

PRACTICE ISSUE EVIDENCE SUMMARY

Best Practice Issue: Omega-3 Recommendations	
Member: Lisa Skromeda, RD and Jodis McCaine, RD	Site: ACCESS Transcona/River East
Purpose: (goals, scope, intended users, settings, and patient/client groups)	
<p>Purpose: To provide consistent recommendations on Omega-3 intake from diet and/or supplements. Goals: as above Users: Health Care Professionals Settings: Ambulatory Care, Primary Care, Public Health, Acute Care Patient/client group: Adults</p>	
Definitions:	
<p>Omega 3 is an umbrella term for 3 different dietary fatty acids:</p> <ul style="list-style-type: none"> • Docosahexaenoic acid (DHA) – found mainly in fatty fish and some commercially made sources from algae. • Eicosapentaenoic acid (EPA) – found mainly in fatty fish. • Alpha-linolenic acid (ALA) – found in plant sources like flax, canola and soy. It is the precursor to DHA and EPA, but the conversion rate is very low in humans, <i>therefore DHA and EPA sources are recommended over ALA.</i> <p>The evidence available from several studies has suggested that DHA and EPA (in the form of fish or fish oil supplements) versus ALA is the form of omega-3 which has benefits to the heart</p>	
Recommendations for care /service including important care/service processes: (exclusions and exceptions, criteria or threshold for evaluation, method for documentation)	
<p>The following recommendations are based on the summary of Omega-3 fatty acid recommendations (Appendix 1):</p> <p>General/Primary Prevention: 300-500 mg DHA + EPA per day, equivalent to 2-3 servings of oily fish per week. No recommendations available for supplementation for non-fish eaters.</p> <p>Secondary Prevention: ~1000 mg DHA + EPA per day, equivalent to 6-7 servings of oily fish per week or by supplement under MD supervision.</p> <p>Hypertriglyceridemia: 2-4 g DHA + EPA per day, as capsules (supplement) under MD supervision.</p> <ul style="list-style-type: none"> • 4-8 capsules per day would be required to obtain 2-4 g of DHA + EPA. <p>NOTE: Recommend Omega-3 supplements only; Omega 3-6-9 pills have very little Omega-3 in them.</p> <ol style="list-style-type: none"> 1. Food sources versus supplements are recommended as the primary source for obtaining recommended amounts of Omega-3 fatty acids. See Appendix 2 for a list of fish and their omega-3 content. 2. If supplements are considered, recommend Omega-3 (DHA + EPA) supplements only; Omega 3-6-9 pills have very little Omega-3 in them (Appendix 3). Do not recommend fish <u>liver</u> oils (e.g. cod liver oil) which contain high amounts of Vitamin A and may increase the risk of Vitamin A toxicity (Appendix 4). 3. Some foods are fortified with Omega-3 fatty acids, which can be counted as part of a person's total daily omega-3 intake, provided that the source of omega-3 in the food is DHA and/or EPA, not ALA. See Appendix 5 for a list of foods fortified with Omega-3. 4. The above recommendations encourage DHA + EPA as the recommended form of omega-3, not ALA, as the evidence available in the literature is based on studies using DHA + EPA. 	

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

PEN Cardiovascular Disease pathway.

Grade A given for increasing levels of DHA + EPA for reducing serum TG levels.

Grade B given for primary prevention of CVD, secondary prevention of CVD and specifically in women with CVD.

Includes ADA/DC position paper on dietary fatty acids and 2006 AHA diet and lifestyle recommendations, among others.

Medline Plus review. "Omega-3 fatty acids, fish oil, alpha-linolenic acid"

Grade A given for high blood pressure, hypertriglyceridemia, and secondary CVD prevention (fish oil / EPA + DHA).

Grade B given for primary CVD prevention (fish intake) and inflammation.

