Different methodological approaches of external price referencing lead to different medicine prices.

**Background**
- External price referencing (EPR) is a frequently used medicine pricing policy.
- It aims to lead to more affordable (lower) prices.
- Different dimensions are to be taken into consideration when designing an EPR system, e.g.:
  - Basket of reference countries
  - Calculation of the benchmark price
  - Exchange rate
  - Weighting price data of reference countries

**Objective**
- To investigate the impact of changes in the EPR methodology on medicine prices (list prices)

**Methods**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Methodological approaches</th>
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<tbody>
<tr>
<td>Model</td>
<td>Discrete-event simulation (DES)</td>
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<tr>
<td>Price data</td>
<td>Fictitious prices</td>
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<tr>
<td>Countries included</td>
<td>All 28 EU Member States except Denmark, Sweden and UK; plus Iceland, Norway and Switzerland</td>
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<td>Time period</td>
<td>Period of 120 months, starting Q1 / 2015</td>
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<tr>
<td>Base case</td>
<td>&quot;Real-life setting&quot;: Dimensions of EPR in the countries as in place in 2015, as surveyed</td>
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<tr>
<td>Simulations</td>
<td>Different scenarios were simulated</td>
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<td>Assumptions</td>
<td>Prices were held constant until a re-evaluation was due according to legislation</td>
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<td></td>
<td>No consideration of price deflation/ inflation</td>
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<td>Exchange rates were held constant</td>
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<td>EPR was assumed to be the sole pricing policy in the EPR-applying countries</td>
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<td>Launch countries</td>
<td>Germany (assumed price: 100) and Italy (assumed price: 70)</td>
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</tbody>
</table>

**Findings**
- 21.9% after 10 years
- 34.2%
- 16.0%
- 32.9
- 70.0
- 16.0%
- 58.2
- 77.3
- 75.8
- 76.5
- 65.6
- 47.2
- 5.0%
- 16.0%
- 6.5%
- 5.3%
- 34.2
- 1.0%
- 3.0%

**Base case (continuation of 2015 methodology):**
- -21.9% after 10 years
- Simulations with highest impacts:
  - Consideration of discounts (assumed 20% discount in 6 large economies and mandatory discounts in DE, EL & IE): -47.2%
  - Calculation based on lowest price in ref. countries: -34.2%
- Simulations with mixed impacts:
  - Adjusting price data to PPP: -16%
- Simulations with further impacts:
  - Regular price revisions
  - Changes in the basket of reference countries
  - Shorter intervals of the average exchange rates

**Conclusions**
- The methodological design of EPR can result in (partially substantial) changes of the price
- Savings for payers through strategic choices

**Acknowledgements**
- Lena Lepuschütz, GöG for her collaboration in the study &
- PRPI network members for providing data for the base case.
- This analysis was part of a larger study funded by the Health Programme of the European Union (see QR code), we acknowledge the funding of the European Commission.

**Contact details:** sabine.vogler@goeg.at

Sabine VOGLER, Peter Schneider
Gesundheit Österreich GmbH (GÖG), Stubenring 6, 1010 Vienna, www.goeg.at & https://ppri.goeg.at