Restless Legs Syndrome:
Increase disease awareness to reduce patient suffering and reduce societal cost

VOT

EBC
European Brain Council

Jaarsma J[1], Dauvilliers Y[2], Ferri R[3], Rijsman R[4], Sakkas GK[5], Guldemond N[6], Trenkwalder C[7] and Oertel W[8]

[1]European Alliance for Restless Legs Syndrome (EARLS); [2]Gui-de-Chauliac Hospital; [3]Oasi Research Institute (IRCCS); [4]Center for Sleep and Wake disorders, Haaglanden MC; [5]Plymouth Marjon University; [6]The Institute of Health Policy & Management (iBMG), Erasmus University;[7]Paracelsus Elena Klinik and Goettingen University; [8]European Academy of Neurology (EAN)

Background

Restless Legs Syndrome (RLS) (or Willis/Ekbom Disease – WED) is a common neurological disease which is often unrecognized or misdiagnosed. 2.7% of the European population suffer from moderate to severe RLS: an uncontrollable urge to move the legs due to highly unpleasant pain-like sensations, leading to chronic sleep deprivation [1]. Wrong diagnoses and wrong treatments occur due to lack of knowledge and expertise at both the primary and secondary care levels, and as a consequence wrong routing of the patient. As a result RLS patients often have to wait many years before getting a correct diagnosis. Access to appropriate RLS care is not generally available across Europe. RLS cannot be cured, medicines are available and provide symptom suppression only. Side effects of the medicines of first choice have created new and serious problems. In this study the authors describe the patient's journey through the healthcare systems in three countries (DE, FR, IT) and describe the barriers to optimal treatment and the unmet needs of patients.

Methods

The RLS care pathway was mapped in order to identify the unmet needs of patients as well as the underlying causal factors. Which are the barriers to optimal treatment? A case study including all possible aspects of the typical RLS patient was written, an extensive literature search on RLS and its treatment was done, a working group was formed. The group set out to identify the typical stages in the patient journey. Diagnostic delay, access to good care, the cost of non-treatment, sick leave, loss of income/job, proportion of drug resistant patients, awareness of RLS among medical professionals, (lack of) available medicines and – importantly – incorrect application and dosages, that cause adverse reactions thereof, possible prevention, screening/prodroma, early intervention, and overall disease management were all mapped. Based on the data thus gathered and the stories of three hypothetical patients, each in the three countries studied (DE, FR, IT), the cost differences between adequate and inadequate treatment could be calculated, and the burden of the lack of awareness and the resulting societal cost unveiled.

Treatment Gaps & Unmet Needs

• There is a huge lack of awareness and knowledge of Restless Legs Syndrome. As a result patients are not taken seriously, wrong diagnoses are made and false treatments are given

• The knowledge among in particular primary care physicians leaves much to be desired, referrals to specialists are often not done, resulting in delayed or false diagnoses and either no or wrong treatment

• Medicines for RLS do exist. Treatment of first choice to date are the dopamine agonists. Adverse reactions if applied incorrectly to these drugs in RLS patients are frequent, the most severe adverse reaction being the paradoxical phenomenon called augmentation

• Augmentation is a severe adverse reaction of the dopamine agonists in RLS. With high doses RLS symptoms become much worse and spread over the entire body during many hours per day.

• A significant aspect of augmentation is often a misinterpretation of this phenomenon: when symptoms get worse, the doctor will assume loss of efficacy and increase the dosage. This results in even more severe augmentation. More is not better in RLS treatment!

• Due to this a drug holiday is often advised, an almost impossible journey for the patient due to extreme withdrawal symptoms and no sleep for many days.

• The number of truly knowledgeable RLS specialists in Europe is very limited to non-existing in some countries

• Due to lack of awareness medicines are not reimbursed for RLS in many countries

• All available medicines were registered for other diseases in the first place; there is no systematic pharmacological research for RLS per se.

