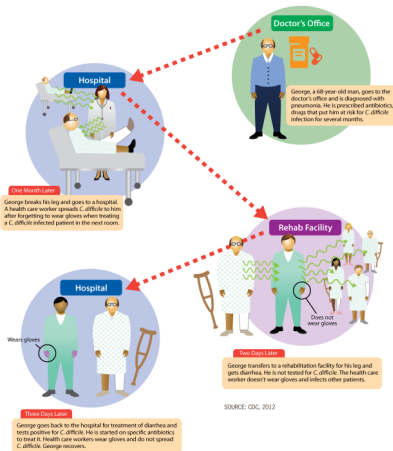


## How *C. difficile* Spreads.



## ALL ABOUT CLOSTRIDIUM DIFFICILE (*C. difficile*)

Healthcare-Associated Infections (HAIs) continue to grow significantly. The trend has mirrored the increased rates of resistance to antibiotics. Studies indicate that 30-50% of antibiotics prescribed in hospitals are unnecessary or inappropriate. The overuse of antibiotics has been a significant driver of the growth of HAIs especially *C. difficile*.

*C. difficile* has become the most common cause of healthcare-associated diarrhea in industrialized countries and the most common HAI in US hospitals. It causes almost a half a million infections among patients in a single year. Thirteen of every 1000 hospital inpatients has *C. difficile* contributing almost \$3.2 billion to the cost of patient care. The single most important risk factor for *C. difficile* infection is antibiotic use.

### What is *C. difficile* Infection?

*C. difficile* is a gram positive, toxin producing, and rod shaped bacterium located in the intestines. Some people carry the bacterium in their intestines but never become sick, although they can still spread the infection. Illness usually develops during or within a few months after a course of antibiotics. The most common symptoms are watery diarrhea three or more times a day for two or more days, fever, loss of appetite, nausea, blood or pus in the stool, mild cramping and belly tenderness. In severe cases, people become dehydrated and may need hospitalization. *C. difficile* causes the colon to be inflamed due to the release of toxins that attack the lining of the intestines, causing a condition called *C. difficile* colitis. Signs and symptoms of a severe infection include: kidney failure and even a hole in the intestines, which if not treated immediately can lead to death. Diagnosis is done by testing the stool for the toxins. In some cases a colonoscopy may be needed. Since 2000 there has been a more aggressive, antibiotic resistant strain of *C. difficile*.

### Special Points of interest:

- Thirteen of every 1000 hospital inpatients has *C. difficile* contributing to almost \$3.2 billion to the cost of patient care.

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### What are *C. difficile* risk factors?

The elderly and people with certain medical conditions that require hospitalization or placement in long term care facilities are most at risk. Overgrowth of *C. difficile* is most likely to occur with the use of a broad spectrum antibiotic or when multiple antibiotics are need to fight infection or when antibiotics need to be taken over a long period of time. Other risk factors include: surgery of the GI tract, diseases of the colon such as colorectal cancer, a weakened immune system, use of chemotherapy drugs, previous *C. difficile* infection, kidney disease, and use of drugs called proton-pump inhibitors which lessen stomach acid.

*C. difficile* bacterium spores can live outside the human body for a long time and can be found on things in the environment such as: bed linens, bed rails, bathroom fixtures, and medical equipment. The infection can spread from person to person on contaminated equipment and on the hands of healthcare personnel that fail to follow proper procedures for sanitizing their hands.

### How is *C. difficile* infection treated?

Standard treatment is typically a 10-14 day course of metronidazole (Flagyl) which keeps the bacterium from growing and treats the diarrhea and other complications. (Con't on page 2)

### **C. difficile—Continued**

Improvement usually happens within 72 hours, but if no improvement is seen or the diarrhea returns, another round of antibiotics is needed or a strong antibiotic such as vancomycin (Vancocin) may be prescribed. About 25% of patients need a second round of antibiotics. For people with severe pain, organ failure or inflammation of the lining of the abdominal wall, surgery to remove the diseased portion of the colon may be the only option. After one or more recurrences, the rate of recurrence increase is up to 65%. Those over age 65 are more at risk for recurrence as well as those taking antibiotics for other reasons or those that have an underlying medical disorder such as kidney or liver disease or inflammatory bowel disorder.

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*“The best way to prevent the spread of infection is to properly wash hands with soap and water before and after treating each patient”*

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Other treatments include taking probiotics which help colonize the intestines with “good” bacteria and the drinking of lots of fluids to prevent dehydration as well as good nutrition which include starchy foods such as potatoes, noodles, rice, wheat and oatmeal.

#### **What can be done to prevent C. difficile infection?**

The best way to prevent the spread of infection is to properly wash hands with soap and water before and after treating each patient. Don't just rely on alcohol based hand sanitizers. Contact Precautions should be used to isolate the patient or have them share a room with someone who has the same illness. Patients should remain in their room as much as possible and not wander around especially to the gift shop or cafeteria. Hospital staff and visitors should wear gowns and gloves while in the room. When leaving the room everyone needs to remove their gown and gloves and wash their hands. All surfaces should be carefully disinfected with products that contain chlorine bleach. *C. difficile* spores can survive routine cleaning products that do not contain bleach. Patients should avoid being given any antibiotics unless absolutely necessary.

Patients should make sure that all staff and visitors washing their hands when entering and leaving their room. **If a patient does not see healthcare providers clean their hands, please ask them to do so.** Patients should make sure wash their own hands often especially after using the bathroom and before eating. When discharged, make sure that you complete any antibiotics given. Wash your hands often especially after going to the bathroom and before eating. Any people living with you should wash their hands often also.

