OBESITY AND PREGNANCY

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Disclosures

- Annie McCartney, MSN, WHNP-BC
  - Nothing to disclose
- Cheryl Robinson, DNS, MS, NNP-BC
  - Nothing to disclose

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Objectives

By the end of this presentation, the learner should be able to:

- Understand current definitions of obesity in non-pregnant and pregnant women.
- Recognize causes of increased risk of preterm delivery among obese pregnant women.
- Identify both maternal and neonatal complications related to obesity and pregnancy.

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YOU'VE PUT ON A LITTLE WEIGHT SINCE LAST...
GIMME A MINUTE!!
11-23

Patient Myths

- More weight gain = healthier baby
- I'm eating for two.
- It will easily come off after delivery
  - Especially if I am breastfeeding
- Its Unavoidable: expected part of being a mom
- There is no risk to baby

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Provider Myths

- “Talking about weight will offend my patients.”
- “My weight makes me uncomfortable. How can I counsel my patients on their weight if I struggle with mine?”
- There are too many other priorities that weight falls behind in importance.

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Defining Obesity

CDC Definitions of Obesity

Normal Weight	BMI 18.5 – 24.9
Overweight	BMI 25 – 29.9
Obese	BMI ≥ 30
Class I Obesity	BMI 30 – 34.9
Class 2 Obesity	BMI 35 – 39.9
Class 3 Obesity (Morbid Obesity)	BMI ≥ 40

BMI = weight in kg/height in meters sq

Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity (2012)

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Incidence of Obesity

- In the US:
  - 56% of non-pregnant women of childbearing age are overweight.
  - 30% of non-pregnant women of childbearing age are obese.
- Worldwide:
  - 15-20% of women are obese

Flegal, Carroll, Kit, Ogden (2012)

