Disclosures

- N/A
Objectives

- Vaccination Updates:
  - Recombinant Herpes Zoster (SHINGRIX)
  - Recombinant HPV Vaccine (GARDASIL-9)
  - Hepatitis A Vaccine
- Colon Cancer Screening Guidelines
- Aspirin for Primary Prevention of CV Disease
- Omega-3 Fatty Acids for Prevention of CV Disease
Vaccination Updates
Recombinant Herpes Zoster Vaccine (SHINGRIX)
Recombinant Herpes Zoster Vaccine (SHINGRIX)

Cunningham AL, Lal H, Kovac M, et al. Efficacy of the herpes zoster subunit vaccine in adults 70 years of age or older. 
Zoster Vaccines

**SHINGRIX**
- Recombinant Vaccine
- Efficacy
  - AGE 60-69: 97.4%
  - AGE >70: 89.8%
- Durability: Approx. 19 yrs.

**ZOSTAVAX**
- Live Attenuated Virus
- Efficacy
  - AGE 60-69: 63.9%
  - AGE >70: 37.6%
- Durability: Approx. 5 yrs.
Zoster Vaccines

CDC recommendations:
- Shingrix preferred over Zostavax for the prevention of herpes zoster
- All immunocompetent adults age 50 years and older
SHINGRIX - Practical Considerations

- **Immunocompromised Patients**
  - Not contraindicated; Not studied

- **Prior Zoster Vaccination**
  - Revaccination studied at 5 years; per CDC only need to wait 8 weeks

- **Prior Zoster Infection**
  - Vaccinate as soon as no signs of active infection

- **No History of Varicella**
  - No need to screen (>99% Seropositive)

- **Multiple Vaccinations**
  - OK with Influenza, Pneumonia, Tetanus
SHINGRIX – Vaccine Shortage

- **Where to Find the Vaccine:**
  - Vaccinefinder.org
  - Shingrix.com/shingles-vaccine-locator.html

- **Missed or Delayed Second Dose**
  - Give second Shingrix ASAP
  - Do Not Repeat Series
  - Do Not Replace with Zostavax
HPV Vaccine – GARDASIL 9

GARDASIL® 9
Human Papillomavirus 9-valent Vaccine
(Recombinant, adsorbed)
HPV Vaccine – GARDASIL 9

- FDA Expanded approval to Men and Women aged 27-45
  - All men and women ages 9 – 45
- Based on Unpublished Data from Gardasil-4 Approval
  - In Women Aged 27-45, vaccination was 88% effective at preventing persistent infection and HPV-associated vaginal/cervical disease
  - Durable at up to 10 years
  - Extrapolated to Include Gardasil-9
  - Extrapolated to Include Men
- No updated CDC vaccination guidelines
Hepatitis A Outbreak

Hepatitis A Outbreak 2017-2018

- 281 Cases (9.2/100,000 Person Years)
- 69.4% in Salt Lake County
- 55.9% Hospitalizations

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**Risk Factors**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homelessness and Drug Use</td>
<td>101</td>
<td>35.9%</td>
</tr>
<tr>
<td>Drug Use</td>
<td>78</td>
<td>27.8%</td>
</tr>
<tr>
<td>Homelessness</td>
<td>21</td>
<td>7.5%</td>
</tr>
<tr>
<td>Epi-Linked</td>
<td>40</td>
<td>14.2%</td>
</tr>
<tr>
<td>Travel</td>
<td>4</td>
<td>1.4%</td>
</tr>
<tr>
<td>Unknown</td>
<td>37</td>
<td>13.2%</td>
</tr>
</tbody>
</table>

**Incarcerated**

- 40 Incarcerated cases (14.2%)

**Co-infection**

- Hepatitis B (HBV): 3 cases (1.1%)
- Hepatitis C (HCV): 43 cases (15.3%)
- HBV & HCV: 12 cases (4.3%)

Hepatitis A Vaccination

Current Vaccination Recommendations:
- Children > Age 1
- Adults At Risk
  - Travelers
  - MSM
  - Chronic Liver Disease
  - Food Handlers
  - IV and non-IV Drug Users
  - Homeless Persons*

Post-Exposure Prophylaxis
- Single dose Hep A Vaccine within 2 weeks or Immune Globulin
Colon Cancer
GUIDELINES FOR SCREENING
“Adults aged 45 years and older with an average risk of colorectal cancer undergo regular screening with either a high-sensitivity stool-based test or a structural (visual) examination...”

