(CNN) -- Humanity has fought long and hard against diseases and insects. Now a Harvard scientist has tallied up the bill for the unintended costs, the rapid evolution of super bugs.

The application of drugs and insecticides to combat pathogens and crop pests has induced our mite-sized enemies to mutate quickly, which can render newer generations highly resistant to the chemicals.

To fight the quickly evolving creatures, the United States must spend between $30 billion and $50 billion a year, according to biologist Steve Palumbi.

"We are in an explosive arms race with many disease and pest species," said Palumbi, who reported his findings in the September 7 edition of the journal Science.

"Those are minimal annual costs in the United States, based on just two disease organisms and the impact of insect pests in agriculture. These were the only good numbers I have found so far, but they add up to a surprising bill," he said

The worldwide costs, while not tallied, certainly run much higher. Containing the rapidly mutating AIDS virus, for example, could exceed hundreds of billions of dollars.

The present approach to combating super mutants is all defense and no offense: Wait for a new strain to emerge and then devise a new drug or pesticide to fight it.

The approach is hardly a good one, Palumbi argues. Scientists should intervene to slow the evolution of the tiny antagonists before new strains appear, he added.
'Evolutionary maelstrom'

He gives the case study of major bacterial infections in recent decades. Doctors have relied on increasingly expensive drugs to fight them, such as penicillin, vancomycin, Methicillin and Zyvox.

But most of the pathogens have evolved resistance to the succession of antibiotics. Some have become incurable.

"The cost of one type of infection is billions and billions higher than it would be if evolution of resistance hadn't occurred," Palumbi said.

The situation could be worsened by genetically modified organisms, which, sown in agricultural fields, could spark an "evolutionary maelstrom" by inducing rapid evolution in insects and weeds.

Palumbi has nothing against chemicals, but thinks that they can be used much more effectively in the battle against the bugs. Some hospitals, for example, switch antibiotics on a regular basis to impede the ability of diseases to become immune to them.

"Battling evolutionary arms races costs a huge amount, but we can reduce this amount by 'drugging smarter not harder' and incorporating the potential for evolution into current policies," he said.

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MRSA Fast Facts

By CNN Library
June 28, 2013 -- Updated 1701 GMT (0101 HKT)

(CNN) -- Here are some facts about MRSA you should know:

Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria are resistant to all beta-lactam antibiotics such as methicillin, penicillin, oxacillin, and amoxicillin. A MRSA infection can be fatal, and is sometimes called the "Super Bug."

**About:**

*Staphylococcus aureus* bacteria are commonly found on the skin and in the noses of healthy people. Skin infections from staph bacteria are called staph infections; staph bacteria are one of the most common causes of skin infection in the U.S. Staph bacteria are a common cause of pneumonia, surgical wound and bloodstream infections. Most of these infections can be treated without antibiotics.

Twenty-five to thirty percent of the population is colonized with staph, and less than 2% is colonized with MRSA. Colonized means bacteria is present but doesn't cause infection.

**Statistics:**

According to the CDC an estimated 10,800 deaths in the U.S. each year are caused by staph, 5,500 of which are linked to MRSA.

2005 - According to JAMA an estimated 94,360 cases of MRSA infection are reported in the U.S.

2005 - According to JAMA MRSA is responsible for an estimated 18,650 deaths in the U.S.

2011 - A study by researchers at UC Davis finds that the number of children hospitalized due to community-acquired MRSA doubled between 2000 and 2007.

August 2012 - Researchers from the University HealthSystem Consortium (UHC) and University of Chicago Medicine publish a study indicating the "rate of MRSA infections recorded at U.S. academic hospitals doubled between 2003 and 2008."

May 29, 2013 - A study released in the "New England Journal of Medicine" finds that "germ-killing soaps and ointments" used in ICU's reduced cases of MRSA by 40%.

Types of MRSA Infections: (Source: JAMA)
The majority of staph and MRSA infections occur in hospitals or other health care settings, among patients with weakened immune systems. However, it is becoming more common in the community. These are called hospital-associated or healthcare-associated MRSA infections. (HA-MRSA). Risk factors for an HA-MRSA infection include current or recent hospitalization, living in a nursing home, or long-term antibiotic use.