Recommendations

Policies aiming to increase disease awareness and recognition among primary care physicians and specialists would allow patients to receive adequate treatment and alleviate their suffering. Thus:

• Include RLS disease in general medical education across all of Europe
• Improve access to information
• Increase research budgets
• Support patient organisations

"I went to see a different neurologist a few weeks back. He would not listen to me, and told me RLS is a muscle disorder, nothing to do with neurology…."
RLS patient, May 12, 2017

"I am so glad I found you, patient group, I have visited at least ten doctors in the past years and no one has been able to help me….What you describe is exactly what I have.."
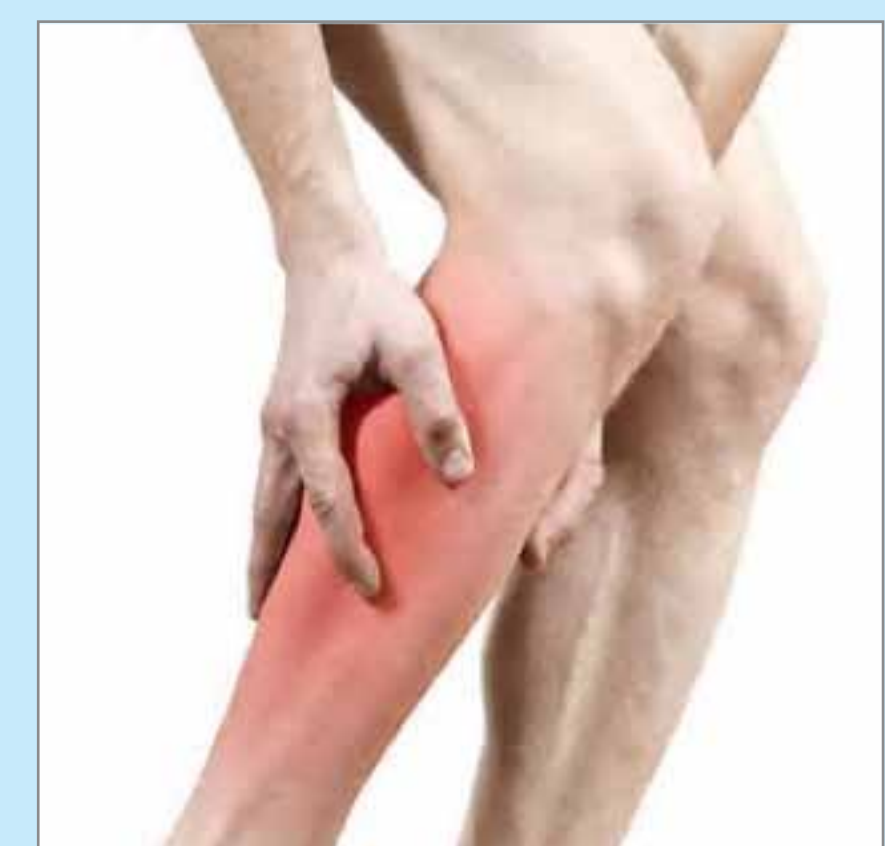Patient, 2017

"We want to have a second child. But my first pregnancy was an absolute awful nightmare, and I just cannot bear the thought of another long period with almost no sleep. Can you help??"
Patient, 2017

"Thank God I watched the TV programme. It let me know that it's not all in my mind and I am not alone. Listening to others made the world of difference to me, I have struggled for so many years…."
Patient, 2017

Conclusions

Restless Legs Syndrome (RLS) is a chronic progressive sleep-motor-pain disorder of still unknown cause. Despite its high prevalence, awareness for RLS in the population is low. Patients often wait for years before a correct diagnosis is made and thus receive inadequate therapy. Effective symptomatic therapy for RLS is available, but its long term use carries the risk to even augment the symptoms. Thus education about RLS is urgently needed to increase expertise of health care professionals on how to diagnose and manage RLS. Equally important the search into the cause(s) of RLS and for new treatment strategies have to be intensified in order to reduce the suffering of people with RLS and to reduce the substantial societal costs.

References:

1. Allen RP. et al.: Restless Legs Syndrome Prevalence and Impact. 2005. Archives of Internal Medicine.

Acknowledgements:

institute of Health Policy & Management
EARLS
EFNA European Federation of Neurological Associations
ean european academy of neurology
EURLSSG

Socio economic impact of RLS & inadequate RLS treatment across different healthcare systems

Tinelli M[1], Jaarsma J[2], Dauvilliers Y[3], Ferri R[4], Rijsman R[5], Sakkas GK[6], Trenkwalder C[7] and Oertel W[8]

