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Professional Education Series

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Food Truths, Trends and the Pandemic: Diet and Nutrition Trends Impacting Health

TODAY'S AGENDA:

- Introduction & Housekeeping
- Speaker Introduction
- Presentation
- Q&A
- Closing



WEBINAR HOST:

Keith Hine MS, RD
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Orgain

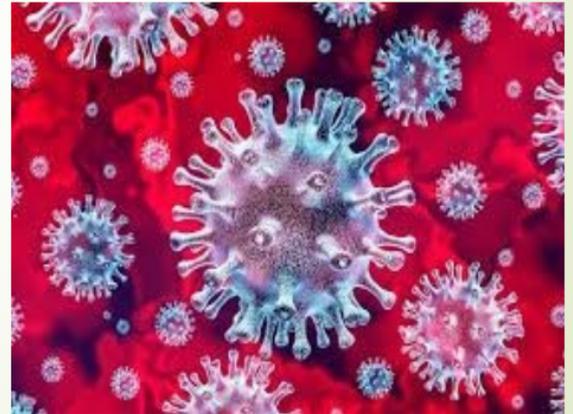


WEBINAR PRESENTER:

Kathleen Zelman, MPH, RDN, LD
Food, Nutrition & Media Communication Consultant

Food Truths, Trends and the Pandemic: Diet and Nutrition Trends Impacting Health

Kathleen Zelman, MPH, RDN, LD
June 10, 2021 sponsored by Orgain





Learning Objectives

- 1. Identify the role of nutrition in supporting immunity.
- 2. Understand the role of food and nutrition in blunting inflammation.
- 3. Appreciate and understand the ramifications of the pandemic and how healthcare professionals can make a positive impact.

TROUBLE
STORM
LOSS
ABUSE
PERFECT
ISOLATION
FOG
ANXIETY
FOOD
DISRUPTIONS
UNEMPLOYMENT
SLEEPING
SMOKING
SCREEN TIME
CRISIS
INSECURITY
HEADACHES
SUBSTANCE
BURNOUT

2020: COVID-19 Nations Leading Cause of Death

- ▶ Pandemic and quarantine resulted in significant changes in mental and physical health¹
 - ▶ Trigger unhealthy eating habits to feel better
2020 IFIC survey- 85% Americans changed eating habits
 - ▶ ↑ in eating disorders, especially binge eating
 - ▶ ↓ physical activity
 - ▶ Substance abuse
 - ▶ Anxiety... Depression ... Stress ... Mood changes
- ▶ **Changes ↑ risk CVD²**



¹Ettman CK JAMA Netw Open. 2020 Sep 1

²Mattioli AV. Nutr Metab Cardiovasc Dis. 2020 Aug 28

Effect On Our Nation's Children

- ▶ The pandemic has compromised nutrition and physical activity
 - ▶ 2% ↑↑ in obesity in children aged 2-17 years
- ▶ Children make up over 20% of new COVID-19 cases
 - ▶ AAP: 88,000 new pediatric COVID-19 cases (April 15, 2021)



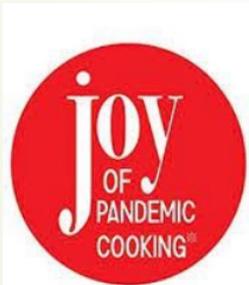
Food Insecurity

- ▶ Pandemic contributed to rapid increases in food insecurity in the U.S.
 - ▶ Latino and minority households most vulnerable
 - ▶ Increased reliance on calorie dense snacks during pandemic
- ▶ **Food insecurity In the U.S., associated with lower quality diets, negative health conditions/ outcomes, obesity**

Payan, D. JAND May 2021



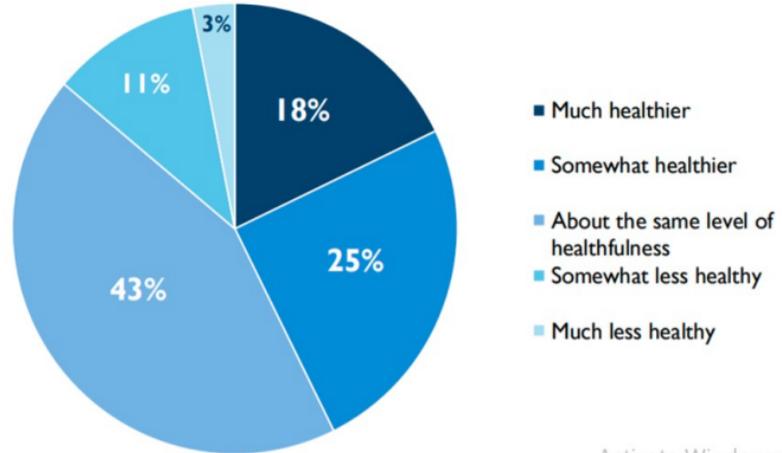
Paradox: Pandemic Cooking and Eating



Recipes by Evan Brown

There has never been a better time to learn how to cook.

