

Individualization of hemophilia treatment

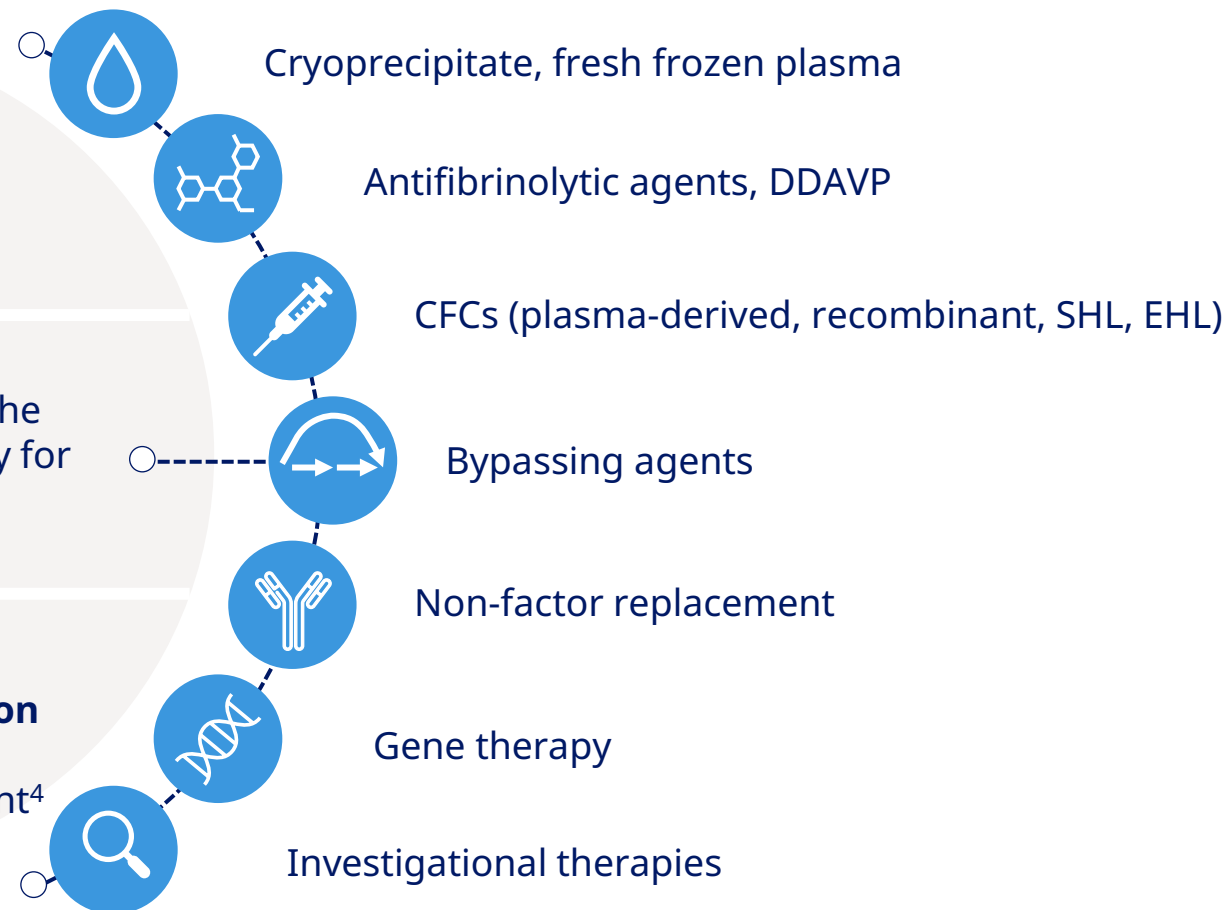


Hemophilia care should be individualized to choose the “optimal” treatment for PwH

Evolution of hemophilia care has resulted in efficacious treatments designed to reduce bleeding and improve functional status and QoL¹⁻³

Decision-making can be a complex process of selecting the most appropriate **treatment option** and dosing strategy for each patient¹

