HemoNED
Dutch Hemophilia Registry

Dutch Hemophilia Registry
Annual Report 2023

HemoNED Foundation
May 2024

https://hemoned.nl/en

Contents

Introduction

This annual report describes data from the Dutch Hemophilia Registry ('HemoNED Registry') and the VastePrik digital infusion log for home treatment available on 31 December 2023.

HemoNED Foundation

The HemoNED Registry & VastePrik are managed by the HemoNED foundation. The aim of the HemoNED foundation is described as follows:
"The Foundation aims to set up a nationwide registry of people with hemophilia and related disorders including data about their disease, treatment and complications, to perform scientific research, to publish reports and to provide education to contribute to an improvement of the quality of care."
The Steering Committee of HemoNED, consisting of representatives from all the Dutch Hemophilia Treatment Centers (HTCs), the Dutch Hemophilia Patient Society (NVHP) and the Dutch Hemophilia Nurses Society (NVHV), is responsible for assessing and approving the annual reports and data applications.
The procedure for data applications can be found on the HemoNED website Data application HemoNED.

Dutch Hemophilia Registry

The Dutch Hemophilia Registry was established in 2017 as a joint initiative from the Dutch Hemophilia Treaters Society (NVHB), the NVHP and the NVHV. For rare diseases like hemophilia, for which there is an effective but expensive treatment, a national hemophilia registry is an important tool for monitoring treatment and improving quality of care. The HemoNED Registry collects information about the diagnosis, treatment and treatment outcomes of people with hemophilia or related disorders in the Netherlands. The anonymized registry data are used for overview reports, scientific research and efficacy and safety studies of drugs. Health care providers manually complete the registry with relevant medical information and part of the registry is automatically filled with data from Electronic Health Records of the HTCs. The registry database has built-in validation checks to ensure quality of data.

VastePrik

The digital infusion log VastePrik was launched in 2018 both as an app for smartphones and a web page. Participants can register their home treatment (infusions and possible bleeds). VastePrik is mainly used by participants on prophylaxis. The health care provider also has access to the VastePrik data and overview reports of his/her patient through a secured online web page, to evaluate and adjust home treatment if necessary. In agreement with the patient, health care providers can add or change infusions or bleeds in VastePrik. In 2023, promotional activities were continued, to increase the use of VastePrik. Short instructional videos, that explain clearly how to use VastePrik, play an important role in VastePrik promotion Video's VastePrik | Stichting HemoNED.

Inclusion

All national certified HTCs routinely invite possible participants for the HemoNED Registry:

- Amsterdam UMC location AMC
- Erasmus MC Rotterdam
- LUMC Leiden & HagaZiekenhuis The Hague
- HTC NEM: Radboudumc Nijmegen & MUMC Maastricht & MMC Veldhoven/ Eindhoven
- UMC Groningen
- UMC Utrecht (Van Creveld Clinic)

People with one of the following diagnoses will be eligible to participate in the HemoNED Registry:

- Hemophilia A or B
- Carriers with hemophilia A or B, coagulation factor levels ≤ 50%
- Von Willebrand disease, VWFag and/or VWFact and/or VWFrcf and /or FVIII levels ≤ 30%, and/or dependent on clotting factor concentrates
- Rare factor deficiencies and platelet disorders, prophylactic treatment and/or dependent on clotting factor concentrates or infusion with thrombocytes at surgery/trauma
- Acquired clotting factor disorders

Adverse events

All HTCs enter adverse events and complications for people with bleeding disorders in the HemoNED Registry. Quarterly, HemoNED provides an overview of reported events to the NVHB, the HTCs, the European Haemophilia Safety Surveillance (EUHASS) and the Netherlands Pharmacovigilance Centre Lareb.

Data analysis

The HemoNED project office analyzed the 2023 data on behalf of the Steering Committee. The statistical software SPSS was used to perform describing statistical analyses to analyze and describe the data. The HemoNED foundation ensures that all information provided for research and publication is fully anonymized. To further prevent indirect traceability this annual report presents, wherever possible, cells with values lower than 10 as '<10' or values have been aggregated with other (sub)categories.

Publications

HemoNED provided numbers for the Annual Global Survey 2022 of the World Federation of Hemophilia in collaboration with NVHP: Annual Global Survey -WFH -World Federation of Hemophilia.