Over 4 in 10 report healthier eating habits



Q7. Compared to before COVID-19 began impacting the United States, do you consider your current eating habits to be:

Activate Windows



Consumer Trends During Pandemic

- ▶ Some people focused on planet and personal health:
 - ▶ Reducing sugar intake
 - ▶ Sustainability
 - ▶ Plant-based products
 - ▶ Immune support

COVID-19 Changed Eating Habits

'I Just Need the Comfort': Processed Foods Make a Pandemic Comeback

Shoppers, moved by nostalgia and hunting for longer shelf lives, are returning to old standbys like Chef Boyardee and Campbell's soup.



In a study of 8,000 people, 30% of adults reported eating more unhealthy foods than usual during the pandemic and worsening eating habits, especially among women.

Eating more food, snacks, pastries, fried and fast foods globally.

And Drinking Habits

- ▶ 1 in 4 adults drank more alcohol than usual to cope
- ▶ Binge drinking up significantly among women since 3/2019
 - ▶ The pandemic has placed a bigger burden on women, which leads to increased stress and anxiety.

Pollard MS, JAMA Netw Open. 2020



Unintended Consequence: COVID-15?



- ▶ **1/3 of U.S. adults report unwanted weight gain**
 - ▶ 40% of Americans (an increase since the beginning of the pandemic) overweight or obese.
 - ▶ Adults reported gaining an average of 29 pounds (avg. 15 pounds).
- ▶ Adults gained 1.5 pounds per month during lockdowns.

Stress Impacts Weight Gain

- ▶ Stress causes a surge in Adrenalin and Cortisol > trigger insulin and the release of glucose
 - ▶ Trigger weight gain and fat storage, can interfere with sleep
- ▶ Cortisol and Insulin are inflammatory hormones that can alter the body's immune response to infections.
- ▶ 8 in 10 adults say the pandemic is a major source of stress.



Obesity: Achilles Heel for COVID-19



- ▶ COVID-19 death rates 10X higher in overweight
 - ▶ 70% adults in US overweight, 40% obese
- ▶ 88 % of COVID-19 deaths in countries where >1/2 the population is overweight.¹
- ▶ After old age, obesity is the 2nd leading risk factor for death for critically ill with COVID-19²
 - ▶ Other major risks for COVID: t2D, HTN