MRSA infections occurring in people who have not been hospitalized/haven't had a medical procedure in the past year and are otherwise healthy are called community-associated MRSA infections (CA-MRSA).

Risk factors for a CA-MRSA infection include having an underdeveloped or weakened immune system, playing contact sports, association with healthcare workers (family, friends, etc), or living in crowded or unsanitary conditions.

Symptoms:
Red bumps that look like pimples or boils. They can become painful abscesses that must be surgically drained.
The infection site can resemble a spider bite.
The bacteria can cause infections in surgical wounds, and can get into the bloodstream and bones.

Diagnosis:
MRSA is diagnosed by checking for signs of drug-resistant bacteria in nasal secretions or tissue samples. Tests that can detect staph DNA yield faster results than growing the bacteria in a lab.

Prevention:
Wash hands often with warm water and soap or with an alcohol-based hand sanitizer.
Cover open wounds and keep them clean.
Avoid sharing personal hygiene items such as towels, sheets, clothing and toiletries.

http://www.medicalexpose.com/
CDC sets threat levels for drug-resistant 'superbugs'

By Miriam Falco, CNN

September 17, 2013 -- Updated 2148 GMT (0548 HKT)

STORY HIGHLIGHTS

- More than 2 million people get antibiotic-resistant infections each year
- CDC is ranking the worst bacteria based on number of hospitalizations and deaths
- Drug-resistant 'superbugs' include CRE bacteria, C-Diff and Neisseria gonorrhoeae

(CNN) -- Health officials have been warning us about antibiotic overuse and drug-resistant "superbugs" for a long time. But today the Centers for Disease Control and Prevention is sounding the alarm in a new way.

For the first time, the CDC is categorizing drug-resistant superbugs by threat level. That's because, in their conservative estimates, more than 2 million people get antibiotic-resistant infections each year, and at least 23,000 die because current drugs no longer stop their infections.

Antibiotics are designed to kill bacteria that cause infection. However, in the process they can also kill so-called good bacteria (the human body hosts about 100 trillion).

The Missouri Department of Health explains this way: "Every time a person takes antibiotics, sensitive bacteria are killed, but resistant germs may be left to grow and multiply. Repeated and improper uses of antibiotics are primary causes of the increase in drug-resistant bacteria."

Some bad bacteria are naturally resistant to certain types of antibiotics, according to Tufts University. Others can become resistant by spontaneous genetic mutation or by swapping genes with other bugs.
So the CDC is ranking the worst drug-resistant bacteria according to how many people get sick, the number of hospitalizations and the number of deaths caused by each. They also took into account how many, if any, existing antibiotics still work on the bacteria. Instead of red, orange or yellow -- the levels once used to describe terrorism threats -- the CDC is using "urgent," "serious" and "concerning."

**Fatal brain disease may have infected 13**

Knowing the specific names of the deadly bacteria may not be essential for the average person, but CDC Director Dr. Thomas Frieden said Monday that the CDC is warning the public about these health threats before they get out of control.

"For the first time," said Frieden, "we have a snapshot of antimicrobial threats that have the most impact on human health."

According to the CDC, the following bacteria are the most "Urgent Threats":

**CRE bacteria** -- a family of germs called carbapenem-resistant Enterobacteriaceae, which includes E. Coli. Some CRE bacteria are resistant to all existing antibiotics. The CDC reports more than 9,000 infections are contracted in hospitals and other health care settings from these bacteria. As many as 50% of the patients who are infected with CRE end up dying because there is nothing to help them fight the infections.

**Clostridium Difficile (C-Diff for short)** -- a bacteria that can cause [life-threatening diarrhea](https://www.cdc.gov/ndph/dpdhiv/hpv/index.html). It kills up to 14,000 people and causes a quarter million hospitalizations each year. Most patients who get this potentially deadly infection are on antibiotics for other infections. The problem is that while antibiotics kill bad bugs, they also kill good bacteria in your gastrointestinal system that help fight off bad bacteria, C-Diff included.

