



# **OB<sup>3</sup>**

## ***Obstetrics, Obesity, Oh Boy***

***Marcela Smid***

***Project ECHO***

***May 19<sup>th</sup>, 2017***



# DISCLOSURE

**M. Smid has no relevant financial interests to disclose.**





# Objectives

1. **Oh boy**  
(how big is this problem)
2. **Obesity**  
(let's talk about fat, baby)
3. **Obstetrics & obesity**  
(what we think we know aka best practices for obese women)
4. **Cubed**  
(what I think of all of this)

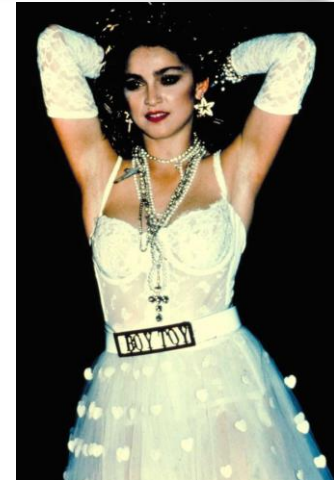
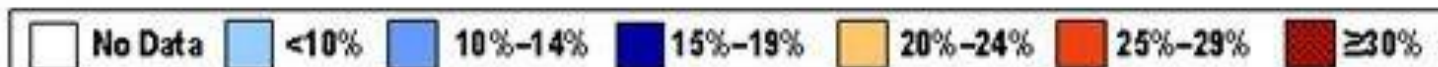




# Obesity epidemiology

- Prevalence of obesity increased dramatically in the last 25 years
  - More than 33% of women are obese.
  - More than 50% pregnant women obese or overweight.
  - 8% reproductive age women extremely obese
- Revised IOM pregnancy weight gain recommendations (2009)
  - Overweight = BMI 25-29.9
  - Obese = BMI 30 or greater.
  - Does not differentiate class I (30-34.9), class II (35-39.9) and class III ( $\geq 40$ )
- Highest rate in black (50%), then Mexican-American (45%), then white (33%)

## 1985



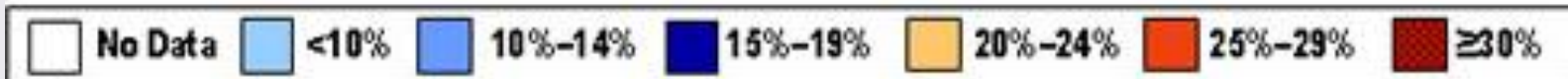
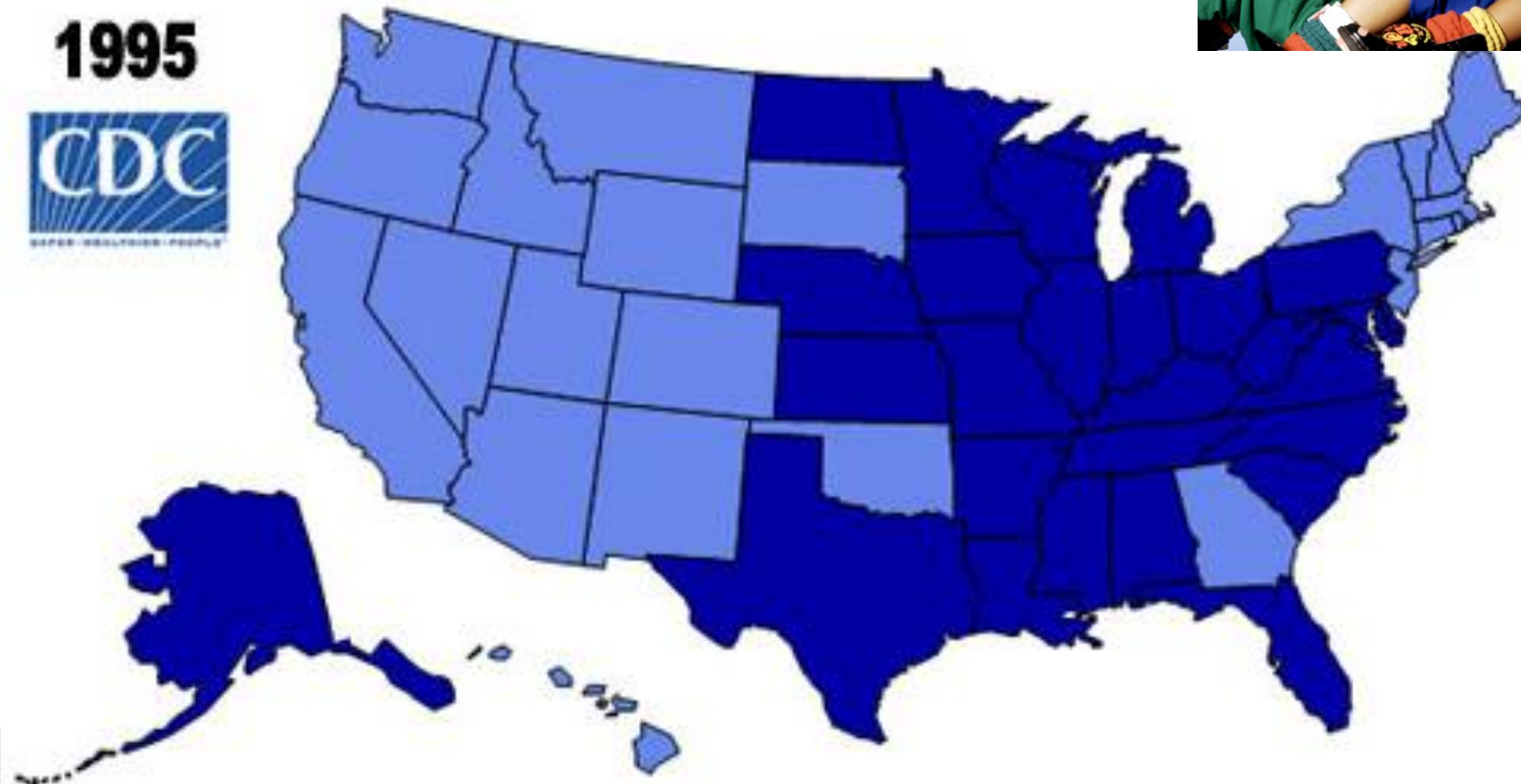




