Drugs (2023) 83:633–638
https://doi.org/10.1007/s40265-023-01866-9

ADISINSIGHT REPORT

Efanesoctocog Alfa: First Approval

Susan J. Keam[1]

Published online: 6 April 2023

Abstract
Efanesoctocog alfa (ALTUVIIIO™; [antihemophilic factor (recombinant), Fc-VWF-XTEN fusion protein-ehtl]), a von Willebrand factor (VWF) independent, recombinant DNA-derived Factor VIII (FVIII) concentrate, has been developed by Bioverativ Therapeutics, Inc (a Sanofi company) and Swedish Orphan Biovitrum AB (Sobi). Efanesoctocog alfa was approved in February 2023 in the USA for use in adults and children with hemophilia A (congenital FVIII deficiency) for: routine prophylaxis to reduce the frequency of bleeding episodes; on-demand treatment and control of bleeding episodes; perioperative management of bleeding. This article summarizes the milestones in the development of efanesoctocog alfa leading to this first approval for hemophilia A.

Digital Features for this AdisInsight Report can be found at https://doi.org/10.6084/m9.figshare.22344709.

Efanesoctocog alfa (ALTUVIIIO™): Key points

A VWF independent recombinant DNA-derived, FVIII concentrate is being developed by Bioverativ, a Sanofi company, and Sobi for the treatment of hemophilia A.

Received its first approval on 22 February 2023 in the USA.

Approved for use in adults and children with hemophilia A (congenital FVIII deficiency) for: routine prophylaxis to reduce the frequency of bleeding episodes; on-demand treatment and control of bleeding episodes; perioperative management of bleeding.

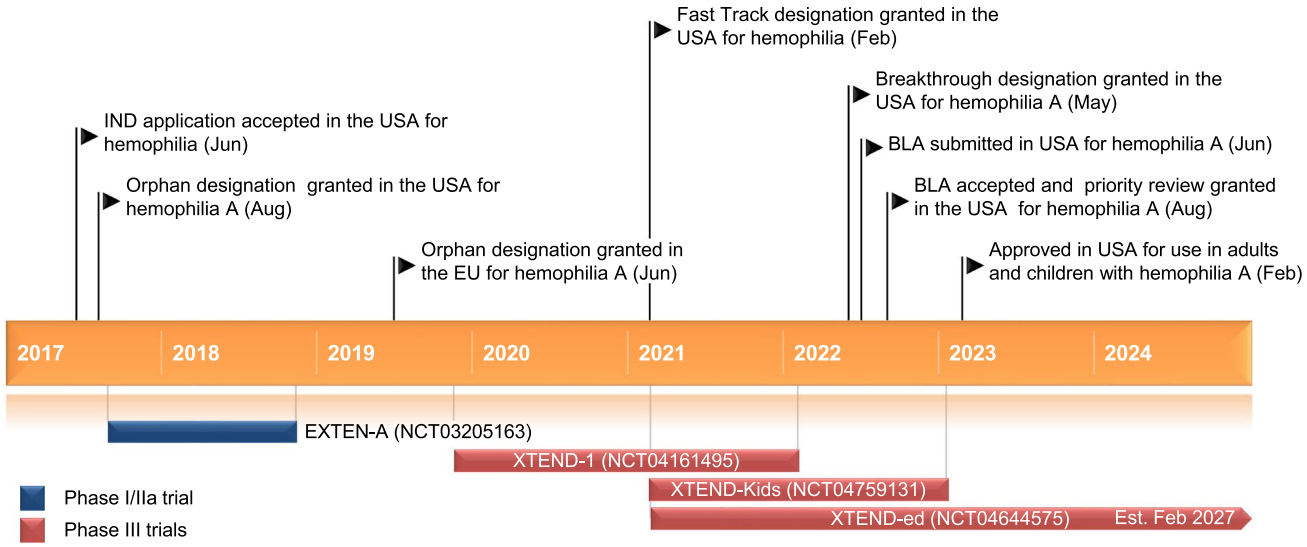
This profile has been extracted and modified from the *AdisInsight* database. *AdisInsight* tracks drug development worldwide through the entire development process, from discovery, through pre-clinical and clinical studies to market launch and beyond.

