

# COST OF IMMUNE TOLERANCE INDUCTION IN HEMOPHILIA A PATIENTS: RESULTS FROM THE ITER STUDY



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Inhibitors to factor VIII (FVIII) are recognized as a complication of haemophilia since the introduction of FVIII replacement therapy. Large-scale prevalence studies and registry data indicate that the prevalence of inhibitors in the Haemophilic population overall is between 5% and 7%, while in severe patients raise to 13%[1]. ITI treatment is generally accepted as treatment to eradicate inhibitors in hemophilic patients, little is about determinants of outcomes and cost consequences. ITER STUDY aimed to answer to this question.

## Material and Methods

Immune Tolerance and Economics Retrospective (ITER) is an observational, retrospective, multicentre and multinational study. Eleven European centers specialized in Hemophilia treatment has participated to the study. Seventy-one patients with haemophilia A, who underwent ITI treatment using any type of FVIII as immunizing agent, with availability of data in the 12 months before and after the 12 months after ITI treatment, were enrolled. Costs are calculated by adopting the perspective of the third party payer. We focused on factors consumption, which represents 95-99% of costs for the management of haemophilic patients, particularly those with inhibitors .[2]

## Results

### Inhibitors:

Before ITI the median Inhibitors peak titre was 18.5 (0.80-704) BU. ITI was applied for a median of 1.22 (0.1-14.0) years and was successful in 84.5% patients.

### Cost

The following unit costs are applied: Recombinant FVIIa: 0.74 €/mcg, corresponding to 0.012333 €/UI; aPCC: 0.78 €/UI; recombinant FVIII: 0.63 €/UI ;Plasma derived FVIII 0.47 €/UI

Total cost of replacement therapy in the before the diagnosis of inhibitors :

Calculated considering 12 months of observations as regards the patients aged more than 1 year at inhibitors diagnosis, or patients' age when it was less than one year at the time of diagnosis of inhibitors. Sixty three patients used FVIII.

Total Cost per patient-month (among 71 patients) is 670.24 €.

Total cost from diagnosis and the initiation of ITI:

For 4 patients data on date of diagnosis of inhibitors are missing .

The time from diagnosis and start of ITI was in mean 33.83 months.

Total Cost per patient-month (among 71 patients) is 3188.36€ per patient-month.

Total cost during the ITI

Results are described in Tab. 3.

Total cost during the 12 months after the end of ITI:

As 12 patients were still taking ITI treatment at the time of data collection, the following results are based on the remaining 59 patients, for a total of 708 person-months.

Total Cost per patient-month (among 59 patients) is 13210.86.

