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The science of VIAGRA: Doctor reveals exactly how the little blue pill helps boost a man's performance in the bedroom

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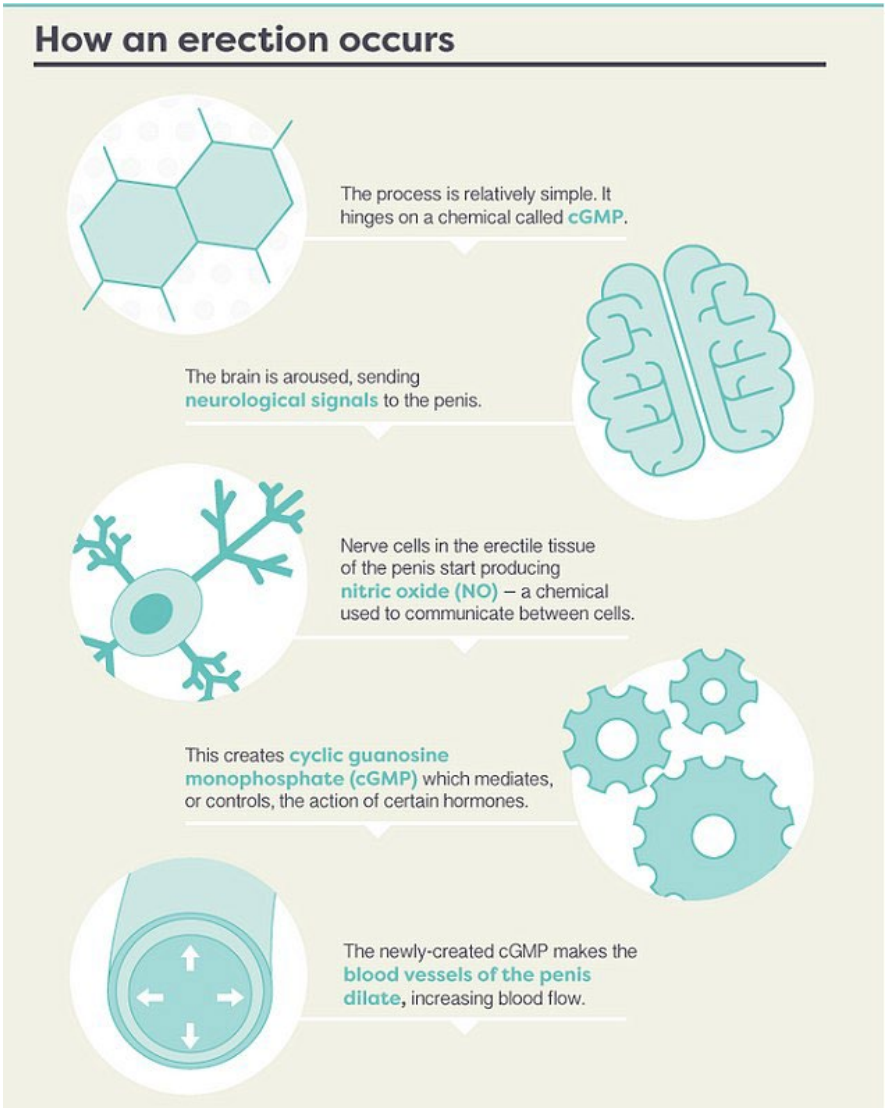
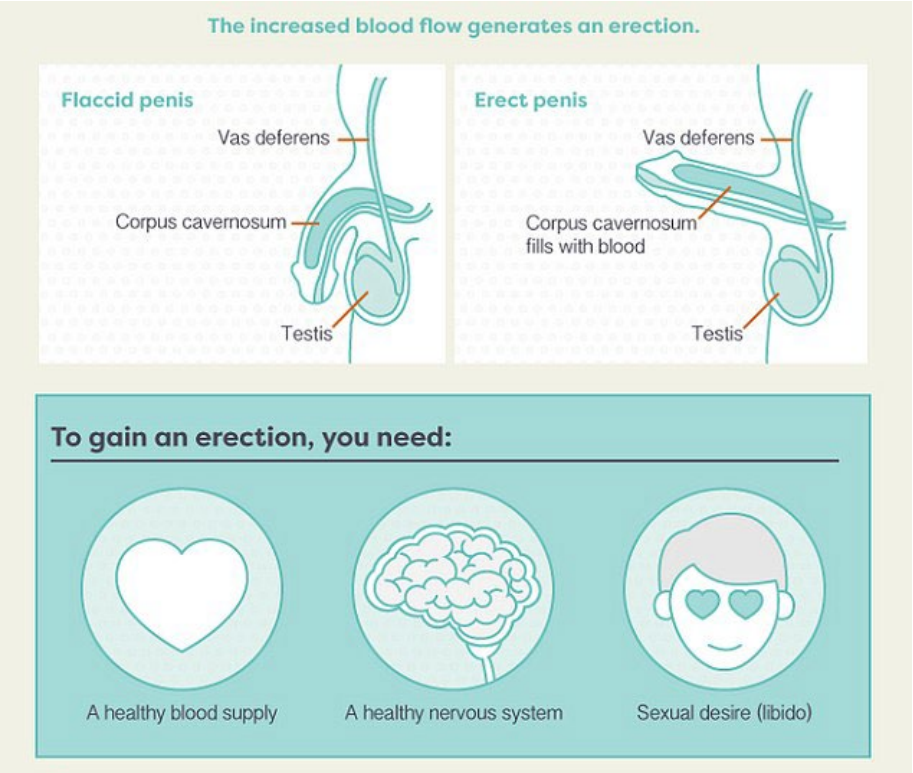
- cGMP increases blood flow to the penis and causes an erection to occur
- After sex, the PDE-5 enzyme breaks down cGMP so the erection subsides
- Viagra works by inhibiting PDE-5 so cGMP is not broken down in the penis
- As cGMP levels are high, it boosts blood flow to treat erectile dysfunction

