

## Trends in Infant / Toddler Feeding

Produced by the Alabama Department of Public Health  
Video Communications and Distance Learning Division

## Faculty

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## Baby Led Weaning (BLW)



## The Birth of Baby Led Weaning

- Recent trend made popular in the UK by Gail Rapley, a health visitor
- Several popular books on the subject
- Research on the topic recently begun

## Baby Led Weaning in a Nutshell

- Skip (or limit) the spoon
- Skip (or limit) pureed foods
- Give baby large pieces of soft food that they can easily hold and bite off of
- Include baby in family meals
- Never force or hurry baby to eat

## Pros and Cons of BLW

- Has anyone tried BLW or know someone who has?
- What about your participants?
- What are your thoughts about BLW?

### Moms Who Try BLW Are More Likely To:



- Breastfeed
- Have more education
- Less likely to return to work at 12 months postpartum
- More likely to follow the recommendation to breastfeed exclusively for 6 months (Brown A., Mat Child Nutr, 2011)

### What Do BLW “Moms” Think About It?

- Healthier way to introduce solids
- Less expensive
- Babies enjoy it more



### Positives of BLW

- Considered a responsive feeding technique
- Encourages self - regulation
- The intention is to follow baby's developmental readiness for solids
- \*Baby shares family food and mealtimes
- Requires constant supervision; parents may be more tuned in to feeding cues
- Could lead to less overfeeding, healthier body weight

### Positives of BLW

- Allowing a baby to use oral motor skills as soon as they develop is important in the process of accepting different textures
- Delaying introduction to textures can cause feeding difficulties and “fussy” eaters

(Cameron SL, Nutrients, 2012)

### Negatives of BLW

- Babies who are not developmentally ready may miss out on starting solids
- Increased risk for iron deficiency
- Possible inadequate intake
- Choking hazards
- Constant supervision required
- \*Baby shares family food & mealtimes

### Motor Skills Required for BLW

- Sits independently
- Uses hands to reach for food
- Successfully grasps food and brings to mouth
- Oral motor function: bites off pieces, moves them around in mouth, chews and swallows

### Do Babies Have the Skills to Independently Self Feed at Six Months?

- 68% of children were able to grasp food with their hands at 4 to 6 months  
(Carruth BR J Am Diet Assoc 2004)
- 85% by 6 to 7 months  
(Wright CM, Mat Child Nutr, 2011)
- 96% by 7 to 8 months  
(Carruth BR J Am Diet Assoc 2004)

### Energy and Nutrient Adequacy: Possibilities

- Overly focused on fruits and vegetables
- Lacking iron rich foods
- Excessive empty calorie foods

### What about Pouches?



### When Marketing Trumps Logic: Pureed Food Pouches

- Just like eating fresh fruit and vegetables...right?



### Wrong!

- Pouches:
  - Are easier and thus faster to eat
  - Could indirectly encourage overeating
  - Have more added sugar and less soluble fiber than fresh fruit
  - Don't teach babies and toddlers how to eat real food

### BLW: The Bottom Line

- Approach with a positive attitude
- Give guidance:
  - Adequate iron intake
  - Choking hazards
  - Family foods should be healthy!

### The Pitfalls of Rushing Solids



### Recommendations for Starting Solids

- Based on developmental readiness, nutrient needs and risk of allergies
- Exclusive breastfeeding until 6 months is preferred
- Iron - rich foods first: iron fortified cereals, pureed meats
- Wait 3 - 5 days between new foods

### Why Do Parents Start Solids Early?

- Perceived earlier sleeping through the night
- Perceived inadequate breast milk supply
- Growth spurt parent is unaware of

### What Circumstances Are More Likely to Lead to Starting Solids Early?

- Shorter breastfeeding duration
- Suboptimal breastfeeding practices
- Those who introduce formula
- Moms with high anxiety or depression



### What Circumstances Are More Likely to Lead to Starting Solids Early?



- Influenced by maternal grandmother (Tarrant RC. Br J Nutr Nov 2010.)
- Perceived as fussy (Wasser H. Pediatrics 2011)
- Obese mother

### Characteristics of Moms Who Start Solids Early

- Younger
- Lower educational status
- Low socioeconomic status
- Smoker (Rebhan B., J Pediatr. Gastroenterol. Nutr.2009.)
- Ethnicity, city and country of residence?