✉ Susan J. Keam
dru@adis.com

[1] Springer Nature, Private Bag 65901, Mairangi Bay, Auckland 0754, New Zealand

1 Introduction

Hemophilia A is a bleeding disorder characterized by an inherited deficiency of functional coagulation Factor VIII (FVIII), resulting in a prolonged clotting time in an activated partial thromboplastin time (aPTT)-based one-stage clotting assay [1, 2]. Hemophilia A is classified as mild (5 to < 40% of functional FVIII), moderate (1–< 5% of functional FVIII) or severe (< 1% of functional FVIII) [1, 2]. FVIII pharmacodynamic/pharmacokinetic analyses indicate that the risk of bleeding in hemophilia A is negatively correlated with FVIII activity; spontaneous bleeding is uncommon when FVIII levels are > 15% [1]. The standard treatment for severe hemophilia A is regular prophylaxis with FVIII replacement to prevent spontaneous bleeding and joint damage [1, 2]. Current treatment guidelines indicate that trough FVIII levels > 3–5% or higher are preferred by most clinicians, although this may require higher doses or more frequent infusions of clotting factor concentrates (CFCs) [1]. While the introduction of extended half-life CFCs has reduced the burden of the frequent infusions required for standard half-life CFC prophylaxis, the interaction between FVIII and endogenous von Willebrand factor (VWF), which has a half-life of ≈ 15 h, has imposed a half-life ceiling of 15–19 h on extended half-life FVIII replacement products [2–6]. To overcome this limitation, new strategies, such as prolonging the half-life of VWF or circumventing the interaction of recombinant FVIII with VWF, have been investigated [2, 3, 7–9].



Key milestones in the development of efanesoctocog alfa in hemophilia A. *BLA* Biologics License Application, *IND* Investigational New Drug

Efanesoctocog alfa (ALTUVIIIO™; [antihemophilic factor (recombinant), Fc-VWF-XTEN fusion protein-ehtl]), a VWF independent, recombinant DNA-derived FVIII concentrate, was approved on 22 February 2023 in the USA for use in adults and children with hemophilia A (congenital FVIII deficiency) for: routine prophylaxis to reduce the frequency of bleeding episodes; on-demand treatment and control of bleeding episodes; perioperative management of bleeding [10–12]. Regulatory submission in hemophilia A in the EU is expected in the first half of 2023 [11].

Efanesoctocog alfa is administered as an intravenous (IV) injection [10]. The recommended dosing of efanesoctocog alfa for routine prophylaxis for adults and children is 50 IU/kg body weight once weekly. For on-demand treatment and control of bleeding episodes, the recommended dose for minor or moderate bleeding is a single dose of 50 IU/kg; for bleeding occurring within 2–3 days after a prophylactic dose, a lower dose of 30 IU/kg may be used. Additional doses of 30 or 50 IU/kg every 2-3 days may be considered. The recommended dose for major bleeding is a single dose of 50 IU/kg. Additional doses of 30 or 50 IU/kg every 2– 3 days can be considered. For resumption of prophylaxis after treatment of a bleed, allowing an interval of at least 72 h between the last 50 IU/kg dose for treatment of a bleed and resuming prophylaxis dosing on the patient's regular schedule is recommended. For perioperative management, the pre-operative dose for minor surgery is a single dose of 50 IU/kg. An additional dose of 30 or 50 IU/kg after 2–3 days may be considered. The pre-operative dose for major surgery is a single dose of 50 IU/kg. Additional doses of 30 or 50 IU/kg every 2–3 days may be administered as clinically needed for perioperative management [10]. Although allergic-type hypersensitivity reactions were not reported with efanesoctocog alfa in clinical trials, they may occur. Efanesoctocog alfa is not indicated for the treatment of von Willebrand disease [10].

