TV-108-030320-61

SYLLABUS AND COURSE GUIDE

One Size Does Not Fit All: Using Population Pharmacokinetics for Tailored Hemophilia Care

A Free, 90-Minute CME/CNE/CPE/MIPS/ABIM MOC Live and On-Demand Activity

Premiere Date: Tuesday, March 3, 2020

12:00 PM - 1:30 PM ET (live)

Credit Expiration Date: Wednesday, March 3, 2021

On the Web: http://bit.ly/TV-108

LIVE FACULTY: Miguel A. Escobar, MD; Mark T. Reding, MD

MODERATOR: Alfonso Iorio, MD, PhD, FRCP(C)

Take advantage of our LIVE Q&A segment during this webcast!

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INFORMATION FOR PARTICIPANTS

Statement of Need

In order to prevent and treat bleeding in patients with hemophilia A, the activity of the replaced clotting factor VIII must reach or exceed a target level over a period of time. Pharmacokinetic (PK) measures are therefore used to determine the dosing regimen of the different factor VIII replacement products. Recently, extended half-life recombinant factor VIII products with improved PK profiles have been approved and these reduce treatment burden and improve treatment adherence.

In this CME Outfitters live and on-demand webcast, renowned hematologists will discuss the clinical significance of the results of the head-to-head comparison study of PK profiles of extended half life factor VIII products including the application of population PK models and shared decision-making (SDM) to provide personalized hemophilia A therapy.

Learning Objectives

At the end of this CE activity, participants should be able to:

- Summarize the comparative PK data and the clinical significance of popPK studies on factor VIII replacement therapies.
- Apply popPK models to determine individualized dosing regiments for patients with hemophilia A.
- Integrate approaches for SDM to develop patient-centered, PK-based treatment plans for patients with hemophilia A.

The following learning objectives pertain only to those requesting CNE or CPE credit:

- Summarize the comparative PK data and the clinical significance of popPK studies on factor VIII replacement therapies.
- Explain popPK models that can determine individualized dosing regimens for patients with hemophilia A.
- Describe approaches for SDM to develop patient-centered, PK-based treatment plans for patients with hemophilia A.

Target Audience

Hematologists, physician assistants, nurse practitioners, nurses, and clinical pharmacists.

Financial Support

Supported by an educational grant from Bayer HealthCare Pharmaceuticals, Inc.

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Live: 0376-0000-20-002-L01-P; Enduring: 0376-0000-20-002-H01-P
Type: knowledge-based

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Learning Formats:

Live activity
Enduring Material

Royal College MOC:

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FACULTY BIOS & DISCLOSURES

Alfonso Iorio, MD, PhD, FRCP(C) (Moderator)

Department of Health Research Methods, Evidence and Impact, McMaster University, Canada

Prof. Iorio is a Professor in the Department of Health Research Methods, Evidence, and Impact at McMaster University Canada, where he holds the McMaster – Bayer Endowed Research Chair in Clinical Epidemiology of Congenital Bleeding Disorders. He is the Director of the Health Information Research Unit (HiRU) and of the Hamilton-Niagara Hemophilia Program. He received his medical and PhD degrees from the University of Perugia, Italy.

He is the Principal Investigator of the Web Application for Population Pharmacokinetic in Hemophilia (WAPPS) project, co-investigator of the Patient Reported Outcomes, Burden, and Experiences (PROBE), and chair of the Canadian Bleeding Disorders Registry (CBDR). He is an associate editor for bleeding disorders of the Cochrane Collaboration, Thrombosis Research, and serves on the Editorial Boards of numerous journals including the *Journal of Thrombosis and Haemostasis*, and *Haemophilia*. Prof. Iorio's current interests include internet-based knowledge dissemination, systematic review and meta-analysis methodology, and risk prediction and stratification. He has published over 200 peer reviewed publications.

