## Besponsa™ (inotuzumab ozogamicin) – New orphan drug approval

- On August 17, 2017, the FDA announced the approval of Pfizer's Besponsa (inotuzumab ozogamicin) for the treatment of adults with relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL).

- ALL is a type of cancer in which the bone marrow makes too many lymphocytes and leads to infection, anemia and bleeding. It can also spread to the central nervous system.

- The efficacy and safety of Besponsa were evaluated in an open-label clinical study of 326 patients with relapsed or refractory ALL. Patients were randomized to receive Besponsa or investigator's choice of chemotherapy.

    — Of the initial 218 randomized patients, 35.8% (95% CI: 26.8 – 45.5) of those who received Besponsa experienced complete remission (CR) for a median 8.0 (95% CI: 4.9 – 10.4) months and 89.7% (95% CI: 75.8 – 97.1) of those patients achieved minimal residual disease (MRD)-negativity.
    — Of the patients who received chemotherapy, 17.4% (95% CI: 10.8 – 25.9) experienced CR for a median 4.9 months (95% CI: 2.9 – 7.2) and 31.6% (95% CI: 12.6 – 56.6) of those patients achieved MRD-negativity.

- Besponsa carries a boxed warning for hepatotoxicity, including hepatic veno-occlusive disease, and increased risk of post-hematopoietic stem cell transplant non-relapse mortality.

- Other warnings and precautions of Besponsa include myelosuppression, infusion related reactions, QT interval prolongation, and embryo-fetal toxicity.

- The most common (≥ 20%) adverse reactions with Besponsa use were thrombocytopenia, neutropenia, infection, anemia, leukopenia, fatigue, hemorrhage, pyrexia, nausea, headache, febrile neutropenia, increased transaminases, abdominal pain, increased gamma-glutamyltransferase, and hyperbilirubinemia.

- For the first cycle, the recommended total dose of Besponsa for all patients is 1.8 mg/m$^2$ per cycle, infused as 3 divided doses on day 1 (0.8 mg/m$^2$), day 8 (0.5 mg/m$^2$), and day 15 (0.5 mg/m$^2$). Cycle 1 is 3 weeks in duration, but may be extended to 4 weeks if the patient achieves a CR or CR with incomplete hematologic recovery, and/or to allow recovery from toxicity.

    — Refer to the Besponsa drug label for specific dosing instructions for subsequent cycles depending on treatment response.
    — Premedication with a corticosteroid, antipyretic, and antihistamine is recommended before each dose.

- Based on the typical duration of treatment, the total cost of the drug will be $168,300.

- Pfizer plans to launch Besponsa next week. Besponsa will be available as a 0.9 mg lyophilized powder in a single-dose vial for reconstitution.