Pregnancy & Post-Partum Nutrition

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Dietary Reference Intakes

• Recommended Dietary Allowance
  “the average daily dietary intake level; sufficient to meet the nutrient requirements of nearly all (97-98 percent) healthy individuals in a group”

• Estimated Average Requirements
  “the average daily nutrient level estimated to meet the requirements of half of the healthy individuals in a group”

• Adequate Intake
  “is believed to cover the needs of all healthy individuals in the groups, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of individuals covered by this intake”

Source: https://www.nal.usda.gov/fnic/dri-tables-and-application-reports
Key Nutrients to Discuss

- **Energy** (calories)
- **Protein**
- **Omega 3 Fatty Acids** (ALA)
- **Folate/Folic Acid**
- **Vitamin D** - no change from non-preg. -> preg. -> lactating
- **Calcium** - no change from non-preg. -> preg. -> lactating
- **Choline**
- **Iron**
Energy (calories)

• Pregnancy
  • No extra in first trimester!
  • Increased needs in 2\textsuperscript{nd} & 3\textsuperscript{rd} trimesters (see reference)
  • Not “eating for 2”... cals should come from nutrient dense sources (yogurt, whole grains, proteins, fruit/veg)

• Postpartum
  • Lactating- + 500 (0-6 mo.) or +400 (6-12 mo.) calories a day
    • Depends on age of baby & how much milk is being produced
    • Eating this will maintain weight... not lead to weight loss
    • Eating less may lead to weight loss, this will not impact milk supply unless VERY low calories (1200 or less)
    • May be hard to eat less... body will be HUNGRY!
  • Non-Breastfeeding- back to normal/pre-pregnancy level
    • If healing from C-section/surgery, may have other additional needs (vitamin C, protein)
Protein

- RDA: 71g throughout pregnancy & lactation (multiples: + 25 g/baby)
  - 1.1g/kg (pre-pregnancy weight reference)
    - 130 lb. woman = 65 g/day
    - 160 lb. woman = 80 g/day
  - Non-pregnant (post-partum non-breastfeeding): 46g
    - Based on .8g/kg
- EAR: .88g/kg
  - 130lb woman = 48g/day
  - 160lb woman = 64g/day


Key: Pounds/2.2= kg
Protein- alternate hypothesis

- 2\textsuperscript{nd} & 3\textsuperscript{rd} trimester- 21g/day deposited into fetal, placental and maternal tissue
  - Note- not much in the 1\textsuperscript{st} trimester
- Research to explore needs as pregnancy progresses
  - 1.2g/kg at 16 weeks (2\textsuperscript{nd} tri)
    - 130 lb. woman = 71 g/day (same as RDA)
    - 160 lb. woman = 87 g/day
  - 1.5g/kg at 36 weeks (3\textsuperscript{rd} tri)
    - 130 lb. woman = 89 g./day
    - 160 lb. woman = 109 g./day

Inadequate Protein

• First... baby takes from mom!
• Then... baby may not grow & develop adequately
  • Increased risk of small for gestational age or intrauterine growth restriction
  • Adequate protein supplementation showed a 31% decreased risk of SGA- study based on undernourished women at conception
    • Nutritional status at conception is VERY important
    • Important to refer for nutritional counseling when a woman comes into pregnancy underweight and/or under-nourished
    • Important to address in non-pregnant women... in prep for next pregnancy

Imdad and Bhutta BMC Public Health 2011, 11(Suppl 3):S17
Protein

• Takeaways:
  • Should not be 1 size fits all
  • Protein needs affected by:
    • Weight
    • Physical activity level
    • Age & life stage
    • Disease states
    • Recovery (surgery...c-sections)
  • Most people who eat a wide range of food (not on restricted diet) easily meet these requirements
  • Vegetarians- need to make an effort in trimesters 2 & 3
  • Underweight/under-nourished women should be referred to an RD early, and be followed for adequate intake
Omega 3s (ALA) - (1.4g/day)