Organisation

Board members HemoNED Foundation in 2023:

- **Chair: Dr. S.C. (Samantha) Gouw,** Pediatric hematologist Amsterdam UMC Hemophilia Treatment Center
- **Secretary: Dr. M.H.E. (Mariëtte) Driessens,** Delegate Dutch Hemophilia Patient Society (NVHP)
- **Treasurer: Prof. Dr. K. (Karina) Meijer,** Internist-hematologist, UMC Groningen Hemophilia Treatment Center

The following representatives were part of the HemoNED Steering Committee in 2023:

- **Dr. S.C. (Samantha) Gouw,** chair Steering Committee, Amsterdam UMC Hemophilia Treatment Center
- **Dr. K. (Kathelijn) Fischer,** Van Creveld Clinic UMC Utrecht
- **Dr. M.J.H.A. (Marieke) Kruip,** Erasmus MC Rotterdam Hemophilia Treatment Center
- **Dr. B.A.P. (Britta) Laros-van Gorkom,** Hemophilia Treatment Center Radboudumc Nijmegen, MUMC+ Maastricht & MMC Eindhoven/ Veldhoven
- **Dr. M.A. (Marjet) Stein-Wit,** UMC Groningen Hemophilia Treatment Center
- **Dr. P.L. (Paul) den Exter,** Hemophilia Treatment Center LUMC Leiden & HagaZiekenhuis The Hague
- **Mr. S.L.A. (Stephan) Meijer,** Dutch Hemophilia Patient Society (NVHP)
- **Mrs. M. (Marlène) Beijlevelt,** Dutch Hemophilia Nurses Society (NVHV)

The HemoNED Project Office in 2023:

- **Ms. C.M.E. (Caroline) van Veen,** Project coördinator HemoNED
- **Mrs. E.M. (Liesbeth) Taal,** Data manager HemoNED

Results Dutch Hemophilia Registry

General

Figure 1a Number of unique participants in the HemoNED registry by gender

Total participants

Total completed 2825 (100%)

Gender

Man 2065 (73%)

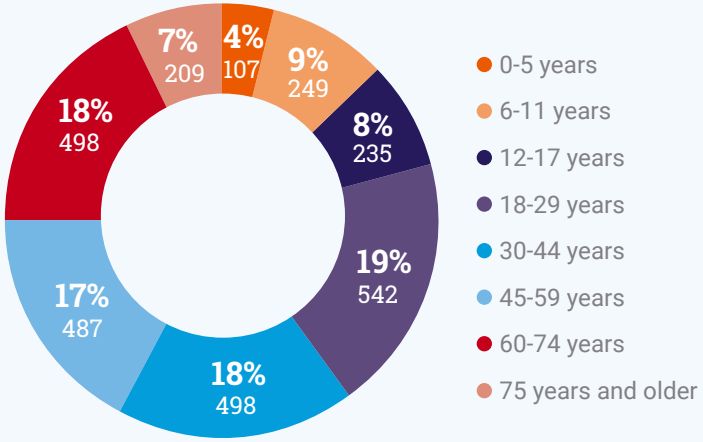
Woman 760 (27%)

General

Figure 1b Number of unique participants in the HemoNED registry by age and diagnosis

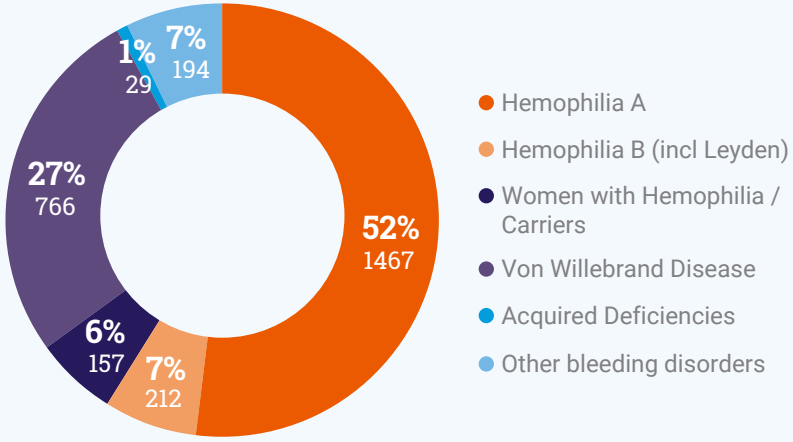
Age

Total completed **2825** (100%)



Diagnosis

Total completed **2825** (100%)



Mortality

2018-2022: 68 participants died. The data of these participants are excluded.