# Obesity 1995



1995

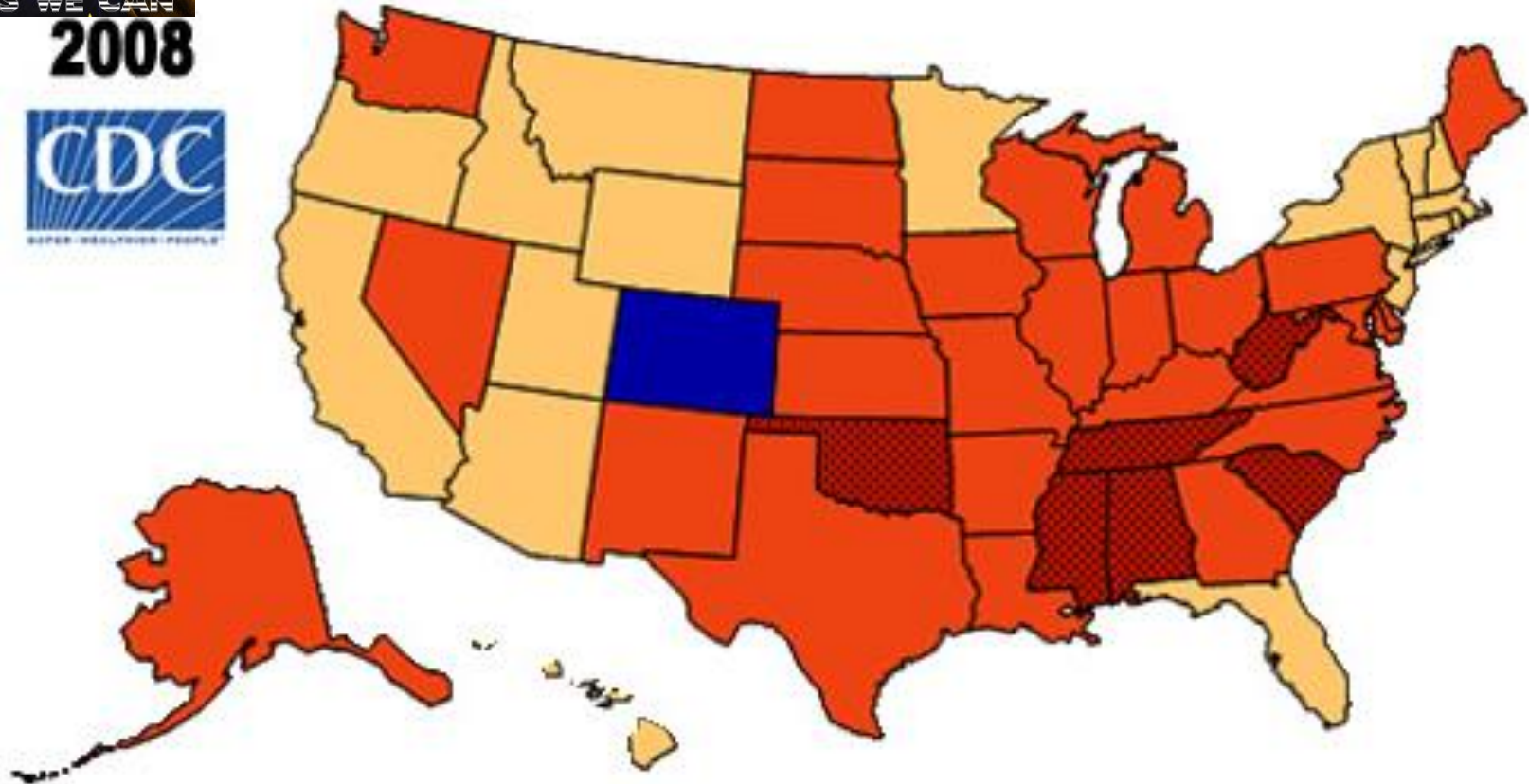




# Obesity 2008



2008



No Data



<10%



10%-14%



15%-19%



20%-24%



25%-29%



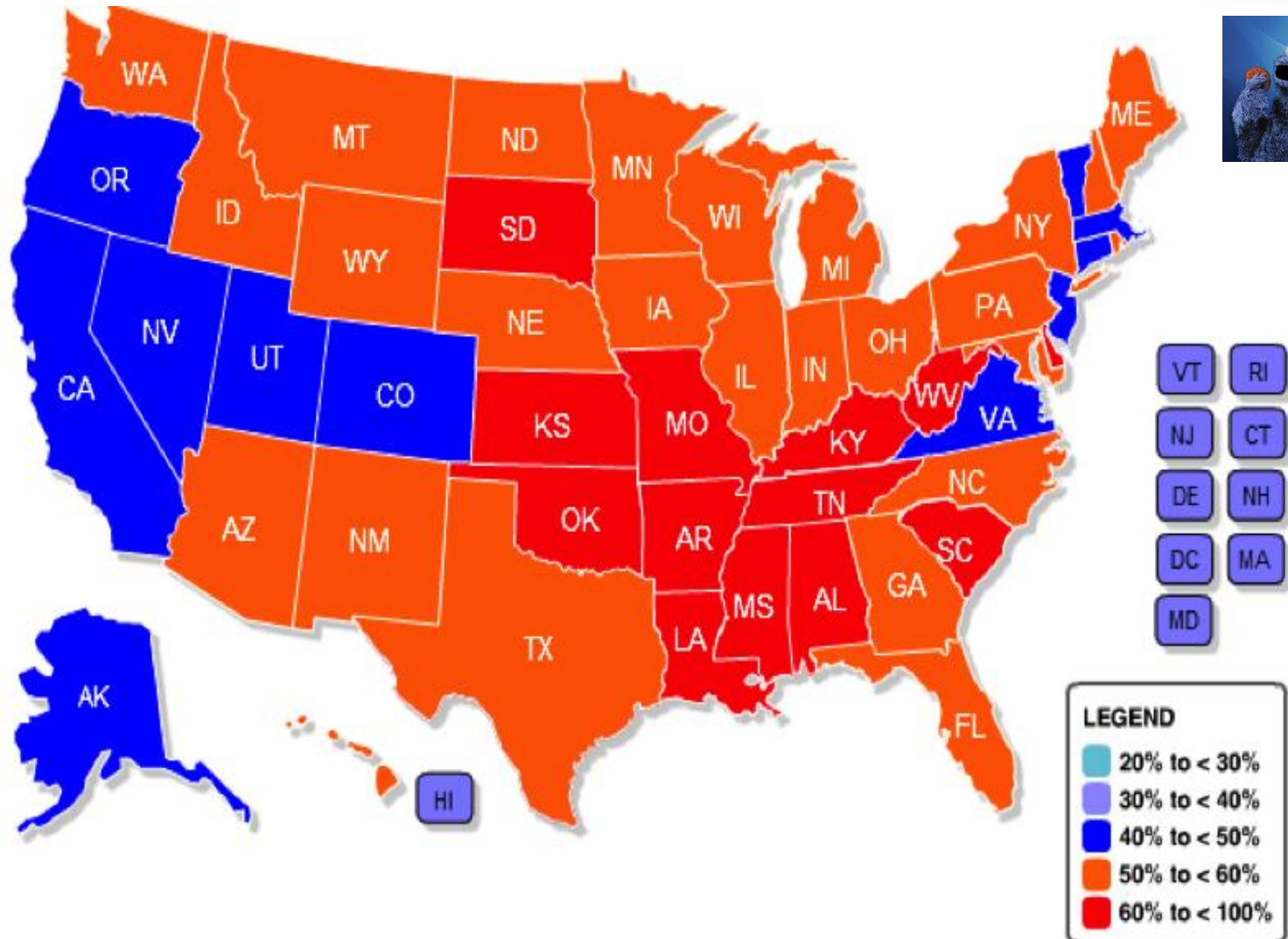
≥30%







# Projected Obesity 2030

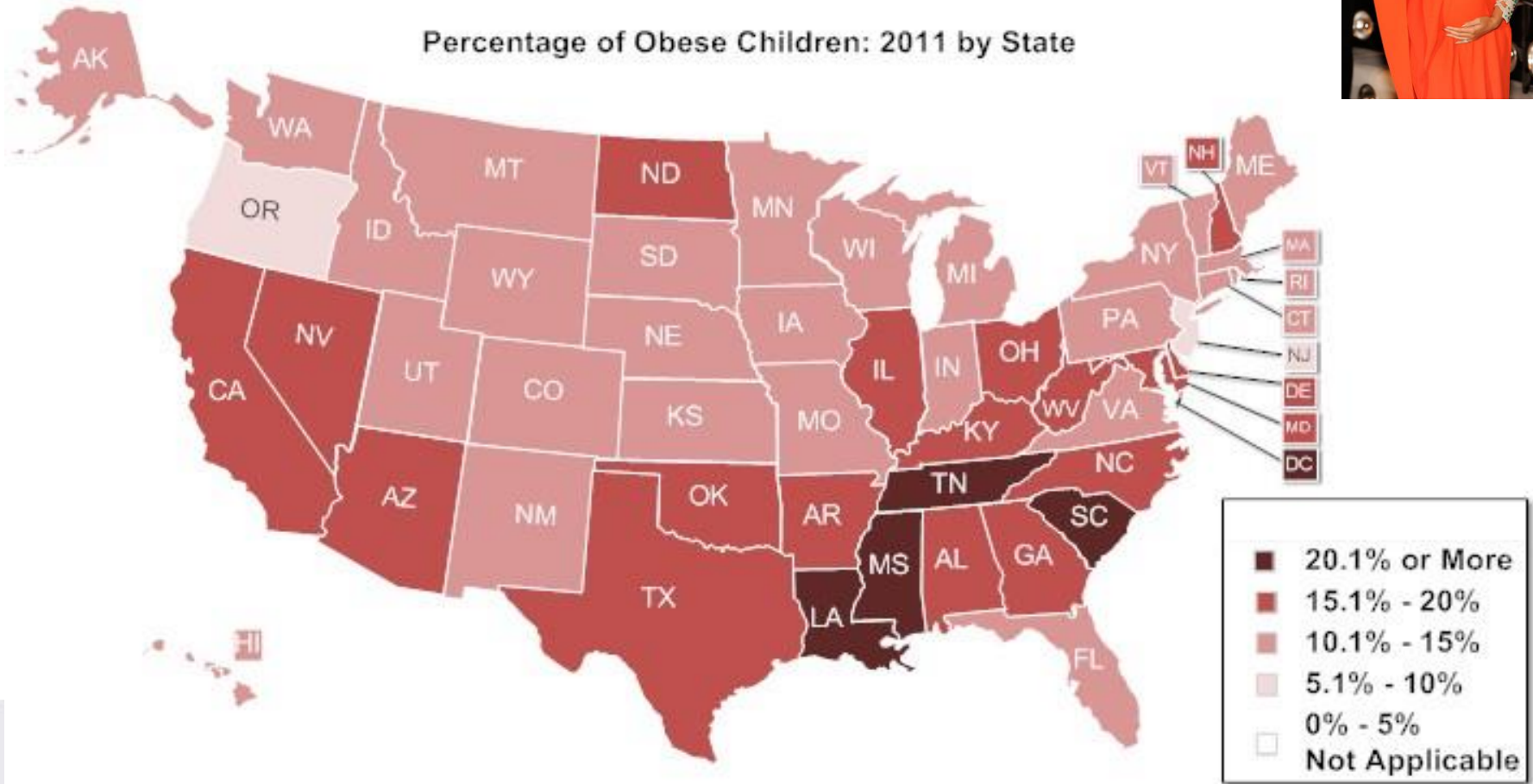




# Childhood obesity 2011



Percentage of Obese Children: 2011 by State





# Globesity (actual WHO term)

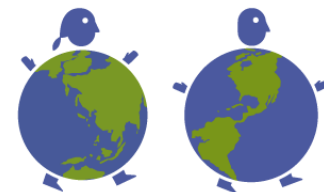
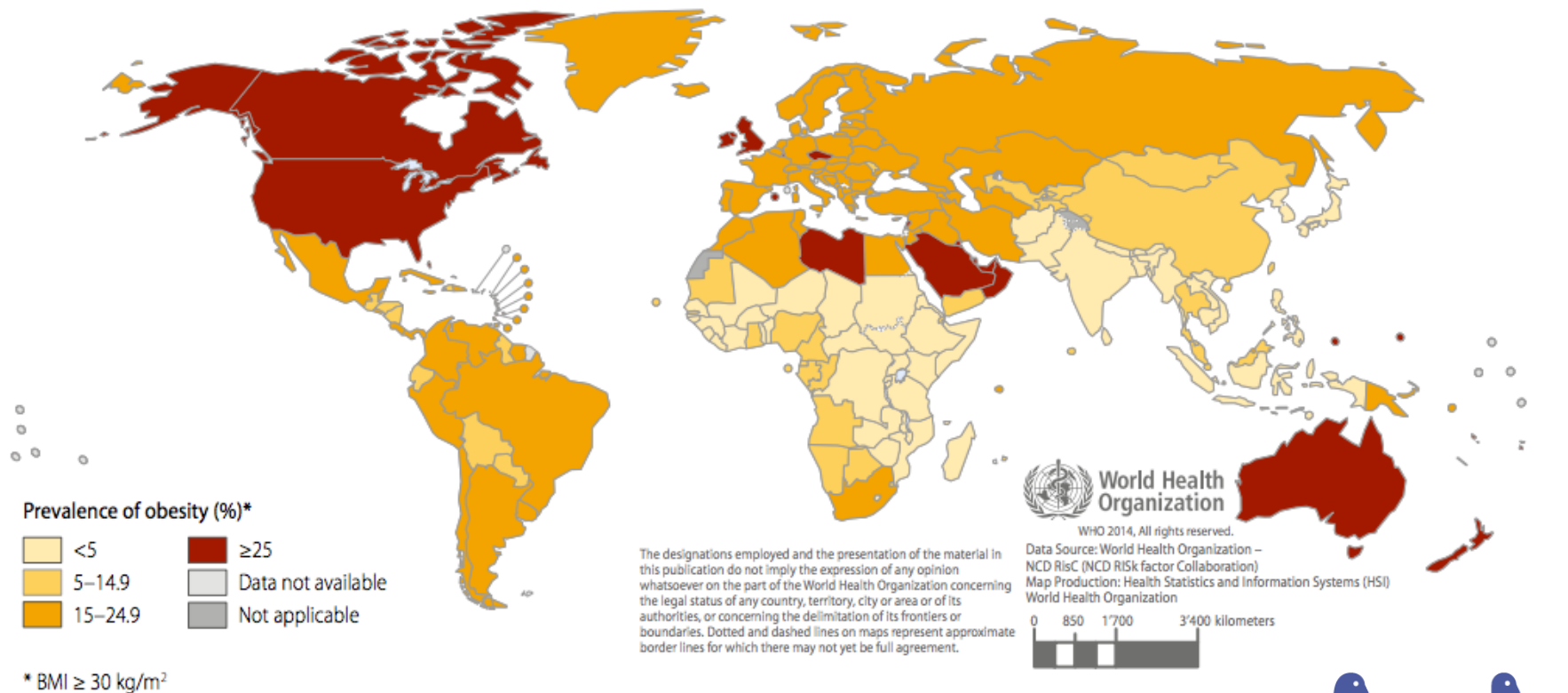
- Worldwide obesity has more than **doubled** since 1985.
- Surpassed smoking as #1 preventable cause of death.
- In 2014, **>1.9 billion** adults were overweight and 600 million were obese.
- **42 million children** under the age of 5 were overweight or obese in 2013.





