Going with the Grain

Solutions to Achieve 2010 Dietary Guidelines Fiber Recommendations
Objectives

✓ Understand the new guidance for dietary fiber, grains and carbohydrates in the 2010 Dietary Guidelines for Americans (DGA)

✓ Broaden knowledge of the science behind fiber sources and the role of added fibers in closing the fiber gap

✓ Provide practical solutions that can help your patients and clients:
  – Better understand fiber sources
  – Meet their fiber intake goals without significantly increasing calories
Today’s Speakers

• Lisa M. Sanders, PhD, RD
  – Senior Nutrition Scientist, Kellogg Company

• Joanne Slavin, PhD, RD
  - Professor, Department of Food Science and Nutrition, University of Minnesota - Twin Cities
  - Member of 2010 Dietary Guidelines Advisory Committee

• Amy R. Mobley, PhD, RD
  - Assistant Professor of Foods and Nutrition, Purdue University
SETTING THE STAGE: 2010 DGA
Development of Dietary Guidelines Policy and Communications

DGAC Charter

DGAC is chartered

DGAC Public Meetings: Review of the Science

Public comments collected

DGAC Advisory Report submitted to the Secretaries of USDA & HHS

USDA & HHS write the Policy Document

DG’s implemented through Federal programs

The New “Pyramid”

Evidence-based Methodology Used to Review the Science
What’s Different: 2010 DGA

• Simplest consumer messages ever used in DGA
  – Including emphasis on behavior and eating occasions

• The first time the government:
  – Developed guidelines for an unhealthy or “sick” population
  – Stated “eat less” since 1977 guidelines (“enjoy your food but eat less”)
  – Recognized an ecological model as a matter of policy, setting stage for role of environment (e.g. food industry) in helping consumers eat healthfully

• Provided direct recommendations to:
  – Balance calories
  – Aim for nutrient-dense foods
  – Be active

• Highlighted “Enjoyment”
2010 Dietary Guidelines for Americans

• Balancing Calories
  – Enjoy your food, but eat less
  – Avoid oversized portions

• Foods to Increase
  – Make half your plate fruits and vegetables
  – Switch to fat-free or low-fat milk

• Foods to Reduce
  – Compare sodium in foods and choose foods with lower numbers
  – Drink water instead of sugary drinks
America’s Fiber Deficit

• No surprise 2010 DGA list fiber as a “nutrient of concern”
  – Nearly all Americans – 95% of adults and children – fall short of the recommended daily fiber intake
  – Americans’ fiber deficit cuts deep, averaging only 15 grams of fiber per day, far less than the recommended 21-38 grams for most adults and 19-38 grams for children ages 1-18
Fiber: Risk-Reducer Superhero

• 2010 DGAC highlighted fiber’s compelling association with:
  – Reducing coronary heart disease (CHD) – the leading cause of death in the U.S.
  – Promoting healthy laxation and contributing to satiety
  – Reducing cancer risk
  – Reducing the risk of type 2 diabetes

• Considering prevalence of diabetes, CHD, and overweight/obesity, hard to deny the widespread inadequate fiber intake is a major public health concern
2010 DGA Recommendations: Fiber

- Encouraged to choose foods that provide more potassium, dietary fiber, calcium and vitamin D.

- Eating more whole grains, particularly those higher in dietary fiber, help in maintaining a lower body weight.

- Not all whole grain products are good or excellent sources of dietary fiber.

- Functional fiber/added fiber is starting to become part of the definition of fiber sources.

- Foods high in water and/or dietary fiber typically have fewer calories per gram and are lower in calorie density.
Registered Dietitians Told Us ...

- Strong consensus around importance of fiber in client communication
- General knowledge of functional fibers, including specific types of functional fibers (e.g. inulin)
- About two-thirds see foods fortified with functional fibers as playing a positive role in addressing the fiber deficit
- However ...
  - Many are confused around the relationship between fiber and whole grain
  - Concerns about the value of “functional fiber fortified foods” relative to whole food fiber sources
  - 58% “worry that some fiber fortified foods don’t offer the same benefits as whole foods with dietary fiber.”
- Lack of confidence in benefits of fiber-fortified foods among one-third of RDs driven by several concerns, including:
  - Un-healthfulness of processed foods
  - Functional fibers are not equivalent to natural sources

