

The Bladder Infection Superbug, Explained by the Doctor Who Discovered Its Spread // E Coli ST131

Lauren Cox, MyHealthNewsDaily Contributor | October 26, 2010

Super-charged bacterial infections that are resistant to antibiotics, and can take people's limbs or even lives, have been all over the news lately. First there was the threat of the superbug MRSA (Methicillin-Resistant Staphylococcus Aureus) that causes skin staph infections, then came *C. difficile* (bacteria that can cause diarrhea and life-threatening colon inflammation).

Now signs point to the rise of the next superbug, a strain of *E. coli* called ST131.

Dr. James Johnson, a professor at the University of Minnesota and a physician at the Minneapolis VA Medical Center, discovered how widespread ST131 had become when he analyzed *E. coli* samples collected from hospitalized patients across the United States.

The new strain accounted for 17 percent of all *E. coli* samples collected, and caused 50 percent of all infections that were resistant to treatment with two antibiotics. In some cases, a urinary tract infection from ST131 ended in death.

My Health News Daily spoke with Dr. Johnson about the rise of ST131, and what we can do to stop it.

How long has this strain of *E. coli* been around?

It [ST131] was first reported in 2008. Now looking back, we can see it's been around longer than that. But people didn't stumble onto it until 2008.

Most of these infections arise immediately from a bug that was in the host's own intestinal track. Then the question is: Where did the bug come from? There's plenty of evidence to show that people pick up new *E. coli* strains all the time. There's a steady input.

Sometimes it's from other people. It can be from our pets, it can be from food. It may be in water, depending on the local circumstances.

Scientists have reported increases in infections from several kinds of drug-resistant bacteria in recent years. Is this a sign of a trend, and is ST131 part of it?

It's a very consistent trend around the world, in every kind of microorganism that causes disease in humans: bacteria, viruses, fungi, parasites.

Everything is becoming resistant to the drugs and chemicals that we have (in the past) relied on to control them. And it's predictable. Darwin was right. Organisms are going to

have mutation and genetic variation and if environmental conditions change, the bugs that are best adapted to the new conditions will survive and thrive, and the others will die off.

You "use it and lose it" when it comes to antibiotics, and we've been using them like crazy. We use them for patients who don't have infections, or have infections that don't really need antibiotic treatment.

And what that means is we're encouraging bugs to become resistant. So when a patient has a real infection that really needs that drug, we don't have it anymore. The bug is resistant.

Now that you've found the strain, what can public health officials do about it?

I think we need more study to find out answers to some of the questions you've been asking, like what are the reservoirs [of the bacteria]? Where is it lurking? How's it getting it spread around?

We need to be aware that any antibiotic use is likely to promote this strain, because it's resistant to so many different antibiotics. ... So all our efforts that we've been doing for years, to try to reduce unnecessary antibiotic use in people and on the farm [for cows and other animals], are all the more important because of bugs like this.

How does ST131 compare with other E. coli strains?

There are three different broad "flavors" of E. coli. There are the ones that pretty much don't cause disease, they just live in the intestines of humans and animals. There are the ones that cause diarrhea, and then there are the ones that cause urinary tract infections and other so-called extra-intestinal infections meaning outside the intestines.

ST131 is a bit different from most previous drug-resistant E. coli. Old-fashioned drug-resistant E. coli tended to more be like the benign types that don't cause disease all that effectively. When they do, they're drug resistant, they're hard to treat, but they tended to pick on weakened hosts. It's kind of like the lions in the Serengeti will go for the slowest antelope.

But, ST131 is more like one of the regular old, potent urinary-tract-infection causing strains. So it has that capability, and it has all this resistance. So it's a double threat.

How is ST131 different from other superbugs like MRSA or C. difficile?

Well, it is in some ways very similar to both. I would say those are the poster children for drug-resistant superbugs that everyone's afraid of now -- and this would be the third. A whole different type of bacterium that rounds out the trio.

So, we now have bacterial threats ... causing infections of all different body parts that are hard to treat with antibiotics. And these are increasing in number, frequency and severity, and are found both in the community and in the hospital.

The great majority of MRSA infections are pretty mild, pretty trivial, frankly. And that is true with ST131 also. Most of them are minor bladder infections. It doesn't get better with the first drug you try so you try something else, and it gets better.

But there is this tip of the iceberg, peeking above the water, of bad, severe, awful cases. Death or debility.

So, how worried should we be about ST131?

It's not like I think ST131 is going to kill off humanity in the next few years or ever. But it is making treatment of what used to be simple-to-manage infections a lot more difficult.

Some patients are being made sicker, and they stay sicker longer than would have been the case before. Patients are needing to have intravenous treatment, where before they could have been treated with pills. And some patients are dying, who previously would have survived.

I think we do need to move forward and take action, but we don't need to throw our hands up and cry that the sky is falling and there are things that can be done, it's not a hopeless field by any means.