As clinical characteristics (e.g., bleeding phenotype), lifestyle, and environment of PwH differ, **individualization of care is required** to ensure patient-centered care that targets optimal outcomes and preferences of each patient⁴



CFC, clotting factor concentrate; DDAVP, desmopressin; EHL, extended half-life; PwH, people with hemophilia; QoL, quality of life; SHL, standard half-life

1. Hermans C et al. Blood Rev 2022;52:100890; 2. Mannucci P. Haematologica 2020;105:545-53; 3. Konkle BA et al. Res Pract Thromb Haemost 2019;3:184-92; 4. Berntorp E et al. Blood Rev 2021;50:100852

Treatment individualization involves tailoring product type^{1,2} and dosing regimen¹⁻⁴

1. Product type—there are a variety of features to consider when selecting a hemophilia product:



Route of administration and MoA^{4,5}



Product origin⁶
(plasma-derived vs recombinant)



Dosing frequency⁶



Hemostatic efficacy/safety profile⁴



Convenience of administration^{5,6}

- Vials per infusion
- Diluent volume,
- Reconstitution device



Storage temperature⁶



Access⁷

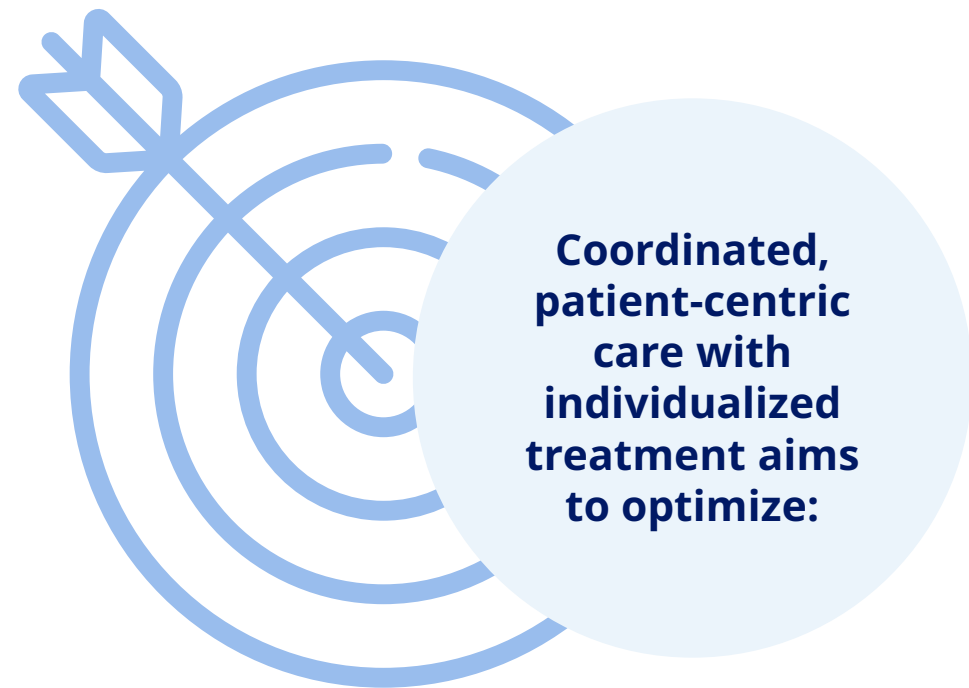
2. Dosing regimen—tailoring dose and frequency⁴ as per indication to help prevent bleeds

MoA, mechanism of action

1. Mancuso ME et al. *Haemophilia* 2021;27:889–96; 2. Coppola A et al. *J Clin Med* 2022;11:801; 3. Collins PW et al. *Haemophilia* 2012;18(Suppl 4):131–5; 4. Srivastava A et al. *Haemophilia* 2020;26(Suppl 6):1–158; 5. Furlan R et al. *Patient Prefer Adherence* 2015;9:1687–94; 6. Tischer B et al. *Patient Prefer Adherence* 2018;12:431–41; 7. Okaygoun D et al. *J Biomed Sci* 2021;28:64