**Fecal transplant cures woman's bacterial infection**

**Neisseria gonorrhoeae** -- the drug-resistant form of this bacteria causes gonorrhea, the second most commonly reported infection in the United States. Gonorrhea can cause a variety of illnesses in men and women, including infertility. The CDC estimates there are 820,000 infections each year. In nearly a third of the cases, treatment of the sexually-transmitted disease, is hampered by growing antibiotic resistance.

**Sexually-transmitted superbug could be major crisis**

Frieden said if the current trends continue, "the medicine cabinet may be empty for patients who need them in the coming months and years."

To avoid what Frieden calls a "post-antibiotic" era, where none of the existing drugs work anymore and new ones haven't been approved, the CDC has created a four-step plan to stem the tide of antibiotic resistance.

The government agency hopes to better track infections in the future to know when a bacteria is becoming drug-resistant. By spotting the trend earlier, scientists may be able to develop new antibiotics quicker.

You can also do your part, the CDC said, by preventing infections in the first place. Preventing infection starts with practicing good hand hygiene and safe food-handling, so you don't get sick in the first place. Since many antibiotic-resistant infections are spread in hospital settings, patients and their families should feel empowered to ask doctors and other health care personnel coming into their rooms if they have washed their hands.

Patients should also only take antibiotics when they are really necessary. Changing the way antibiotics are used is perhaps "the single most important action needed to greatly slow the development and spread of antibiotic-resistant infections," Frieden said.
Patients need to demand fewer antibiotics and doctors have to resist patients requests for them when they know they won't work. Also, lowering the use of antibiotics in animals to only when it's absolutely necessary can contribute to stretching the life and usefulness of available drugs, Frieden said.

Disinfectants could give rise to superbugs

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http://www.medicalexpose.com/
AntiBiotics are used to Make Animals FAT

Can't You See That AntiBiotics Make you Fat

Wake Up and Smell the Herbal Coffee
DARPA: Let’s Get Rid of Antibiotics, Since They’ll Be Obsolete Anyway

For the better part of a century, antibiotics have given doctors great powers to cure all sorts of bacterial infections. But due to bacteria’s nasty habit of evolving, along with widespread overuse of these drugs, disease-causing bacteria are evolving antibiotic resistance at an alarming rate, making it much harder, and at times impossible, to wipe them out. DARPA, the military’s research agency, is eyeing an innovative

Antibiotics used in dentistry

DO NOT Use Antibiotics as Preventive in Dentistry
Use with Caution
UNFORTUNATELY, NO AMOUNT OF ANTIBIOTICS WILL GET RID OF YOUR COLD.

The best way to treat most colds, coughs or sore throats is plenty of fluids and rest. For more advice talk to your pharmacist or doctor.
'We've reached the end of antibiotics': Top CDC expert declares that 'miracle drugs' that have saved millions are no match against 'superbugs' because people have overmedicated themselves

By SNEHA NARAYAN
PUBLISHED: 06:50 GMT, 28 October 2013 | UPDATED: 06:17 GMT, 28 October 2013

Health crisis: Dr Arjun Srinivasan, the associate director of the CDC, told PBS Frontline that misuse and overuse of antibiotics over the years have rendered them powerless to fight infections.

A high-ranking official with the Centers for Disease Control and Prevention has declared in an interview with PBS that the age of antibiotics has come to an end.

For a long time, there have been newspaper stories and covers of magazines that talked about “The end of antibiotics, question mark?” said Dr Arjun Srinivasan. “Well, now I would say you can change the title to ‘The end of antibiotics, period.’”

The associate director of the CDC sat down with Frontline over the summer for a lengthy interview about the growing problem of antibacterial resistance.

Srinivasan, who is also featured in a Frontline report called "Hunting the Nightmare Bacteria," which aired Tuesday, said that both humans and livestock have been overmedicated to such a degree that bacteria are now resistant to antibiotics.

“We're in the post-antibiotic era,” he said. “There are patients for whom we have no therapy, and we are literally in a position of having a patient in a bed who has an infection, something that five years ago even we could have treated, but now we can't.”

Dr Srinivasan offered an example of this notion, citing the recent case of three Tampa Bay Buccaneers players who...