Availability to antibiotics of particular importance

In a pilot project, the Public Health Agency of Sweden has investigated whether a model with guaranteed reimbursement to the pharmaceutical company can improve access to particularly important antibiotics in Sweden. An initial evaluation shows that the studied reimbursement model led to increased access to the antibiotic products in our country, earlier than in other comparable European countries.

Having access to the right kind of antibiotics is crucial for infections with resistant bacteria. But Sweden is a small market with restrictive antibiotic use. New drugs tend to be introduced late or not at all.

In 2018, the Public Health Agency of Sweden (PHAS) was commissioned by the government to test and evaluate a new reimbursement model aiming to ensure that particularly important antibiotics for hospital use are available in Sweden. The overall aim was to propose a model that would strengthen the availability of certain antibiotics in Sweden, so that patients with infections caused by multi-resistant bacteria can receive the best possible treatment. The goal of the assignment was to make a recommendation to the government on whether the activities within the pilot study should be extended, and if so, in what way. Any additional measures required for a long-term solution were also to be presented. The proposal would be analysed for legal aspects and financial consequences, as well as suggest division of responsibilities between the state and the regions.

Methods

The work on this assignment was divided into three phases: preparation, implementation and evaluation. In the preparation phase, the PHAS established all the principles for the reimbursement model to be tested. The preparation phase included several dialogue meetings and exchanges of experience with relevant national and international stakeholders, including pharmaceutical companies.

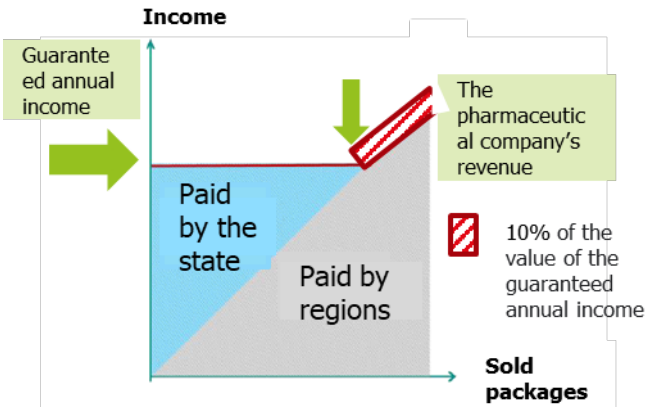
The reimbursement model

The studied reimbursement model is a so-called pull mechanism where the revenue is partially de-linked from the sale. This means that pharmaceutical companies are guaranteed a minimum income (in the pilot study via state funds from the Innovation Agency Vinnova) in return for providing the product on the market.

The garanteed level was set at: volume of stock set aside for Sweden * template price per pack * 1.5.

The defined stock volume was based on an estimated medical need in a "worst case scenario". The aim was to cope with unpredictable global delivery problems. During the preparation phase, a principle in the reimbursement model called the inventory incentive part was also designed. The incentive share was set at 10 percent of the annual guaranteed minimum revenue. It was set as an extra pull mechanism for all products, even if annual sales exceed the reimbursement level during the contract period. The intention was to cover costs for maintaining availability according to the agreement.

Figure 1. Schematic principles of the model.



Requirements specification

The principles for deciding which antibiotics to include in the pilot study were based on a priority by the PHAS

together with independent experts. The resistance types that were judged to be or potentially become a high-grade medical risk in Sweden, corresponded well with the WHO's "critical priority pathogens".

The requirement specification was that the drug has:

- approval by the EU commission
- an antibacterial spectrum with proven good activity against at least one of the following carbapenem-resistant pathogens: Enterobacterales, Pseudomonas aeruginosa or Acinetobacter baumanii
- approval for infections caused by susceptible bacteria in patients with limited treatment options or for at least two of the following:
  - complicated intra-abdominal infections
  - complicated urinary tract infections
  - hospital-acquired pneumonia
- bactericidal effect
- safety profile similar to β-lactam antibiotics.

In addition, requirements were set for stock-piling and delivery time, as well as environmental considerations.

National procurement

The PHAS carried out the procurement in order to test the reimbursement model. The agency has expert knowledge in the field of antibiotics and experience in national procurement. All products meeting the requirement profile could be contracted in order to promote assortment breadth and not disrupt the market. The procurement was deemed not to pose a risk of unauthorised state-aid. Thr contracts applied from July 2020 – December 2022.