# Worldwide globesity

**Fig. 7.1** Age-standardized prevalence of obesity in men aged 18 years and over (BMI  $\geq 30$  kg/m<sup>2</sup>), 2014

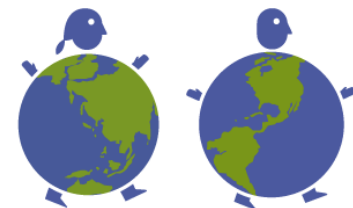
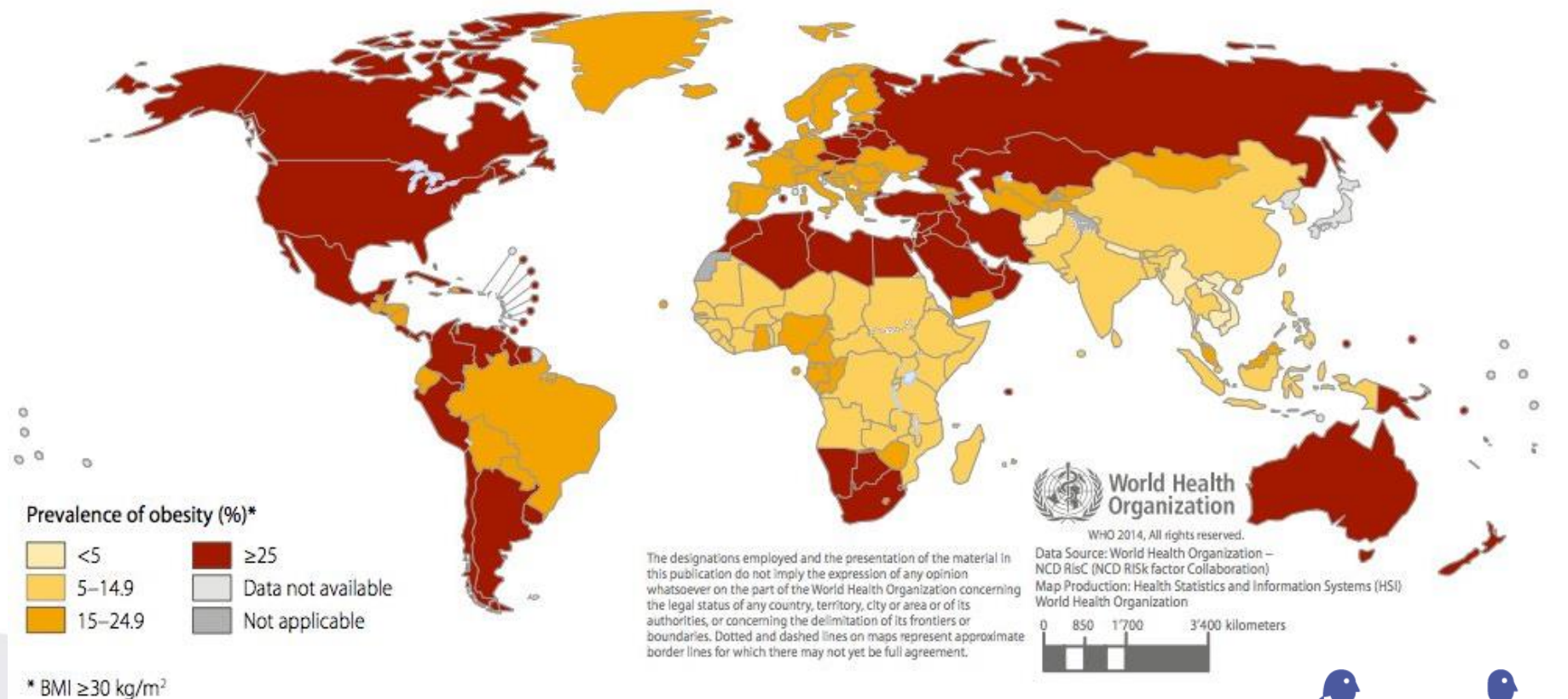






# Worldwide globesity

**Fig. 7.2** Age-standardized prevalence of obesity in women aged 18 years and over (BMI  $\geq 30$  kg/m<sup>2</sup>), 2014



# Obesity stigma

- Negative attitudes
- Discrimination
- Blame
- **Social & psychological impact**
  - **Mental health**
    - Depression and lower self esteem
  - **Education**
    - Teachers
    - Parents
  - **Employment**
    - Obese women make \$6000 less than non-obese women
    - Non-obese men no difference but less represented in managerial positions.





