

# Influence on Antibiotic Prescribing and Cost Effects through Standardized Implementation of PoC Testing in Adults with Sore Throats in Standard SHI Care

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## 1. Background & Aim

- **46%** of patients with acute pharyngitis receive an **antibiotic (AB)** prescription after consulting a general practitioner (GP).<sup>1</sup>
- However, **acute pharyngitis** is caused by **bacteria** in only **15-30%** of cases.<sup>2</sup>
- The main pathogens of bacterial pharyngitis are **Group A streptococci**, which can be detected by a **point-of-care (PoC)** test in the GP's practice. As strep A infections are associated with an increased risk of complications, they are often treated with antibiotics. The use of Strep A tests could reduce antibiotic prescribing for other infections and prevent potential antibiotic resistance and ADRs.
- Existing studies show that **antibiotics** are **prescribed** in only about **20%** of cases if a **Strep A test** has been performed beforehand.<sup>3</sup> However, these tests are currently rarely used in adult patients, as their procedure is not remunerated and the test is not reimbursed in Germany.
- The present analysis is intended to show the extent to which the reimbursement of Strep A tests in the indication sore throat influences AB prescriptions and costs from the perspective of the SHI system and the community of SHI insurants (including patients' co-payments) in Germany.

## 2. Methods

- Based on the patient population eligible for AB prescription according to the DEGAM guideline, the current status quo without reimbursement of Strep A tests was compared to the SHI reimbursement scenario using a decision tree (**Fig. 1**).<sup>2</sup>
- The medical options considered in the model were the performance of a Strep A test, the prescription of an AB and the recommendation of an OTC product.
- Both the probabilities and the costs were determined for each path. The budget effects were calculated from the SHI perspective and the perspective of the community of SHI insurants.
- In addition, the influence on the number of AB prescriptions and AB prescriptions without the presence of a bacterial infection was determined. Sensitivity analyses were carried out.

