Leveraging Action to Support Dissemination of Pregnancy Weight Gain Guidelines

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Pregnancy Weight Gain Guidelines: Dissemination Workshops and Related Activities
March 1, 2013
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  University of California-Berkeley
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  University of Pittsburgh
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  Pennington Biomedical Research Center
- Nancy Butte
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IOM Staff: Ann Yaktine, Study Director; Wendy Keenan, Research Associate,
Significance
Why Reexamine Pregnancy Weight Guidelines?
Then
Now

WEIGHT GAIN DURING PREGNANCY

REEXAMINING THE GUIDELINES

INSTITUTE OF MEDICINE AND NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES
Increasing overweight & obesity among U.S women of childbearing age; 1965-2005


<table>
<thead>
<tr>
<th>Year of survey</th>
<th>Proportion of women (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>0%</td>
</tr>
<tr>
<td>1975</td>
<td>10%</td>
</tr>
<tr>
<td>1985</td>
<td>20%</td>
</tr>
<tr>
<td>1995</td>
<td>30%</td>
</tr>
<tr>
<td>2005</td>
<td>40%</td>
</tr>
</tbody>
</table>

**Overweight (BMI > 25 kg/m²)**

**Obese (BMI > 30 kg/m²)**

**Extreme obesity (BMI > 40 kg/m²)**

*NHANES 1963-65, 1966-70
NHANES 1971-74
NHANES 1976-80
NHANES 1988-94
NHANES 1999-2000, 2001-02, 2003-04*

*Ages 20-35 through NHANES 1988-94*
Increasing overweight & obesity among prepregnant U.S. women; 1993-2003, by race-ethnicity

Trends in Gestational Weight Gain 1990-2005

Trends in Gestational Weight Gain
1990-2005

Percent of women who gained >40 lbs during pregnancy 1990-2005, by race-ethnicity

Source: CDC. MMWR 2008;57:127
Percent of women who gained greater than IOM guidelines 1993-2003, by pre-pregnancy BMI

Source: PRAMS CDC. Information contributed to the committee in consultation with P Dietz. Jan 2009
Percent of women who retained >10lbs & >20lbs at >24 weeks postpartum

Source: PNSS CDC. Information contributed to the committee in consultation with A Sharma. Dec 20
The greater the gestational weight gain, the greater the postpartum weight retention

Source: Derived from IFPS II. Available online: [http://www.cdc.gov/ifps/questionnaires.htm](http://www.cdc.gov/ifps/questionnaires.htm)
Summary

• More U.S. women are entering pregnancy overweight or obese

• More U.S. women are gaining too much weight during pregnancy

• The more weight women gain during pregnancy, the more weight they retain in the postpartum
Consequences of Gestational Weight Gain
Consequences of Gestational Weight Gain: Mother

- Strong association between higher GWG & increased risk of cesarean delivery
- Strong association between higher GWG & postpartum weight retention
- Insufficient evidence to link GWG to long term health consequences of the mother
- Maternal prepregnancy weight status is an important independent predictor of maternal short- & long-term outcomes
Consequences of Gestational Weight Gain: Child

- Strong association between GWG and birthweight
  - Lower GWG predicts SGA
  - Higher GWG predicts LGA
  - RR higher among women with lower prepregnancy BMI

- Weaker evidence for association between GWG and preterm birth
  - Lower GWG associated with PTB among underweight, and to lesser extent, normal weight women
  - Higher GWG may also be associated with higher PTB
Prenatal Programming of Childhood Obesity:
The Role of Gestational Weight Gain
Consequences of Gestational Weight Gain: Child Obesity?

