On behalf of the California Department of Social Services, the California Department of Public Health Nutrition Education and Obesity Prevention Branch, UC CalFresh, California Department of Aging, and Catholic Charities of California, we are pleased to welcome you to the California SNAP-Ed training:

**Addressing Nutrition Hot Topics Webinar**
**Organic Food Trivia**

What year did USDA release its national standards for organic products, officially bringing the movement into the mainstream?

- a. 1987
- b. 2002
- c. 1999
- d. 2006

Say: Good morning and welcome to today's webinar: Addressing Nutrition Hot Topics: 2015 DGA. For those of you that have arrived early we have some fun trivia for you so let's start with our first trivia on the topic of organic food. (Read question, launch poll, share, close poll, go to next slide for answer)

a. 1987
b. 2002
c. 1999
d. 2006

Read Answer
Caffeine Trivia

All of the following have been reported about coffee EXCEPT:

a. The ruler of Mecca linked coffee to gambling & banned it
b. A German king said “coffee is disgusting - drink beer.”
c. An Ethiopian queen made prisoners eat raw coffee beans
d. Johann S. Bach wrote a “Coffee Cantada” for his daughter

Instructions: Read trivia, launch poll, share poll, close poll, go to next slide for answer.

Source: Uncommon Grounds The History of Coffee And How It Transformed Our World
Caffeine Trivia

All of the following have been reported about coffee **EXCEPT:**

c. A queen of Ethiopia required prisoners to eat raw coffee beans

Read Answer

Instructions: Read trivia, launch poll, share poll, close poll, go to next slide for answer.
GMO Trivia

What year was the transgenic Flavr Savr tomato approved by the FDA for marketing in the US?

a. 1949
b. 2001
c. 1994
d. 2010

Instructions: Read trivia, launch poll, share poll, close poll, go to next slide for answer. The Flavr Savr is no longer planted commercially.

Tomato GMO - https://pixabay.com/get/e832b50b21f1033ed1584d05fb0938c9bd22ffd41db619439cf3c37ba1/modified-1744952_1280.jpg?attachment
Source - https://en.wikipedia.org/wiki/Genetically_modified_food
Flavr Savr is no longer in use commercially.

Read answer
Welcome!

Addressing Nutrition Hot Topics Webinar

Image: https://pixabay.com/ under Creative Commons CC0
Chat box Q&A

Answer questions in the chat box to “All Entire Audience” throughout the webinar.

Do: Read slide then Acknowledge the responses and thank everyone for responding.
Objectives

- Compare sample daily caffeine intake to DGA recommendation.
- List public concerns and scientific facts about GMOs, and develop responses for questions in SNAP-Ed classes.
- List public concerns about organic vs. conventional foods and develop science-based responses for questions in SNAP-Ed classes.
- Identify common reasons why people choose to follow a gluten free diet. Be familiar with the science vs the “feelings” regarding gluten. Be familiar with basic information on foods containing gluten.

**Lyn:** What will our time together today look like? We are excited to have Dr. Sheri Zidenberg-Cherr and Dr. Rachel Scherr from UC Davis presenting for us today on Nutrition Hot Topics. They'll be covering topics like DGA recommendations on caffeine, scientific facts about GMOs and organic vs. conventional foods, as well as providing you with facts about gluten-free diets. So without further ado I’d like to introduce our distinguished presenters.
Lyn
Dr. Sheri Zidenberg-Cherr is Vice-Chair of the Department of Nutrition at UC Davis, Co-Director of the UC Davis Center for Nutrition in Schools, and a UC Cooperative Extension Nutrition Science Specialist.

Dr. Rachel Scherr is Assistant Research Scientist with the UC Davis Department of Nutrition and Associate Director for Program Evaluation with the UC Davis Center for Nutrition in Schools.
Controversial Issues

Sheri
Current Issues and Controversies in Nutrition

- Nutrition Science
- Dietary Guidelines for Americans
  - as a basis for dietary recommendations
- Caffeine Recommendations
- Controversies
  - GMOs
  - Conventional vs Organic Production
  - Gluten
Beyond the Hype

• Nutrition is an inter-disciplinary science
  – “Evidence-based” recommendations
  – Understanding these recommendations can help you identify the hype from those with good scientific evidence

Sheri
Lyn

Our class participants many times become confused and frustrated because it seems that nutrition information is always changing - or they hear different information coming from different sources. For example, the 2015 Dietary Guidelines made some changes to the recommendations about cholesterol intake. Articles quickly appeared with headlines like “Eggs are okay again”

We’re going to ask you to chat out some topics you have heard about where nutrition advice seems to be conflicting.