Miguel A. Escobar, MD

Dr. Escobar is Professor of Internal Medicine and Pediatrics, and Director of the Gulf States Hemophilia and Thrombophilia Center at the University of Texas Health Science Center and the McGovern Medical School in Houston, Texas. He is also the Director of the Clinical Research Center at the University and the Medication, Therapy and Wellness Center at the Memorial Hermann Hospital in Houston.

Dr. Escobar received his MD from the Universidad Libre in Cali, Colombia and completed his residency in Internal Medicine at the University of Connecticut and his fellowship in hematology/oncology at the University of North Carolina at Chapel Hill.

Dr. Escobar has been involved in many clinical studies, resulting in a range of publications and is a member of several professional organisations. His main research interests are in haemophilia, congenital and acquired inhibitors, and other coagulation deficiencies.

Mark T. Reding, MD

Dr. Reding is Director of the Center for Bleeding and Clotting Disorders at the University of Minnesota Medical Center and an Associate Professor of Medicine in the Division of Hematology, Oncology, and Transplantation at the University of Minnesota in Minneapolis, Minnesota. He is also an attending physician on the Inpatient Hematology Consult Service and the Outpatient Hematology Clinic.

Dr. Reding earned his medical degree at the University of Minnesota Medical School and completed an internal medicine residency at the University of Minnesota. He was a chief resident in internal medicine at the Minneapolis VA Medical Center and completed a hematology/oncology fellowship at the University of Minnesota.

Dr. Reding is a recipient of the Outstanding Clinical Mentor Award from the Division of Hematology, Oncology, and Transplantation at the University of Minnesota; the Clinical Excellence Award from the Department of Medicine at the University of Minnesota, and the Clinical Instructor of the Year Award from the Department of Physician Assistant Studies at Augsburg University in Minneapolis.

In addition to clinical and teaching duties, Dr. Reding has laboratory research experience investigating the mechanisms of the immune response to factor VIII and has served as principle investigator of many clinical trials in hemophilia. He is a frequent lecturer both nationally and internationally.

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Dr. Escobar reports his institution, The University of Texas, participates in research sponsored by American Thrombosis and Hemostasis Network (ATHN); Novo Nordisk; OPKO Biologics; Pfizer Inc; Sanofi; Takeda Pharmaceuticals U.S.A., Inc.; and UniQure. He serves on the advisory committee for Genentech, Inc./Roche; National Hemophilia Foundation (NHF); Novo Nordisk; Sanofi; Takeda Pharmaceuticals U.S.A., Inc. He is a consultant for Genentech, Inc.; Novo Nordisk; Pfizer Inc.; Takeda Pharmaceuticals U.S.A., Inc.; U.S. Food and Drug Administration. (FDA)

Dr. Reding reports he receives research support from Bayer Corporation and BioMarin. He serves on the advisory committee for Bayer Corporation; Genentech, Inc.; Novo Nordisk; Sanofi Genzyme and Takeda Pharmaceuticals U.S.A., Inc.

Howard Bliwise, MD (peer reviewer) has no disclosures to report.

Mae Ochoa, RPh (peer reviewer) has no disclosures to report.

Kavitha Ramachandran, PhD (planning committee) has no disclosures to report.

Evan Luberger (planning committee) has no disclosures to report.

Jan Perez (planning committee) has no disclosures to report.

Sharon Tordoff (planning committee) has no disclosures to report.

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One Size Does Not Fit All:
Using Population
Pharmacokinetics for
Tailored Hemophilia Care

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Alfonso Iorio, MD, PhD, FRCP(C)

Professor, Department of Health Research Methods, Evidence, and Impact (HEI), Bayer Endowed Chair for Clinical Epidemiology and Bleeding Disorders, McMaster University
Hamilton, ON, Canada

Alfonso Iorio, MD, PhD, FRCP(C)
Disclosures

- ***Research/Grants:*** Bayer Inc.; F. Hoffmann-La Roche Ltd; Novo Nordisk; Octapharma; Pfizer Inc.; and Takeda Pharmaceutical Company Limited.

