Estimating the magnitude of a pull incentive for antibiotic development using the STEDI value framework; an example from Spain

HPR143

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Key findings

The value of a novel β-lactam/β-lactamase inhibitor antibiotic combination, such as aztreonam-avibactam (ATM-AVI), to the Spanish healthcare system over 10 years is estimated at:

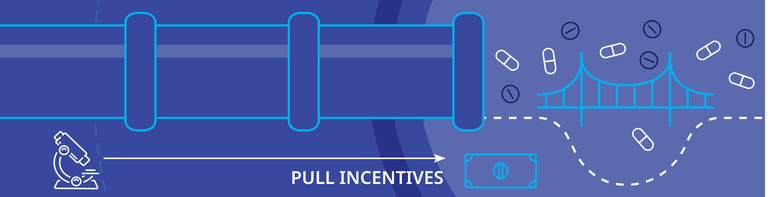
€762 million
(net monetary benefit [NMB])

CALCULATED AS:

25,600 QALYs gained **X** **€25,000** willingness-to-pay[1] **+** **€122 million** costs saved

Evaluation frameworks that account for population-level value, including antimicrobial resistance, are crucial to support pull incentive policies to:

- encourage research and development (R&D) investment
- create a robust pipeline
- bridge the gap from R&D to patient access



Conclusion

Unlocking the value of novel antimicrobials in the context of their broader value including antimicrobial resistance supports policy decisions that incentivize novel antimicrobial development

Estimating transmission and diversity value of the STEDI AMR valuation framework, demonstrates substantial value of a new antibiotic to the Spanish healthcare system

Introduction

- Increasing antimicrobial resistance is reducing the effectiveness of antimicrobials, leading to an urgent unmet need for new effective antimicrobials[2]
- The World Health Organization indicates that the current antimicrobial pipeline is insufficient to address the current need[3]
- New effective antimicrobials are often held in reserve and used for short periods to limit resistance development. Combined with low-cost comparators, the ability for manufacturers to recoup research and development investments with conventional reimbursement mechanisms linked to volume of sales is limited
- Pull incentives are intended to encourage antimicrobial development by providing economic incentives for bringing new treatments to the market[4]
- Several financial models have been developed or proposed for incentivising antimicrobial development including the UK's Antimicrobial Products Subscription Model which fully delinks revenue from sales volume, similar initiatives are being considered in the US (PASTEUR Act), the EU, Canada and Japan[4]
- In Spain, the National Action Plan against AMR (PRAN) was launched in 2014 with updates in 2019 and 2022. The PRAN is focused on a One Health approach but does not currently propose economic incentives needed to drive investment and access in Spain[5]
- Globally, a pull incentive delinked from volumes of sale is estimated at $4.2 billion per antimicrobial drug[6]
- STEDI (Spectrum, Transmission, Enablement, Diversity and Insurance) is a novel valuation framework, describing the value of antimicrobials considering AMR developments at a population level[7]
- Aztreonam-avibactam (ATM-AVI) is approved in Europe in adult patients for the treatment of complicated intra-abdominal infection (cIAI); hospital-acquired pneumonia (HAP), including ventilator-associated pneumonia (VAP); complicated urinary tract infection (cUTI), including pyelonephritis and for infections due to aerobic gram-negative organisms with limited treatment options (LTO)[8]

Objective

This study aimed to estimate the **pull value** of a **novel** β-lactam/β-lactamase inhibitor antibiotic combination (ATM-AVI) to **Spain's healthcare system**, using transmission and diversity value from the **STEDI framework**

