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Antibiotics Linked to Fatal Heart Condition

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STORY AT-A-GLANCE

- Fluoroquinolones, long associated with Achilles tendonitis and rupture, have been demonstrated to increase your risk of aortic dissection (a tear in the wall of the major artery, allowing blood to flow between the layers) or aortic rupture, which can lead to death
- Even though "black-box" warnings are now attached to them, fluoroquinolones are still often prescribed for upper respiratory infections or urinary tract infections
- Antibiotic use can trigger a permanent change in your gut microbiome, which accounts for nearly 80% of your immune system function, so it is important to use antibiotics only when absolutely necessary
- You may reduce your risk of bacterial and viral infections by supporting your immune system through simple lifestyle measures, such as quality sleep, fermented foods, regular exercise and optimizing your vitamin D level

Research shows your body's microbiome has nearly 39 trillion bacteria.[1] During early years, your family, dietary intake and environmental exposure contribute to the variety in your microbiome, influencing your lifelong health. Everyday activities such as brushing your teeth, eating, kissing someone or handling a family pet also affect your microbiome.

This composition may be as distinct to you as a fingerprint and plays an enormous role in disease prevention, and influences the function of your skin, lungs, breast and liver.[2] Harmful bacteria can trigger illness and disease, which is frequently treated with

antibiotics. Of the 10 most commonly prescribed, two are from the antibiotic class of fluoroquinolones.[3]

The Food and Drug Administration (FDA) first added a boxed warning to fluoroquinolones in 2008, due to the increased risk for tendinitis and tendon rupture.[4] Boxed warnings, also referred to as black box warnings, appear on prescription drug labels designed to call attention to serious or life-threatening risks.[5]

An additional warning was added in 2011 for those suffering from myasthenia gravis, and updates were included in 2013 describing irreversible peripheral neuropathy.[6] In 2018, the FDA warned fluoroquinolone antibiotics may increase the occurrence of ruptures or tears in the aorta.[7] And, in January 2022, the FDA decided:[8]

> *"We have determined that fluoroquinolones should be reserved for use in patients with no other treatment options for acute bacterial sinusitis, or ABS, acute bacterial exacerbation of chronic bronchitis (ABECB), and uncomplicated UTI because the risks generally outweighs the benefits.*
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> *For some serious bacterial infections the benefits of fluoroquinolones outweigh the risks, and it is appropriate for them to remain available as a therapeutic option."*

Yet, despite these warnings, researchers found in April 2022 that fluoroquinolones are still among the most-prescribed antibiotics around the world.[9] They concluded that some health care workers may have an "unsatisfactory knowledge" of the safety profiles and risks of these drugs, and that more education on adverse reactions to fluoroquinolones may be needed.

FDA Warning Links Fluoroquinolones With Aortic Damage

The aorta is the main artery in your body supplying oxygenated blood to your circulatory system. The artery comes from the left side of your heart and runs down the front of your backbone. The review by the FDA found fluoroquinolone antibiotics increase the

risk of tears in the aorta, also called aortic dissections, or ruptures of an aortic aneurysm, leading to excessive bleeding and death.

The findings occurred when antibiotics were given by mouth or through an injection. This led the FDA to caution against the use of fluoroquinolone antibiotics in those at risk, unless there are no other treatment options available.

Specifically, the antibiotic should not be used in those who are at risk for, or have a current, aortic aneurysm, such as those suffering peripheral atherosclerotic vascular disease, hypertension and specific genetic conditions such as Ehlers-Danlos syndrome or Marfan syndrome.[10]

Findings were pulled from four published observational studies, which taken together demonstrated a consistent association between aortic dissection or rupture and fluoroquinolone use. The underlying mechanism could not be determined from those studies.

Some of the commonly used fluoroquinolones include ciprofloxacin (Cipro), levofloxacin (Levaquin), gemifloxacin (Factive) and moxifloxacin (Avelox). These are prescribed to treat upper respiratory and urinary tract infections. In a statement, the FDA warns:[11]

> *"Fluoroquinolones should not be used in patients at increased risk unless there are no other treatment options available.*
>
> *Health care professionals should avoid prescribing fluoroquinolone antibiotics to patients who have an aortic aneurysm or are at risk for an aortic aneurysm, such as patients with peripheral atherosclerotic vascular diseases, hypertension, certain genetic conditions such as Marfan syndrome and Ehlers-Danlos syndrome, and elderly patients."*

Upper Respiratory Infections Are Often Viral

Viruses commonly trigger upper respiratory infections (URIs) with symptoms of runny nose, cough, low grade fever, sore throat and difficulty sleeping. URIs represent the most

common acute illness in the outpatient setting, often related to the common cold, which is typically a mild, self-limited inflammation of the mucous membranes in the airways.[12]

Bacterial illness may follow a viral illness as a secondary infection, and commonly includes symptoms persisting longer than 14 days with a fever higher than one might typically expect from a virus. Oftentimes, the fever gets worse a few days into the illness rather than improving.[13]

Unfortunately, one of the more common reasons fluoroquinolones are prescribed is for upper respiratory infections, ordinarily triggered by a virus. According to the U.S. Centers for Disease Control and Prevention (CDC),[14] the highest number of community antibiotic prescriptions are written in the southeastern states.