### **Pitfalls of Starting Solids Too Soon**

- Atopic disease
- Excessive calorie intake
- Weight gain
- Negative feeding experience
- Possible exposure to salty or sweetened foods

### **Pitfalls of Starting Solids Too Soon**

Introduction of any food before 4 months associated with higher incidence of atopic dermatitis up to 10 years later.

### **Pitfalls of Starting Solids Too LATE**

Delayed introduction of solids, especially top allergenic foods, may increase the risk of allergy or eczema.

(Feicher DM Journal of Allergy and Clinical Immunology Jan 2013.)

### **Possible Problem with Early Solids**

- Excessive Calorie Intake
  - Cereals
  - Juices
  - Sweetened foods and beverages

### **Impact on Future Weight**

- Independently associated with overweight in childhood in formula-fed infants (Huh SY, Pediatrics 2011.)
- Fast catch - up growth associated with overweight later in childhood

### **Points to Ponder**



Quick infant growth and weight gain during a sensitive period may affect lifelong metabolic and immunologic programming and risk of allergies.

### Points to Ponder

Rapid catch - up growth after intrauterine growth restriction has been associated with the development of asthma.

(Melnik BC, All Asth Clin Immun, 2014.)

### Allergies: The Latest From The AAP

- Avoidance diets during pregnancy and lactation are not recommended - But more research is needed.
- Exclusive breastfeeding for at least 4 months and up to 6 months is recommended.

### Allergies: The Latest From The AAP

- For babies not breastfed, hydrolyzed formula appears to offer advantages to prevent allergic disease and cow's milk allergy
- Complementary foods can be introduced between 4 - 6 months (WIC recommendation: 6 months)

### Signs of Developmental Readiness for "Solid" Foods

- Sits with support
- Holds head up
- Open mouth when food approaches
- No longer has tongue - thrust reflex
- Generally will have doubled birth weight and weighs at least 13 pounds (AAP, Healthychildren.org, 2014)

### Signs of Developmental Readiness for "Solid" Foods

"There is little evidence that delaying introduction of solids past 4 - 6 months will prevent... atopic disease."

(Greer, Pediatrics, 2008.)



### What About the Top Allergenic Foods?

- Can be introduced between 4 - 6 months of age, after a few other foods have been tolerated. (AAAAI)
- Best to introduce at home, not day care

### What About the Top Allergenic Foods?

Delayed introduction, especially allergenic foods, may increase the risk of food allergy or eczema.

Fleicher DM et al. Primary prevention of allergic disease through nutritional interventions. *The journal of allergy and clinical immunology: In Practice*. January 2013; 1(1) 29-36. (AAAAI)

### Allergies: Vitamin D Makes a Difference!

- Infants with vitamin D deficiency were at higher risk of sensitization to food allergens
- Atopic dermatitis may be more severe in infants with Vitamin D deficiency (Baek JH, *J Pediatr*. 2014)

### Transitioning to Table Foods



### What Does That Look Like?

- Like this?
  - From 2007 - 2019, 11% of calories were from fast food



### What Does That Look Like?

- Or this?



### Family Diet

- Looking at The Family Diet: Mostly Bad News
- What are Parent's Attitudes Toward Healthy Eating?

