

High levels of antibiotic-resistance in Indian poultry farming raises concerns

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A new study from India raises questions about the dangers to human health of farming chicken with growth-promoting antibiotics—including some of the same drugs used in raising millions of chickens in the United States and worldwide.

The study, led by researchers from the Center for Disease Dynamics, Economics & Policy (CDDEP) and published today in *Environmental Health Perspectives*, found high levels of antibiotic-resistant pathogens in chickens raised for both meat and eggs on farms in India's Punjab state.

Many countries, including the U.S., permit antibiotics to be used in food animal production, despite the risk to human health of spreading antibiotic [resistance](#). The U.S. Food and Drug Administration's voluntary ban on use of antibiotic growth-promoting agents in [animals](#) took effect in January, but its effectiveness is not yet known. Advocates of reducing non-therapeutic antibiotic use in animals have expressed skepticism about how well the voluntary ban will work.

"This study has serious implications, not only for India but globally," said study author and CDDEP Director Ramanan Laxminarayan.

"Overuse of antibiotics in animal farms endangers all of us. We must remove antibiotics from the human food chain, except to treat sick animals, or face the increasingly real prospect of a post-antibiotic world."

For the CDDEP study, the largest of its kind ever to be conducted in

India, researchers collected samples from 530 birds on 18 poultry farms and tested them for resistance to a range of antibiotic medications critical to human medicine. Two-thirds of the farms reported using antibiotic factors for growth promotion; samples from those farms were three times more likely to be multidrug-resistant than samples from farms that did not use antibiotics to promote growth.

Although the researchers found reservoirs of resistance across both types of farms, meat farms had twice the rates of antimicrobial resistance that egg-producing farms had, as well as higher rates of multidrug resistance.

Across the board, the CDDEP researchers found high levels of multidrug resistance, ranging from 39 percent for ciprofloxacin, used to treat endocarditis, gastroenteritis, cellulitis and [respiratory tract infections](#), and other infections, to 86 percent for nalidixic acid, a common treatment for [urinary tract infections](#).

Additional testing revealed the presence of certain enzymes that confer drug resistance to medications used, for example, to treat *E. coli*, bacterial pneumonia, and other infections. Almost 60 percent of *E. coli* isolates analyzed contained these enzymes.

Use of [antibiotics](#) for growth promotion in [farm](#) animals has increased worldwide in response to rising demand for food animal products. Previous CDDEP studies have projected that antibiotic consumption in food animal production will rise globally by 67 percent by 2030, including more than a tripling of use in India.

Provided by Center for Disease Dynamics, Economics & Policy

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