Examining Special Nutritional Requirements in Disease States:
A Workshop

Planning Committee on Examining Special Nutritional Requirements in Disease States

April 2-3, 2018
The National Academy of Sciences Building
Lecture Room
2101 Constitution Avenue, NW
Washington, DC

Workshop Objectives
• Examine pathophysiological mechanisms by which specific diseases impact nutrient metabolism and nutrition status and whether this impact would result in nutrient requirements that differ from the Dietary Reference Intakes.
  o Explore the role of genetic variation in nutrition requirements.
  o Examine nutrient requirements in certain chronic conditions or acute phases for which emerging data suggest a contribution of nutrition status to disease outcomes. Consider the scientific evidence needed to establish such relationships and discuss principles about the relationship between nutrition requirements and specific diseases.
  o Explore how a disease state impacts nutrient metabolism and nutrition status and, conversely, what is the impact of nutrition status on the disease state.
• Identify promising approaches and challenges to establishing a framework for determining special nutrient requirements related to managing disease states.

WORKSHOP DAY 1: APRIL 2, 2018, 8:00 AM – 5:15 PM
8:00 AM Registration

Session 1: Introduction of the Concepts and Context of the Workshop
Moderator: Barbara Schneeman, University of California, Davis
8:30 Origins of the Workshop
  Barbara Schneeman, University of California, Davis, Planning Committee Chair
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

8:50   What Defines a Special Nutritional Requirement?
       Patsy Brannon, Cornell University

9:10   The Underlying Biological Processes of Special Nutritional
       Requirements
       Patrick Stover, Texas A&M University

9:30   Moderated Panel Discussion and Q&A

10:00  Break

Session 2: Addressing Nutrient Needs due to Loss of Function in Genetic Diseases
Moderator: Erin MacLeod, Children’s National Health System

10:20  Understanding the Basis of Nutritional Needs in PKU
       Denise Ney, University of Wisconsin-Madison

10:40  Nutritional Inadequacies in Mitochondrial-Associated Metabolic Disorders
       Marni Falk, The Children’s Hospital of Philadelphia (via Zoom)

11:00  Contribution of Nutrients in Complex Inborn Errors of Metabolism:
       The Case of Methylmalonic Aciduria (MMA)
       Charles Venditti, National Human Genome Research Institute,
                   National Institutes of Health

11:20  Lessons Learned: What We Know about Nutrition Management for
       Inborn Errors of Metabolism
       Sue Berry, University of Minnesota

11:40  Moderated Panel Discussion and Q&A

12:00 – 1:00 PM   Lunch

Session 3: Disease-Induced Loss of Function and Tissue Regeneration
Moderator: Alex Kemper, Nationwide Children’s Hospital

1:00   Examples of GI Dysfunction and Malabsorption of Nutrients:
       Intestinal Failure
       Chris Duggan, Boston Children’s Hospital (via Zoom)

1:30   Examples of GI Dysfunction and Malabsorption of Nutrients: Cystic
       Fibrosis
       Sarah Jane Schwarzenberg, University of Minnesota Masonic
       Children’s Hospital

1:50   Nutritional Requirements for Inflammatory Bowel Disease
       Dale Lee, Seattle Children’s Hospital
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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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<tr>
<td>2:10</td>
<td>Blood-Brain Barrier Dysfunction and Resulting Brain Nutrient Deficiencies</td>
<td>Martha Field, Cornell University</td>
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<td>2:30</td>
<td>Macro- and Micronutrient Homeostasis in the Setting of Chronic Kidney Disease</td>
<td>Alp Ikizler, Vanderbilt University</td>
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<td>2:50</td>
<td>Moderated Panel Discussion and Q&amp;A</td>
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<td>3:15</td>
<td>Break</td>
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<td>3:30</td>
<td><strong>Session 4: Diseased-Induced Deficiency and Conditionally Essential Nutrients in Disease</strong></td>
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<td><strong>Moderator:</strong> Bernadette Marriott, Medical University of South Carolina</td>
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<td>3:30</td>
<td>Arginine as an Example of a Conditionally Essential Nutrient: Sickle Cell Anemia and Surgery</td>
<td>Claudia Morris, Emory University School of Medicine</td>
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<td>3:50</td>
<td>Nutrition Needs in Hypermetabolic States: Burns, Cachexia, and Surgery</td>
<td>Paul Wischmeyer, Duke University School of Medicine</td>
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<td>4:30</td>
<td>Metabolic Turnover, Inflammation, and Redistribution: Impact on Nutrient Requirements</td>
<td>Jesse Gregory, University of Florida</td>
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<td>5:15</td>
<td>Meeting adjourns</td>
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**WORKSHOP DAY 2: APRIL 3, 2018, 8:00 AM – 1:00 PM**

8:00 – 8:30 AM Registration

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<td>8:30</td>
<td><strong>Session 5: Building the Evidence Base: Research Approaches for Nutrients in Disease States</strong></td>
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<td><strong>Moderator:</strong> David Suskind, University of Washington</td>
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<tr>
<td>8:30</td>
<td>Type and Strength of Evidence Needed for Determining Special Nutrient Requirements</td>
<td>Amanda MacFarlane, Health Canada</td>
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Identification and Validation of Biomarkers in Disease States
Patrick Stover, Texas A&M University

Innovative Causal Designs for Efficacy. What Type of Evidence is Needed?
Nicholas Schork, J. Craig Venter Institute

Examples of a Complex Disease
- Inflammatory Bowel Disease
  Gary Wu, University of Pennsylvania
- Cancer
  Steve Clinton, Ohio State University

Moderated Panel Discussion and Q&A

Session 6: Future Opportunities

Principles Learned from Workshop Presentations
Barbara Schneeman, University of California, Davis

Panel Discussion
Susan Barr, University of British Columbia
Kristen D’Anci, ECRI Institute
Tim Morck, Spectrum Nutrition LLC
Ginanne Stallings, University of Pennsylvania Perelman School of Medicine

Sponsor Remarks
Paul Coates, National Institutes of Health
Patricia Hansen, U.S. Food and Drug Administration
Caren Heller, Crohn’s and Colitis Foundation
Chantal Martineau, Health Canada
Sarah Ohlhorst, American Society for Nutrition
Alison Steiber, Academy of Nutrition and Dietetics

Meeting adjourns