



EXECUTIVE SUMMARY- Perinatal

Name of Expert Review Group:

Perinatal Expert Review Group

Member:

Erin Hunter, RD

Site:

Clinical Dietitian, Health Sciences Centre

Diets Included in the Review: (please list)

Partum

Revised Diet Terminology: (please list)

Perinatal

Rationale: (Overall Purpose, Goals, etc.)

To review the nutritional needs of perinatal patients (pre- and post-natal) in order to develop a standardized compendium diet. Nutrients are the same as the Standard Diet (for 18 – 69 year olds) unless otherwise stated.

The goals of the Perinatal Expert Review Group are to:

1. Ensure nutritional needs of pregnant and lactating individuals are being met. Specifically, nutrients of concern or that may differ from the needs of individuals who are not within this population, which includes:
 - Energy
 - Protein
 - Fibre
 - Fluid
 - Calcium
 - Vitamin D
 - Folate
 - Iron
 - Zinc
 - Vitamin B12

2. Examine and create recommendations for the following key nutrition issues in relation to pregnancy:
 - Vegetarian diets
 - Caffeine consumption
 - Food safety concerns such as fish and mercury and the prevention of food borne illness infections
 - Safe use of herb and herbal teas
 - Artificial sweeteners
 - Meal pattern

Recommendations:

1. **Energy:** Additional 340 – 450 kcals for pregnancy or breastfeeding from all food sources.
2. **Protein:** DRI for pregnancy is 1.1 g/kg/day.
3. **Fibre:** 28 - 29 g / day. Meal trays will provide 18 – 25 g. Nourishments to provide additional fibre to meet goal.
4. **Fluid:** 3.0 – 3.8 L / day. Additional fluid to be provided on patient unit to meet goal.
5. **Calcium:** 1000 – 1300 mg / day.
 - Minimum intake of 1000 mg/ day may be achieved with double portions of cow's milk (120ml) or 1 portion of fortified soy milk (250ml) at meals 3 times a day to provide 720-750 mg of calcium.
 - 1 serving of vanilla or fruit flavored yogurt and 1 serving of light cheese portion supplied as nourishment daily can provide an extra approximate 325 mg of calcium daily.
 - Milk should be offered as first choice of beverage rather than juice.
6. **Vitamin D:** 600 IU (15 µg) / day. A daily prenatal multivitamin plus 300 IU per day to be provided with meal trays is recommended.
7. **Folate:** 600 µg / day. Achieved with healthy diet according to Eating Well with Canada's Food Guide and supplementation with a daily prenatal multivitamin.
8. **Iron:** 27mg / day for pregnancy, 9 mg / d for lactation. Achieved with healthy diet according to Eating Well with Canada's Food Guide and supplementation with a daily prenatal multivitamin
9. **Zinc:** 11 – 12 mg / day. Adequate intake can be achieved through a healthy diet, which includes food sources high in zinc, such as meat, seafood, legumes, nut/seeds, whole grains, and fortified cereals every day. Taking a daily prenatal multivitamin helps ensure needs are met for both vegetarian and non-vegetarian women.
10. **Vitamin B12 / Vegetarian Diets:** 2.6 – 2.8 µg / d of vitamin B12. Dairy products and eggs are reliable sources of vitamin B12 for those vegetarians who include these foods in their diet. In addition to a healthy diet according to Canada's Food Guide, intake of a daily prenatal multivitamin is recommended to ensure DRI intakes of iron, zinc, and vitamin B12 needs are met for pregnant and lactating vegetarian and vegan women.
11. **Caffeine:** Maximum 300 mg caffeine / day. The exact amount of caffeine in hot beverages varies, but by limiting coffee and tea to two 250 mL servings / day (or two to three 180mL servings / day) the maximum intake should not be exceeded.
12. **Food Safety:** Follow safe food handling practices including washing hands and food preparation surfaces well. The following foods should be avoided during pregnancy due to an increased risk of foodborne illnesses:
 - Raw or unpasteurized dairy products, fruit juices or cider.
 - Soft and semi-soft cheeses (e.g. Brie, Camembert, chèvre, feta), blue-veined cheeses (e.g. Danish blue, Roquefort, Gorgonzola), and Hispanic-style fresh cheeses (e.g. queso blanco, queso fresco, queso panela).
 - Refrigerated pâtés, meat spreads and smoked seafood.
 - Pre-packaged or prepared fruit/vegetable salads. Assumption: WRHA Nutrition and Food Services products are washed thoroughly and considered safe.
 - Ready-to-eat deli meats and ready-prepared meals unless they are reheated until steaming hot (internal temperature of 74°C).
 - Raw or undercooked meat, poultry, shellfish and eggs.
 - Raw sprouts.
13. **Fish:**
 - Avoid tuna (fresh or frozen), shark, swordfish, marlin, orange roughy and escolar.
 - Serve 2 servings of low mercury fish weekly to help meet DHA needs during pregnancy.
 - Limit canned Albacore "white" tuna to 300 grams per week. Canned "light" tuna is not limited.
14. **Herbs and Herbal Teas:**
 - The following herbs may be provided in levels commonly found in foods or as herbal teas in moderation