Fluoroquinolones ranked No. 4 in the highest number of prescriptions written per 1,000 people in the CDC's outpatient antibiotic prescription index in 2016. Because providers were still opting for fluoroquinolones more than they should for respiratory infections such as pneumonia, the CDC reported in 2021 that an expert panel had recommended the use of these drugs for this purpose be lowered by 90%.[15]

Bacterial and viral infections are dissimilar in important respects related to the organism's structure and the way they respond to medications. Although both are too small to be seen with the naked eye, the largest virus is actually smaller than the smallest bacteria.[16] Unlike the more complex bacteria, viruses cannot survive without a host and only reproduce by attaching themselves to other cells. Also, unlike bacteria, most viruses are specific in the cells they attack.

The differences in the structure and complexity of the organism have an impact on the type of medication that may be effective against it. Viral infections are not affected by antibiotics such as fluoroquinolones. In fact, using antibiotics for viral infections only contributes to the rising number of antibiotic-resistant infections.

Fluoroquinolones Linked to Multiple Health Concerns

Fluoroquinolone antibiotics have been associated with Achilles tendon ruptures and damage for over a decade. Other severe adverse events, such as retinal detachments as well as aortic aneurysms, may also be associated with other systems requiring collagen formation.[17] This may also explain, at least in part, how the drug increases your risk of aortic rupture or dissection, as collagen[18] lines your arteries and veins to allow for stretch as the heart pumps blood.[19]

Subsequently, in July 2022 the FDA mandated another warning, "alerting physicians to the increased risk of tendonitis and tendon rupture associated with their use."[20] According to Dr. Renata Albrecht, who heads the FDA's Division of Special Pathogen and Transplant Products, 'Achilles' ruptures associated with fluoroquinolones are three to four times more frequent than ruptures among people not taking these drugs.[21]

So, if you are taking these antibiotics, you should seek immediate medical care if you experience soreness or inflammation in muscles or tendons. You should also not exercise while your joints are affected.

The drugs are also powerful iron chelating agents that may trigger epigenetic changes through the loss of agents requiring iron as a cofactor. As noted in one study, this may also explain the classic renal toxicity associated with the antibiotics:[22]

> *"At sub-millimolar concentrations, these antibiotics inhibited jumonji domain histone demethylases, TET DNA demethylases and collagen prolyl 4-hydroxylases, leading to accumulation of methylated histones and DNA and inhibition of proline hydroxylation in collagen, respectively. These effects may explain fluoroquinolone-induced nephrotoxicity and tendinopathy."*

A recent study[23] has linked the use of fluoroquinolones to the rising number of children and adults affected by kidney stones. The odds of stones increased 1.5 times with the use of fluoroquinolones and exposure within 3 to 12 months was associated with greater risk. It appeared children and adolescents were particularly susceptible.

Reactions can be bodywide, impacting your central nervous system and musculoskeletal, visual and renal systems, sometimes simultaneously. Among the

serious reactions reported are:[24]

Memory impairment	Delirium	Agitation
Disorientation	Retinal detachment[25]	Hearing loss and/or tinnitus[26]
Disturbance in attention	Kidney stones	Kidney failure[27]
Hypoglycemia leading to coma	Aortic rupture or dissection	Tendon rupture or dissection

More Psychiatric Side Effects Than You Might Imagine

Researchers recommend further study to understand the pathogenesis caused by antibiotics in order to treat antibiotic-associated diseases through the mitigation of the intestinal environment — restoring it to its original state.[28]

Further research has demonstrated an imbalance in gut microbiome caused by antibiotics can negatively affect health in a number of ways and for long periods of time.[29] If your physician prescribes one of these dangerous antibiotics, ask to use another one. It would be unusual a fluoroquinolone would be the only antibiotic that could be used to treat your infection.

Remember, these dangerous antibiotics should be used as a last resort only. If it is necessary, be sure to carefully read the package insert and all the warnings, and seek medical attention the moment you notice a side effect.

