Learning Objectives

1. Distinguish between food sources of ALA omega-3s and EPA/DHA omega-3s.
2. Communicate effectively which omega-3s patients and clients should focus on and why.
3. Recommend therapeutic amounts of omega-3s to support the overall health of patients and clients.

Additionally...

- What are omega-3s?
- Why do we need them?
- Does type matter?
- How much do we need?
- How can we get more?
Fats: A Review
- Saturated fats
- Unsaturated fats
- Monounsaturated fats
- Polyunsaturated fats
  - Omega-6
  - Omega-3

Omega-3 Fatty Acids
- Alpha-linolenic acid (ALA)
- Eicosapentaenoic acid (EPA)
- Docosahexaenoic acid (DHA)

Omega-3s: Are They Essential?
Essential? Yes, But…

- Essential = must come from diet; cannot be generated in the body
- Conversion rate ALA → EPA = low
- Conversion rate ALA → EPA → DHA = lower

Best to consume EPA+DHA directly

Why You Need Omega-3s

Omega-3s and Heart Health

- Reduced risk of mortality from coronary heart disease or sudden cardiac death
- Lowers triglycerides
- Improves blood vessel function
- Lowers blood pressure

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A Study of Cardiovascular Events in Diabetes (ASCEND)
- 15,480 subjects with diabetes, but without evidence of CVD
- Treatment: 1 g/d omega-3 fatty acids (840 mg EPA+DHA) or placebo
- Primary outcome: first serious vascular event
- Secondary outcome: first serious vascular event or any arterial revascularization
- No significant differences between groups
- However ...
  - 18% statistically significant reduction in risk of vascular death
    - O-3 Group: 196 (2.5%) vs placebo: 240 (3.1%)


Reduction of Cardiovascular Events With EPA - Intervention Trial (REDUCE-IT)
- 8,171 men and women
- 4 g/d EPA (icosapent ethyl) combined with statin therapy vs. statin therapy alone
- Reduction of first occurrence of major adverse cardiovascular events (MACE): 25%


Vitamin D and Omega-3 Trial (VITAL)
- Large-scale randomized clinical trial, follow up after 5 years
- Nearly 26,000 subjects
- All relatively healthy, no known CVD or cancer
- 28% reduced risk for heart attacks among omega-3 supplement users (given 1 g/day)
- 17% reduced risk for CHD
- Rates more dramatic for those with less omega-3 intake at baseline
**Omega-3s and Brain Health**

- DHA concentrated in the brain
- Improvements in cognition and working memory
- May prevent cognitive decline
- Emerging research on EPA/DHA and mental health:
  - ADHD
  - Major depressive disorder (MDD)
  - Bipolar disorder
  - Schizophrenia
- Potential for treatment of traumatic brain injury (TBI)


**ISNPR Practice Guidelines on Omega-3s for MDD**

According to the International Society for Nutritional Psychiatry Research (ISNPR):

- n-3 PUFAs are better used as an *adjunctive treatment* than monotherapy for adult MDD (major depressive disorder)
- n-3 PUFAs can be efficacious and safe, both for acceleration and augmentation
  - **Acceleration**: adding n-3 at the beginning of treatment concurrently with another antidepressant
  - **Augmentation**: adding n-3 when a prior antidepressant's effect is inadequate
- Both pure EPA and EPA/DHA (ratio >2:1) combinations are effective as a potential treatment of MDD
- n-3 PUFAs are considered effective as an adjunctive treatment for acute major depressive episodes, but more evidence is needed for recurrent major depressive episodes

**Omega-3 Protocol for TBI**

- Use a concentrated triglyceride omega-3 product
- One dose of 3,000mg EPA+DHA: 3x/day for 1 week (9,000 mg/day)
- One dose 2x/day 1 more week (6,000 mg/day)
- One dose daily for ongoing maintenance

Source: Brain Health Education and Research Institute. http://www.brainhealtheducation.org/omega-3-protocol/
Omega-3s and Eye Health
- DHA concentrated in the retina of the eye
- Important in early development
- Some indication of omega-3s and dry eye, age-related macular degeneration

Omega-3s and Prenatal Health
- Brain development
- Attention
- Motor function
- Retinal development
- Visual development
- Preterm birth risk
- Low birth weight

American Academy of Pediatrics
Advocacy for Improving Nutrition in the First 1000 Days to Support Childhood Development and Adult Health
Omega-3s and Preterm Birth/Low Birth Weight

- 42% reduced risk of early preterm birth (<34 wks)
- 11% reduced risk of preterm birth (<37 wks)
- 10% reduced risk of low birth weight (<5.5 lbs)

Background:
Higher intakes of foods containing omega-3 long-chain polyunsaturated fatty acids (LCPUFA), such as fish, during pregnancy have been associated with longer gestations and improved perinatal outcomes. This is an update of a review that was first published in 2006.

Objectives:
To assess the effects of omega-3 LCPUFA, as supplements or as diet additions, during pregnancy on neonatal outcomes and longer-term outcomes for mother and child.

“Omega-3 LCPUFA supplementation during pregnancy is an effective strategy for reducing the incidence of preterm birth, although it probably increases the incidence of post-term pregnancies. More studies comparing omega-3 LCPUFA and placebo (to establish causality in relation to preterm birth) are not needed at this stage.”