(max. 2-3 cups / day): bitter orange/orange peel, echinacea, ginger, peppermint, red raspberry leaf, rose hip and rosemary.

- The use of herbal supplements during pregnancy and lactation should be limited and reviewed with qualified Healthcare Providers.

15. Artificial Sweeteners:

- Food or beverages containing acesulfame potassium, aspartame, D-tagatose, neotame, stevia glycosides, sucralose, thaumatin, or sugar alcohols may be provided, as long as these products do not displace more nutritionally dense choices.
- Avoid food or beverages containing saccharin and cyclamates, although these may be provided as a table-top sweetener.

16. Meal Pattern:

- Provide 3 regular meals daily plus one or more between meal nourishments.
- Nourishments should focus on nutrient dense foods to help meet higher needs during prenatal period. These should include calcium-rich dairy products (cheese, yogurt, and puddings), fresh fruit and vegetable, and whole grains.
- For the individual dietary management of nausea and vomiting during pregnancy, provided a diet consisting of small, frequent, bland meals, limited in fat and sugar sweetened beverages, with low odor.

Evidence Review:

1. Energy:

- In pregnant and lactating women, the estimated energy requirement (EER) accounts for extra energy needed for growth, deposition of tissues, and secretion of milk at rates that are consistent with good health¹.
- The EER for pregnancy = non-pregnant EER + pregnancy energy deposition, which is an extra 0 kcal/d in the first trimester, 340 kcal/d in the second trimester, and 450 kcal/d in the third trimester of pregnancy¹.
- The EER lactation = non-pregnant EER + milk energy output – weight loss. In general this is an extra 330 kcal/d 0-6 months post-partum, and an extra 400 kcal/d 7-12 months post-partum.¹

2. Fat:

- The recommended intake of fat during pregnancy and lactation remains the same as that of a non-pregnant or lactating individual.¹

3. Carbohydrate:

- The recommended intake of carbohydrates and added sugars during pregnancy and lactation remains the same as that of a non-pregnant or lactating individual.^{1&2}

4. Protein:

- Additional protein is needed during pregnancy for protein disposition. The dietary reference intake (DRI) recommendation for protein intake during pregnancy is 1.1 g/kg/day based on pre-pregnancy body weight or ideal body weight (if the pre-pregnant weight is greater than ideal).
- The additional protein needed during lactation is based on the output of protein and non-protein nitrogen in breast milk. The DRI recommendation for protein intake during lactation is 1.3 g/kg/day.¹
- The additional amount of protein needed during pregnancy and lactation falls within the Standard Diet (for 18 – 69 year olds) based on a 57 kg reference point.