# Obesity stigma in health care

- Physicians (n=400)
  - Discomfort, reluctance or dislike
  - Drug addiction, alcoholism, mental illness, **obesity**
- Nurses (n=586)
  - 24% say touching an obese patient “repulses them.”
  - Dissatisfaction with own weight positively correlated with negative stereotypes
- Medical students (n=130)
  - Uniformly negative attitude toward morbid obesity



Project Implicit®

*Want to know if  
you are implicitly  
biased?*



UNIVERSITY OF UTAH  
HEALTH SCIENCES

I'M ALL ABOUT THAT PANNUS



NO TREBLE



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

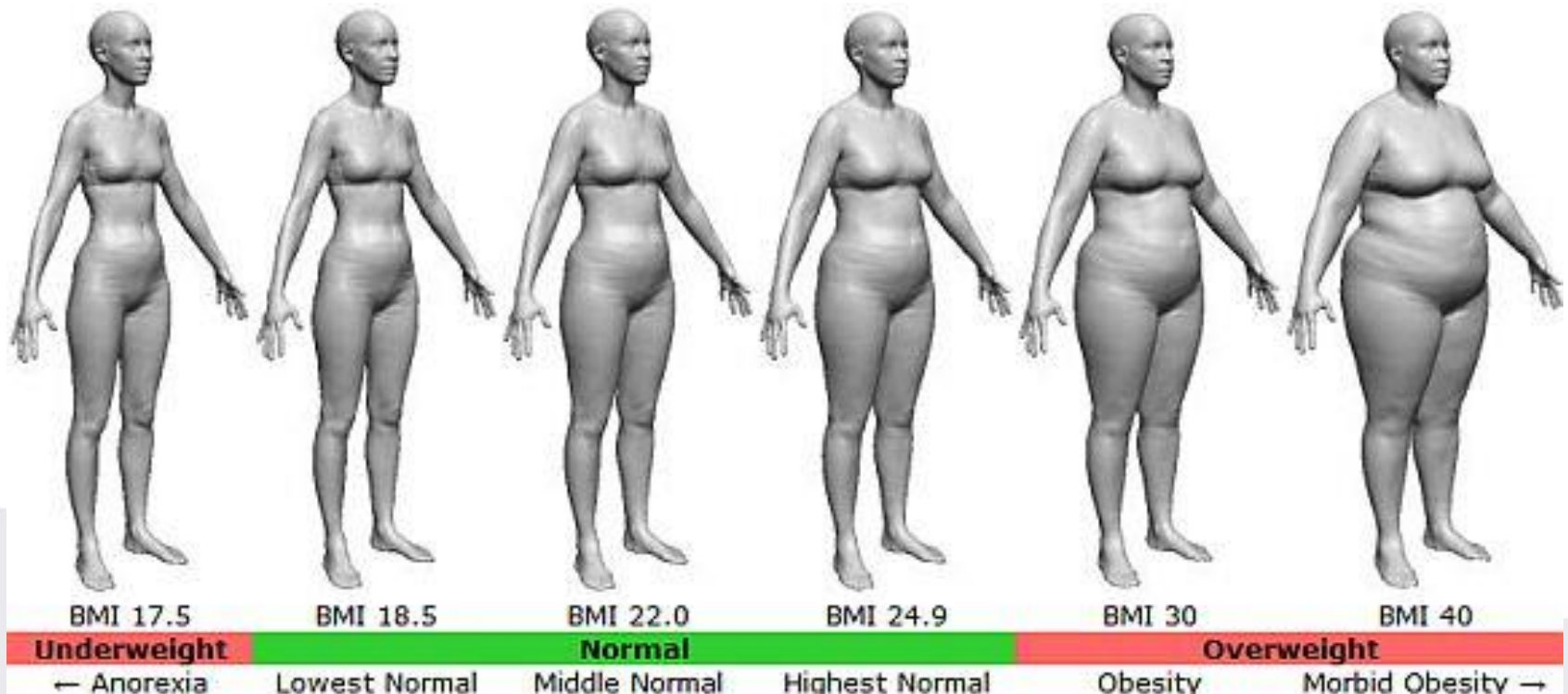




# Defining obesity



- **Adverse medical condition** in which excess adipose tissue accumulation to the extent adversely affects health
- Since 1998, **BMI categories** are used in the US & worldwide





# Craniocervical Angle



(a)



(b)



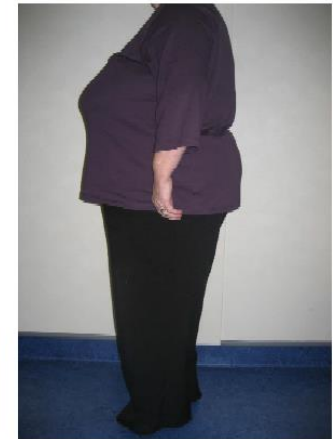
# Guessing that BMI

- 206 health care practitioners in Ireland and Canada

Ahern et al, 2012



(a)



(b)

Actual BMI (kg/m <sup>2</sup> )	Estimated BMI (kg/m <sup>2</sup> )					p Value <sup>a</sup>	p Value <sup>b</sup>
	Endos (n = 21)	GPs (n = 96)	Dietitians (n = 50)	Physios (n = 39)	All (n = 206)		
32	31 (29 - 34)	29 (28 - 31)	29 (27 - 31)	28 (26 - 28)	29 (27 - 31)	<0.001	<0.001
40	32 (30 - 35)	30 (30 - 33)	30 (29 - 32)	30 (27 - 32)	30 (29 - 33)	0.002	<0.001
51	40 (38 - 49)	40 (35 - 42)	40 (37 - 45)	38 (34 - 40)	40 (35 - 42)	0.044	<0.001
52	42 (40 - 45)	38 (35 - 40)	40 (35 - 45)	39 (33 - 42)	39 (35 - 43)	0.003	<0.001
72	50 (45 - 58)	42 (38 - 45)	47 (40 - 50)	42 (37 - 46)	44 (39 - 49)	<0.001	<0.001



# What is BMI?

- $BMI = \text{Weight} / \text{height}^2$
- Developed in 19<sup>th</sup> century by Lambert Adolphe Jacques Quetelet



---

Reprints and Reflections

## Indices of relative weight and obesity\*

**Ancel Keys<sup>1</sup>, Flaminio Fidanza<sup>2</sup>, Martti J Karvonen<sup>3</sup>, Noburu Kimura<sup>4</sup> and Henry L. Taylor<sup>5</sup>**

<sup>1</sup>Director, Laboratory of Physiological Hygiene, University of Minnesota School of Public Health,  
<sup>2</sup>Professor, Institute of Food and Nutrition Science, University of Perugia, Italy, <sup>3</sup>Director, Institute of Occupational Health, Helsinki, Finland, <sup>4</sup>Director, Institute of Cardiovascular Research, University of Kurume, Japan and <sup>5</sup>Professor, Laboratory of Physiological Hygiene, University of Minnesota School of Public Health