What topics in nutrition have you heard conflicting advice about?

Chat your responses

Mike and Maegan read out chat outs

Image: USDA – public domain
“Just eat whatever the heck you want. One day something’s bad for you, one day it’s good for you. Maybe I’ll get lucky and smoking will be good for me too.”

Sheri - It is our responsibility as nutrition scientists and educators to act as credible sources of science-based nutrition recommendations.

We must work to prevent the attitude:

“Just eat whatever the heck you want. One day something’s bad for you, one day it’s good for you. Maybe I’ll get lucky and smoking will be good for me too.”
Why is there so much variability with respect to individuals’ responses to diet?

Sheri

Image: https://pixabay.com/ under Creative Commons CC0
The study of how dietary choices & food components affect the human physiologic system, from the genome (genetics) level, to proteome (proteins), to metabolome (metabolites), and ultimately physiologic functioning and health.

Underlying assumptions:

• Diet & dietary components can alter risk of disease development by modifying processes involved with onset, progression or severity

• Food components can act on the human genome directly, or indirectly at levels of protein expression & function, to alter expression of genes and gene products

• Diet can potentially compensate for or accentuate effects of genetic polymorphisms
Microbiome

- Billions of microorganisms that are on and in us
- Essential for normal functioning
- Differs from person to person, place to place and over time

Personalized Nutrition Recommendations

• Both our genetic make-up, epigenetic factors and our microbiome influence how we respond to our environment

• **GOAL:** Personalized nutrition therapies to maximize genetic, potentials, prevent chronic disease and improve treatment outcomes
Comment: DGA is the foundation of SNAP-Ed nutrition education and obesity prevention interventions. SNAP-Ed intervention strategies may focus on limiting, as well as increasing consumption of certain foods, beverages and nutrients consistent with the DGAs. (2017 SNAP-Ed Plan Guidance)
Academy of Nutrition and Dietetics Commends Strong Evidence-Based Dietary Guidelines Report

Thursday, May 14, 2015

WASHINGTON, D.C. – The Academy of Nutrition and Dietetics, the world's largest organization of food and nutrition professionals, commends the 2015 Dietary Guidelines Advisory Committee for drafting a strong, evidence-based Scientific Report outlining recommendations and rationale for the forthcoming 2015 Dietary Guidelines for Americans. The Academy supports these recommendations that will improve how and what Americans eat.

The Academy applauds the evidence-based systematic review of the literature, which is vital to the DGAC's assessment of the science. We commend the Department of Health and Human Services and the Department of Agriculture for their commitment to the Nutrition Evidence Library and their ongoing efforts to strengthen the evidence-based approach for assessing the scientific literature for future dietary recommendations.
This was a new area of Dietary Guidelines committee. They recognized the impact of food and beverages on environmental outcomes from farm to plate to waste disposal and the need for dietary guidance to include the wider issue of sustainability.

Basis was that it is essential to ensure a healthy food supply that is available for future generations.

Sustainable diets: a pattern of eating that promotes health and well-being and provides food security for present population while sustaining human and natural resources for future generations.
Dietary Guidelines for Americans (2015-2020)

• USDA Secretary Tom Vilsack
• HHS Secretary Sylvia Burwell

— “..In terms of the 2015 Dietary Guidelines for Americans we will remain within the scope of our mandate...which is to provide ‘nutritional and dietary information and guidance based on the preponderance of scientific and medical knowledge’.”
Dietary Guidelines for Americans (2015-2020)

• Eat for health and for the long run
• Start with small changes
• Support healthy choices for everyone
Dietary Guidelines for Americans, 2010

• Balance calories with physical activity to manage weight

• Consume more of certain foods and nutrients such as fruits, vegetables, whole grains, fat-free and low-fat dairy products and seafood

• Consume fewer foods with sodium (salt), saturated fats, trans fats, cholesterol, added sugars and refined grains.
"If it wasn't for coffee, I'd have no discernible personality at all."

David Letterman

Mike Starts

Introduces Dr. Rachel Scherr
More than 95% of American adults consume caffeine foods or drinks

Need my coffee!

Rachel
It is advised to consume less than 400mg of caffeine per day in order to incorporate moderate caffeine consumption into a healthy eating pattern. This is the first time that the Dietary Guidelines has made a recommendation for caffeine. As such, it is not in any of the SNAP-Ed approved curricula, however it is important for everyone to know that there is a recommendation now.