It's the little blue pill that has revolutionised sex lives over the world. Viagra, known generically as sildenafil, helps boost blood flow to a man's penis so he can maintain an erection. But the popular drug was invented accidentally, to treat angina, a heart condition that constricts the vessels that supply the organ with blood.

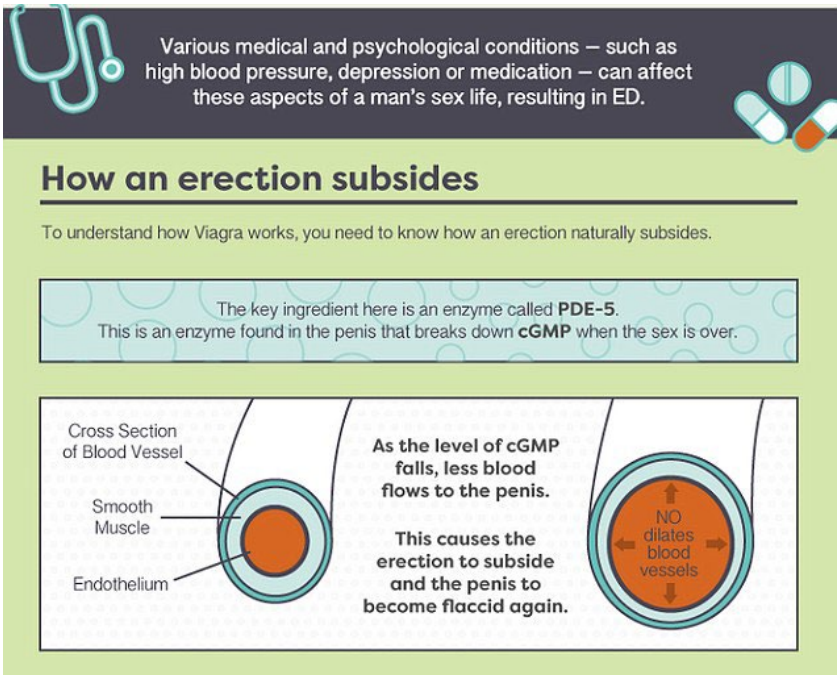
Pfizer, the pharmaceutical company that creates the drug, were searching for something to relax these blood vessels, and in the process stumbled on a pill for erectile dysfunction. Until recently, only men who suffered impotence as a side-effect of illness or those seen by a specialist could be given the pills on the NHS. But since Viagra's patent ran out in 2013, its cost has plummeted by 93 per cent and cheaper, generic versions of the drug have become available. Because of this, the NHS has allowed all men with serious impotence problems to be prescribed the pill, and prescriptions have soared, with more than 3,800 prescriptions being dished out every day last year. As the drug becomes increasingly common, Dr Tom Brett, a GP in London and medical director of Lloyd's Pharmacy's online doctor service, explains exactly how it works...