¹World Obesity Federation, WHO

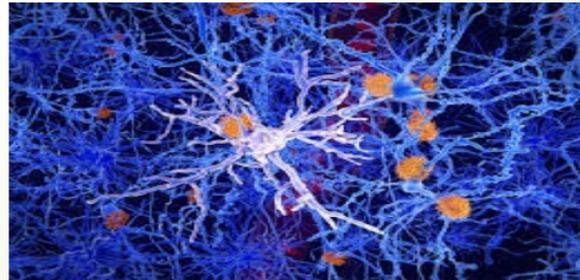
²Muscoguirri, G. Metabolism 2020

Obesity Increases Inflammation

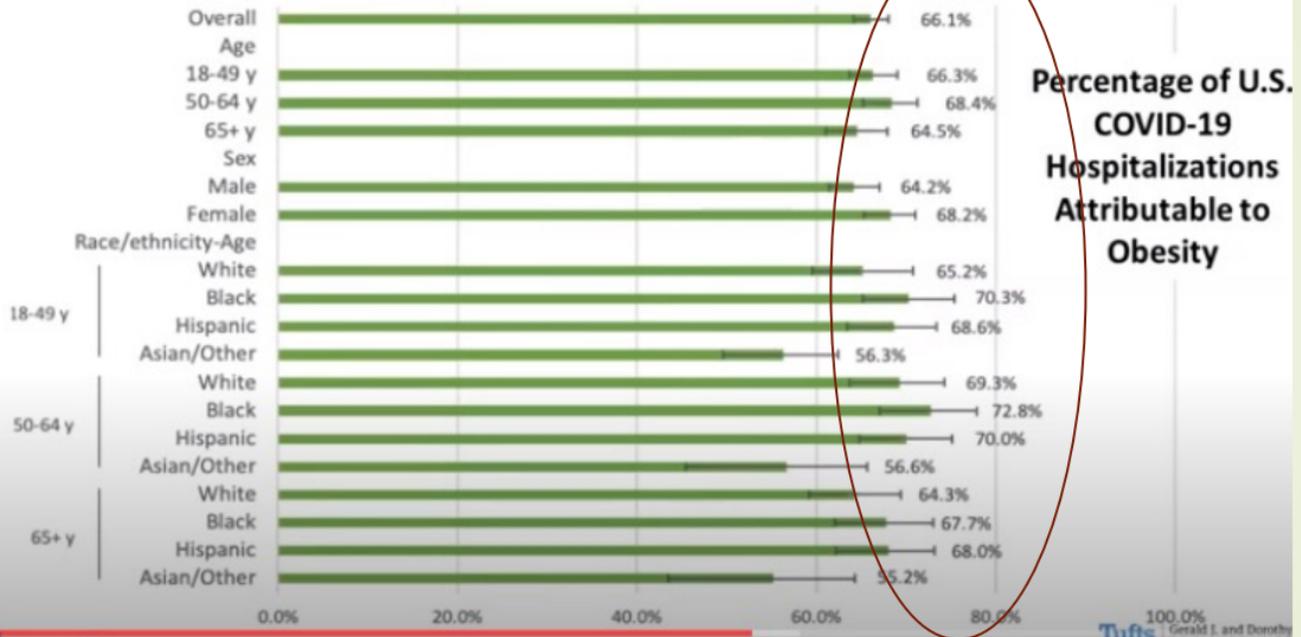
- ▶ Obesity is characterized by significant inflammation - does not interact well with acute inflammation of COVID-19¹
- ▶ A pro-inflammatory state may lead to impaired immune response and ↑↑ susceptibility to all influenza viruses.
- ▶ Obesity is a leading risk factor of CVD, diabetes, and renal disease, has a detrimental effect on lung function and clinically relevant factor with all-cause mortality.²

¹Muscogiuri G. Metabolism. 2020

²Xu H, JAMA Netw Open. 2018



Obesity-Attributable COVID-19 Hospitalizations





Diet Related Comorbidities: Covid-19 Hospitalizations

- *Diet related diseases far higher risk of severe illness, hospitalization and death.*
- **Obesity:** 4.3 fold higher odds of hospitalization
- **Severe obesity:** 6.2
- **Diabetes:** 2.8
- **Heart disease:** 4.3
- **Hypertension:** 1.2

- Analysis from NYC, similar to other US regions, Italy, UK, China

Immune Health Steals the Spotlight



- ▶ The immune system is a complex network that constantly works to protect the body from antigens associated with pathogens, bacteria, toxins, parasites, and viruses
- ▶ **Adequate nutrition is required for all cells** to function optimally.
- ▶ Well-established that **nutritional inadequacy greatly impairs the functioning of the immune system**. Deficiency or insufficiency of vitamin D, C and zinc, can affect immunity.
 - ▶ INADEQUATE intake and status of nutrients is widespread leading to a decrease in resistance to infection and increase in disease.

Lifestyle Strategies to Tame Inflammation



- Get enough sleep
- Regular physical activity
- Shed extra pounds
- Stop smoking
- Stress management – meditation, relaxation

Nutrition, Immunity & Gut Health

- ▶ **A healthy diet can positively impact immune health.**¹
 - ▶ Numerous challenges exist for demonstrating the impact of diets and nutrients influencing immune status.
 - ▶ Certain illnesses, medications, and lifestyle choices can affect immune function.
 - ▶ Key functions of the immune system: **how it interacts with nutrients and the gut microbiome in mediating immunological effects.**
- ▶ A healthy microbiome is essential to immune function²
 - ▶ Nutrients impact directly or indirectly upon immune cells causing changes in their function in the gut microbiome.

¹Calder PC, Nutrients. 2020.