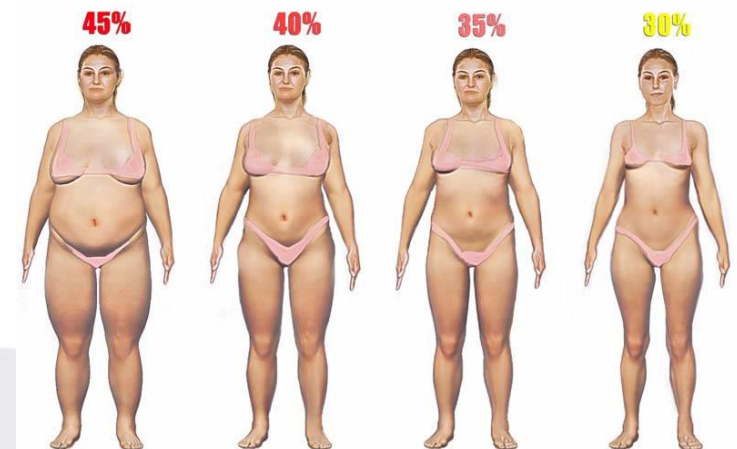
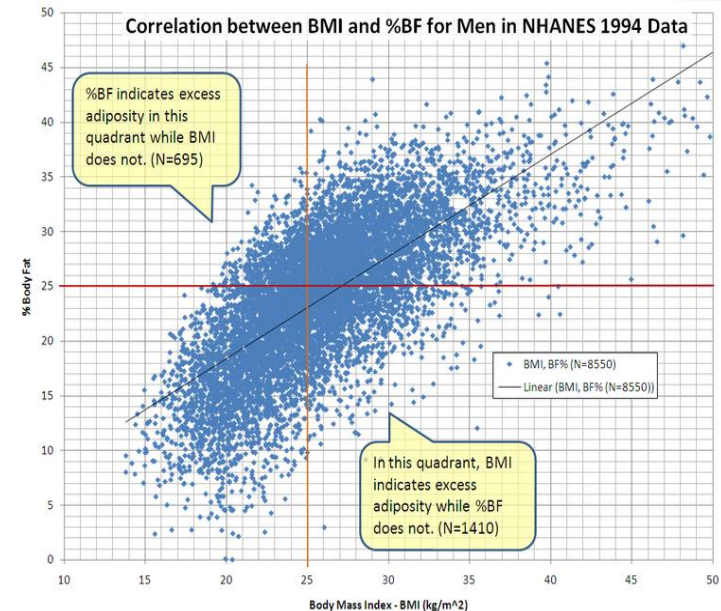
Keys et al 1972





# BMI & outcomes

- 21% of men and 31% of women were obese according to BMI
- 50% of men and 62% of women were obese according to body fat defined obesity
- BMI was found to underestimate the number of obese subjects.





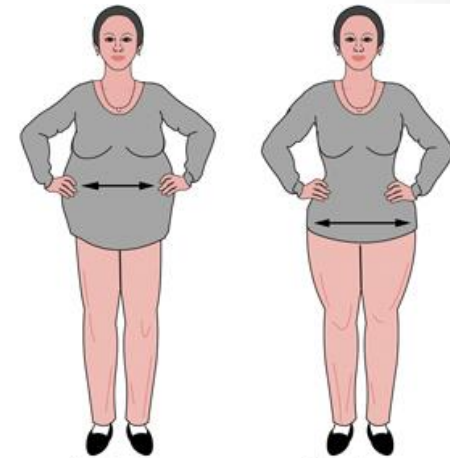
# Alternatives to BMI

- 11,000 subjects for up to eight years WHR more predictive of **heart attack, stroke, kidney failure, diabetes or death** than BMI

(Schneider et al 2010)

- 60,000 patients for 13 years better predictor of ischemic heart disease (HUNT-II)

(Morkedal et al 2011)



Waist to Hip Circumference Ratio Standards for Men and Women

		Disease Risk Related to Obesity			
	Age (years)	Low	Moderate	High	Very High
MEN	20-29	<0.83	0.83-0.88	0.89-0.94	>0.94
	30-39	<0.84	0.84-0.91	0.92-0.96	>0.96
	40-49	<0.88	0.88-0.95	0.96-1.00	>1.00
	50-59	<0.90	0.90-0.96	0.97-1.02	>1.02
	60-69	<0.91	0.91-0.98	0.99-1.03	>1.03
WOMEN	20-29	<0.71	0.71-0.77	0.78-0.82	>0.82
	30-39	<0.72	0.72-0.78	0.79-0.84	>0.84
	40-49	<0.73	0.73-0.79	0.80-0.87	>0.87
	50-59	<0.74	0.74-0.81	0.82-0.88	>0.88
	60-69	<0.76	0.76-0.83	0.84-0.90	>0.90

(Adapted from Heyward VH, Stolarczyk LM: Applied Body Composition Assessment. Champaign IL, Human Kinetics, 1996, p82.)

and need for

(Karthouser et al, 2013)

# Fat distribution

- Waist circumference and BMI related to mode of delivery

(Bentham 2014 Arch Dis Child Fetal Neonatal Ed)

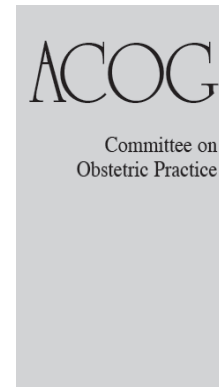
- WHR correlates with pre-eclampsia
  - (Yamamoto 2001 J Ob Gyn Research)
- Waist circumference at 16 weeks
  - Pregnancy induced hypertension OR 1.8 (95% CI 1.1-2.9)
  - Pre-eclampsia OR 2.7 (95% CI 1.2-3.4)
  - (Satter et al 2001 Obstetrics & Gynecology)





# Obesity & obstetrics

- Definition?
- Pre-pregnancy BMI
- Delivery BMI
  - 44% of women will change BMI categories, 6% will change two categories (Kibiru & Raynor, 2004 AJOG), “Severe” BMI 35-50
- Maternal weight 200-300 lbs



Committee  
Opinion



Number 315, September 2005

Obesity in Pregnancy

## NO standard definition





# Fertility & obesity

- **Adipose tissue is an active endocrine organ**
- **Reduced fertility (PCOS)**
  - Oligoovulation
  - Anovulation
- Less likely to respond to gonadotropics
- Male obesity decreases sperm quality and fertility



**Harder to get pregnant spontaneously & less successful ART**



# Obesity & pregnancy loss

- 2011 systematic review
  - Total 28,538 women spontaneously conceiving women with  $\geq 1$  miscarriage
  - 16.6% obese women
  - 11.8% overweight women
  - 10.7% normal weight women



*Boots and Stephenson (2011)*

- Meta analysis of 17 trials of women with PCOS - metformin not shown to improve outcomes

*Palomba et al (2009)*

**Harder to stay pregnant**



# Obesity Pregnancy Complications

## Maternal

- GDM
- HTN/Preeclampsia
- VTE
- Cesarean
- Postpartum weight retention
- Peripartum/postoperative complications
- Anesthesia complications

## Perinatal

- Prematurity
- Stillbirth (fetal demise)
- Congenital anomalies
- Macrosomia
  - Traumatic birth injury
- Childhood obesity

# Maternal risks of obesity

- Hypertension, gestational HTN & preeclampsia
  - 3 fold increase in preeclampsia or gestational HTN with obesity
    - Risk doubles with each increase of 5 in BMI
- Gestational Diabetes
  - 2.5-4 fold increased risk, increasing with severity of obesity
- Cesarean delivery
  - Rate is 34-47% (class I-II) obesity vs. 20%
  - Most often indicated by labor arrest disorder
- Post-partum hemorrhage
  - 44% increase (Doherty et al 2006)



# Maternal risks of obesity

- Intrapartum complications
  - Difficulty fetal monitoring
  - Difficulty assessing fetal weight
  - Protracted labor disorders
  - Shoulder dystocia (?? - conflicting reports)
- Anesthetic complications
  - 2.5-4 fold increased complication rate
  - Difficult intubations & regional anesthesia
  - Initial epidural failure (42 vs 6%)
- Venous thromboembolism
  - 2-5 fold risk increase (absolute risk 3.5-9/1000)