1.1 Company Agreements

In September 2019, Swedish Orphan Biovitrum (Sobi) entered into an expanded agreement with Sanofi to exercise early opt-in for the development and commercialisation of efanesoctocog alfa. Sobi and Sanofi have collaborated on the development and commercialization of efanesoctocog alfa; Sobi holds the final development and commercial rights in Sobi territory (i.e. Europe, North Africa, certain countries in the Middle East, and Russia) and Sanofi holds the final development and commercial rights in North America and in regions of the world excluding Sobi territory [11–13].

In February 2022, Sanofi completed the acquisition of Amunix, Inc [14]; prior to this, in March 2018, Sanofi had acquired Bioverativ [15]. In April 2014, Amunix and Bioverativ had entered into an exclusive worldwide license agreement to research and develop novel, fully-recombinant FVIII products that incorporated Amunix's XTEN® technology [16], following on from an earlier (April 2011), exclusive worldwide collaboration to research and develop fully-recombinant blood factors (FIX, FVIII and FVIIa) using XTEN technology [17].

2 Scientific Summary

2.1 Mechanism of Action

Efanesoctocog alfa is a fully recombinant fusion protein comprised of two XTEN polypeptide chains: a single chain B-domain deleted FVIII-XTEN-Fc chain with an XTEN polypeptide inserted at the B-domain region of native FVIII sequence, and a von Willebrand Factor (VWF) D'D3-XTEN-Fc chain with a second XTEN polypeptide inserted between D'D3 domain and Fc [8, 10]. XTEN polypeptides have hydrodynamic volumes significantly larger than typical globular proteins of similar mass [18] and alter the hydrodynamic radius of the fusion protein, thus reducing clearance and degradation rates and improving pharmacokinetic properties [10]. Efanesoctocog alfa does not bind to endogenous VWF due to the intra-molecule shielding of FVIII by the covalently attached D'D3 fragment [8, 10].

The Fc, VWF, and XTEN polypeptide portions of the molecule extend the half-life ($t_{1/2}$) of efanesoctocog alfa in plasma [10]. The mean efanesoctocog alfa $t_{1/2}$ was up to 4 times longer than that of recombinant FVIII and mean area under the activity-time curve (AUC) was up to 7 times higher after IV administration of a single dose of either treatment in the single-dose phase I/IIa EXTEN-A study (NCT03205163) in previously treated patients with severe hemophilia A [7].

2.2 Pharmacodynamics

IV administration of efanesoctocog alfa increases plasma FVIII levels, which temporarily corrects the coagulation defect seen in hemophilia A; a once-weekly dose of efanesoctocog alfa 50 IU/kg results in levels of FVIII activity that are associated with a low risk of bleeding [10].

In vitro studies showed that efanesoctocog alfa or rFVIII [at equivalent activity levels (determined by aPTT-based one-stage clotting assay) [8] or equal concentrations [19]] added to whole blood [8] or plasma [19] from patients with hemophilia A achieved similar dose-dependent efficacy in terms of whole blood clotting time, peak thrombin generation, endogenous thrombin potential [8], promotion of fibrin clot formation, and clot stability in the presence of tissue plasminogen activator [19]. In hemophilia A mice, efanesoctocog alfa or rFVIII administered shortly before repeated saphenous vein laser-induced injuries showed similar dose-dependent increases over time in injury-induced platelet accumulation with similar platelet deposition kinetics [19]. In hemophilia A mouse models of bleeding, equivalent doses of efanesoctocog alfa and rFVIII showed similar dose-dependent acute hemostatic activity (in the acute blood loss tail clip model) and 24-h survival rates (in the tail vein transection bleeding model) [8].

A post-hoc analysis of pooled data (n = 37) from EXTEN-A and a repeat-dose phase I study (EudraCT2018-001535-51 [20]) in previously treated patients with severe hemophilia A found that there was no correlation between efanesoctocog alfa $t_{1/2}$ or clearance (CL) and VWF antigen levels, confirming that efanesoctocog alfa is VWF independent [21].