*Online interviews conducted August, 2010, RDs screened from both general audience universe and universe of medical specialty practice groups.*
Classifying Fiber

• **Dietary Fiber**: Fiber naturally found in plant foods

• **Added or Functional Fibers**: Include functional, novel and isolated fiber
  – May be extracted from fruits, vegetables, legumes, and seeds
  – modified forms of traditional fibers or manufactured from other ingredients such as corn or wheat

• **Total Fiber**: the sum of *dietary fiber* and *functional fiber*
Fiber Varies In Common Whole Grain Foods

**Sidebar 2:**
Fiber Content of Commonly Consumed Whole-Grain Foods

<table>
<thead>
<tr>
<th>Food</th>
<th>Fiber (per serving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Rice</td>
<td>1.8g (½ cup)</td>
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<tr>
<td>Muesli</td>
<td>6.2g (1 cup)</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>2g (½ cup)</td>
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<tr>
<td>(cereals, oats, regular and quick and instant, unenriched, cooked with water, without salt)</td>
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</tr>
<tr>
<td>Popcorn</td>
<td>3.5g (3 cups)</td>
</tr>
<tr>
<td>Whole Wheat Bread</td>
<td>1.9g (1 slice)</td>
</tr>
<tr>
<td>Whole Wheat Crackers</td>
<td>2.4g (5 crackers)</td>
</tr>
<tr>
<td>Wild Rice</td>
<td>1.5g (½ cup)</td>
</tr>
</tbody>
</table>

Where Are We Getting Our Fiber?

• More than 25 different foods deliver 13.8 grams of fiber people consuming daily
Challenge

How do we improve Americans’ fiber intake while still balancing calories?
Purpose

To simulate the impact of various approaches to increase dietary fiber in diets of Americans using data from the National Health and Nutrition Examination Survey (2003-2006).

Methods

• Looked at baseline mean usual intake
• Conducted a variety of simulations to assess impact on usual Dietary Fiber (DF) intakes in US adults 19+ yrs:

1) increase all fiber-containing foods (fruits, vegetables, and grains) by 10, 25, 50, or 100%;

2) increase fiber content of low fiber grain products to a) a good source level (2.5 g/serving) or b) an excellent source level (5.0 g/serving); and

3) increase currently available whole grain foods to meet recommendations of one-half of total grain (maximum increase of five times current intake).

• Impact on energy intake (Kcal) was also determined.
Bottom Line

• To meet daily fiber intake goals, you could:

  – Increase consumption of foods with fiber:
    • 1,043 extra calories
  – Increase consumption of whole grain foods:
    • 1,266 extra calories
  – Choose foods with added fiber (2.5-5.0 g/svg):
    • 0 extra calories
Implications

• Foods with added fiber help close fiber gap without affecting overall calorie intake

• Opportunity for food manufacturers to reformulate products with added fiber
Added Fiber Can Be Found In ...
## Benefits of Added Fibers

<table>
<thead>
<tr>
<th>Isolated Fiber* <em>(Functional Fiber)</em></th>
<th>Beneficial Role</th>
<th>Primary Source</th>
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</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>Laxation</td>
<td>Plant foods</td>
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<tr>
<td>Guar Gum</td>
<td>Blood lipid lowering</td>
<td>Guar bean (legume)</td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
<td></td>
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<tr>
<td>Inulin/Oligofructose/ Fructooligosaccharide (FOS)</td>
<td>Laxation</td>
<td>Chicory root, Jerusalem artichoke, Synthesized from simple CHO</td>
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<tr>
<td></td>
<td>Blood lipid lowering</td>
<td></td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
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</tr>
<tr>
<td>Beta-glucan (β-glucan) and oat bran</td>
<td>Blood lipid lowering</td>
<td>Oats and Barley</td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
<td></td>
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<tr>
<td>Pectin</td>
<td>Blood lipid lowering</td>
<td>Plant foods</td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
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<tr>
<td>Polydextrose</td>
<td>Laxation</td>
<td>Synthesized from dextrose (glucose)</td>
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<tr>
<td>Psyllium</td>
<td>Laxation</td>
<td>Psyllium husk (plant)</td>
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<td></td>
<td>Blood lipid lowering</td>
<td></td>
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<tr>
<td>Resistant Dextrins</td>
<td>Blood lipid lowering</td>
<td>Corn and wheat</td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
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<tr>
<td>Resistant Starch</td>
<td>Laxation</td>
<td>Plant foods</td>
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<tr>
<td></td>
<td>Attenuates blood glucose response</td>
<td></td>
</tr>
<tr>
<td>Soluble Corn Fiber†</td>
<td>Attenuates blood glucose response</td>
<td>Corn</td>
</tr>
</tbody>
</table>