Comprehensive care and individualized prophylaxis target improved patient outcomes

Hemophilia guidelines recommend early initiation of regular, long-term prophylaxis and comprehensive care with input from an MDT of specialists¹



Protection from bleeds^{2,3}



Factor trough levels and hemostatic efficacy^{3,4}



Patient **satisfaction** with treatment^{3,5}



Adherence to therapy³



Clinical outcomes, including joint health⁶ and pain⁷



Quality of life,^{2,5} including physical activity⁴

MDT, multidisciplinary team

1. Mancuso ME et al. *Haemophilia* 2021;27:889–96; 2. Coppola A et al. *J Clin Med*. 2022;11:801; 3. Hermans C et al. *Blood Rev* 2022;52:100890; 4. Su J et al. *Haemophilia* 2020;26:e291–9; 5. Poon MC et al. *Thromb J* 2016;14(Suppl 1):32; 6. Pasi J et al. *Ther Adv Hematol* 2022;13:20406207221079482

Treatment individualization can result in improved protection from bleeds

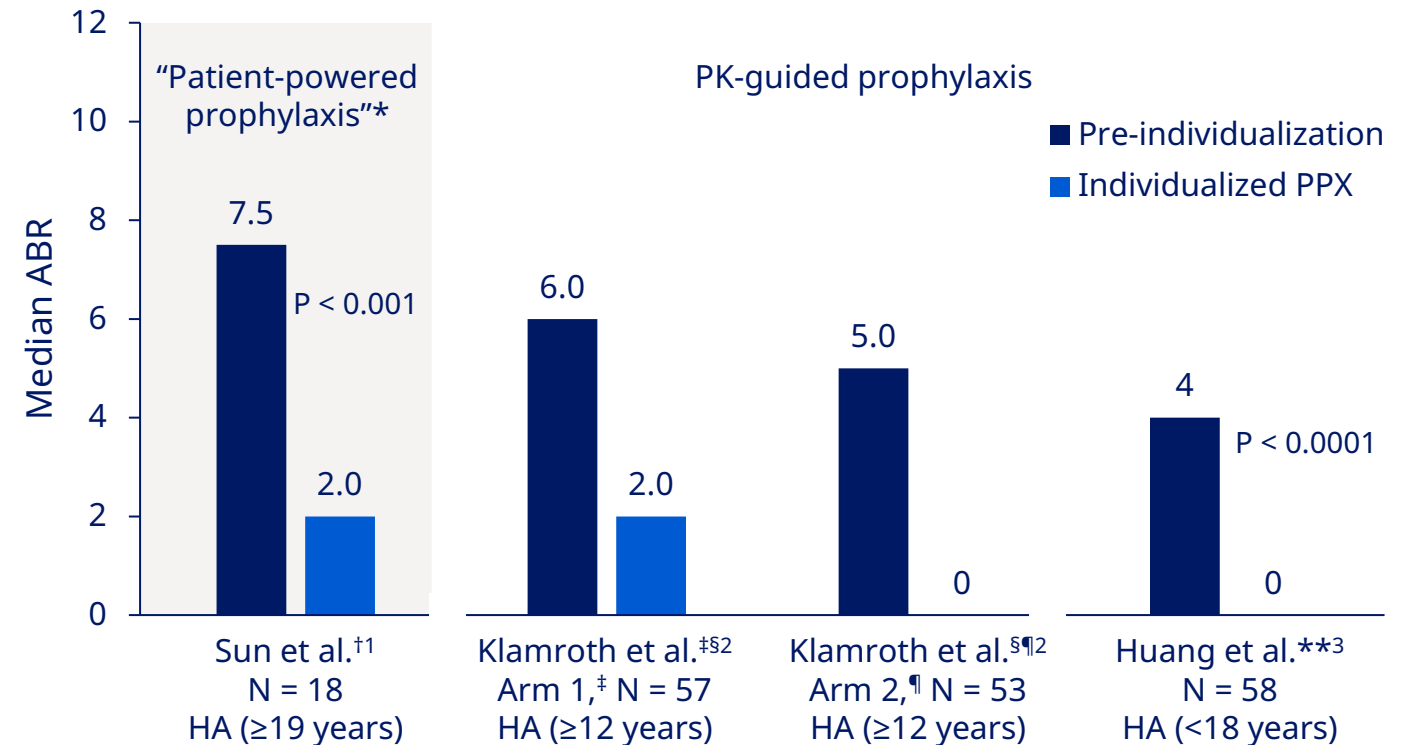


- Reductions in ABR observed following transition to individualized prophylaxis¹⁻³
- PK-guided prophylaxis targeting elevated trough levels can increase proportion of patients with zero bleeds^{2,3}



- Individualized prophylaxis can improve health-related QoL,¹ physical functioning,¹ and reduce pain⁴

ABR outcomes with standard and individualized prophylaxis



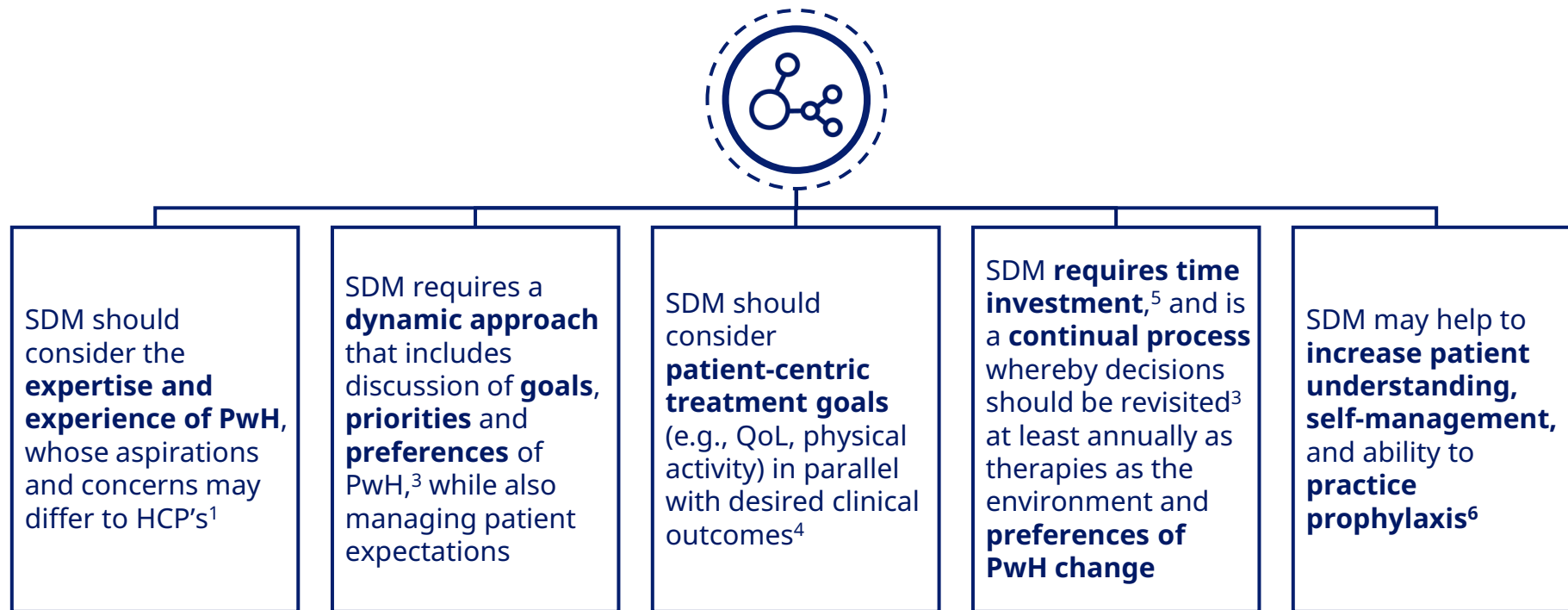
ABR, annualized bleeding rate; HA, hemophilia A; PK, pharmacokinetic; PPX, prophylaxis; QoL, quality of life

