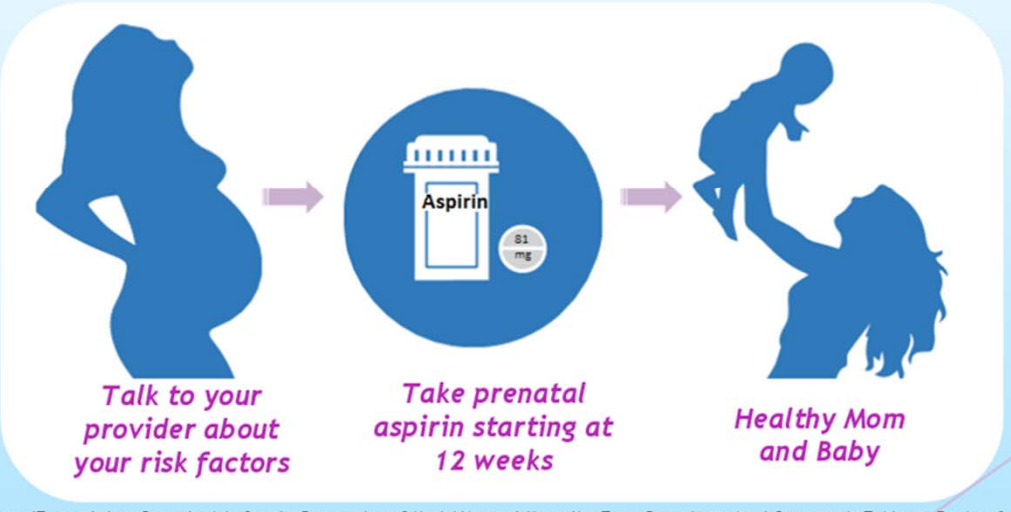
- Standardized Patient Counseling of Hospitalized Patients at Delivery with Gestational or Chronic Hypertension or Fetal Growth Restriction
- Standardized Electronic Health Record documentation
- Focus on Normalizing Conversations about aspirin as pregnancy risk reduction

Sample of Education Materials

What You Need To Know: Aspirin in Pregnancy

- It's also known as *low-dose*, *baby*, *prenatal*, or *81mg* aspirin
- For 30 years research has shown that prenatal aspirin has many benefits.
  - It does not harm mom or baby.[4]

Benefits of prenatal aspirin:	***Side effects or risks*** of prenatal aspirin:
• It is ***safe*** to use in pregnancy • Works within the placenta • Helpful for both you and your baby • Lowers your chance of a premature baby • Lowers your chance of a low birth-weight baby	• Will ***not*** cause you to have increased bleeding • Does ***not*** reach the baby's blood, ***has not*** been shown to have negative effects on the baby's initial development • Does ***not*** increase risk of miscarriage • Does ***not*** need to be stopped before delivery



Show this Card to your Pharmacist

References: (4) Henderson JT, et.al. Low-Dose Aspirin for the Prevention of Morbidity and Mortality From Preeclampsia: A Systematic Evidence Review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 112. AHRQ Publication No. 14-05207-EF-1. Rockville, MD: Agency for Healthcare Research and Quality; 2014.

Prenatal Aspirin* in Pregnancy: Process Map

*low-dose, 81mg, baby aspirin

- Background literature review; Determine aim, measures, budget, driver diagram, cause/effect
- Apply for funding
- Support from local/national organizations

Baseline Data Gathering:
- Jan. & May 2017 birth log chart reviews/analysis
- Pharmacy survey and data analysis

Develop Education Materials:
- Patient and provider flyers
- Screening cards
- Office room posters
- Patient video
- Provider paraphernalia
- Provider and pharmacy process maps

Email providers about pilot implementation

Piloting Sessions at BMC:
- Group intake
- Individual intakes
- Antenatal testing unit

Midwife/ObGyn/Nurse/FamMed Meetings
- Present work
- Provider material feedback
- Workflow input

Distribute Final Materials:
- Process maps
- Flyers, posters, screening cards
- Patient video
- Paraphernalia

Implementation:
- EPIC dot phrase
- Providers to follow process map

Medical Students:
- Patient survey for material feedback
- Patient survey for baseline knowledge
- Initiate risk assessment screening

PDSA Cycles
- Cont. current prenatal and retrospective birth log chart reviews
- Cont. follow up patient phone calls
- Run charts every other week
- Adjustments/reminders

IT involved
- EPIC screening part of intake dot phrase
- Prompt PNA prescription for at-risk patients
- Remove "Aspirin C/I in pregnancy" message

Intake Providers Involved:
- Review patient screening
- Prescribe PNA
- Fill PNA

Local Change:
- Increased PNA prescription
- Decreased preeclampsia
- Decreased IUGR and preterm births

Share Knowledge:
- Present at conferences
- Publish work

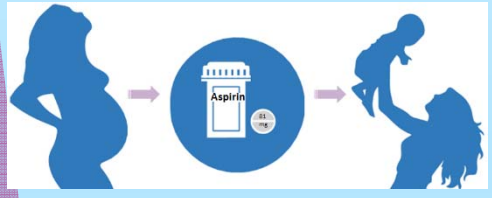
Medical Students:
- Follow up phone call to at-risk pts and pharmacies
- Document & begin run charts