²Venter C, Nutrients. 2020

Promising Evidence: Food/Nutrition and Immunity



- **Compounds from foods could improve the immune response and/or reduce the severity of infection:**
- Vitamins A, C, D, E, B6,
- Zinc, iron, selenium, magnesium, and copper
- Omega-3 fatty acids EPA & DHA
- Flavonols
- Food extracts – gogi berry, elderberry, green tea and tumeric



Mechanistic Actions of Nutrients

- ▶ Target specific proteins
- ▶ Block entry into cells or key enzymes
- ▶ Prevent cell replication
- ▶ Many nutrients boost cell mediated immune response
- ▶ Inhibition of pro-inflammatory mediators
- ▶ Promotion of anti-inflammatory functions
- ▶ Block entry into cells or key enzymes



Vitamin D

- ▶ It is known that COVID-19 infection is associated with the ↑ production of pro-inflammatory cytokines and C-reactive protein and optimizing white blood cell function¹
- ▶ **Vitamin D enhances cellular immunity by reducing the cytokine storm.**²
- ▶ June 1st PLoS Medicine study **denies vitamin D as a protective measure** against COVID-19. Study did not include people with deficiency.³

¹Wang D.J Am Med Assoc. 2020

²Huang C Lancet. 2020

³Butler-Laporte G, PLoS Med June 2021

Supplemental Vitamin D

- ▶ To ↓ risk of infection for people at risk of COVID-19
 - ▶ 10,000 IU/d of vitamin D3 for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d.
 - ▶ Goal: raise 25(OH)D concentrations above 40–60 ng/ml..
- ▶ Some preliminary observations support vitamin D supplementation to ↓ the risk of influenza and COVID-19.
- ▶ For people infected with COVID-19
 - ▶ Higher vitamin D3 doses might be useful

Grant, W.B. Nutrients 2020



Calcium and Vitamin D Deficiency



- ▶ Evidence of vitamin D deficiency, low serum calcium on poor outcomes in COVID-19 patients.
- ▶ **Correcting hypocalcemia, and vitamin D may improve the vital prognosis.**¹
- ▶ **Higher Incidence of COVID-19 in blacks** in US with low vitamin D levels less than 40 ng/ml compared to whites²

¹Meltzer DO, JAMA Netw Open. 2021

²Bennouar A. J Am Coll Nutr. 2021

Vitamin B6 May Protect Against Severe COVID-19

- ▶ **Anti inflammatory and anti thrombosis properties of B6 might help protect people against sever infection.**
- ▶ Potential role of vitamin B6 in suppressing the severity of COVID-19 possibly through ameliorating complications of chronic diseases such as hypertension, CVD, and diabetes.

Front. Nutr., 29 October 2020



Zinc

- ▶ Children and elderly are at high risk for zinc deficiency resulting in impaired immune function
 - ▶ Important in lymphocyte function
- ▶ Supplementation may be helpful in those with low serum zinc levels.
- ▶ Narrow range for optimal health
 - ▶ Both zinc deficiency and overload impair immune functions

Wu D. Front Immunol. 2019





Antioxidants: Vitamins A, C, E

- ▶ Antioxidants and vitamins exert protective effects against infection and inflammation.
- ▶ Free-radical scavengers protect cells from oxidative injury and help regulate immune response
- ▶ **Vitamin A** is known as an anti-inflammation vitamin because of its critical role in enhancing immune function
- ▶ **Vitamin C** can stimulate the production of white blood cells, which are key to fighting infections.
- ▶ **Vitamin E** is an immune system modulator

Supplementing Nutrients to Support Immunity



- **Supplementation of the RDA at upper safety limits**
- **Increased intake above currently recommended levels** may optimize immune functions and resistance to infection. ¹
 - Animal and human studies present promising benefits in autoimmune, inflammatory disorders, and in reduction of infection.
- Modest effects: **Probiotics, omega-3 fatty acids, multivitamin or vitamin D supplements** are associated with reduced risk of coronavirus infection in women but not men. **Vitamin C, garlic and zinc** show no clear benefit (COVID-19 Symptom Study)²

Pre and Probiotics

- Promising, probiotics have not been substantiated by intervention studies.
- Currently **no direct evidence** examining the use of probiotics in improving patients infected with COVID-19.
 - Probiotics include a wide variety of species and strains, likely the probiotics' immune-modulating effect is strain-specific.
- Prebiotics naturally improve gut health and influence systemic inflammation and gut-barrier function.