CME Outfitters
CONTINUING MEDICAL EDUCATION

Miguel A. Escobar, MD

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University of Texas M.D. Anderson Cancer Center
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Miguel A. Escobar, MD
Disclosures

- ***Research/Grants:*** American Thrombosis and Hemostasis Network (ATHN); Novo Nordisk; OPKO Biologics; Pfizer Inc; Sanofi; Takeda Pharmaceuticals U.S.A., Inc.; UniQure
- ***Consultant:*** Genentech, Inc.; Novo Nordisk; Pfizer Inc.; Takeda Pharmaceuticals U.S.A., Inc.; U.S. Food and Drug Administration (FDA)
- ***Advisory Board:*** Genentech, Inc./Roche; National Hemophilia Foundation (NHF); Novo Nordisk; Sanofi; Takeda Pharmaceuticals U.S.A., Inc.

CME Outfitters
CONTINUING MEDICAL EDUCATION

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University of Minnesota Medical Center
Minneapolis, MN

Mark T. Reding, MD

Disclosures

- ***Research/Grants:*** Bayer Corporation; BioMarin
- ***Advisory Board:*** Bayer Corporation; Genentech, Inc.; Novo Nordisk; Sanofi Genzyme and Takeda Pharmaceuticals U.S.A., Inc.

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Learning Objective 1

Summarize the comparative PK data and the clinical significance of popPK studies on factor VIII replacement therapies.

Hemophilia: Overview

- Hemophilia refers to deficiencies of factors VIII and IX
- Both are due to mutations in the genes encoding factor VIII (hemophilia A) or factor IX (hemophilia B)
- Both are inherited in an X-linked recessive pattern
  - 30% of patients have no family history
- Heterozygous females (i.e. carriers) can be symptomatic
  - Females can be asymptomatic carriers, or when symptomatic, mild (most often) or moderate (very rare) hemophilia patients, depending on their factor level.

Centers for Disease Control and Prevention. 2019. https://www.cdc.gov/ncbddd/hemophilia/data.html.

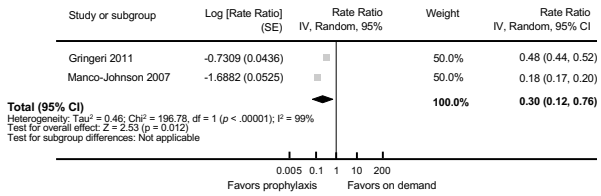
Hemophilia: Overview

- The prevalence (per 100,000 males) of hemophilia is
  - 17.1 cases for all severities of hemophilia A,
  - 6.0 cases for severe hemophilia A
  - 3.8 cases for all severities of hemophilia B
  - 1.1 cases for severe hemophilia B

Iorio A, et al. *Ann Intern Med.* 2019;171:1-8.

Why Prophylaxis?

Comparison 2 Standard prophylaxis versus on-demand treatment (factor VIII concentrate), Outcome 1 Bleed frequency



df = degree of freedom; IV = intravenous; SE = standard error.
Iorio A, et al. *Cochrane Database Syst Rev*. 2011;9(9):CD003429.

How are EHL FVIII Drugs Different?

Compared to SHL drugs:

- Half-life prolongation not what was hoped for
- PK differences may not be clinically meaningful for all patients (especially kids)

Compared to each other:

- PK differences are small
- May or may not be clinically meaningful
- Head to head data may help distinguish

EHL = extended half-life; PK = pharmacokinetic; SHL = standard half-life.
Pipe SW. Hematology Am Soc Hematol Educ Program. 2016;2016:650–656; Berntorp E, Andersson NG. *Semin Thromb Hemost*. 2016;42:518–525.