Methods

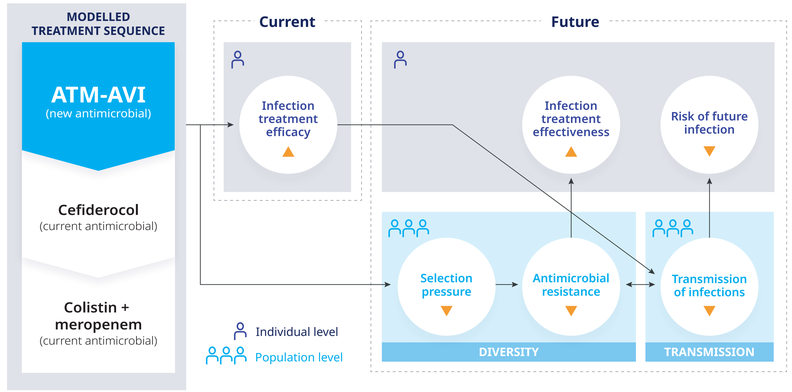
A population-level dynamic transmission model was developed to estimate transmission and diversity value; capturing immediate and future benefits at patient and population-level, including infection transmission, resistance development and treatment outcomes (Fig. 1)

The model was populated with data from the phase 3 REVISIT[9] and CREDIBLE-CR[10] trials, literature and expert clinical opinion. Costs included current treatments, hospitalization and adverse events (€, 2024)

The pull incentive value was estimated as NMB where quality-adjusted life years (QALYs) were valued at a willingness-to-pay threshold of €25,000, cost and benefits were discounted at 3%[11]

To estimate a value-based price, the acquisition costs of ATM-AVI were not considered. Outcomes were estimated over 10 years, aligned with the duration of proposed pull incentives

Figure 1. The relationship between the introduction of ATM-AVI and the patient and population-level value, described in transmission and diversity value



Results

Over 10 years, introducing ATM-AVI into the Spanish healthcare system for treatment of MBL-EB cIAI and HAP/VAP was estimated to:

PREVENT
726 infections

SAVE
1,720 lives
Leading to 25,600 QALYS gained (28,761 life years)

SAVE
7,486 bed days

overall costs
REDUCED BY
€122 million

Resulting in a pull incentive value of
€762 million
(expressed in NMB)
(€ 76 million per year)

References: 1. Vallejo-Torres et al. Valor Monetario de un Año de Vida Ajustado por Calidad: Estimación empírica del coste de oportunidad en el Sistema Nacional de Salud. Ministerio de Sanidad, Servicios Sociales e Igualdad. Servicio de Evaluación del Servicio Canario de la Salud; 2015. Informes de Evaluación de Tecnologías Sanitarias **2.** Salam et al. Healthcare. 2023;11(13):1946 **3.** World Health Organization. 2020 https://www.who.int/publications/i/item/9789240021303 **4.** Anderson et al. The Lancet Microbe. 2024;5(10):100886 **5.** Gobierno de Espana. Plan Nacional Frente A La Resistencia A Los Antibióticos 2022-2024. 2022 **6.** Outterson et al. Health Affairs. 2021;40(11):1758-1765 **7.** Rothery et al. https://pure.york.ac.uk/portal/en/publications/framework-for-value-assessment-of-new-antimicrobials-implications **8.** Pfizer. Emblaveo - Summary of Product Characteristics. https://www.ema.europa.eu/en/documents/product-information/emblaveo-epar-product-information_en.pdf **9.** Carmeli et al. Lancet Infect Dis. 2025; 25(2):218-230 **10.** Bassetti et al. Lancet Infect Dis. 2021; 21(2): 226-240 **11.** Eslava et al. Sociedad Española de Farmacia Hospitalaria. 2017

Abbreviations: ATM-AVI, aztreonam-avibactam; **cIAI,** complicated intra-abdominal infection; **HAP/VAP,** hospital-acquired pneumonia/ventilator associated pneumonia; **MBL-EB,** metallo-beta-lactamase-producing Enterobacterales; **NMB,** net monetary benefit; **QALY,** quality-adjusted life years; **STEDI,** spectrum, transmission, enablement, diversity and insurance

Funding acknowledgements: EB and MG are employees of Pfizer Inc. AL, MMD, MCCV, YM are employees of Pfizer SLU. JD and SN are employees of Health Economics and Outcomes Research Ltd. Health Economics and Outcomes Research Ltd. received fees from Pfizer Inc. in relation to this study .LM-M, SLP and RF received honoraria from Pfizer Inc. in relation to this study.