

EXECUTIVE SUMMARY

Name of Expert Review Group:

Normal Nutrition Working Group

Member:

Site:

Julie Gislason, RD, CHAIR	WRHA Nutrition and Food Services, Regional Manager Clinical Systems
Maria Knaus, RD, MSc	Manager Nutrition and Food Services Misericordia Health Centre
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Diets Included in the Review: (please list)

Standard Diet	Vegetarian Definitions (Vegan, Lacto-Ovo, Ovo, Lacto, Pesco, Pollo)

Rationale: (Overall Purpose, Goals, etc.)

The standard adult diet recommendations were reviewed to ensure that the standard and related diets meet the nutritional requirements of adults 18-69 years based on the recommendations of Eating Well with Canada's Food Guide (EWCFG), the Dietary Reference Intakes (DRI's), and evidence in literature. The goals of the normal nutrition expert review group were to:

- Ensure that the standard diet meets the recommended number of food guide servings per day,
- Ensure variations of the standard diet where either one or more food groups may be excluded or individual foods are excluded meet nutrient recommendations, and
- Update, based on current evidence, the criteria for the above stated diets.

Recommendations:

Compendium Definitions

	Recommendation (based on evidence review)
EWCFG	Vegetables and Fruits 7-10 servings per day Grain Products 6-8 servings per day Milk and Alternatives 2-3 servings per day (3-4 servings for 18 Years) Meat and Alternatives 2-3 servings per day Goal is to meet the minimum number of servings per day for each food group from meals and snacks for ages 18-50 years. Additional servings available as requested/ required. Note: The minimum servings meet the recommendation for 14-18 years of age in EWCFG with the exception of milk and alternatives, additional servings must be added.
Meal Pattern	Breakfast, Lunch and Supper to provide a minimum of 75% of total energy requirements. Between meal snacks to be made available/ offered to patients/ clients to meet the difference in nutritional requirements.

Energy	Range based on EWCFG for age 18-69 and a sedentary activity level Goal for the standard diet will be a minimum of 1800 kcals per day
Fat Cholesterol	20-35% of total kcal per day PUFA's – recommend fish twice per week - fatty fish preferred SFA's – strive to lower saturated fat by following a healthy dietary pattern. TFA's -should be kept as low as possible, especially by limiting foods that contain synthetic source of TFA, partially hydrogenated oils. For all vegetable oils and soft spreadable margarines purchased TFA's should be limited to 2% of total fat content. For all other foods the TFA's content should be limited to 5% of total fat content. This limit does not apply to food products for which the fat originates exclusively from ruminant meat or dairy products. Cholesterol will not be limited.
Carbohydrate	45-65 % of total kcal per day (200 grams - 300 grams CHO) based on 1800 kcal/day Fruit, vegetables, whole grain products and legumes should be the primary sources of carbohydrates and fibre in the diet.
Fibre	19-25 grams per day based on 1800 kcal/d and weekly average At least 3 whole grain servings per day (2 from meals and 1 available at nourishments).
Protein	0.8 – 1.2 grams/kg (75 g minimum). Recommend 20-30 grams protein at each meal where operationally possible
Sodium	2300-3000 mg /day (100-130 mmol/day) excluding salt package.
Fluid	1000 mL minimum from trays per day. Water or fluid provided at bedside or offered at nourishments. Current Standard diet provides minimum 1200 ml per day.
Calcium	Goal for the standard diet will be 1000 mg per day. There will be a minimum of 2 servings of milk/ day, a mixed diet will be provided. Additional calcium may come from nourishments.
Vitamin D	> 150 International Units per day to be provided on trays. Supplementation recommended. Adults 18-69 years 400 International Units/day after 10 days hospitalization.
Iron	Adults: Women 18 years 15 mg per day 19-50 years 18 mg per day 51-69 years 8 mg per day Men- 18 years 11 mg per day 19 – 69 years 8 mg per day Those following a vegan diet should have their iron status monitored and supplement if required.
B 12	Adults: > 18 2.4 Micrograms per day Those following a vegan diet should have their B12 status monitored and supplemented if required.

