

# Pediatric Nutrition, dispelling common myths and current recommendations

Pegah Jalali, MS, RD, CDN, CNSC

Adjunct Professor NYU Department of Nutrition and Food Studies

Clinical Coordinator NYU Langone Health CEC

Pediatric Specialist Middleberg Nutrition

# Outline

- Pregnancy and fetal development
- Breastfeeding and maternal diet
- Introducing solids
- Toddler nutrition and beyond
- Conclusion

# Foods to avoid when pregnant

- High-mercury fish
  - [Seafoodwatch.org](http://Seafoodwatch.org)
- Undercooked or raw seafood
- Undercooked, raw and processed meat
- Raw or undercooked eggs
- Organ meats
- Caffeine
- Raw sprouts and unwashed produce
- Alcohol
- Unpasteurized cheese, milk and produce
- Processed junk food

# Maternal diet and Fetal Development

- Prenatal vitamin: folic acid, calcium, vitamin D, vitamin C
- Choline
  - Neurologic development of fetus
  - Protects against birth defects like Spina Bifida
  - Associated with higher IQ and lower rates of depression in children
  - Concern in vegetarian or vegan mothers, poor quality diet
  - Found in animal products
  - AI for choline at 425 milligrams/per day for women aged 19 and older
  - AI for pregnant women is 450 mg/d; 550 mg/d for lactating women
- EPA and DHA
  - Fish or algal oil
  - Prenatal diet tends to be low
- Maternal lead exposure
  - Neurological deficits
  - Premature birth and low birth weight