Continued support
- March of Dimes
- Boston Public Health Commission
- Present at CAN meeting

Spread
- Local: community health centers
- Local: academic centers
- National: academic and community centers

National Change:
- Decreased preeclampsia
- Decreased IUGR and preterm births

Prenatal aspirin infused into prenatal vitamins



Prenatal Aspirin in Pregnancy: Providers

low-dose, 81mg, baby aspirin

Patient is here for first prenatal visit **or** is < 28 weeks gestation *not* on prenatal aspirin

Yes

Screen* patient for risk factors for hypertensive disease in pregnancy

Dot phrase: **.bmcobprenatalaspirin** To Document risk factors

Screen positive?

Yes

Review and Provide Patient Education material

Patient < 12 weeks gestation?

Patient 12-28 weeks gestation?

***Prescribe* prenatal aspirin today**

- Educate patient to start taking prenatal aspirin nightly beginning 12 weeks
- Not required to discontinue prior to delivery

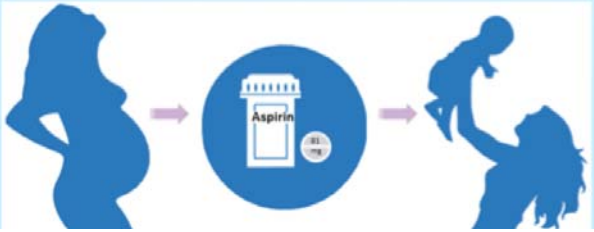
***Prescribe* prenatal aspirin today**

- Educate patient to start taking prenatal aspirin nightly starting today
- Not required to discontinue prior to delivery

Link PNA prescription to "pregnancy" diagnosis on problem list

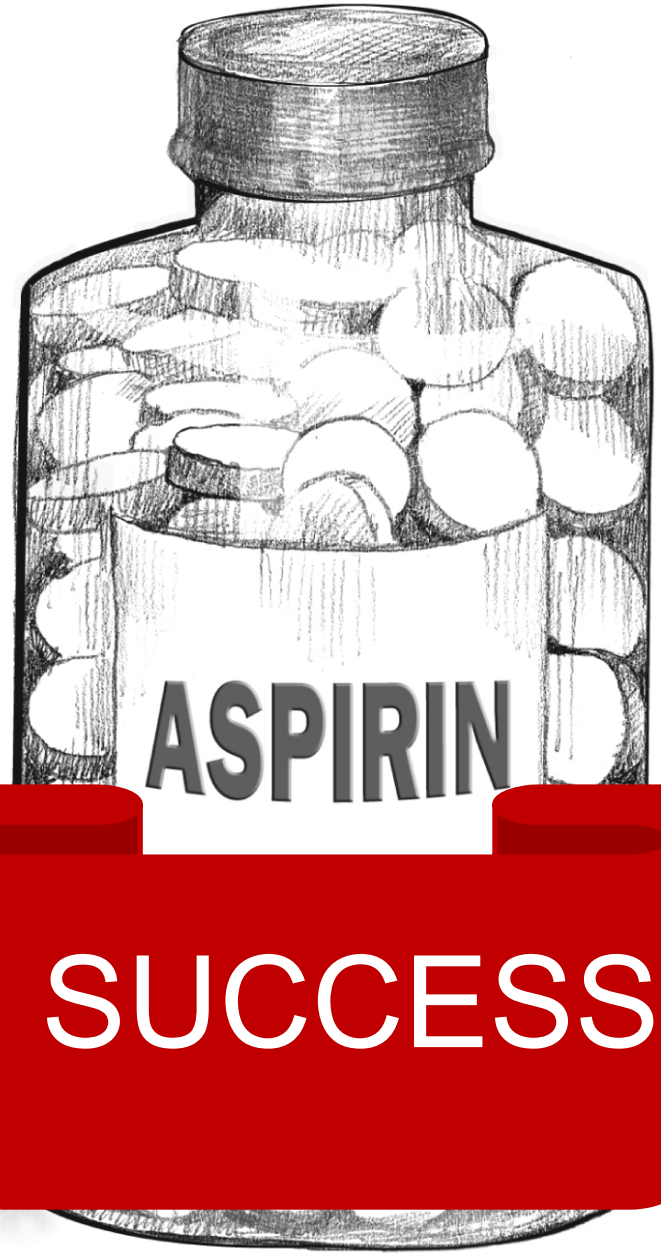
***Screening Criteria**

Any of the following high-risk factors:	***Several*** of the following moderate-risk factors:
☐ History of preeclampsia ☐ Multifetal gestation ☐ Chronic hypertension ☐ Diabetes ☐ Renal disease ☐ Autoimmune disease	☐ Nulliparity ☐ BMI >30 ☐ Family history of preeclampsia ☐ African American or Black ☐ Public health insurance ☐ Age ≥35 years ☐ History of IUGR ☐ Previous adverse pregnancy outcome (i.e. miscarriage) ☐ >10-year pregnancy interval




ASPIRIN
CAUTION
Pregnant women should not enter.

cvs Health®



SUCCESS!