Image: Public domain
Intake differs by age and sex

Few exceed DGA daily guideline of 400 mg

Rachel

Caffeine is not a nutrient; it is a dietary component that functions in the body as a stimulant. Caffeine occurs naturally in plants (e.g., coffee beans, tea leaves, cocoa beans, kola nuts). It also is added to foods and beverages (e.g., caffeinated soda, energy drinks). If caffeine is added to a food, it must be included in the listing of ingredients on the food label.

Much of the available evidence on caffeine focuses on coffee intake. Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns. This guidance on coffee is informed by strong and consistent evidence showing that, in healthy adults, moderate coffee consumption is not associated with an increased risk of major chronic diseases (e.g., cancer) or premature death, especially from CVD. However, individuals who do not consume caffeinated coffee or other caffeinated beverages are not encouraged to incorporate them into their eating pattern.

Most adults do not consume more than the recommended amount of caffeine. Daily intakes of caffeine exceed 400 mg per day for a small percent of the adult population. About 10% of adult men and about 5% of adult women exceed the 400 mg per day recommended upper limit for caffeine. Caffeine sources for adults are
largely from coffee and tea, which provide about 70 to 90 percent of total caffeine intake across all adult age groups.

Image: Public domain
Matching Game?
Guess about how many servings of each of these foods or drinks equals about 400 mg?

- Tea
- Cola
- Coffee
- Energy Drink
- Chocolate bar

a. 2.5-5 servings
b. 4 servings
c. 9 servings
d. 7-29 servings
e. 9-20 servings

Mike starts
Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Matching Game

Guess about how many servings of each of these foods or drinks equals 400 mg?

a. 2.5-5 servings (80 - 160 mg)

Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Matching Game
Guess about how many servings of each of these foods or drinks equals 400 mg?

a. 2.5-5 servings
   (80-160 mg)

b. 4 servings
   (100 mg)

Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Matching Game
Guess about how many servings of each of these foods or drinks equals 400 mg?

a. 2.5-5 servings (80 -160 mg)

b. 4 servings (100 mg)

c. 9 servings (45 mg)

Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Matching Game
Guess about how many servings of each of these foods or drinks equals 400 mg?

a. 2.5-5 servings (80-160 mg)

b. 4 servings (100 mg)

c. 9 servings (45 mg)

d. 7-29 servings (14-60 mg)

Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Matching Game

Guess about how many servings of each of these foods or drinks equals 400 mg?

<table>
<thead>
<tr>
<th>Option</th>
<th>Servings</th>
<th>mg Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Energy Drinks</td>
<td>2.5-5 servings</td>
<td>80 -160 mg</td>
</tr>
<tr>
<td>b. Coffee</td>
<td>4 servings</td>
<td>100 mg</td>
</tr>
<tr>
<td>c. Colas</td>
<td>9 servings</td>
<td>45 mg</td>
</tr>
<tr>
<td>d. Tea</td>
<td>7-29 servings</td>
<td>14-60 mg</td>
</tr>
<tr>
<td>e. Chocolate bars</td>
<td>9-20 servings</td>
<td>20-45 mg</td>
</tr>
</tbody>
</table>

Images: Chocolate bar
https://commons.wikimedia.org/wiki/File:Cooking_chocolate,_whole_bar.jpg
All others free to use
Rachel:
There is very little naturally occurring caffeine in foods. There is some in chocolate, ~20 mg per serving, but most foods that contain caffeine have had it added. Here are some different caffeinated snack foods and the amounts of caffeine they contain. Other foods, like coffee-containing ice cream also have caffeine, around 20-50 mg per serving.

Some Gums: 45 mg
A particular brand of waffles – 200 mgs
A candy with espresso beans (and caffeine added) – 600 mgs!

Even some powdered drinks and one brand of almonds have added caffeine!

Images
Waffle – Wikimedia no restrictions
Gum https://commons.wikimedia.org/wiki/File:Chewing_gum_stick.jpg
Espresso beans

<table>
<thead>
<tr>
<th>Other Foods with Caffeine</th>
<th>Amount (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee Ice Cream</td>
<td>25-50</td>
</tr>
<tr>
<td>Caffeinated “Energy” Gum</td>
<td>45</td>
</tr>
<tr>
<td>Caffeinated Waffles</td>
<td>200</td>
</tr>
<tr>
<td>Caffeinated Chocolate Espresso Beans</td>
<td>up to 600</td>
</tr>
</tbody>
</table>
Coffee ice cream:
https://www.flickr.com/photos/69668444@N03/8055971718/in/photostream/ Migle
How some people feel about GMOs

Image: https://www.flickr.com/photos/simononly/6158871456
GMO

• Genetic modification is a special set of gene technology that alters the genetic machinery of animals, plants, or microorganisms.