TURNING RECOMMENDATIONS INTO ACTIONS
## Lost In Translation

### Health Professional Talk

- Soluble fiber
- Insoluble fiber
- Functional fiber
- Dietary fiber
- Females of child-bearing age
- Dark, green, leafy vegetables
- Adequate
- Complex Carbohydrates
- Cardiovascular
- Lipids
- Serum Glucose
- Consume
- Mean

### Consumer Talk

- Fiber
- Fiber
- Fiber
- Fiber
- Women who might get pregnant
- Greens
- Enough of
- Starchy foods
- Heart
- Fat
- Blood Sugar
- Eat
- Average

Analysis from Carol Byrd-Bredbenner, PhD, RD, FADA, Rutgers University
Targeted and Tailored Messages

• Are more likely to be
  – Read and remembered
  – Rated as attention catching
  – Saved and discussed with others
  – Perceived as personally relevant
Consumer Tested Messages

Make your whole-grain choices count. Choose at least 3 servings of whole grains with at least 3 grams of fiber per serving every day.

Make the most of your grains. Choose grain foods that provide at least 3 grams of fiber per serving most often.
**Preferred Messages: Fiber & Whole Grains**

### Why They Work

- Easier to understand – and make it more likely to incorporate guidance into their diet
- Are simpler, give them specific direction (“3 grams”)
- Use terms they know
  - “Refined grains” was a challenge in DGAC Report-based messages

### Why They Matter

- Fiber is essential to good health at all life stages
- Americans need to boost fiber intake
  - 92% of consumers say they’re trying to get more fiber in their diet\(^5\)
  - 9 out of 10 Americans are still falling short on daily fiber needs\(^6\)
- Not all grain foods are created equal when it comes to fiber – Americans need help knowing what to look for
  - Nearly half of ready-to-eat cereals with on-pack whole grain claims do not meet criteria for even a good source of fiber\(^7\)

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\(^5\)IFIC Health & Wellness Study, 2008
\(^6\)Moshfegh, Alanna; Goldman, Joseph; and Cleveland, Linda; 2005 What We Eat in America, NHANES 2001-2002USDA ARS
\(^7\)Completed using a syndicated database, 01/01/05 to 07/24/08. Current product formulations or on-pack messaging may be different from the information reflected in this report
Challenges to Closing the Fiber Gap

- Perception:
  - Taste
  - Color
  - Cost

- Food selection:
  - Food Label
  - Eating out

- Availability
What Can You Do?

**Educate:**

- **Peers:**
  - Benefits of fiber fortified foods
  - Educational strategies for consumers
- **Patients/ Clients:**
  - Label reading skills
  - Recipe demonstrations and food sampling
- **Policy makers**
  - Consistent whole grain labeling system
  - Inclusion of foods with good sources of fiber in food assistance programs
  - Availability of foods for limited resource populations
What Can You Do?

• **Be a champion:** Help translate DGA into actions

• **Consider all foods with fiber:** Fruits, vegetables, legumes; and all grain products with at least 3 grams of fiber per serving

• **Encourage Sampling/Coupons:** More likely to eat what they know
What You Should Tell Your Clients

• Encourage them to eat more whole grains, fruits, vegetables, legumes

• When purchasing grains:
  – “Flip” to the Nutrition Facts label and look for fiber
  – When choosing whole grains, look for foods that contain at least 3g fiber/serving

• Boost fiber intake while balancing calories by making small changes to your diet and enjoying products with added fiber
### Meal Plan #1