Evidence Review: (Please list type of evidence reviewed or clinical practice guidelines or process for literature search, as applicable.)

1. **Eating Well with Canada's Food Guide (EWCFG)¹**
 - The recommended number of servings per day will be based on adults > 18 years of age. The goal is to meet the minimum number of servings per day for each food group.
2. **Meal Pattern**
 - **Snacking in Canada contributes about 23% of energy for adults².**
 - **Data from 2009 shows 24% of food consumed is as snacks for Canadians. Snacks can help people meet their nutritional needs and are an important part of a healthy diets. 34% of snacks are eaten in the afternoon, 30% in the morning and 27% in the evening³.**
3. **Energy**
 - Energy recommendations are estimated energy requirements based on EWCFG.⁴ They are approximations calculated using Canadian median heights and weights that were derived from the median normal BMI⁵ and have been based on a sedentary activity level. Males 18-69 years are 2350-2500 kcal/day and females 18-69

years are 1750-1900 kcal/ day.

- Energy requirements are based on the dietary reference intakes for men and women using the reference height and weights for 18-30 years of age. Since there is no evidence that weight should change with ageing reference weight for adults 19-30 apply to all adult age groups. The estimated energy requirements (EER) are as follows.⁵

Males 18 years = 1.74m, 61kg - EER = 2244 kcal

Males 19-69 years = 1.77m, 70kg – EER = 2403 kcal

Females 18 years =1.63m, 54kg – EER = 1930 kcal

Females 19-69 years = 1.63m, 57kg – EER = 1959 kcal

Although the reference height and weight for 18 years is slightly lower than that for 19-69 years, the 19-69 years reference will be used as it better reflects our population.

- Hospitalized patients may have increased or decreased requirement as indicated by medical condition, nutrition screening (where available), nutrition assessment and increased or decreased appetite.
- Based on the evidence from EWCFG and the DRI the expert review group recommends providing 1800 kcal per day based on a weekly average. Smaller or larger portions and /or nourishments are available for those that require them.

4. Fat

- Dietary fat should provide 20 – 35% of total energy with an increased consumption of n-3 polyunsaturated fatty acids, limited intake of saturated and trans fat and a focus on increasing n-3 intake by striving to consume two or more servings of fish per week (fatty fish preferred eg. cod liver, mackerel and salmon).⁶
- The DRI recommends that saturated fat, trans fat and cholesterol intake be kept as low as possible while consuming a nutritionally adequate diet. The DRI also states that no upper limit (UL) has been set for saturated fat, trans fat and cholesterol.⁷
- The Heart and Stroke Foundation recommendations do not include a threshold/ limit for saturated fat and cholesterol and instead focus on a healthy balanced dietary pattern.⁸
- Based on the DRI recommendations and the Heart and Stroke Foundation position statement, it is recommended to reduce saturated fat by following a healthy balanced dietary pattern and that cholesterol will not be limited.
- The trans fat task force recommends that TFAs should be kept as low as possible, especially by limiting foods that contain synthetic source of TFA, partially hydrogenated oils. FAO/ WHO recommend a TFA upper limit (both ruminant and industrially produced) to be <1% of energy.⁹
- Based on the trans fat task force it is recommended to limit foods that contain a synthetic source of trans fatty acid, partially hydrogenated oils. For all vegetable oils and soft spreadable margarines purchased TFA's should be limited to 2% of total fat content. For all other foods the TFA's content should be limited to 5% of total fat content. This limit does not apply to food products for which the fat originates exclusively from ruminant meat or dairy products.⁹
- **Vegan:** risk of not meeting requirements for essential fatty acids (EFA's). Include EFA containing foods daily. Sources could include ground flax, soy milk, other soy containing products, nuts and seeds. Canola and soybean oils are recommended.¹⁰

5. Carbohydrate

- Canadian adults require 45-65% of total energy intake as carbohydrate based on the Acceptable Macronutrient range within the DRI's.⁷
- Fruit, vegetables, whole grain products and legumes should be the primary sources of carbohydrates and fibre in the diet.