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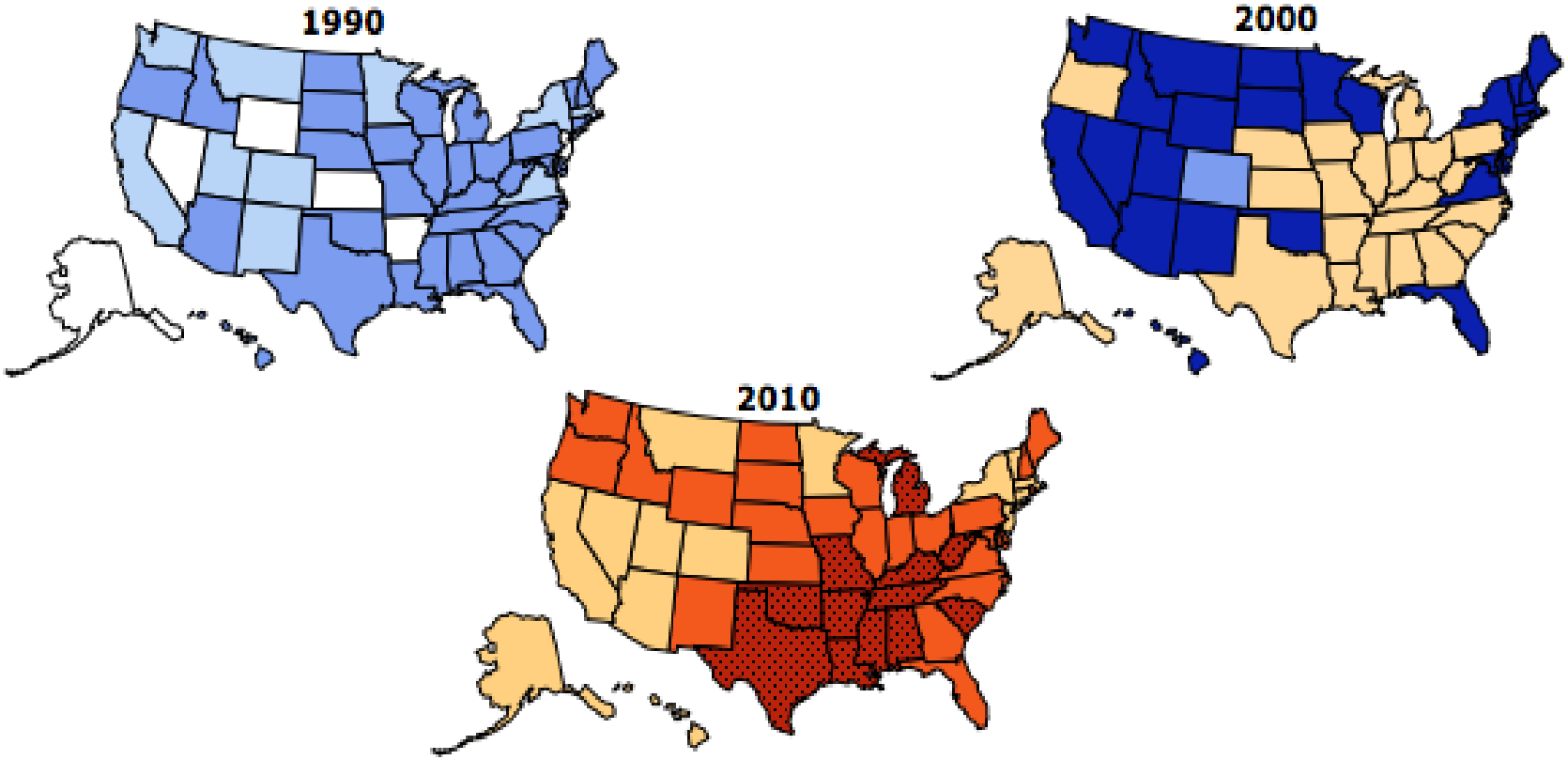
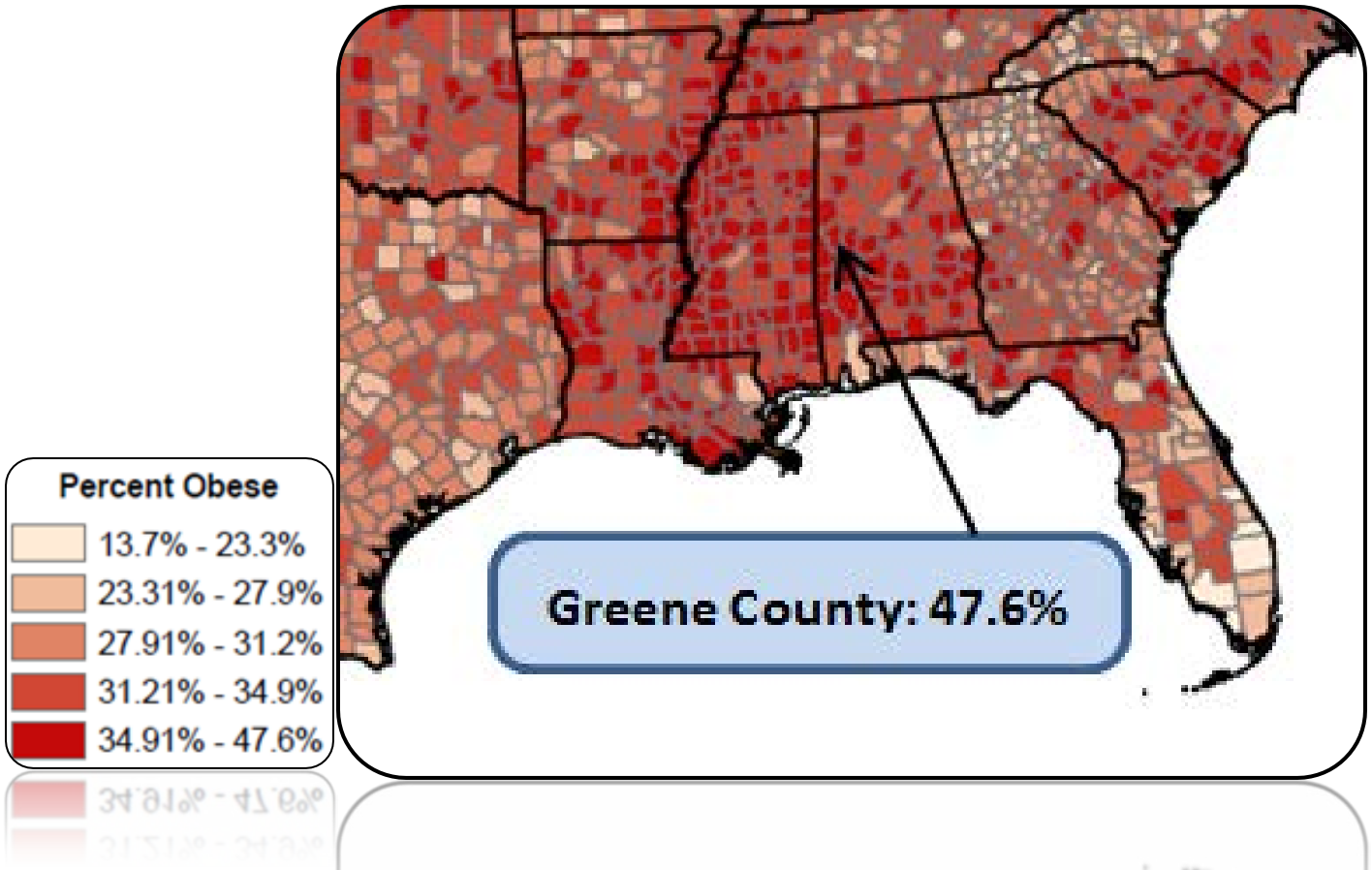
Obesity Trends* Among U.S. Adults