5. Fibre:

- The DRI recommendation for total fibre intake during pregnancy and lactation is 14g/1000 kcal multiplied by median energy intake level from the Continuing Survey of Food Intakes by Individuals (CSFII 1994-1996, 1998).¹
- Total daily fibre expressed as g/day is based on g/1000 kcal multiplied by median energy intake (CSFII 1994-1996, 1998). These values are 28 g/day for pregnancy and 29 g/day for lactation.¹
- Fibre rich foods are available to meet additional needs not provided on trays.

6. Fluid:

- The DRI for total fluid intake in pregnancy is 3.0 L / day, and 3.8 L /day for lactation. Total fluids include fluids in food, beverages, and drinking water.¹

7. Sodium:

- The recommended intake of sodium during pregnancy and lactation remains the same as that of a non-pregnant or lactating individual.¹

8. Calcium:

- The DRI recommendations for calcium during pregnancy and lactation are the same as those for non-pregnant and lactating women of their age range because calcium-regulating hormones adjust maternal

calcium absorption efficiency.¹

- The DRI for calcium during pregnancy and lactation is 1300 mg/d for women ≤ 18 years old.¹
- The DRI for calcium during pregnancy and lactation is 1000 mg/d for women 19 - 50 years old.¹
- Pregnant women may not be consuming adequate amounts of calcium. Natural calcium-rich foods are the preferred source of calcium since these foods provide a variety of necessary nutrients that are not present in calcium supplements (Grade A).³

9. Vitamin D:

- The DRI for vitamin D during pregnancy and lactation is 600 IU (15µg) daily.¹
- Six 120ml portions of cow's milk (or 3 250ml portions of fortified soy milk) provide approximately 300IU daily.
- Vitamin D supplementation in the form of a daily prenatal multivitamin is encouraged to ensure needs are met.

10. Folate:

- The DRI for folate during pregnancy is 600 µg daily.¹
- The DRI for lactation is 500 µg daily.¹
- Health Canada recommends that women of child bearing age eat a healthy diet according to the Eating Well with Canada's Food Guide and consume a daily multivitamin that contains 400 µg of folic acid to prepare for a healthy pregnancy and reduce the risk of the baby developing neural tube defects.⁴

11. Iron:

- The DRI for iron in pregnancy is 27 mg/ d.¹
- The DRI for iron during lactation is 9 mg/ d for women 19 – 50 years old.¹
- Health Canada recommends eating according to the Eating Well with Canada's Food Guide and taking a daily prenatal multivitamin that has 16 – 20 mg of iron during pregnancy.⁵
- Because vegetarians rely on plant sources of iron, their iron needs are higher. Supplements to meet iron needs may be required.⁶

12. Zinc:

- The DRI for zinc is 11 mg / d during pregnancy and 12 mg / d during lactation for women 19 – 50 years old.¹
- Adequate intake can be achieved through a healthy diet, which includes food sources high in zinc, such as meat, seafood, legumes, nut/seeds, whole grains, and fortified cereals. Taking a daily prenatal multivitamin helps ensure needs are met for both vegetarian and non-vegetarian women.

13. Vitamin B12 / Vegetarian Diets:

- The DRI for vitamin B12 is 2.6 µg/ d during pregnancy and 2.8 µg / d during lactation.¹ To prevent vitamin B12 deficiency in infants born to mothers who are vegetarian/vegan it is recommended that pregnant and lactating women achieve, on average, the DRI value for vitamin B12. This includes consuming foods, beverages, fortified foods and/or supplements that are reliable sources of vitamin B12 each day.⁷
- Vegans who exclude all animal products require a source of vitamin B12 either from foods fortified with vitamin B12, nutritional yeast, or a supplement.⁶
- The daily consumption of a source of vitamin B12 is needed during lactation to prevent deficiency in infants as maternal intake has an influence on the secretion of the vitamin in milk. Dairy products and eggs are reliable sources of vitamin B12 for those vegetarians who include these foods in their diets. For vegans, vitamin B12 must be obtained daily by including vitamin B12-fortified foods and/or a vitamin B12 supplement. Foods containing vitamin B12 should be included at least two times per day or a supplement that provides at least 5 µg should be taken once per day.⁷
- Health Canada advises that pregnant women take a prenatal multivitamin containing vitamin B12 every day.³

