Cost Minimization Analysis Evaluating Turoctocog Alfa (Novoeight®) and Product X as Prophylaxis Treatment for Paediatric and Adult Patients with Severe Haemophilia A in China

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Objective

- Turoctocog Alfa (Novoeight®) is a recombinant factor VIII(rFVIII) for the treatment of haemophilia A that has been associated with excellent effectiveness and safety in the Guardian trial program.
- This study was to compare the total annual drug cost between turoctocog alfa and product x*, which is most commonly used rFVIII among Chinese patients with haemophilia A, as prophylaxis treatment for paediatric and adult patients with severe haemophilia A from the Chinese healthcare perspective.

Methods

- A cost minimization model was constructed to calculate the total annual costs of turoctocog alfa and product x as prophylaxis treatment for paediatric(<12 years) and adult patients(≥12 years) with severe haemophilia A.
- Only drug cost was considered in this study, including: (1) drug cost of prophylaxis, and (2) drug cost for treatment of breakthrough bleeds.
- Model parameter
  - ✓ Clinical data including prophylactic regimens and annual breakthrough bleed rate were obtained from respective clinical trial that included previously treated patients with severe hemophilia A(Table 1).
    - Mean prophylaxis dose and the mean annual bleed rate (ABR) were used in the analysis.

Table 1 Prophylactic regimens and annual breakthrough bleed rate

Patients	rFVIII	Dose(IU/kg)			Doses/ week	Mean annual bleed rate (ABR)	Source
		Min	Max	Mean			
Paediatric patients	turoctocog alfa	25	60	42.5	3	1.45	1. Runhui W, et al.Therapeutics and Clinical Risk Management 2020:16 567–578.
	product x	25	50	37.5	3-3.5	1.97	2. Ljung R, et al. Haemophilia, 2016, 22(3):354-360.
Adult patients	turoctocog alfa	20	50	35	3	1.35	1. Runhui W, et al.Therapeutics and Clinical Risk Management 2020:16 567–578.
	product x	30	40	35	3	2	3. Renchi Y, et al. Haemophilia. 2019 May;25(3):e153-e158.

- ✓ Mean weight of patients with severe haemophilia A were sourced from published data in China (Table 2).

Table 2 Mean weight of patients with severe haemophilia A in China

	Mean weight (kg)	Source
Paediatric	25.91	1. Runhui W, Therapeutics and Clinical Risk Management 2020:16 567–578.
Adult	56.92	

- ✓ Proportion of mild, moderate and severe bleeds were obtained from published data in China (Table 3).

Methods

Table 3 Proportion of mild, moderate and severe bleeds

	Proportion	Source
Mild bleeds	49.14%	1. Runhui W, Therapeutics and Clinical Risk Management 2020:16 567–578 Assumption: proportion of mild and moderate bleeding episode were the same.
Moderate bleeds	49.14%	
Severe bleeds	1.73%	

- ✓ Therapeutic regimen for mild, moderate and severe bleeds were sourced from Chinese package insert. Cost of turoctocog alfa and octocog alfa for treatment of each bleeds of paediatric and adult patients were based on the average bidding price in August 2021 in China* (Table 4).

Table 4 Therapeutic regimen for mild, moderate and severe bleeds and cost for treatment of each bleeds

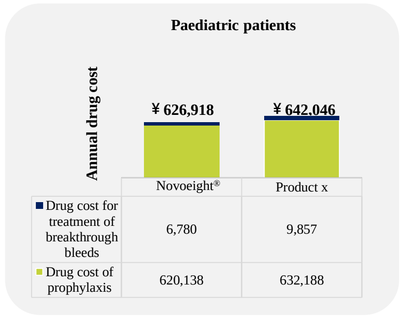
	Dose (IU/kg)	Doses/ week	Cost for paediatric (CNY)		Cost for adult (CNY)		Source
			turoctocog alfa	product x	turoctocog alfa	product x	
Mild bleeds	15.0	1.0	1,404.3	1,497.6	3,085.1	3,290.0	Therapeutic regimen were from chinese package insert of turoctocog alfa and octocog alfa. Cost of these two product were based on average bidding price price in August 2021 in China.
Moderate bleeds	22.5	3.5	7,366.2	7,855.9	16,182.4	17,258.1	
Severe bleeds	33.8	7.0	22,129.7	23,601.4	48,615.4	51,848.4	

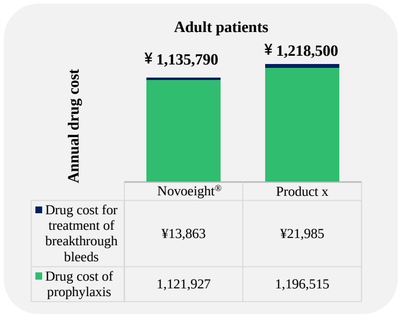
*Average bidding price of turoctog alfa was based on 4 provinces where have conducted online bidding in August 2021 in China. Average bidding price of octcog alfa were based on 16 provinces.

- Considering clinical practice in China, scenario analysis was conducted using minimum prophylaxis dose of each product.

Result

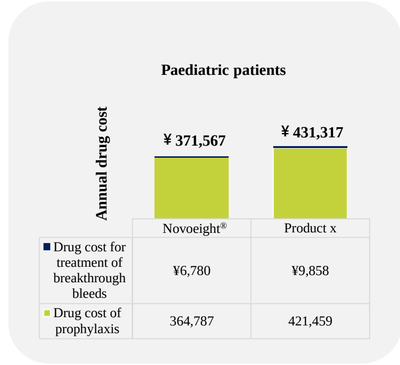
- Novoeight® as prophylaxis treatment for paediatric and adult patients were associated with total annual drug cost saving of CNY 15,128 and CNY 82,710, respectively, compared with product x using mean prophylaxis dose.

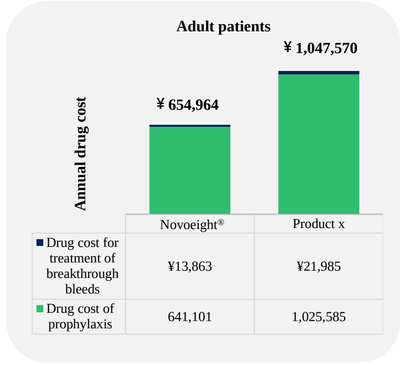




Results

- Considering the clinical practice in China, Novoeight® as prophylaxis treatment for paediatric and adult patients were associated with total annual drug cost saving of CNY 59,750 and CNY 392,606, respectively, compared with product x using minimum prophylaxis dose.





Conclusion

- Compared with product x, using Novoeight® as prophylaxis treatment was likely to reduce the total annual costs both for prophylaxis and breakthrough bleeds treatment in paediatric and adult patients with severe haemophilia A in China.

References

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3. Renchi Y, Jing Sun, Yongqiang Z, et al. Efficacy and safety of prophylaxis with BAY 81-8973 in Chinese patients with severe haemophilia A enrolled in the LEOPOLD II trial Haemophilia. 2019 May;25(3):e153-e158.

*According to report of IQVIA in 2021 Q3, Kovaltry® occupied the largest market share of rFVIII in China.

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