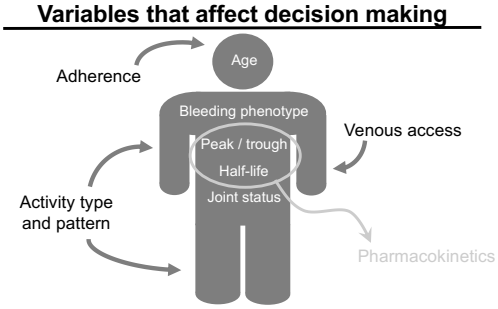
EHL Products for Hemophilia A

	Efmoroctocog alfa (Eloctate)	Rurioctocog alfa pegol (Adynovate)	Damoctocog alfa pegol (Jivi)	Turoctocog alfa pegol (Esperoct)
FDA approval	2014 Adults and Children	2015 Adults and Children	2018 Adults and Adolescents, previously treated	2019 (n/a until after 2020) Adults and Children
rFVIII design	B domain deleted	Full length	B domain deleted	B domain truncated
Modification to extend half life	Fc fusion	PEG (20 kDa)	PEG (60 kDa)	PEG (40 kDa)
Half life (hours) (adult)	19.7 +/- 2.3	14.7 +/- 3.8	17.9 +/- 4.0	~19
Dosing (adult)	50 U/kg every 4 days Adjust: 25-65 U/kg every 3-5 days	40-50 U/kg 2x/week	30-40 U/kg 2x/week Adjust: 40-60 U/kg every 5 days; may be further adjusted to less or more frequent dosing	50 U/kg every 4 days Adjust: less or more frequent dosing based on bleeding episodes
Efficacy	• All highly effective when used as prophylaxis with ABRs that are similar to each other and similar to non-EHL FVIII • Also effective for breakthrough bleeds and perioperative management			
Safety	• Generally well tolerated with no unexpected safety issues			

ABRs = annual bleeding rate; Fc = flow cytometry; kDa = kilodalton; PEG = polyethylene glycol.
Iorio A. *Hematology Am Soc Hematol Educ Program*. 2017;2017(1):595–604.

Is an EHL Factor Product the Right Choice for THIS Patient?

Variables that affect decision making



Application of PK in Hemophilia Management

- Prevention of bleeding during surgery
- Prophylaxis
- Guide tapering of ITI treatment and assessment of response

ITI = immune tolerance induction.
Iorio A. *Hematology Am Soc Hematol Educ Program*. 2017;2017(1):595–604.

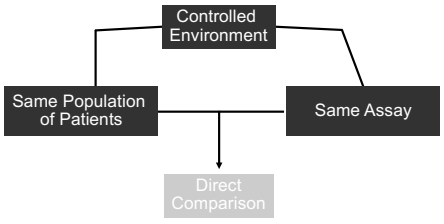
Rationale for Using PK to Individualize Hemophilia Treatment

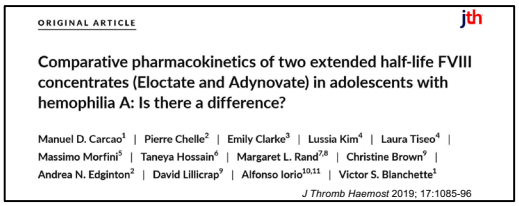
- Variability in PK among different concentrates
- Variability in PK among different individual patients
- Variability in PK in the same individual over time and across different concentrates

Iorio A. *Hematology Am Soc Hematol Educ Program*. 2017;2017(1):595–604.

Advantages of Head-to-Head Crossover Studies

Establishes a level playing-field between products





ORIGINAL ARTICLE

jth

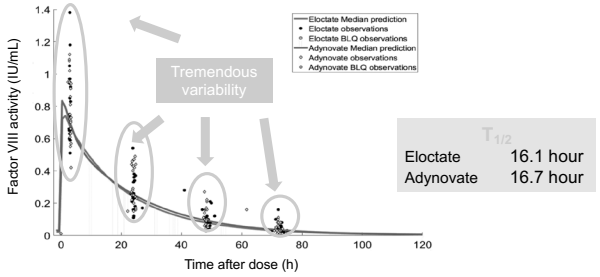
Comparative pharmacokinetics of two extended half-life FVIII concentrates (Eloctate and Adynovate) in adolescents with hemophilia A: Is there a difference?