- Higher GWG is associated with childhood obesity
  - AHRQ review (Viswanathan 2008) identified 4 studies which reported higher child BMI with higher GWG
  - Committee identified 3 additional studies reporting positive association between GWG & child BMI
    Moreira 2007; Oken 2008; Wrotniak 2008
  - 4 studies of poorer quality reported no association
    Fisch 1975; Maffeis 1994; Whitaker 2004

- All but 1 study reported child BMI as the only outcome
  - Oken (2007) found higher systolic BP in 3-yr olds with higher GWG
Summary

• Lower GWG is associated with SGA and possibly PTB

• Higher GWG is associated with cesarean delivery, postpartum weight retention, LGA and child obesity
New IOM Pregnancy Weight Guidelines
Previous IOM Guidelines

- Institute of Medicine (1990)
  - Underweight (BMI<19.8)=12.5-18kg (28-40 lbs)
  - Normal weight (BMI=19.8-25.9)=11.5-16kg (25-35 lbs)
  - Overweight (BMI=26.0-29.0)=7-11.5kg (15-25 lbs)
  - Obese (BMI>29)= >6kg (15 lbs)
Previous Approaches

- Cedergren (2007)
  - Swedish Medical Birth Registry (N=298,648)
  - Trade-offs of unweighted 6 maternal & 7 fetal outcomes
  - Many outcomes lack clear association with GWG
  - Optimal GWG lower than 1990 IOM guidelines, especially for overweight & obese women

- Proposed optimal weight gain during pregnancy
  - Underweight (BMI<18.5)=4-10kg
  - Normal weight (BMI=18.5-24.9)=2-10kg
  - Overweight (BMI=25-29.9) < 9kg
  - Obese (BMI≥30)= < 6kg
Previous Approaches

- Kiel (2007)
  - Obese women in Missouri (N=120,251)
  - Trade-offs of 4 unweighted outcomes (preeclampsia, cesarean, LGA, SGA)
  - GWG<15 lb was associated with a significantly lower risk of preeclampsia, cesarean delivery, and LGA and higher risk of SGA
  - Limited or no weight gain in obese pregnant women has favorable pregnancy outcomes.

- Proposed optimal weight gain during pregnancy
  - Obese Class I (BMI 30-34.9)=4.5-11.4kg
  - Obese Class II (BMI 35-39.9)=0-4.1kg
  - Obese Class III (BMI≥40) loss of 0-4.1 kg
Previous Approaches

- Nohr (2008)
  - Danish National Birth Cohort (N=60,892)
  - Trade-offs of 4 unweighted outcomes (unscheduled cesarean, SGA, LGA, and postpartum weight retention)
  - Optimal GWG somewhat higher than 1990 IOM guidelines

- Proposed optimal weight gain during pregnancy
  - Underweight (BMI<18.5) => 20kg
  - Normal weight (BMI=18.5-24.9) = 16-19kg
  - Overweight (BMI=25-29.9) 10-15kg
  - Obese (BMI>=30) = < 10kg
GWG-specific risks for pregnancy outcomes by prepregnancy BMI category among primiparous women
New approaches to development of the guidelines

• Commissioned new analyses
  • Ellen Nohr: DNBC (1996-2002)
    • extension of trade-off analyses to obese women & special populations
  • Amy Herring: NMIHS (1988, 1991)
    • Add PPWR, breastfeeding & infant mortality from 1991 follow-back survey
    • Subgroup analyses in black and white women
    • Subgroup analyses in black and white women
  • Jim Hammitt: quantitative risk analysis
    • Considered infant mortality, postpartum weight retention & child obesity
    • Used quality-adjusted life years (QALYs) for comparison across outcomes
New IOM Pregnancy Weight Guidelines

<table>
<thead>
<tr>
<th>Prepregnancy BMI category</th>
<th>Total weight gain (lb, kg)</th>
<th>Rate of weight gain 2\textsuperscript{nd} and 3\textsuperscript{rd} trimester (lb/wk, kg/wk)*</th>
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<tbody>
<tr>
<td>Underweight (&lt; 18.5 kg/m\textsuperscript{2})</td>
<td>28-40, 12.5-18</td>
<td>1.0 (1.0-1.3), 0.51 (0.44-0.58)</td>
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<td>Normal-weight (18.5-24.9 kg/m\textsuperscript{2})</td>
<td>25-35, 11.5-16</td>
<td>1.0 (0.8-1.0), 0.42 (0.35-0.50)</td>
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<td>Overweight (25.0-29.9 kg/m\textsuperscript{2})</td>
<td>15-25, 7-11.5</td>
<td>0.6 (0.5-0.7), 0.28 (0.23-0.33)</td>
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<tr>
<td>Obese (≥ 30.0 kg/m\textsuperscript{2})</td>
<td>11-20, 5-9</td>
<td>0.5 (0.4-0.6), 0.22 (0.17-0.27)</td>
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*Calculations assume a first-trimester weight gain of 1.1-4.4 lb (0.5-2.0 kg)
New IOM Weight Guidelines:  
What’s New?