URL of this page <http://www.nlm.nih.gov/medlineplus/druginfo/natural/patient-fishoil.html>

Side Effects and Warnings:

- May increase the risk of bleeding, especially at higher doses. Caution in patients taking drugs, herbs or dietary supplements that increase the risk of bleeding, for example Aspirin, anticoagulants such as Warfarin, antiplatelet drugs such as Plavix, NSAIDs such as ibuprofen and naproxen and Gingko Biloba.
- May decrease platelet aggregation and prolong bleeding time.
- Caution in patients with ventricular tachycardia (abnormal heart rhythms)
- Some species of fish contain higher amounts of dioxins, methylmercury and polychlorinated biphenyls (PCBs) – methylmercury accumulates in fish meat more than fish oil, and fish oil supplements appear to contain almost no mercury. These contaminants may be harmful in pregnant/breastfeeding women and children.
 - PEN guidelines suggest pregnant women can safely consume up to 340 g of fish 2x/ week.
- Gastrointestinal upset is common with fish oil supplement use. Diarrhea, increased burping (with fishy aftertaste), acid reflux/heart burn/indigestion, abdominal bloating and abdominal pain may also occur.
 - GI side effects can be minimized if fish oils are taken with meals and if doses are started low and gradually increased.
- May lower blood pressure by 2-5 mm/Hg. Caution advised in patients with low blood pressure or in those taking blood pressure lowering medications.
- Although slight increases in fasting blood glucose have been noted in patients with type 2 diabetes, the available evidence suggests no significant long-term effects, including no changes in A1C levels.
- Long-term fish oil use may cause vitamin E deficiency, therefore Vitamin E is added to many commercial fish oil products. As a result, caution is warranted with additional vitamin E supplementation.
- Increases in LDL levels by 5-10% are observed with intake of omega-3 fatty acids. Effects are dose-dependent.

Taken from www.nlm.nih.gov/medlineplus/druginfo/natural/patient-fishoil.html May 2, 2008

References:

Medline Plus "Omega-3 fatty acids, fish oil, alpha-linolenic acid" review:

www.nlm.nih.gov/medlineplus/druginfo/natural/patient-fishoil.html

PEN Cardiovascular Disease pathway: www.dieteticsatwork.com/PEN/home.asp (access to this website is restricted to subscribers).

Position of the American Dietetic Association and Dietitians of Canada: Dietary Fatty Acids, Journal of the American Dietetic Association, September 2007; 107 (9): 1599-1611.e2

American Heart Association recommendations.

Dietitians of Canada Current Issues: Omega-3 Fats in the Marketplace.

Omega-3 Fatty Acid Dietary Recommendations and Food sources to achieve essentiality and cardiovascular benefit, American Journal of Clinical Nutrition, 2006; 83 (Suppl): 1526S-35S

Practice Changes:

Anticipated Impact:

Consistent recommendations given by all Health Care Professionals.

Instructions for implementing the guide:**These recommendations were reviewed by:**

Nancy Doern White, RD	HSC Lipid Clinic
Primary Care Dietitian's Practice Council	
Dr Donald Duerksen, MD FRCPC	Associate Preofessor of Medicine Medical Director, WRHA Nutrition and Food Services
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Approved by WRHA Nutrition Advisory Committee June, 2009

Appendix 1:

Organization	Table 1 – Summary of Omega 3 Fatty Acid Recommendations			
	General	Primary CVD Prevention	Secondary CVD Prevention	High TG
ADA/DC Position statement on Dietary Fatty Acids	Based on a 2000 calorie diet: - ALA = 1.3-2.7 g/d (0.6-1.2% of energy) - DHA + EPA = 500 mg/d*			
PEN		DHA + EPA = 300-450 mg/d equivalent to 2 fish servings per week**	EPA + DHA = 1 g/d (fatty fish or supplement) should be given in consultation with MD	
American Heart Association		Variety of fish (preferably oily fish) 2 x/week	DHA + EPA ~ 1 g/d – prefer from oily fish -EPA + DHA supplement considered with MD consultation	DHA + EPA = 2 – 4 g/d as capsules under MD supervision
American Heart Association – For women only			~ 850 to 1000 mg/d of EPA + DHA in capsule form, as an adjunct to diet	2 to 4 g/d, of EPA + DHA in capsule form, as an adjunct to diet
American Journal of Clinical Nutrition		DHA + EPA 500 mg/d*	DHA + EPA 1 g/d	
National Institute of Health	DHA + EPA 650 mg/d (= fatty fish 2½-3 x/wk)	Supports AHA recommendation (as above) and WHO recommendation of EPA + DHA = 300-500 mg/d		