**Breakfast**
- 1 cup sugar-coated flake cereal: 1.3g
- 1 cup low-fat milk
- 1 small banana
- 1 cup coffee with 2 tsp sugar, 1 tbsp half & half

| Fiber | 3.9g |

**Lunch**
- Ham and swiss sandwich
  - 2 oz ham luncheon meat
  - 1 oz swiss cheese
  - 2 tsp light mayo
  - 1 leaf lettuce
  - 1 sandwich roll
  - 1 oz potato chips
  - 8 fl oz sweet tea

| Fiber | 2.4g |

**Snack**
- 3 chocolate chip cookies: 0.6g

| Fiber | 0.6g |

**Dinner**
- Spaghetti with meatballs
  - 1 cup pasta: 2.5g
  - 2 oz meatballs
  - ½ cup marinara sauce
  - 1 tbsp parmesan cheese
  - Tossed salad
    - 1 cup iceberg lettuce
    - 2 tbsp light Italian dressing
  - Water

| Fiber | 5.8g |

**Total Fiber** 13g
**Total Calories** 1590

### Meal Plan #1 with Fiber Swaps

**Breakfast**
- 1 serving Kellogg's Frosted Mini Wheats (24 biscuits): 6.0g
- 1 cup low-fat milk
- 1 small banana
- 1 cup coffee with 2 tsp sugar, 1 tbsp half & half

| Fiber | 8.6g |

**Lunch**
- Ham and swiss sandwich
  - 2 oz ham luncheon meat
  - 1 oz swiss cheese
  - 2 tsp light mayo
  - 1 leaf lettuce
  - 1 sandwich roll
  - 1 oz potato chips
  - 8 fl oz sweet tea

| Fiber | 2.4g |

**Snack**
- 1 Kellogg's FiberPlus™ Chocolate Chip Bar: 9.0g

| Fiber | 9.0g |

**Dinner**
- Spaghetti with meatballs
  - 1 cup pasta: 2.5g
  - 2 oz meatballs
  - ½ cup marinara sauce
  - 1 tbsp parmesan cheese
  - Tossed salad
    - 1 cup iceberg lettuce
    - 2 tbsp light Italian dressing
  - Water

| Fiber | 5.8g |

**Total Fiber** 26g
**Total Calories** 1580
### Meal Plan #1

#### Breakfast
- 1 cup sugar-coated flake cereal: 1.3g
- 1 cup low-fat milk
- 1 small banana: 2.6g
- 1 cup coffee with 2 tsp sugar, 1 tbsp half & half

**Fiber**: 3.9g

#### Lunch
- Ham and Swiss sandwich
  - 2 oz ham luncheon meat
  - 1 oz Swiss cheese
  - 2 tsp light mayo
  - 1 leaf lettuce
  - 1 sandwich roll: 1.2g
- 1 oz potato chips: 1.2g
- 8 fl oz sweet tea: 1.2g

**Fiber**: 2.4g

#### Snack
- 3 chocolate chip cookies: 0.6g

**Fiber**: 0.6g

#### Dinner
- Spaghetti with meatballs
  - 1 cup pasta: 2.5g
  - 2 oz meatballs
  - ½ cup marinara sauce: 2.0g
  - 1 tbsp parmesan cheese
- Tossed salad
  - 1 cup iceberg lettuce: 1.3g
  - 2 tbsp light Italian dressing
- Water

**Fiber**: 5.8g

**Total Fiber**: 13g
**Calories**: 1590

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**Other Examples of Small Steps to Increase Fiber & Improve Food Choices for Meal Plan #1:**

- **Add a small apple** + 3.5g fiber
- **Upgrade to whole-grain pasta that is at least a good source of fiber** + 3.5g fiber
- **Replace potato chips with ½ cup baby carrots** + 1.5g fiber + 1 serving vegetable
- **Switch to romaine lettuce or add ¼ cup chopped tomatoes** + ½g fiber
- **Add 1 cup low-fat or fat-free milk, ½ cup low-fat yogurt** + 1.5 servings milk

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Resources Available

- American Dietetic Association: [www.eatright.org](http://www.eatright.org)
- MyPyramid: [www.mypyramid.gov](http://www.mypyramid.gov)
- National Fiber Council: [www.nationalfibercouncil.org](http://www.nationalfibercouncil.org)
- IFIC: [www.foodinsight.org](http://www.foodinsight.org)
Kellogg Resources

Closing America's Fiber Gap with Options and Variety

Americans' low fiber intake causes various health problems. Thirteen percent of Americans over the age of one consumes less than the estimated average recommended intake (less than 20 grams per day for adults and 14 grams per day for children). A low fiber intake directly impacts the nation's public health, as the intake of fiber in health promotion and disease risk reduction.