### 2014 Health and Behavior Survey

- Looked at stages of change for healthier eating and lifestyle habits
- 44% of 18 - 34 years olds were in precontemplation / contemplation stage (FIC Foundation, 2014)

### Those in Precontemplation / Contemplation Stage Are:

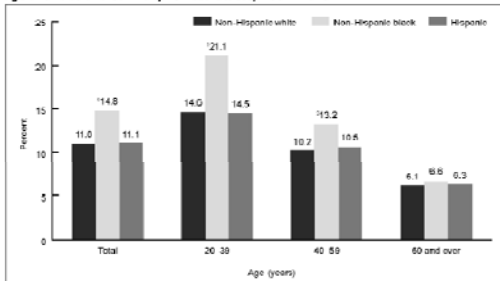
- Younger
- More likely to be single
- More likely NOT to be doing anything about their weight

### That Same Group Is Less Likely To:

- Think about calories
- Plan for meals or use planning tools
- Use nutrition information when eating out
- Choose food based on healthfulness

### Looking at a Typical Parent's Diet

Figure 2. Percentage of calories from fast food among adults aged 20 and over, by age and race and ethnicity: United States, 2007-2010



Source: NHANES 2007-2010.  
<http://www.cdc.gov/nchs/data/databriefs/db114.htm>

### Food and Nutrient Data from the 2015 Dietary Guidelines Scientific Report

- <http://www.health.gov/dietaryguidelines/2015-scientific-report/06-chapter-1/d1-11.asp#figure-d1-1>



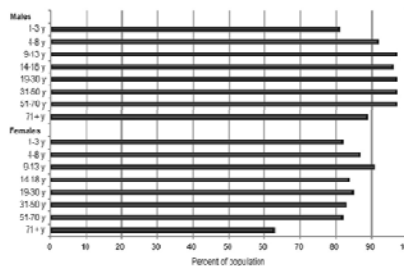
## Toddlers' Diets are Lacking

Could Older Infants' Diets Be Much Different?



## Sodium

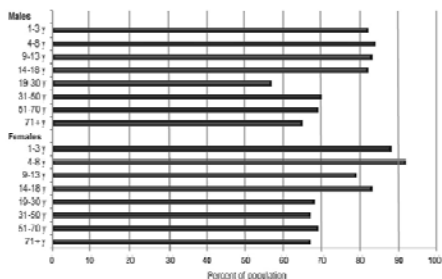
Figure D1.3 Sodium: Percent of age/sex groups with usual intakes above UL



Source: What We Eat in America, NHANES 2007-2010

## Saturated Fat

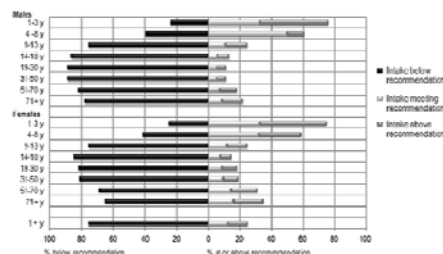
Figure D1.4 Saturated fat: Percent of age/sex groups with usual intake above 10% of calories



Source: What We Eat in America, NHANES 2007-2010

## Fruit

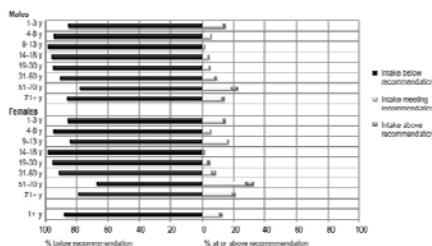
Figure D1.9 Total Fruit: Estimated percent of persons below, at, or above recommendation



Source: What We Eat in America, NHANES 2007-2010

## Vegetables

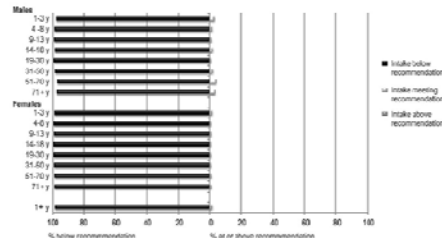
Figure D1.11 Total Vegetables: Estimated percent of persons below, at, or above recommendation