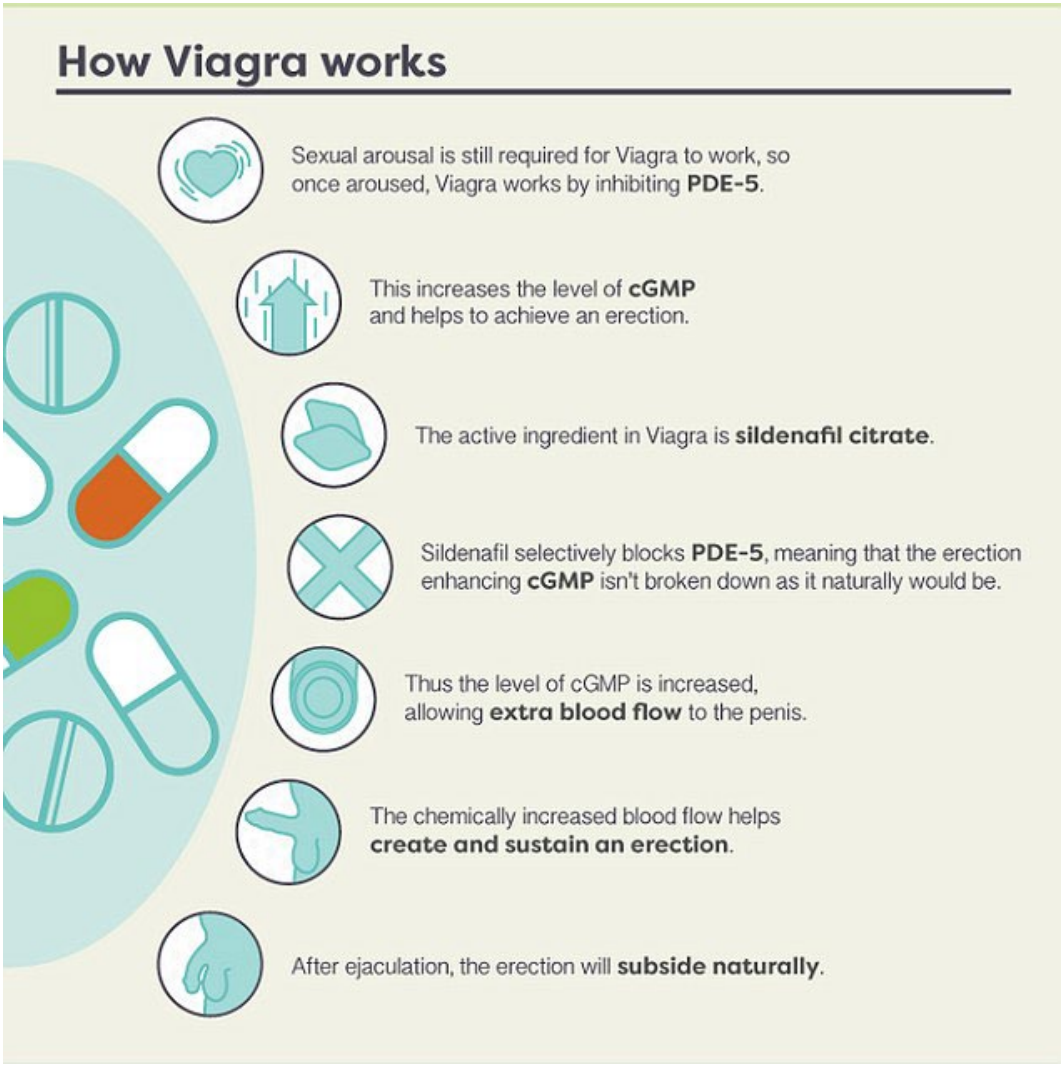
When the brain is aroused it send signals to the penis. There, nerve cells start producing nitric oxide (NO), a chemical used to communicate between cells. This in turn creates cyclic guanosine monophosphate (cGMP) which controls the actions of certain hormones. The cGMP dilates the blood vessels of the penis.