- 42% reduced risk of early preterm birth (<34 wks)
- 11% reduced risk of preterm birth (<37 wks)
- 10% reduced risk of low birth weight (<5.5 lbs)


Omega-3s: What You Need

“Get More Omega-3s”
“Get More Omega-3s” → “Get More EPA and DHA Omega-3s”

Omega-3 Intake Needs

“...8 ounces per week of seafood, which provide an average consumption of 250 mg per day of EPA and DHA...”

Omega-3 Intake Needs

Omega-3 Intake Needs

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Birth to 6 months</td>
<td>0.5 g</td>
<td>0.5 g</td>
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<tr>
<td>7-12 months</td>
<td>0.5 g</td>
<td>0.5 g</td>
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<tr>
<td>1-3 years</td>
<td>0.7 g</td>
<td>0.7 g</td>
</tr>
<tr>
<td>4-8 years</td>
<td>0.9 g</td>
<td>0.9 g</td>
</tr>
<tr>
<td>9-13 years</td>
<td>1.2 g</td>
<td>1.0 g</td>
</tr>
<tr>
<td>14-18 years</td>
<td>1.6 g</td>
<td>1.2 g</td>
</tr>
<tr>
<td>19-50 years</td>
<td>1.6 g</td>
<td>1.1 g</td>
</tr>
<tr>
<td>51 years and older</td>
<td>1.6 g</td>
<td>1.1 g</td>
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</table>


“Get More Omega-3s” → “Get More EPA and DHA Omega-3s”

Children and adults are not getting enough EPA+DHA omega-3s

<table>
<thead>
<tr>
<th>Age</th>
<th>Recommended Amount (DGA)</th>
<th>Actual intake</th>
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<tbody>
<tr>
<td>Men (20+)</td>
<td>250 mg</td>
<td>100 mg</td>
</tr>
<tr>
<td>Females (20+)</td>
<td>250 mg</td>
<td>98 mg</td>
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</table>

This amount may be too low!

More Just Might Be Better…
• “...marine omega-3 supplementation was associated with a significantly lower risk for myocardial infarction, CHD death, total CHD, CVD death, and total CVD.”
• “Risk reductions appeared to be linearly related to marine omega-3 dose.”

Omega-3s and Preterm Birth/LBW: Omega-3 fats to Reduce the Incidence of Prematurity (ORIP Study)
• Large, multicenter, double-blind, randomized trial of >5,000 women
• Trial group received 900mg omega-3 capsules; control group received vegetable oil capsules
• Starting from <20 weeks gestation to 34 weeks (or delivery)
• No measurable differences in early preterm birth or low birth weight between treatment and control groups.

Know Your Omega-3 Levels
Undesirable <4% Intermediate 4-8% Desirable 8-12%
Omega-3s: How to Boost *EPA and DHA* Intake

How to Boost *EPA and DHA* Omega-3s

≥ 250 mg daily average EPA+DHA

- Must get two servings each week
- Fish servings can’t be poor sources of omega-3s

> 250 mg daily average EPA+DHA
How to Boost *EPA and DHA* Omega-3s

Best strategy for boosting levels of EPA+DHA

Supplement Types

Even for Vegetarians and Vegans

Algal Oil
How to Read a Supplement Label

**Fish Oil 1280mg**

### Supplement Facts

<table>
<thead>
<tr>
<th>Serving Size: 2 Soft Gels</th>
<th></th>
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<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
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<tbody>
<tr>
<td>Calories</td>
<td>18</td>
</tr>
<tr>
<td>Calories from fat</td>
<td>18</td>
</tr>
<tr>
<td>Total Fat</td>
<td>2.0g</td>
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<tr>
<td>Saturated Fat</td>
<td>0.1g</td>
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<tr>
<td>Trans Fat</td>
<td>0g</td>
</tr>
<tr>
<td>Omega-3s Weight</td>
<td>1280mg</td>
</tr>
<tr>
<td>EPA (Eicosapentaenoic Acid)</td>
<td>650mg</td>
</tr>
<tr>
<td>DHA (Docosahexaenoic Acid)</td>
<td>450mg</td>
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<tr>
<td>Other Omega-3s</td>
<td>180mg</td>
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<tr>
<td>Total Omega-3s</td>
<td>1280mg</td>
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<tr>
<td>Oleic Acid (Omega-9)</td>
<td>56mg</td>
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</tbody>
</table>

* Percent Daily Values are based on a 2,000 calorie diet.
** Daily Value not established. *** Natural Triglycerides.

Less than 5mg of Cholesterol per serving.

**Ingredients:**
- Purified deep sea fish oil (from anchovies and sardines), soft gel capsule (gelatin, water, glycerin, natural lemon oil), natural lemon oil, d-alpha tocopherol, rosemary extract.

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**Summary: Putting It Into Practice**

- Americans are meeting recommendations for ALA omega-3s but not for EPA and DHA omega-3s.
- EPA and DHA omega-3s are associated with heart health, brain health (cognition and mental health), eye health, and prenatal/maternal health.
- To boost blood levels of EPA and DHA, seafood meals are good but seafood + supplements are better.
- There’s an EPA+DHA supplement for everybody, including vegetarians/vegans.

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**Questions?**

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