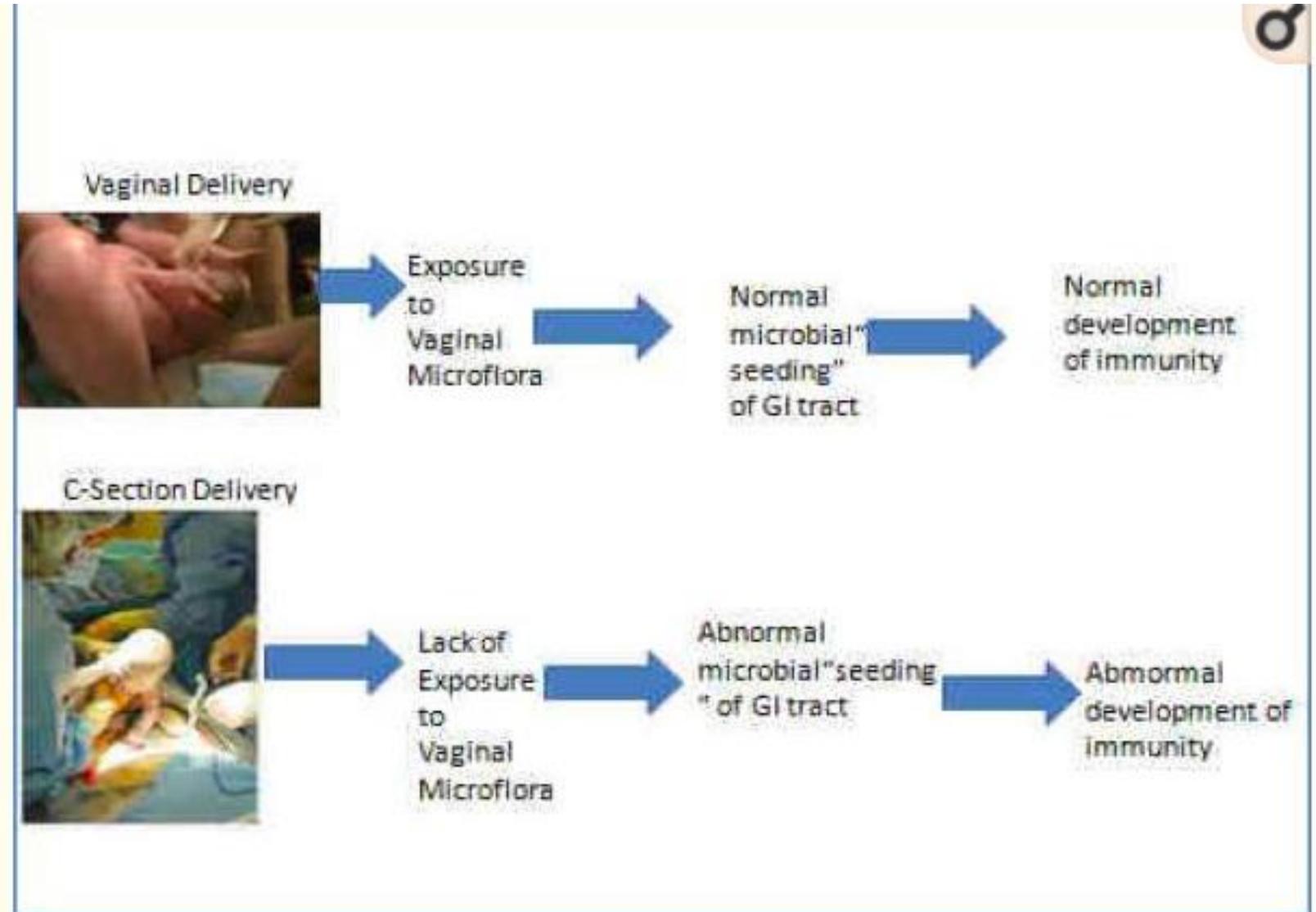
# Allergens during Pregnancy

- Unless the mother has a known food allergy, there is no evidence to avoid allergens like wheat, nuts, peanuts, soy, shellfish, eggs and fish during pregnancy or breastfeeding

# Maternal Diet

- Taste buds develop around 13-15 weeks
- Amniotic fluid is flavored by mothers diet, particularly pungent spices and flavors
- Fetal taste buds predisposed to sweet preference, shown that they take larger volumes when amniotic fluid is sweeter
- By 3<sup>rd</sup> trimester, fetus taking 500mL-1L of amniotic fluid
- Newborns have strong sense of taste, even premature infants will suck harder on sweetened nipple vs. plain rubber nipple
- This is thought to prepare baby to take breast milk which also contains flavors from mothers diet

# Microbiome & Birth



Neu J and Rushing J. Cesarean versus Vaginal Delivery: Long term infant outcomes and the Hygiene Hypothesis. *Clin Perinatol.* 2011 Jun; 38(2): 321–331.

# Breastfeeding & Maternal diet

- Energy and nutrient needs higher during lactation than even third trimester of pregnancy
- BM produced by mammary glands of breast
- The mammary glands draw from diet and stores, so if diet is inadequate, the glands get “first shot” at what is available to make highly nutritious BM, leaving mom at risk
- Quality of milk not largely affected by maternal diet, expect for fatty acid profile similar to that of maternal diet
- Vitamin D levels in breast milk affected by maternal levels

# Infant Diet

- Birth-6 months: exclusive breastfeeding
- Supplements- recommended AAP
  - Vitamin K at birth
  - Vitamin D
    - 400 IU/day started first few days of life for all infants (breast fed + formula fed)
    - Can d/c vitamin D for formula fed infants taking 32 oz/day of formula
    - Breastfeeding mother can take 6400 IU/day, can d/c supplement in infant
- Supplements- these are found in most infant formulas
  - DHA
  - Probiotics

# Introduction to solids

- In the 1950s, it was recommended to start solids at 3 months, over the last few decades research has shown improved outcomes with introduction at 6 months
- Recommended to introduce solids at 6 months- AAP
- Recommended against starting solids before 4 months
  - Does not help a baby sleep through the night
  - Aspiration
  - Food aversion
  - Too much or not enough calories or nutrients
  - Increase risk of obesity later in life
  - Cause GI issues due to underdeveloped GI tract
- Developmentally + culturally assess infant
- No benefit in avoiding allergen introduction, unless there is history of allergy in family

# Breastfed infants vs. Formula fed

- Iron needs
  - 0-6months 0.27mg
  - 6-12months 11mg
- When introducing solids, for breast fed infants – important to introduce iron rich foods
  - Fortified baby cereals, meats, greens
  - Vitamin C can aid in Iron absorption

# Introduction to Solids

- Traditional method: purees
  - Typically start with fortified cereal
  - Parents feed infant
  - Advance by adding 1 new food every 2-3 days
- Baby led weaning
  - Skipping purees
  - Infant led, hand held foods, developmentally ready
  - Family shared mealtimes and food