14. Caffeine:

Health Canada recommends that women of reproductive age consume no more than 300mg of caffeine per day.⁸

15. Food Safety:

During pregnancy, the higher production of progesterone causes a woman's immune system to become suppressed making it more difficult to fight off infections and increasing the risk for foodborne illness, notably listeriosis, toxoplasmosis, campylobacteriosis and salmonellosis. The consequences of foodborne illness can be particularly devastating during pregnancy because both the woman and her fetus are at risk.⁹

- The following foods have been identified as high risk for Listeria contamination, and should be avoided during pregnancy:
 - Raw or unpasteurized dairy products, fruit juices or cider.
 - Soft and semi-soft cheeses (e.g. Brie, Camembert, chèvre, feta), blue-veined cheeses (e.g. Danish blue, Roquefort, Gorgonzola), and Hispanic-style fresh cheeses (e.g. queso blanco, queso fresco, queso panela).
 - Refrigerated pâtés, meat spreads and smoked seafood.
 - Pre-packaged or prepared fruit/vegetable salads and raw sprouts.
 - Ready-to-eat deli meats and ready-prepared meals unless they are reheated until steaming hot (internal temperature of 74°C).
 - Raw or undercooked meat, poultry, seafood and eggs.⁹
- The following recommendations relate to reducing risk of Toxoplasma, Campylobacter and Salmonella

infections:

- Avoid unpasteurized milk products and juices.
- Avoid raw or undercooked meat, poultry, shellfish and eggs.
- Rinse fresh fruits and vegetables thoroughly.
- Avoid raw sprouts.
- Follow safe food handling practices including washing hands and food preparation surfaces well.⁹

16. Fish:

- Fish contributes to a healthy diet during pregnancy; however, high levels of methylmercury (MeHg) exposure *in utero* and in early childhood when the brain is still developing are associated with irreversible neurological problems in infants and children.³
- All populations should include at least two servings a week of an age-appropriate portion of low mercury fish and shellfish. A variety of fish and shellfish should be chosen, especially if more than two servings are consumed per week. Fish and shellfish that are low in mercury and good sources of omega-3 fatty acids include anchovy, capelin, char, hake, herring, Atlantic mackerel, mullet, pollock (Boston bluefish), salmon, smelt, rainbow trout, lake whitefish, blue crab, shrimp, clam, mussel and oysters. Canned light tuna also has a low mercury content.³
- Health Canada recommends that women who may become pregnant, are pregnant and/or are breastfeeding are advised to limit consumption of frozen/fresh tuna, shark, swordfish, marlin, orange roughy and escolar to 150 grams per month.³
- Albacore ("white") canned tuna has more mercury than canned light tuna. Health Canada recommends that women who may become pregnant, are pregnant and/or are breastfeeding may consume up to 300 grams of canned albacore tuna per week.³

17. Herbs and Herbal Teas:

Pregnant women should avoid using the following herbs due to documented adverse effects. Lactating women should avoid using the following due to documented adverse effects or due to insufficient reliable information on the safety of their use during lactation:

- blue cohosh
- calendula (Marigold)
- dong quai
- ephedra
- ginko
- juniper
- licorice (as an herb)
- passionflower
- pennyroyal
- sage
- thuja
- uva-ursi³

