

# The Relationship between Societal Costs Associated with Haemophilia and Disease Severity: A Regression Analysis Using CHES II Data

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**Background:** Haemophilia (deficiency or absence of clotting factor) is a genetic bleeding disorder characterised by prolonged trauma-related or spontaneous bleeding events and associated complications. Haemophilia has been found to pose an economic burden on patients, caregivers, and the wider health care system. There is limited research, on the wider (non-drug related) costs of haemophilia and levels of severity, specifically across different levels within the mild range.

**Aims:** To assess the relationship between societal costs and severity levels, using interim real-world data from the 'Cost of Haemophilia in Europe: a Socioeconomic Survey – II' study (CHES II).

**Methods:** Data were extracted from the CHES II interim dataset, a societal perspective, prevalence-based study in mild, moderate, and severe adult haemophilia A and B patients across France, Germany, Italy, Spain, UK, Romania, Netherlands, and Denmark (n=787). Disease severity was categorised according to baseline endogenous factor VIII/IX activity (IU/dl or %). 304 patients provided societal cost data. Mild haemophilia was subcategorized by endogenous factor VIII/IX expression (>5-20%, n=14; >20-40%, n=25). Societal costs consisted of healthcare system costs (excluding costs of treatment) and patient-centric costs, such as caregiver hours and time missed from work. A generalized linear model (GLM) was developed to investigate variation in societal costs across severity groups, adjusting for covariates age, BMI and country.

**Results:** The GLM model provided adequate fit, the average marginal effect at the mean was calculated from regression outputs. Analysis found that when compared to moderate and severe patients (0-5%, n=265), subgroups of mild haemophilia '>5-20%' and '>20-40%' were €7,170 ( $p=0.058$ ) and €13,111 ( $p<0.05$ ) less costly, respectively. This analysis controlled for age, BMI and country effects.

**Conclusions:** This analysis suggests that a higher endogenous factor VIII/IX expression (>20-40%) may have a significant impact on reducing total per-patient cost from the societal perspective, accounting for age, BMI and country effects.

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