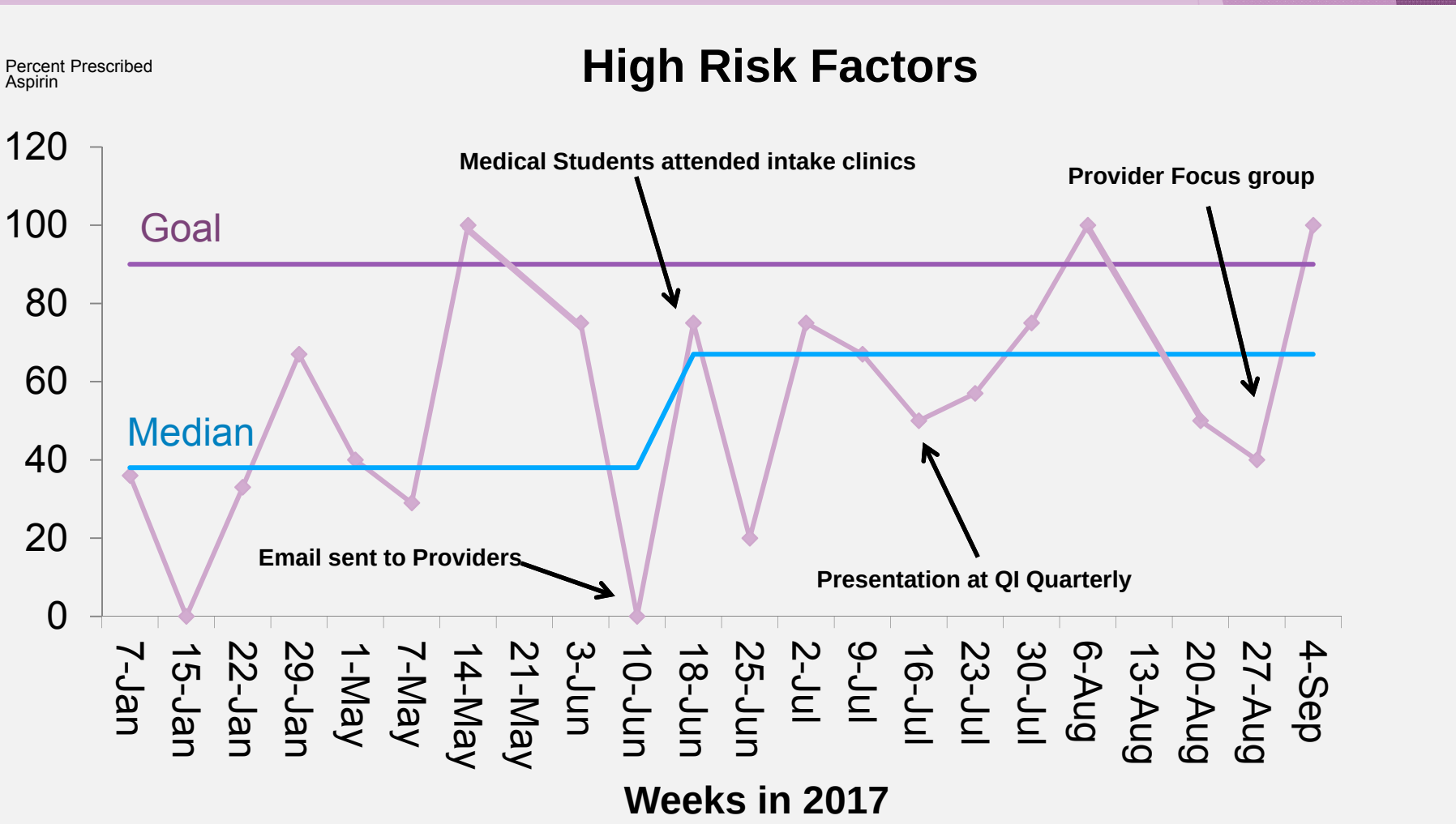
Why “Prenatal Aspirin”?