The consumption of the following herbs in pregnancy and lactation should be limited to the amount commonly found in foods or consumed in moderation as an herbal beverage (two to three cups per day). The consumption of herbal beverages should not displace more nutrient-dense beverages in the diet (i.e. milk and alternatives). Supplements of these herbs (tablets, capsules or extracts) are not recommended due to potential adverse effects:

- bitter orange/orange peel
- echinacea
- peppermint
- red raspberry leaf
- rose hip
- rosemary³

Pregnant and lactating women should avoid using the following herbs as there is insufficient reliable information available to recommend their use:

- fennel – documented adverse effect during lactation.³

Pregnant women should avoid using the following herbs due to documented adverse effects. Lactating women should avoid using the following due to documented adverse effects or due to insufficient reliable information on the safety of their use during lactation:

- aloe
- black cohosh
- buckthorn
- chamomile
- chaste tree (Chasteberry)

- coltsfoot
- comfrey
- evening primrose oil – pregnancy only; safe during lactation
- feverfew
- ginseng - during first trimester; caution advised during later stages of pregnancy and during lactation
- kava
- labrador tea
- lobelia
- sassafras
- senna – long-term, frequent or high doses; in the short-term, small amounts safe during pregnancy and lactation
- St. John's wort
- tea tree oil³

Pregnant and lactating women should avoid using the following herbs as there is insufficient reliable information available to recommend their use:

- burdock
- hops
- Japanese mint
- red bush tea (Rooibos tea)
- lemon balm
- linden
- valerian
- wild yam
- fennel – insufficient reliable information on safety during pregnancy³

18. Artificial Sweeteners:

- Acesulfame potassium, aspartame, D-tagatose, neotame, stevia glycosides, sucralose, and thaumatin have been approved in Canada for use during pregnancy and lactation at or below their Acceptable Daily Intake (ADI).³
- Saccharin and cyclamate have been approved in Canada as table-top sweeteners but are not permitted for use in food products at the present time.³
- Health Canada advises that the consumption of approved sugar alcohols do not pose a health risk during pregnancy but cautions that the use of products containing these sweeteners should not replace more nutrient dense foods.³

19. Meal Pattern:

- “Women adhering to regular main meals had a significantly reduced risk of preterm delivery. This meal frequency pattern included eating breakfast, lunch, and dinner on a regular basis, with a median of one additional snack per day.” This study highlights to potential impact of a regular, frequent eating pattern during pregnancy on infant health.¹⁰
- Anecdotal evidence suggests that eating small, frequent meals consisting of bland foods, avoiding fatty foods such as potato chips, and avoiding drinking cold, tart, or sweet beverages helps in the management of nausea and vomiting during pregnancy. Other advice has been to avoid sensory stimuli, particularly strong odours.¹¹

Practice Changes:

- New CBORD diet to meet the needs of prenatal and lactating individuals based on most up to date evidence.
- The recoding of the CBORD data base for any new items considered non-compliant.
- Review the nourishment provisions to ensure all nutrient needs are being met.
- Update contract specifications for non-compliant foods.
- Increase minimum number of servings of fruit and vegetables to 7 servings per day.
- Increase minimum number of servings of grain products to 6 servings per day and ensure that at least half are whole grain.
- Increase milk to double portions of cow’s milk (120ml) or 1 portion of fortified soy milk (250ml) at meals 3 times a day.
- Provide 2 servings of cheese or vanilla / fruit flavored yogurt daily.
- For the management of nausea and vomiting during pregnancy a “transition/standard” diet may be suggested until the perinatal diet is tolerated.

Anticipated Impact:

- New diet terminology to include prenatal and lactating individuals.

These recommendations were sent to a number of individuals for review. Feedback was received by:

Brenda Hotson, RD MSc	Clinical Nutrition Manager, Acute Care
Julie Gislason, RD	Regional Manager, Clinical Systems, Nutrition and Food Services
Kim Hutchison, RD	Clinical Systems Specialist, Nutrition and Food Services
Acute Care Practice Council	

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