

# COST MINIMIZATION ANALYSIS OF ACTIVATED PROTHROMBIN COMPLEX CONCENTRATE (APCC) COMPARED TO RECOMBINANT FACTOR VIIA (RFVIIA) FOR HEMOPHILIA PATIENTS WITH INHIBITORS

Tomáš Mlčoch<sup>1</sup>, Tomáš Doležal<sup>1</sup>, Jiří Klimeš<sup>1</sup>

<sup>1</sup>VALUE OUTCOMES, s.r.o.



## OBJECTIVES

Approximately 15-35% of patients with hemophilia A develop inhibitory antibodies to factor VIII. There are currently two bypassing agents to treat inhibitor patients in the case of bleeding episodes (BE) and preemptively before and during major surgeries. Both APCC and rFVIIa demonstrated similar efficacy and safety results [1].

Our aim was to compare the costs of bypass strategy based on APCC or rFVIIa, including acquisition costs, and the consequent costs of bleeding episodes and surgery costs in Hungary, Slovakia, Slovenia and Serbia.

## RESULTS

In the scenario of bleeding episodes, the use of APCC instead of rFVIIa brings the potential savings of €4,596-8,704; €5,135-9,347; €5,738-10,807; €4,369-8,527 respectively in Hungary, Slovakia, Slovenia and Serbia (depending on the dosing scheme, see Figure 1). Lower savings are when dosing of 2x90µg/kg of rFVIIa is used, and higher when 1x270µg/kg of rFVIIa is used. While using APCC during major surgeries, the savings are equal to €157,159 (if compared to rFVIIa therapy) and €15,616 (if compared to the combination therapy of APCC and rFVIIa) in Hungary; €180,653 and €16,558 in Slovakia; €196,965 and €19,362 in Slovenia; and €145,979 and €15,422 in Serbia (see Figures 2 and 3).

The results of OWSA confirmed the results from the base-case setting. In case of BE with lower dosage of rFVIIa (see Table 1), the savings were well above zero indicating that even with price and dose changes of rFVIIa/APCC there is a certainty of cost-savings. When dosing rFVIIa with 1x270µg/kg per BE, the savings are substantially higher in both lower and higher case compared to situation of lower rFVIIa dosing scheme (Table 2). Finally, OWSA conducted in situation of surgery (Table 3) also confirmed the results from base-case setting. In this surgery situation, the lower case savings were around €100,000 and higher case savings were above €200,000.

