



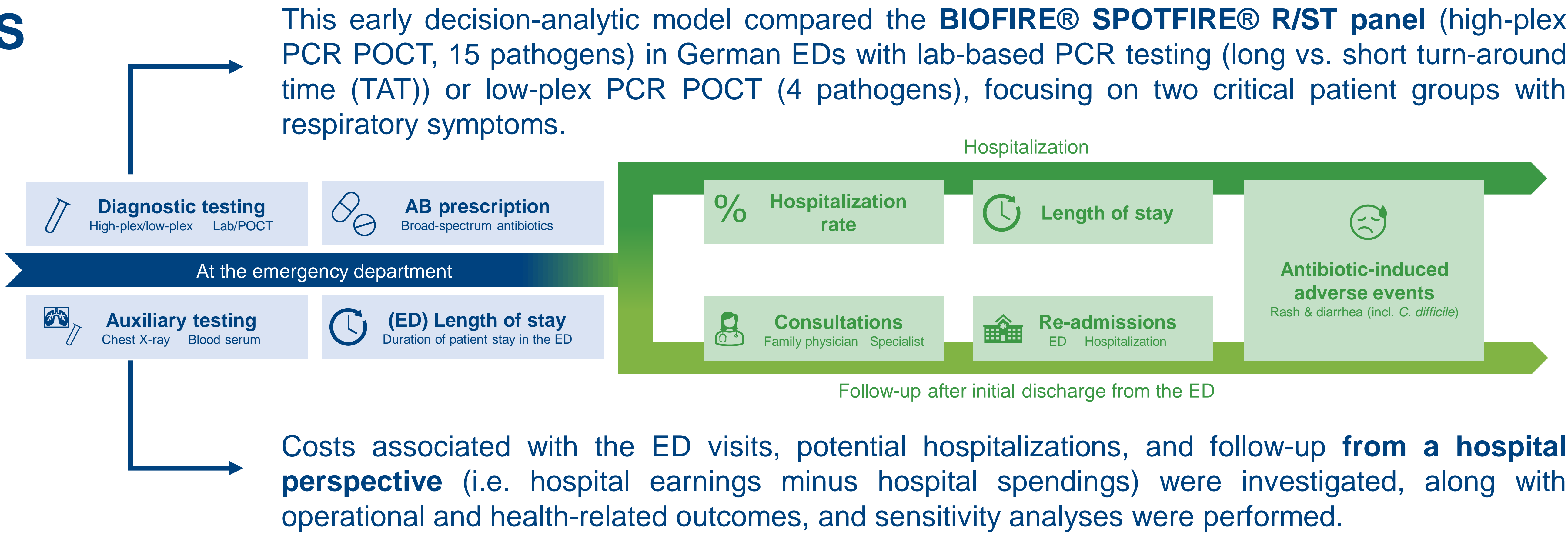
The impact of high-plex point-of-care diagnostic testing for acute respiratory tract infections in German emergency departments: An early cost-consequence analysis

INTRODUCTION

Acute respiratory tract infections (ARTI) can cause serious problems requiring urgent care, especially in vulnerable patients. Emergency departments (EDs) face the challenge of making accurate treatment decisions under time constraints. The absence of comprehensive, rapid and accurate diagnostic tools at the ED can compromise **timely and effective patient care**, possibly leading to antibiotic misuse and unnecessary hospitalizations.

High-plex polymerase chain reaction (PCR) point-of-care testing (POCT) offers a promising alternative by providing **immediate and comprehensive pathogen detection**. Our objective was to explore the impact of an innovative high-plex POCT system on cost, operational, and health-related outcomes in the German ED compared to current testing practices.

METHODS



RESULTS

	Children< 5 years	High-risk adults	
NET COSTS (+) OR NET SAVINGS (-)			
High-plex POCT vs. low-plex POCT	- € 159.2	- € 137.4	Versus lab-based testing with a long TAT (12h+) or low-plex POCT:
High-plex POCT vs. lab-based testing (12h+)	- € 197.8	- € 209.1	
ANTIBIOTICS PRESCRIPTION RATE (%)			
High-plex POCT vs. low-plex POCT	- 5.1%	- 3.5%	• High-plex POCT results in net savings for the hospital.
High-plex POCT vs. lab-based testing (12h+)	- 15.0%	- 10.2%	
REDUCED LENGTH OF STAY			
High-plex POCT vs. lab-based testing (2-3h)	- 67.5 min	- 67.5 min	Versus lab-based testing with a short TAT (2-3h):
			• ED length of stay is reduced in high-plex POCT, which can impact ED patient flow and operational efficiency.

CONCLUSIONS

Based on our **early decision-analytic model**, **high-plex PCR point-of-care testing for acute respiratory tract infections outperforms low-plex and lab-based PCR alternatives** in terms of **costs, antibiotic use and/or ED length of stay** in the **German ED setting for high-risk patients**.

- The results of this early health-economic evaluation underscores **the value of diagnostic speed and comprehensiveness** in highly volatile environments, such as the ED.
- Real-world data collection** is now required to confirm the potential of immediate and comprehensive diagnostic testing. Based on our findings, it is key that these studies **consider the entire patient pathway, during and beyond the ED**.



More info? Scan the QR code and read our white paper