BRFSS, 1990, 2000, 2010

(*BMI ≥30, or about 30 lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



- Mississippi, Alabama, Arkansas, and Louisiana have the highest concentration of obese counties in the nation.
  - In total, 35% of Alabamians weigh-in as obese.
  - Greene county in central Alabama has the highest concentration of obese adults in the entire nation with a percentage of 47.6%.

Robert Wood Johnson Foundation (2012).

Obesity in Alabama

- According to the CDC, 69% of adults in Alabama are considered overweight, with BMI of 25 or greater.
  - 32 - 35% of these are classified as obese or morbidly obese with BMI of 30% or greater
- Estimated yearly medical costs for obese adults on average $1429 higher than those of normal weight.

Centers for Disease Control and Prevention (2010)

Obesity in Pregnancy

- Defined as pre-pregnancy BMI ≥ 30
- Increased incidence of both maternal and neonatal/fetal complications.

American College of Obstetricians and Gynecologists (2013)

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Obesity and Pregnancy

- Proposed etiology of increased complications in obese pregnant patients:

Obesity: state of chronic, low-grade inflammation.
Can account for increased incidence of diabetes and hypertension among other diseases

Pregnancy: state of altered immunity and inflammation.

Combined: leads to state of significant, chronic inflammatory response that can be harmful to both mother and fetus.

Madan, Chen, Goodman, Davis, Allan, & Dammann (2010)

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Obesity and Pregnancy

- What does this mean?
  - Inflammation sets off a cascade of events which can lead to other complications.
  - Often these complications lead to elective medically-indicated preterm induction/delivery.
- What can we do?
  - Break the chain

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Obesity and Pregnancy

Obese pregnant patients are at increased risk for:

- First trimester loss
- Recurrent pregnancy loss
- Gestational Hypertension
- Pre-eclampsia
- Gestational Diabetes
- Chorioamnionitis
- Elective preterm birth
- Stillbirth
- Higher rates of C-Section
- LGA and Shoulder Dystocia
- DVT/PE
- Anesthetic Complications

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American College of Obstetricians and Gynecologists (2013)

Obesity and Preterm Delivery

- Spontaneous PTD: conflicting evidence
- Elective PTD: Most incidences of PTD in obese pregnant patients are elective, medically-indicated secondary to medical or obstetric complication(s).
- Accounts for up to 40% of all preterm births.