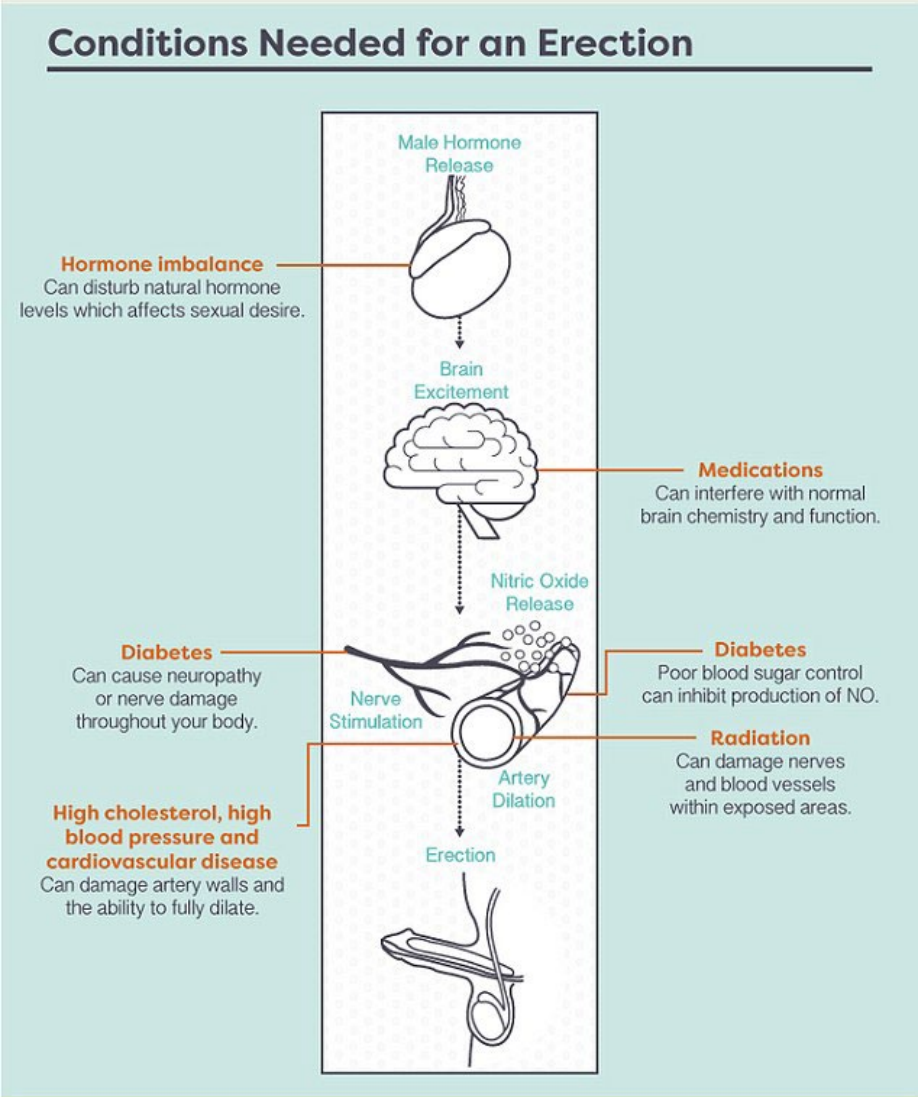
When the penis' blood vessels are dilated, blood flow is increased, and this generates an erection.

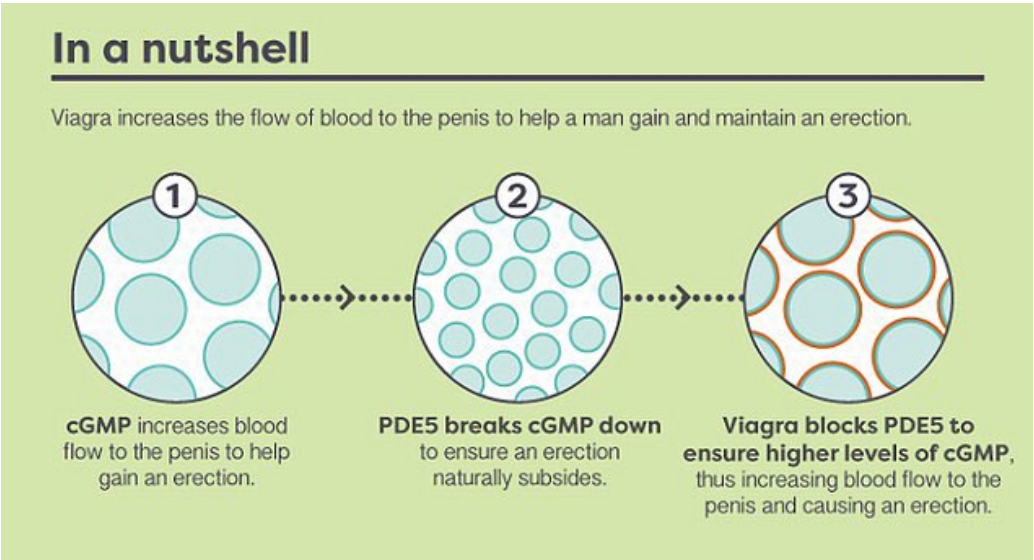


An enzyme called PDE-5 breaks down cGMP when sex is over, causing less blood flow to the penis, which causes it to become flaccid again. Medical and psychological conditions can cause erectile dysfunction.



