

# Cost per responder analysis of certolizumab pegol versus adalimumab in patients with moderate to severe active rheumatoid arthritis and high rheumatoid factor levels: a payer perspective from France, Germany, Italy and United Kingdom

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Mohammed Soomro,<sup>1</sup> Baran Ufuktepe,<sup>2</sup> Nicola Tilt,<sup>1</sup> Flore Decuyper,<sup>2</sup> Elide Toniolo,<sup>3</sup> Angela Blake,<sup>1</sup> Sandeep Kiri,<sup>1</sup> Rémi Marty<sup>2</sup>

<sup>1</sup>UCB, Slough, UK; <sup>2</sup>UCB, Brussels, Belgium; <sup>3</sup>UCB, Madrid, Spain

## Objective

This study aimed to compare the cost per responder of certolizumab pegol, a tumour necrosis factor inhibitor (TNFi) without a fragment crystallizable (Fc) region, against adalimumab in patients with moderate to severe rheumatoid arthritis and elevated rheumatoid factor (>200 IU/mL) from the healthcare payer perspectives of France, Germany, Italy, and the United Kingdom over a 104-week timeframe.

## Introduction

- Rheumatoid arthritis is a chronic, systemic autoimmune disease characterised by joint inflammation and progressive structural damage<sup>1</sup>
- According to the 2022 EULAR guidelines, the presence of rheumatoid factor is recognized as a poor prognostic indicator in the management of rheumatoid arthritis<sup>2</sup>
- For patients with poor prognostic markers who fail to achieve treatment targets with conventional synthetic disease-modifying antirheumatic drugs (DMARDs), guidelines recommend escalation to biological DMARDs<sup>2</sup>
- However, despite guideline-based escalation, elevated rheumatoid factor levels are associated with reduced response to Fc-containing monoclonal anti-TNF therapies<sup>3</sup>
- Certolizumab pegol is a PEGylated TNFi that lacks an Fc region, which may offer improved clinical outcomes in this subgroup<sup>3</sup>
- Certolizumab pegol has demonstrated comparable efficacy to adalimumab at Week 104 in patients with moderate to severe rheumatoid arthritis, however in patients with rheumatoid factor levels >200 IU/mL, a greater proportion achieved low disease activity with certolizumab pegol than with adalimumab<sup>3,4</sup>

## Methods and Analysis

- A 104-week cost per responder model was developed based on data from EXXELERATE, a phase IV, head-to-head, randomised controlled trial comparing certolizumab pegol plus methotrexate and adalimumab plus methotrexate in patients with moderate to severe rheumatoid arthritis<sup>4</sup>
- The trial included eligible patients from 151 centres worldwide aged 18 years or older with a diagnosis of rheumatoid arthritis at screening, as defined by the 2010 ACR/EULAR criteria, and had prognostic factors for severe disease progression, including a positive rheumatoid factor, or anti-cyclic citrullinated peptide antibody result, or both<sup>4</sup>
- Treatment response was assessed using low disease activity, defined as Disease Activity Score 28 joints-C-reactive protein (DAS28-CRP) ≤2.7 at Week 104
- Cost per responder was calculated as:

$$\text{Cost per responder} = \frac{\text{Total treatment cost over 104 weeks}}{\text{Response rate at Week 104}}$$

- Drug acquisition costs were estimated based on originator prices, with average biosimilar costs applied for adalimumab in line with market availability (Table 1)
- Treatment regimens followed product labels:
  - Certolizumab pegol: 400 mg at Week 0, 2, and 4, followed by 200 mg every 2 weeks<sup>5</sup>
  - Adalimumab: 40 mg every other week<sup>6</sup>

## Results

- In patients with elevated rheumatoid factor levels, low disease activity response rates at Week 104 were higher for certolizumab pegol compared to adalimumab (42.5% for certolizumab pegol and 25.5% for adalimumab) (Figure 1)
- The cost per responder (certolizumab pegol vs adalimumab) by country was (Figure 2):
  - France: €35,242 vs €38,190
  - Germany: €49,278 vs €75,996
  - Italy: €67,275 vs €78,537
  - United Kingdom: €56,567 vs €79,521

## Summary of cost per responder analysis

A cost per responder model was developed using data from the EXXELERATE trial in patients with moderate to severe rheumatoid arthritis and elevated rheumatoid factor levels.