Results

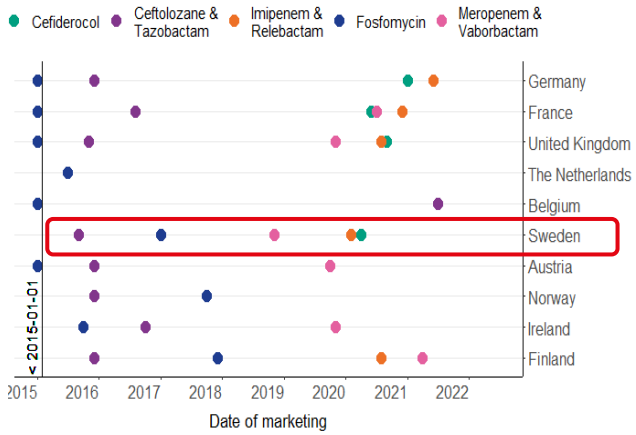
Four pharmaceutical companies met the requirements and signed agreements to supply five different products.

Table 1. Pharmaceutical companies included in the pilot study

Company	Product (substance)
MSD	Recarbrio (imipenem/relebactam)
MSD	Zerbaxa (ceftolozane/tazobactam)
Pharmaprim	Vaborem (meropenem/vaborbactam)
Unimedic Pharma	Fosfomycin Infectopharm (fosfomycin)
Shionogi	Fetcroja (cefiderocol)

The regions paid for the drugs as usual. If the revenue from the regions for a certain antibiotic was lower than the guaranteed amount, the state paid the difference to the respective pharmaceutical companies. The company was guaranteed a revenue of at least SEK 4,000,000 per product and year, in return for keeping a defined stock of the product and guaranteeing delivery within 24 hours of ordering. In case of higher sales, the companies received SEK 400,000 yerly in return for continuing to comply with the contractual requirements. Delayed or non-delivery resulted in reductions. The pilot study ran from 15 July 2020 to 31 December 2022. Through the pilot study, Sweden gained access to several new antibiotics earlier than other comparable and even larger European countries. In the pilot study, the state has paid just over 2 million SEK per product and year to guarantee availability of these new, medically important antibiotics. The evaluation showed that they have been used for a limited but critically ill patient group who, without the reimbursement model, would have had very few treatment options.

Figure 2. Timing of the launch of the drugs included in the pilot study, in ten European countries, sorted by size, source: IQVIA.



Conclusions from the pilot study

The pilot study showed that the reimbursement model fulfilled the purpose to ensure the availability of identified antibiotics. The reimbursement model used in the pilot study is based on the principle of partial de-linkage from sales and has worked well in Sweden. The evaluation showed that the products were delivered according to the agreement with very few exceptions. The new antibiotics made available through the pilot study have been used for a limited but critically ill group of patients. The share of the companies' total revenue made up of the pilot model's compensation varies between 10 and >90 percent for the five products. The cost must be set in relation to the number of patients who received a treatment who, without this model, would have had very few treatment options. The evaluation also showed that

the addition of the new antibiotics to the Swedish market through this assignment led to reduced sales of certain older antibiotics, possibly a replacement for medical reasons. Furthermore, it was shown that there was a relatively large cancellation of unsold products, which indicates that the requirements for stock volume were not entirely correct. The pilot study indicates that the model should be supplemented with a new principle of retrospectively reevaluating and, if necessary, excluding products with very low demand. In addition, the importance of having more than one treatment option available for the treatment of critically ill patients with infections caused by the specified pathogens, in order to prevent serious consequences of unforeseen delivery problems, was clearly demonstrated.

It emerged during follow-up interviews that the involved companies were generally positive about the pilot study's setup and implementation. Some felt that the level of compensation and the size of the safety stock may need to be reassessed.

In the long term, the model could potentially be used for medicines other than antibiotics as well.

For sustainable access to antibiotics, measures along the entire chain are needed, from models to stimulate research and early development to models to launch and maintain products on markets.

Recommendation

The Public Health Agency of Sweden recommends that the agency should be tasked with continuing the procurement of access to antibiotics of special medical value, according to a model similar to the pilot described here.