Source: What We Eat in America, NHANES 2007-2010

## Whole Grains

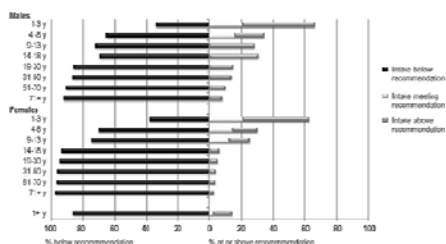
Figure D1.17 Whole grains: Estimated percent of persons below, at, or above recommendation



Source: What We Eat in America, NHANES 2007-2010

## Dairy

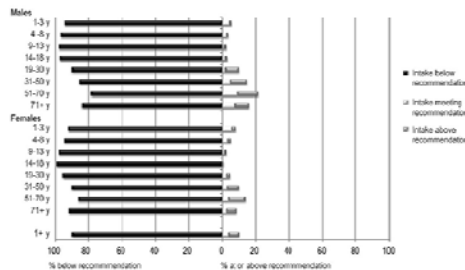
Figure D1.19 Dairy: Estimated percent of persons below, at, or above recommendation



Source: What We Eat in America, NHANES 2007-2010

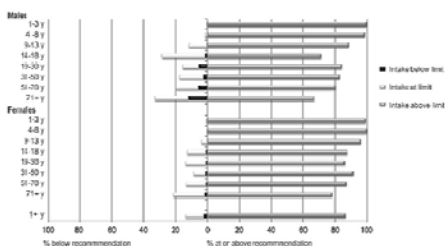
## Seafood

Figure D1.22 Seafood: Estimated percent of persons below, at, or above recommendation



## Empty Calories

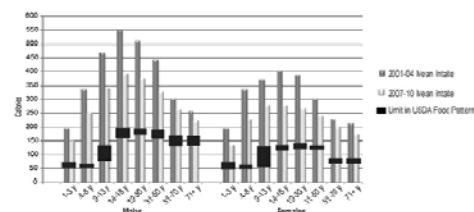
Figure D1.24 Empty calories: Estimated percent of persons below, at, or above limits



Source: What We Eat in America, NHANES 2007-2010

## Added Sugars

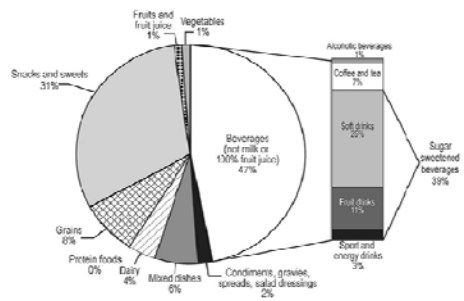
Figure D1.31 Added sugars intakes in 2001-04 and 2007-10 by age/sex groups in comparison to added sugars limits in the USDA Food Patterns



Source: What We Eat in America, NHANES 2001-2004 and 2007-2010

## Sources of Added Sugars

Figure D1.26 Food Sources of Added Sugars



Source: What We Eat in America, NHANES 2009-2010

## The Acorn Doesn't Fall Far From the Tree! Typical Toddler Diet

- Increased consumption of sugar sweetened beverages
- Increased portion sizes
- Reduced fruit and vegetable intake
- Eating more snacks
- Eating more meals away from home

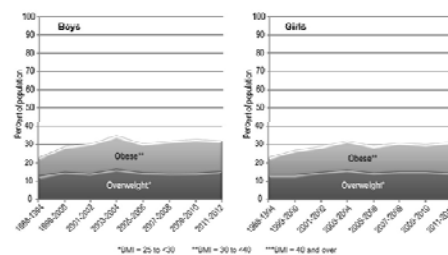
## Snacking

- More frequent snacking associated with body weight in children in some but not all studies
- Trend moving toward 3 snacks per day with 27% of calories coming from snacks
- Largest increase in salty snacks and candy, with most calories coming from desserts and sweetened beverages

(Piemas C, Popkin BM. Health Affairs. 2010)

## Trends in Overweight / Obesity

Figure D1.54 Trends in overweight and obesity, Boys and Girls ages 2-19.