2023: 19 participants died. The data of these participants are included in this report.

General

Figure 2a Number of participants included in the HemoNED registry until 31 December 2023

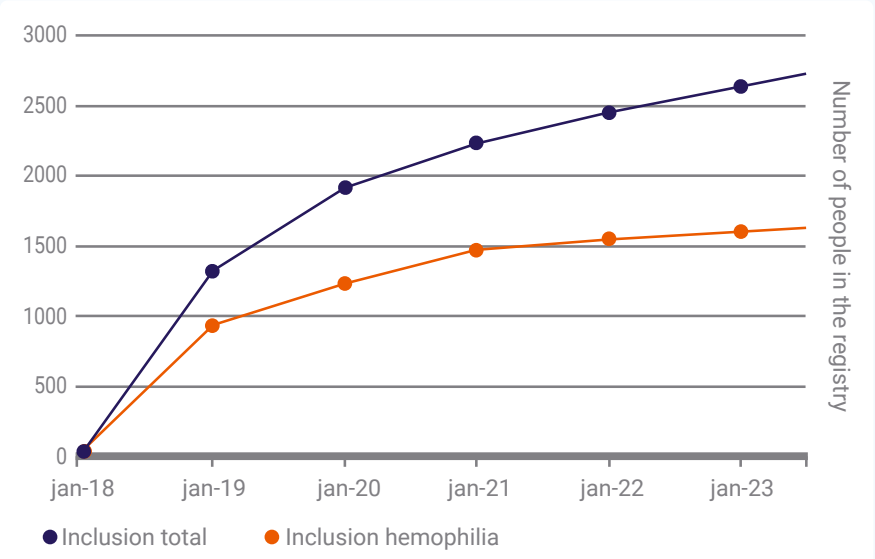
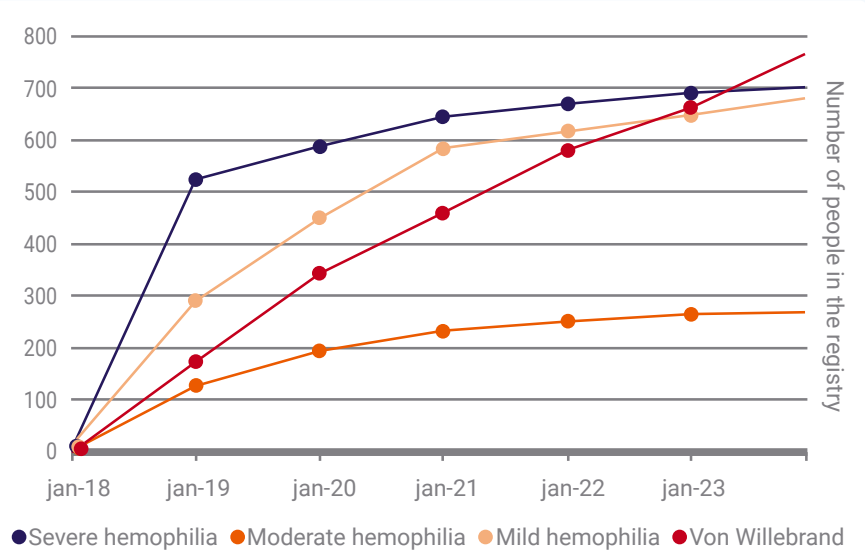


Figure 2b Number of participants with severe, moderate and mild hemophilia and Von Willebrand disease included in HemoNED until 31 December 2023



Hemophilia

Diagnosis and demographic data

Table 1 Number of participants in the HemoNED registry with diagnosis Hemophilia

Diagnosis	Number	%
Hemophilia A	**1467***	**100**
Severe	613	42
Moderate	236	16
Mild	617	42
Severity unknown	1	

Diagnosis	Number	%
Hemophilia B	**212****	**100**
Severe	91	43
Moderate	34	16
Mild	64	30
Leyden	23	11

Diagnosis	Number	%
Hemophilia Carriers	**157**	**100**
Hemophilia A	115	73
Hemophilia B	41	26
Hemophilia B	1	1