[1]London School of Economics (LSE); [2]European Alliance for Restless Legs Syndrome (EARLS); [3]Gui-de-Chauliac Hospital; [4]Oasi Research Institute (IRCCS); [5]Center for Sleep and Wake disorders, Haaglanden MC; [6]Plymouth Marjon University; [7]Paracelsus Elena Klinik and Goettingen University; [8]European Academy of Neurology (EAN)

Background

Restless legs syndrome (RLS) is one of the most common neurological disorders. Adult prevalence of RLS in European population is about 2.7%, with women affected twice as often as men [1]. The key characteristics of RLS, including severe sleep disorders, restlessness in the evening and discomfort while at rest, have substantial impact on normal daily activities and lives of sufferers and their families. Given its high prevalence in the general population and how it affects their lives, it is necessary to evaluate the socio economic impact of RLS and the inadequate RLS treatment across different EU healthcare systems.

Methods

Socio economic impact of RLS. The economic burden of RLS was estimated for the first time across EU settings using the framework adopted by the EBC in "The economic cost of brain disorders in Europe 2010" [2] in three separate healthcare systems, France, Germany and Italy, as examples of EU nations with different healthcare systems with regard to delivery of services, financing and coverage. Epidemiological and cost data were derived from the literature [1-4]. The estimates included health care costs as well as indirect costs to society, such as lost productivity due to reduced ability to work or to work at full capacity.

Socio economic impact of inadequate RLS treatment. RLS patients often receive no or a delayed diagnosis and this prevents them from timely and adequate access to treatment, resulting in poor clinical outcome and increased healthcare and societal costs. In this economic analysis, we calculated the cost difference between adequate and inadequate treatment in three typical RLS cases, depicting the story of three hypothetical patients (see box below). A panel of experts from the three countries was consulted and asked to: create the three case studies, gather their personal opinion on the use of resources in the different scenarios as well as provide source of unit cost from their local country public tariff (when available) and their personal data. For each of the three scenarios two alternative were compared, including baseline scenario (ie. delayed diagnosis, insufficient response and augmentation) vs. their respective target adequate RLS treatment. Timeframe varied according to the personal life story described in the three case studies. Cost included those for the one person described in the case study and covered those incurred by the health care provider or society, pending on the individual cases. Discount rate of 3.5% was applied as appropriate.

> **Box : Case studies**
>
> **Delayed diagnosis:** Catherine is a 67-year-old RLS patient who has had RLS all her life. She received the correct diagnosis only after years of suffering. Subsequently medication was given at a too high dosage, as a consequence of which her symptoms further worsened and augmentation eventually occurred. Because of her poor health condition, she had to receive long-term sick leave and eventually quit her job. The model assumes that by receiving a correct diagnosis and timely/adequate treatment, Catherine would have had less use of health care resources, a better health outcome and she would have been able to keep her job and continue to be an active member of society. [Total period of time covered: from JANUARY 1960 up to NOVEMBER 2016]
>
> **Insufficient response:** Camilla is a 51-year-old woman who complained of insomnia since her youth and later started presenting RLS symptoms. It took three years to receive a correct diagnosis. Her symptoms responded poorly to the medication and started to relapse with increased severity. After a few years, she was admitted to a sleep centre as inpatient because of insufficient sleep quality. She presented a mild memory decline causing some difficulties in the activities of daily life. [Total period of time covered: from JANUARY 2005 up to NOVEMBER 2016]
>
> **Augmentation:** Peter is a 67-year-old male who presents very severe RLS symptoms. He has consulted several neurologists, who treated him as inpatient. Because of his poor response to the treatment, the dose of his medications was steadily increased for several years. As a result of the high dose of the medicines, Peter was hospitalised with severe RLS symptoms and the diagnosis augmentation was made. [Total period of time covered: from November 2012 up to November 2016]

Results

Socio economic impact of RLS (Fig 1):
When considering the overall burden of brain disorders in the EU subsample given by the three countries, RLS is ranked the fifth largest economic disease burden (with mood disorders as first place, followed by dementia, Psychotic and Anxiety disorders).

Socio economic impact of inadequate RLS treatment:

Delayed diagnosis (Fig 2): When calculating the difference in direct costs for the healthcare provider adequate treatment provides a cost saving of 1,600-33,300 euros over a period of 54 years across the three healthcare systems (for details see Table 2). When health care and productivity costs incurred by the whole society are considered, adequate treatment provides cost savings at a level of 35,000-50,500 Euros per patient case.