5. Fibre

- At least two of the grain servings offered will be whole grain at meals and one available at nourishments, in keeping with EWCFG.¹
- The DRI fibre recommendations are based on 14 grams/1000 kcals.⁷ The average Canadian adult consumes approximately 17 - 21 gram dietary fibre per day.¹¹ The ERG recommendation is to serve 19-25 gram dietary fibre per day with the goal of meeting the DRI recommendation of 14 grams/1000 kcals or 25 grams daily based on 1800 kcal. With increased fibre intake it is recommended that adequate fluids are consumed per the DRI (below). Rapidly increasing fibre intake without equivalent increase in fluid intake may result in adverse gastro-intestinal effects. The expert review group recommendation is to serve 19-25g of dietary fibre daily to reduce unwanted side effects. Fibre rich food are available to meet additional needs/ requests for increased fibre.

6. Protein

- Evidence supports a protein requirement of 0.8-1.2 grams/kg/day.^{12,13,14,15,16,17} Using the Dietary Reference Intakes (DRI) reference weight for females 18 years – 54 kg = 45.9g and females 19-69 years -57kg

requirements would be 45.6-68.4g protein per day (based on a weekly average), males 18 years – 61 kg = 51.85 g and males 19-69 – 70kg would be 56-84g protein per day (based on a weekly average). The current standard diet provides an average of 75g daily per weekly average and therefore will meet the target for minimum daily protein required. Target protein should be divided into 20 – 30 grams per three meals to maximize protein synthesis and preserve skeletal muscle¹⁸ where operationally possible.

- Additional protein rich food available at nourishments would also be of benefit.
- **Vegan:** Protein needs may be higher than the DRI in vegetarians whose dietary protein sources are mainly those that are not well digested such as some cereals and legumes. Therefore it is important that the diet consists of a mixture of plant based protein, including soy products. Additional servings of soy milk or soy based protein alternatives could be provided to meet requirements for protein and energy.¹⁰

7. Sodium

- Canadian sodium reduction strategy recommends a daily intake <2300 mgs (100 mmol)¹⁹ and is consistent with the recommendations from other health organizations.^{20,21,22,23,24,25} Current intakes in the population are 3000-4000mg or 130 – 170 mmol reflecting an awareness of sodium in foods and a trend towards lower sodium food choices as well as lower sodium options in the food manufacturing sector.^{26,27} The standard diet recommendation is to provide 2300 – 3000 mg (100 – 130 mmol) per day sodium, without including a salt package. A salt package can be provided on request which adds 200 mg (<9 mmol) to the meal.

8. Fluid

- Dietary reference intakes:²⁸
Males 3.7 L per day 19-69 years 3.3 L per day 18 years
Females 2.7 L per day 19-69 years 2.3 L per day 18 years
- Patients should receive 1000 mL fluid minimum on trays.
- This recommendation assumes the remainder of fluid will be made up from moisture in food, access to water at the bedside, IV and nourishments.

9. Calcium

- Dietary reference intakes:²⁹
Adults 19-69 years 1000 mg per day 18 years 1300 mg per day
- Two cups of milk or fortified soy beverage served per day provides approximately 600 mg per day of calcium. This meets the requirement of EWCFG. Other calcium containing foods will be provided throughout the day and/or additional servings of milk or soy beverage may be requested to meet the additional requirement of 400 mg per day.
- **Vegan:** Calcium intake of vegans may fall below recommended intake. Calcium fortified foods such as fortified soy milk, fruit juices or breakfast cereals can contribute to significant amounts of dietary calcium for vegans. Soy milk beverages fortified with calcium carbonate may be better absorbed than those fortified with tricalcium phosphate.¹⁰

10. Vitamin D

- Dietary reference intake:²⁹
Adults 18 – 69 years 600 IU per day
Partum 18 – 69 years 600 IU per day
- The 1.5 - 2 cups of milk or soy beverage served on meal trays provide >150IU.
- Vitamin D supplementation of 400 IU per day is required to meet the dietary reference intake. We recommend that all patients receive a vitamin D supplement of 400 IU per day after ten days of hospitalization.