*Individualized prophylaxis established based on findings from motivational interviewing to discern patient values/experiences. [†]Comparison from the 12-month pre-study period to the 12-month study period. [‡]PK-guided rurioctocog alfa pegol prophylaxis targeting 1–3% trough levels. [§]Comparison from 12-month pre-study period to second 6-month study period. [¶]PK-guided rurioctocog alfa pegol prophylaxis targeting 8–12% trough levels. ^{**}PK-guided, trough-level escalating individualized prophylaxis; comparison from 6-month observation period (standard prophylaxis) to 24–30-month period on individualized prophylaxis

1. Sun LH et al. Haemophilia 2017;23:877–83; 2. Klamroth R et al. Blood 2021;137:1818–27; 3. Huang K et al. Haemophilia 2022;28:e209–18; 4. Pasi J et al. Ther Adv Hematol 2022;13:20406207221079482.

Individualization of care is a dynamic process of shared decision-making between patients and their MDT

Shared decision-making: decisions around hemophilia treatment should be a collaborative process between the MDT and patient/caregiver^{1,2}

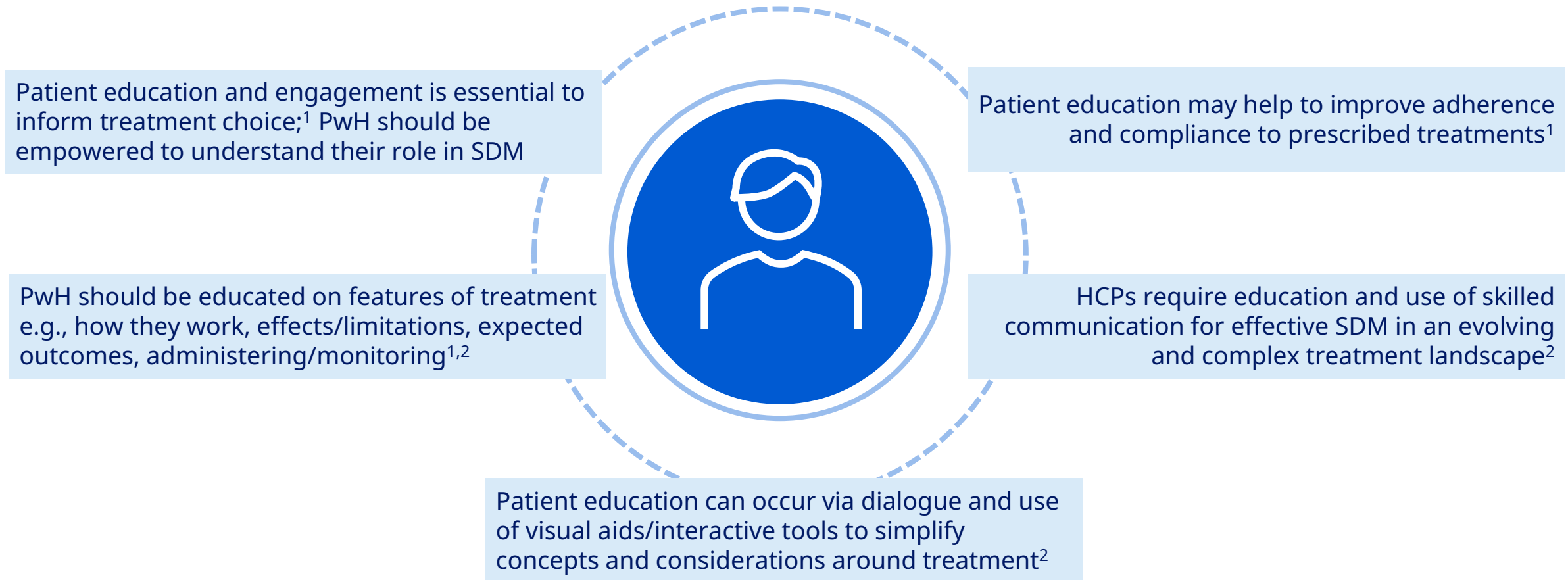


HCP, healthcare professional; MDT, multidisciplinary team; PwH, people with hemophilia; QoL, quality of life; SDM, shared decision-making