# Maternal risks of obesity

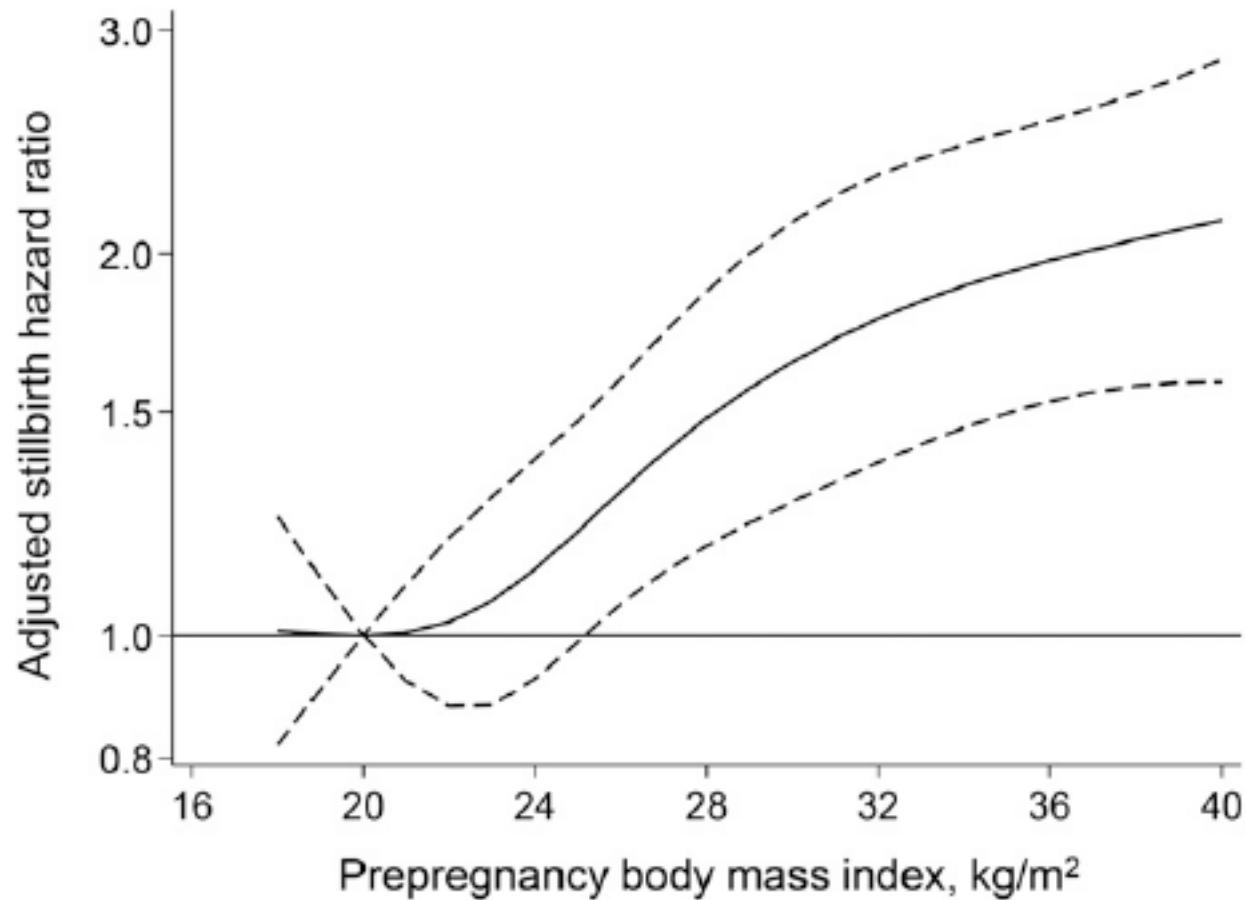
- Operative & postpartum complications
  - 3 fold increased rate
  - 20% increase in postpartum hemorrhage
  - Cesarean: increased blood loss, operative time, endometritis, wound infections & breakdown (1.5-2 fold increase)
- VBAC / TOLAC
  - Lower rate of VBAC success
  - Patients weighing >300 lb have <15% success
  - Increased complications with failed TOLAC
    - Operative injury
    - Postoperative infection & wound breakdown

# Perinatal risks of obesity

- Fetal demise
  - 20% increase in miscarriage
  - 2-fold increase in fetal demise and even higher risk among morbidly obese
- Prematurity
  - Increase in medically indicated PTD
- Fetal anomalies
  - 2-fold increase in NTDs
  - Increased risk for others: CHD, orofacial clefts, hydrocephalus, omphalocele, limb defects & CDH
- Macrosomia
  - 2-3 fold increase



# Obesity & stillbirth







# Obesity & prenatal diagnosis

- **Congenital anomalies**

- Anencephaly/spina bifida (OR 3.5, 95% CI 1.2-10.3)
  - Folic acid less effective in prevention
  - (OR 0.52 obese vs 0.32 non-obese)
- Cardiac defects (OR 2.0 95 CI 1.2-3.4)
- Multiple anomalies (OR 2.0, 95CI 1.1-3.4)

- **Detection rates**

- Targeted US:

Normal 97%, Overweight 91%, Class I 75%, Class II 88%, Class III 75%



*Watkins et al 2003  
Cedergren and Kallen 2003  
Dashe et al 2009*

**More anomalies and harder to diagnose**



# Obesity & preterm birth

- **Risk of spontaneous preterm birth**
  - 2011 systemic review: (84 studies, one million women)  
no difference by maternal weight *McDonald et al 2010 BMJ*
  - 2009 systemic review: no difference *Tortloni J Matern Fetal Neonatal Med. 2009*
  - *Cnattiingius 2013 JAMA* : possible 1.5-2 fold increase in risk for extreme SPTB for BMI>35



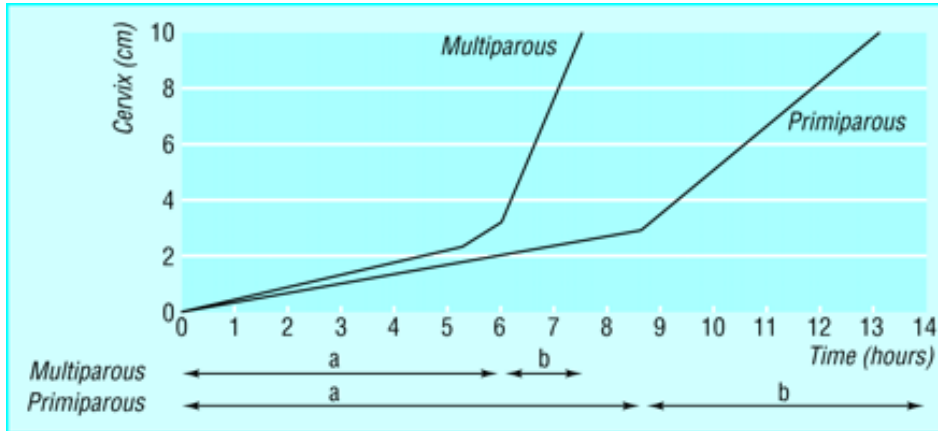
# Increased indicated preterm birth – attributed to HTN & DM?

**Table 4.** Maternal BMI in Early Pregnancy and Risks of Medically Indicated Preterm Delivery

	BMI Categories					
	<18.5	18.5-<25	25-<30	30-<35	35-<40	≥40
<b>All Women</b>						
Extremely preterm delivery <sup>a</sup>						
No. (%)	17 (0.07)	395 (0.04)	226 (0.06)	108 (0.09)	35 (0.11)	17 (0.16)
Adjusted OR (95% CI) <sup>b</sup>	1.05 (0.63-1.71)		1.51 (1.27-1.79)	2.48 (1.99-3.1)	2.74 (1.92-3.92)	3.84 (2.32-6.38)
Very preterm delivery <sup>a</sup>						
No. (%)	60 (0.15)	1517 (0.15)	745 (0.19)	324 (0.28)	121 (0.37)	71 (0.66)
Adjusted OR (95% CI) <sup>b</sup>	0.97 (0.74-1.27)		1.29 (1.18-1.41)	1.91 (1.68-2.17)	2.52 (2.08-3.06)	4.16 (3.23-5.36)
Moderately preterm delivery <sup>a</sup>						
No. (%)	448 (1.09)	9006 (0.89)	4310 (1.13)	1725 (1.52)	618 (1.91)	256 (2.40)
Adjusted OR (95% CI) <sup>b</sup>	1.24 (1.12-1.37)		1.22 (1.18-1.27)	1.62 (1.54-1.71)	2.00 (1.84-2.18)	2.45 (2.15-2.79)
<b>Women Without Hypertensive or Diabetic Diseases</b>						
Extremely preterm delivery <sup>a</sup>						
No. (%)	11 (0.03)	168 (0.02)	84 (0.02)	34 (0.03)	11 (0.04)	4 (0.05)
Adjusted OR (95% CI) <sup>b</sup>	1.51 (0.78-2.90)		1.27 (0.96-1.67)	1.69 (1.15-2.5)	1.91 (1.02-3.56)	2.06 (0.75-5.64)
Very preterm delivery <sup>a</sup>						
No. (%)	38 (0.10)	673 (0.07)	263 (0.07)	97 (0.09)	19 (0.07)	17 (0.19)
Adjusted OR (95% CI) <sup>b</sup>	1.43 (1.02-1.99)		0.98 (0.84-1.13)	1.15 (0.92-1.44)	0.75 (0.47-1.2)	1.94 (1.18-3.19)
Moderately preterm delivery <sup>a</sup>						
No. (%)	300 (0.76)	5438 (0.56)	2215 (0.61)	745 (0.72)	233 (0.83)	87 (0.98)
Adjusted OR (95% CI) <sup>b</sup>	1.40 (1.24-1.57)		0.99 (0.94-1.04)	1.07 (0.99-1.16)	1.11 (0.97-1.28)	1.23 (0.99-1.53)



