Oxbryta™ (voxelotor) – New orphan drug approval

- On November 25, 2019, the FDA announced the approval of Global Blood Therapeutics' Oxbryta (voxelotor), for the treatment of sickle cell disease (SCD) in adults and pediatric patients 12 years of age and older.
    - This indication is approved under accelerated approval based on increase in hemoglobin. Continued approval for this indication may be contingent upon verification and description of clinical benefit in confirmatory trial(s).
- SCD is an inherited blood disorder that impacts hemoglobin. Due to a genetic mutation, people with SCD form abnormal hemoglobin known as sickle hemoglobin (hemoglobin S). Through a process called hemoglobin polymerization, red blood cells become sickled – deoxygenated, crescent-shaped and rigid. The sickling process causes hemolytic anemia and blockages in capillaries and small blood vessels, which impede the flow of blood and oxygen throughout the body.
    - SCD affects an estimated 100,000 people in the U.S.
- Oxbryta is a novel hemoglobin S polymerization inhibitor. By increasing the affinity of hemoglobin for oxygen, Oxbryta demonstrates dose-dependent inhibition of hemoglobin S polymerization. Nonclinical studies suggest that Oxbryta may inhibit red blood cell sickling, improve red blood cell deformability, and reduce whole blood viscosity.
- The efficacy of Oxbryta was established in the HOPE trial, a randomized, double-blind, placebo-controlled study in 274 patients with SCD. Patients received daily Oxbryta 1,500 mg, Oxbryta 900 mg, or placebo. Efficacy was based on hemoglobin response rate defined as a hemoglobin increase of > 1 g/dL from baseline to week 24 in patients treated with Oxbryta 1,500 mg vs. placebo.
    - The response rate for Oxbryta 1,500 mg was 51.1% (46/90) vs. 6.5% (6/92) in the placebo group ($p < 0.001$).
- Warnings and precautions for Oxbryta include hypersensitivity reactions and laboratory test interference.
- The most common adverse reactions (> 10%) with Oxbryta use were headache, diarrhea, abdominal pain, nausea, fatigue, rash, and pyrexia.
- The recommended dose of Oxbryta is 1,500 mg taken orally once daily with or without food.
- Global Blood Therapeutics plans to launch Oxbryta within two weeks. Oxbryta will be available as a 500 mg tablet.