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Healthcare resource utilisation for treatment of *Clostridioides difficile* infection across 12 European countries: health economic results of COMBACTE-CDI

Sebastian Wingen-Heimann*¹, Lise Lurienne², Kerrie Davies³, Anthony Benson³, Georgina Davis³, Virginie Viprey³, Mark H. Wilcox³, Marc J.M. Bonten⁴, Oliver A. Cornely¹, Jörg Janne Vehreschild¹

¹University Hospital of Cologne, Cologne, Germany, ²Da Volterra, Paris, France, ³University of Leeds, School of Medicine, Leeds, United Kingdom, ⁴University Utrecht, University Medical Center Utrecht, Utrecht, Netherlands

Background: *Clostridioides difficile* infection (CDI) is one of the leading healthcare associated infections resulting in prolonged hospital length of stay and increased costs. CDI related data of healthcare resource utilization across Europe are scarce.

Materials/methods: A questionnaire to assess current CDI practices and CDI-related costs was sent out in 10/2018 to both hospital and community settings in 12 European countries. Countries were divided into four regions: West (Belgium, France, The Netherlands), North (Ireland, Sweden, United Kingdom), East (Poland, Romania, Slovakia), and South (Greece, Italy, Spain). Bootstrapped CDI related direct costs were expressed in Euro (€), year 2019 values. For international comparison of health expenditures, price level indices published by the Organisation for Economic Co-operation and Development (OECD) were used to ensure comparability of cross-country variations.

Results: Overall, 158 sites participated in the survey, predominantly hospitals (n= 109, 69%) and community physicians (n= 40, 25%). Median overall costs for one *C. difficile* stool sample test was €21.8 (interquartile range (IQR): €13.8 - €37.2), with lowest and highest values in Northern Europe (€15.0; IQR: €11.6 - €22.9) and Western Europe (€31.9; IQR: €16.2 - €37.6; p= 0.046), respectively. Across Europe, community physicians reported higher median drug costs for a one-day treatment with metronidazole iv (€14.4; IQR: €9.9 - €52.9 vs. €1.9; IQR: €1.4 - €9.5; p= 0.005) and vancomycin (€15.6; IQR: €7.9 - €22.0 vs. €6.5; IQR: €3.7 - €12.8; p= 0.017) compared to the hospital setting. In the pan-European hospital setting, median costs for severe CDI cases treated in intensive care units ranged from €1,437.5/day (IQR: €1,292.7 - €1,839.9) in Eastern Europe to €2,094.7/day (IQR: €1,063.8 - €3,191.5; p= 0.175) in Western Europe. Median costs for one general ward bed-day with isolation measures due to CDI was 2-fold higher in Southern Europe (€769.2; IQR: €567.9 - €1,623.9) compared to Eastern Europe (€324.0; IQR: €166.8 - €690.0; p= 0.010).

Conclusions: Healthcare costs of CDI diagnostic and treatment measures vary markedly in both hospital and community settings across Europe. The impact of the prevalence of hypervirulent strains, severity of illness, and guideline adherence are subject of future health economic evaluations of COMBACTE-CDI.

Presenter email address: sebastian.wingen-heimann@uk-koeln.de