Rozga M, J Acad Nutr Diet. 2020



Western Diet Induces Inflammation and Alters Immune System

- ▶ ↑↑ levels of saturated fat, ultra-processed foods, added sugar and salt, and overall calories.
- ▶ Often ↓↓ in nutrient rich foods linked with better health.
 - ▶ Research from the PBH Foundation shows fruit and vegetable consumption has declined nearly 10%. Americans are eating produce just once each day.
- ▶ Nutrient deficiencies are more common in these diets.



Anti Inflammatory Foods

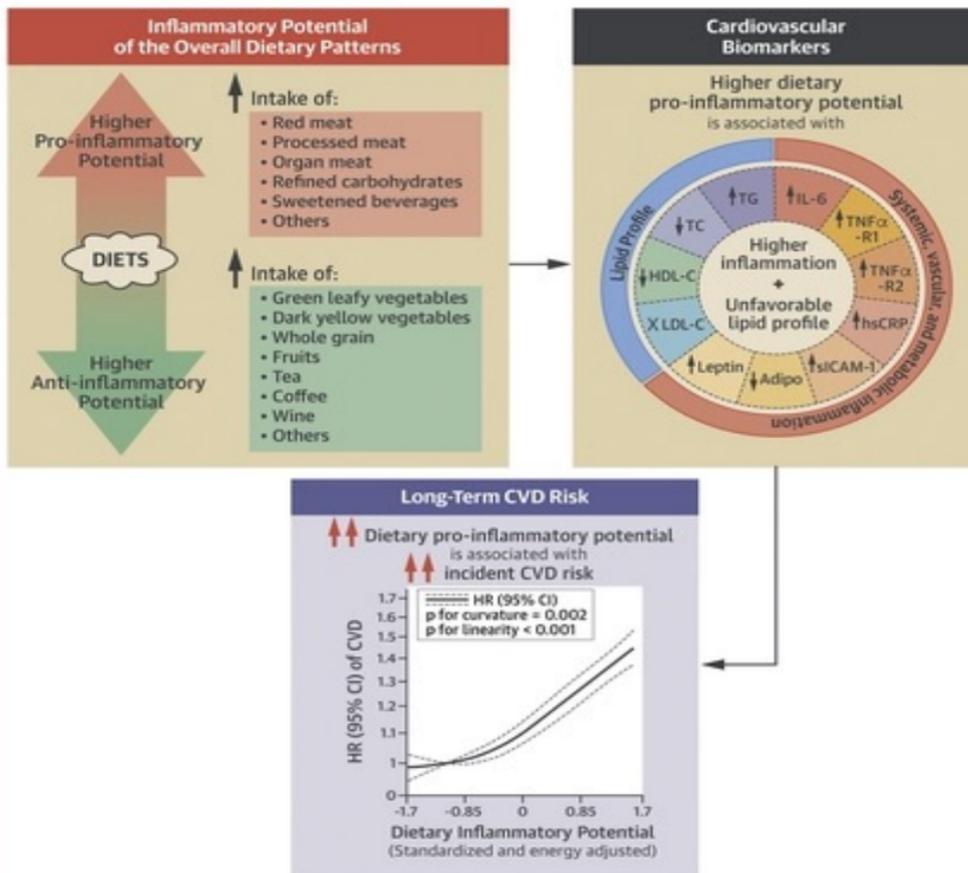
- Legumes
- Vegetables
- Fruits
- Nuts
- Higher intake of plant over animal foods
- Low-fat fermented dairy
- Fish
- **Limit or avoid** strong alcoholic drinks, processed high-fat meat and soft drinks.



Diets Influence on Inflammation

- Emerging research indicates that diet can have the most profound effect — positive or negative.
- Many foods in typical American diet fuel unhealthy levels of inflammation.
- **“Red meat, processed meat, saturated and trans fats, added sugars, fried foods, and refined carbohydrates all directly trigger pro-inflammatory responses,”**

CENTRAL ILLUSTRATION: Adherence to Proinflammatory Dietary Patterns and Cardiovascular Disease Incidence



Foods Promoting Inflammation

- ▶ 2021 study of nearly 1,500 people, found consistent associations between pro-inflammatory bacterial species and **diets high in fast food, sugar and animal products.**¹
- ▶ **Diets low in nutrients and high in ultra processed foods impairs immune function**²

