The Relationship Between Treatment Strategy and Work Productivity in Severe Haemophilia

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INTRODUCTION

- Individuals with severe haemophilia represent approximately one-third of the haemophilia population in Europe[1,2] and can experience recurrent spontaneous bleeds, often in the absence of any trauma event.
- In many cases, recurrent joint inflammation (arthropathy) leads to joint deformity, reduced mobility, chronic pain, consequently influencing patients' health-related quality of life (HRQoL) due to not only physical but also psychological and societal effects.[3]
- There are two existing treatment approaches for patients with Haemophilia A and B; a prophylactic and an on-demand approach. Of these two types of therapy, prophylaxis improves outcomes as it prevents bleeding incidents resulting in better outcomes for patients.[4,5,6]
- Prophylactic treatment reduces joint bleeds and prevents arthropathy, particularly when initiated early in life.[3] It has shown to help paediatric patients with severe haemophilia achieve zero joint damage.[4] It also reduces pain[6,7] and the number of days missed from school or work[8,9]
- The clinical benefits of prophylaxis for haemophilia are well documented. However, little research has been undertaken into other potential societal benefits of prophylaxis, including work productivity and ability to effectively take part in the labour force.

OBJECTIVE

- This analysis investigates the association between treatment strategy and the number of working days lost per annum in patients with severe haemophilia A or B.

METHODS

- Data were taken from the 'Cost of Haemophilia across Europe: Socioeconomic Survey (CHESS) – A cross-section of 139 haemophilia specialists (surveyed between January and April 2015) providing demographic and clinical information and 12-month ambulatory and secondary care activity for 1,285 patients via an online survey. In turn, 551 of those patients provided corresponding direct and indirect non-medical cost information, including work loss and out-of-pocket expenses. A cost database was developed for each country using publically-available information. Study ethics was governed and approved by the University of Chester Ethics Committee.
- The inclusion criteria for the study were that patients have a factor level of < 1%, are over 18 years old and are diagnosed with hereditary haemophilia A or B
- The treatment strategies in this analysis have been categorized as the following:- primary prophylaxis (PPX, on prophylaxis from diagnosis), secondary prophylaxis (SPX, on prophylaxis, previously on-demand), primary on-demand (POD, always been on-demand) and secondary on-demand (SOD, previously on prophylaxis and moved to on-demand regimen).
- Patients were grouped by treatment strategy and the average annual days of work lost (reported by the patient) was calculated for each of the four treatment groups. Standard t-tests were conducted to test for significance.
- Patients with inhibitors were excluded from this analysis.

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RESULTS

Table 1: Breakdown of Treatment Strategies

Strategy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Primary on demand	91	22.30	91	22.30
Secondary on demand	73	17.89	164	40.19
Primary prophylaxis	57	13.97	221	54.16
Secondary prophylaxis	187	45.83	408	100.0

- Of the available population of 1,227 (excludes current inhibitor patients), 408 patients completed information related to haemophilia and work productivity, these patients were the focus of this analysis.
- Table 1 provides a breakdown of the available treatment options for patients and the number of patients in each. The majority of patients in this analysis were treated with secondary prophylaxis (n = 187, 46%) followed by primary on demand (n = 91, 22%). Primary prophylaxis had the lowest number of patients with a share of 14% (n = 57).
- The majority of the study population (n = 318, 78%) were haemophilia A patients with the remaining, haemophilia B patients (n = 90, 22%).
- The average age of patients examined in this analysis was 37 years old (SD 14yrs).
- Patients examined in the analysis had mean 1.2 (SD 1.25) target joints.

Figure 1: Breakdown of Haemophilia Subtypes in Study Population

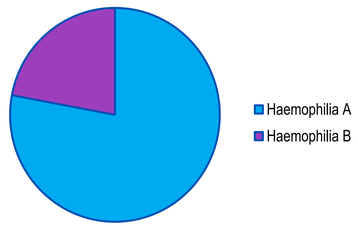
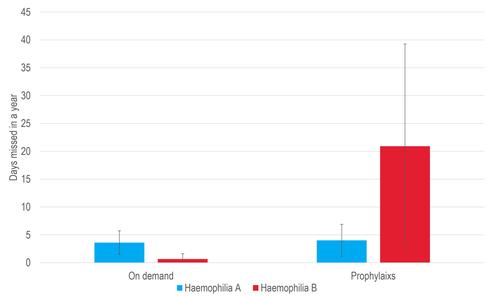
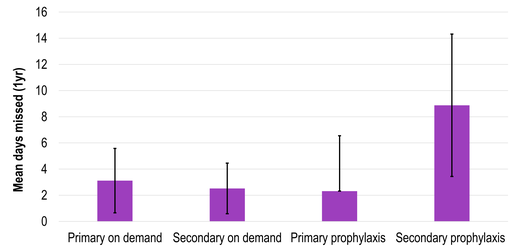


