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25% of Women in Colorado Do Not Gain Enough Weight During Pregnancy!
More women gain too little weight than smoke during pregnancy!

Inadequate Prenatal Weight Gain and Low Birthweight in Colorado
Of the 68,475 births in 2004:
• Nearly 1 in 4, or 17,000, pregnant women gained inadequately
• 1,190 of the 6,172 low birthweight births could be attributed to inadequate prenatal weight gain (19.3% PAR)
Colorado’s Social Marketing Campaign to Address Inadequate Prenatal Weight Gain: 

A Healthy Baby is Worth the Weight

Campaign Purpose & Goals

• Increase the number of pregnant women in Colorado who gain an adequate amount of weight during pregnancy.
• Decrease the number of low birth weight births due to inadequate prenatal weight gain.

How will we achieve these goals?

• Motivate prenatal health care providers to discuss and monitor appropriate weight gain with patients.
• Increase awareness about the importance of maternal weight gain among consumers.
Campaign Evaluation

Added a question to the 2004 PRAMS survey

How much weight did your doctor, nurse or other health care worker tell you to gain during your pregnancy?

______ Pounds OR ______ Kilos

☐ They did not tell me how much weight to gain

☐ I don’t remember

☐ Other, please tell us _________________________

Colorado birth certificate (2007) added fields

• pre-pregnancy weight

• height

How Did We Figure This Out?

• How do we know that inadequate weight gain is so important in Colorado?

• Isn’t the main problem the high altitude?

• After altitude, isn’t the main problem smoking?

• Isn’t excessive weight gain more of a problem?

Tipping the Scales Report

• In 1999, CDPHE conducted a population-attributable risk analysis for the first time using all 166,591 births between 1995 and 1997

• Report is called Tipping the Scales: Weighing in on Solutions to the Low Birth Weight Problem in Colorado

• www.cdphe.state.co.us/pp/womens/pdf/tippingthesccales.pdf
Isn’t it the altitude?

- High altitude is the perennial explanation for LBW in Colorado; well-documented association
- All of Colorado’s births occur above 3,000’ elevation
- There is a 1 ounce loss in birth weight per 1,000’ elevation (1997 AJPH study)
- Allowing for the impact of elevation, Colorado’s place in the LBW ranking among all states would be in the middle

Colorado and Other States’ LBW

<table>
<thead>
<tr>
<th>High Altitude States</th>
<th>2003 LBW rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>9.1%</td>
</tr>
<tr>
<td>Utah</td>
<td>6.7%</td>
</tr>
<tr>
<td>Washington</td>
<td>6.1%</td>
</tr>
<tr>
<td>Oregon</td>
<td>6.1%</td>
</tr>
</tbody>
</table>

Healthy People 2010 Goal is 5.0%
What does *Tipping the Scales* say?

Multiple gestation is the largest risk
Among singleton births,

- The #1 factor is inadequate maternal weight gain during pregnancy
- The #2 factor is smoking during pregnancy
- The #3 factor is premature rupture of membranes
- The #16 factor is altitude over 10,000 feet

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**Singleton Births: Population Attributable Risk Study Results**

- **Factor #1: Inadequate Weight Gain**
  - 12.8%* of the LBW rate can be attributed to inadequate maternal weight gain = 1 in 8 LBW births (*2003 data indicate a PAR of 19.3%)
- **Factor #2: Smoking**
  - 11.9% of the LBW rate can be attributed to maternal smoking = 1 in 8 LBW births
- **Combined Inadequate Weight Gain &/or Smoking**
  - 34.4% of the LBW rate can be attributed to inadequate maternal weight gain and/or smoking = 1 in 3 LBW births

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**Factor #1**

**Inadequate Weight Gain**

- Women with inadequate weight gain increase their risk of having a low birth weight baby by about 65%.
- The singleton LBW rate in CO could drop by nearly one percentage point if all women gained weight adequately.
Combinations of Factors
If all pregnant women gained weight adequately and no pregnant women smoked:
• Colorado’s singleton LBW rate could be reduced by over one-third, from 7.1% in 2003 to 4.7%
• Colorado’s total LBW could be reduced by one-quarter, from 9.0% in 2003 to 6.8% - a very large decrease

Weight Gain Recommendations for Pregnancy and Related Research

History of Weight Gain Recommendations
• 1960’s: limit maternal weight gain to 15#, 25# maximum
• 1970’s: NAS concluded that restrictive weight gain resulted in an increased risk of low birth weight; Recommended 9-11.4 kg (19.8-25#)
• 1990: IOM and NAS report provided recommended ranges of weight gain by BMI (body mass index) category
1990 Institute of Medicine’s Total Weight Gain Recommendations

- Low BMI (<19.8): 28-40 pounds
- Normal BMI (19.8-26): 25-35 pounds
- High BMI (26-29): 15-25 pounds
- Obese BMI (>29): 15 pounds

Based on pre-pregnancy weight & height

http://www.nap.edu/catalog/1451.html

Common questions about the recommendations:

- Do they increase obesity after pregnancy?
- Do they reduce low birth weight?
If weight gain was
• Below
• Within
• Above appropriate BMI range

PP weight retention
• 2.1 lbs n=450
• 2.2 lbs n=568
• 5.3 lbs n=575

Keppel, American Journal of Public Health, 1993

IOM Weight Gain Recommendations and LBW

• Well documented association between maternal weight gain and infant birth weight. Ehrenberg 2003, Chang 2003, Schieve 2000, Shapiro 2000
• “The timing of weight gain is also important. Regardless of the mother’s pregravid weight, low weight gain in either the second or third trimester increases the risk of intrauterine growth retardation.” Strauss 1999, Siega-Riz 1994, Abrams 1995.