* 1441 men, 26 women
** 203 men, 9 women

Hemophilia

Figure 3a Participants with Hemophilia A by severity

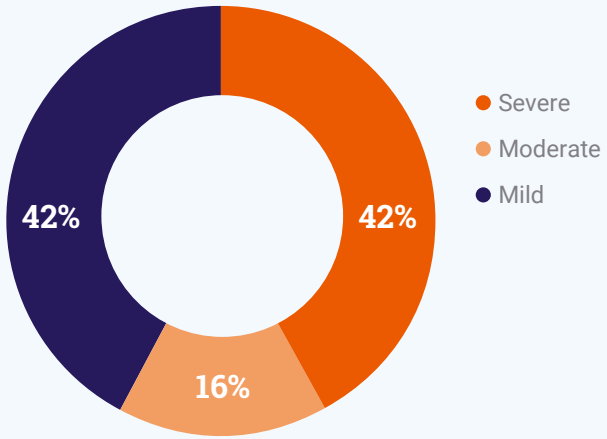
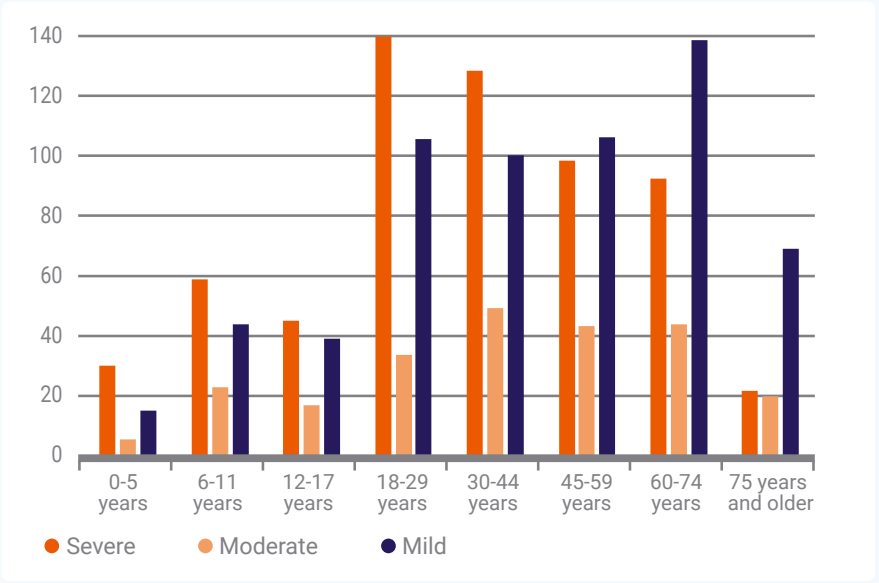


Figure 3b Participants with Hemophilia A by age and severity



Hemophilia

Figure 4a Participants with Hemophilia B by severity

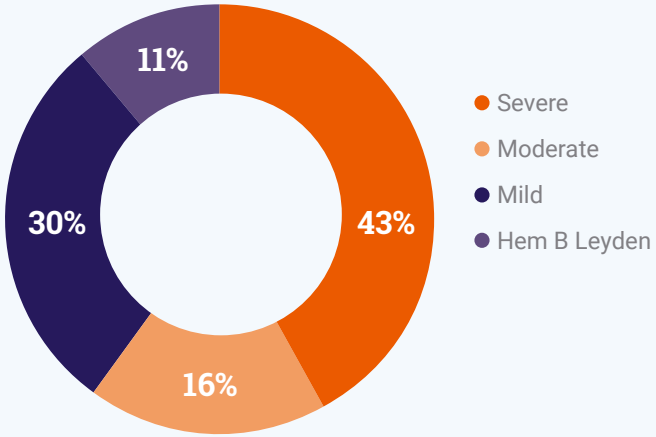
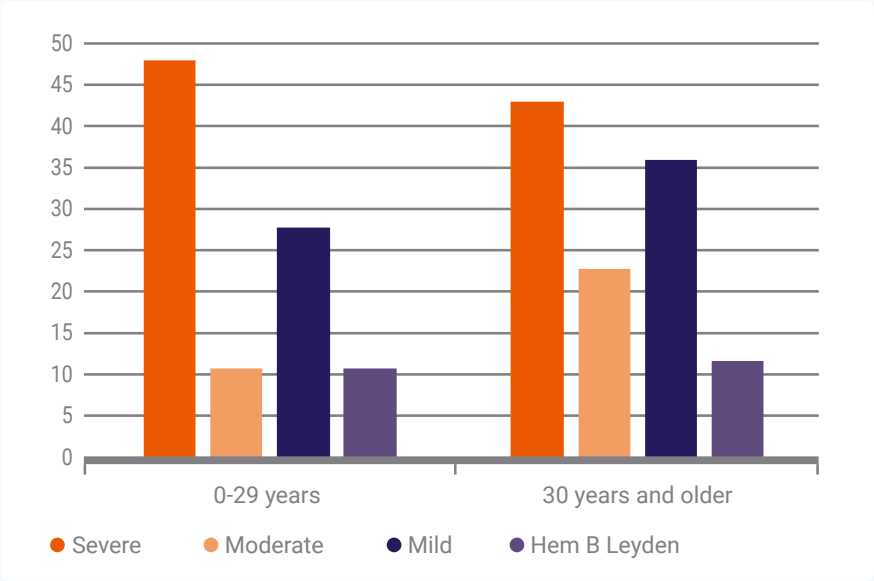