# Pros and Cons

- Traditional purees
  - Infant diet tends to be more bland
  - More work for parents
  - Less potential for self regulation by infant
- Baby Led Weaning
  - Can be slower process at start, since baby is self feeding
  - Chewing may not be developmentally appropriate
  - Risk of gagging
  - More varied diet
  - Helps foster family meal times
  - Less research

# Purees vs. BLW

- Assess family and cultural preferences
- Provide recommendations best suited for the family
- Solution for most families is usually a combination of purees + BLW
- When introducing solids focus on variety, flavor, consistency
- Open cup for water

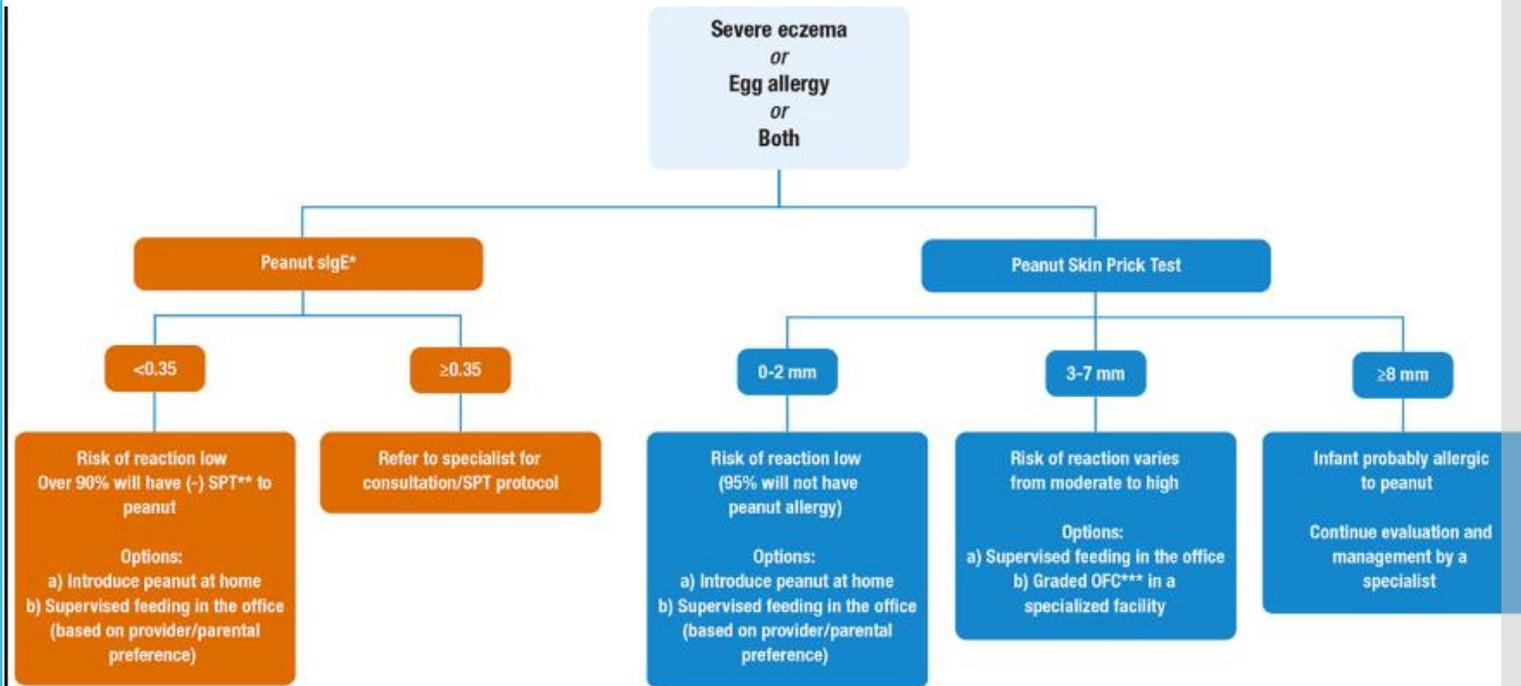
# Choking hazards

- Whole nuts- crush or give cut up pieces
- Sticky food like peanut butter, marshmallows- only give thin coating on bread, in cereal or on fruit (bananas)
- Whole grapes
- Raw apple- cut into small pieces
- Raw carrots- shred
- Round food such as grapes and hard candy- quarter grapes
- Hot dogs- cut into small pieces, not coins
- Popcorn