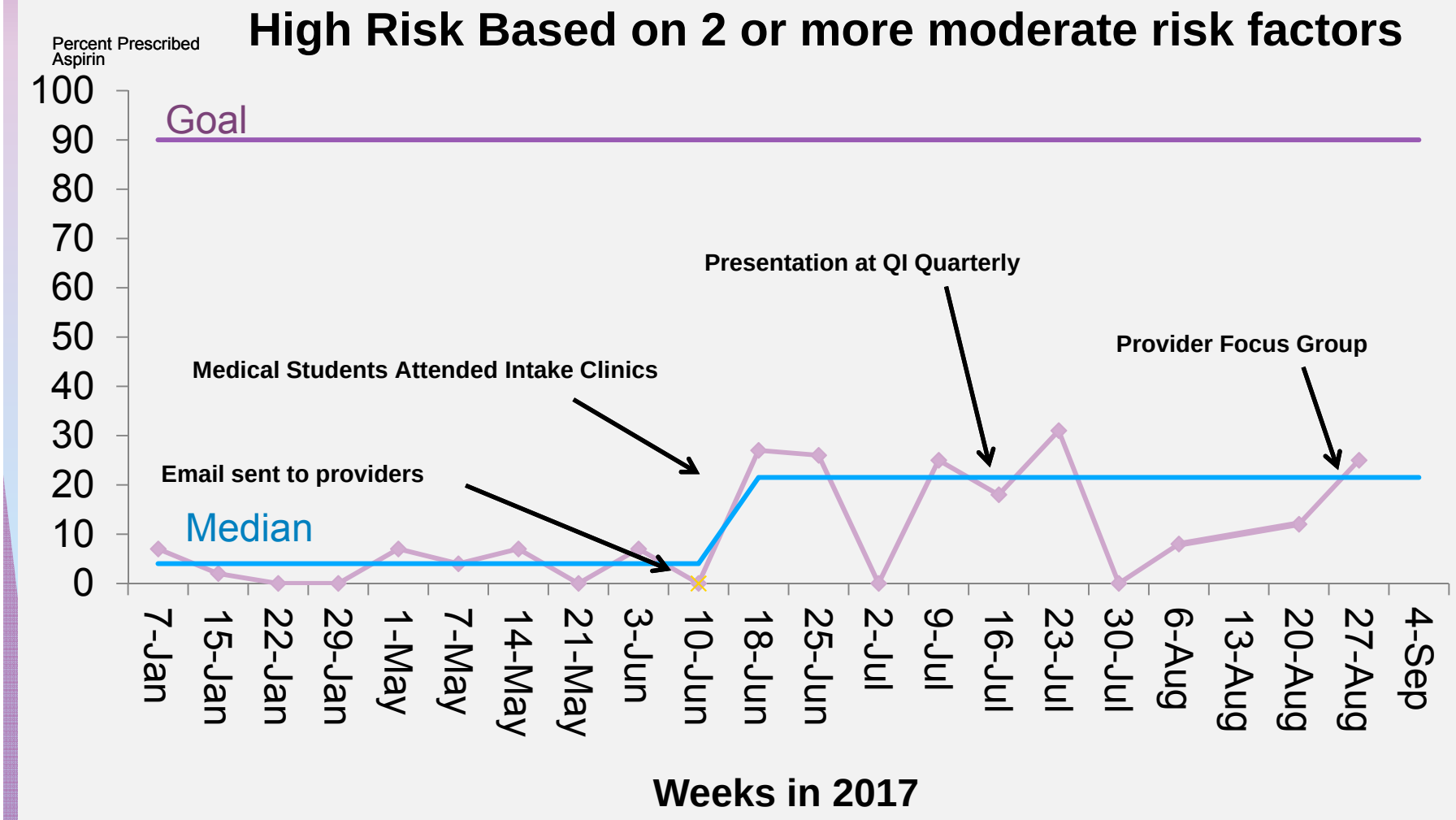
- We want to associate the use of Aspirin with Prenatal Care
- We want Patients, Providers & Pharmacists on the same page that it is prescribed specifically for risk reduction in pregnant women
- We want to reinforce the use of aspirin for risk reduction in pregnancy for our patients and their families
- Initial research in European studies suggests that higher doses than 81mg may be ideal, especially for women with higher BMI’s (recommended dosage may change over time)