Figure 4b Participants with Hemophilia B by age and severity



Hemophilia

Viral infections

Table 2 Number of participants, born before 1992, with diagnosis Hemophilia that suffer(ed) from a blood-borne viral infection

Viral infection	Number	%
Total participants with hemophilia born before 1992	**978**	
Not completed	**207**	
Total completed	**771**	**100**
Unknown*	46	8
No	351	50
Yes**	374	42

Viral infection	Number	%
HIV infection	**27**	

Viral infection	Number	%
Hepatitis B infection	**90**	

Viral infection	Number	%
Hepatitis C infection	**347**	**100**
Successfully treated	278	80
Spontaneously cleared	41	12
Still infected	21	6
Unknown	7	2

* Classified by a health care provider as 'Unknown'.
** Participants may (have) suffer(ed) from more than one infection.

Inhibitors

Table 3 Inhibitor status of participants with diagnosis Hemophilia A or B

Inhibitors and Hemophilia A	Number	%
Total completed*	**1259**	**100**
Never	1069	85
Current or past inhibitor	173	14
Unknown**	17	1

Inhibitors and Hemophilia B	Number	%
Total completed***	**177**	**100**
Never	169	95
Current or past inhibitor	4	2
Unknown**	4	2

* Data available for 1259 of 1467 participants with Hemophilia A.
** Classified by a health care provider as 'Unknown'.
*** Data available for 177 of the 189 participants with Hemophilia B.

Hemophilia

Treatment

Table 4 Number of participants with diagnosis Hemophilia A or B on prophylactic treatment

Hemophilia A	Number completed	Number on prophylaxis	% on prophylaxis
Total	**1466**	**659**	
Severe	613	592	97
Moderate	236	58	25
Mild	617	9	1

Hemophilia B	Number completed	Number on prophylaxis	% on prophylaxis
Total	**189**	**92**	
Severe	91	74	81
Moderate	34	15	44
Mild	64	3	5

Hemophilia

Table 5 All prescribed treatment products for participants with diagnosis Hemophilia A or B

Hemophilia A	Number
Total completed	**1988 (for 1456 participants)***
Product A	790
Product B	381
Product C	302
Product D	183
Product E	157
Product F	69
Product G	35
Product H	15
Product I	18
Product J	13
Product K	12
Other products**	13

Hemophilia B	Number
Total completed	**211 (for 211 participants)***
Product A	87
Product B	86
Product C	28
Other products**	10

* For 11 participants with Hemophilia A and 1 participant with Hemophilia B the treatment plan is missing; For some of the participants more than one treatment product was prescribed

** Number of prescriptions too small (< 10).

Hemophilia

Table 6 Number of participants with diagnosis Hemophilia A or B by type of product*

Hemophilia A	Number	%	Number on prophylaxis	%
Total completed	**1456**	**100**	**659**	**100**
Standard Half Life	907	62	169	26
Extended Half life	114	8	106	16
Non Replacement Therapy	381	26	381	58
Bypassing Agents	28	2	0	0
Plasma derived	17	1	<10	0
Only Desmopressin	<10	0	0	0
Other	<10	0	<10	0

Hemophilia B	Number	%	Number on prophylaxis	%
Total completed	**211**	**100**	**92**	**100**
Standard Half Life	114	54	11	12
Extended Half life	96	46	81	88
Other	<10	0	0	0

* If more than one product was prescribed to a participant, the main product is shown.