11. Iron

- Adults: Women 18 years 15 mg per day
19-50 years 18 mg per day
51-69 years 8 mg per day

Men- 18 years 11 mg per day
19 – 69 years 8 mg per day
- **Vegan:** Monitor iron status and supplement as required.¹⁰

12. B12

- **Vegan:** Monitor B12 status and supplement as required.¹⁰

Practice Changes:

Change diet terminology to Standard (Regular) 18-69 y
Addition of 18 years age group and 51-69 years age group
Remove recommendation for saturated fat and cholesterol
3 soy/milk beverages per day for all vegetarian diets
Consider omega 3 source for vegetarian diets
Consider Vitamin D supplementation recommended for all patients > 10 days length of stay
Maintain removal of salt package from tray.
Recommend movement towards higher protein food where operationally possible, feasibility, menu development, food product enhancement, financial impact and patient/resident acceptance.

Anticipated Impact:

To ensure nutritional adequacy of the vegan diet especially with regards to protein, offer soy milk as a beverage at all meals and plant based protein sources at the breakfast meal e.g. veggie patties, soy enriched cereals, tofu scramble, nuts.

These recommendations have been reviewed by: (List suggested reviewers)

Clinical Dietitian Leadership Group	

¹ Health Canada, eating well with Canada's food guide. (February 28, 2007). Retrieved, 2014., from http://www.hc-sc.gc.ca/fn-an/food-guide-aliments/index_e.html.

² Hess, J.M., Jonnalagadda, S.S. Slavin, J.L. What is a Snack, Why Do We Snack and How Can We Choose Better Snacks? A Review of the Definitions of Snacking, Motivations to Snack, Contributions to Dietary Intake and Recommendations for Improvement. *American Society for Nutrition*, 2016, 7:466-475.

³ Fernando, J. and Matejovsky, L. Updates from Competitiveness and Market Analysis Branch. *Consumer Corner*, September 2011, 15:1-5.

⁴ Health Canada, eating well with Canada's food guide, estimated energy requirements. (February 28, 2007). Retrieved, 2014, from http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/basics-base/1_1_1-eng.php.

⁵ Health Canada, dietary reference intakes definitions, dietary reference intakes, equations to estimate energy requirement. (November 2010). Retrieved, 2014, from http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/nutrition/dri_tables_e.pdf.

⁶ Vannice, G. e. a. (January 2014,). Position of the academy on nutrition and dietetics: dietary fatty acids for healthy adults . *Journal of the Academy of Nutrition and Dietetics*, Volume 114,(Number 1), 136 - 153. doi:<http://dx.doi.org/10.1016/j.jand.2013.11.001>.

⁷ National Research Council. (2005). *Dietary reference intakes for energy, carbohydrate, fibre, fat, fatty acids, cholesterol, protein, and amino acids*. Washington, DC: The National Academies Press.

⁸ Heart and Stroke Foundation (2015). Saturated Fat, Heart Disease, and Stroke: Position Statement. Retrieved from http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.9314923/k.E0FA/Saturated_fat_heart_disease_and_stroke.htm.

⁹ *TRANSforming the food supply: Report of the trans fat task force* . (2014). Ottawa, Ontario: Minister of Health.

¹⁰ American Dietetic Association (2009). Position of the American Dietetic Association :vegetarian diets. *Journal of the American Dietetic Association*,109(7),1266-1282.

¹¹ Findlay, L., Garriguet, D., & Langlois, K. (2009). Diet composition and obesity among Canadian adults.20(4), May 29, 2014.

¹² Elango, R., Humayun, M. A., Ball, R. O., & Pencharz, P. B. (2010). Evidence that protein requirements have been significantly underestimated. *Current Opinion in Clinical Nutrition and Metabolic Care*, 13(1), 52-57. doi:10.1097/MCO.0b013e328332f9b7; 10.1097/MCO.0b013e328332f9b7.