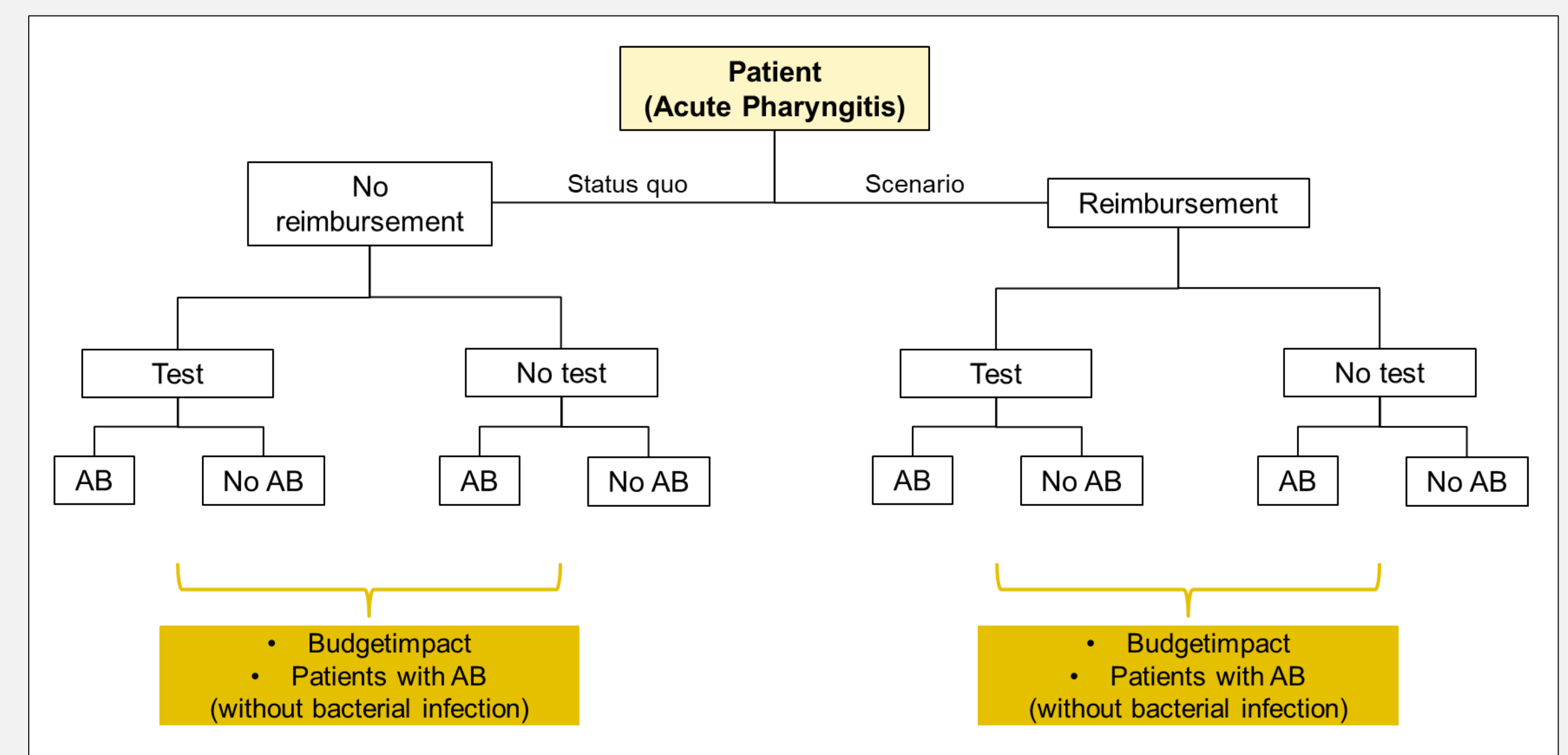


Figure 1: Decision analytical model

## 3. Results

- The reimbursement of Strep A tests does not lead to additional costs for SHI or the community of SHI insurants (**Fig. 2**). The cost comparison per patient shows that, from the perspective of the SHI and the community of SHI insurants, reimbursement of Strep A tests results in an average reduction in intervention costs of **51** and **67 ct** respectively.

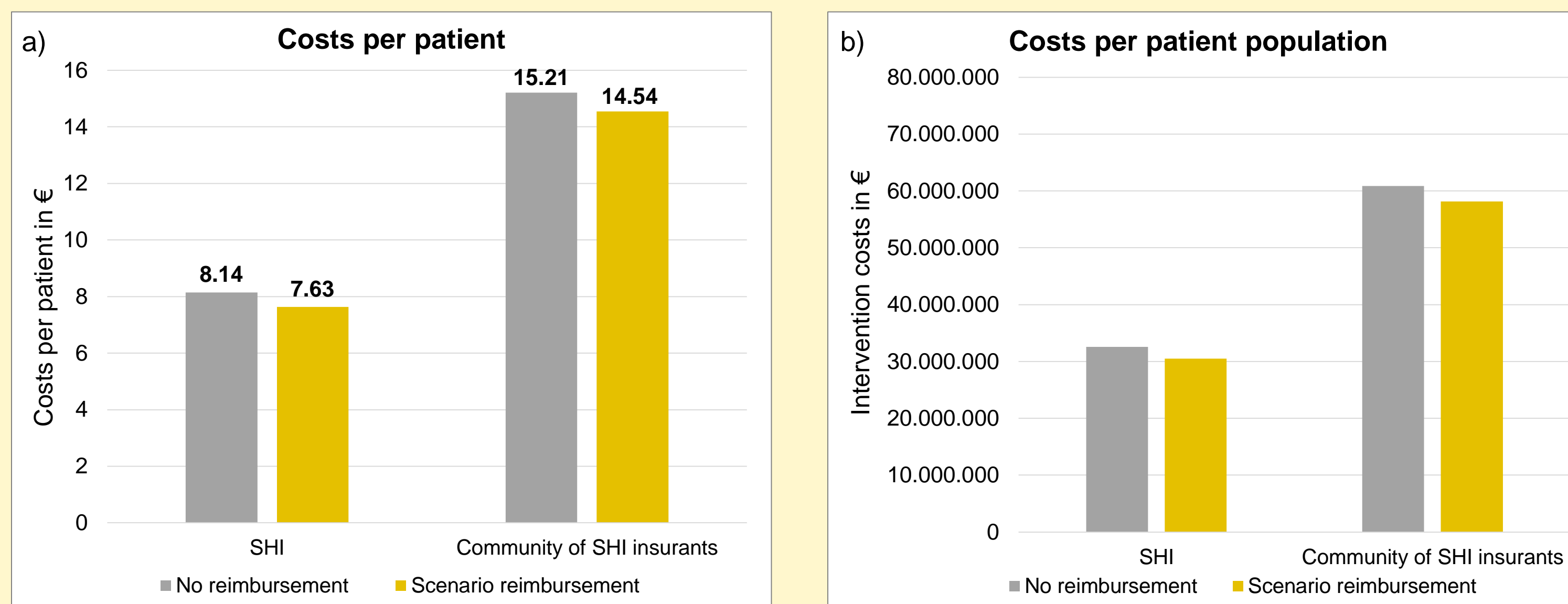


Figure 2: a) Costs per patient from the SHI perspective and the perspective of the community of SHI insurants in the status quo (no reimbursement) vs. reimbursement. b) Extrapolation of costs per patient from the SHI and the perspective of the community of SHI insurants to the number of cases of patients with acute pharyngitis in Germany.

- The more tests carried out, the more AB prescriptions can be avoided (**Fig. 4**). The results of the sensitivity analyses prove to be robust.