Insufficient response (Fig 3): On an 11-year time horizon there is a cost saving of 3,600-7,800 euro per patient case.

Augmentation (Fig 4): When calculating the difference in indirect costs for the healthcare provider, adequate treatment would provide a cost saving of 8,900-36,000 euro per patient case in 4-year time horizon. The variation in estimates across the three countries may be attributable to differences in health delivery practices, coverages and care payment systems.

Conclusions

Our analysis finds RLS to cause a significant personal and social burden and the economic benefit we can foresee when meeting adequate treatment is tangible and it is confirmed for the three case studies. When translating RLS costs (and the impact of RLS inadequate treatment) to the general population we foresee substantial economic impacts well beyond what may be anticipated from current epidemiological figures in the literature. Crucially epidemiological studies define RLS only according to three questions used in epidemiological surveys, but not along the need of treatment, and therefore these numbers should be considered a rough estimate of the overall RLS impact .
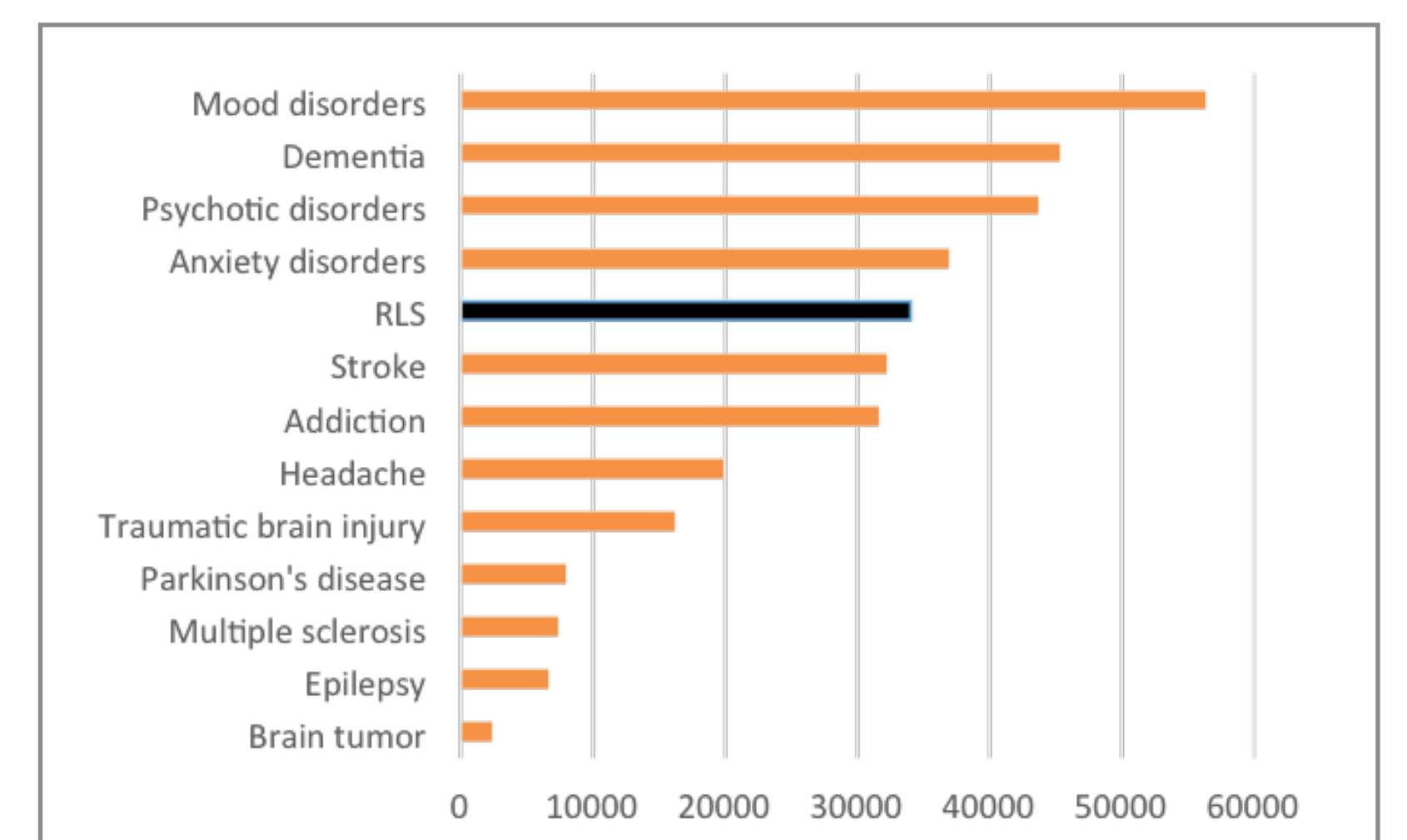

