Seafood and Public Health

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Session Overview

- State of public health in the US
- Current seafood consumption recommendations: USDA/HHS Dietary Guidelines, FDA/EPA Fish Advice
- Current seafood and omega-3 consumption
- Low intake of seafood and omega-3s implications
- Clearing the path from science to public awareness/urgency
State of Public Health in the US

• Most experts agree that half or more of premature deaths in the US are preventable through diet and lifestyle changes.¹

• Per the CDC, the US spends 86% of healthcare dollars treating chronic diseases, including mental health.²

• Excesses of the traditional Western diet lead to high risk for chronic disease that can only be ameliorated with adoption of a healthier dietary pattern that is rich in nutrient rich foods, including seafood.³ At the same time, food production must follow sustainable and ethical principles.⁴

• Essentially, the outlook for human health and environmental health depend in large part with what we put on our plates each day.
7 of the Top 10 Causes of Premature Death in US from Chronic Diseases

Inflammation is a leading contributor to chronic diseases.

Heart disease is the #1 cause of death in the US.

Chronic diseases are preventable through:

- Diet
- Exercise
- Smoking Cessation
- Alcohol Moderation

Source: CDC

1. Inflammation is a leading contributor to chronic diseases.
Poor diet is a leading factor in 1/5 deaths
Costs to Treat Chronic Diseases & Health Risks¹

86% of all health care spending is for one or more chronic medical conditions including mental health.

### Annual Chronic Diseases and Health Risk Behaviors Health Care Costs¹

- **Heart disease & stroke**: $315.4 billion
- **Diabetes**: $245 billion
- **Age-related cognitive decline/Alzheimer**: $216 billion
- **Cancer**: $157 billion
Current US Seafood Consumption Guidelines: Eat Seafood Twice A Week

USDA/HHS: Dietary Guidelines for Americans
DGA 2015-2020 Seafood Advice

- For the general population, consumption of about 8 ounces per week of a variety of seafood, which provide an average consumption of 250 mg per day of EPA and DHA, is associated with reduced cardiac deaths among individuals with and without preexisting CVD.

- Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that eating patterns that include seafood are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity.
DGA 2015-2020 Seafood Advice (cont.)

• Women who are pregnant or breastfeeding should consume at least 8 and up to 12 ounces of a variety of seafood per week, from choices that are lower in methyl mercury.

• Consumption by women who are pregnant or breastfeeding of at least 8 ounces per week from seafood choices that are sources of DHA is associated with improved infant health outcomes.
Current US Seafood Consumption Risk Guidelines for Expecting Moms (Risk-based)

EPA/FDA: Fish Advice

Advice About Eating Fish
What Pregnant Women & Parents Should Know
Fish and other protein-rich foods have nutrients that can help your child’s growth and development.

For women of childbearing age (about 15-45 years old), especially pregnant and breastfeeding women, and for parents and caregivers of young children:
- Eat 2 to 3 servings of fish a week from the “Best Choices” list OR 1 serving from the “Good Choices” list.
- Eat a variety of fish.
- Serve 1 to 2 servings of fish a week to children, starting at age 2.
- If you eat fish caught by family or friends, check for fish advisories. If there is no advisory, eat only one serving and no other fish that week.*

Use this chart!
You can use this chart to help you choose which fish to eat, and how often to eat them, based on their mercury levels. The “Best Choices” have the lowest levels of mercury.

What is a serving?
To find out, use the palm of your hand!
For an adult
4 ounces
For children, ages 4 to 11
3 ounces

Best Choices
EAT 2 TO 3 SERVINGS A WEEK

Good Choices
EAT 1 SERVING A WEEK

Choices to Avoid
HIGHEST MERCURY LEVELS

*Same fish caught by family and friends, such as larger cats, bass, trout and perch, are more likely to have fish advisories due to mercury or other contaminants. State advisories will tell you how often you can safely eat these fish.

SeafoodNutrition.org

State of The Science
September 20, 2017
2017 EPA/FDA Fish Advice

- 90% of fish eaten in the U.S. is considered a “best” choice, low in mercury, and should be consumed 2 to 3 times per week.
- Eat 1 serving from the “Good Choices” list.
- Eat a variety of fish.
- Serve 1 to 2 servings of fish a week to children, starting at age 2.
- If you eat fish caught by family or friends, check for fish advisories. If there is no advisory, eat only one serving and no other fish that week.
- FDA/EPA advisory contains a 1,000% Safety Factor
## Considering Seafood Nutrients

2014 FDA Net Effects Report

Quantitative Assessment of the Net Effects on Fetal Neurodevelopment from Eating Commercial Fish
(As Measured by IQ and also by Early Age Verbal Development in Children) Table V-10