march of dimes

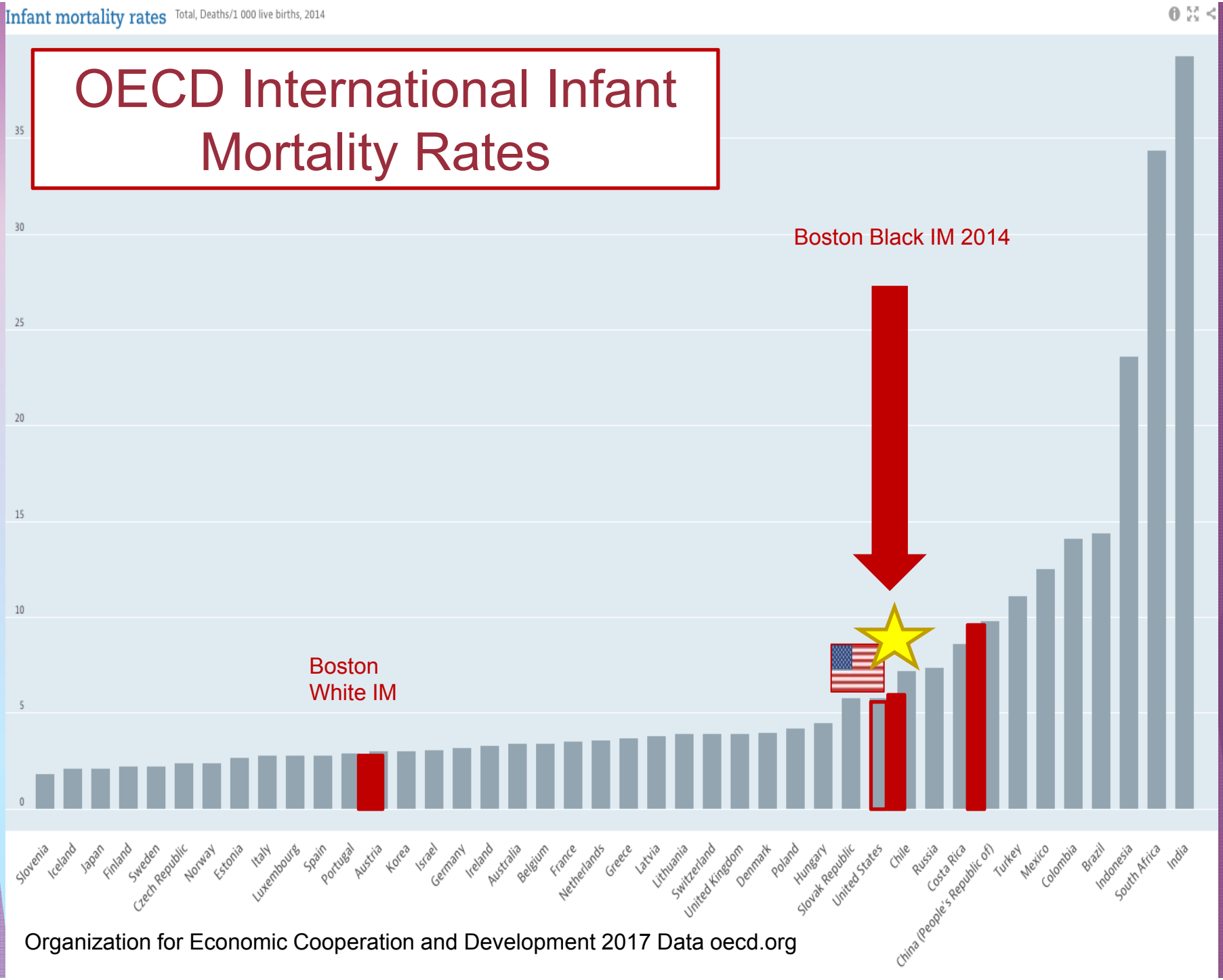
BOSTON MEDICAL CENTER

BU Boston University School of Medicine

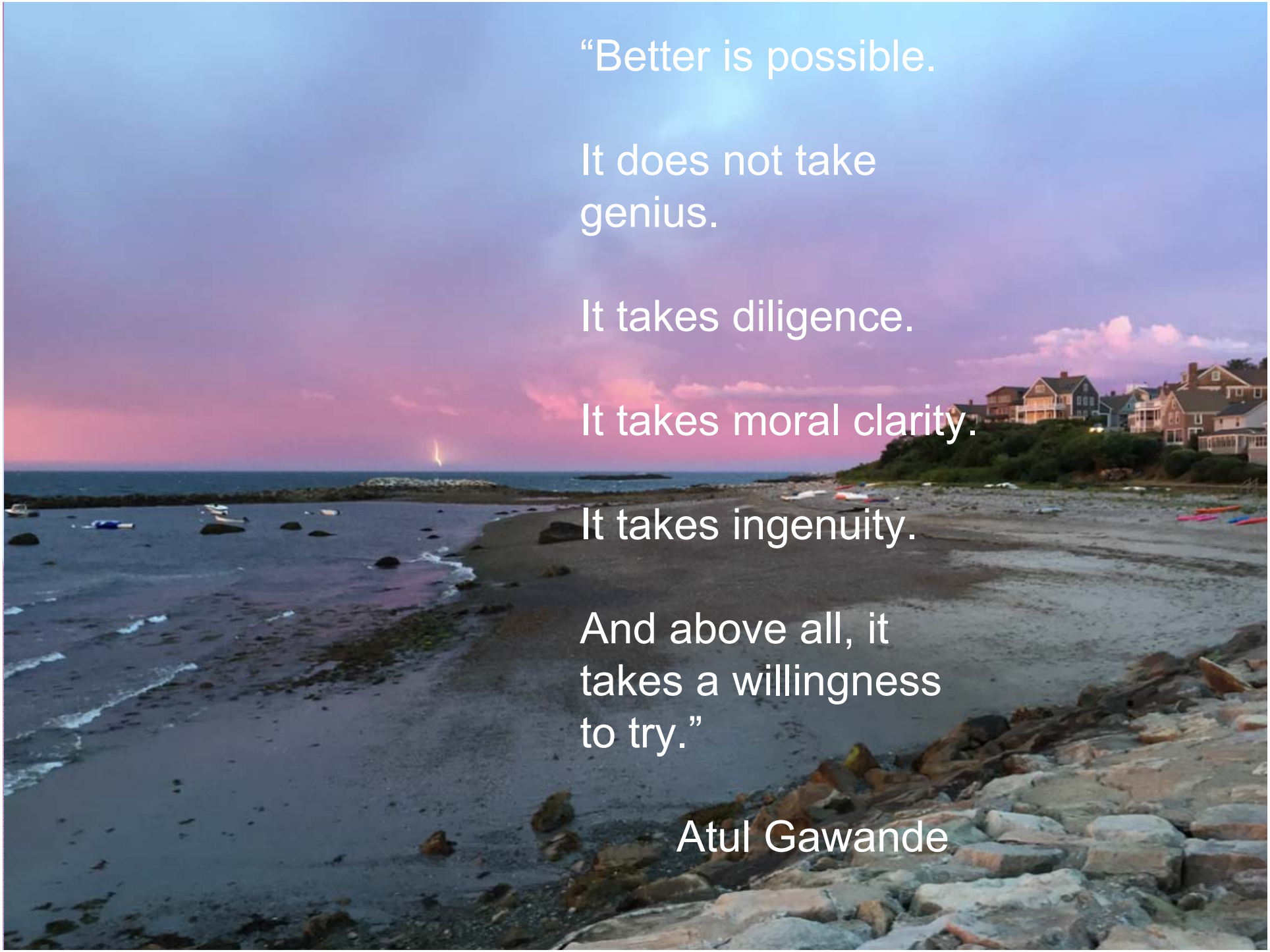

High Risk Factors
Percent Prescribed Aspirin
120
100
80
60
40
20
0
Goal
Median
Medical Students attended intake clinics
Provider Focus group
Email sent to Providers
Presentation at QI Quarterly
7-Jan
15-Jan
22-Jan
29-Jan
1-May
7-May
14-May
21-May
3-Jun
10-Jun
18-Jun
25-Jun
2-Jul
9-Jul
16-Jul
23-Jul
30-Jul
6-Aug
13-Aug
20-Aug
27-Aug
4-Sep
Weeks in 2017


High Risk Based on 2 or more moderate risk factors
Percent Prescribed Aspirin
100
90
80
70
60
50
40
30
20
10
0
Goal
Median
Email sent to providers
Medical Students Attended Intake Clinics
Presentation at QI Quarterly
Provider Focus Group
7-Jan
15-Jan
22-Jan
29-Jan
1-May
7-May
14-May
21-May
3-Jun
10-Jun
18-Jun
25-Jun
2-Jul
9-Jul
16-Jul
23-Jul
30-Jul
6-Aug
13-Aug
20-Aug
27-Aug
4-Sep
Weeks in 2017

OECD International Infant Mortality Rates



Organization for Economic Cooperation and Development 2017 Data oecd.org


“Better is possible.
It does not take genius.
It takes diligence.
It takes moral clarity.
It takes ingenuity.
And above all, it takes a willingness to try.”
Atul Gawande


REFUGEES
VELCOME


I CAN'T
BREATHE
4 BLACK
lives


DON'T
DEPORT
MY


HEALTH
IS A
HUMAN
RIGHT

Bibliography

- ACOG Committee on Obstetric Practice. "ACOG practice bulletin. Diagnosis and management of preeclampsia and eclampsia. Number 33, January 2002.
- American College of Obstetricians and Gynecologists." International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics 77.1 (2002): 67.
- American College of Obstetricians and Gynecologists ACOG practice bulletin no. 134: fetal growth restriction Obstet. Gynecol., 121 (2013), pp. 1122-1133
- Bell MJ. A Historical Overview of Preeclampsia-Eclampsia. Journal of obstetric, gynecologic, and neonatal nursing : JOGNN / NAACOG. 2010;39(5):510-518. doi:10.1111/j.1552-6909.2010.01172.x.
- Irgens Henrik U, Roberts James M, Reisæter Lars, Irgens Lorentz M, Lie Rolv T. Long term mortality of mothers and fathers after pre-eclampsia: population based cohort study Pre-eclampsia and cardiovascular disease later in life: who is at risk? *BMJ* 2001; 323 :1213