- Different cutoff points for prepregnant BMI

- New pregnancy weight recommendation for obese women
  - 5-9 kg (11-20 lbs)
  - Preponderance of data for obesity Class I
  - It is possible that weight gain <5kg may be associated with a more favorable trade-off
Recommendations for special populations

- **Short stature:** no modification
- **Young age:** no modification; use adult BMI tables
- **Racial/ethnic subgroups:** no modification
- **Primiparity:** no modification, but trade-off should be studied further
- **Smokers:** no modification, but stop smoking
New IOM Weight Guidelines: Rate of Weight Gain

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New IOM Weight Guidelines:
Provisional guidelines*: mothers of twins

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<th>Prepregnancy BMI category</th>
<th>Weight gain at term</th>
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<tr>
<td>Normal-weight</td>
<td>37-54 lb, 17-25 kg</td>
</tr>
<tr>
<td>Overweight</td>
<td>31-50 lb, 14-23 kg</td>
</tr>
<tr>
<td>Obese</td>
<td>25-42 lb, 11-19 kg</td>
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*Based on the interquartile (25th-75th percentile) of gains of women who delivered twins at term (37-42 wk gestation) with birth weights ≥ 2,500 g
Note: Insufficient data are available to offer a guideline for underweight women
Next Steps
Conclusions

• Gain within the guidelines

• Achieve healthier weight before pregnancy, and get back to healthier weight after pregnancy
Gain within Guidelines

About one in five women gains more than 40 pounds during pregnancy—more than any woman should gain.

Just one in ten gains less than 15 pounds, a reasonable goal for many obese women.
Gain within Guidelines

Weight gain by BMI from PRAMS (2002-2003) (50th percentile, interquartile range)

Weight gain by BMI as recommended (midpoint, range)

<table>
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<tr>
<th>Weight Gain (lbs)</th>
<th>Underweight</th>
<th>Normal weight</th>
<th>Overweight</th>
<th>Obese</th>
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<tbody>
<tr>
<td></td>
<td>32</td>
<td>30</td>
<td>20</td>
<td>25</td>
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Body Mass Index Category (WHO Criteria)

*PRAMS 2002-03
Gain within Guidelines

*PRAMS 2002-03
Achieving healthier weight before, between & beyond

The guidelines themselves are not that different, but what it will take for women to gain within them represents a radical change in the care of women of childbearing age!
Preconception Health & Healthcare

- CDC/ATSDR Preconception Care Work Group & Select Panel on Preconception Care
- Office of Minority Health Preconception Peer Educators
- CMS Expert Panel on Interconception Care
- USDA FNS The Role of WIC in Improving Periconceptional Nutrition
Affordable Care Act

- Bans gender rating
- Bans denial of coverage based on preexisting conditions
- Bans lifetime limits on benefits
- Expands medicaid eligibility & subsidies for health insurance
- Expands coverage for clinical preventive services for women
  - gestational diabetes screening
  - intimate partner violence screening and counseling
  - HIV screening and counseling
  - STI counseling
  - HPV DNA testing
  - FDA-approved contraceptive products
  - breastfeeding support
  - well women visit including preconception and interconception care
If you want 1 year of prosperity, grow grain. If you want 10 years of prosperity, grow trees. If you want 100 years of prosperity, grow people.

*Chinese Proverb*
If you want to grow healthy people, you start by growing healthy babies.

Not a Chinese Proverb
The definition of insanity is doing the same thing over and over and expecting different results.

Benjamin Franklin
We must become the change we want to see.

- MOHANDAS GANDHI