Antibiotics shortages: what's causing them and how countries can minimise the impact

December 19 2022, by Kostas Selviaridis and Nonhlanhla Dube

Credit: AI-generated image (disclaimer)

A variety of antibiotics are currently in short supply across Europe. In the UK, for example, the availability of amoxicillin and penicillin, which are used to treat infections such as strep A, is low.

Medicine shortages are a significant problem around the world, affecting

patient welfare and costs of care. A 2021 survey of community pharmacists in 27 European countries confirmed that shortages are a persisting issue.

The current shortage of antibiotics could have negative effects on patients and raises public health concerns. So what's causing these shortages, and what can we do to ensure people who need antibiotics can access the right ones?

Our research on medicine shortages suggests that antibiotics supply problems are, in many respects, no different from other recent instances of drug shortages. They are the result of well-known demand and supply issues.

On the demand side, changing infection patterns and possibly also the continuing cold snap have contributed to higher than usual use of antibiotics.

In the UK, for example, medical experts have explained that cases of scarlet fever and strep A usually increase in the new year. But altered immunity levels in the population related to the COVID pandemic seem to have influenced infection cycles.

The earlier than usual spike in illness was largely unexpected, invalidating demand forecasts and disrupting manufacturers' production plans. Accordingly, pharmacies have reported difficulties securing supplies of key antibiotics to meet the spike in demand.

In addition, changing prescription patterns can contribute to demand spikes. A recent change of advice in England permitted the use of antibiotics for children at risk of strep A as a "blanket measure," which in turn likely increased demand for penicillin and amoxicillin.

On the supply side, over-reliance on a small number of suppliers for active pharmaceutical ingredients and other raw materials has made it difficult for manufacturers to match current demand. A specific challenge has been China's zero COVID policy and the constraints this has placed on manufacturing output and logistics.

More broadly, heavy dependence on certain countries as key sources for ingredients and raw materials is a significant issue. China and India together accounted for more than 60% of the supply of active pharmaceutical ingredients globally in 2020. This level of supply market concentration can lead to severe availability issues when medicine supply chains are disrupted.

Another key issue is that many antibiotics, especially those that are not protected by patents (widely known as "generics"), are very cheap. Although low prices make these antibiotics affordable, they also reduce the financial attractiveness for manufacturers, who may decide to discontinue production when supplying these products no longer makes economic sense.

Rising energy costs exacerbate these challenges because they increase production costs, which has contributed to some antibiotics manufacturers ceasing production.

Problems for patients

If people can't access the antibiotics they need, this will lead to more cases of severe illness. In very serious cases, it could be life-threatening.

The majority of amoxicillin- and penicillin-based products are "narrow-spectrum" antibiotics, meaning that they target a specific set of infections. Shortages of these products could increase the use of "broad-spectrum" antibiotics, which are meant to treat a host of bacterial

infections.

Although this is better than leaving infections untreated, broad-spectrum antibiotics elevate the risk of antimicrobial resistance, making it more challenging to treat infections in the long run.

What can be done?

Given the public health risks involved, it's imperative that antibiotics go to patients who need them today, instead of being held for patients who might need them tomorrow.

An immediate action for governments to take is to actively discourage hoarding by individuals and healthcare professionals to ease demand pressures. The UK government has already taken steps in this direction. On the pharmacy side, rather than build emergency stocks, pharmacies could exchange information about their stock levels and collaborate to share stock as and when needed.

Governments reimbursing pharmacies for costs associated with antibiotics price increases, to ensure they maintain a healthy profit margin, can contribute to supply continuity. Medical experts could also review prescription guidelines so that use of antibiotics is encouraged only in cases where serious health consequences are expected. This would help to manage demand more effectively.

Governments also need to work with manufacturers and wholesalers to review their stockpiling policies. Investing in suitably-sized buffer stocks of antibiotics to account for seasonal spikes in demand can help suppliers and healthcare professionals buy time when imbalances between supply and demand occur. Any cost increases associated with supply chain actors holding safety stocks could be covered either through direct government payments or product price increases.

Ultimately, though, fixing medicine shortages requires rethinking procurement systems to incentivise supply security and reducing dependence on remote suppliers of active ingredients and raw materials. The latter might, for instance, involve joint investment in regional manufacturing hubs in Europe.

Provided by The Conversation