- Carroll, I.M., Yang, Q.Z., Sandhu, K.A., Vragovic, O., Abbott, J. (2017). 381: Indications for preterm birth in an Urban safety net hospital. American Journal of Obstetrics & Gynecology. 216(1) S229-S230.
- Barker DJ. Fetal origins of coronary heart disease. Br Heart J. 1993; 69(3):195–196. 147.
- Yeung EH, Robledo C, Boghossian N, Zhang C, Mendola P. Developmental Origins of Cardiovascular Disease. Curr Epidemiol Rep.2014;1(1):9–16
- Duley L, Henderson-Smart DJ, Meher S, King JF, "Antiplatelet agents for preventing pre-eclampsia and its complications," Cochrane Database of Systematic Reviews, Issue 2.
- Henderson, JT, Low-dose aspirin use for the prevention of morbidity and mortality from preeclampsia: A systematic evidence review for the U.S. preventive services task force, Ann Int Med, 2014; 160 (10): 695-703.
- Daniel Rolnik et al. Aspirin versus Placebo in Pregnancies at High Risk for Preterm Preeclampsia New England Journal of Medicine . 2017.
- Ayala, DE et al, Chronotherapy with low-dose aspirin for prevention of complications in pregnancy, Chronobiology International, 2013; 30(1-2): 260-279.
- Hochbaum, G., Rosenstock, I., & Kegels, S. (1952). Health belief model. United States Public Health Service.
- Caritis, S., Sibai, B., Hauth, J., Lindheimer, M. D., Klebanoff, M., Thom, E., ... & Meis, P. (1998). Low-dose aspirin to prevent preeclampsia in women at high risk. New England Journal of Medicine, 338(11), 701-705
- Slone, D., Heinonen, O., Kaufman, D., Siskind, V., Monson, R., & Shapiro, S. (1976). Aspirin and congenital malformations. The Lancet, 307(7974), 1373-1375.
- Askie, L. M., Duley, L., Henderson-Smart, D. J., & Stewart, L. A. (2007). Antiplatelet agents for prevention of pre-eclampsia: a meta-analysis of individual patient data. The Lancet, 369(9575), 1791-1798.
- Irgens Henrik U, Roberts James M, Reisæter Lars, Irgens Lorentz M, Lie Rolv T. Long term mortality of mothers and fathers after pre-eclampsia: population based cohort studyPre-eclampsia and cardiovascular disease later in life: who is at risk? *BMJ* 2001; 323 :1213
- Barker DJ. Fetal origins of coronary heart disease. Br Heart J. 1993; 69(3):195–196. 147.
- Yeung EH, Robledo C, Boghossian N, Zhang C, Mendola P. Developmental Origins of Cardiovascular Disease. Curr Epidemiol Rep.2014;1(1):9–16