• Combining genes from different organisms is known as recombinant DNA technology.

The modification of organisms has existed for centuries in the form of plant-breeding techniques (such as cross-fertilization) used to produce desired traits. With genetic modification, however, isolated genes are inserted into plants for a desired trait with a much quicker result than occurs when cross-breeding plants, which can take years. Scientists first discovered in 1946 that DNA can be transferred between organisms (Clive 2011). It is now known that there are several mechanisms for DNA transfer and that these occur in nature on a large scale, for example, it is a major mechanism for antibiotic resistance in pathogenic bacteria. The first genetically modified (GM) plant was produced in 1983, using an antibiotic-resistant tobacco plant. China was the first country to commercialize a transgenic crop in the early 1990s with the introduction of virus resistant tobacco. In 1994, the transgenic ‘Flavour Saver tomato’ was approved by the Food and Drug Administration (FDA) for marketing in the USA. The modification allowed the tomato to delay ripening after picking. In 1995, few transgenic crops received marketing approval. This include canola with modified oil composition (Calgene), Bacillus thuringiensis (Bt) corn/maize (Ciba-Geigy), cotton resistant to the herbicide bromoxynil (Calgene), Bt cotton (Monsanto), Bt potatoes (Monsanto), soybeans resistant to the herbicide glyphosate (Monsanto), virus-resistant squash (Asgrow) and additional delayed ripening tomatoes (DNAP, Zeneca/Peto, and Monsanto) (Clive 2011). A total of 35 approvals had been granted to commercially grow 8 transgenic crops and one flower crop of carnations with 8 different traits in 6 countries plus the EU till 1996 (Clive 1996). As of 2011, the USA leads a list of
multiple countries in the production of GM crops.
GM food are developed and marketed because there is some perceived advantage either to the producer or consumer of these foods. This is meant to translate into a product with a lower price, greater benefit (in terms of durability or nutritional value) or both. Initially GM seed developers wanted their products to be accepted by producers and have concentrated on innovations that bring direct benefit to farmers (and the food industry generally).

One of the objectives for developing plants based on GM organisms is to improve crop protection. The GM crops currently on the market are mainly aimed at an increased level of crop protection through the introduction of resistance against plant diseases caused by insects or viruses or through increased tolerance towards herbicides.

Resistance against insects is achieved by incorporating into the food plant the gene for toxin production from the bacterium Bacillus thuringiensis (Bt). This toxin is currently used as a conventional insecticide in agriculture and is safe for human consumption. GM crops that inherently produce this toxin have been shown to require lower quantities of insecticides in specific situations, e.g. where pest pressure is high.

Virus resistance is achieved through the introduction of a gene from certain viruses which cause disease in plants. Virus resistance makes plants less susceptible to
diseases caused by such viruses.

Herbicide tolerance is achieved through the introduction of a gene from a bacterium conveying resistance to some herbicides. In situations where weed pressure is high, the use of such crops has resulted in a reduction in the quantity of the herbicides used.
Foods derived from GM crops

• In instances, the product is directly consumed as food, but in most of the cases, crops that have been genetically modified are sold as commodities, which are further processed into food ingredients.

Currently, there are a number of food species in which a genetically modified version exists (Johnson 2008). Some of the foods that are available in the market include cotton, soybean, canola, potatoes, eggplant, strawberries, corn, tomatoes, lettuce, cantaloupe, carrots etc. GM products which are currently in the pipeline include medicines and vaccines, foods and food ingredients, feeds and fibers. Locating genes for important traits, such as those conferring insect resistance or desired nutrients—is one of the most limiting steps in the process.

Lyn suggests switch out graphic. Couldn’t find permission for use on other graphic. Also, GMO tomatoes not in commercial production.

Image: https://gmoanswers.com/ (website grants permission to use)
Genetically modified corn turns up in many different products in the U.S. This crop is used to produce many different ingredients used in processed foods and drinks. But the bulk of the GM corn grown around the work is used to feed livestock. plants that produce new plastics with unique properties

Technologies offer promise but may pose risks.
The genetic modifications are made for providing resistance to herbicides viz. glyphosate or glufosinate and also for improving the oil composition. After removing oil from canola seed, which is $\sim 43\%$, the meal has been used as high quality animal feed. Canola oil is a key ingredient in many foods and is sold directly to consumers as margarine or cooking oil. The oil has many non-food uses, which includes making lipsticks.

