

Superbug risk from tonnes of antibiotics fed to animals

- 13:31 23 March 2015 by [Debora MacKenzie](#)
- For similar stories, visit the [Food and Drink](#) Topic Guide

The problem of antibiotic-resistant bacteria, already an ["apocalyptic" threat](#), is poised to get worse. The reason? The world's hunger for meat.

In the first estimate of its kind, researchers calculate that farmers globally feed 63,000 tonnes of antibiotics to chickens, pigs and cattle every year – and that will climb by 67 per cent, to 106,000 tonnes, by 2030.

Antibiotics fed to livestock encourage the evolution of antibiotic-resistant bacteria, which [have repeatedly been linked to human infections](#).

Most of the increase in antibiotic use is expected to be in middle-income countries, but once resistant bacteria appear, they can spread round the world. The problem is getting worse as people become more prosperous and [eat more meat and dairy](#). For example, Tim Robinson of the [International Livestock Research Institute](#) in Nairobi, Kenya, and his colleagues calculate that the total biomass of livestock around the world now outstrips that of people, illustrating the size of the demand.

Factory farming

Traditionally, livestock foraged for grass or scraps in pastures or alleys, but producers worldwide are increasingly switching to intensive production with animals fed in crowded barns, as is already done in rich countries. Low doses of antibiotics are routinely added to the animal feed whether or not they are sick, to make the livestock gain more weight per gram of food eaten and boost farmers' slender profits.

Some 80 per cent of the antibiotics consumed in the US go to livestock, but there were no figures for global consumption. To find out, Robinson's team looked at the amount of antibiotics farmers in rich countries feed to their intensively reared livestock. Then they mapped pig, chicken and cattle populations worldwide, noting the proportions that are raised intensively, and how that is predicted to grow over the next decades. With the help of a computer model they calculated the antibiotics consumption of each country's livestock.

China is the worst offender, with its livestock consuming 15,000 tonnes a year, 50 per cent more than the US, the next on the list. Surprisingly, given the 2011 European Union ban on antibiotic growth-promoters, Germany is the fourth-highest consumer.

Antibiotic explosion

Worryingly, China's consumption will double by 2030, along with that of India, Brazil and South Africa. Consumption will more than double in countries such as Indonesia, Nigeria and Peru.

The estimates are probably conservative, says Robinson, due to simplifications in the model. [Frank Aarestrup](#) of the Technical University of Denmark in Lyngby, who [raised the alarm](#) about antibiotics in livestock in the 1990s, agrees the estimate is necessarily oversimplified. "But it gives us something to argue from, so I welcome it."

The question, he says, is whether developing countries will follow the US example, using a lot of antibiotics, or Denmark's, where antibiotic growth promoters have been eliminated.

"That's going to be a challenge," says Robinson.

Journal reference: [PNAS, DOI: 10.1073/pnas.1503141112](#)