Adequate fiber intake is linked to health benefits, including lower risk of certain diseases and chronic conditions. Therefore, we recommend that all U.S. adults consume at least 25 grams of fiber daily. This is a significant change from the previous recommendation of at least 14 to 18 grams per day for women and 20 to 25 grams per day for men. This change is based on recent evidence that suggests a lower threshold for optimal health benefits. The Institute of Medicine recommends 25 to 30 grams of fiber daily (based on age and gender).

*Fiber adds bulk to your diet, which can help you feel full and satisfied between meals, and therefore, can help you lose weight or maintain a healthy weight.


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Fill Up on Fiber in the Fewest Calories

Simple Solutions to Eat Away at America's Fiber Deficit

Americans continue suffering from a nutritional imbalance, consuming too many calories and too few important nutrients. And, when it comes to fiber, "too few" is an understatement.

The reality is nearly all Americans – 94 percent of adults and 96 percent of children – fall short of the recommended daily fiber intake. Americans' fiber deficit cuts deep, averaging only 18 grams of fiber per day for less than the recommended 21 to 38 grams for most adults and 19 to 30 grams for children ages 1 to 3.

Not surprisingly, the 2010 Dietary Guidelines for Americans (DGA) call attention to fiber as a "nutrient of concern." In addition, its technical report 2010 Dietary Guidelines Advisory Committee highlighted fiber's compelling association with reducing the risk of both diabetes and coronary heart disease (CHD) – the leading cause of death in the U.S. – as well as fiber's role in promoting healthy weight loss and in controlling obesity, which is important for weight control. Considering the increasing prevalence of obesity and overweight, it's clear that the widespread inadequate intake of fiber is a serious health concern.

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<table>
<thead>
<tr>
<th>Meal Plan 3</th>
<th>Meal Plus with Fiber Snacks</th>
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</thead>
<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td><strong>Breakfast</strong></td>
</tr>
<tr>
<td>Oatmeal with milk</td>
<td>Peanut butter with banana</td>
</tr>
<tr>
<td>16 grams</td>
<td>18 grams</td>
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<tr>
<td><strong>Lunch</strong></td>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>Grilled chicken salad</td>
<td>Turkey lettuce wraps</td>
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<tr>
<td>18 grams</td>
<td>18 grams</td>
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<tr>
<td><strong>Dinner</strong></td>
<td><strong>Dinner</strong></td>
</tr>
<tr>
<td>Spaghetti with meatballs</td>
<td>Chili with beans</td>
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<tr>
<td>20 grams</td>
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<tr>
<td><strong>Snack</strong></td>
<td><strong>Snack</strong></td>
</tr>
<tr>
<td>Apple slices</td>
<td>Greek yogurt with mixed berries</td>
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<tr>
<td>10 grams</td>
<td>10 grams</td>
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<table>
<thead>
<tr>
<th>Meal Plan 4</th>
<th>Meal Plus with Fiber Snacks</th>
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<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td><strong>Breakfast</strong></td>
</tr>
<tr>
<td>Yogurt with granola and fruit</td>
<td>Almond butter with apple slices</td>
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<tr>
<td>15 grams</td>
<td>16 grams</td>
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<tr>
<td><strong>Lunch</strong></td>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>Grilled salmon and vegetables</td>
<td>Turkey wraps with spinach</td>
</tr>
<tr>
<td>18 grams</td>
<td>18 grams</td>
</tr>
<tr>
<td><strong>Dinner</strong></td>
<td><strong>Dinner</strong></td>
</tr>
<tr>
<td>Chicken stir-fry</td>
<td>Black bean and corn salad</td>
</tr>
<tr>
<td>18 grams</td>
<td>18 grams</td>
</tr>
<tr>
<td><strong>Snack</strong></td>
<td><strong>Snack</strong></td>
</tr>
<tr>
<td>Carrot sticks</td>
<td>Roasted edamame</td>
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<td>10 grams</td>
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</table>
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Questions?
Thank You!

Lisa Sanders, PhD, RD
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