Maize, also called corn in the US and cornmeal which is ground and dried maize constitute a staple food in many regions of the world. Grown since 1997 in the US and Canada, 86% of the USA maize crop was genetically modified in 2010 and 32% of the worldwide maize crop was GM in 2011.

A good deal of it goes for livestock feed

...
Sugar

• The US imports 10% of its sugar, while remaining is extracted from domestically grown sugar beet and sugarcane

• In US, 95% of sugar bean acres were planted with glyphosate resistant seed. –herbicide tolerant

The sugar produced from GM sugar beets is highly refined and contains no DNA or protein—it’s just sucrose

Sugar Cane image: publicdomainpictures.net
Sugar

• Food products of sugar beets are refined sugar and molasses

• The sugar produced from GM sugar beets is highly refined and contains no DNA or protein—it’s just sucrose
Clover Stornetta Farms of Petaluma will be adding non-GMO certification to its conventional milk in early 2017. The non-GMO designation means the milk comes from dairy cows who have been raised with no genetically engineered corn, soy or other products in their diets.
DNA from genetically engineered feed is not passed to milk or meat, according to research by UCCE specialist Alison Van Eenennaam.

Dr. Van Eenennaam said that non-GMO animal feed crops have a larger ecological impact than genetically engineered versions because of their decreased resistance to disease and pests, and lower yields.

She is concerned that suggesting non-GMO milk is a safer or more environmentally sound product could have a negative effect on agriculture science advances necessary to feed a world population set to hit 9 billion by 2050.
Foods derived from genetic modification

While most of the currently approved GMO products are non-animal; I mentioned milk above and On November 19, 2015, the Food and Drug Administration (FDA) approved AquaBounty Technologies’ application to produce AquAdvantage Salmon, a genetically engineered (GE) Atlantic salmon, for human consumption. This is the first GE animal that has been approved for human consumption in the United States. FDA also has proposed voluntary guidelines for using labels that indicate whether food products are derived from GE salmon.

Environmental concerns related to the development of GE salmon include the potential for competition and
interbreeding with wild fish. According to some, escaped GE salmon could spawn with wild Atlantic salmon and introduce the modified genetic material to the wild population. To address these concerns, AquaBounty will produce salmon eggs (all sterile females) in Canada, ship these eggs to Panama, grow and process fish in Panama, and ship table-ready, processed fish to the United States for retail sale. Aquabounty will limit production to land-based facilities to isolate GE salmon from the environment and minimize the likelihood of harm to wild fish populations. Production from these facilities is limited to approximately 100 metric tons, which is a small fraction of the current U.S. fresh and frozen salmon supply of 700,000 metric tons.
Peer Reviewed

Title:
Careful risk assessment needed to evaluate transgenic fish

Journal Issue:
California Agriculture, 60(3)

Author:
Van Eenennaam, Alison L., Dept. of Animal Science/UC Davis
Olin, Paul G., Sea Grant Ext./UCCE Sonoma Co.

Publication Date:
2006

Permalink:
http://escholarship.org/uc/item/9fx369v6
Controversies and public concern surrounding GM foods and crops commonly focus on human and environmental safety, labeling and consumer choices, intellectual property rights, ethnics, food security, poverty reduction and environmental conservation.

Image: https://pixabay.com/ under Creative Commons CC0
GMO Controversies

- Transfer of antibiotic resistance
- Pest-resistant and herbicide-resistant plants
- Evolution of resistant pests and weeds termed superbugs and superweeds
- Viral resistance
- Toxicity
- Allergenicity
  - Transfer of a known allergen that may occur from a crop into a non-allergenic target crop

Most commonly voiced concerns by the public: pest-resistant and herbicide-resistant plants; evolution of resistant pests and weeds termed superbugs and superweeds; viral resistance
Food Hazards

• Inserted genes and their expression products
  – The expression of the gene—new proteins can be synthesized
  – Attention should be given to foods engineered with genes from foods that commonly cause allergies, such as milk, eggs, nuts, wheat, legumes, fish, mollusks and crustacean.
  – can assess ahead of time

• Alteration in biochemical pathways
  – ??toxin concentrations???
Consumer’s attitude towards GM foods

• Consumer acceptance is conditioned by the risk they perceive from introducing food into their diet, processed through a technology that they do not understand.

