If the phrase “too much of a good thing” applies to anything, it surely applies to antibiotics. Their discovery was one of the most important medical advances of the last century, but overuse has made them less effective. This is known as drug resistance. There’s widespread agreement on the need to speed up development of new antibiotics and to discourage doctors from prescribing the drugs when they’re not needed. Another side of the issue is more controversial: about 80 percent of antibiotics in the U.S. are fed to farm animals. Regulators say using them to fatten livestock faster helps spread drug resistance. Meanwhile, globally an estimated 700,000 people a year die from drug-resistant infections, with millions more falling sick.

The Situation

In late 2015, researchers reported the discovery of a new gene that weakens the strongest antibiotic drugs. Many believe the use of antibiotics on farms in China created the gene, which has allowed resistance to spread more quickly than ever. New health plans for farm animals in the U.S. now require a prescription from a veterinarian before antibiotics can be given to animals. In 2006, the European Union (EU) banned giving the drugs to healthy
animals, and California did the same in 2015. Fast-food chains like Chipotle, Panera Bread and McDonald’s have announced policies to reduce the use of meat from animals raised with antibiotics.

Health officials say there has been some success in cutting down the overuse of antibiotics in humans. Between 2000 and 2010, the use of antibiotics around the world went up 36 percent. However, in more educated and wealthy countries, the use of antibiotics stayed the same or went down. Most of the growth was in poorer nations, where antibiotics are often given as a substitute for public-health measures. Another problem getting attention is the use of antibacterial hand cleaners. Many believe they don’t improve health and may be contributing to antibiotic resistance.

### Resistance Can Grow Rapidly

Frequency of treatment failure in two pairings of bacteria and antibiotic classes.

<table>
<thead>
<tr>
<th>Case description</th>
<th>Resistance percentage, by year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathogen E. coli Treatment Extended spectrum cephalosporins 4</td>
<td>2007-’08 12.3% 2009-’10 19.0%</td>
</tr>
<tr>
<td>Pathogen Acinetobacter baumannii Treatment Carbapenems</td>
<td>2007-’08 50.0% 2009-’10 62.6%</td>
</tr>
</tbody>
</table>

### The Background

Bacteria are constantly changing in ways that let them survive when a sick person is given an antibiotic. As more antibiotics are given to patients, bacteria are becoming more resistant. The use of antibiotics in animal agriculture began in 1946, when researchers noted that chickens who were fed low doses of the drugs grew faster. Antibiotics have become an important part of factory farming, where animals live very close together and disease spreads more quickly.

For more than 50 years, livestock and drug companies have argued that treating animals with antibiotics does not affect drug resistance in humans. But evidence has mounted that resistant bacteria on farms reaches humans through soil, air or water contaminated with animal waste and through eating animal products. Another problem is that antibiotics are becoming cheaper. People are taking more because they cost less, creating more drug resistance. Meanwhile, there are fewer and fewer large drug companies developing new antibiotics.
The Argument

The Food and Drug Administration (FDA) says its voluntary relabeling plan will reduce antibiotic use in livestock faster than a ban that would take years to push through. Industry groups such as the American Meat Institute support this voluntary approach. Other groups say the plan is an empty gesture. Because farmers can still use antibiotics to prevent disease, meaningful change is unlikely, a 2013 study said. EU officials say they have seen some decline in the use of antibiotics since the 2006 ban. However, the effect has been muted by higher rates of illness. Denmark put a ban in place earlier and has seen a bigger drop. Farmers there learned that they needed to raise their animals in healthier conditions once they weren't getting a daily dose.
Quiz

1. The MAIN idea of the article is developed by:
   (A) describing the underlying causes of an important problem and critically examining potential solutions
   (B) providing informational graphs that highlight the effects of the increasing problem of drug resistance
   (C) citing expert opinion on the necessity of reducing the bacteria threatening livestock by increasing the production of new antibiotics
   (D) discussing the dangers of overprescribing antibiotics and analyzing why physicians in countries with fewer resources utilize antibiotics too often

2. Which of these sentences would be MOST important to include in an objective summary of the article?
   (A) Overprescribing antibiotics to treat infection is a controversial and regretfully common practice that is endangering human health.
   (B) The continued decrease in antibiotic effectiveness will likely encourage farmers to use fewer drugs on farms.
   (C) Although using antibiotics with livestock was once thought to be a safe practice, it is now connected to drug resistance in humans.
   (D) Because antibiotics have gotten significantly cheaper, people in poor countries are dying from drug-resistant infections.

3. Which two sentences from the article are BEST supported by the information in the graph "A Sputtering Drug Pipeline"?
   (A) There's widespread agreement on the need to speed up development of new antibiotics and to discourage doctors from prescribing the drugs when they're not needed. ... Meanwhile, there are fewer and fewer large drug companies developing new antibiotics.
   (B) Meanwhile, globally an estimated 700,000 people a year die from drug-resistant infections, with millions more falling sick. ... People are taking more because they cost less, creating more drug resistance.
   (C) The Food and Drug Administration (FDA) says its voluntary relabeling plan will reduce antibiotic use in livestock faster than a ban that would take years to push through. ... Denmark put a ban in place earlier and has seen a bigger drop.
   (D) If the phrase “too much of a good thing” applies to anything, it surely applies to antibiotics. ... New health plans for farm animals in the U.S. now require a prescription from a veterinarian before antibiotics can be given to animals.
Which statement BEST explains why the graph “Resistance Can Grow Rapidly” is included with the article?

(A) It shows that the effectiveness of popular antibiotic drugs is decreasing.

(B) It shows that the use of antibiotics is successfully decreasing.

(C) It shows that some antibiotics are more effective than other antibiotics.

(D) It shows that the number of infections is increasing as resistance to antibiotics increases.