Why you shouldn't pop pimples — and 9 other things to know about acne

Updated by Joseph Stromberg | Feb 24, 2015, 12:00pm EST

Most people don't consider acne an interesting topic to talk or read about. But about 85 percent of people get acne at one time or another.
What's more, pimples aren't just a common skin problem — they're something of a scientific mystery, caused in part by poorly-understood colonies of bacteria that live in our pores and eat our skin oil.

"Most people think that because acne is so common, it must be simple," says Emmy Graber, a dermatologist at Boston University. "But it's actually incredibly complex — and we don't really understand a lot about it."

What scientists have learned so far, though, can tell us a lot about the trillions of bacteria that live throughout our bodies and profoundly affect our health in all sorts of ways. It can also provide a few practical tips — including why you shouldn't pop pimples.

1) Acne is caused by clogged pores

![Formation of Skin Pimples and Acne](Shutterstock.com)

1. Healthy follicle
2. Duct clogged by dead cells, sebum starts to accumulate
3. Bacterial infection, inflammation triggered, -- pimple
4. Follicle ruptures, pustule with fluid formed - acne
This is the acne fact you probably know already, and it’s something doctors have known for some time.

Here’s how it works: Your skin cells naturally die over time and are shed through the pores in your skin. "For some people, though, skin cells don't shed out of the pores the way they should," Graber says. "They get globs of dead skin cells and oil stuck in them."

These clogged pores lead to bacterial growth, inflammation, and the formation of nodules: the painful bumps we call pimples. When they have a big opening at the skin surface that gets filled with dried oil and darkened, dead cells, they become **blackheads**; when they remain covered with skin, trapping oil, bacteria, white blood cells, and pus, they become whiteheads.

A number of different factors can lead to all this happening. **Genetics** appear to play a role in a person's odds of developing clogged pores, and several hormones — including testosterone —
cause your glands expand and secrete more oil, further increasing the chance of clogging. (This is why acne often strikes during adolescence, when hormone levels are particularly high.)

Recently, though, research has suggested that a separate factor is especially important.

2) Very specific strains of bacteria likely clog the pores

Every single person has Propionibacterium acnes bacteria. (CDC/Bobby Strong)

In some cases, though, blooms of P. acnes bacteria combine with dead skin cells and excess oil to clog pores, causing outbreaks of acne. So why does this only happen to some people?

Huiying Li, a UCLA biologist who's sequenced the DNA of P. acnes bacteria living on the skin of people who suffer from acne and people who don't, believes her research team has the answer. "When we compared the P. acnes at skin level, we found there are certain strains that are highly
associated with acne," she says. "They’re mostly found in acne patients, and rarely in healthy individuals."

It’s still unclear how these specific strains might clog pores, and whether they’re typically contracted from other people, or evolve on a person’s skin. Li’s lab is currently examining their DNA and cellular metabolism to learn more.

3) Some bacteria might actually prevent acne

As we’ve found with bacteria in the gastrointestinal tract, the idea that all skin microbes are bad is a dangerous oversimplification. In fact, Li believes that there might be some P. acnes strains that prevent outbreaks of acne.

Apart from the strains found more often in people with acne, her team's research also turned up P. acnes strains disproportionately found in people with clear skin. Ongoing work in this area could someday lead to probiotic treatments for acne: doses of beneficial strains that would crowd out harmful strains, and help unclog pores.

Alternately, other researchers have explored the idea of using viruses to inject DNA into acne-causing strains of bacteria, in order to mutate them into benign strains.

4) Humans might be the only animal species that gets acne naturally
There are an estimated 8 million animal species on Earth. But only one of them, as far as we know, naturally develops acne on a regular basis: humans. Scientists intentionally induce acne in mice and other species to be used for testing cosmetics and medicine, but as far as we know, no other animal regularly develops acne on its own.

It's unclear why this is the case, but some evolutionary biologists hypothesize that it might be due to the fact that our oil glands originally evolved to moisten the furry skin of our primate ancestors.
ancestors. Once we lost all that hair, we had an excess of oil, which sometimes leads to clogged pores.

5) Dirt has nothing to do with acne

"Lots of people think they're getting acne because they're not washing their face enough," Graber says. "But there's no evidence that dirt directly causes acne."
Experts recommend that all people — including those who are prone to acne — should wash their faces no more than twice per day. Washing it over and over, Graber says, will just lead to overdrying.

6) Greasy foods don't cause acne — but skim milk might

As with dirt, the idea that greasy, high-fat foods cause breakouts has never been backed up by scientific research. There’s also no evidence that chocolate triggers acne breakouts.
However, preliminary research may implicate other, seemingly-benign foods. "There are some studies that suggest that there may be an association between dairy consumption — particularly skim milk — and acne," Graber says. Other work, meanwhile, suggests that foods with a high glycemic index (like white rice and white bread) might contribute to acne.

Still, Graber cautions that this work is still in the early stages, and the idea that these foods cause acne hasn't been proven in controlled studies.

7) You shouldn't pop pimples

Popping pimples is, admittedly, quite satisfying. But there's a big downside to it: "it can lead to scarring," Graber says.

Dermatologists still don't fully understand why some people get acne scars and others don't, but they believe that popping is part of the equation.

Of course, if you care more about the simple pleasure of popping than the long-term effect of scarring, pop away.

8) There may be genes that contribute to acne, but we don't know what they are

Studies of twins indicate that there is some genetic influence over who suffers from acne. But this work, too, is far from mature. Researchers have found a few genetic variants that appear to be correlated with higher acne rates, but the overall picture is still unclear.

"I have identical twins that come into my practice, and one suffers from severe acne, and the other has clear skin," Graber says. "At the same time, if you have acne, it's more likely that one of your parents did too. The bottom line is that we don't fully understand how it's inherited."

9) Treating acne with antibiotics can backfire
Dermatologists sometimes prescribe antibiotics to people who suffer from especially severe acne (in order to kill off bacteria and reduce overall inflammation). But in many cases, research shows, these antibiotics aren’t any more effective than over-the-counter treatments, and they have a major downside — leading to antibiotic resistance.

An increasing number of *P. acnes* bacteria, it turns out, are resistant to the main types of antibiotics used. This includes the acne-causing strains identified by Li’s team at UCLA.
"If a patient carries these strains, an antibiotic treatment won't work," Li says. "It might actually make the disease worse, because you're killing other strains, and encouraging the antibiotic-resistant strains to grow." In a sense, this mirrors the way that antibiotic over-use as a whole has led to the proliferation of all sorts of resistant types of bacteria.

10) Over-the-counter treatments work nearly as well

Graber recommends that most people try using a benzoyl peroxide-based over-the-counter treatment for acne, and only ask a dermatologist for an antibiotic as a last resort — as trials have found that benzoyl peroxide is nearly as effective as antibiotics in treating acne. Though it's sold in concentrations ranging from 2 to 10 percent, higher concentrations just dry your skin out, and don't actually work any better.

She also notes that spot treatments designed to eliminate existing pimples are typically ineffective. Benzoyl peroxide and other medications can prevent acne from forming, but once it has, there's not much to do besides let it subside naturally over time.

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