Figure 1: **Socio economic impact of RLS in France-Germany-Italy (pooled data). Ranking table with yearly total costs (€PPP million, 2016; pooled data)**
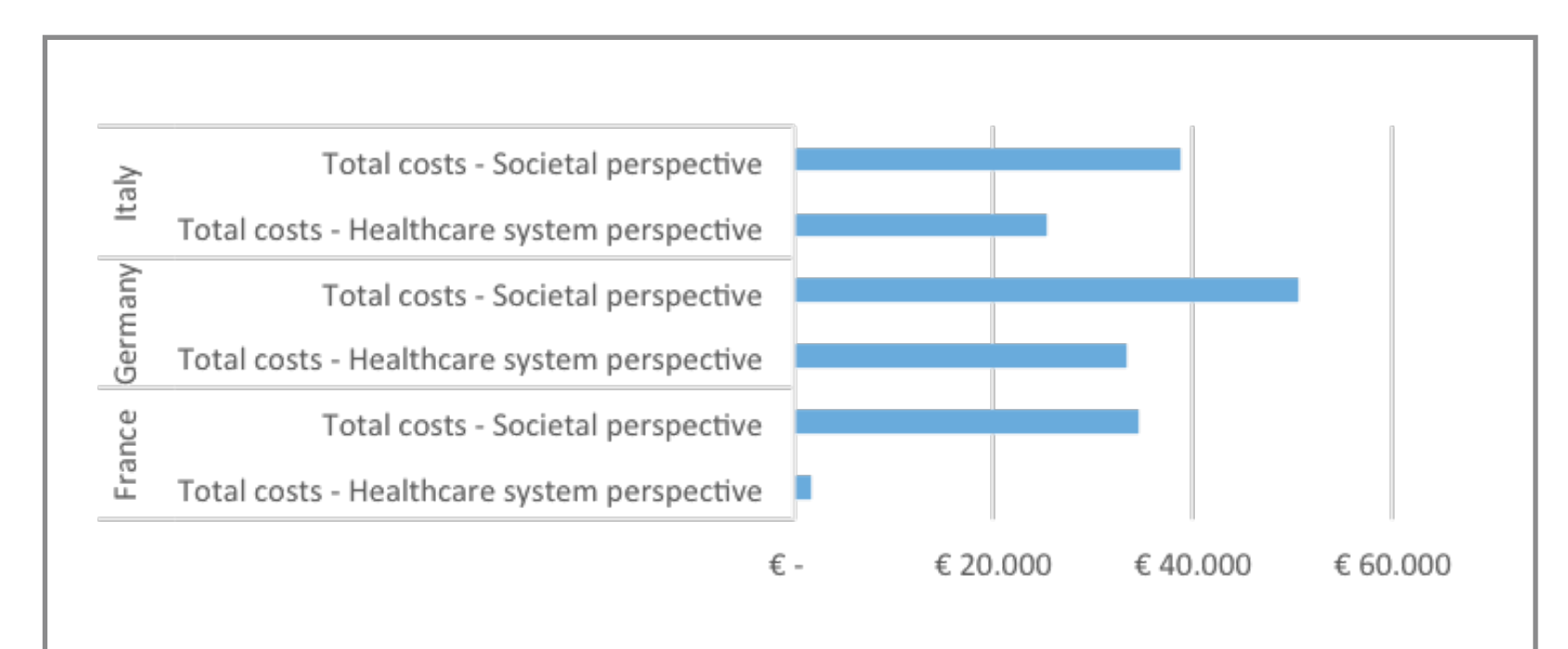