Weight Gain and Preterm Delivery

• Weight gain
  – Low weight gain identified consistently as a risk factor for preterm delivery
  – High weight gain may be a risk factor
• BMI
  – Lean women at increased risk of preterm
  – Obesity inconsistently has been associated with preterm delivery

Slide compliments of Patricia M. Dietz with CDC
Adjusted Odds of Delivering Preterm Due to Low Weight Gain

Adjusted OR

Lean Average Overweight or higher

Pre-pregnancy BMI

Schieve et al., Obstetrics & Gynecology 2000
Slide compliments of Patricia M. Dietz with CDC

Issues for Women in Addressing Inadequate Weight Gain Issues

• Pregnant Women Focus Group Results, Summer 2002:
  – Concern about body image during pregnancy
  – Reported lack of education from health care providers, especially doctors
  – Lack of understanding of relationship between maternal weight gain and infant weight and health

“The women I know aren’t gaining.... They need to know how important it is to gain.”

“I know three pregnant women who have pictures of models on the inside of their kitchen cupboards so when they open the cupboard they don’t eat so much.”

“The Hollywood stars give a false impression of what a pregnant lady should look like.”
The Perfect Little Bump

Many of the city’s mothers-to-be are counting every carb and pushing their heart-rate monitors to the limit to stay skinny and sexy while pregnant. Is this harmless vanity? Or a New York obsession gone too far?

By Laurie Abraham

“Fourteen weeks pregnant with her first child, Margot Tenenbaum secretly wished she were a bit more nauseous.”

“Johns Hopkins psychologist Janet DiPietro says she finds her subjects’ weight-restrictive behaviors unnerving. “The pregnancy and the delivery is all about them; it’s almost like they can’t see that they’re going to get a baby out of this deal,” she says. “If you can’t invest in your baby by gaining weight, I think it’s a harbinger for lack of investment in the child.”

http://newyorkmetro.com/nymag/?o=20040927

Common Provider Concerns

Belief: “My patients are gaining an adequate amount of weight.”
Solution: Share county statistics on inadequate weight gain, share the campaign tools, and ask them to plot out a few patients on a grid to see if they really are gaining enough.

Common Provider Concerns

Belief: “I can’t do one more thing during my patient’s OB appointment.”
Solution: Evaluate office flow with staff, plotting weight on grid allows for easier identification of weight gain problems (high or low).
Advice associated with actual weight gain according to IOM categories (%)

<table>
<thead>
<tr>
<th>Provider Advice</th>
<th>None</th>
<th>&lt;IOM</th>
<th>IOM</th>
<th>&gt;IOM</th>
</tr>
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<tbody>
<tr>
<td>Actual gain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;IOM</td>
<td>25</td>
<td>51</td>
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<tr>
<td>IOM</td>
<td>30</td>
<td>31</td>
<td>44</td>
<td>19</td>
</tr>
<tr>
<td>&gt;IOM</td>
<td>45</td>
<td>18</td>
<td>36</td>
<td>67</td>
</tr>
</tbody>
</table>

Campaign Tools Created:
Combined BMI calculator / gestational wheel

- BMI assessment and corresponding weight gain recommendations provided on wheel
- Reverse side is a standard gestational wheel

Prenatal Weight Gain Grid

- Clear, graphic representation of weight gain trends
- Colored lines represent minimum weight gain
- Good education tool to use with women gaining outside IOM guidelines (above or below)
IWG not a problem with my patients

- How do you know? Plot 5 of your high risk clients.
- You need to be sure you are recommending according to the IOM with BMI specific recommendations first.
- Then, plot them out on a grid and see how they really are doing.
- One out of four pregnant women gain too little. Some counties have even higher rates!

Standard ACOG flow sheet to monitor weight gain.

Weight gain below minimum gain line (green).
Pt. would benefit from reminder to gain at least the minimum recommended
When pregravid weight is unknown

- Use the woman’s estimated pregravid weight if this seems reasonable for the current weight gain and weeks gestation.
- If pregravid weight is unknown, estimate the woman’s **BMI category** based on her current weight. Most women will not change an entire BMI category even with pregnancy weight gain.

1990 IOM Recommendation

“When abnormal weight gain appears to be real, rather than a result of measurement error or recording error, try to determine the cause and then develop and implement corrective actions jointly with the women.”

Nutrition Counseling

- **At minimum:** advise on total weight gain range appropriate for her BMI category
- Instill that rate of weight gain, with the goal of slow steady gains, is equally as important as total weight gain
- Reassure that all weight gained is necessary for the normal development of her baby and weight gain is not all fat
Population based services

- Intended to promote health and prevent disease with "services" oriented to the population as a whole
- Concerned with addressing factors that affect health and can be impacted by targeted efforts of public health practitioners

How outreach is sometimes conducted:

FIRE!

Population based strategies:

READY!
AIM!
FIRE!
Promotion

- Multiple audiences influence the success of the campaign.
- Everyone involved or “potentially involved” in its promotion should be considered a valued partner.
- Campaign participation can be done by providers on a variety of levels.
- To be effective, promotion needs to be ongoing.

Just Did It!

![Nike Logo]

What can I do?

- Promote accurate weight gain recommendations for pregnancy to clients, colleagues, friends and family.
- Remember you are the “Nutrition Expert” and can be a valued asset to the medical team for referrals or staff training.
Campaign Resources

- www.healthy-baby.org
  - Order materials
  - View campaign TV/Radio PSAs
  - BMI calculator
  - Research, references, PowerPoint presentation
- FREE attractive and user friendly materials
- 10-minute patient education video
A Healthy Baby is Worth the Weight!

More Information:
www.healthy-baby.org
Women’s Health Section:
303-692-2480