The late Dr. David Flockhart, who served as professor of medicine and chief of clinical pharmacology at Indiana University School of Medicine, and who before his death was considered one of the leading experts in fluoroquinolone side effects, said in 2012 that "as many as one-third of patients taking a fluoroquinolone will experience some sort of psychiatric side effect."[30]

But the thing is, Flockhart had tried to call attention to these drugs over 10 years earlier, in 2001, when he decried Ciprio specifically, as he tried to stress just how dangerous fluoroquinolones are:[31]

> *"Cipro is basically a big gun whose benefits outweigh its risks in certain circumstances. But the bigger the gun you use, the more damage you can expect as collateral."*

Antibiotics Trigger Permanent Changes to Your Gut Microbiome

The health of your gut microbiome is a game changer. It has become increasingly apparent in recent years that the composition of your gut microbiome plays an enormous role in your health and disease prevention. Cancer and many other health conditions have been traced back to the influence of gut microbes, including obesity, depression, Parkinson's and allergies, just to name a few.

Since your gut is the main residence of your immune system,[32] disrupting your gut microbiome automatically disrupt your immune function, which can have far-reaching consequences. One way antibiotics can promote disease is by creating an oxygen-rich environment in your intestines, favoring the growth of pathogenic bacteria.

Beneficial microbes grow in an anaerobic (no oxygen) environment, while pathogenic bacteria need oxygen to survive.[33] Data suggest even one course of antibiotics can negatively alter your microbiome for up to one year, which is why it's crucial to use antibiotics only when it is absolutely necessary.[34]

However, Dr. Martin Blaser with the Langone Medical Center at New York University argues the impact of antibiotics on gut bacteria may be permanent. In an editorial in Nature he writes:[35]

> *"Early evidence from my lab and others hint that, sometimes, our friendly flora never fully recover. These long-term changes to the beneficial bacteria within people's bodies may even increase our susceptibility to infections and disease.*

Overuse of antibiotics could be fueling the dramatic increase in conditions such as obesity, Type 1 diabetes, inflammatory bowel disease, allergies and asthma, which have more than doubled in many populations."

Support Your Health and Your Gut

The stronger your immune system, the less chance any microbe will have of gaining a foothold in your body. Below are some basic strategies for supporting your immune system and preventing illness.

Optimize your diet — Avoid foods that tax your immune system, such as trans fats, fried foods, processed foods, sugars and grains. Seek to reduce your net carbohydrate (sugar, grains, fructose) and protein intake, replacing them with high-quality healthy fats.

Balance your gut flora — One of the best ways to support your gut is by incorporating naturally fermented foods into your diet, working up to 4 to 6 ounces per day. You may take a high-quality probiotic supplement, but fermented foods tend to offer the greatest benefit.

Exercise regularly — Exercise improves the circulation of immune cells in your blood, creating a more efficient system at locating and eliminating pathogens in your body. Make sure your fitness plan incorporates weight training, high-intensity exercises, stretching and core work.

Get plenty of restorative sleep — Research shows sleep deprivation has the same effect on your immune system as physical stress or disease, which is why you may feel ill after a sleepless night.

Reduce stress — High levels of stress hormones can diminish your immunity, so be sure you're implementing some sort of stress management. Meditation, prayer, yoga

and Emotional Freedom Techniques (EFT) are all excellent strategies for managing stress, but you'll have to find what works best for you.

Optimize vitamin D levels — Studies show inadequate vitamin D can increase your risk for MRSA and other infections. Your best source of vitamin D is through sensible sun exposure. Monitor your vitamin D level to confirm they're in a therapeutic range of 60 to 80 ng/mL. If you can't get UV exposure, consider taking an oral vitamin D3 supplement, in conjunction with magnesium and vitamin K2 (MK-7).

In addition to the lifestyle measures listed above, there are natural agents that are naturally antibacterial, including the following:

Vitamin C — Vitamin C's role in preventing and treating infectious disease is well established. Intravenous vitamin C is an option, but if you don't have access to a practitioner who can administer it, liposomal vitamin C is the most potent oral form. For more information on vitamin C, listen to my interview with Dr. Ronald Hunninghake (hyperlinked above), an internationally recognized vitamin C expert.

Garlic — Garlic is a powerful antibacterial, antiviral and antifungal. It can stimulate your immune system, help wounds heal and kill antibiotic-resistant bacteria. For highest potency, the garlic should be eaten fresh and raw (chopped or smashed).

Olive leaf extract — In vitro studies show olive leaf extract is effective against Klebsiella, a gram-negative bacteria, inhibiting its replication, in addition to being toxic to other pathogenic microbes.

Manuka honey — Manuka honey, made from the flowers and pollen of the Manuka bush, has been shown to be more effective than antibiotics in the treatment of serious, hard-to-heal skin infections. Clinical trials have found Manuka honey can effectively eradicate more than 250 clinical strains of bacteria, including resistant varieties such as MRSA.

Tea tree oil — Tea tree oil is a natural antiseptic proven to kill many bacterial strains.[36]

Colloidal silver — Colloidal silver has been regarded as an effective natural antibiotic for centuries, and recent research shows it can even help eradicate antibiotic-resistant pathogens. If you are interested in this treatment, make sure you read the latest guidelines for safe usage of colloidal silver as there are risks with using it improperly.

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