<table>
<thead>
<tr>
<th>Top consumed seafood species in the US (90% of what is consumed in US)</th>
<th>Upper safety limit for consumption before mercury risk per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shrimp</td>
<td>1,784 oz. (111.5 lbs.)</td>
</tr>
<tr>
<td>2. Salmon</td>
<td>853 oz. (53 lbs.)</td>
</tr>
<tr>
<td>3a. Canned Tuna – Skipjack (Light)</td>
<td>164 oz. (10 lbs.)</td>
</tr>
<tr>
<td>3b. Canned Tuna – Albacore (White)</td>
<td>56 oz. (3.5 lbs.)</td>
</tr>
<tr>
<td>5. Tilapia</td>
<td>1,509 oz. (94 lbs.)</td>
</tr>
<tr>
<td>6. Farmed Catfish, Pangasius, Swai, Basa</td>
<td>1,154 oz. (72 lbs.)</td>
</tr>
<tr>
<td>7. Pollock</td>
<td>530 oz. (33 lbs.)</td>
</tr>
<tr>
<td>8. Cod</td>
<td>223 oz. (14 lbs.)</td>
</tr>
<tr>
<td>9. Crab</td>
<td>311 oz. (19 lbs.)</td>
</tr>
<tr>
<td>10. Clams</td>
<td>853 oz. (53 lbs.)</td>
</tr>
</tbody>
</table>

Top 10 average =
- 46 pounds
- 3.5 pounds (56 oz.)

…in one week…
Seafood Omega-3s & Brain Health

- Omega-3 DHA are main building blocks of neural cell structure.¹
  - A third of the brain’s key functional units are made up of omega-3 fatty acids.²
- Nearly half of our eye’s light detecting cell structure are made of omega-3 DHA.²
- Studies consistently show that omega-3 EPA improves depressive symptoms.³
- Omega-3 EPA is the key nutrient that balances blood flow and clotting, key to reduction of stroke risk.⁴
Seafood Omega-3s & Heart Health

• Epidemiological studies have consistently found negative associations between omega-3 intake and rates of chronic disease, particularly coronary heart disease.¹

• Prominent research studies have shown that eating seafood at least twice a week reduces the risk of dying from heart disease by 36%.²
Current Seafood and Omega-3 Consumption Status

• In Western populations with low fish intake have omega-3 EPA + DHA levels of about 3%–5%\textsuperscript{1}
• Average American is consuming just 80-90mg omega-3s EPA + DHA per day.\textsuperscript{2}
• The Physician’s Health Study found that those who had omega-3 levels of 6-10% compared to someone with 2-4% had an 80-90% relative reduction in sudden cardiac death.\textsuperscript{3}
1 in 10 Americans Follow DGA Recommendation to Eat Seafood 2x Week

Source: USDA

Biggest Barrier to Eating Seafood

Lack of confidence in knowing: how to: select, buy, and eat seafood.
Lack of Confidence Contributed By Risk Focus Communications

2010 Johns Hopkins University study categorized media communications on seafood over 15 years and found:

- **80%** focused on health risk of eating seafood
- **20%** focused on health benefits of eating seafood

**Fig. 2** Health benefits (—) and health risk (— —) framing by year
Omega-3 Deficiency in US

Prominent health org’s recommend 250-500mg omega-3s EPA + DHA per day

EPA & DHA Intake from Food Per Day
NHANES 2013-2014

Food EPA+DHA Intake (mg per day)
A 2017 Journal of American Medical Association study found that diet-related cardiometabolic deaths related to low intake of seafood omega-3 fats for 54,626 deaths¹
Clearing the Path from Science to Public Awareness and Urgency

- Our goal is that today will facilitate productive conversations about the essential role that seafood omega-3s play in the human diet found by expert groups worldwide, and how it is produced sustainably to support our future food security.
- Understand current communications outreach efforts in progress.
- Consider other avenues of support such as establishing a chronic disease dietary reference intake.¹
Citations

Slide 2
2. CDC Chronic Disease Overview. [https://www.cdc.gov/chronicdisease/overview/index.htm](https://www.cdc.gov/chronicdisease/overview/index.htm)

Slide 3
CDC Chronic Disease Overview. [https://www.cdc.gov/chronicdisease/overview/index.htm](https://www.cdc.gov/chronicdisease/overview/index.htm)

Slide 4

Slide 5
1. CDC Chronic Disease Overview. [https://www.cdc.gov/chronicdisease/overview/index.htm](https://www.cdc.gov/chronicdisease/overview/index.htm)
Citations

Slide 6
https://www.choosemyplate.gov/?q=ten-tips-eat-seafood

Slide 7

Slide 8

Slide 9

Slide 11
FDA, Quantitative Assessment of the Net Effects on Fetal Neurodevelopment from Eating Commercial Fish (As Measured by IQ and also by Early Age Verbal Development in Children) Table V-10 pg. 111, 2014, https://www.fda.gov/Food/FoodborneIllnessContaminants/Metals/ucm393211.htm
Citations

Slide 12
3. Michael J. Weiser, Kelly Wynalda, Norman Salem, Jr., and Christopher M. Butt, Dietary DHA during development affects depression-like behaviors and biomarkers that emerge after puberty in adolescent rats, NIH 2015, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274063/

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Citations

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Slide 17

Slide 18
What We Eat In America, NHANES 2013-2014 https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/1314/Table_1_NIN_GEN_13.pdf

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