*Approximately 8 oz cooked fish per week provides about 500 mg/d DHA + EPA

**Pregnancy/breastfeeding– avoid high mercury fish – can consume up to 340 g of fish 2 x/ week (PEN Guidelines)

Appendix 2:

EPA & DHA Per Serving of Fish – Size (75 g or 2 ½ oz)

Fish	EPA & DHA per 75 gm serving
Herring – Atlantic, baked or broiled	1500 mg
Herring – Pacific, baked or broiled	1600 mg
Salmon – Atlantic, farmed, baked or broiled	1600 mg
Salmon – Sockeye (red), canned, solids with bone & liquid	1400 mg
Mackerel – Atlantic, baked or broiled	900 mg
Mackerel – Pacific and Jack, mixed species, baked or broiled	1400 mg
Trout – Rainbow, farmed, baked or broiled	900 mg
Trout – Rainbow, wild, baked or broiled	700 mg
Flatfish – (Flounder or Sole or Plaice), baked or broiled	400 mg
Tuna – Bluefin, fresh, baked or broiled	1100 mg
Tuna – light, canned in water, drained, unsalted	200mg
Shrimp – mixed species, boiled or steamed	200 mg
Cod – (Gray Cod), Pacific, baked or broiled	200 mg
Haddock – baked or broiled	200 mg
Sardines – canned with oil, drained solids with bones	700 mg
Pickeral – (Walleye Pike)	140 mg

Adapted from: Canadian Nutrient File, 2007, available at: www.healthcanada.gc.ca/cnf. Accessed on April 10, 2007

Appendix 3: Omega-3 Content of Selected Supplements

Supplement	Suggested dose	Cost per capsule or tsp (cents)	EPA per capsule/tsp (mg)	DHA per capsule/tsp (mg)	Natural Product Number (NPN) or Drug Identification Number (DIN)
Jamieson Omega-3 Heart	1-3 capsules / day	43.3	400	200	No
Jamieson Omega-3 Complete	3 capsules / day	22.5	400	200	80003179
Weber Natural Cardio Omega3	3-6 capsules / day	18.9	200	100	No
Weber Liquid Omega3	1 tsp / day	71.4	980	545	00320552
Weber Natural Omega 3 Super	3 capsules / day	15.5	400	200	No
Swiss Heart Health Wild Salmon + Fish	4 capsules / day	13.3	180	120	80005093
Swiss Heart Health Omega 3	3 capsules / day	19.0	300	200	80002693
Genuine Health O3MEGA	2-4 capsules / day	22.5	180	120	Pending
Genuine Health O3MEGA Liquid	1-2 tsp / day	45.0	786	524	80002070
Exact Omega-3 Elite (Superstore)	3 capsules / day	?	300	200	80003127
Presidents Choice Omega Body (Superstore)	2 capsules / day	?	400	300	No
Our Compliments Omega-3 (Sobey's)	2-4 capsules / day	13.3	300	200	No
Rexall Natural Omega-3 (Pharma Plus)	1-3 capsules / day	15.5	300	200	No
Equate Omega-3 (Walmart)	2 capsules / day	8.8	180	120	80004003
Equate EZswallow Omega-3 (Walmart)	2 capsules / day	11.2	300	250	No