Figure 5 Number of persons with Hemophilia A on prophylactic treatment, by type of prescribed product since 2020

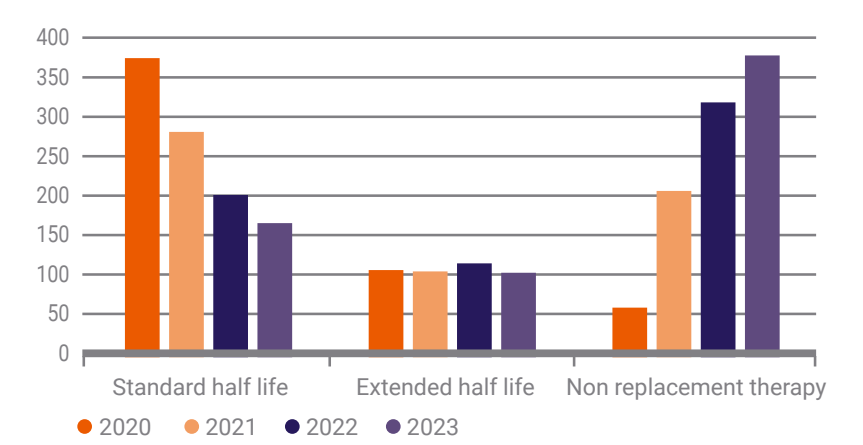


Table 7 Reason to start with Non Replacement therapy

Reason to start Non Replacement therapy	Number	%
Total completed	**384**	**100**
Preference of both patient and physician, non-specific	160	42
Recurring bleeds despite regular prophylaxis	90	23
Venous access problems	68	18
Inhibitor with bleeding tendency	35	9
Not being able to administer regular prophylaxis	16	4
Very active life (sports, travelling)	15	4

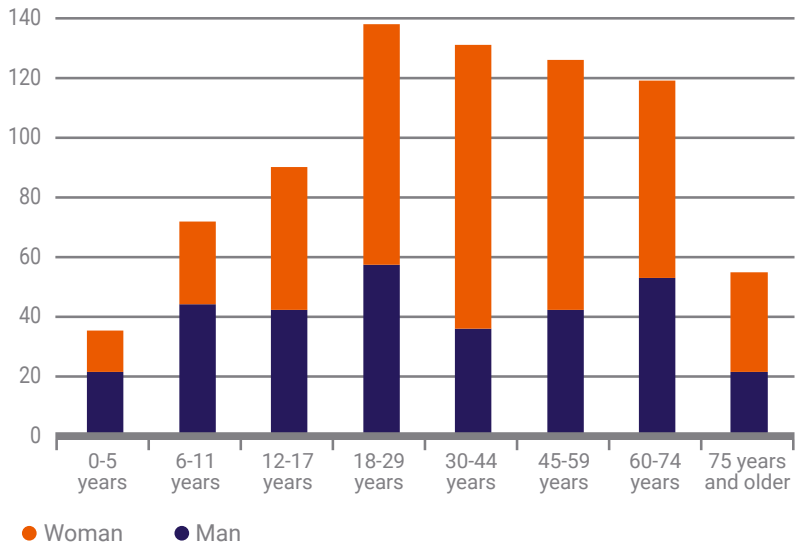
Von Willebrand Disease

Diagnosis and demographic data

Table 8 Number of participants with diagnosis Von Willebrand disease

Diagnosis	Number	%
Von Willebrand disease	**766**	**100**
Type 1	427	56
Type 2, no subtype	13	2
Type 2A	118	15
Type 2B	65	8
Type 2M	54	7
Type 2N	20	3
Type 3	37	5
Other/type unknown	32	4

Figure 6 Participants with Von Willebrand disease by age and gender



Von Willebrand Disease

Inhibitors

Table 9 Inhibitor status of participants with diagnosis Von Willebrand disease

Inhibitors and Von Willebrand	Number	%
Total completed	**378***	**100**
Never	338	92
Current or past inhibitor	<10	
Unknown**	31	8

* Data available for 378 of 766 participants with Von Willebrand disease.

** Classified by a health care provider as 'Unknown'.

Treatment

Table10 All prescribed treatment products for participants with diagnosis Von Willebrand disease

Products and Von Willebrand	Number
Total completed	**891 (for 766 participants)***
Product A	495
Product B	224
Product C	135
Product D	20
Other products**	17

* For 65 participants the treatment plan is missing; for some of the participants more than one treatment product was prescribed.

