

# Cost Analysis of Work and Household Productivity Improvements with Certolizumab Pegol in Patients with Non-Radiographic Axial Spondyloarthritis in Spain

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## Objective

To calculate the economic impact on work productivity (WP) and household productivity (HHP) in patients with non-radiographic axial spondyloarthritis (nr-axSpA) treated with certolizumab pegol (CZP) plus non-biologic background medication (NBBM) vs NBBM, from the Spanish societal perspective.

## Background

- Axial spondyloarthritis (axSpA) is a chronic inflammatory disease that mainly affects the sacroiliac joints and spine. nr-axSpA and radiographic axSpA (or ankylosing spondylitis [AS]) are two subpopulations of axSpA with similar disease burden reported.<sup>1–6</sup>
- nr-axSpA patients showed a reduction in functional capacity and quality of life influencing their productivity.<sup>7</sup>
- nr-axSpA is seen more frequently in young adults during the most productive life period (age 20–30 years old), being characterised by chronic inflammatory back pain.<sup>7,8</sup>
- In Spain, about 500,000 patients have axSpA.<sup>9</sup> It has been reported that more than half of the working patients with axSpA had some type of work absenteeism during the previous year and limitations in daily activities (such as household activities), especially in the case of young patients.<sup>9</sup>

## Methods

### Model Design

- A cost-analysis model was developed to calculate WP (indirect) and HHP (non-healthcare direct)-related costs.

### Calculation of Costs

- Productivity data were obtained from a clinical trial (C-axSpAnd; NCT02552212) comparing CZP plus NBBM vs NBBM over 52 weeks in 317 patients.<sup>10,11</sup>
- The analysis was developed from the societal perspective, WP and HHP were evaluated in number of days lost per month and days per month with reduced productivity ( $\geq 50\%$ ) due to nr-axSpA.
- The time horizon of the analysis was one year. Treatment with CZP resulted in improvements in labour and household productivity from Week 12, with benefits maintained until Week 52 (Table 1).
- To calculate the WP, the cost of a lost workday considering labour costs (€86.44/day; €2019) was obtained from the Spanish National Institute of Statistics (Table 2).<sup>12</sup>
- The cost of HHP assumes that if home activities could not be carried out by the patient, a caregiver or external staff would be required with a cost per day equal to the minimum inter-professional salary (€31.21/day; €2019) (Table 2).

## Results

- Monthly costs derived from WP loss per treated patient with CZP/NBBM and NBBM were €159.91 and €419.22, respectively. CZP/NBBM treatment would provide benefits, in terms of WP loss avoided, of €259.31/month and €3,111.70/year (Figure 1).
- HHP loss in patients treated with CZP/NBBM would imply €137.33 vs €248.13 with NBBM per month, generating benefits of €110.80/month and €1,329.61/year in CZP/NBBM-treated patients (Figure 2).
- Aggregate treatment with CZP/NBBM vs NBBM reflects an average annual benefit of €4,441.31/patient (Figure 3).

### Limitations

- Productivity data were obtained from a clinical trial (C-axSpAnd)<sup>10,11</sup> and may not represent the situation in the usual practice.
- The results of the clinical trial (C-axSpAnd)<sup>10,11</sup> have been projected from Week 12 to Week 52, with the aim of providing annualised data that are easier to interpret, based on data from the last observation carried forward, due to a large proportion of patients treated with placebo (66%) who switched to open-label CZP treatment between Week 12 and Week 52.

## Conclusions

The results of this analysis suggest that treatment of nr-axSpA with CZP/NBBM vs NBBM could generate benefits for society by increasing WP, and for patients in terms of HHP, in the Spanish setting.

## Summary



A cost-analysis model was developed to calculate the economic impact on work productivity and household productivity in patients with non-radiographic axial spondyloarthritis (nr-axSpA) treated with certolizumab pegol plus non-biologic background medication (NBBM) vs NBBM only, in Spain.

This analysis found that treatment with certolizumab pegol plus NBBM could provide benefits of:



€3,111.70/year of avoided work productivity loss



€1,329.61/year of avoided household productivity loss

**Conclusion:** Treatment of nr-axSpA with certolizumab pegol plus NBBM vs NBBM only, could generate economic benefits for society by increasing work and household productivity in the Spanish setting.