Figure 2: **Delayed diagnosis: Savings for Catherine case when shifting to target treatment (56 year-time frame)**
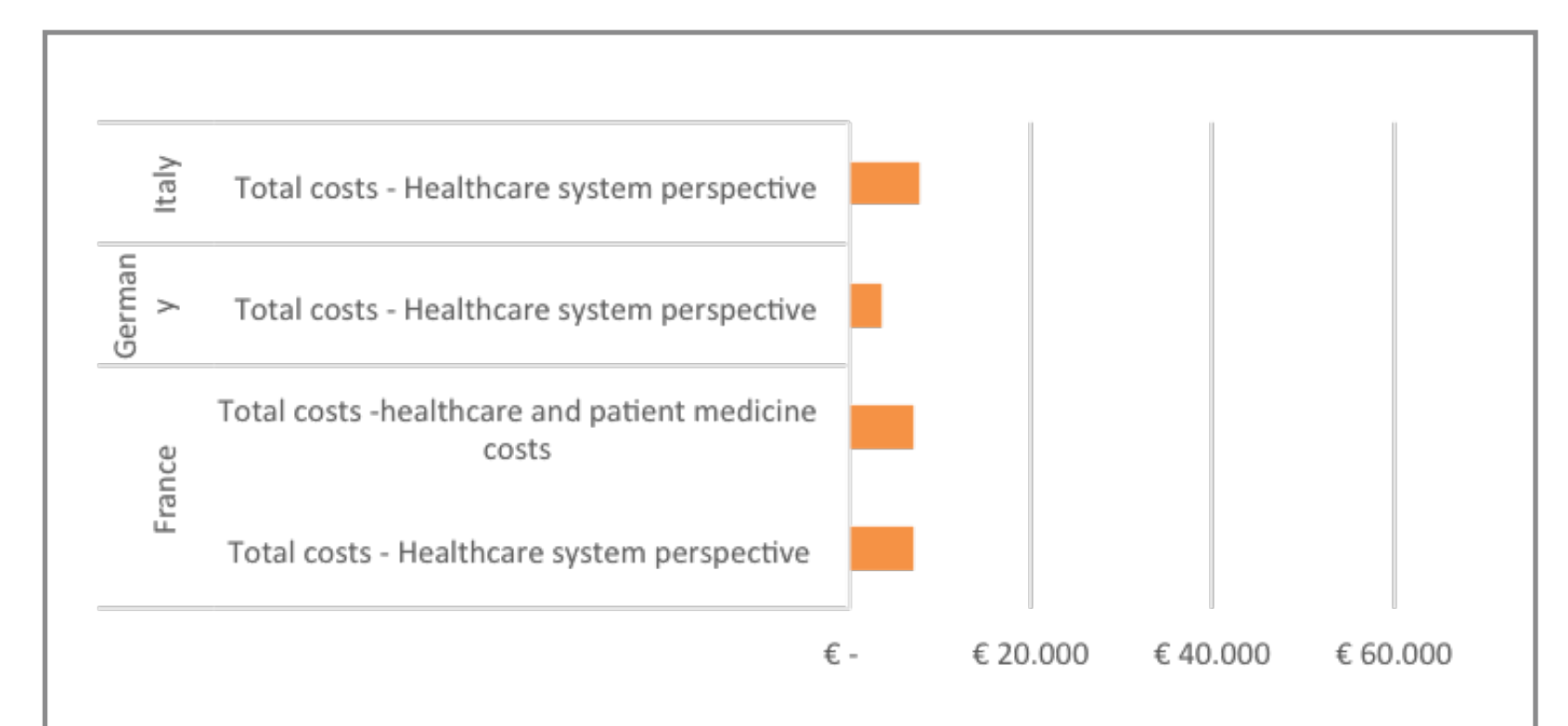