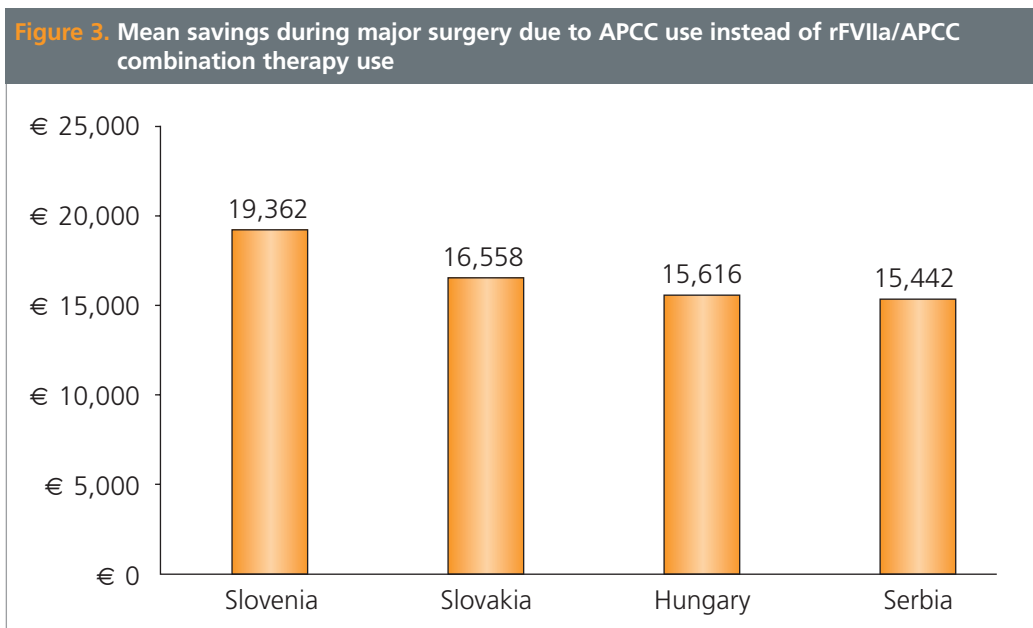
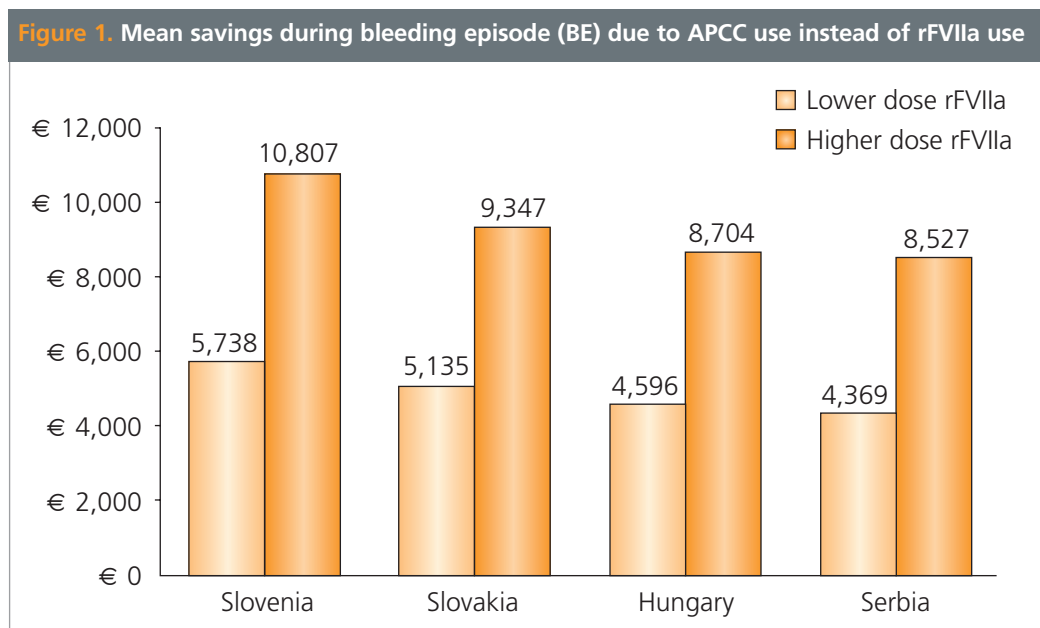
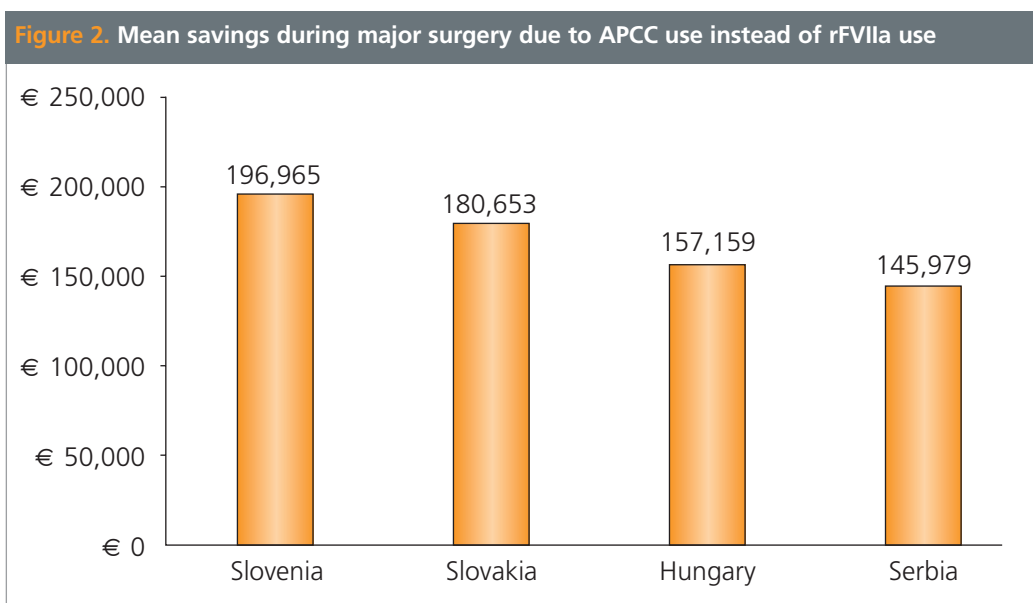
## METHODS

For the purpose of cost comparison, we developed a model using cost-minimization approach including all relevant costs from the perspective of health insurance fund (payer). The same approach was adopted in published literature [2-4].

We assessed the cost differences for two basic scenarios – patients with bleeding episodes and patients undergoing major surgeries. The doses used in model were: i) APCC 62.5 U/kg per BE, ii) APCC 85 U/kg per surgery, iii) rFVIIa 90 µg/kg per BE and surgery. The doses are based on the SmPCs (midst of given dose intervals) and published

literature (in the case of APCC used in surgery which is administered in higher doses in clinical practice compared to declaration in SmPC). The cost of APCC per unit (U) was in given countries equal to: 1) €0.77 in Hungary, 2) €0.90 in Slovakia, 3) €0.94 in Slovenia and 4) €0.84 in Serbia. The cost of rFVIIa per µg was then equal to: 1) €0.61, 2) €0.65, 3) €0.75 and 4) 0.62, respectively in these four countries.