**Table 1** Number of days lost, and productivity reduced over 12 weeks in patients with nr-axSpA<sup>a,b</sup>

Monthly productivity	Work productivity (WP) <sup>a</sup>		Household productivity (HHP)	
	CZP/NBBM	NBBM	CZP/NBBM	NBBM
Days of lost productivity	0.9	2.1	2.6	4.5
Days with productivity reduced $\geq 50\%$ <sup>c</sup>	1.9	5.5	3.6	6.9

<sup>a</sup>Data are from the month preceding Week 12. <sup>b</sup>WP is based on patients employed at Week 12. <sup>c</sup>One day of work with reduced productivity  $\geq 50\%$  is equivalent to 0.5 workdays lost.

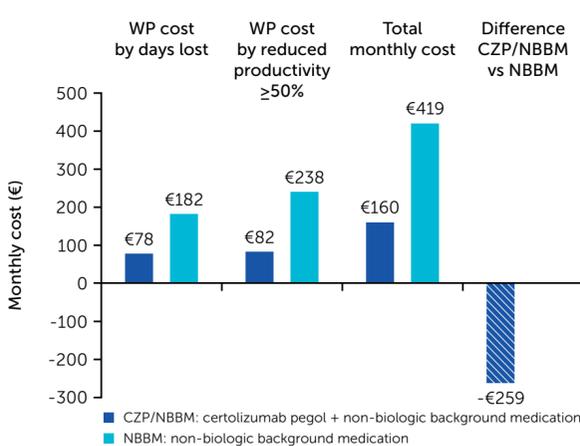
**Table 2** Cost of work and household productivity lost

Cost	Work productivity (WP) <sup>a</sup>	Household productivity (HHP) <sup>b</sup>
Monthly cost	€2,630.90	€950.00
Daily cost	€86.44	€31.21

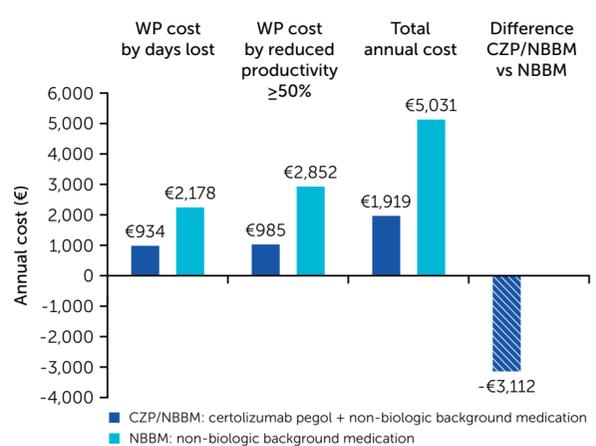
<sup>a</sup>Labour cost; <sup>b</sup>minimum inter-professional salary.