# Introducing Allergens

- No evidence to delay introduction of common allergenic foods
- National Institute of Allergy and Infectious Diseases (NIAID) + AAP new guidelines recommend introducing peanuts at earlier age to those with increased risk of peanut allergy
- No cows milk until 1 year of age- not for allergy reasons, infant kidney is underdeveloped

# Introducing Allergens



\* To minimize a delay in peanut introduction for children who may test negative, testing for peanut-specific IgE may be the preferred initial approach in certain health care settings. Food allergen panel testing or the addition of sIgE testing for foods other than peanut is not recommended due to poor positive predictive value.

\*\* skin prick test

\*\*\* oral food challenge

# Introducing Allergens- at home

- Allergenic foods: dairy products, peanuts and tree nuts, eggs, soy, wheat, and fish and shellfish
- When introducing allergens, wait 3-5 days between each allergen so that you are able to decipher if they have a reaction
- You also want to make sure they are overall well, and introduce them at a time when you will be watching them and they will not be sleeping for a prolonged period of time. I.e. give them peanuts at dinner then they go to bed for 6 hours.
- Allergic reaction can occur minutes to 2-3 hours from ingesting the food.
- The allergic reaction can manifest as: hives (red and itchy welts) difficulty breathing and swallowing wheezing red, itchy eyes swelling of the tongue and/or lips swelling of the hands and face hoarseness stomach upset, nausea, or vomiting itchy or runny nose and sneezing coughing light-headedness.
- If you notice any of the above, call your pediatrician right away.
- Benadryl at home

## Introducing Allergens- common challenges

- If infants are taking purees, some foods like shellfish, fish, nuts, peanuts and soy are not common purees
- Give parents specific recommendations based on cultural preferences, ie. If they are a kosher family, no need to introduce shellfish
- Dairy: whole milk yogurt, cheese
- Shellfish: shrimp, can puree with avocado
- Fish: cod or salmon, can puree with fruit like mango
- Eggs: hard boiled pureed, scrambled or pancake cut up
- Peanuts: Peanut puffs, powdered peanut can be added to infant cereal, thin smear of peanut butter on toast or bananas, baked goods
- Nuts + seeds: see peanuts, hummus contains sesame seeds
- Soy: pureed edamame, can be mixed with fruit purees

Meal time



# Meal time



# Importance of Family Meal times

- Infants and toddlers learn behaviors by modeling
- They are more likely to eat foods they see others eating (as they get older they will look to their peers for this influence)
- Family meal times are associated with desirable eating habits- eat more fruits and vegetables, less juice + soda
- Numerous psychological and behavioral benefits

# Making meal times less stressful

- If infant if being fed purees parents should monitor appropriate cues for fullness, and avoid force feeds
- If infant or toddler not interested in eating then, parents should not nag or coax them to eat
- Offer a variety, always including a safe food
- Family style
- Play music, no other distractions (ipad, tv)
- Infants, toddlers have lower threshold for meal times, realistically can sit at table 10 minutes, more as they get older
  - Use a timer for an older child, increase as necessary

# Meal + Snack Routines

- Infants typically feed on demand
- Toddlers should be on a set a meal + snack time routine
- Make sure to account for snacks provided at day care/preschool
- Try to keep schedule as consistent as possible
- Meals and snacks should only be eaten in high chair, avoid feeding in car seat, stroller or while child is playing/walking around

# Parents Provide Children Decide

- Ellyn Satter
- Parents are responsible for choosing and providing food in a consistent schedule
- Children decide if and how much they want to eat
- Make sure parents understand if children are not hungry, then that is ok, their appetite waxes and wanes

# Common issues- infant feeding

- Parents do not advance consistency of textures, from thinner purees to thicker purees to more chewable textures
- Lack of variety, "my baby does not like..."
- Pouches
- Non nutritive snacks- puffs

# Common issues- toddler feeding

- Food neophobia
- Constipation
- Juice
- Alternative milks

# AAP Juice

AMERICAN ACADEMY OF PEDIATRICS

## DAILY JUICE RECOMMENDATIONS



Fruit juice offers no nutritional benefits over whole fruits. Whole fruits also provide fiber and other nutrients.