Figure 3: **Insufficient response: Savings for Camila case when shifting to target treatment (11 year-time frame)**
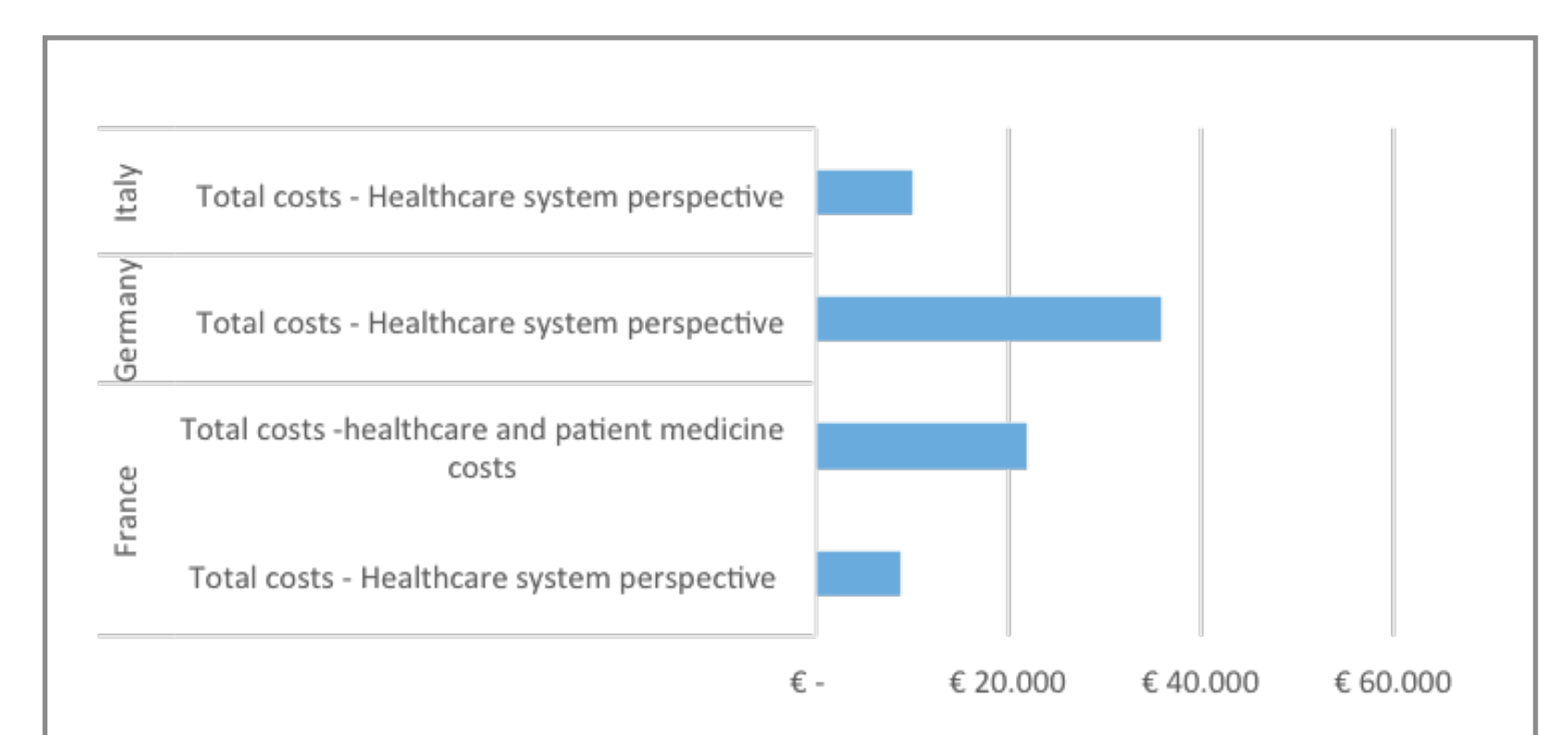

Figure 4: **Augmentation: Savings for Peter case when shifting to target treatment (4 year-time frame)**

Notes:

Societal perspective - Italy and Germany: healthcare costs (visits, hospital, tests), productivity loss and patient costs for medicines; France: healthcare costs (medicines, visits, hospital, tests), productivity loss.

Healthcare perspective - Italy and Germany: healthcare costs (visits, hospital, tests); France: healthcare costs (medicines, visits, hospital, tests).

References:

[1] Allen RP et al. Prevalence and disease burden of primary restless legs syndrome: results of a general population survey in the United States. 2011. Mov Disord. 2011 Jan; [2] Gustavsson A et al. Cost of disorders of the brain in Europe 2010. European Neuropsychopharmacology ; [3] Dodel R, et al. Health economic burden of patients with restless legs syndrome in a German ambulatory setting. 2010. Pharmacoeconomics; [4] Salas R et al. The real burden of restless legs syndrome: clinical and economic outcomes. 2012. Am J Manag Care; [5] GDP per capita (2016) http://www.tradingeconomics.com/; [6] Cost effectiveness and strategic planning (WHO-CHOICE).