**Figure 1** Work productivity cost per patient

A) Work productivity (WP) - monthly cost

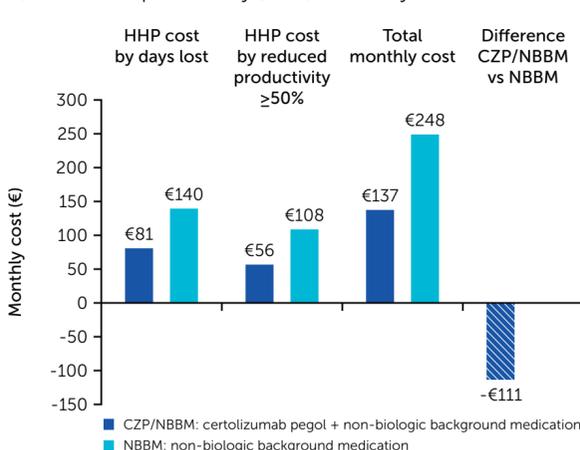


B) Work productivity (WP) - annual cost

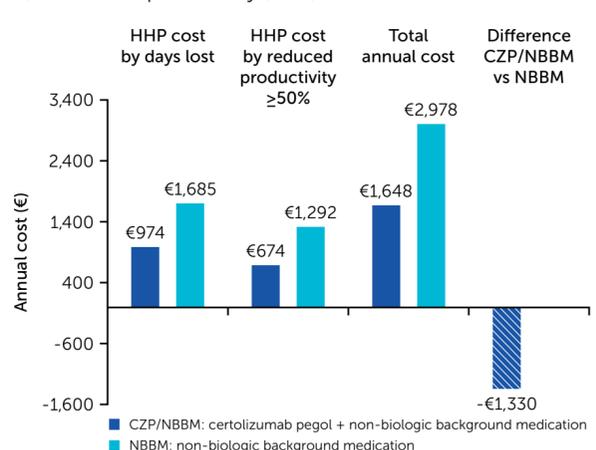


**Figure 2** Household productivity cost per patient

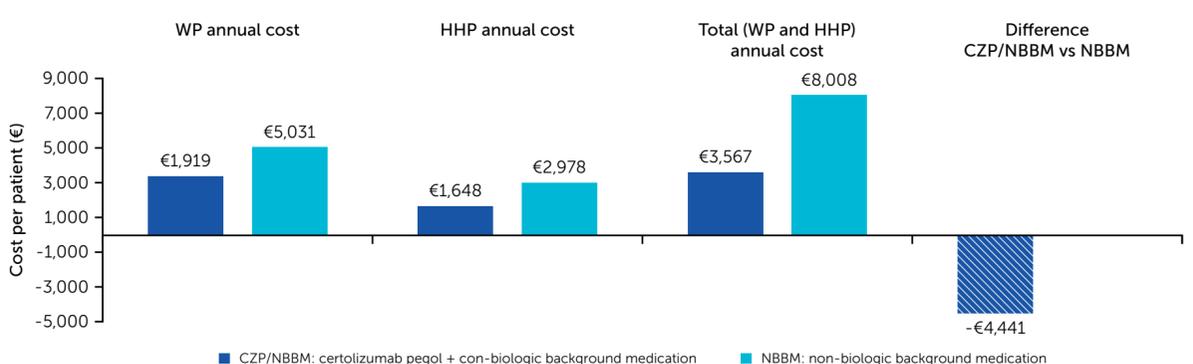
A) Household productivity (HHP) - monthly cost



B) Household productivity (HHP) - annual cost



**Figure 3** Work and household productivity cost per patient



AS: ankylosing spondylitis; axSpA: axial spondyloarthritis; CZP: certolizumab pegol; HHP: household productivity; NBBM: non-biologic background medication; WP: work productivity.

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**References:** <sup>1</sup>Landewé R et al. Ann Rheum Dis 2014;73:39–47; <sup>2</sup>Sieper J et al. Value Health 2013;16:A227; <sup>3</sup>Baraliakos X et al. RMD open 2015;1(Suppl 1); <sup>4</sup>Taurog JD et al. N Engl J Med 2016;374:2563–74; <sup>5</sup>Keat A et al. Rheumatol Int 2017;37:327–36; <sup>6</sup>Wallman JK et al. Arthritis Res Ther 2015;17:378; <sup>7</sup>Sieper J et al. Clin Exp Rheumatol. 2016;34:975–83; <sup>8</sup>Coordinadora Española de Asociaciones de Espondiloartritis (CEADE). Espondiloartritis axial no radiográfica. Available at: <https://eaceade.es/espondiloartritis-axial-no-radiografica/>; <sup>9</sup>CEADE. Atlas de Espondiloartritis Axial en España 2017: Radiografía de la enfermedad. Available at: [https://espondiloartritisaxial.org/atlas/img/AtlasEA\\_2017\\_v5-C.pdf](https://espondiloartritisaxial.org/atlas/img/AtlasEA_2017_v5-C.pdf); <sup>10</sup>Deodhar A et al. Arthritis Rheumatol. 2019;71:1101–11; <sup>11</sup>Gaffney K et al. Available at: [https://www.researchgate.net/publication/340784407\\_P242\\_CZP\\_improves\\_work\\_and\\_household\\_productivity\\_and\\_social\\_participation\\_over\\_1\\_year\\_of\\_treatment\\_in\\_patients\\_with\\_non-radiographic\\_axSpA](https://www.researchgate.net/publication/340784407_P242_CZP_improves_work_and_household_productivity_and_social_participation_over_1_year_of_treatment_in_patients_with_non-radiographic_axSpA); <sup>12</sup>Instituto Nacional de Estadística (INE). INEbase-Mercado laboral - Salarios y costes laborales - Encuesta trimestral de coste laboral. Available at: [https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736045053&menu=ultiDatos&idp=1254735976596](https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736045053&menu=ultiDatos&idp=1254735976596). **Author Contributions:** Substantial contributions to study conception/design, or acquisition/analysis/interpretation of data: RF, ME, NE, SF, MAC; Drafting of the publication, or revising it critically for important intellectual content: RF, ME, NE, SF, MAC. **Author Disclosures:** RF: No conflict of interest; SM: Employee of UCB Pharma; MAC, ME, NE: Employees of Pharmacoeconomics & Outcomes Research Iberia (PORIB), a consultant company which received financial support to develop this project. **Acknowledgements:** This study was funded by UCB Pharma. The authors acknowledge Susana Lobo Berastegui, UCB Pharma, Brussels, Belgium, for publication coordination, and Costello Medical, London, UK for editorial assistance. All costs associated with development of this presentation were funded by UCB Pharma.