Source: Fryar, CD, Carroll, MD, Ogden, CL. Prevalence of Overweight and Obesity among Children and Adolescents: United States, 1963-1965 Through 2011-2012. CDC/NCHS, the Health E-Stat, September 2014.

## Choking Hazards

- Foods that are round and about the size of the throat  
- about the size of a nickel
- Cut them in small pieces  
– No larger than one - half inch



(www.choosemyplate.gov)

## Foods That Are Choking Hazards

- Peanuts
- Chewing gum
- Popcorn
- Chips
- Round slices of hotdogs or sausages
- Carrot sticks or baby carrots



(www.choosemyplate.gov)

## Foods That Are Choking Hazards

- Tough meat
- Hard candy
- Whole grapes
- Cherry tomatoes
- Large pieces of raw fruits and vegetables



(www.choosemyplate.gov)

## Priority Nutrients: 2015 Dietary Guidelines

- **Calcium:** Milk, cheese, yogurt, tofu, soy milk, green leafy vegetables
- **Vitamin D:** Milk, some yogurt, salmon, some mushrooms, butter
- **Potassium:** Fruits and vegetables including potatoes, milk, cheese, yogurt

### Priority Nutrients: 2015 Dietary Guidelines

- **Dietary fiber:** Fruits and vegetables, some WIC cereals, whole grain pasta, bread
- **Iron:** Fortified foods (cereal, bread), beans, lean meat

(<http://www.health.gov/dietaryguidelines/2015-scientific-report/06-chapter-1/d1-2.asp>)

### Toddlers in the Drive-Thru



### Fast Food Nation?

- In 2007 - 2008, 33% of children ate fast food on a typical day
- Associated with higher intake of sweetened beverages and French fries, and lower intake of milk, fruit and vegetables
- Fast food: a cause or a marker for unhealthy eating? (Poti JM, Am J Clin Nutr 2014)

### The Problem with Toddlers in the Drive-Thru

- Health Issues
  - Obesity, heart disease, hypertension: Calories, saturated fat, sodium
  - Asthma, rhinoconjunctivitis and eczema: risk increased by 27% in 6 - 7 year old children eating fast food > 3 times a week (Ellwood P et al. Epidemiology 2012)
- Academic achievement affected? (Purtell KM, Gershoff ET, Clin Pediatr(Phila) 2014)



### CSPI Analysis of Kids' Restaurant Meals

- 83% offer fried chicken entrees
- 65% offer burgers
- 50% offer pasta dishes
- 73% offer fried potatoes as a side item
- 78% offer soft drinks as a children's beverage option

### CSPI Analysis of Kids' Restaurant Meals

- 66% of meals exceeded 770 mg of sodium (DRI for 4 - 8 y = 1200 mg)
- 45% exceeded 35% calories from fat
- 55% exceeded 10% calories from saturated fat

### Steering Parents Towards Better Options

- Subway
- Wendy's
- Burger King\*
- Sonic\*
- Arby's\*
- Jack in the Box
- Chik-Fil-A\*

\*Participates in Kids Live Well Nutrition Standards from the National Restaurant Association

### Kid's Meal Improvements

- 53% offer vegetables other than fried potatoes
- 68% offer fruit as a side item
- 58% offer fruit juice as a beverage option
- 40% offer non - fat / lowfat milk
- 43% offer 2% or whole milk
- Panera Bread offers yogurt as it's only side item

### Kid's Meal Improvements

Nearly half of the chains offer healthier meals for children, compared to only 1/3 in 2008.