2.3 Pharmacokinetics

High, sustained FVIII activity (measured by the aPTT-based one-stage clotting assay) with a prolonged $t_{1/2}$ was evident across all age groups [children aged 1 to < 12 years (n = 32 evaluable), adolescents (n = 25 evaluable) and adults (n = 134 evaluable)] after the first dose of efanesoctocog alfa 50 IU/kg in the phase III XTEND-1 (NCT04161495) and XTEND-Kids (NCT04759131) trials [10]. Mean AUC over the dosing interval (AUC_τ) was 6710 IU·h/dL in children aged 1 to < 6 years, 7190 IU·h/dL in those aged 6 to < 12 years, 8350 IU·h/dL in adolescents and 9850 IU·h/dL in adults. $t_{1/2}$ in these cohorts was 39.9, 42.4, 44.6 and 48.2 h, respectively, and CL was 0.740, 0.681, 0.582 and 0.493 mL/h/kg [10].

The PK profile of efanesoctocog alfa at steady state (week 26) was consistent with that after the first dose [10]. In the XTEND-1 trial (n = 17 evaluable patients receiving once weekly prophylaxis), FVIII activity at steady state was > 40% (> 40 IU/dL; i.e. normal to near normal activity) for a mean 4.1 days after administration of efanesoctocog alfa 50 IU/kg and was 15.2% (15.2 IU/dL) at day 7 [10, 22]. At steady state, geometric mean $t_{1/2}$ was 47.0 h, maximum FVIII activity was 151 IU/dL, AUC_τ was 11,500 IU·h/dL, CL was 0.439 mL/h/kg and incremental recovery was 3.00 IU/dL per IU/kg [22]. In children aged < 12 years in XTEND-Kids, FVIII activity at steady state was > 40% (> 40 IU/dL) for 2–3 days after administration of efanesoctocog alfa 50 IU/kg and was > 5 % (5.0 IU/dL) at day 7 in most children [10].

While patient age, sex, race, VWF antigen and activity, hematocrit level, blood type, HCV status and HIV status have no clinically meaningful effect on the pharmacokinetics of efanesoctocog alfa, body weight is expected to alter weight normalized clearance [10].

Features and properties of efanesoctocog alfa

Alternative names	ALTUVIIIO; antihemophilic factor (recombinant), Fc-VWF-XTEN fusion protein-ehtl; BIVV-001; Factor VIII recombinant—Bioverativ/Sanofi; Fc-VWF-XTEN fusion protein-ehtl; rFVIIIFc-VWF-XTEN
Class	Antihemorrhagics, Blood coagulation factors, Recombinant fusion proteins
Mechanism of action	Factor VIII replacement Fc, VWF, and XTEN portions of the molecule extend plasma $t_{1/2}$ Mean $t_{1/2}$ is up to 4 x longer than with rFVIII and mean AUC is up to 7 x higher
Route of administration	Intravenous
Pharmacodynamics	Similar dose-dependent efficacy to rFVIII in vitro in hemophilia A whole blood/plasma for whole blood clotting time, peak thrombin generation, endogenous thrombin potential, promotion of fibrin clot formation, and clot stability in the presence of tissue plasminogen activator Similar dose-dependent acute hemostatic activity and 24h survival rates to rFVIII after equivalent doses in hemophilia A mouse models of bleeding No correlation between $t_{1/2}$ or CL and VWF antigen levels in patients with severe hemophilia A
Pharmacokinetics (steady state)	Adults/adolescents: mean $t_{1/2}$ 47.0 h, maximum FVIII activity 151 IU/dL, mean AUC_{τ} 11,500 IU·h/dL, mean CL 0.439 mL/h/kg, mean incremental recovery 3.00 IU/dL per IU/kg; FVIII activity > 40 IU/dL for a mean 4.1 days after administration and 15.2 IU/dL at day 7. Children: FVIII activity > 40 IU/dL for 2–3 days after administration and > 5 IU/dL at day 7
Adverse events	
Most frequent (incidence >10%)	Headache, arthralgia
ATC codes	
WHO ATC code	B02B-D02 (Coagulation Factor VIII)
EphMRA ATC code	B2D (Blood Coagulation)

