

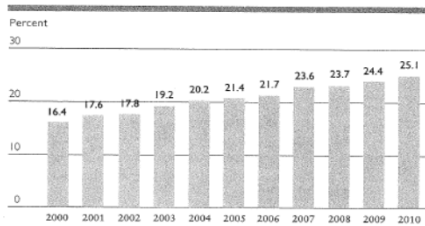
## FIMR: Obesity as a Pregnancy Risk Factor

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## Obesity and Overweight

- Obesity: Body Mass Index (BMI)  $\geq 30$
- Overweight: BMI  $\geq 25$
- The proportion of women ages 18-44 who were obese increased nearly 55% over the past decade to 25.1% in 2010 (CDC)

### Obesity among Women Ages 18-44, 2000-2010



Note: Obesity is defined as a Body Mass Index of 30 or more.  
Source: Centers for Disease Control and Prevention, 2000-2010 Behavioral Risk Factor Surveillance System, Data prepared by March of Dimes Perinatal Data Center, 2012.

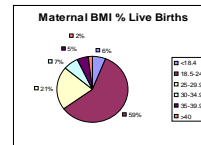
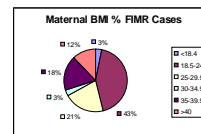
## Obesity in women of childbearing age

- Both overweight and obesity increase the risk of infertility, pregnancy-related medical complications and poor pregnancy outcomes
- Overweight and obesity increase maternal risks for
  - HTN, DM, C-section
- Compared to babies born of normal weight women, babies born of overweight & obese mothers have
  - More NTDs, lower Apgars, more birth injuries and more NICU admissions

## Obesity in women of childbearing age

- AND, compared to babies born of normal weight women, babies born of overweight & obese mothers also have a higher rate of fetal demise....

## FIMR: BMI Comparison



BMI classification  
 < 18.5: underweight  
 18.5-24.9: normal weight  
 25-29.9: overweight  
 30-34.9: class 1 obesity  
 35-39.9: class 2 obesity  
 >40: class 3 (extreme) obesity

## MetroHealth FIMR Project: A Report of Initial Findings

	Historical	1997-2006
BMI <25, % (n)	65.4 (157)	40.3 (29)
BMI ≥25, % (n)*	34.6 (83)	59.7 (43) #
BMI Mean ± SD**	24.4 ± 5.6	28.5 ± 7.8

\*OR 2.80 (1.63-4.82)

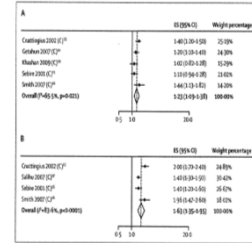
\*\*Student *t* test P,0.0001

#2012 = ~Same as 1997-2006 BMI ≥25, 60%

## Meta-analysis: Risks for Stillbirth

(Flenady V et al The Lancet, 2011)

- High-income countries
- Factors chosen based on the ability to modify through lifestyle changes
- 96 Population-based studies included
- Maternal overweight and obesity (BMI ≥25) was the highest ranking modifiable risk factor



## ACOG Practice Bulletin (March 2009)

- Hazard ratio for stillbirth increases with increasing gestational age
- Obesity associated with a fivefold increase in stillbirth associated with placental dysfunction
- Obesity remains a risk factor after controlling for smoking, gestational diabetes and preeclampsia

	Risk of stillbirth /1000
Non-obese	5.5
BMI 30-39.9	8
BMI >40	11

## Why...is high pre-pregnancy BMI a risk factor for poor pregnancy outcome??

- Biological basis poorly understood
- Risk of stillbirth increases as gestation proceeds
- Practical problems:
  - Inaccuracies of abdominal palpation to assess growth, lie or presentation of fetus
  - Blood pressure measurement difficulties including the availability of large cuffs and the accuracy of monitoring devices in women with large upper arm circumferences greater than 35 cm
  - Speculation: reluctance of obese women to seek care and reduced sensitivity to changes in fetal movement

## Why...is high pre-pregnancy BMI a risk factor for poor pregnancy outcome?? (cont)

- Obesity is associated with inflammation, and disturbances in lipid and endocrine metabolism
- Increased risk of co-morbidities
  - DM, pre-eclampsia, HTN
  - Risk continues controlling for these complications
- Suboptimal ultrasonography
  - Poor visualization and decreased sensitivity with high central adiposity

## Why...is high pre-pregnancy BMI a risk factor for poor pregnancy outcome?? (cont)

- Placental dysfunction
  - Metabolic and vascular abnormalities
  - Impaired placental blood flow
  - Functional limitations to transfer sufficient oxygen to large fetus (associated respiratory disease)
  - Failure of normal placentation may lead to both infarction and abruption in later pregnancy
- Attainment of normal prenatal BMI is the key
- Lower threshold of referral to MFM specialist recommended

## Conclusions

- Pregnant women who are overweight or obese deserve close scrutiny especially during the last trimester
- All pregnant women, but especially those with added risk factors, should be encouraged to contact their health care provider if the baby's movement pattern changes (kick counts starting at 28 weeks)
- Healthy lifestyle changes before, during and after pregnancy can decrease complications associated with obesity

## References

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