** Number of prescriptions too small (<10).

Table 11 Prescribed type of treatment products for participants with Von Willebrand disease on prophylaxis

Product types and Von Willebrand disease	Number
Total completed	**30**
Combination Factor VIII/VWF	27
Other products	3

Other bleeding disorders

Table 12 Number of participants in HemoNED registry with other bleeding disorders

Diagnosis	Number	%
Other bleeding disorder	**223**	**100**
Factor VII deficiency	31	14
Factor XI deficiency	27	12
Glanzmann's disease	21	9
Acquired Hemophilia A	20	9
Afibrinogenemia/hypofibrinogenemia/ hypodysfibrinogenemia/dysfibrinogenemia	16	7
Storage Pool Disease	16	7
Factor XIII deficiency	15	7
Factor V deficiency	10	4
Other bleeding disorders	67	37
Various other platelet disorders	44	
Rare factor deficiencies	10	
Other acquired bleeding disorders	9	
Other or disorder not specified	4	

Other platelet disorders include Gray platelet syndrome, Bernard-Soulier syndrome, May-Hegglin syndrome
Rare factor deficiencies include Factor II deficiency, combined Factor V and Factor VIII deficiency, Factor X deficiency
Other bleeding disorders include alpha-2-antiplasmin deficiency

Adverse events

Table 13 Adverse events and complications reported in HemoNED registry

Adverse events and complications	Number
Reported with event date in 2023	**47**
Mortality	23
Malignancy	13
Inhibitor	<10
Allergic or other acute event	<10
Thrombosis	<10
Other	<10

* Reports from HemoNED participants and non-participants (these are reported anonymously).

In 2023 29 persons with acquired Hemophilia A are reported in HemoNED. From a few persons with this diagnosis informed consent was asked and obtained for full registration in the HemoNED registry. These are also included in table 12.

Results VastePrik

Diagnosis and demographic data

Table 14 Diagnosis of VastePrik users (usage ≥1) in 2023

Diagnosis	Number	%
Total	**488**	**100**
Hemophilia A	**403**	**83**
Severe	327	
Moderate	60	
Mild	16	
Hemophilia B	**47**	**10**
Severe	39	
Moderate	<10	
Mild	<10	
Leyden	<10	
Von Willebrand Disease	**22**	**4**
Type 3	14	
Other types/unknown	<10	
Other bleeding disorders	**16**	**3**
Factor XIII deficiency	<10	
Factor VII deficiency	<10	
Afibrinogenemia / hypofibrinogenemia	<10	
Other	<10	

Diagnosis and demographic data

Figure 7 Age distribution of VastePrik users (N=488) in 2023

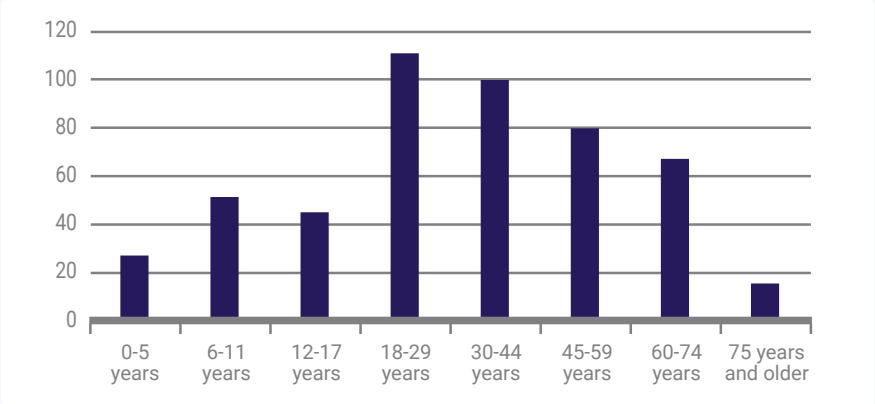
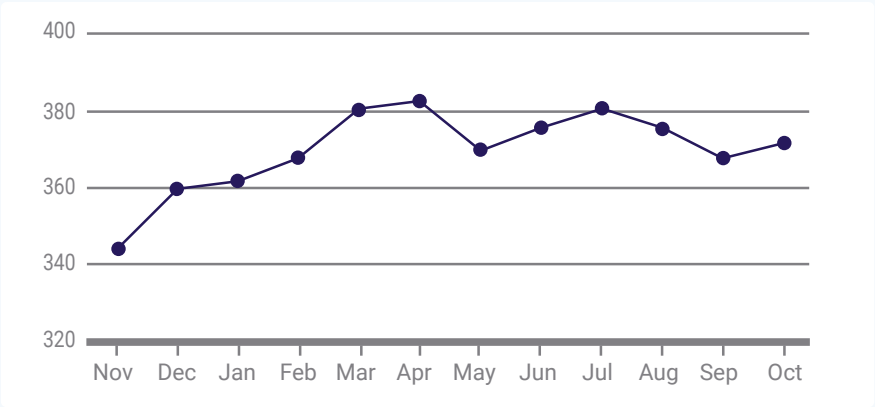


Figure 8 Number of unique VastePrik users each month 2022-2023*



* Data processor MRDM was not able to provide VastePrik data until dec 2023 in the first quarter of 2024.

