

Abbreviated Prescribing Information

Zynteglo ▼ (Autologous CD34⁺ cells encoding $\beta^{\text{A-T87Q}}$ -globin gene)

Please refer to the Summary of Product Characteristics (SmPC) before prescribing.

Presentation: 1.2-20 × 10⁶ cells/mL dispersion for infusion. **Indication:** Treatment of patients ≥12 years with transfusion-dependent β -thalassaemia (TDT) who do not have a β^0/β^0 genotype, for whom haematopoietic stem cell (HSC) transplantation is appropriate but a human leukocyte antigen (HLA)-matched related HSC donor is not available. **Dosage:** The finished product is composed of one or more infusion bags which contain a dispersion of 1.2-20 × 10⁶ cells/mL suspended in cryopreservative solution. Each infusion bag contains approximately 20 mL of Zynteglo. Quantitative information regarding strength, CD34⁺ cells, and dose is provided in the Lot Information Sheet. **Administration:** Zynteglo must be administered in a qualified treatment centre by a physician(s) with experience in HSC transplantation and treatment of patients with TDT. Minimum recommended dose of Zynteglo is 5.0 × 10⁶ CD34⁺ cells/kg. In clinical studies doses up to 20 × 10⁶ CD34⁺ cells/kg have been administered. Zynteglo is intended for autologous use and should only be administered once. *Mobilisation and apheresis:* HSC mobilisation followed by apheresis to obtain CD34⁺ stem cells for medicinal product manufacturing is required. Minimum target of CD34⁺ cells collected is 12 × 10⁶ CD34⁺ cells/kg. Back-up collection ≥1.5 × 10⁶ CD34⁺ cells/kg (if collected by apheresis) or >1.0 × 10⁸ TNC/kg (if collected by bone marrow harvest) is required. *Pre-treatment conditioning:* Full myeloablative conditioning must be administered before

infusion of Zynteglo and only when the complete set of infusion bag(s) constituting Zynteglo dose is received and stored at administration site, and availability of back-up collection is confirmed. Prophylaxis for veno-occlusive liver disease is recommended. Iron chelation should be stopped ≥7 days prior to conditioning. *Zynteglo administration:* For intravenous use only. After completion of the 4-day course of myeloablative conditioning, there must be a minimum of 48 hours of washout before Zynteglo infusion. Before infusion, confirm that the patient's identity matches the unique patient information on the Zynteglo infusion bag(s). The total number of infusion bags should be confirmed with the Lot Information Sheet. Complete Zynteglo infusion as soon as possible and ≤4 hours after thawing. Each infusion bag should be administered in <30 minutes. *After Zynteglo administration:* Any blood products required within the first 3 months after Zynteglo infusion should be irradiated. **Special populations:** *Elderly:* Zynteglo has not been studied in patients >65 years of age. *Renal impairment:* Zynteglo has not been studied in patients with renal impairment. Assess patients for renal impairment (creatinine clearance ≤70 mL/min/1.73 m²) to ensure HSC transplantation is appropriate. No dose adjustment is required. *Hepatic impairment:* Zynteglo has not been studied in patients with hepatic impairment. Assess patients for hepatic impairment to ensure HSC transplantation is appropriate. *Paediatric population:* Safety and efficacy of Zynteglo in children <12 years of age has not yet been established. *Patients seropositive for human immunodeficiency virus (HIV) or human T-lymphotropic virus (HTLV):* Zynteglo has not been studied in patients with HIV-1, HIV-2, HTLV-1, or HTLV-2. Negative HIV

serology test necessary to ensure acceptance of apheresis material for Zynteglo manufacturing.

Contraindications: Hypersensitivity to active substance or excipients (Cryosor CS5). Pregnancy and breast-feeding. Previous treatment with HSC gene therapy. Contraindications to the mobilisation agents and the myeloablative conditioning agent must be considered.