Manuel D. Carcao[1] | Pierre Chelle[2] | Emily Clarke[3] | Lussia Kim[4] | Laura Tiseo[4] | Massimo Morfini[5] | Taneya Hossain[6] | Margaret L. Rand[7,8] | Christine Brown[9] | Andrea N. Edginton[2] | David Lillicrap[9] | Alfonso Iorio[10,11] | Victor S. Blanchette[1]

J Thromb Haemost 2019; 17:1085-96

- Cohort of 25 Canadian boys, aged 12 to 18 years, required to switch from Eloctate to Adynovate
- FVIII levels sampled at 3, 24, 48, and 72 hours after a regular prophylactic infusion of each product
- PK parameters (half-life, clearance, and time to 5%, 3%, and 1%) determined by WAPPS-Hemo PK tool

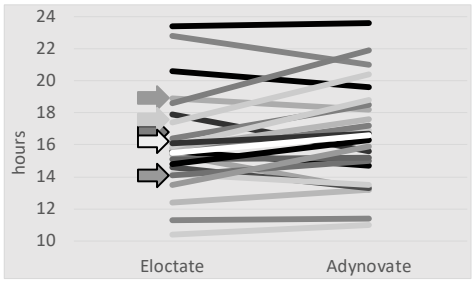
Eloctate vs. Adynovate: Half Life



	$T_{1/2}$
Eloctate	16.1 hour
Adynovate	16.7 hour

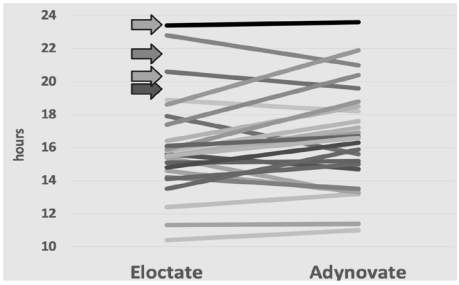
BLQ = below the limit of quantification; h = hour; IU/mL = international units per milliliter.
Carcao MD, et al. *J Thromb Haemost.* 2019; 17:1085-96

Eloctate vs. Adynovate: Half-life in Individual Patients



Carcao MD, et al. *J Thromb Haemost* 2019; 17:1085-96.

Eloctate vs. Adynovate: Half-life in Individual Patients



Carcao MD, et al. J Thromb Haemost 2019; 17:1085-96.

Eloctate vs. Adynovate: Results

- All 9 blood group O subjects had half-lives shorter than the median
- Among the 8 subjects with the shortest half-life, 7 were blood group O
- No subject had a long half-life with one product and a short half-life with the other, or vice versa

- **Conclusions:**
  - Eloctate and Adynovate have almost identical PK parameters (in adolescents aged 12 to 18 years)
  - When switching from one to another, no change in prophylaxis regimen is needed

Carcao MD, et al. *J Thromb Haemost.* 2019;17:1085-1096.

Annals of Hematology (2019) 98:2035–2044
https://doi.org/10.1007/s00277-019-03747-2

ORIGINAL ARTICLE

Check for updates

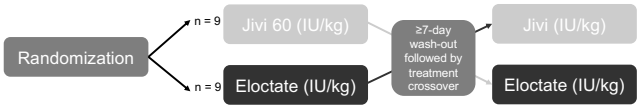
Direct comparison of two extended-half-life recombinant FVIII products: a randomized, crossover pharmacokinetic study in patients with severe hemophilia A

Anita Shah[1] · Alexander Solms[2] · Sara Wiegmann[3] · Maurice Ahsman[4] · Erik Berntorp[5] · Andreas Tiede[6] · Alfonso Iorio[7] · Maria Elisa Mancuso[8] · Tihomir Zhivkov[9] · Toshko Lissitchkov[9]

Received: 14 February 2019 / Accepted: 15 June 2019 / Published online: 24 June 2019

- Randomized, open-label, single-dose, crossover study
- PK profiles of Jivi and Eloctate compared
- Previously treated males, aged 18 to 65 years, severe hemophilia A, no history of inhibitor