# Obesity & intrapartum



- Dysfunctional labor
  - Robinson et al 2011 Obstet Gyn
- Induction
- C-section

Percent of women delivered by cesarean, by BMI category, stratified by parity and prior cesarean delivery status

	Total		Nulliparas		Multiparas and prior cesarean		Multiparas without prior cesarean <sup>a</sup>	
	Total deliveries	Cesarean, %	Total deliveries	Cesarean, %	Total deliveries	Cesarean, %	Total deliveries	Cesarean, %
Total	124,389	14.0	57,230	21.8	5288	37.4	61,871	4.8
BMI category <sup>b</sup>								
≥40.0	8897	27.3	3845	42.8	540	52.8	4512	11.0



# OB<sup>3</sup>: intrapartum

- ZEPRS database (n= 51,250)



Outcome	Underweight (<18.5)		Overweight (25-29.9)		Obese (>=30)	
	Crude RR (95 CI)	Adjusted RR* (95 CI)	Crude RR (95 CI)	Adjusted RR * (95 CI)	Crude RR (95 CI)	Adjusted RR * (95 CI)
<b>Composite perinatal outcome</b>	1.31 (1.21,1.42)	1.32 (1.21,1.43)	0.87 (0.75,1.00)	0.85 (0.73,0.99)	0.93 (0.74,1.18)	0.96 (0.75,1.22)
<b>Maternal death</b>						
<b>Cesarean delivery</b>	0.63 (0.48,0.81)	0.62 (0.47,0.81)	3.26 (2.79,3.81)	2.61 (2.21,3.07)	3.11 (2.39,4.06)	2.61 (2.03,3.36)
<b>Stillbirth</b>	0.85 (0.63,1.14)	0.90 (0.67,1.22)	1.77 (1.33,2.36)	1.53 (1.13,2.07)	1.90 (1.19,3.03)	1.74 (1.07,2.84)

\*adjusted for Age, RPR, HIV status, HGB, Hypertension during ANC or delivery, and EGA at first ANC visit

## Globesity in effect



# Obesity & intrapartum

Table 2. Maternal Outcomes by Body Mass Index Categories for Trial of Labor Patients

Outcome					<i>p</i> *
Failed trial					< .001
Hospital stay					< .001
Endometritis					< .001
Rupture					.12
Dehiscence	4 (0.3)	35 (0.7)	45 (0.7)	15 (0.9)	.12
Rupture/dehiscence	12 (0.9)	71 (1.5)	91 (1.4)	35 (2.1)	.03
Transfusion	24 (1.8)	54 (1.1)	100 (1.6)	25 (1.5)	.59
Thromboembolism <sup>†</sup>	1 (0.07)	1 (0.02)	2 (0.03)	1 (0.06)	1.00
Wound complication <sup>‡</sup>	2 (0.1)	17 (0.4)	22 (0.3)	11 (0.7)	.06
Maternal surgical injury <sup>§</sup>	6 (0.4)	23 (0.5)	14 (0.2)	10 (0.6)	.58
Hysterectomy	4 (0.3)	6 (0.1)	14 (0.2)	5 (0.3)	.57

**More failed TOLAC  
and uterine ruptures**



# Obesity and intraoperative risks

TABLE 3

Log-binomial regression models for the risk of any intraoperative complication, by maternal BMI (n = 51,218)

	Unadjusted RR (95% CI)	Model 1: direct aRR (95%CI)	Model 2: indirect aRR (95%CI)	Percent of intraoperative risk attributable to surgical characteristics
BMI 18.5 to 29.9 (reference)	Reference	Reference	Reference	
BMI 30 to 39.9	0.83 (0.75–0.92) <sup>a</sup>	0.87 (0.82–1.00)	0.93 (0.84–1.03)	32
BMI 40 to 49.9	0.69 (0.58–0.81) <sup>a</sup>	0.66 (0.56–0.79) <sup>a</sup>	0.76 (0.64–0.89) <sup>a</sup>	32
BMI ≥ 50	1.15 (0.88–1.51)	1.02 (0.78–1.32)	0.98 (0.75–1.27)	51
Race (ref nonblack)	1.70 (1.55–1.87)	1.67 (1.51–1.83)	1.55 (1.41–1.71)	
PTD < 37 weeks (ref ≥ 37 weeks)	2.44 (2.22–2.69) <sup>a</sup>	2.31 (2.10–2.55) <sup>a</sup>	2.01 (1.82–2.23) <sup>a</sup>	
Skin incision (ref vertical)				
Pfannenstiel	0.56 (0.50–0.62) <sup>a</sup>		0.56 (0.50–0.62) <sup>a</sup>	
Unknown	0.46 (0.42–0.54) <sup>a</sup>		0.58 (0.51–0.66) <sup>a</sup>	
Emergency cesarean delivery (ref: nonemergency cesarean delivery)	2.33 (2.11–2.57) <sup>a</sup>		1.80 (1.62–2.00) <sup>a</sup>	

Model 1 adjusted for race and PTD &lt; 37 weeks.

Model 2 adjusted for race, PTD &lt; 37 weeks, skin incision type, and emergency cesarean delivery.

aRR, adjusted risk ratio; BMI, body mass index; CI, confidence interval; PTD, preterm delivery; RR, risk ratio.

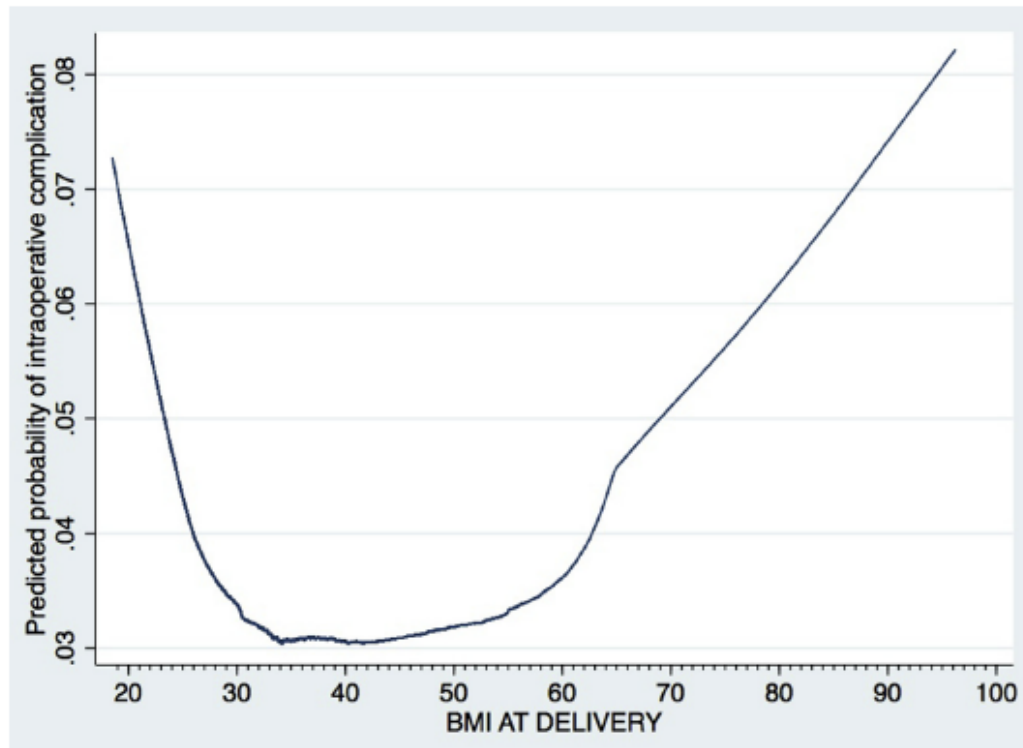
<sup>a</sup> Statistical significance at  $P < .05$ .Smid et al. Maternal obesity and cesarean intraoperative complications. *Am J Obstet Gynecol* 2017.