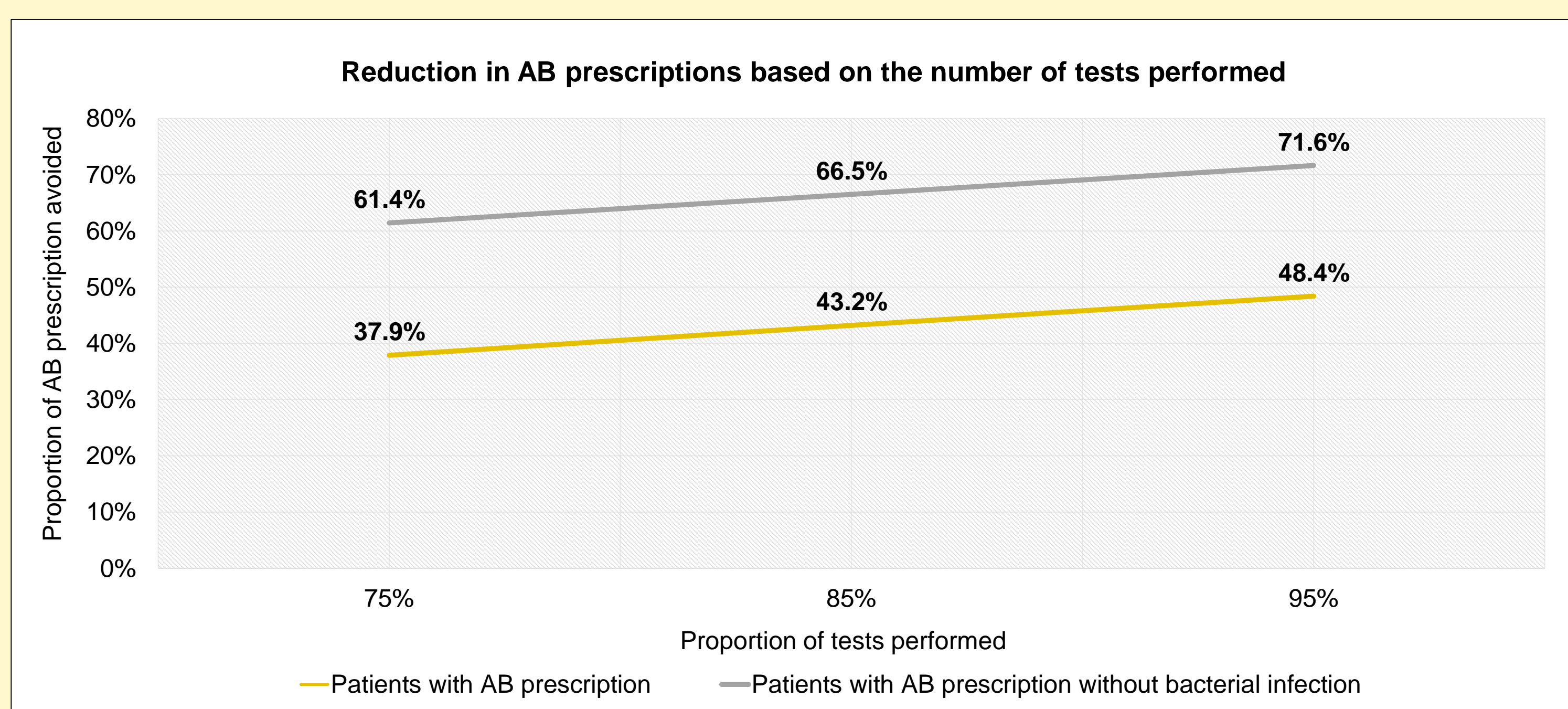


Figure 4: Proportion of AB prescription avoided in all patients (yellow) vs. patients without bacterial infection (grey) in the reimbursement scenario compared to no reimbursement depending on the number of Strep A tests performed.

- Without the reimbursement of Strep A tests for adult patients in the GP practice in Germany, there is a 98.5% probability that the patients will receive an AB, while in the reimbursement scenario only 55.3% are prescribed an AB (**Fig. 3**).
- In the status quo, 76.3% of patients who are prescribed an AB do not have a bacterial infection, compared to 9.8% in the reimbursement scenario.
- In total, **AB prescriptions** can be **reduced** by around **43%** compared to the status quo. In particular, in the reimbursement scenario AB prescriptions are reduced by almost **67%** in **patients without a bacterial infection** (**Fig. 3**).