Additionally, we performed one-way sensitivity (OWSA) analysis in which we changed the price and the dosage of APCC and rFVIIa.



	Lower case savings	Higher case savings
<b>Slovenia (base case savings €5,738)</b>		
Price change (+/-20%) rFVIIa	3,710	7,765
Dose change (+/-20%) rFVIIa	3,710	7,765
Price change (+/-20%) APCC	4,857	6,618
Dose change (+/-20%) APCC	4,857	6,618
<b>Slovakia (base case savings €5,135)</b>		
Price change (+/-20%) rFVIIa	2,836	6,365
Dose change (+/-20%) rFVIIa	2,836	6,365
Price change (+/-20%) APCC	3,756	5,445
Dose change (+/-20%) APCC	3,756	5,445
<b>Hungary (base case savings €4,596)</b>		
Price change (+/-20%) rFVIIa	2,953	6,239
Dose change (+/-20%) rFVIIa	2,953	6,239
Price change (+/-20%) APCC	3,872	5,320
Dose change (+/-20%) APCC	3,872	5,320
<b>Serbia (base case savings €4,369)</b>		
Price change (+/-20%) rFVIIa	2,706	6,032
Dose change (+/-20%) rFVIIa	2,706	6,032
Price change (+/-20%) APCC	3,580	5,159
Dose change (+/-20%) APCC	3,580	5,159

	Lower case savings	Higher case savings
<b>Slovenia (base case savings €10,807)</b>		
Price change (+/-20%) rFVIIa	7,765	13,849
Dose change (+/-20%) rFVIIa	7,765	13,849
Price change (+/-20%) APCC	9,927	11,688
Dose change (+/-20%) APCC	9,927	11,688
<b>Slovakia (base case savings €9,347)</b>		
Price change (+/-20%) rFVIIa	6,365	11,659
Dose change (+/-20%) rFVIIa	6,365	11,659
Price change (+/-20%) APCC	8,168	9,856
Dose change (+/-20%) APCC	8,168	9,856
<b>Hungary (base case savings €8,704)</b>		
Price change (+/-20%) rFVIIa	6,239	11,168
Dose change (+/-20%) rFVIIa	6,239	11,168
Price change (+/-20%) APCC	7,980	9,428
Dose change (+/-20%) APCC	7,980	9,428
<b>Serbia (base case savings €8,527)</b>		
Price change (+/-20%) rFVIIa	6,032	11,022
Dose change (+/-20%) rFVIIa	6,032	11,022
Price change (+/-20%) APCC	7,738	9,317
Dose change (+/-20%) APCC	7,738	9,317

	Lower case savings	Higher case savings
<b>Slovenia (base case savings €196,965)</b>		
Price change (+/-20%) rFVIIa	116,865	277,066
Dose change (+/-20%) rFVIIa	116,865	277,066
Price change (+/-20%) APCC	156,258	237,673
Dose change (+/-20%) APCC	156,258	237,673
<b>Slovakia (base case savings €180,653)</b>		
Price change (+/-20%) rFVIIa	83,576	222,969
Dose change (+/-20%) rFVIIa	83,576	222,969
Price change (+/-20%) APCC	114,230	192,314
Dose change (+/-20%) APCC	114,230	192,314
<b>Hungary (base case savings €157,159)</b>		
Price change (+/-20%) rFVIIa	92,258	222,059
Dose change (+/-20%) rFVIIa	92,258	222,059
Price change (+/-20%) APCC	123,690	190,627
Dose change (+/-20%) APCC	123,690	190,627
<b>Serbia (base case savings €145,979)</b>		
Price change (+/-20%) rFVIIa	80,232	211,675
Dose change (+/-20%) rFVIIa	80,232	211,675
Price change (+/-20%) APCC	109,478	182,479
Dose change (+/-20%) APCC	109,478	182,479

## CONCLUSIONS

The results confirmed that the use of APCC in hemophilia patients with inhibitors is the cost-saving therapy compared to intervention with rFVIIa, which conform to previous analyses mentioned in published literature [2-4]. The potential savings by using APCC instead of rFVIIa are substantial from the health-care systems perspective in Hungary, Slovakia, Slovenia and Serbia. Moreover, these finding could also be interpreted that the APCC use thus indirectly enables more patients to be treated for the same health care costs consumption.

## REFERENCES

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