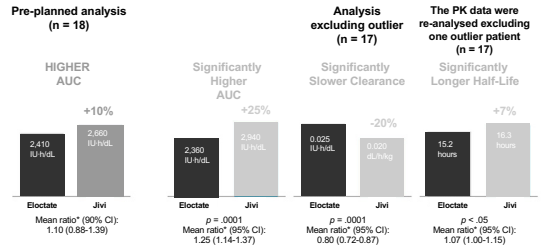
Jivi vs. Eloctate: Study Design



- 18 subjects randomized
- Received a single dose of 60 IU/kg
- At least 7-day washout before treatment crossover
- PK samples collected pre-dose, and at 11 time points from 15 minutes to 120 hours post-dose

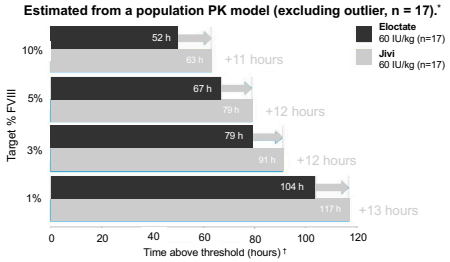
Shah, et al. *Ann Hematol.* 2019;98:2035-2044.

Jivi vs. Eloctate: Comparative PK Results



* Geometric least squares
AUC = area under the curve; CI = confidence interval; Fc = fragment crystallizable region of human immunoglobin.
Shah A, et al. *Ann Hematol.* 2019;98(9):2035-2044.

Time Spent Above Target FVIII Threshold Levels



* A population PK model was developed based on data obtained by a one-stage assay to simulate time to reach FVIII thresholds of 1, 3, 5, and 10% FVIII.
† Median time to threshold
Shah A, et al. *Ann Hematol.* 2019;98(9):2035-2044.

Jivi vs. Eloctate – Conclusions

- Jivi had a superior PK profile compared to Eloctate
- Real-world data needed to determine whether these PK advantages provide additional bleed protection

Extended Half-life FVIIIs: Are They All the Same?

Study 1: Jivi vs. Eloctate in a head-to-head crossover study.

Annals of Hematology
https://doi.org/10.1007/s00277-019-03747-2

ORIGINAL ARTICLE

Direct comparison of two extended-half-life recombinant FVIII products: a randomized, crossover pharmacokinetic study in patients with severe hemophilia A

Anita Shah[1] · Alexander Solms[2] · Sara Wiegmann[3] · Maurice Ahsman[4] · Erik Berntorp[5] · Andreas Tiede[6] · Alfonso Iorio[7] · Maria Elisa Mancuso[8] · Tihomir Zlotkov[9] · Toshiko Lisitchkov[9]

Received: 14 February 2019 / Accepted: 15 June 2019
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Jivi was demonstrated to have an improved PK profile.

Study 2: Eloctate vs. Adynovate in an observed crossover study

Received: 2 March 2019 | Accepted: 17 April 2019
DOI: 10.1111/jth.14449

ORIGINAL ARTICLE

jth

Comparative pharmacokinetics of two extended half-life FVIII concentrates (Eloctate and Adynovate) in adolescents with hemophilia A: Is there a difference?

Manuel D. Carcao[1] | Pierre Chelle[2] | Emily Clarke[3] | Lussia Kim[4] | Laura Tiseo[4] | Massimo Morfini[5] | Taneya Hossain[6] | Margaret L. Rand[7,8] | Christine Brown[9] | Andrea N. Edginton[10] | David Lillicrap[9] | Alfonso Iorio[11,12] | Victor S. Blanchette[13,14]

PK profiles of Eloctate and Adynovate were not statistically different.

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Learning Objective 2

Apply popPK models to determine individualized dosing regimens for patients with hemophilia A.