2.4 Therapeutic Trials

Once-weekly prophylaxis with IV efanesoctocog alfa was effective in preventing bleeding episodes in previously treated patients with severe hemophilia A in the phase III XTEND-1 trial (NCT04161495) [22]. Patients in XTEND-1 were divided into two treatment groups: those receiving efanesoctocog alfa 50 IU/kg once weekly as prophylaxis for 52 weeks (group A; $n = 133$) and those receiving efanesoctocog alfa 50 IU/kg as on-demand treatment for 26 weeks, followed by 50 IU/kg once-weekly as prophylaxis for 26 weeks (group B; $n = 26$) [22]. In group A, the median annualized bleeding rate (ABR) was 0 (interquartile range 0–1.04) and the estimated mean ABR was 0.71 (95% CI 0.52–0.97) [primary endpoint]; efanesoctocog alfa was considered effective, because the upper limit of the ABR one sided 97.5% CI was ≤6. Approximately two-thirds of patients in group A (86 of 133; 65%) had zero bleeding episodes, 93% had 0–2 bleeding episodes and 72% had no joint bleeds. In group A, no episodes of spontaneous bleeding were reported in 80% (107 of 133) of patients. A switch from prestudy standard-care FVIII prophylaxis to efanesoctocog alfa prophylaxis in group A ($n = 78$ evaluable; key secondary endpoint) significantly reduced the estimated mean ABR by 77% (from 2.96 to 0.69) [ABR ratio 0.23; 95% CI 0.13–0.42; $p < 0.001$). The mean ABR in group B decreased from 21.42 to 0.69 when patients switched from on-demand efanesoctocog alfa to prophylaxis [22]. The majority of bleeding episodes (96.7% of 362 episodes), most of which occurred during on-demand treatment in arm B, were resolved with a single injection of efanesoctocog alfa 50 IU/kg [10, 22].

Eligible patients in XTEND-1 were aged ≥12 years, had < 1% endogenous FVIII activity or a documented genetic mutation consistent with severe hemophilia A and had received prior FVIII treatment. Patients in groups A and B were required to have had ≥ 150 previous exposure days to recombinant or plasma-derived FVIII concentrates or cryoprecipitate. In addition, patients in group A were required to have been receiving a prior prophylactic regimen, while those in group B were required to have been receiving on-demand treatment with FVIII replacement and to have had ≥6 bleeding episodes in the previous 6 months or ≥12 bleeding episodes in the previous 12 months. The mean age at entry was 35.4 years, the median age at the start of first prophylaxis was 1.0 years and all but one of the patients were male. [10, 22].

After 52 weeks' routine prophylaxis with once-weekly IV efanesoctocog alfa 50 IU/kg in the phase III XTEND-Kids trial (NCT04759131) in previously treated patients aged < 12 years with severe hemophilia A, the median ABR was 0.00 (interquartile range 0.0–1.02) and the estimated mean ABR was 0.89 (95% CI 0.56–1.42) [23], outcomes consistent with data from an interim analysis in 23 patients with ≥26 weeks' exposure [median ABR 0.00 (interquartile range 0–1.3) and estimated mean ABR 0.5 (95% CI 0.2–1.3)] [10]. XTEND-Kids enrolled 74 patients aged < 12 years and 65 patients experienced ≥50 exposure days [23].

Key clinical trials of efanesoctocog alfa (Bioverativ, Sanofi)

Drug(s)	Indication	Phase	Status	Location(s)	Identifier
Efanesoctocog alfa	Severe hemophilia A	III	Ongoing	Global	NCT04644575; XTEND-ed EudraCT2020-002215-22
Efanesoctocog alfa	Severe hemophilia A	III	Completed	Global	NCT04161495; XTEND-1 EudraCT2019-002023-15
Efanesoctocog alfa	Severe hemophilia A	III	Completed	Global	NCT04759131; XTEND-Kids EudraCT2020-000769-18
Efanesoctocog alfa, rFVIII	Severe hemophilia A	I/IIa	Completed	USA, Japan	NCT03205163; EXTEN-A
Efanesoctocog alfa	Severe hemophilia A	I	Completed	Bulgaria	EudraCT2018-001535-51
Efanesoctocog alfa, octocog alfa, rurioctocog alfa	Severe hemophilia A	I	Completed	Bulgaria	NCT05042440
Efanesoctocog alfa	Type 2N and 3 von Willebrand disease	I	Ongoing	USA, France	NCT04770935; EudraCT2020-004947-10