**References:** [http://www.cdc.gov/HAI/organisms/cdiff/Cdiff\\_infect.html](http://www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html)

<http://www.webmd.com/digestive-disorders/clostridium-difficile-colitis>

<http://www.mayoclinic.org/diseases-conditions/c-difficile/basics/definition>

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#### **ABP CONTINUING EDUCATION INFORMATION**

A reminder that ABP, Inc. offers home study continuing education booklets to help you earn CE contact hours. Call ABP at (574)277-0691 to order or visit ABP's website at [www.abpincorp.com](http://www.abpincorp.com) to download an order form.

All About Bed Bugs	Atrial Fibrillation	Basics of HPV
Biological & Chemical Terrorism	Chronic Fatigue Syndrome	Communication Skills:
Neonate-Geriatric Hand Hygiene	HIPAA Security Rules	Intro to Tuberculosis
Basic Electrocardiography	Interpreting ECGs	MRSA Infections
Nutrition, Diet and Feeding Patients	OSHA Haz Com Standard (New!)	Patient Rights
Routine Venipuncture	Seasonal Flu	Summertime Hazard

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## EAT THIS WAY AND AVOID ALZHEIMERS

People who tried the new scientist-designed MIND diet lowered their risk of Alzheimer's by 53%. Always use olive oil for cooking and dressings, for its memory-protecting polyphenols.

### Eat this many weekly servings of the following nine foods.

- Whole grains: 21 Paced with fiber to fuel a productive brain. Aim for 3 servings per day.
- Berries: 2 Thanks to their flavonols, the only fruit that can slow brain decline
- Beans: 3 Plenty of fiber, plus low fat protein for growing brain cells.
- Leafy Greens: 6 Full of antioxidants and carotenoids to protect gray matter.
- Poultry: 2 Delivering dementia preventing B vitamins and low fat protein.
- Nuts: 5 Rich in vitamin E, shown to lower risk of Alzheimer's.
- Other Veg: 7 Packed with plant-based antioxidant power.
- Fish: 1 Rich in brain cell fortifying omega-3 fatty acids.
- Wine: 7 Alcohol reduces dementia risk.

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*“Eating 10 grams more fiber daily can cut your risk of premature death by 10%!!”*

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### Keep these foods to a minimum

- Red Meat: 4 times a week or less.
- Fast food, fried food and cheese: less than once a week.
- Butter or margarine: fewer than 7 TBSPs a week.
- Pastries or sweets: less than 5 times a week.

Reference: July 2015 PREVENTION.COM

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## YOUR BODY ON FIBER

Eating 10 grams more fiber daily can cut your risk of premature death by 10%.

### Seven more reasons to hit the recommended daily dose of 25 grams of fiber

**BRAIN:** Adding 7 gm daily can cut your stroke risk by 7%.

**HEART:** Heart disease risk drops by 9% for each 7 gms consumed daily, thanks to fiber's cholesterol lowering powers.

**WAISTLINE:** People who simply increased their daily fiber intake to 30 gms. Or more lost nearly as much weight as those on a more complicated diet plan that included restricting calories.

**KIDNEYS:** Getting more than 21 gms. of fiber daily stands to lower risk of kidney stones by 22%.

**LUNGS:** Dietary fiber soothes systemic inflammations and may slash risk of inflammatory diseases like COPD.

**GUT:** Eating more fiber can balance levels of healthy bacteria, helping aid digestion.

**BLOOD SUGAR:** Fiber slows the body's absorption of glucose, controlling blood sugar spikes and decreasing diabetes risk.

Reference: July 2015 PREVENTION.COM

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## RETHINK YOUR FUELING STRATEGY

Just as your workout gear varies, so should your preworkout food combos.

<b>WALKING</b>	1 medium pear + ½ oz. sharp cheddar cheese	Think light: 100 to 200 calories with a mix of carbs, protein, and fat offsets hunger and helps muscles stride longer.
<b>RUNNING</b>	½ cup each of oats and blueberries + 1 cup of low fat milk	Easy on heavy foods; aim for 200 to 300 calories, with roughly 30 gms of carbs for fast energy, an hour before your run.
<b>YOGA</b>	1 small apple + 1 oz of almonds	Don't let bloating mess up your Zen; stick with 100 to 200 calories of easily digested carbs and protein 1 to 2 hours before class.
<b>STRENGTH TRAINING</b>	6 oz low fat cottage cheese + ½ cup raspberries	Grab 100 to 250 calories of muscle-building protein and carbs 30 to 60 minutes prior to lifting and you will jump start recovery.
<b>SWIMMING</b>	6 dates + 1 Tbsp nut butter	Stay quick and cramp free with 200 to 300 calories of simple and complex carbs, plus a little protein, an hour before you hit the pool.

**When you don't need a preworkout snack:** You have eaten a nutritious meal within the past 2 to 3 hrs., don't feel hungry, and you are only going to workout for 45 minutes or less. Reference: August 2015 PREVENTION.COM

## NEW HEMOLINK COULD REPLACE VENIPUNCTURES

An innovative, needleless blood collection device called the HEMOLINK developed by a research team at the University of Wisconsin-Madison, could replace needlesticks and venipunctures at medical laboratories. Patients could be able to collect their own blood at home in minutes.

Users of the HEMOLINK will place a device with the diameter of a golf ball against their arms or abdomens for two minutes. During that time, the device draws blood from capillaries into a small container. Patients will then mail the tube of collected blood to a medical laboratory for analysis.

In a process known as "capillary action", the HEMOLINK leverages microfluidics to create a slight vacuum that pulls blood from capillaries through tiny channels in the skin into a small tube. The device collects 0.15 ml of blood which would be enough to test for cholesterol, infections, cancer cells, blood sugar and other conditions.

The HEMOLINK device is inexpensive to manufacture and the company hopes to have the device on the market in 2016. More research needs to be done to ensure blood stability.

Picture available on the Tasso, Inc. website.