McDonald, Hen, Mulla, & Beyene (2010)
Torloni, et al. (2009)

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Preterm Delivery

- US (2012): more than 450,000 babies born preterm
- Preterm birth accounts for up to 35% of all infant deaths.
- Alabama (2012): Scored an “F” on MOD Preterm Birth Report Card with rate of 14.6%

Centers for Disease Control and Prevention (2010)
March of Dimes (2012)

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Elective Preterm Induction

- Most common causes of elective preterm induction of labor:
  - Pre-eclampsia, fetal distress, SGA/IUGR, placental abruption
- These often occur as a result of hypertension or diabetes (whether pre-existing or gestational).
  - Both are more common in obese patients

Torloni, et al. (2009)

Miscarriage and Obesity

- First Trimester Pregnancy Loss
  - Data is inconclusive
- Study of approximately 30,000 patients:
  - Risk of Spontaneous Abortion (SAB)
    - 14% of obese patients
    - 11% of normal weight patients
      - OR 1.31, 95% CI
  - Risk of Recurrent SAB
    - 0.4% of obese patients
    - 0.1 % of normal weight patients
      - OR 3.51, 95% CI

Boots & Stephenson (2011)
Yogev & Visser (2009)

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Hypertension

- One of the most common complications of pregnancy
  - Occurs in 10% of pregnancies
- 2 general categories:
  - Pre-existing (chronic) hypertension
  - Pregnancy-related Hypertension
    - Gestational Hypertension
    - Pre-eclampsia
    - Eclampsia

Jim, Sharma, Kebede, & Acharya (2010)

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Pre-existing Hypertension

- Pre-existing (chronic) hypertension is more common among obese women.
- Incidence: 3% of pregnant women
- More common in obese patients
  - 3-fold increase in PTB prior to 35 weeks.
- ~10-25% will develop superimposed pre-eclampsia.
  - 2.7 fold increase in risk for severe pre-eclampsia

Jim, Sharma, Kebede, & Acharya (2010)

Gestational Hypertension

- Also known as Pregnancy-Induced Hypertension
  - Affects 5-10% of all pregnancies
- Obese patients 2.5 – 3.2 fold increase in risk
  - The higher the BMI the higher the risk of gestational hypertension.
- Almost 50% of these women will go on to develop pre-eclampsia

Beckman, et al. (2014)
Jim, Sharma, Kebede, & Acharya (2010)

Pre-Eclampsia

- Affects 5% of all pregnancies
- Obesity increases risk of pre-eclampsia 3-fold
  - 30% of all patients with pre-eclampsia are obese
  - Central obesity creates much higher risk
- Considered to be a systemic intravascular inflammatory response whose cure is delivery.
- Pre-eclampsia can lead to decreased placental perfusion which leads to medically-indicated preterm delivery secondary to fetal distress or IUGR in about 30% of all cases

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Jim, Sharma, Kebede, & Acharya (2010)

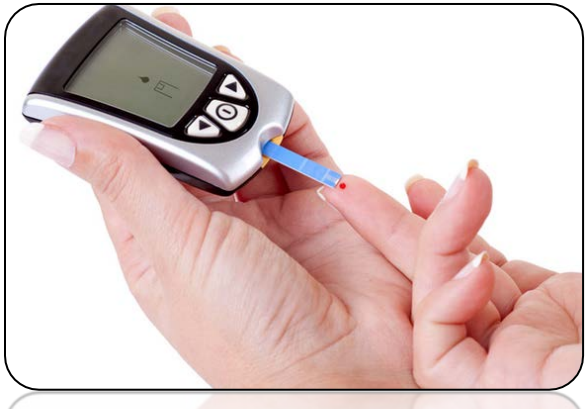
Pre-existing Diabetes

- One of the two most common medical complications among obese pregnant women.
  - CDC: occurs in 2-5 per 1000 pregnancies
  - Type 2 more common than Type 1
- 2-fold increase in pre-eclampsia
- Complications: pre-eclampsia, macrosomia, Miscarriage, IUFD, polyhydramnios, DKA
  - All of which can necessitate elective medically-indicated PTD.

Beckman, et al. (2014)

Gestational Diabetes

- Prevalence: 3-15% and continues to climb.
- Obese pregnant patients have 2.6-4.0 fold increase in risk for development of GDM
  - Obese patients: risk of 20% for GDM
  - Increases 0.92% for every increase of 1 kg/m2.
- Control of GDM is affected by obesity
  - 2/3 of morbidly obese pts with GDM failed to achieve glycemic control and required treatment with insulin.
  - Insulin treatment: 3-fold risk for pre-eclampsia



American College of Obstetricians and Gynecologists (2013)

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Chorioamnionitis

- More common in obese pregnant women
- Thought to be secondary to increased inflammatory and decreased immune state of obesity and pregnancy.
- Implicated in pathogenesis of PROM, preterm birth, and increased neonatal mortality.