2.5 Adverse Events

Efanesoctocog alfa was well tolerated in clinical trials in previously treated pediatric, adolescent and adult patients with severe hemophilia A [10, 22]. Treatment emergent adverse events (TEAEs) were reported in 77% (123/159) of patients and treatment emergent serious adverse events (TESAEs) were reported in 9% (15/159) of patients. The most common TEAEs (incidence >5%) reported with efanesoctocog alfa in the XTEND-1 trial included headache (20%), arthralgia (16%) falls (6%) and back pain (6%) and the most common TESAE was hemophilic arthropathy [2 patients (1%)]; all other TESAEs were reported in one patient each [22]. 152 (96%) patients achieved at least 25 exposure days and 115 (72%) achieved ≥ 50 exposure days (median 53.0 for both exposure days and injections per subject). Overall exposure was monitored for a total of 151.5 subject-years. In the phase III long-term safety extension study (XTEND-ed; NCT04644575), thromboembolic events occurred in 1% (3/206) of evaluable patients, all of whom had pre-existing risk factors [10].

No neutralizing antibodies (inhibitors) to FVIII were detected in the efanesoctocog alfa clinical program, including in patients aged < 12 years in XTEND-Kids [10, 22, 23]. Transient anti-drug antibodies (ADAs) were detected in 2.2% of efanesoctocog alfa recipients (4/277 patients) during treatment (up to 49.64 weeks) in clinical studies; however, ADAs had no impact on FVIII activity-time profiles and pharmacokinetic exposure parameters, bleeding episodes and the pharmacodynamic response [10, 22].

2.6 Ongoing Clinical Trials

The phase III global XTEND-ed study (NCT04644575), a long-term safety and efficacy trial of efanesoctocog alfa in previously treated patients with severe hemophilia A, is ongoing. Eligible patients include those of any age who have completed the previous phase III efanesoctocog alfa studies; Chinese patients of any age who are newly initiating efanesoctocog alfa prophylaxis treatment; and patients of any age who have planned major surgery and are newly initiating efanesoctocog alfa prophylaxis treatment. A phase I trial in adults with Type 2N and 3 von Willebrand disease (NCT04770935) is also ongoing.

3 Current Status

Efanesoctocog alfa received its first approval on 22 February 2023 in the USA for use in adults and children with hemophilia A (congenital FVIII deficiency) for: routine prophylaxis to reduce the frequency of bleeding episodes; on-demand treatment and control of bleeding episodes; perioperative management of bleeding [10–12].

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s40265-023-01866-9.

Declarations

Funding The preparation of this review was not supported by any external funding.

Authorship and Conflict of interest During the peer review process the manufacturer of the agent under review was offered an opportunity to comment on the article. Changes resulting from any comments received were made by the authors on the basis of scientific completeness and accuracy. Susan J. Keam is a contracted employee of Adis International Ltd/Springer Nature, and declares no relevant conflicts of interest. All authors contributed to the review and are responsible for the article content.

Ethics approval, Consent to participate, Consent to publish, Availability of data and material, Code availability Not applicable.