• Long Chain Polyunsaturated Fatty Acids (LCPUFA)
  • “Essential” nutrient - your body cannot make it
  • Anti-inflammatory, heart healthy, found most abundantly in brain and retinol tissue
• Sources:
  • ALA= Walnuts, fatty fish, greens, flax, some veg oils
  • DHA= fatty fish primarily (salmon, tuna, herring); fortified foods & supplements (fish oil or algal oil)
• Aim for 200-250mg DHA (or more - supplements vary in quality)
• Our bodies are VERY inefficient at converting ALA to EPA and DHA, cannot rely on just plant sources for DHA
• Inconclusive if DHA intake in pregnancy & lactation have a significant impact on infant/child brain or vision development (not enough research!)

Key Vitamins

• Folate/Folic Acid (600mcg./day)
  • Vital for neural tube development, closure
  • Easy to get in diet if eating fortified grains, cereals
  • Folate naturally found in wide variety of fruits/vegetables, beans/peas
  • Upper limit is 1,000mcg./day

• Vitamin D (600 IU/day)
  • Sun exposure, some foods have vitamin D
  • Upper limit is 4,000 IU/day
  • Evidence that 4000 IU/day is safe for pregnant women, and will increase maternal and neonatal blood concentrations¹
  • Evidence that 6,400 IU/day in lactating mothers will provide needed 400 IU/day for nursing infants without any² complication.
    • Otherwise nursing infants need supplement of 400 IU/day

2. Journal of Breastfeeding Medicine, Vol. 1, No. 2, June 2006,
Calcium

- Calcium (1000 mg./day for 19 yrs. and older)
  - No change between stages (non-preg., preg., lactating)
  - Key nutrient recommended in pregnancy - body does need MORE
  - Body self-regulates and excretes less (more efficient), and will absorb more in gut
  - Important to get this rec. amount, otherwise mom’s reserves will be drained to support baby
Choline (450 to 550 mg./day)

- Vital role in fetal brain development; may enhance learning and memory function
- Sources: Beef liver (338mg), egg yolks (150mg), dairy (170 mg/cup), cauliflower/shiitake mushrooms/leafy greens, Brussel sprouts have about 25-50 mg./100g.
- May be difficult to get enough from food, look for amounts in supplement
Iron

• 18mg -> 27mg -> 9mg (while lactating/non-menstruating)
• Best to enter pregnancy with normal iron
• Sources: meat (esp. red meat), tofu, fortified cereals, dark chocolate, lentils, beans
• Better absorbed if “heme” iron (animal based); and also better absorbed with vitamin C.
• High levels of calcium (and other 2+ minerals) can reduce absorption
• Body will adjust absorption based on need
Iron

• Too little iron: Anemia
  • Mom would be tired/lethargic, affects immune system
  • Baby may not grow as well, may affect development (if mom is very anemic, ongoing); risk of pre-term labor

• Too much iron
  • GI distress, your body can only absorb a small % at a time, the rest if oxidized in the gut and can cause gas or constipation
  • Can be toxic

• Important to measure iron levels, educate based on individual. Emphasize food instead of supplements.
Hydration

• Adequate intake
  • 3 liters (about 12 cups) per day for pregnancy
  • 3.8 liters (14-15 cups) per day for lactation

• *Includes ALL sources of fluid*
  • About 20% comes from food (esp. fruits and veg)
  • All beverages, even coffee/tea (limit caffeine)
    • Caffeine itself is not dehydrating unless at higher levels than accustomed to, however too much caffeine can possibly affect baby (in utero or through milk)
  • Obviously water is ideal
  • Color of urine is a good indicator of hydration (look for pale yellow/straw colored)
Supplements

• Most needs of pregnancy and lactation can be met through diet
  • Foods will always absorb better than supplements
  • Need to assess intake before assuming supplement is needed

• Some nutrients are challenging for some people
  • Iron
  • Choline
  • Vitamin D
  • Possibly calcium, some B vitamins

• 1.5 times children’s “complete” vitamin is essentially the same as a prenatal (and tastier, and cheaper!)