- Qualified Recommendation
Annual Percent Change (APC) in Colorectal Cancer Mortality Rates Among Adults Aged 20 to 54 Years in the United States by Race, 1970-2014

Colorectal Cancer Mortality Rates in Adults Aged 20 to 54 Years in the United States, 1970-2014

Colon Cancer Screening: USPSTF

Recommends screening for colorectal cancer starting at age 50 years and continuing until age 75 years.

– GRADE A Recommendation
Colon Cancer Screening: USPSTF

Aspirin

PRIMARY PREVENTION FOR CARDIOVASCULAR DISEASE
Aspirin: Background

“Low Dose aspirin use for the primary prevention of cardiovascular disease (CVD) and colorectal cancer (CRC) in adults aged 50 to 59 years who have a ≥ 10% CVD risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years.” – USPSTF; GRADE B
Aspirin 2018: Cardiovascular Events

- **ARRIVE (ALL COMERS):** No difference in rate of composite CV events
  - Aspirin 4.29% vs Placebo 4.48%
  - Hazard ratio 0.96; 95% CI: 0.81–1.13

- **ASCEND (DIABETICS):** Lower rates of composite CV events
  - Aspirin 8.5% vs Placebo 9.6%
  - Rate ratio 0.88; 95% CI: 0.79 to 0.97

- **ASPREE (ELDERLY):** No difference in rate of composite CV events
  - Aspirin 10.7 / 1000 person-years vs Placebo 11.3 / 1000 person-years
  - Hazard Ratio 0.95; 95% CI: 0.83 to 1.08
Aspirin 2018: Myocardial Infarction

- **ARRIVE (ALL COMERS):** No difference in rate of fatal or non-fatal MI
  - Aspirin 1.52% vs Placebo 1.78%
  - Hazard Ratio 0.85; 95% CI 0.64–1.11

- **ASCEND (DIABETICS):** No difference in rate of non-fatal MI
  - Aspirin 2.5% vs Placebo 2.5%
  - Rate ratio 0.98; 95% CI 0.80-1.19

- **ASPREE (ELDERLY):** No difference in rate of fatal or non-fatal MI
  - Aspirin 4.0 /1000 person years vs 4.3 / 1000 person-years
  - Hazard Ratio 0.93; 95% CI 0.76-1.15
Aspirin 2018: Stroke

- **ARRIVE (ALL COMERS):** *No difference* in rate of Stroke
  - Aspirin 1.20% vs Placebo 1.07%
    - Hazard Ratio 1.12; 95% CI 0.80–1.55

- **ASCEND (DIABETICS):** *No difference* in rate of non-fatal (ischemic) Stroke
  - Aspirin 2.6% vs Placebo 3.0%
    - Rate ratio 0.88; 95% CI 0.73-1.06

- **ASPREE (ELDERLY):** *No difference* in rate of non-fatal ischemic stroke
  - Aspirin 3.5 / 1000 person-years vs Placebo 3.9 / 1000 person years
    - Hazard Ratio 0.89; 95% CI 0.71-1.11
Aspirin 2018: Bleeding

- **ARRIVE (ALL COMERS):** Higher Rates of GI Bleeding with Aspirin
  - Aspirin 0.97% vs Placebo 0.47%
    - Hazard Ratio 2.11; 95% CI 1.36-3.28

- **ASCEND (DIABETICS):** Higher Rates of Major Bleeding with Aspirin
  - Aspirin 4.1% vs Placebo 3.2%
    - Rate ratio 1.29; 95% CI 1.09-1.52