Bolte, LA et al. Gut, 2021¹

Childs CE, Nutrients. 2019²





Nutritional Guidelines: Preventing and Treating COVID-19 at Home

- ▶ Proper nutrition and hydration are vital for healthier, stronger immune systems and lower risk of chronic illnesses and infectious diseases. (WHO)
- ▶ **Eat a variety of fresh and unprocessed foods every**
 - ▶ Antioxidants and other compounds in dark leafy greens and omega 3s reduce inflammation
- ▶ **Drink fluids.** You lose more water when you're sick. Dehydration can make symptoms worse and cause other health problems.
- ▶ Reduce intake of sugar, fat and salt to significantly lower your risk of overweight, obesity, and more.

Nutrition and Hydration: Quick Facts for COVID-19 Patients

Background

In the US, only around 12% of those infected with COVID-19 will require hospitalization.¹ The remaining 88% are people who will manage their illness and recover at home.

The most common symptoms of COVID-19 infection are fever, cough, and shortness of breath; these symptoms are usually accompanied by fatigue and loss of appetite.²

Nutrition and Hydration are Central to Recovery

With an infection, the body must work intensely to mount an immune response. High fever is the immune system's way of revving up metabolism to "battle the bug." Fever is also associated with excess loss of fluids and increased metabolism which can lead to dehydration and increased nutritional requirements.

Even though you may not be thirsty or hungry, it is important that you continue to eat and drink fluids to support your body's ability to fight the virus and support your body's immune function.

Protein and calories are important to protect against muscle loss while fighting COVID-19, especially if you are bedridden or inactive.

For more information, visit nutritioncare.org/COVID19.

References

1. Razzighi H. The CDC COVID-19 Response Team. Severe outcomes among patients with coronavirus disease 2019 (COVID-19) – United States, February 12–March 16, 2020. *Morbidity and Mortality Weekly Report*. 2020;69:343-346.

2. Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19) symptoms of coronavirus. 2020. April 6, 2020.



Meeting the Nutritional Needs of a Person with COVID-19

Nutritional Requirements:

- Fluid: about 3 quarts (3 liters) of fluid per day
- Calories: 2000 - 2500 calories per day
- Protein: 75 - 100 grams per day

Drink Fluids Every Hour

At a minimum, you should drink 2-4 ounces of fluid every 15 minutes. The optimal fluids to drink are clear liquid beverages with calories and protein, oral rehydration solutions, or sport drinks.

Eat a High Calorie, High Protein Diet

- Try eating 6 times a day, every 2-3 hours. Eat even if you are not hungry.
- Calories are important to protect against breakdown of muscle for energy. Due to the increased stress from COVID-19, you need more ability than your normal diet.
- Try to eat 75-100 grams of protein per day which is 10-14 ounces of a protein source. Good protein sources are: peanut or nut butters, milk, eggs, yogurt, cheese, meat/fish/poultry, protein shakes.
- Due to decreased appetite, now is not the time to restrict calories. Eat nutrient dense foods. Drink fruit juice, milk, or other calorie-containing beverages.
- Double or triple the portion sizes of added fats and oils (butter, margarine, cream cheese, sour cream, and avocado).
- Try using liquid nutritional supplements (available in grocery stores and drug stores) between meals to increase your nutritional intake.
- Eat small amounts frequently.

Food is medicine when you are ill.

Nutrition and Hydration: Key Weapons in the Fight Against COVID-19

Importance of Hydration and Nutrition During Your Illness

The body is composed of about 70% water.¹ Water is normally lost in urine and stool and from our skin and respiratory tract. When ill with a fever, the body loses water rapidly.

For an adult with a fever of 102-103 (39-40 C), sweating results in the loss of about 30 ounces of fluid every 24 hours with an additional 3 ounces lost during coughing and breathing.² Fluid deficits are further magnified by losses due to nausea, vomiting and/or diarrhea, and inadequate fluid intake related to poor appetite.

Unintentional weight loss during illness is an indication that the body is losing fluids and utilizing the body's fat and muscle for energy and protein to maintain normal bodily functions. Body fluid, fat and muscle losses impact your ability to fight the illness and recover.

Hydration and nutrition play an important role in your body's response to and recovery from the COVID-19 virus and are an essential part of your medical treatment.