Warnings and Precautions: Traceability: Requirements of cell-based advanced therapy medicinal products must apply. General: Warnings and precautions of mobilisation agents and myeloablative conditioning agent must be considered. Patients treated with Zynteglo should not donate blood, organs, tissues or cells. Risks associated with TDT and iron overload: HSC transplantation with myeloablative conditioning is not appropriate for patients with cardiac T2* <10 msec by magnetic resonance imaging (MRI). Liver MRI should be performed prior to myeloablative conditioning. If MRI results demonstrate liver iron content ≥ 15 mg/g, liver biopsy should be performed. In patients with bridging fibrosis, cirrhosis, or active hepatitis, HSC transplantation with myeloablative conditioning is not appropriate. Risk of insertional oncogenesis: Monitor annually for leukaemia or lymphoma (including complete blood count) for 15 years post treatment. Serological testing: Test for HIV-1/2 and HTLV-1/2 prior to mobilisation and apheresis. Interference with serology testing: Do not screen Zynteglo treated patients for HIV using PCR-based assay due to risk of false positive. Engraftment failure as measured by neutrophil engraftment: Patients who experience neutrophil engraftment failure should be managed with rescue treatment from back-up collection. Delayed platelet engraftment: Patients should be made aware of bleeding risk until platelet recovery achieved. Monitor for thrombocytopenia and bleeding according to standard guidelines.

Platelet counts should be monitored according to medical judgment until platelet engraftment and platelet recovery are achieved. Anti-retroviral and hydroxyurea use: Anti-retroviral medications and/or hydroxyurea should be stopped ≥ 1 month prior to mobilisation until ≥ 7 days after Zynteglo infusion. Sodium content: Zynteglo contains 381-1564 mg sodium per dose. **Interactions:** Patients should not take anti-retroviral medicines or hydroxyurea at ≥ 1 month prior to mobilisation and ≥ 7 days after Zynteglo infusion. Interactions between iron chelators and myeloablative conditioning agent must be considered. Iron chelators must be discontinued 7 days prior to initiation of conditioning. Myelosuppressive iron chelators should not be used for ≥ 6 months after Zynteglo infusion. **Fertility, pregnancy and lactation:** Women of childbearing potential/Contraception in males and females: Women of childbearing potential and men capable of fathering a child must use a reliable method of contraception (intra-uterine device or combination of hormonal and barrier contraception) from start of mobilisation through ≥ 6 months after administration of Zynteglo. Pregnancy and breast-feeding: Negative serum pregnancy test must be confirmed prior to the start of mobilisation and re-confirmed prior to conditioning and before Zynteglo administration. Zynteglo must not be administered to women who are breast-feeding. Fertility: Data are available on the risk of infertility with myeloablative conditioning. It is advised to cryopreserve semen or ova before treatment if possible. **Undesirable Effects:** Very common ($\geq 1/10$) adverse drug reactions (ADRs) attributed to mobilisation and apheresis: thrombocytopenia, hypocalcaemia, headache, peripheral sensory neuropathy, nausea, bone pain. For a list of common ADRs and other important safety information associated with mobilisation and apheresis,

consult the product SmPC. Very common ($\geq 1/10$) ADRs attributed to myeloablative conditioning: Veno-occlusive liver disease, thrombocytopenia, febrile neutropenia, neutropenia, leukopenia, anaemia, vaginal haemorrhage, gingival bleeding, epistaxis, abdominal pain, anal inflammation, constipation, diarrhoea, nausea, stomatitis, vomiting, decreased appetite, insomnia, headache, pharyngeal inflammation, alopecia, pruritus, skin hyperpigmentation, pyrexia, fatigue, alanine aminotransferase increased, aspartate aminotransferase increased and blood bilirubin increased. Common ADRs ($\geq 1/100$ and $< 1/10$) attributed to myeloablative conditioning: For a list of other common ADRs and other important safety information associated with myeloablative conditioning, consult the product SmPC. Common ADRs ($\geq 1/100$ and $< 1/10$) associated with Zynteglo: thrombocytopenia, abdominal pain, hot flush, dyspnoea, pain in extremity, non-cardiac chest pain.

Legal Category: Prescription Only Medicine

Marketing Authorisation Number: EU/1/19/1367/001. **Further information is available from the Marketing Authorisation Holder:** bluebird bio (Netherlands) B.V., Stadsplateau 7, WTC Utrecht, 3521AZ Utrecht, The Netherlands
Date of Preparation: 29 May 2019
Reference: ZYN-EU-00013

- ▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 of your local full prescribing information on how to report adverse reactions. Please report adverse reactions also to bluebird bio at safety.reporting@bluebirdbio.com.

For medical enquiries please contact bluebirdbio via email at medinfo@bluebirdbio.com.