Clip art – openclipart.org under bing public domain
Future Directions: GMO

- Have the potential to solve many of the world’s hunger and malnutrition problems
- Help protect and preserve the environment
  - increase yields
  - reduce reliance on synthetic pesticides/herbicides
- Challenges:
  - Safety testing
  - Regulation
  - Policies
  - Food labeling

Have the potential to solve many of the world’s hunger and malnutrition problems, and to help protect and preserve the environment by increasing yields and reducing reliance upon synthetic pesticides and herbicides.

Challenges: safety testing, regulation, policies and food labeling
Chat Out

What kinds of comments do you get from your SNAP-Ed participants about organic foods?

Lyn Starts
Mike and Maegan read comments
Are Organic Foods Safer or Healthier Than Conventional Alternatives?

Annals of Internal Medicine 2012; 157: 348-366
Current Organic Legislation

- As of October 2002, all foods with the USDA organic symbol must have at least 95% organic ingredients.

- Currently, the USDA makes no claims that organic foods are safer or more nutritious than conventionally produced food.

- This is a complex issue and there is not enough research to support a national recommendation regarding consumption of organic foods.

Why Do Consumers Purchase Organic Foods?

• Some people are concerned about the effects of conventional farming practices on:
  – The environment
  – Human health
  – Animal welfare

• Some people believe that organic foods are tastier or healthier than their conventional alternatives
About the Alliance for Food and Farming

- Non-profit formed in 1989
- Organic and conventional farmers.
- Alliance contributors are farmers of fruits and vegetables; companies that sell, market or ship produce; or organizations representing farmers.
- Mission: to deliver credible information to consumers about the safety of fruits and vegetables.
- The Alliance does not engage in lobbying activities, nor does it accept money or support from the pesticide industry.
Who should the public trust?

The Dirty Dozen

If you are interested in eating more organically, the Environmental Working Group (EWG) publishes a “Shopper's Guide to Pesticides in Produce” containing a list of conventional produce dubbed the “Dirty Dozen” that contained high levels of pesticide residues when tested. Consider buying organic if you are shopping for produce on this list even if it costs a bit more. (2)

Strawberries  Celery  Bell peppers
Apples  Grapes  Cherries
Nectarines  Spinach  Cherry tomatoes
Peaches  Tomatoes  Cucumbers

Scientific Basis of the “Dirty Dozen” is Lacking

- Risk = Exposure x Toxicity
- The “Dirty Dozen” list considers exposure, but makes no attempt to address toxicity
- There are reliable, well-established and accepted methods for assessing the risk of small doses of chemicals.
- The authors of the “Dirty Dozen” list acknowledge this and clearly state on their website that the list “is not built on a complex assessment of pesticide risks.”
Alliance for Food and Farming Expert Panel Conclusions

• Negative messages about food safety is not promoting consumption of fruits and vegetables.
• The Media/Internet may be increasing our fears about food safety, and lowering our faith in government oversight of the safety of our food.
• It is inaccurate to suggest that organic produce is the only “safe” choice.
• Some consumers feel like they are making inferior choices when they buy conventionally grown produce.
• The key health message should be – eat your fruits and vegetables.
SafeFruitsandVeggies.com

- Promotes all fruits and vegetables.
- Provides credible information
- Developed by experts in nutrition, toxicology, risk assessment and farming.
- Pesticide Residue Calculator
- Farmer videos
- Blog
- Scientific Reports
- Facebook, Twitter, YouTube

www.safefruitsandveggies.com
Why It’s OK to Eat Fruits and Veggies with Pesticides
Response from Carl K. Winters on bestfoodfacts.org

• The U.S. Environmental Protection Agency determines Reference Doses of pesticide residue that are safe to consume
• The EPA only approves the use of pesticides that pose little to no threat to consumers
Why It’s OK to Eat Fruits and Veggies with Pesticides
Response from Carl K. Winters on bestfoodfacts.org

• Bottom Line:
  – The amount of the chemical, not the “absence or presence” of it, determines its toxicity
  – Regardless of organic or conventional growth methods, detected levels of pesticide residue are very low
  – It is more important to consume a variety of fruits and vegetables than limit consumption due to a potential pesticide risk
Organic Advantages

Organic plant foods may have an advantage over conventionally grown foods by:

• Having an increased concentration in:
  – Vitamin C
  – Carotenoids
  – Polyphenols
Organic and Conventional Produce

Whether grown organically or conventionally, plant foods contain:

- Fiber
- Vitamins
- Minerals
- Phytochemicals
Are Organic Foods Safer or Healthier Than Conventional Alternatives?