Age:	Recommendation:
Younger than 12 months	Do not routinely give fruit juice to infants younger than 12 months since it offers no nutrition benefit at this age.*
1 to 3 years	Limit fruit juice to a maximum of 4 ounces per day (½ cup). Do not allow your child to carry a cup or box of juice throughout the day.
4 to 6 years	Limit fruit juice to a maximum of 4 to 6 ounces per day (½ cup to ¾ cup). Do not allow your child to carry a cup or box of juice throughout the day.
7 to 18 years	Limit juice to 8 ounces per day (1 cup).

\*The American Academy of Pediatrics recommends breastfeeding as the sole source of nutrition for your baby for about 6 months. When you add solid foods to your baby's diet, continue breastfeeding until at least 12 months. You can continue to breastfeed after 12 months if you and your baby desire. Check with your child's doctor about the recommendations for vitamins D and iron supplements during the first year.



healthychildren.org  
Powered by pediatricians. Trusted by parents.  
Join the American Academy of Pediatrics.

Policy Statement: Heuman WS, Abrams SA, and the AAP Section on Gastroenterology, Hepatology, and Nutrition and Committee on Nutrition. Fruit Juice in Infants, Children, and Adolescents: Current Recommendations. Pediatrics. 2017;139(5):e20162967.

Copyright © 2017 American Academy of Pediatrics

# Juice

- CHO load
- Fructose excessive
- Microbial safety in young children
- 'empty calories'
- Replaces food due to volume
- Replaces more nutritious food like milk – nutrition!

# Food Neophobia

- Between 2-5 years children become resistant to trying new foods
- Dietary variety can diminish to a few accepted favorites
  - This is NORMAL
- Favorites rotate
  - This week it may be carrots and chicken nuggets
  - Next week it may be something completely different
  - This is also normal

# Food Neophobia

- Young children often prefer sweet & slightly salty foods but will reject sour & bitter foods
- It is important to continue to offer variety – may need to try new food 10-15 times or more before accepted
- Important for parents to be a good role model
- Avoid encouraging child to “clean your plate”, this sets up for food battles and does not allow the child’s internal regulation

# Food neophobia

- Continue to offer variety of foods, always making sure there is a safe food
- Continue meal structure
- Continue family meals
- Discourage distractions at meal times
- Discussing appropriate language/vocabulary with parents about food
- To relieve pressure from toddler, consider multivitamin
- Engage toddlers in food outside of meals
  - Gardening, going to the farmers market or grocery store
  - Making a recipe together, can be as simple as helping put fruits in blender
  - Reading books about food or other picky eaters
  - Sensory play with food

# Alternative milk

- Infants must take formula or breast milk until 1 year of age
- Although cows milk recommended when transitioning into toddlerhood, not always necessary (16-24oz/day from 1-3 yrs)
- Some toddlers have a varied nutritious diet and alternate sources of calcium (yogurt, cheese, sesame seeds, greens, fortified milks)
- Only issue in toddlers with poor diets, relying on alternative milks like rice milk- too low in protein or soy milk- not always calcium fortified

# Alternative milk

- Tend to be low in fat, protein and nutrients
- Not all created the same
- Example Ripple milk
  - 8 g of protein vs. 8 g in cow milk
  - Pea protein
  - Similar amount of fat as 2% milk- sunflower oil + algal oil
  - Fortified with calcium, vitamin D, DHA
- Example Orgain unsweetened almond milk vanilla
  - 10 g of protein vs. 8 g in cow milk
  - Almond + pea protein
  - Similar amount of fat as 1% milk (low)
  - Fortified with calcium, vitamin D, Iron and Phosphorous



# Conclusion

- NO JUDGEMENT
- Treat each infant, toddler individually based on their history, development, family and culture
- Most of the time, when working with family, more than one issue, identify the most harmful and work from there
- Give concrete solutions, that the family can implement beyond a handout with iron rich food sources
- Multiple visits, check ins, phone calls, messages

Questions,  
interested in  
resources?

- Email me at [pegah@middlebergnutrition.com](mailto:pegah@middlebergnutrition.com)