Building a movement

Invitation to participate in Prematurity Campaign Collaborative

Purpose: To engage a wide array of organizations, drawing on their collective expertise to identify issues and new ideas, as well as opportunities for outreach, alignment, and implementation.

You are invited to do the following as a Collaborative participant:

- ✓ Join quarterly virtual meetings of full Collaborative
- ✓ Suggest ideas or topics for consideration by the Steering Committees or workgroups
- ✓ Sign up for a workgroup and participate in their virtual meetings – each workgroup meets once every two months.

Use one of two ways to sign up for a workgroup:

1. Complete the sign-up form on marchofdimes.org/collaborative
2. Email collaborative@marchofdimes.org

Website: marchofdimes.org/collaborative

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Prematurity Campaign Collaborative

SAVE THE DATE
Prematurity Campaign Collaborative Summit
May 21-22, 2018
Washington, DC Metropolitan Area

The summit will convene thought leaders to advance policy and practice, mobilize community leadership, share and spread emerging ideas and promising practices, and energize stakeholders to achieve equity and reduce preterm birth.

More details to come.

MARCH OF DIMES

HEALTH ACTION SHEET

Low-dose aspirin to prevent preeclampsia and premature birth

For some pregnant women, taking low-dose aspirin may help reduce your risk for serious problems for you and your baby, like preeclampsia and premature birth.

Preeclampsia is when you have high blood pressure and signs that some of your organs, like your kidneys and liver, may not be working right. If not treated, it can cause serious problems for you and your baby. It also increases your risk for premature birth (before 37 weeks of pregnancy). Babies born early may have more health problems than babies born on time.

If you're at risk for preeclampsia, your provider may recommend you take low-dose aspirin.

What you can do:

- ✓ Talk to your provider about your risk for preeclampsia. Read the list of risk factors and check off any that you have.
- ✓ If your provider says it's OK, take low-dose aspirin each day. You can buy it over-the-counter, or your provider can give you a prescription for it. It's also called baby aspirin or 81 mg aspirin.
- ✓ Take the aspirin exactly as your provider tells you to. Don't take more or take it more often than your provider says.
- ✓ Go to all your prenatal care checkups, even if you're feeling fine. You can have preeclampsia and not know it.
- ✓ If you have signs or symptoms of preeclampsia (like severe headaches, blurred vision or swelling in the hands or face) during or after pregnancy, call your provider right way.

Are you at risk?

Check off any of the risks you have and share this sheet with your provider. If you have even one risk, ask your provider about low-dose aspirin:

You're at highest risk for preeclampsia if:

- ☐ You've had preeclampsia before.
- ☐ You're pregnant with multiples.
- ☐ You have high blood pressure, diabetes, kidney disease or an autoimmune disease like lupus.

Other risk factors for preeclampsia:

- ☐ You've never had a baby before, or it's been more than 10 years since you had a baby.
- ☐ You're obese.
- ☐ Your family members have had preeclampsia.
- ☐ You had complications in a previous pregnancy, like your baby had low birthweight.
- ☐ You had fertility treatment called in vitro fertilization.
- ☐ You're 35 or older.
- ☐ You're African-American. African-American women are more likely than others to have preeclampsia.
- ☐ You have little education or income.

▶ Watch videos about preeclampsia at: **marchofdimes.org/preeclampsia**

PREECLAMPSIA *foundation*

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HOJA DE ACCIÓN DE SALUD

Dosis baja de aspirina para prevenir la preeclampsia y el nacimiento prematuro

Para algunas embarazadas, tomar aspirina en dosis baja podría ayudar a reducir el riesgo de tener graves problemas, como preeclampsia y nacimiento prematuro.

Preeclampsia es cuando tiene alta presión arterial y señales de que algunos de sus órganos, como sus riñones e hígado, no están funcionando bien. Si no es tratada, puede causar graves problemas para usted y su bebé. También aumenta su riesgo de nacimiento prematuro (antes de las 37 semanas). Los bebés nacidos antes de tiempo pueden tener más problemas de salud que los bebés que nacen a tiempo.

Si corre riesgo de preeclampsia, su profesional puede recomendarle que tome aspirina en dosis baja.