Infusions and bleeds

(self-report of the VastePrik users)

Table 15 Number of infusions by reason reported in VastePrik (November 2022 - October 2023, 1 year)

Reason infusion	Number of infusions	%
Prophylaxis*	21046	90
Precaution (risky activities)	453	2
(Directly following a) Bleed**	931	5
Aftercare (after a bleed or surgery)	991	3
Total	**23421**	**100**

* Prophylaxis reported by 449 of 488 VastePrik users
** Bleeds reported by 257 of 488 VastePrik users
Joint bleeds reported by 152 of 488 VastePrik users

Table 16 Type of bleeds reported

Type	Number of bleeds	%
Joint	403	43
Muscle	198	21
Subcutaneous	82	9
Mucous membranes	61	7
Other	187	20
Total	**931**	**100**

Table 17 Location of joint bleeds

Location	Number of bleeds	%
Ankle	124	31
Elbow	109	27
Knee	57	14
Shoulder	36	9
Hip	18	5
Wrist	17	4
Other	42	10
Total	**403**	**100**

Table 18 Bleed severity

Severity	Number of bleeds	%
Low	325	35
Moderate	438	47
High	136	15
Missing	32	3
Total	**931**	**100**

* Self-report of the VastePrik user.

Table 19 Cause of bleeds

Cause	Number of bleeds	%
Spontaneously	316	34
Overload	223	24
Accident, trauma	219	24
Postoperative	18	2
Other or missing	155	17
Total	**931**	**100**

Table 20 Severity of joint bleeds

Severity	Number of bleeds	%
Mild	155	39
Average	186	46
Severe	57	14
Missing	5	1
Total	**403**	**100**

* Self-report of the VastePrik user.

Table 21 Cause of joint bleeds

Cause	Number of bleeds	%
Spontaneous	160	40
Overload	127	31
Accident, trauma	80	20
Postoperative	4	1
Other or missing	32	8
Total	**403**	**100**

Table 22 Reported bleeds in VastePrik (November 2022 - October 2023, 1 year) by users with hemophilia (selection: regular VastePrik users, mean registration of ≥ 1 prophylaxis infusion each month, N=246; 217 hemophilia A, 29 hemophilia B)

	Number of participants without bleeds	Number of participants with bleeds	Number of bleeds	A(J)BR*	
				median (IQR)**	range
All bleeds	104	142	469	1 (0-2)	0-23
Joint Bleeds	152	94	239	0 (0-1)	0-17

* Annualized (Joint) Bleeding Rate = median number of (joint) bleeds per person per year

** Interquartile Range

Table 23 Most recently used prophylaxis product by VastePrik users with Hemophilia

	Number of users	%
Hemophilia A	**367**	**100**
Product a	225	61
Product b	63	17
Product c	43	12
Product d	15	4
Product e	20	5
Other products*	<10	1

	Number of users	%
Hemophilia B	**45**	**100**
Product a	37	83
Other products*	<10	17

* Number of users to small (<10)

Table 24 Most recently used prophylaxis product by VastePrik users with Hemophilia, by type of product

	Number of users	%
Hemophilia A	**367**	**100**
Standard Half Life	78	21
Extended Half Life	63	17
Non Replacement Therapy	225	61
Bypassing Agents	<10	1

	Number of users	%
Hemophilia B	**45**	**100**
Standard Half Life	<10	7
Extended Half Life	42	93

Back to contents

Support

HemoNED received a grant/research support from the following sponsors:

- BioMarin Pharmaceutical Inc
- CSL Behring B.V.
- Octapharma Benelux N.V.
- Pfizer B.V.
- Roche Nederland B.V.
- Swedish Orphan Biovitrum BVBA/SPRL

- Stichting Haemophilia research grant

Contact

HemoNED Foundation
p/a LUMC, Staff Thrombosis and Hemostasis
Albinusdreef 2
2333 ZA Leiden
The Netherlands
E-mail: info@hemoned.nl
Website: https://hemoned.nl/en