The proportion of patients achieving low disease activity was 17% higher with certolizumab pegol vs adalimumab at Week 104

Certolizumab pegol: 42.5%      Adalimumab: 25.5%



Certolizumab pegol demonstrated a lower cost per responder than adalimumab biosimilar list price in France, Germany, Italy and the United Kingdom at Week 104

Cost per responder	France	Germany	Italy	United Kingdom
Certolizumab pegol	€ 35,242	€ 49,278	€ 67,275	€ 56,567
Adalimumab (biosimilar)	€ 38,190	€ 75,996	€ 78,537	€ 79,521

Table 1 Model input: Treatment costs per patient over 104 weeks

	France	Germany	Italy	United Kingdom
Certolizumab pegol	€ 14,961	€ 20,920	€ 28,560	€ 24,014
Adalimumab (biosimilar)	€ 9,751	€ 19,403	€ 20,052	€ 20,303

Figure 1

Model input: Low disease activity (DAS28-CRP) response rates at Week 104 in patients with elevated rheumatoid factor levels

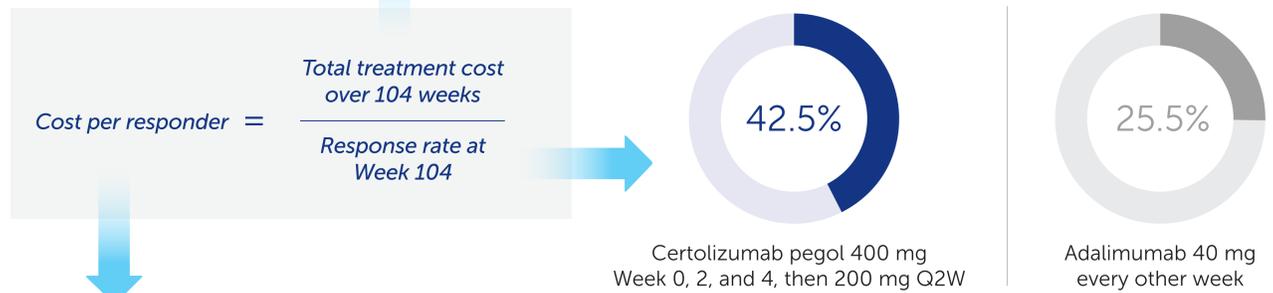
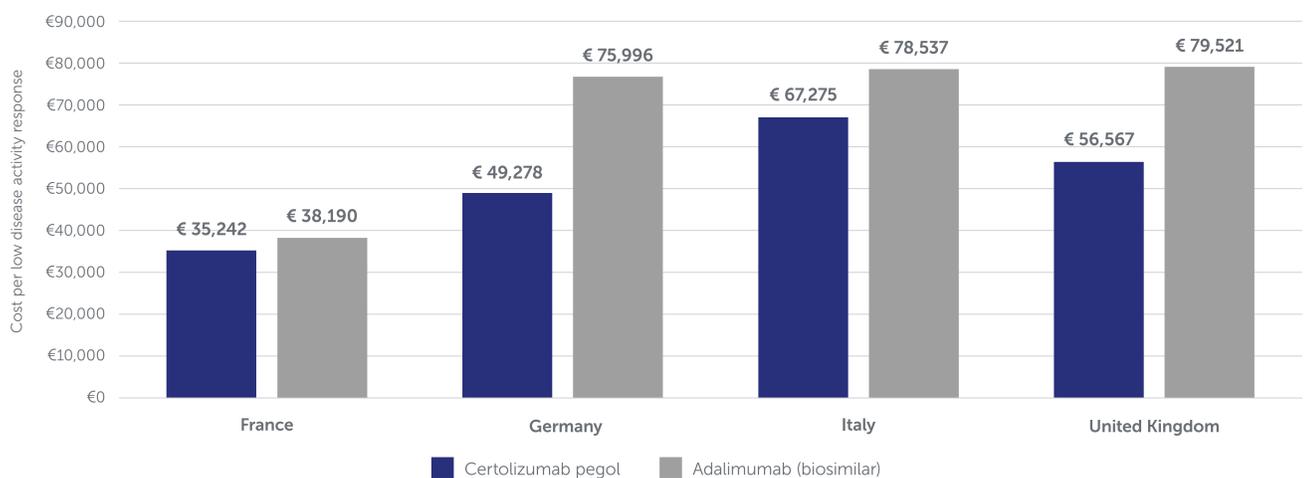


Figure 2

Cost per responder to achieve low disease activity at Week 104 in patients with elevated rheumatoid factor levels



## Conclusions

This analysis shows that targeting low disease activity as an outcome has a lower cost per responder for certolizumab pegol than the adalimumab biosimilar in patients with elevated rheumatoid factor levels across all markets in the analysis.

## Limitations

- Drug acquisition costs were estimated based on list prices
- For adalimumab, average biosimilar costs were applied based on market availability. These estimates did not account for potential local or national discounts, which may influence actual procurement costs and impact comparative cost per responder outcomes

ACR: American College of Rheumatology; DAS28-CRP: disease activity score 28 with C-reactive protein; DMARD: disease-modifying antirheumatic drug; EULAR: European Alliance of Associations for Rheumatology; Fc: fragment crystallizable; TNFi: tumor necrosis factor inhibitor.

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