- **ASPREE (ELDERLY):** Higher Rates of Major Hemorrhage
  - Aspirin 8.6 per 1000 person years vs Placebo 6.2 per 1000 person years
    - Hazard Ratio 1.38; 95% CI 1.18-1.62
Aspirin 2018: All Cause Mortality

- **ARRIVE (ALL COMERS): NO DIFFERENCE**
  - Aspirin 160 (2.55%) vs Placebo 161 (2.57%)
  - Hazard Ratio 0.99; 95% CI 0.80-1.24

- **ASCEND (DIABETICS): NO DIFFERENCE**
  - Aspirin 748 (9.7%) vs Placebo 792 (10.2%)
  - Hazard Ratio 0.94; 95% CI 0.85-1.04

- **ASPREE (ELDERLY): NO DIFFERENCE**
  - Aspirin 12.7 per 1000 person years vs 11.1 per 1000 person years
  - Hazard Ratio 1.14; 95% CI 1.01-1.29
Aspirin 2018: Controversy

“Moderate Risk”? 

- ARRIVE (ALL COMERS): Calculated ASCVD Risk 17.3%; Actual Event Rate: ~5% over 5 years of the study
- ASCEND (DIABETICS): Only 17.2% of study population had 5 year event risk of >10%
Omega-3 Fatty Acids
CARDIOVASCULAR OUTCOMES
Omega-3 Fatty Acids: BACKGROUND

Short Chain Ω-3

- ALA (Alpha-linolenic acid)

10%

Long Chain Ω-3

- EPA
- DHA (Docosahexaenoic acid)

Eicosapentaenoic acid

Docosahexaenoic acid
Omega-3 Fatty Acids: BACKGROUND

**Known:**
- Lower risk of death from Coronary Heart Disease in populations with high fish consumption
- Improvements in Interim Cardiac Measures: ↓TG (30%) / ↓ Systolic BP (1-2 mmHg) / ↓ HR (1-2 bpm)

**Unknown:**
- Benefits from Supplementation of Omega-3
- Cardiac Outcomes (Death, Vascular Events, Etc.)
The American Heart Association recommends eating fish (particularly fatty fish) at least two times (two servings) a week... Increasing omega-3 fatty acid consumption through foods is preferable. However, those with coronary artery disease, may not get enough omega-3 by diet alone. These people may want to talk to their doctor about supplements.

Effects of n–3 Fatty Acid Supplements in Diabetes Mellitus

The ASCEND Study Collaborative Group*

Omega-3 Fatty Acids: ASCEND

![Graph showing the comparison of First Serious Vascular Event between Placebo and Fatty acids over Years of Follow-up. The graph includes a table showing the No. at Risk for each group and the Cumulative benefit per 1000 patients in the fatty acid group with standard deviations.]
### Omega-3 Fatty Acids: ASCEND

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Fatty Acids (N=7740)</th>
<th>Placebo (N=7740)</th>
<th>Rate Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary</td>
<td>100 (1.3)</td>
<td>127 (1.6)</td>
<td>0.79 (0.61–1.02)</td>
</tr>
<tr>
<td>All stroke</td>
<td>35 (0.5)</td>
<td>37 (0.5)</td>
<td>0.94 (0.59–1.50)</td>
</tr>
<tr>
<td>Other vascular</td>
<td>61 (0.8)</td>
<td>76 (1.0)</td>
<td>0.80 (0.57–1.12)</td>
</tr>
<tr>
<td>Vascular</td>
<td>196 (2.5)</td>
<td>240 (3.1)</td>
<td>0.82 (0.68–0.98)</td>
</tr>
<tr>
<td>Cancer</td>
<td>305 (3.9)</td>
<td>319 (4.1)</td>
<td>0.95 (0.82–1.12)</td>
</tr>
<tr>
<td>Respiratory</td>
<td>73 (0.9)</td>
<td>78 (1.0)</td>
<td>0.93 (0.68–1.28)</td>
</tr>
<tr>
<td>Other medical</td>
<td>158 (2.0)</td>
<td>125 (1.6)</td>
<td>1.26 (1.00–1.59)</td>
</tr>
<tr>
<td>External causes</td>
<td>17 (0.2)</td>
<td>22 (0.3)</td>
<td>0.77 (0.41–1.45)</td>
</tr>
<tr>
<td><strong>Nonvascular</strong></td>
<td><strong>553 (7.1)</strong></td>
<td><strong>544 (7.0)</strong></td>
<td><strong>1.01 (0.90–1.14)</strong></td>
</tr>
<tr>
<td>Unknown cause</td>
<td>3 (0.0)</td>
<td>4 (0.1)</td>
<td>0.75 (0.17–3.31)</td>
</tr>
<tr>
<td><strong>All causes</strong></td>
<td><strong>752 (9.7)</strong></td>
<td><strong>788 (10.2)</strong></td>
<td><strong>0.95 (0.86–1.05)</strong></td>
</tr>
</tbody>
</table>