¹³ Li, M., Wang, Z. L., Gou, L. Y., Li, W. D., Tian, Y., Hu, Y. C., . . . Zhang, Y. H. (2013). Evaluation of the protein requirement in Chinese young adults using the indicator amino acid oxidation technique. *Biomedical and Environmental Sciences: BES*, 26(8), 655-662. doi:10.3967/0895-3988.2013.08.004; 10.3967/0895-3988.2013.08.004.

¹⁴ Elango, R., Ball, R. O., & Pencharz, P. B. (2012). Recent advances in determining protein and amino acid requirements in humans. *The British Journal of Nutrition*, 108 Suppl 2, S22-30. doi:10.1017/S0007114512002504; 10.1017/S0007114512002504.

¹⁵ Millward, DJ. (2013). The use of protein: energy ratios for defining protein requirements, allowances and dietary protein contents.16 (15), 763-768. doi:<http://dx.doi.org/10.1017/S1368980013000396>.

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- ¹⁶ Soenen, S., Martens, E. A., Hochstenbach-Waelen, A., Lemmens, S. G., & Westerterp-Plantenga, M. S. (2013). Normal protein intake is required for body weight loss and weight maintenance, and elevated protein intake for additional preservation of resting energy expenditure and fat free mass. *The Journal of Nutrition*, 143(5), 591-596. doi:10.3945/jn.112.167593; 10.3945/jn.112.167593.
- ¹⁷ Millward, D. J. (2012). Identifying recommended dietary allowances for protein and amino acids: A critique of the 2007 WHO/FAO/UNU report. *The British Journal of Nutrition*, 108 Suppl 2, S3-21. doi:10.1017/S0007114512002450; 10.1017/S0007114512002450.
- ¹⁸ Paddon-Jones, D., & Rasmussen, B. B. (2009). Dietary protein recommendations and the prevention of sarcopenia. *Current Opinion in Clinical Nutrition and Metabolic Care*, 12(1), 86-90. doi:10.1097/MCO.0b013e32831cef8b; 10.1097/MCO.0b013e32831cef8b.
- ¹⁹ Health Canada. (2010). Sodium reduction strategy for Canada. Ottawa, ON: Minister of Health.
- ²⁰ Barr, S. I. (2010). Reducing dietary sodium intake: The Canadian context. *Applied Physiology, Nutrition, and Metabolism*, 35(1), 1-8. doi:10.1139/H09-126; 10.1139/H09-126.
- ²¹ Maillot, M., & Drewnowski, A. (2012). A conflict between nutritionally adequate diets and meeting the 2010 dietary guidelines for sodium. *American Journal of Preventive Medicine*, 42(2), 174-179. doi:10.1016/j.amepre.2011.10.009; 10.1016/j.amepre.2011.10.009.
- ²² Center for Disease Control. (2014). Sodium reduction resources for everyone. (Salt). Atlanta. Ga.
- ²³ U.S. Department of Agriculture, U.S. Department of Health and Human Services. Dietary guidelines for Americans, 2010. Washington (DC): U.S. Government Printing Office; 2010 Dec. 99 p. Retrieved from: <http://www.guideline.gov/content.aspx?id=34277&search=healthy+eating>.
- ²⁴ Oria, M., Strom, B. L., & Yaktine, A. L. (2013). Sodium intake in populations: Assessment of evidence. (Consensus Report).
- ²⁵ Eckel RH, Jakicic JM, Ard JD, et al. (2013) AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular Risk: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol*. 2014;63(25_PA):2960-2984. doi:10.1016/j.jacc.2013.11.003.
- ²⁶ Health Canada. (2012). Sodium research. (Food and Nutrition).
- ²⁷ Health Canada. (2012). Sodium intake in Canada. (Nutrition and Healthy Eating).
- ²⁸ National Research Council (2006). Dietary reference intakes: the essential guide to nutrient requirements: Washington, DC: The National Academies Press.
- ²⁹ National Research Council (2011). Dietary reference intakes for calcium and Vitamin D. Washington, DC: The National Academies Press.