What You Need to Do

- Even though you may not be thirsty or hungry, it is important that you continue to eat and drink fluids to support your body's ability to fight the virus and support your body's immune function.
- Follow these simple steps to keep your body hydrated and nourished.

STAY HYDRATED

Drinking water and clear liquid beverages are important even if you do not feel thirsty. You need to replace your body's fluid losses and thin your respiratory secretions.

When you are dehydrated, your respiratory secretions thicken and are hard to clear from your lungs. Being unable to clear your secretions from your lungs may lead to pneumonia.

Signs of dehydration are increased thirst, fever, dark colored urine, reduced urine output, dry mouth, increased heart rate, tiredness and confusion. For more information on dehydration: anhi.org/resources/printable/dehydration-infographic-for-patients

Drink water or clear liquid fluids every hour. At a minimum, you should drink 2-4 ounces of fluid every 15 minutes.

Monitor yourself for signs of dehydration. Increase your fluid intake as needed to ensure that you are passing light yellow urine every 3-4 hours.

Consider the following:

- Take frequent small sips of liquids every few minutes if you are not able to drink large volumes of fluids at one time.
- Use a variety of liquids to avoid taste fatigue.
- Keep liquids at your bedside to sip during the night.
- If you are vomiting or have diarrhea, make sure that you are taking an oral hydration solution in addition to water.

The optimal liquids to take are clear liquid beverages with calories and protein, oral rehydration solutions or sports drinks. Drinking these types of beverages is particularly helpful as they provide your body with calories, essential electrolytes and minerals that your body needs to function.

The following are examples of appropriate solutions that can be purchased online:
abbottstore.com/infant-and-child/pediaLyte.html
nestlenutritionstore.com/boost-breeze.html
drpdrop.com/collections/dehydration-relief
ceraproductsinc.com/collections/ceraproducts
gatorade.com/products/sports-drinks/powerade.com

Rehydration Drink Recipe

Mix the following in a pitcher:

- ½ - ¾ tsp salt
- 1 cup of juice (orange, grape, apple, cranberry)
- 3 ½ cups water

EAT A HIGH CALORIE, HIGH PROTEIN DIET

Although you may not have an appetite and food does not taste good to you now – it is critical that you eat. Your body needs calories and protein to maintain its metabolic functions and body weight during this critical time.

Continued



Nutritional Requirements During Infection

- ▶ Fluid: 3 quarts (3 liters) of fluid per day; drink every hour fluids with calories
- ▶ Calories: 2000 - 2500 calories per day
- ▶ Protein: 75 - 100 grams per day (10-14 oz)
- ▶ Due to decreased appetite. Eat nutrient-dense foods. Drink fruit juice, milk or other calorie-containing beverages like **ORGAIN**.
- ▶ Double or triple the portion sizes of added fats, oils, sauces, gravies
- ▶ Liquid nutritional supplements or milkshakes between meals
- ▶ Eat small amounts frequently – 6x/day, every 2-3 hours
- ▶ Consider nutrient supplements