- No differences in vitamin or mineral content between conventionally and organically grown fruits and vegetables
  - with the exception of phosphorus
- No differences in protein or fat content in milk from conventionally and organically raised animals
  - limited evidence for higher omega 3 fatty acids in milk from organically raised animals
- Pesticide levels of organic and conventional foods fell within allowable safety limits
  - lower levels of pesticide residues in urine of children consuming organic diets

Annals of Internal Medicine 2012; 157: 348-366

Generally, this research is very challenging to conduct as plant foods need to be grown in the same location under the same soil, weather, et cetera conditions to truly identify if there are differences.


<table>
<thead>
<tr>
<th>Low-Income Shoppers and Fruit and Vegetables - What Do They Think?</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Informational statements about organic and conventional FV did not increase participants’ likelihood to purchase more FV. In contrast, messages naming specific FV with pesticides shifted participants towards “less likely” to purchase any type of FV regardless whether organically or conventionally grown. The results provide insight about how low-income people view FV and how communications may influence their purchase intention.”</td>
</tr>
</tbody>
</table>

Huang et al. Nutr Today 2016; 51: September/October

Sheri
A participant tells you: At Thanksgiving my niece said she would only eat the vegetables IF she knew they were organic AND not GMO.

Lyn: Chat responses

Image: https://pixabay.com/ under Creative Commons CC0
Poll

How often do your class participants talk about following a gluten free diet?
• Never
• Occasionally
• Often
• All the time

Mike, Launch poll, share, close
We know a lot of you teach on whole grains so we are curious… What are some things you’ve heard from participants on gluten?

(Read responses then go to next slide.)

Image: https://www.pexels.com/photo/marketing-man-person-communication-362/
Chat out...
What are some reasons you hear participants give for avoiding gluten?

Mike
What are some reasons participants give for avoiding gluten?
(Read responses then go to next slide.)

Image:https://www.pexels.com/photo/marketing-man-person-communication-362/
Gluten and Celiac Disease

- Gluten is a protein found in:
  - Wheat
  - Rye
  - Barley

Rachel
Storage protein of the cereal grains. High in glutamines and prolamines which are incompletely digested.
Patients with Celiac disease react to the gliadin in wheat, secalin in rye, and the hordein in barley. Some patients may have an independent immune reaction to the avenin in oats, which indicates the need to distinguish celiac patients based on their sensitivity to different grains
What is celiac disease?

• An autoimmune disorder
• Exposure to gluten results in damage to the intestinal lining
• Damage to the lining of the intestine reduces ability to digest and absorb nutrients
• Treatment consists of completely eliminating gluten from the diet
Gluten-related Disorders

• Celiac Disease
• Wheat Allergy
• Gluten Sensitivity
  – Not diagnosed on allergic or autoimmune mechanisms
  – Subject to risk of placebo effect

While celiac disease is an autoimmune response, there are other presentations of gluten-related disorders. Wheat allergy is an adverse immunologic reaction to wheat proteins caused when gluten exposure activates the T-cells of the immune system in the GI Tract. This causes the release of chemical mediators, including histamine. A reaction may occur minutes to hours after gluten exposure. Wheat allergy is exhibited as a classic food allergy affecting the skin, gastrointestinal tract, or respiratory tract. A wheat allergy is treated by eliminating wheat from the diet and treatment with antihistamines and corticosteroids. Some may need epinephrine on hand in case of an anaphylactic reaction. Although patients usually do not need to restrict other grains, such as rye, barley, and oats, some may choose a gluten-free diet.

Non-celiac gluten sensitivity refers to those who experience distress when consuming gluten-containing products. Non-celiac gluten sensitivity appears to be similar to celiac disease, but there are no diagnostic biomarkers and the small intestine is unharmed. Symptoms may overlap with symptoms of other diseases such as Irritable Bowel Syndrome (IBS) and other food hypersensitivities. The onset may be hours to days after gluten exposure. However, the role of gluten is not yet understood and so some have suggested that the term “non-celiac wheat sensitivity” is a more suitable name for the disorder.
The symptoms to non-celiac wheat sensitivity are similar to celiac disease, but also include symptoms, such as behavioral changes, bone or joint pain, muscle cramps, leg numbness, weight loss, and chronic fatigue. In addition, patients may also experience headaches or migraines, a ‘foggy mind’, eczema, anemia, and depression.

