

Trends over time in medicines with suggested shortages in Europe

Analysing the trends in the utilization of essential medications over time and monitoring their use can greatly contribute to the global endeavour to address drugs shortages.

Background

Shortage of essential medicines can severely impact patients' health, leading to higher mortality rates, increased incidents of adverse reactions and medication errors, and elevated treatment costs. This study aims to investigate the use of medicines with suggested shortages between 2010 and 2023 through the European Health Data & Evidence Network (EHDEN).

Results

 N=11,771,177 (UK)
  N=2,781,072 (NL)
  N=234,806,847 (US)

In October 2022, the EMA announced a shortage of the antibiotics' amoxicillin alone and in combination with clavulanate, attributed to an increment in demand:

- Use of amoxicillin alone (**Figure 1a**)
 - ↓ UK and NL in 2020 (due to COVID-19)
 - ↑ UK and NL in 2022 (surge in use)
- Use of amoxicillin with clavulanate (**Figure 1b**)
 - ↓ UK and NL except for a slight peak in 2022
- ↓ US for both, alone or with clavulanate. (**Figure 1**)

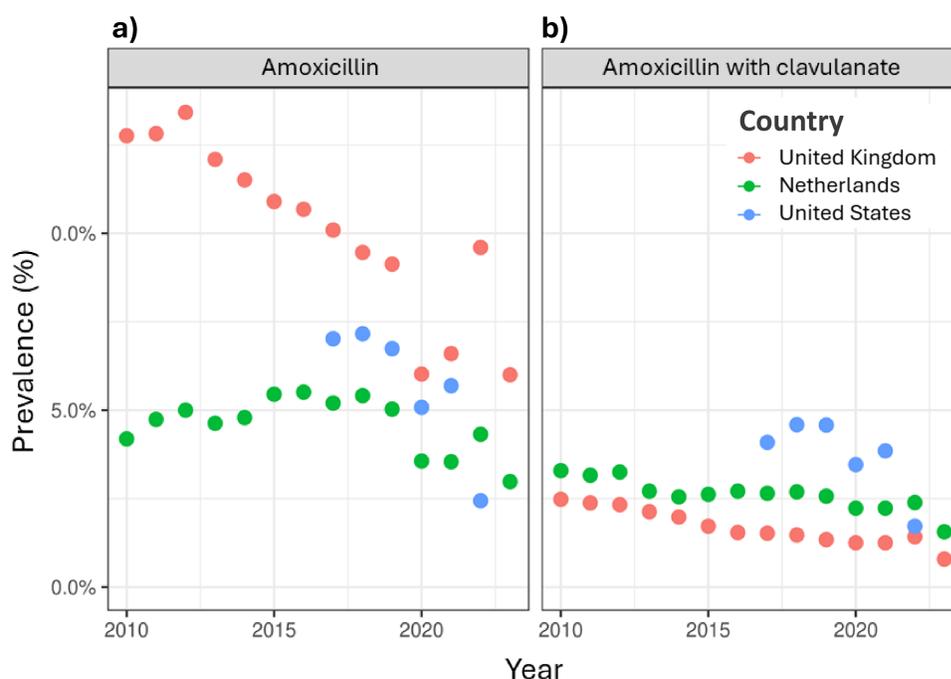


Figure 1. Annual period prevalence of amoxicillin a) alone and b) in combination with clavulanate

Using a federated data network such as EDHEN offers the advantage of delivering a more comprehensive and generalisable representation of drug shortages in the European region.



Methods

- **Study settings:** descriptive study including all individuals present in:
 - Primary care CPRD Gold (UK) [2010 - 2023]
 - Primary care IPCI (NL) [2010 - 2023]
 - Primary and secondary care PharMetrics® Plus for Academics (US) [2017-2022]
 All databases were mapped to the OMOP CDM.
- **Exposure:**
 -  24 drugs with suggested shortage
 -  32 alternative drugs
- **Outcome:** annual period prevalence (% , [95%CI]).

This analysis will also be conducted in multiple other data bases from the EHDEN network.

Interleukin inhibitor belatacept experienced high demand that outstripped production capacity, leading to a shortage between 2017 to 2023.

- Belatacept had too few counts in the data bases of the study, but we could observe, an alternative, systemic tacrolimus (**Figure 2**):
 - ↑ UK and NL between 2010 and 2023
 - ↑ US between 2017 and 2022

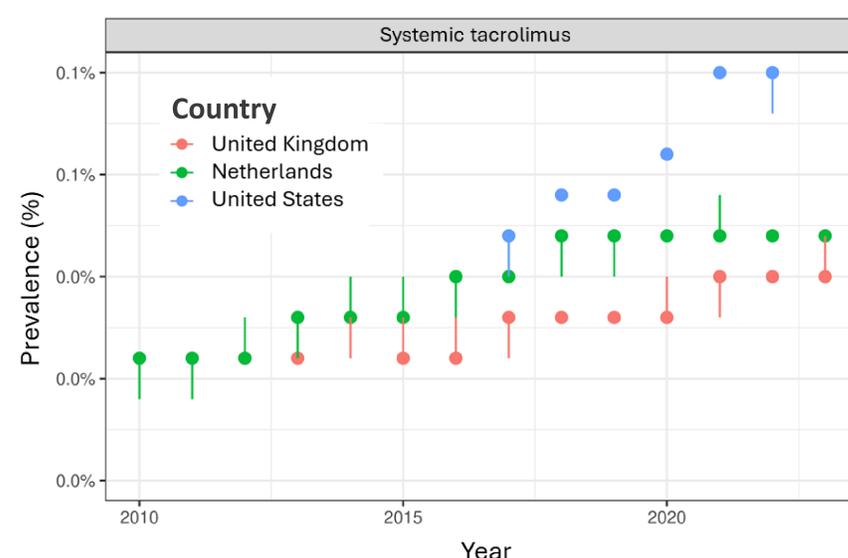


Figure 2. Annual period prevalence of systemic tacrolimus

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