Impact on Taste and Smell

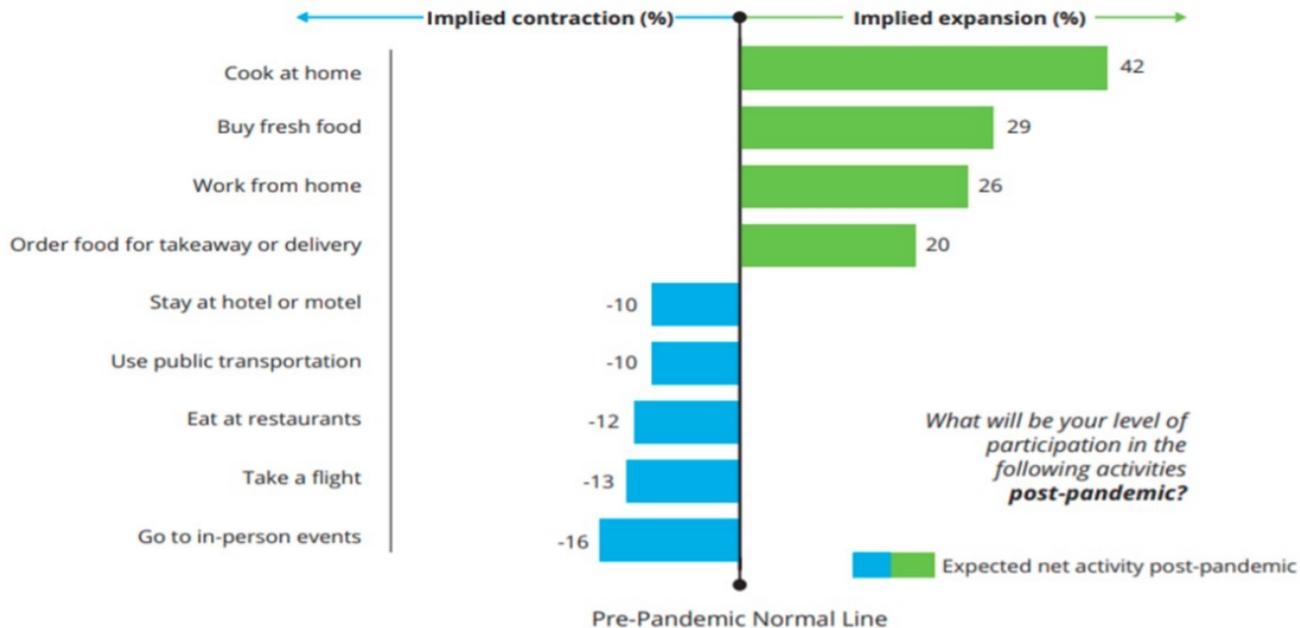


The screenshot shows the McGill Office for Science and Society website. The header includes the McGill logo, the text "Office for Science and Society" with the tagline "Separating Sense from Nonsense", and a search bar. A navigation menu below the header lists "Latest Content", "Who We Are", "Public Lectures", "Dr. Joe's Books", "OSS Press", and "Events". The main content area features a "Home" link and a featured article titled "Loss of smell and COVID-19: Up to 80% of those infected by the SARS-CoV-2 virus report losing their sense of smell". The article's subtext reads: "Anosmia has been a hot topic ever since it was recognized as a symptom of COVID-19, but what actually causes our bodies to lose their senses of smell, and how can we get it back?"

- Sniff essential oils for a few minutes twice a day for a number of weeks: rose, lemon, cloves and eucalyptus.
- Steroid nasal sprays or rinses may calm the nasal cells
- Highlight perceived favorite tastes.
- Try highly textured foods with pungent seasoning.
- Enhance natural flavors or ingredients such as MSG to boost savory, umami flavors without increasing sodium.

Net activity change after the health crisis ends

Post-pandemic expected activity benchmarked against normal activity level pre-pandemic



Post Pandemic Trends

New Normal: Telehealth

- After COVID-19, all industries were forced to go digital
 - Hybrid – work and office???
- Academy Unveils Telehealth practicing guidance
- Medicare is temporarily covering specific CPT codes for telephone services. (4/12/2021)
- Support expansion of Medical Nutrition Therapy Act

**Telehealth
Quick Guide
for RDNs**



IFIC Predictions: 2020 Food & Health Survey



- COVID-19 Remains a Food Safety Focus
- Convenience and Affordability
- Simple Health Goals, Less Ambitious > Focused on immunity
- The Staying Power of Snacks
- Caffeine Craze
- Sustainability and Plant-based Eating

Easing into a New Normal Healthy Lifestyle

- ▶ **Foster awareness of the importance of**
 - ▶ Healthy diet
 - ▶ Physical activity and stress management
 - ▶ Achieving healthy weight
 - ▶ Good lifestyle routine.
- ▶ **Focus on consuming nutrient-dense, minimally processed foods:**
 - ▶ Fruits, vegetables, dairy, whole grains and healthy fats
 - ▶ Fiber, fermented foods, prebiotics, probiotics
 - ▶ Limit or avoid: sweets, refined grains, processed meats
 - ▶ Consider supplementation: vitamin D and B12



Key Take Aways

- ▶ Body of evidence on the role of specific nutrients needs additional research.
- ▶ Healthy diets rich in phytonutrients, omega 3 fatty acids, fiber and whole foods contributes to a healthy immune system.
- ▶ Minimizing highly processed and sugary foods and beverages can reduce chronic inflammation.
- ▶ Healthy weight essential to reduce chronic inflammation.
- ▶ **Dietary patterns can save lives and change the course of our nations health!**

Questions?

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