Advantages of Tailored Dosing

- Reduction of factor administration
- Financial impact to health system
- FVIII/FIX levels are based on peaks and troughs and not IVR
- Maximize efficacy

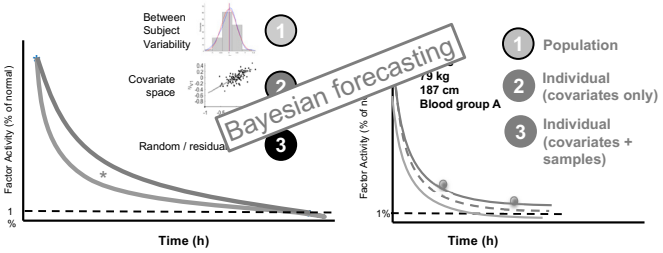
IVR = in vivo recovery.
Iorio A. *Hematology Am Soc Hematol Educ Program.* 2017;2017(1):595–604; Hazendonk HCAM, et al. *Blood Rev.* 2018;265-271

Challenges of Individual PK Studies

- Complexity
  - Large number of samples over several days
  - Technical complexity
  - Need for wash-out period
  - Need for concentrate-specific PK models
  - Bayesian calculation power
  - Time investments by patients
  - Peri-operative PK may not be available

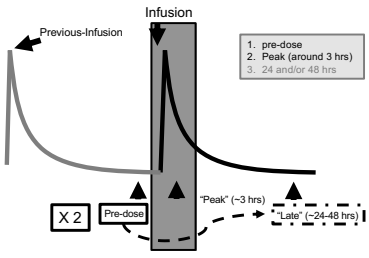
Iorio A. *Hematology Am Soc Hematol Educ Program*. 2017;2017(1):595–604; Hazendonk HCAM, et al. *Blood Rev*. 2018;265-271.

Estimating an Individual PK Profile in a Routine Clinical Practice Setting



McEneny-King A et al. *Thromb Res*. 2018;170(May):53–59.
McEneny-King A et al. *Pharmaceutics*. 2017;9(4):47; McEneny-King A et al. *J Pharmacokinet Pharmacodyn*. 2019;46(5):411-426.

Clinically Feasible vs. Optimal Sampling Times



Collins P, et al. *Haemophilia*. 2016;22(4):487-498; Ragni MV, et al. *J Thromb Haemos*t. 2018;16(7):1437-1441.

WAPPS HEMO

- Web-Accessible Population Pharmacokinetic Service – Hemophilia
- Multi-center prospective project based on a population PK application hosted on a web-accessible platform developed and run by the Health Information Research Unit at McMaster University (Alfonso Iorio, MD, PhD)
- Website (www.wapps-hemo.org), launched in July 2015

WAPPS-Hemo. 2020. https://www.wapps-hemo.org/default.aspx.

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Learning Objective 3

Integrate approaches for SDM to develop patient-centered, PK-based treatment plans for patients with hemophilia A.

NHF-McMaster recommendations Panel Questions

- **Q1:** Should integrated care versus non-integrated care be used for people with hemophilia?
  - In people with hemophilia with inhibitors, and those at high risk for inhibitor development, the same recommendation was graded as strong
  - Integrated care model should be used over non-integrated care models for people with hemophilia; conditional
- **Q2:** For individuals with hemophilia, should a hematologist, a specialized hemophilia nurse, a physical therapist, a social worker, or round-the-clock access to a specialized coagulation laboratory be part of the integrated care team, versus an integrated care team with a lesser complement?
  - A hematologist, a specialized hemophilia nurse, a physical therapist, a social worker, and round-the-clock access to a specialized coagulation laboratory should be part of the integrated care team, over an integrated care team that does not include all these components; conditional

NHF = National Hemophilia Foundation.
Pai M, et al. *Haemophilia*. 2016;22 Suppl 3:6-16.

Principles of SDM

Shared decision making (SDM) has been defined as: “an approach where clinicians and patients share the best available evidence when faced with the task of making decisions, and where patients are supported to consider options, to achieve informed preferences.”

SDM = shared decision-making.
Elwyn G, et al. *BMJ*. 2010;341:c5146.