**Note:** The rate ratio for All causes shows a decrease in mortality from Fatty Acids to Placebo (0.95, 0.86–1.05), indicating a potential benefit of Fatty Acids over Placebo in reducing all-cause mortality in ASCEND.
Marine n–3 Fatty Acids and Prevention of Cardiovascular Disease and Cancer


Omega-3 Fatty Acids: VITAL

A Major Cardiovascular Events

Hazard ratio, 0.92 (95% CI, 0.80–1.06)  
P=0.24

Placebo

n–3 Fatty acids

Cumulative Incidence

No. at Risk
Placebo 12,938  12,862  12,745  12,592  12,281  9,825  775
n–3 Fatty acids 12,933  12,842  12,725  12,594  12,322  9,878  765

Years since Randomization
## Table 2. Hazard Ratios and 95% Confidence Intervals for the Primary, Secondary, and Other End Points, According to Randomized Assignment to n–3 Fatty Acids or Placebo, in Intention-to-Treat Analyses.

<table>
<thead>
<tr>
<th>End Point</th>
<th>n–3 Group (N=12,933)</th>
<th>Placebo Group (N=12,938)</th>
<th>Hazard Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total myocardial infarction</td>
<td>145</td>
<td>200</td>
<td>0.72 (0.59–0.90)</td>
</tr>
<tr>
<td>Total stroke</td>
<td>148</td>
<td>142</td>
<td>1.04 (0.83–1.31)</td>
</tr>
<tr>
<td>Death from cardiovascular causes</td>
<td>142</td>
<td>148</td>
<td>0.96 (0.76–1.21)</td>
</tr>
<tr>
<td>Death from any cause</td>
<td>493</td>
<td>485</td>
<td>1.02 (0.90–1.15)</td>
</tr>
<tr>
<td>Cardiovascular event in expanded composite end point</td>
<td>527</td>
<td>567</td>
<td>0.93 (0.82–1.04)</td>
</tr>
</tbody>
</table>
Associations of Omega-3 Fatty Acid Supplement Use With Cardiovascular Disease Risks
Meta-analysis of 10 Trials Involving 77,917 Individuals

Theingi Aung, MBBS, FRCP; Jim Halsey, BSc; Daan Kromhout, PhD; Hertzel C. Gerstein, MD; Roberto Marchioli, MD; Luigi Tavazzi, MD; Johanna M. Geleijnse, PhD; Bernhard Rauch, MD; Andrew Ness, PhD, FFPH; Pilar Galan, MD, PhD; Emily Y. Chew, MD; Jackie Bosch, PhD; Rory Collins, FMedSci, FRCP; Sarah Lewington, DPhil; Jane Armitage, FRCP, FFPH; Robert Clarke, MD, FRCP, FFPH; for the Omega-3 Treatment Trialists’ Collaboration

Omega-3 fatty acids for the primary and secondary prevention of cardiovascular disease (Review)

References

References