Madan, Chen, Goodman, Davis, Allan, & Dammann (2010).

Risk of Stillbirth

- Incidence of IUFD is 2 times more likely in overweight pregnant women
  - 2.5 times more likely in obese women
- Pathophysiology unknown
- Significant racial disparity:
  - Higher rates among African American women

Ehrenberg, et al. (2009)

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Take Home Points

- Obesity is a modifiable risk factor
- Talk to your patients about their weight
- Work with your patients diligently to help them minimize their risk for preterm birth.
  - Giving same emphasis to obesity as you do other disorders such as diabetes and hypetension

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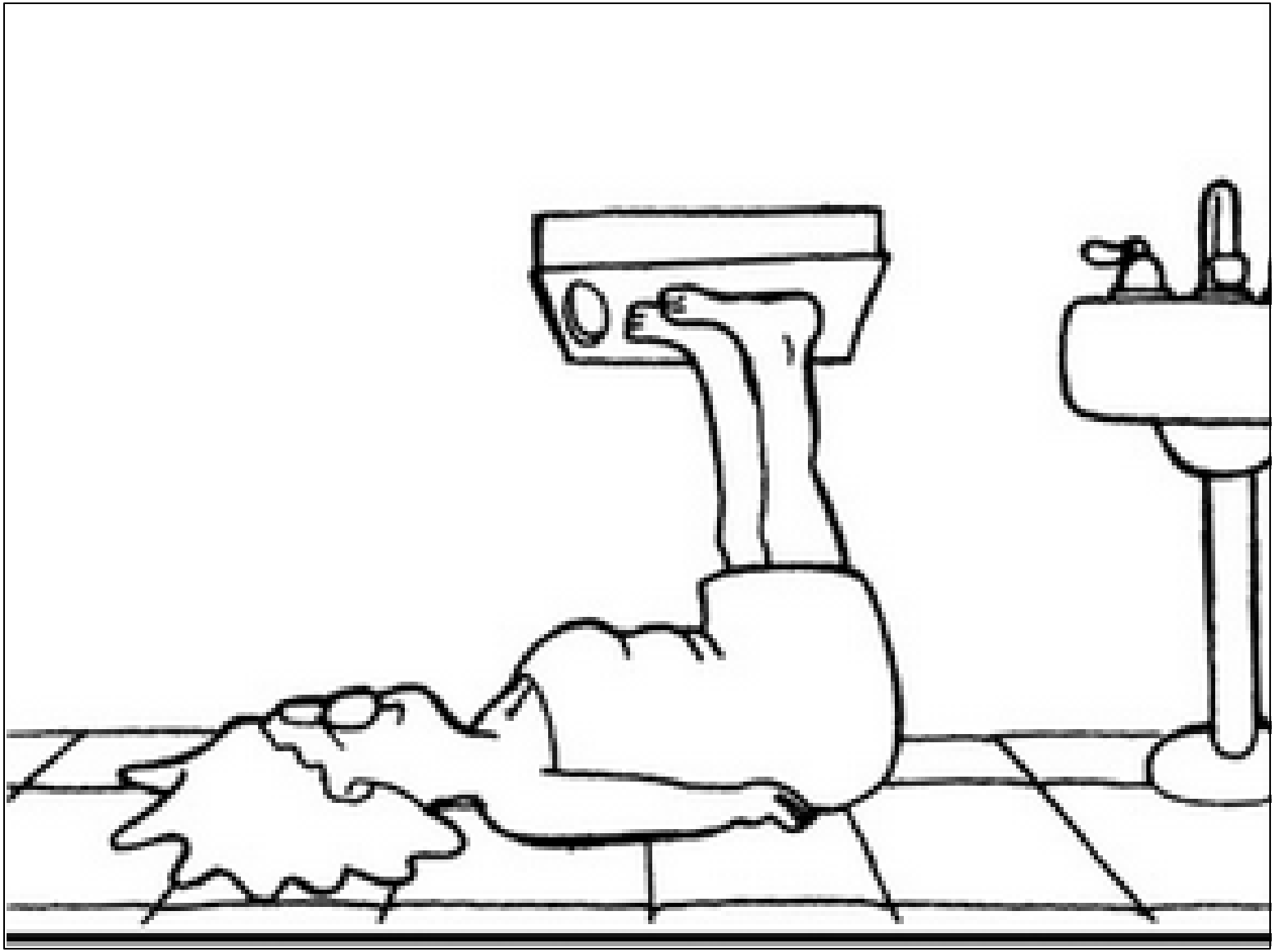
We've been doing it wrong!