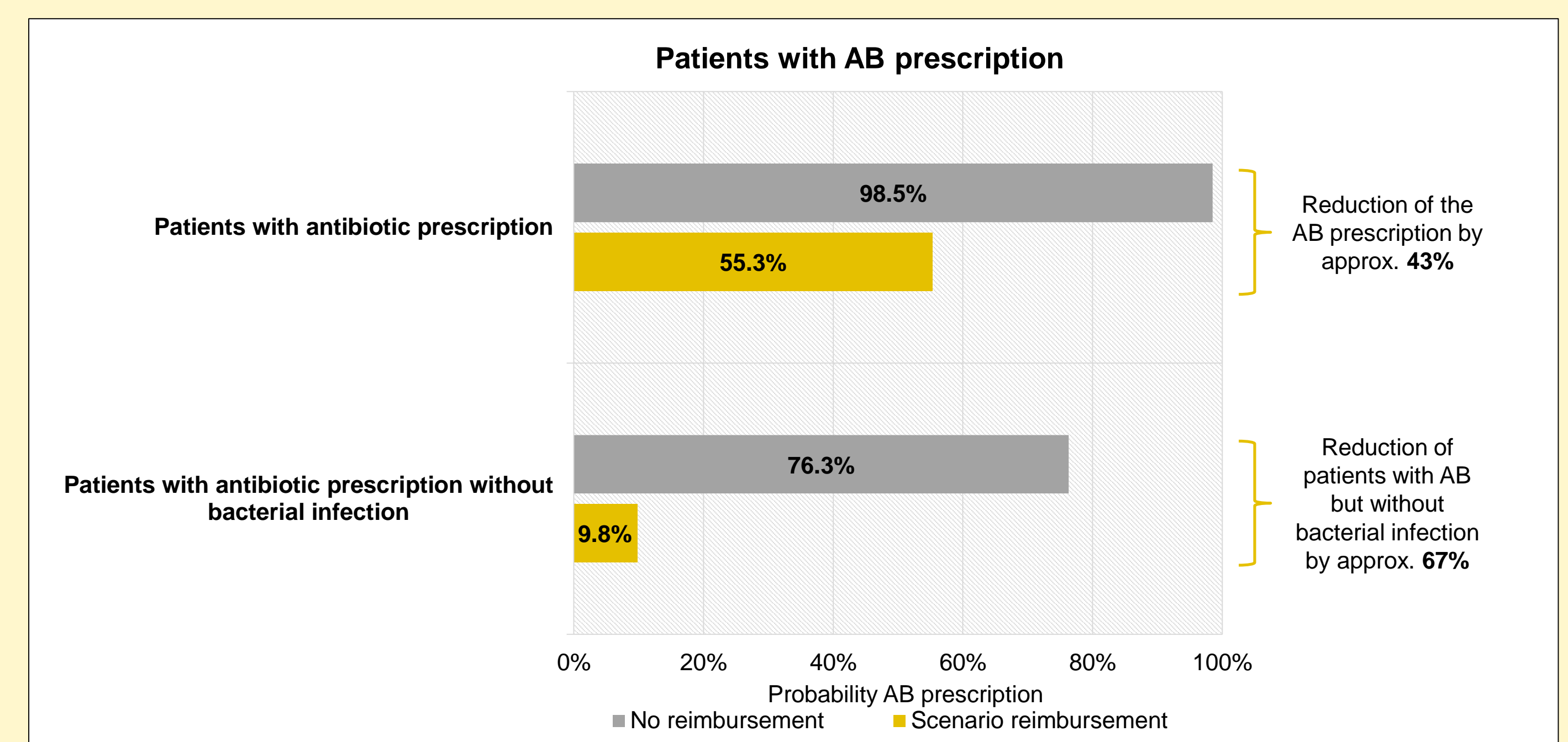


Figure 3: Proportion of total patients and patients without bacterial infection prescribed antibiotics in the status quo\* (no reimbursement) vs. reimbursement scenario. \*The starting point is the patient population for whom an AB would be prescribed without a test. In the status quo, only 2% of patients in this group are tested.

## 4. Conclusion

The reimbursement of Strep A tests in GP practices in Germany is proving to be a dominant strategy compared to non-reimbursement: the prescription of non-indicated AB for acute pharyngitis can be significantly reduced without incurring additional costs for the SHI or the community of SHI insurants.

<sup>1</sup> Kern W.V., Kostev K. (2021): Prevalence of and Factors Associated with Antibiotic Prescriptions in Patients with Acute Lower and Upper Respiratory Tract Infections-A Case-Control Study. In: *Antibiotics*, 10(4), p. 455

<sup>2</sup> DEGAM (2020): DEGAM-Leitlinie Nr. 14, S3: Halsschmerzen, AWMF-Register-Nr. 053-010

<sup>3</sup> Peiter T., Haering M., Bradic S., Coutinho G., Kostev K. (2023): Reducing Antibiotic Misuse through the Use of Point-of-Care Tests in Germany: A Survey of 1257 Medical Practices. In: *Healthcare*, 11(17), p. 2466