Information obtained November, 2008

Appendix 4: Vitamin A & D Content of Selected Cod Liver Oil Supplements

Supplement Brand	Suggested Dose	Omega-3 Content	Vitamin A per capsule or tsp (IU)	Vitamin D per capsule or tsp (IU)
Rexall Cod Liver Oil	2 capsules/d (20 minims capsule)	Not listed	2500	200
Rexall Norwegian Cod Liver Oil	1 tsp (5 ml)/d	Not listed	3920	392
Swiss Cod Liver Oil	3 capsules/d	Not Listed	3000	300
Jamieson Cod Liver Oil	2 capsules/d (275 mg capsule)	9% EPA and 10% DHA	1250	135

Information obtained November, 2008

NOTES:

- The Upper Limits (UL) for vitamins A and D for adults, from both food and supplement sources combined, are as follows:
 - Vitamin A – 3,000 micrograms (10,000 IU) per day
 - Vitamin D – 50 micrograms (2,000 IU) per day
- Taking any of the above supplements at their recommended doses would not exceed the ULs for either Vitamin A or Vitamin D. However, when a person's intake of Vitamin A from food sources and other supplements (e.g. multivitamins) is also considered, the total intake can exceed the daily UL.
- In general, cod liver oil contains 9-12% of the total fatty acids in the oil as DHA, which amounts to *approximately 1000 mg of DHA per 10 ml of the oil.*
(Reference: DHA/EPA Omega-3 Institute website, accessed on Nov.27, 2008, <http://www.dhaomega3.org/index.php?category=faq&title=1194380128>)

Appendix 5: Omega-3 Content of Selected Omega-3 Fortified Foods

FOOD	Total Omega-3 (mg)	Omega-3 Source	DHA + EPA (mg)	Price	Price of similar non-fortified food
Burnbrae Farms Naturegg Omega3 (1 egg)	400	Chickens fed flax	75 (DHA)	\$3.59/12	\$2.75/12
Burnbrae Farms Naturegg Omega Pro (1 egg)	400	Chickens fed "omega oils"	125 (DHA)	\$3.99/12	\$2.75/12
Our Compliments Omega3 eggs (1 egg)	400	Chickens fed flax	Not listed	\$3.39/12	\$2.29/12
Lactantia Healthy Attitude Margarine (2 tsp.)	500	Canola & soy oils	Not listed	\$4.79	\$4.49
Becel Omega-3 Plus Margarine (2 tsp)	600	Canola & fish oils	Not listed	\$5.99 /680g	\$5.99/680g
Astro Biobest Cardio Pro+ Yogurt (100 g)	300	Flax oil	Not listed	\$6.99 12x100g	\$6.99 12x100g
Presidents Choice Blue Menu Oh Mega J Orange Juice (1 cup)	100	Fish, soy, canola oils	50	\$3.27	\$2.99
Minute Maid Fruit Solutions Omega-3 Mango Orange Passion Juice (1 cup)	100	Fish & canola oils	Not listed	\$4.49 /1.89L	\$3.99/1.89L Our Compliments
Oasis Healthy Break Strawberry Kiwi Cocktail (1cup)	300	Cold-pressed flax oil	Not listed	\$4.49 /1.89L	\$2.69/1.89L Our Compliments
Beatrice Omega3 1% Milk (1 cup)	300	Flax oil	Not listed	\$3.19 /2L	\$2.49/2L
So Good Omega Original (1 cup)	700	Flax oil, algal oil	Not listed	\$4.49 /2L	\$4.49/2L
Silk Plus Omega3 DHA Soy Milk (1cup)	400	Flax oil, algal oil	300 (DHA)	\$4.69 /1.89L	\$4.39/1.89L
Black Diamond Smart Growth Cheddarific Strings (21g)	100	Cows fed DHA source	20	\$6.99 /252g	\$4.19/168g Our Compliments
Dempsters Smart 100% white or whole wheat bread (2 slices)	100	Canola +/-or soy oils	Not listed	\$3.49	\$2.29 Our Compliments

Information obtained November, 2008