### Patients

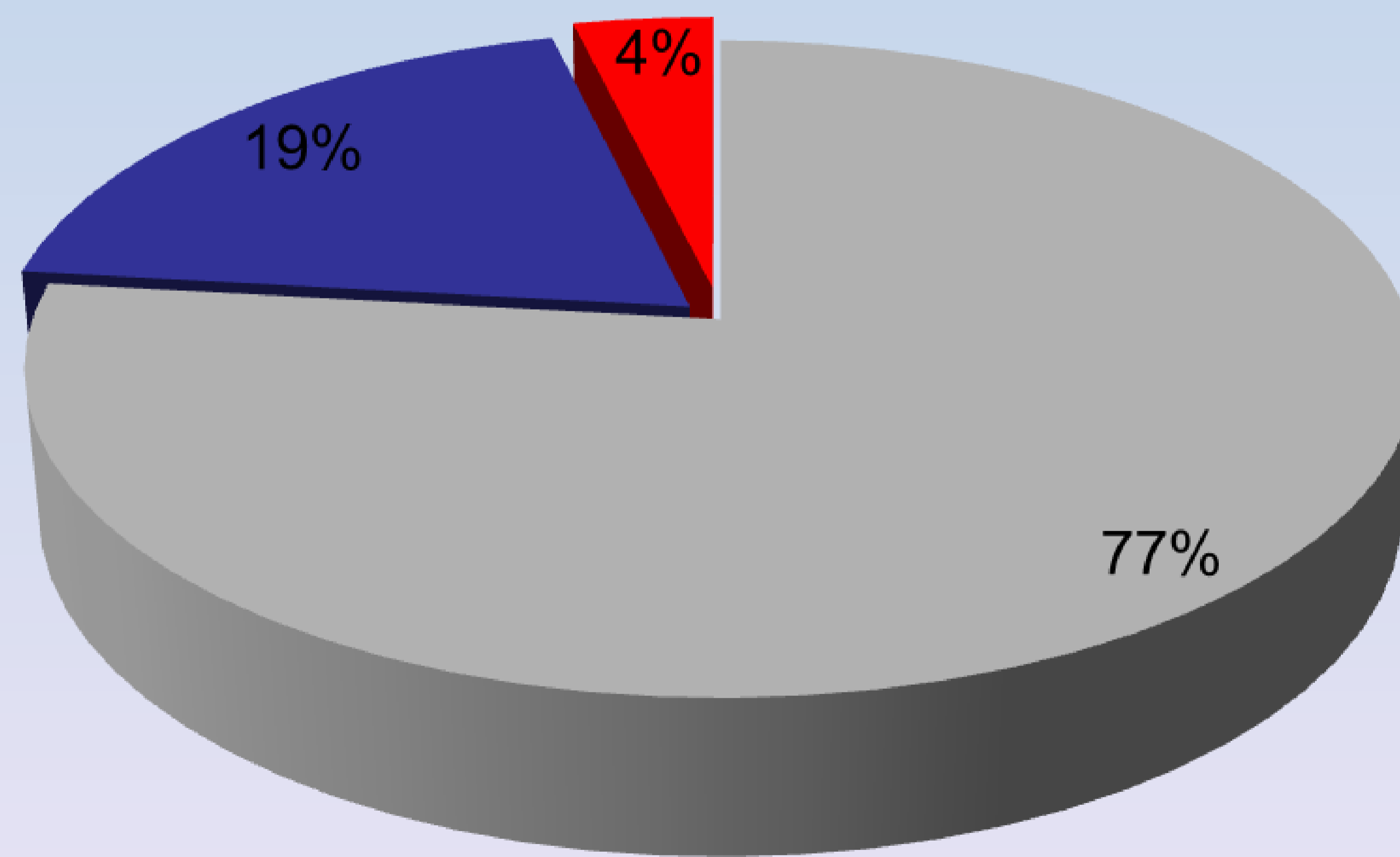
Description (N=71)	Values
<b>Age (years) at ITI start:</b>	
median (min-max)	3.8 (0.44 – 41.02)
Mean (SD)	7.5 (8.8)
< 1 year (min=0.44 years)	4 (5.6%)
≥1 and ≤7	44 (62.0%)
≥ 8 and ≤17	15 (21.1%)
≥18 and ≤ 25	4 (5.6%)
> 25 (max=41.02 years)	4 (5.6%)

### Time in ITI

Description N=71	Values
< 6 months	18.30%
≥6 months and < 1 year	28.20%
≥1 and < 2 years	22.50%
≥ 2 and < 5 years	22.50%
≥5 and almost 14 years (maximum)	8.50%
<b>Months of ITI per patient</b>	<b>Mean (Min-Max)</b>
	22.18 (1.22-167.96)

### Cost during ITI

Description N=71	Mean (Min-Max)
Cost per patient-month of ITI treatment	46143.85 (1994.56-222096.85)
Cost per patient-month of extra treatment with FVIII during ITI	11644.78 (173.75-376920.78)
Cost per patient-month of extra treatment with bypassing agents during ITI	2289.88 (88.11-28.082.57)
<b>Total cost per patient-month during the ITI treatment</b>	<b>60078.51 (2256.42-599017.63)</b>



- Cost per patient-month of ITI treatment
- Cost per patient-month of extra treatment with FVIII during ITI
- Cost per patient-month of extra treatment with bypassing agents during ITI

## Discussion

ITI applied on patients with the characteristics of those involved in the ITER study is successful in 84.5% of them at a mean cost of 60,000€/patient-month during ITI, plus 13,000€/patient-month through 1 year later. Further research is encouraged to value long term benefits and costs attributable to ITI versus non-ITI, in order to identify the most efficient treatment option for the pts' and for the health care system.

[1]The epidemiology of inhibitors in haemophilia A: a systematic review J.WIGHT and S. PAISLEY SchHARR, University of Sheffield, Sheffield,S1 4DA, UK

[2] Cost of care and quality of life for patients with hemophilia complicated by inhibitors: the COCIS Study Group

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