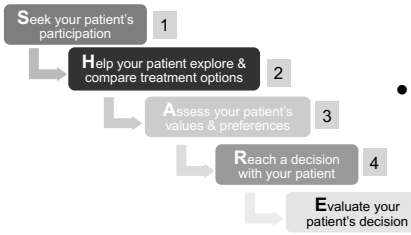
Principles of SDM

- Patient-centered care
  - Recognizes and respects patient values
  - Helps patients understand their medical condition and potential outcomes
  - Helps patients understand the risks, benefits, and alternative options for treatment
  - Engages patients in the decision-making process

Barry MJ, Edgman-Levitan S. *New Engl J Med*. 2012;366(9):780–781.

Models of SDM in Hemophilia Care

5 Essential Steps of SDM



- **Benefits to Health Care Professionals:**
  - Improved quality of care delivered
  - Increased patient satisfaction
- **Benefits to Patients:**
  - Improved patient experience of care
  - Improved patient adherence to treatment recommendations

Adapted from AHRQ. 2018. https://www.ahrq.gov/health-literacy/curriculum-tools/shareddecisionmaking/index.html

Importance of Patient Education

- HTCs
- Local hemophilia chapters
- National Hemophilia Foundation (NHF)
- Hemophilia Foundation of America (HFA)
- World Federation of Hemophilia (WFH)
- Other organizations

SMART Goals

Specific, **M**easurable, **A**ttainable, **R**elevant, **T**imely

- Implement strategies for SDM in clinical practice
- Translate data from head-to-head comparative studies on EHL products in the management of patients with hemophilia
- Adopt a popPK approach to simplify and tailor treatment in practice

Additional Resources

Visit **www.cmeoutfitters.com** for clinical information and certified educational activities

Questions for Faculty?

Type a question in the box under the presentation

OR

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After the live webcast, this activity will be available as a web archive at **www.cmeoutfitters.com**

Coming Up...

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AFTER THE SHOW

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AFTER THE SHOW

Questions & Answers

To receive CME/CE credit for this activity, participants must complete the post-test and evaluation online.

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   (It's ok if you miss answering a question or get them wrong, you can still claim MOC)
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3. Be sure to fill in your **ABIM ID number** and **DOB** (MM/DD) on the evaluation, so we can submit your credit to ABIM.

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   (It's ok if you miss answering a question or get them wrong, you can still claim MOC)
2. Complete your post-test and evaluation at the conclusion of the webcast
3. Be sure to fill in your **ABP ID number** and **DOB** (MM/DD) on the evaluation, so we can submit your credit to ABIM.

PART 2 MOC

CME for MIPS Improvement Activity

How to Claim this Activity as a CME for MIPS Improvement Activity

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- Over the next 90 days, actively work to incorporate improvements in your clinical practice from this presentation.
- Complete the follow-up survey from CME Outfitters in approximately 3 months

CME Outfitters will send you confirmation of your participation to submit to CMS attesting to your completion of a CME for MIPS Improvement Activity.

CME for MIPS IMPROVEMENT ACTIVITY

This continuing education activity is provided by CME Outfitters

TV-108-030320-61

Attendance Form for Groups

Please complete and FAX to **614.929.3600**

Activity Title and Faculty:

One Size Does Not Fit All: Using Population Pharmacokinetics for Tailored Hemophilia Care

with Alfonso Iorio, MD, PhD, FRCP(C) (Moderator); Miguel A. Escobar, MD; Mark T. Reding, MD

Site/Institution Name: ______________________________

Practice Setting: ❑ Office-based ❑ Hospital ❑ Clinic ❑ Managed Care ❑ Small Group Practice (less than 5) ❑ Large Group Practice (more than 5) ❑ Other: ______________

Address: ______________________________

City: ______________ State: ________ ZIP: ______________

Site Coordinator: ______________ Phone: ______________

Fax: ______________ Email: ______________

Completion Date: ______________ We participated in: ______________

Attendee Name (please print)	Please Circle Discipline
______________________	MD DO PA NP RN Pharm Other: __________
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Questions? Call 877.CME.PROS. Thank you for participating in this continuing education activity!