1. Hermans C et al. *Blood Rev* 2022;52:100890; 2. Berntorp E et al. *Blood Rev* 2021;50:100852; 3. Valentino LA et al. *J Haem Pract* 2021;8:69–79; 4. Skinner MW et al. *Haemophilia* 2020;26:17–24;

5. Ankolekar A et al. *PLoS One* 2021;16:e0259844; 6. van Balen EC et al. *Haemophilia* 2019;25:938–45

Shared decision-making for treatment individualization requires education and patient empowerment



HCP, healthcare professional; MDT, multidisciplinary team; PwH, people with hemophilia; SDM, shared decision-making

1. Berntorp E et al. *Blood Rev* 2021;50:100852; 2. Valentino LA et al. *J Haem Pract* 2021;8:69–79

There are multiple variables to consider for treatment individualization (1/2)

Clinical characteristics



Venous access¹



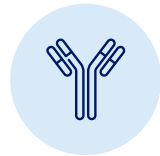
Joint damage and MSK health^{2,3}



ABO Blood group⁴



Pain¹



Inhibitors¹



Comorbidities¹ (e.g., CV disease, thrombotic risk)



Current/past/concomitant treatment¹



Age¹



Bleeding phenotype^{1,2}

- Treatment and dose may be reviewed and adjusted by HCPs according to bleeding pattern:
 - Bleed history
 - Severity of bleeds
 - Frequency of bleeds
 - Location of bleeds
 - Timing with respect to last infusion



Pharmacokinetics¹

- Where able, treatment and dose may be reviewed and adjusted by HCPs to target high trough levels for effective prophylaxis^{2,5}
 - Half-life, AUC, incremental recovery and peak factor levels may also be important for determining optimal coverage⁵
- Tools available for Bayesian PK-guided dosing (e.g., WAPPS, MyPKFit)^{5,6}
- Challenges for routine PK assessment: burden of classical PK sampling,⁵ access to monitoring tools,⁷ monitoring novel therapies⁸

AUC, area under the curve; CV, cardiovascular; HCP, healthcare professional; MSK, musculoskeletal; PK, pharmacokinetic; WAPPS, Web-based Application for the Population Pharmacokinetic Service.

1. Hermans C et al. *Blood Rev* 2022;52:100890; 2. Srivastava A et al. *Haemophilia* 2020;26(Suppl 6):1–158; 3. Seuser A et al. *Blood Coagul Fibrinolysis* 2018;29:509–20; 4. Singkham N et al. *Haemophilia* 2022;28:230–8; 5. Hermans C et al. *Ther Adv Hematol* 2020;11:2040620720966888; 6. Mingot-Castellano ME et al. *Haemophilia* 2018;24:e338–43; 7. Delavenne X and Dargaud Y. *Thromb Res* 2020;192:52–60; 8. Lenting PJ. *Blood Adv* 2020;4:2111–8

There are multiple variables to consider for treatment individualization (2/2)

Patient preferences and lifestyle



Physical activity¹



Preferences²



Perceptions of treatment¹



Lifestyle¹



Quality of life¹



Adherence¹

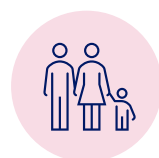


Psychological ecosystem:
motivation, understanding,
ambitions¹

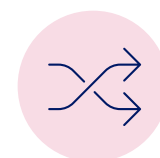
Local healthcare environment



Healthcare resources^{1,2}



Family support¹



Environment for switching¹



Access/coverage¹