References

1. Srivastava A, Santagostino E, Dougall A, et al. WFH guidelines for the management of hemophilia, 3rd edition. Haemophilia. 2020;26(Suppl 6):1–158.
2. Cho S, Perry AM, Cheng AM, et al. Advances in hemophilia A management. Adv Pediatr. 2022;69:133–47.
3. Pipe SW, Montgomery RR, Pratt KP, et al. Life in the shadow of a dominant partner: the FVIII-VWF association and its clinical implications for hemophilia A. Blood. 2016;128(16):2007–16.
4. Childers KC, Peters SC, Spiegel PC Jr. Structural insights into blood coagulation factor VIII: procoagulant complexes, membrane binding, and antibody inhibition. J Thromb Haemost. 2022;20(9):1957–70.
5. Fuller JR, Knockenhauer KE, Leksa NC, et al. Molecular determinants of the factor VIII/von Willebrand factor complex revealed by BIVV001 cryo-electron microscopy. Blood. 2021;137(21):2970–80.
6. Mancuso ME, Mahlangu JN, Pipe SW. The changing treatment landscape in haemophilia: from standard half-life clotting factor concentrates to gene editing. Lancet. 2021;397(10274):630–40.
7. Konkle BA, Shapiro AD, Quon DV, et al. BIVV001 fusion protein as factor VIII replacement therapy for hemophilia A. N Engl J Med. 2020;383(11):1018–27.
8. Seth Chhabra E, Liu T, Kulman J, et al. BIVV001, a new class of factor VIII replacement for hemophilia A that is independent of von Willebrand factor in primates and mice. Blood. 2020;135(17):1484–96.
9. Fassel H, McGuinn C. Haemophilia: factoring in new therapies. Br J Haematol. 2021;194(5):835–50.
10. Bioverativ Therapeutics Inc. Efanesoctocog alfa [antihemophilic factor (recombinant), Fc-VWF-XTEN fusion protein-ehtl]: US prescribing information. 2023. https://www.altuviiio.com/. Accessed 7 Mar 2023.
11. Sanofi. FDA approves once-weekly ALTUVIIIO™, a new class of factor VIII therapy for hemophilia A that offers significant bleed protection [media release]. 23 Feb 2023. https://www.sanofi.com/.
12. Swedish Orphan Biovitrum AB. FDA approves once-weekly efanesoctocog alfa, a new class of high-sustained factor VIII therapy for haemophilia A [media release]. 23 Feb 2023. https://www.sobi.com/.
13. Swedish Orphan Biovitrum AB. Sobi strengthens haemophilia position with potential once-weekly haemophilia A treatment [media release]. 29 Sep 2019. https://www.sobi.com.
14. Sanofi. Sanofi completes acquisition of Amunix [media release]. 8 Feb 2022. https://www.sanofi.com.
15. Sanofi. Sanofi completes acquisition of Bioverativ Inc. [media release]. 8 Mar 2018. https://www.sanofi.com.
16. Amunix Inc. Biogen Idec signs license agreement with Amunix for XTENylated Factor VIII [media release]. 21 Apr 2014. https://www.amunix.com/.
17. Amunix Inc. Amunix signs research collaboration with Biogen Idec for next generation long-lasting blood factor products [media release]. 13 Apr 2011. https://www.amunix.com/.
18. Podust VN, Balan S, Sim BC, et al. Extension of in vivo half-life of biologically active molecules by XTEN protein polymers. J Control Release. 2016;240:52–66.
19. Demers M, Aleman MM, Kistanova E, et al. Efanesoctocog alfa elicits functional clot formation that is indistinguishable to that of recombinant factor VIII. J Thromb Haemost. 2022;20(7):1674–83.
20. Lissitchkov T, Willemze A, Katragadda S, et al. Efanesoctocog alfa for hemophilia A: results from a phase 1 repeat-dose study. Blood Adv. 2022;6(4):1089–94.
21. Staber JM, Lissitchkov T, Konkle BA, et al. Efanesoctocog alfa half-life and clearance are independent of von Willebrand factor in severe hemophilia A: a post hoc analysis from phase 1/2a studies [abstract no. 1035]. Blood. 2021;138(Suppl 1):1035.
22. von Drygalski A, Chowdary P, Kulkarni R, et al. Efanesoctocog alfa prophylaxis for patients with severe hemophilia A. N Engl J Med. 2023;388(4):310–8.
23. Swedish Orphan Biovitrum AB. Positive topline results from pivotal XTEND-Kids phase 3 study of efanesoctocog alfa in children under 12 years of age with haemophilia A [media release]. 2 Mar 2023. https://www.sobi.com/.