Qué puede hacer:

- ✓ Hable con su profesional sobre su riesgo de preeclampsia. Lea la lista de factores de riesgo y marque cualquiera que tenga.
- ✓ Con la aprobación de su profesional, tome a diario una aspirina en dosis baja. Usted puede comprarla sin receta, o su profesional le puede dar una receta. También se llama aspirina de 81 mg.
- ✓ Tome la aspirina exactamente como se lo indique su profesional. No tome más ni la tome con más frecuencia de lo que dice su profesional.
- ✓ Vaya a todas sus visitas prenatales aunque se sienta bien. Usted puede tener preeclampsia sin saberlo.
- ✓ Si tiene señales o síntomas de preeclampsia (como dolores de cabeza fuertes, visión borrosa o hinchazón en las manos o cara) durante o después del embarazo, llame a su profesional de inmediato.

¿Corre riesgo?

Marque cualquiera de los riesgos que tenga y comparta esta hoja con su profesional. Aunque solo tenga un riesgo, pregúntele a su profesional sobre la aspirina en dosis baja:

Usted corre un riesgo mayor de preeclampsia si:

- ☐ Tuvo preeclampsia antes.
- ☐ Está embarazada de más de un bebé.
- ☐ Tiene alta presión arterial, diabetes, enfermedad renal o un trastorno autoinmune, como el lupus.

Otros factores de riesgo de preeclampsia:

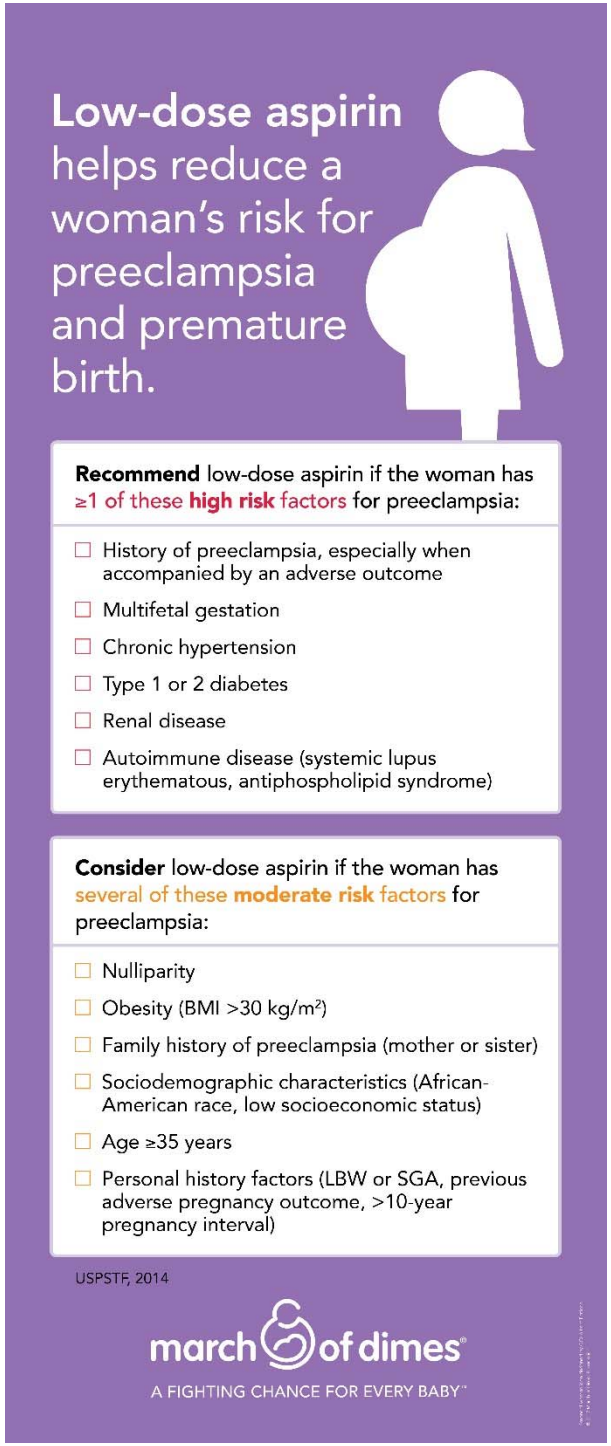
- ☐ No ha tenido un bebé antes, o han pasado 10 años desde que tuvo un bebé.
- ☐ Tiene obesidad.
- ☐ Miembros de su familia han tenido preeclampsia.
- ☐ Tuvo complicaciones en un embarazo anterior, como el bajo peso al nacer en su bebé.
- ☐ Tuvo el tratamiento para la fertilidad llamado fertilización in-vitro.
- ☐ Tiene 35 años de edad o más.
- ☐ Es afroamericana. Las mujeres afroamericanas tienen más probabilidades que otras mujeres de tener preeclampsia.
- ☐ Tiene nivel educativo bajo o bajos ingresos.

Mire un video sobre la preeclampsia en: **nacersano.org/preeclampsia**

PREECLAMPSIA foundation

march of dimes LUCHAMOS POR SU BEBÉ

MARCH OF DIMES



Retractable Banner for Professionals

Dimension: 3' x 6'

For information or to order:

email: aspirinbanner@marchofdimes.org

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Thank You

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