References

American College of Obstetricians and Gynecologists (2013). Obesity in pregnancy: ACOG committee opinion no. 549. Obstet Gynecol 2005; 106: 671-5.

Beckman, CR, Ling, FW, Herbert, WN, Laube, DW, Smith, R, Casanova, R, Chaung, A, Goepfert, AR, Hueppchen, NA, Weiss, PM (2014). Obstetrics and Gynecology (7th edition). P 206. Lippincott Williams & Wilkins; Baltimore, MD.

Boots, C. & Stephenson, M.D. (2011). Does obesity increase risk of miscarriage in spontaneous conception? A systematic review. *Seminars in Reproductive Medicine; 29(6): 507-513*

Centers for Disease Control and Prevention (2010). CDC behavioral risk factor surveillance system: Prevalence and trend data, overweight and obesity, U.S. obesity trends, trends by state 2010. Retrieved from http://www.cdc.gov/brfss/.

Centers for Disease Control and Prevention (2010). Preterm Birth. Retrieved on November 2, 2014 from http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm

Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity(2012). Defining overweight and obesity. Retrieved from http://www.cdc.gov/obesity/adult/defining.html.

Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity(2014). Obesity and pregnancy. Retrieved from http://www.cdc.gov/obesity/data/prevalence-maps.html.

Ehrenberg, H.M., Iams, J.D., Goldenberg, R.L., Newman, R.B., Weiner, S.J.Sibai, B.M.,…Dombrowski, M.P. (2009). Maternal obesity, uterine activity, and the risk of spontaneous preterm birth. Obstet Gynecol, January 2009; 113(1): 48-52.

Flegal, K.M., Carroll, M.D., Kit, B.K., & Ogden, C.L. (2012). Prevanlence of obeisty and trends in the distribution of body mass index among US adults, 1999-2010. JAMA 2012; 307: 491-7.

Jim, B., Sharma, S., Kebede, T., & Acharya, A. (2010). Hypertension in pregnancy: A comprehensive update. Cardiology in Review, August 2010: 18(4); 178-189

Madan, J., Chen, M., Goodman, E., Davis, J., Allan, W., Dammann, O. (2010). Maternal obesity, gestational hypertension, and preterm delivery. Journal of Maternal-Fetal and Neonatal Medicine, January 2010; 23(1): 82-88.

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References

March of Dimes (2012).. Retrieved November 2, 2014 from http://www.marchofdimes.org/Peristats/ViewSummary.aspx?reg=01&slev=4&stop=60.

McDonald, S.D., Han, Z., Mulla, S., & Beyene, J. (2010). Overweight and obesity in mothers and risk of preterm birth and low birth weight infants: Systematic review and meta-analysis. BMJ 2010; 341:c3428.

Torloni, M.R., Metran, A.P., Daher, S., Widmer, M., Dolan, S.M., Menon, R., ... Merialdi, M. (2009). Maternal BMI and preterm birth: A systematic review of the literature with meta-analysis. Journal of Maternal-Fetal and Neonatal Medicine, November 2009; 22(11): 957-970.

Robert Wood Johnson Foundation (2012). 3rd annual county health rankings. Retrived from http://www.stratasan.com/county-health-rankings-2012-obesity-in-america/.

Yogev, Y. & Visser, GH (2009). Obesity, gestational diabetes and pregnancy outcome. Clinical Key: 14(2); 77-84.

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