Viagra, whose active ingredient is sildenafil citrate, works by inhibiting PDE-5, which stops cGMP being broken down. Therefore the level of cGMP is increased and helps to achieve an erection





Viagra inhibits an enzyme called PDE-5 which means cGMP is not broken down. Higher levels of cGMP cause the blood vessels in the penis to dilate, increase blood flow, and causing an erection

What is erectile dysfunction?

To fully understand Viagra one must understand the condition it treats. Erectile dysfunction (ED) occurs when a man is unable to gain or maintain an erection sufficient to have successful sexual intercourse. ED can be caused by psychological issues such as stress, an underlying medical condition, or sometimes by lifestyle choices.

How does Viagra work?

The quick answer is Viagra works by relaxing the muscle cells in the blood vessels supplying the penis, allowing more blood to flow there. This increased blood flow increases the likelihood of getting an erection. The science behind Viagra is relatively simple once you get your head around the jargon. The bullet points below should break it down for you:

- When the brain gets aroused a signal is sent to the penis. Nerve cells in the erectile tissue in the penis start producing nitric oxide. This leads to the creation of a chemical called cGMP.
- cGMP relaxes the smooth muscle in the walls of the blood vessels of the penis, causing them to dilate and increasing the blood flow to the penis. This increased blood flow helps create an erection. This pathway is disrupted in men with erectile dysfunction.
- PDE5 is an enzyme found in the penis which breaks down cGMP when you stop having sex. As the level of cGMP falls, the penis returns to its non-erect state.
- The active ingredient in Viagra is sildenafil citrate. Sildenafil selectively inhibits PDE5. Inhibiting PDE5 increases the level of cGMP when aroused, and allows extra blood flow to the penis to help create an erection.

Background on Viagra

Viagra is the best known treatment for erectile dysfunction. The little blue pill was introduced by the American pharmaceutical corporation Pfizer in 1998 and was an immediate success. In 2000 Viagra sales accounted for 92 per cent of the global market for prescribed erectile dysfunction pills. Viagra was under patent protection in the UK until 2013. Since the patent expired, legal cheaper versions of generic Viagra (sildenafil) have been made available. However, the quality of the Viagra brand name means many men still prefer to use the original product.

Can Viagra cause side effects?

Most men will not experience any side effects when taking Viagra. If side effects do occur they are generally mild and brief. The most common are headache and facial flushing. Other side effects can include palpitations, indigestion, dizziness, and blurred vision.
In the case of any side effects, always consult a doctor before proceeding further.

Who can take Viagra?

Viagra is prescription-only for a reason. Always get expert approval before starting to take it. People should be sure to disclose all medical conditions to their doctor, especially if they have a history of angina, recent heart attack, recent stroke, high or low blood pressure, as well as any allergies. Viagra must never be taken by those using any nitrate or nicorandil medicines. Erectile dysfunction can be caused by underlying medical conditions such as high blood pressure, high cholesterol, obesity and type 2 diabetes. ED is often the first sign of these conditions, so anyone suffering from erectile dysfunction, particularly if they are over the age of 40, should book an appointment with their GP.

Can anything limit how effective Viagra is?

Yes. Alcohol can limit Viagra’s effectiveness, as can high fat foods. For the best results, Viagra should ideally be taken on an empty stomach. Cialis and Levitra, other ED treatments, can be taken with a meal (but not with alcohol), so if this is important to a

person, they may wish to try these options instead.

What if Viagra doesn’t work?

Viagra doesn’t always work first time, but that doesn’t mean it won’t ever work. If nothing happens the first time round, Viagra could nevertheless be more effective next time. Indeed, doctors advise trying all erectile dysfunction medicines eight times before giving up and moving on to another treatment or higher dose.

Source:
https://www.dailymail.co.uk/health/article-3226298/The-science-VIAGRA-Doctor-reveals-exactly-little-blue-pill-helps-boost-man-s-performance-bedroom.html