Figure 2: Work Days Missed by Treatment Type



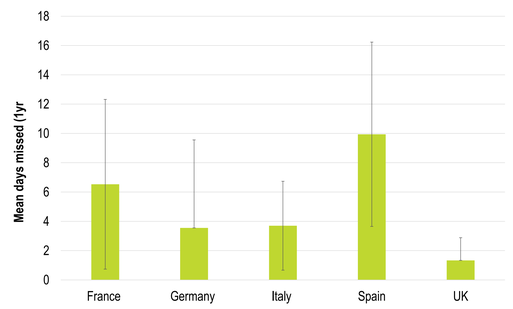
- OD is sum of POD and SOD; PX is sum of PPX and SPX.
- Patients on PX treatment had the highest reported lost working days for haemophilia A and B patients with a reported mean of 4.02 (SD 20.47, n= 196) and 20.92 (SD 63.22, n=48) respectively, during the previous 12–month period.
- Patients on OD treatment had a reported mean of 3.61 (SD 11.81, n= 122) and 0.67 (SD 3.05, n=42) lost working days for haemophilia A and B patients respectively, during the previous 12–month period. The mean days missed difference between on demand and prophylaxis was not found to be statistically significant. (p=0.10)

Figure 3: Work Days Missed by Treatment Strategy



- Patients receiving PPX experienced the lowest mean work loss of 2.32 days (SD 15.95; n = 57). Highest work loss was recorded within the SPX cohort of patients (mean 8.88; SD 37.71, n = 187).
- The majority of work days lost in the SPX group were attributed to the haemophilia B cohort.
- Patients on POD and SOD regimens reported mean 3.12 (SD 11.82, n = 91) and 2.52 (SD 8.29, n = 73) lost working days respectively, during the previous 12-month period.

Figure 4: Work Days Missed Across Countries



- Patients in Spain reported the highest mean lost working days in the analysis with 9.94 (SD 25.60, n = 66) days missed during the previous 12 month period. Whereas patients in the UK reported lowest mean days missed in the previous year 1.33 (SD 3.67, n = 24).
- Patients in France, Germany and Italy reported mean 6.53 (SD 35.16, n = 144), 3.55 (SD 26.99, n = 80) and 3.70 (SD 14.81, n = 94) lost working days respectively, during the previous 12-month period.
- Between-country differences for working days lost were not found to be statistically significant.
- The majority of the patients in the analysis were in full-time employment 47% (n = 191) with part time and students accounting for 19% (n = 78) and 14% (n = 59) respectively.
- 1.47% (n = 6) of patients examined in the analysis reported that they were unable to work due to their haemophilia, while a further 0.74% (n = 3) were on temporary leave due to their haemophilia.
- A breakdown of the employment status of patients in this analysis is presented in Table 2.

Table 2: Breakdown of Employment Status of Study Population

Employment Status	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Full-time employed	191	46.81	191	46.81
Part-time employed	78	19.12	269	65.93
Unable to work due to my haemophilia	6	1.47	275	67.4
Unable to work due to other reason(s)	2	0.49	277	67.89
Temporary leave of absence due to my haemophilia	3	0.74	280	68.63
Temporary leave of absence due to other reason(s)	2	0.49	282	69.12
Unemployed, able to work	30	7.35	312	76.47
Student	59	14.46	371	90.93
Retired	23	5.64	394	96.57
Homemaker	3	0.74	397	97.3
Other	8	1.96	405	99.26
Did not answer (blank)	3	0.74	408	100
Total	408	100.0		

DISCUSSION

- Joint bleeds and joint damage can influence haemophilia patients' quality of life resulting in a decrease of their HRQoL levels.
- Following prophylaxis therapy, patients can achieve very low levels of productivity loss, depending on treatment strategy. However it is clear that there are high levels of heterogeneity within the SPX group.
- Differences between haemophilia A and B were observed in this study with respect to work time lost, with more days lost by haemophilia B patients. This highlights the importance of ensuring care pathways for these patients are delivered to the same standard as for haemophilia A patients.

CONCLUSION

- This analysis suggests that administering a prophylaxis-based regimen at diagnosis may have a positive impact on patients subsequent ability to participate in the labour market.
- Further investigation is needed to confirm this analysis, due to the inherent heterogeneous characteristics of the haemophilia population.
- In particular the results for secondary prophylaxis patients require more in depth analysis as within this group patients may have spent the majority of their lives on an on-demand regimen

DISCLOSURES

- The original CHESS study was supported by unrestricted research grants from Swedish Orphan Biovitrum AB (Sobi) and Novo Nordisk. The study was approved by the University of Chester Ethics Committee. The wider project was conducted in collaboration with the UK Haemophilia Society (UKHS) and governed by a steering committee chaired by Liz Carrol, Chief Executive of the UKHS.
- *Jason Booth is an employee of Baxalta ([2]Baxalta Cambridge, MA USA), now part of Shire.
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