• May not need supplements daily... it is only meant to fill in the gaps, not to give you 100% of everything

• Pre-pregnancy nutrient status is important, encouraging healthy intake, and a regular multivitamin most days for non-pregnant (who may become pregnant) is also vital.
Pregnancy - what is going on?

• Trimester 1:
  • Fertilization, implantation... ball of cells start to differentiate into a human with all its parts
  • At 8 weeks, size of a jelly bean! At 13 weeks, size of a pea pod!
  • For mom:
    • Extreme hormone shifts + Increased blood volume
    • Relaxed muscles (GI tract); nausea/vomiting; heartburn; slowed digestion/constipation; changes in absorption (gut); sensitivity to smells/tastes (cravings/aversions); fatigue
  • Altered diet due to symptoms
    • Decreased appetite, changes in pattern, taking supplement?
Trimester 1- recommendations

• Don’t worry about eating *more*
  • No extra calories, limited evidence of need for extra protein during this time (if not malnourished at conception)
  • Focus on small, frequent meals (helps with slowed GI function, nausea, etc.)
  • Nutrient dense foods, fiber!
  • Consider basic supplement if diet is lacking, and especially if woman is on restricted diet or was underweight pre-pregnancy
  • Drink lots of water, eliminate alcohol, cut down on caffeine (1-2 cups coffee per day)
  • Food safety! Cook foods well; no sushi or raw sprouts; no unpasteurized dairy; wash hands, etc. etc.
  • Avoid high mercury fish- encourage low mercury, fatty fish a couple of times per week
Trimester 2 - recommendations

• Baby is GROWING and DEVELOPING rapidly now
• Increase calories and protein appropriately
• Ensure nutrient dense diet, fiber!
• Iron (hgb) levels appear lower in this trimester - due to increase blood/water volume, this is normal
  • However, baby’s growth and development mean it is important to ensure adequate intake!
• Lots of water/hydration!
• Enjoy- this is the best trimester 😊
Trimester 3

• May start having GI symptoms again (or maybe they never went away?)
  • Heartburn, constipation, feeling full due to baby pushing on stomach

• Small, frequent meals

• Increase protein significantly... every meal and snack should have good quality protein by now

• Increase (healthy) calories to meet needs
  • Especially protein, iron, calcium, vitamin D... baby will take some of this with them into the world!
Lactation

• Experience will vary from woman to woman
  • Full term birth?
  • Adequate iron status throughout pregnancy?
  • Blood loss significant in birth?
  • C-section vs. vaginal birth
  • Complications of pregnancy (diabetes, high blood pressure, pre-eclampsia)? May need f/u with specialists.
Lactation

- Assuming healthy delivery...
  - All of a sudden there is room in there! Easier to eat now!
  - Continued need for higher calories, protein, certain nutrients, hydration
    - May be ravenous as milk production increases, this is normal
  - If taking opioid pain meds (common after c-section), may experience constipation- hydration & fiber are important (in addition to stool softeners)
Lactation and weight loss

• Possible... but not guaranteed
  • Yes, you use extra calories to make milk, but you will probably eat them up!
  • You may not be able to exercise for a bit... baby is attached to you, may not be sleeping well, recovery from birth
  • Have realistic expectations, set goals for after recovery

• Some weight comes off the first few weeks due to fluids/blood volume normalizing

• Getting back to “normal” calories during this time is OK- will not reduce milk supply, but may mean you need a supplement for higher micronutrient needs
Individual Assessment

• Ask open ended questions...
  • “tell me about how you are eating”, or even, “what kinds of things do you like to eat for breakfast”?
• Allow mom to tell you all about her- not every woman needs the same recommendations
  • Does she eat several meals & snacks per day?
  • Is she eating a variety of fruits/veg every day? Quality protein throughout day?
  • Plenty of fiber, fluids, iron-rich foods?
  • Does she look healthy? Any reported issues with deficiency in the past or present?
  • Is she knowledgeable about nutrition and motivated to eat healthy?
• Provide information and recommendations relevant and helpful to HER. Do not regurgitate the same information to everyone.