Source: [www.CSPI.net.org](http://www.CSPI.net.org)

### Advertising Initiative

- Children's Food and Beverage Advertising Initiative of the Better Business Bureau
  - Pledge to limit their marketing of foods to children to products meeting nutrition criteria
  - Of chains, only Burger King and McDonald's participate

### Steering Parents Toward Healthier Options

- #1 impactful recommendation: *beverage choice*
- Empower parents to choose chains that offer healthier options for kids
- Give concrete examples of kid meal options or sharing meals with parents instead

## Taking Care of Baby Teeth



## What Causes Cavities

- Tooth adherent bacteria (mostly mutans streptococci (MS))
- Metabolizes sugars to produce acid
- Over time, acid demineralizes tooth enamel and causes cavities



## Dental Caries or Cavities

- Is considered an infectious disease
- Most prevalent infectious disease in U.S. children; > 40% have cavities by kindergarten
- Thirty - two times more likely in infants of low socioeconomic status, who consume a diet high in sugar and whose mothers have a low education level

## Health Effects: Severe Dental Caries

- Can affect child growth
- Result in pain and more serious infection
- Can diminish overall quality of life

## Dental Advice: Parents

- Proper oral health care for parents during pregnancy and early parenthood
  - Brush twice daily with fluoride toothpaste
  - Rinse nightly with fluoridated mouth rinse
  - Drink juice only at meals

## Dental Advice: Parents

- Avoid carbonated beverages for the first 30 months of infant's life
- Xylitol chewing gum by mom 2 - 4 times daily impacts child's caries rate



(American Academy of Pediatric Dentistry, 2014)

### Prevention: Start at Birth!

- Colonization of mutans streptococci  
“Vertical” transmission from mom
  - Discourage saliva sharing
- Higher level of mom’s MS level, the higher risk of passing on bacteria

### Prevention: Start at Birth!

- Bacteria can colonize in the folds of the infant’s tongue before teeth erupt
- “Horizontal” transmission from peers, siblings

### Contributing Feeding / Eating Habits

- Night time bottle - feeding and ad lib breastfeeding are associated with caries, but not consistently
- Breastfeeding more than 7 times a day after 12 months associated with increased risk of caries

### Contributing Feeding / Eating Habits



- Night time bottle feeding with juice, repeated use of Sippy or no - spill cup
- Frequent sugar containing snacks or drinks increase risk of caries

### Cariogenic Foods: Tooth Enemies

- Sticky foods: fruit roll ups, dried fruit, sticky candies
- High sugar foods
- Acid containing, sweetened foods: sports drinks, soda, sour candy
- Starchy foods: Crackers, sweet cereals, breads, muffins, dried fruit, cookies, chips



### Tooth - Friendly Foods

- Higher in protein
- Minimal to moderate carbohydrate
- High concentration of calcium and phosphorus

### Tooth Friendly Foods

- Stimulates saliva secretion
  - Cheese
  - Nuts / nut butters (choking hazard)
  - Some vegetables



### Dental Health Guidance from AAPD

- Tooth brushing at first tooth eruption: twice a day with soft toothbrush
- No more than 4 - 6 oz. juice for children 1 - 6 y from a cup as part of meal or snack (AAP)

(American Academy of Pediatric Dentistry, 2014)

### Dental Health Guidance from AAPD

- Delay introduction of juice, preferably until 1 year (AAP)
- Fluoride supplements for children in areas with less than 0.6 ppm fluoride in water supply
- Dental visit by 12 months

(American Academy of Pediatric Dentistry, 2014)

### Practice Points: Oral Health

- Don't put baby to bed with a bottle
- Only put breastmilk, formula or water in a bottle
- Before teeth erupt, wash gums and tongue with a wet washcloth after feedings
- Start oral hygiene with appearance of the first tooth


### Practice Points: Oral Health

- Floss as soon as there are touching teeth
- Most important time to brush is at night after last feeding
- If feeding in the middle of the night, wipe teeth clean after



### Practice Points: Oral Health

- Sip or rinse mouth with water if brushing not an option
- Limit cariogenic foods to meal time when teeth can be brushed
- Add a tooth friendly food to a cariogenic one: cheese with crackers, etc.
- Discontinue bottle by 12 months





**Thank You!**

