(Rapid) early weight gain: Catchup growth or weight acceleration?

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February 28, 2013

Rapid early infant weight gain

Obesity

Stettler et al., (2005), Baird et al. (2005),
Ekelund et al., (2007), Chomtho et al., (2008),
Leunissen et al., (2009), Larrnjaer et al. (2010)

W/A z scores early in life associate with BMI and body fat later in life.

Druet et al. (2012)
Infant weight gain correlates with weight later on.

Rapid early infant weight gain

Reality check

• Growth tends to track
• Fast-growing infants tend to be big adults
• Children of bigger mothers tend to be bigger
• Data simply describes normal growth

Objectives

• Differentiate between normal catchup growth and weight acceleration.
• Describe the role of feeding dynamics in supporting optimal weight gain.
• Demonstrate the assessment of feeding/growth problems.
• Demonstrate idSatter based intervention

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<table>
<thead>
<tr>
<th>Researcher</th>
<th>Rapid Early Weight Gain Definition</th>
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<tr>
<td>Eid et al. 1970</td>
<td>W/A ≥ 90th percentile at 6 weeks, 3 mo, and 6 mo of age</td>
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<tr>
<td>Ong et al. 2000</td>
<td>≥ 0.67 in W/A z-score at birth, 2 y, and 5 y</td>
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<tr>
<td>Stettler et al. 2003</td>
<td>≥ 1.00 in W/A z-score at 4 mo, 12 mo, and 7 y</td>
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<td>Baird et al. 2005</td>
<td>Obesity definition varied - measured between 3 months and 2 years of age</td>
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<td>Stettler et al. 2005</td>
<td>Change in W/A z score between 8 d. and 112 d of age</td>
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<td>Leunissen et al. 2009</td>
<td>Change in W/A z score &gt; 0.5 z score in first 3 mo</td>
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**Graphs:**
- Adele W/A 0-22 MO
- Chris W/A 0-24 MO
- Chris W/A 2-20 yr
- Chandra W/A 0-24 MO
- Maria W/A 0-22 MO
- Chris W/A 0-36 MO
CATCHUP GROWTH OR WEIGHT ACCELERATION?

**Catchup growth**
- Consistent at any level
- Divergences smooth
- Divergences level off

**Weight acceleration**
- Inconsistent
- Divergences abrupt
- Growth sharply crosses percentiles
- Leveling off is delayed

The data is only the beginning.

To properly interpret growth data, you need the back-story.

INTERVENTION STARTS WITH ASSESSMENT

- Problem is established; complicated
- Cause is unclear, likely to be multiple

WORKING HYPOTHESIS

- Whatever the underlying issue, distorted feeding dynamics is a primary and/or adjunct cause of the problem
- Feeding intervention will be part of the resolution
ASSESSMENT CONTENT

• Medical & physical
• Nutrition & food selection
• Psychosocial (parents)
• Developmental (child)
• Feeding dynamics

Ellie and ME

W/A ≥ 90th percentile at 6 weeks, 3 mo, and 6 mo of age
Obesity measured between 3 mo and 2 yr of age

W/A z score ≥ 0.5 at 3 mo
≥ 0.67 W/A z-score at 1yr, 2 yr, and 5 yr
≥ 1.00 W/A z-score at 4 yr, 12 yr, and 7 yr
IT IS NORMAL FOR CHILDREN TO GROW NORMALLY

Normal growth can be consistently at the mean
50th %tile w/a

Normal growth can be low and slow
low consistent w/a

Normal growth can be high and fast
high consistent w/a

ME was plump at birth.
W/L at 95th %
Fussy baby
Having trouble tolerating milk

Weaned from breast
Switching formulas due to fussiness

ME wants to finger feed
Asthma dx, prednisone

Meals loosely organized; food PRN between; ME eats to soothe
ME Assessment:
Iatrogenic condition

- Misinterpretation of normal growth
- Early restrained feeding (2 weeks) disrupted breastfeeding, undermined internal regulation
- Restrained feeding, and feeding disruption, through 37 months
  - Starting @ 8 mo, ME’s food demands overwhelmed her mother’s ability to restrict
  - Weight acceleration 8 through 37 months
  - sDOR established & maintained from 37 months

ME Do-over:
Role of feeding dynamics in supporting optimal weight gain

- Optimize feeding from birth by establishing and maintaining a division of responsibility in feeding
- Do early identification of feeding problems, weight inconsistency
- Assess using feeding questions
- Establish division of responsibility in feeding
- Let ME grow up to get the body that nature intends for her
Ask feeding questions
• How is feeding going?
• What advice are you being given about feeding?
• What concerns do you have about your child’s eating/growth?
• How would you like feeding to be different?
Establish sDOR: Division of responsibility

Ellie Weight-for-Age z-score

Problems with BF; “give 2 oz formula q 4 hrs.”

Weaned to formula; on schedule; spitting up problems
Mom starts solids; Still on formula schedule

MD notation: ↑ wt. ?diabetes? formula @ night Δ to cup

Diarrhea MD “cut back on juice”

MD Referral to PE “for Ellie to lose weight”

sDOR Discharge from Nutrition Services
Ellie Assessment: Poor feeding practices

- Put on schedule as newborn: disruptive to sleeping and breastfeeding
- Chaotic life circumstances of family; mom feeling guilty and compensating with overfeeding; loose schedule, feeding PRN
- Restrained feeding recommended age 9 to 11 months exacerbated Mom’s guilt & inconsistency in feeding
- Pattern continued until intervention at 18 months

Ellie: Feeding dynamics assessment and intervention

**Pre-sDOR**
- Meals 8 am, 11 am, 7 pm; wherever
- Made to clean plate
- Helping self to fridge in between
- “Eats everything and all the time.”

**Post-sDOR**
- Meals at times Mom determines; at table only
- Ellie determines how much
- Sit down snacks in between L & D and before bed
- 1 gallon of milk lasts 3-4 days instead of 2

Conclusion

**Early infant weight gain, childhood obesity and feeding dynamics**
- Early weight acceleration (or faltering) is a sign of distorted feeding dynamics
- Throughout life, those distortions can destabilize weight and worsen biological parameters
- At the first sign of weight instability and/or feeding problems, do prompt identification and correction of distorted feeding dynamics