How is non-celiac gluten sensitivity diagnosed?
Exclusion criteria are used to rule out autoimmune and allergic mechanisms. Diagnosing nonceliac gluten sensitivity is controversial because there are no specific biomarkers. Some research has demonstrated that in patients who reported non-celiac gluten sensitivity experienced a reduction in their IBS-like symptoms with the consumption of a low FODMAP (Fermentable Oligosaccharide, Disaccharide, Monosaccharide, and Polyol) diet, indicating their symptoms were actually triggered by sensitivity to FODMAPs that can be found in products containing gluten. This may indicate that NCGS may simply be a subgroup of IBS, rather than a separate condition.
As previously mentioned, there is controversy over the existence of non-celiac gluten sensitivity.
FODMAPs are in several foods. They are found in very high concentration in garlic, onions, and wheat.

Unfortunately, technical difficulties are preventing us from playing this video, however I highly recommend looking up the youtube clip from Monash University as it does a really great job explaining how FODMAP sensitivity works.
FODMAPS: Fermentable, poorly absorbed, short-chain carbohydrates (fermentable, oligo-, di-, monosaccharides, and polyols)

- No Effects of Gluten in Patients With Self-Reported Non-Celiac Gluten Sensitivity After Dietary Reduction of Fermentable, Poorly Absorbed, Short-Chain Carbohydrates
- DOI: [http://dx.doi.org/10.1053/j.gastro.2013.04.051](http://dx.doi.org/10.1053/j.gastro.2013.04.051)

This study, from 2014, resulted in
Gluten-Free Diets

• Important for individuals with celiac disease
• Newest health fad
  – Claims of more energy, weight loss, etc
  – Very little research available to support or disprove claims
Downsides to Gluten-Free Diet

- Expense
  - Gluten-free products can be twice as expensive as gluten-containing products
- May be low in certain nutrients
  - Iron, folate, niacin, zinc, and fiber
- May be higher in calories
Gluten-Free Doesn’t Always Equal Healthy

Photos: https://pixabay.com/ under Creative Commons CC0
Gluten Video

http://www.huffingtonpost.com/2014/05/06/gluten-free-people-have-no-idea-what-gluten_is_n_5273980.html?ncid=fcbklnkushpgm00000063
Questions Image:
https://www.google.com/search?q=Questions&safe=active&biw=1536&bih=831&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjC2NmJiJDQAhVDymMKHQQJAcQQ_AUIBigB#q=Questions&safe=active&tbm=isch&tbs=sur:fmc&imgc=d2rVGXYlUJssOM%3A
UC Davis Department of Nutrition
Nutrition Information

• http://nutrition.ucdavis.edu

• http://cns.ucdavis.edu

Nutrition and Health Info Sheet

Some Facts about Fat

What are fats?
Fats are a kind of oil that can be found in foods. There are many different types of fats, and they are all made of the same building blocks. Some fats are solid, and others are liquid.

Why do we need fat in our diet?
Fats are an essential component of our diet. They help us maintain a healthy weight, provide energy, and support our immune system. Fats are also used to protect the body's organs and help the body absorb other nutrients.

Nutrition and Health Info Sheet: Dietary Guidelines for Americans, 2015 - 2020

For Health Professionals

Nutrition and Health Info Sheet

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### Websites with Reliable Nutrition and Health Information

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<thead>
<tr>
<th>Website</th>
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<tbody>
<tr>
<td>Academy of Nutrition and Dietetics</td>
<td><a href="http://www.eatright.org">http://www.eatright.org</a></td>
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<tr>
<td>National Institutes of Health</td>
<td><a href="http://www.nih.gov">http://www.nih.gov</a></td>
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<tr>
<td>American Council on Science and Health</td>
<td><a href="http://www.acsh.org">http://www.acsh.org</a></td>
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<td>Food and Drug Administration</td>
<td><a href="http://www.fda.gov">http://www.fda.gov</a></td>
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<td>Centers for Disease Control and Prevention</td>
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Concluding Statements

It is our responsibility as nutrition scientists and educators to act as credible sources of science-based nutrition recommendations.

We must work to prevent the attitude:

“Just eat whatever the heck you want. One day something’s bad for you, one day it’s good for you. Maybe I’ll get lucky and smoking will be good for me too.”

Rachel
Look for upcoming training on

**Updated Nutrition Facts Label** on February 15th @

[http://www.cdph.ca.gov/programs/NEOPB/Pages/SNAP-EdTrainingandEventsCalendar.aspx](http://www.cdph.ca.gov/programs/NEOPB/Pages/SNAP-EdTrainingandEventsCalendar.aspx)

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