# Obesity and intraoperative risks

**FIGURE 1**

**Predicted probability of intraoperative complication by maternal BMI at delivery (n = 51,218)**







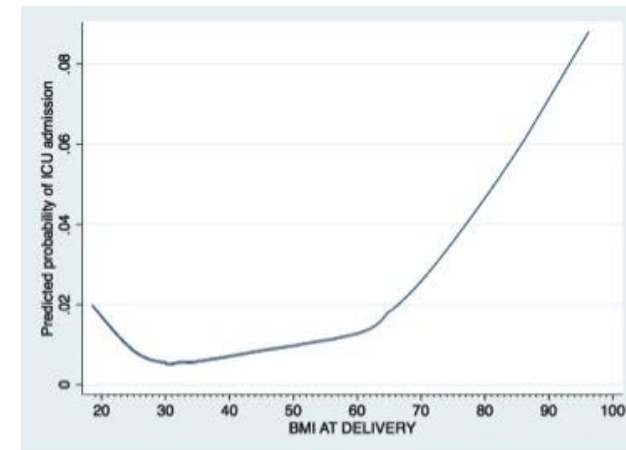
# Super obesity (BMI >50)

- Macrosomia aRR 1.8 95% CI 1.3- 2.5
- Pre-eclampsia aRR 1.7 95% CI 1.4-2.1
- Cesarean aRR 1.8 95% CI 1.5-2.2
- 39% of nulliparous super obese women scheduled C-sections



## • ICU Admission

- **aOR 1.69 (CI 1.01-2.87) for ICU admission**
- Overall 1 ICU: 153 admissions
- **1 ICU: 77 deliveries of super obese women**
- 1 ICU for 144 deliveries for non-obese women
- 1 ICU for 179 every deliveries for Class I or II women
- 1 ICU for 132 every deliveries women with BMI 40s



*Marshall et al  
Alanis et al  
Smid et al*



# Super obesity & acute neonatal morbidity

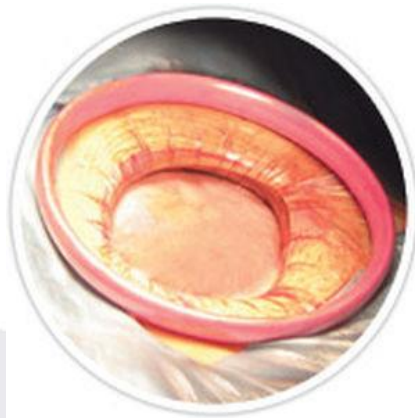
- Acute: APGAR < 5, CPR/vent support, TTN, neonatal injury
- Severe: Grade III/IV IVH, nec, seizure, RDS, HIE, meconium aspiration, vent support > 2 day, sepsis, death

**Table 3** Logistic regression models for maternal BMI and neonatal morbidity

Maternal and delivery characteristics	Acute neonatal morbidity ( <i>n</i> = 41,262)	Severe neonatal morbidity ( <i>n</i> = 41,262)
	Adjusted OR (95% CI)	
BMI: 18.5–29.9 kg/m <sup>2</sup> (ref)	–	–
BMI: 30–39.9 kg/m <sup>2</sup>	1.19 (1.01–1.41)	1.26 (1.11–1.42)
BMI: 40–49.9 kg/m <sup>2</sup>	1.59 (1.40–1.80)	1.63 (1.38–1.92)
BMI: ≥50 kg/m <sup>2</sup>	1.81 (1.46–2.25)	2.08 (1.59–2.73)



# What's the best surgical approach?





# Obesity and surgical approach

## The Problem of the Pannus: Physician Preference Survey and a Review of the Literature on Cesarean Skin Incision in Morbidly Obese Women

Marcela C. Smid, MD, MA, MS<sup>1</sup>   Sarah G. Smiley, MD, MPH<sup>2</sup>   Jay Schulkin, MD<sup>3</sup>  
David M. Stamilio, MD, MSCE<sup>1</sup>   Rodney K. Edwards, MD, MS<sup>4</sup>   Alison M. Stuebe, MD, MSc<sup>1,5</sup>



# Extreme Obesity and Postcesarean Wound Complications in the Maternal-Fetal Medicine Unit Cesarean Registry

Marcela C. Smid, MA, MD, MS<sup>1</sup> Morgan S. Kearney, MD<sup>2</sup> David M. Stamilio, MD, MSCE<sup>1</sup>

**Table 3** Effect of surgical techniques among extremely obese women ( $N = 2,411$ )

Skin incision type	Pfannenstiel ( $N = 1,742$ )	Vertical ( $N = 669$ )	$p$ -Value <sup>a</sup>
Composite morbidity	224 (12.9)	113 (16.9)	0.01
Infectious composite	155 (8.9)	80 (12.0)	0.02
Infection	29 (1.7)	20 (3.0)	0.04
Endometritis	133 (7.6)	67 (10.0)	0.06
Wound opening	10 (0.6)	8 (1.2)	0.11
Seroma/hematoma	14 (0.8)	13 (1.9)	0.02
Readmission	62 (3.6)	25 (3.7)	0.83





# Obesity and surgical approach

- Nine studies on skin incision for obese patients
  - Five = no difference between vertical & LT
  - Three = vertical higher rates
  - One = vertical lower rate
- Selection bias – heavier women are more likely to get vertical skin incisions

# Best Practices for Obese Patients

- Preconception counseling
  - Weight reduction program: diet, exercise, behavior modification
  - **Folate Rx: Higher dose not shown to reduce risk**
  - Infertility treatment: recommend weight loss program prior to ART Rx
- Record maternal height & weight at initial visit
  - Weight gain for obese: 11-20 lb (2009 IOM)
- Nutrition consultation
- Encourage exercise regimen (reduced GWG)
- Increased risk of preeclampsia:
  - Consider urine protein: creatine and/or baseline 24 hr urine protein & LFTs

# Best Practices for Obese Patients

- Anesthesiology consult (antenatal or early labor)
- Antenatal testing:
  - Consider obesity as an indication for serial NST or BPP in the 3<sup>rd</sup> trimester
    - **No evidence for fetal risk reduction**
  - Targeted fetal anatomy ultrasound
  - Growth ultrasound(s) if unable to clinically estimate fetal weight
- VBAC counseling: no optimal delivery mode
  - Estimate success rate and if very low offer cesarean to avoid risks associated with failed TOLAC & emergency cesarean

# Best Practices for Obese Patients

- Early GDM / Type 2 DM screening
  - Class III (“severe”) obesity – screen at 1<sup>st</sup> visit
    - ADA recommendation: 2hr GTT, FBG or HgbA1c
  - Class I-II obesity – consider early screen with other risk factors present
    - **“Expert opinion”**
  - Type 2 DM criteria: HgbA1c > 6.5%, fasting BG >126 mg/dl, or 75g 2hr GTT >200 mg/dl
- Apply standard delivery mode guidelines for macrosomia
  - DM: offer cesarean if EFW >4500g
  - Non-DM: : offer cesarean if EFW >5000g
    - “Expert opinion”

# Best Practices for Obese Patients

- Higher dose of preoperative antibiotics
- Closure of subcutaneous layer after cesarean
- What's the best cesarean skin incision...Pfannenstiel? Vertical? High transverse (peri-umbilical)?
  - No good data to guide clinical practice
- Thromboprophylaxis after cesarean with pneumatic compression device (or LMWH)
- Encourage breast feeding
- Refer to a weight reduction specialist postpartum



# Dr. Intern: we have a C-section



UNIVERSITY OF UTAH  
HEALTH SCIENCES

## BMI ~ 45



**Class III  
Obesity**



**Class III  
obesity**



# OB<sup>3</sup>: what I think of all of this

- **Globesity is increasing**
  - Makes keeping women & their babies safe more challenging
- **BMI is easy but maybe not be identifying women at highest risk**
  - Meant for screening; not diagnostic
- **Fat is important** and have *very* little idea about what fat is doing in pregnancy.
- Because we don't understand fat, we lack **answers** to basic questions in obstetrics and obesity.
- **Embrace and investigate the pannus!**





# Questions?



Thank you...

Marcela.Smid@hsc.utah.edu

