## Zirabev™ (bevacizumab-bvzr) – New biosimilar approval

- On June 28, 2019, Pfizer announced the FDA approval of Zirabev (bevacizumab-bvzr), a biosimilar to Genentech's Avastin® (bevacizumab).

    — Zirabev is the second FDA-approved biosimilar to Avastin.
    — Amgen/Allergan's Mvasi™ (bevacizumab-awwb) was the first biosimilar to Avastin and was approved on September 14, 2017. Amgen/Allergan's launch plans for Mvasi are pending.

- Zirabev, Mvasi and Avastin share the following indications:

    — Metastatic colorectal cancer (MCC), in combination with intravenous fluorouracil-based chemotherapy for first- or second-line treatment
    — MCC, in combination with fluoropyrimidine-irinotecan-or fluoropyrimidine-oxaliplatin-based chemotherapy for second-line treatment in patients who have progressed on a first-line bevacizumab product-containing regimen
    — Unresectable, locally advanced, recurrent or metastatic non-squamous non-small cell lung cancer (NSCLC), in combination with carboplatin and paclitaxel for first-line treatment
    — Recurrent glioblastoma in adults
    — Metastatic renal cell carcinoma (mRCC) in combination with interferon alfa
    — Persistent, recurrent, or metastatic cervical cancer, in combination with paclitaxel and cisplatin or paclitaxel and topotecan.

- In addition, Avastin is indicated for epithelial ovarian, fallopian tube, or primary peritoneal cancer.

- A biosimilar product is a biological agent that is considered highly similar to an already-approved biological drug, known as the reference product. Biological products are generally derived from a living organism and can come from many sources, including humans, animals, microorganisms or yeast.

    — A biosimilar product must show no clinically meaningful differences in terms of safety and effectiveness from the reference product. Only minor differences in clinically inactive components are allowable in biosimilar products.
    — In addition, a biosimilar product may only be approved for the indication(s) and condition(s) that have been FDA approved for the reference product, and must have the same mechanism(s) of action, route(s) of administration, dosage form(s) and strength(s) as the reference product.

- Zirabev has been approved as a biosimilar, ***not*** as an interchangeable product.

- Warnings and precautions of Zirabev include gastrointestinal perforations and fistulae; surgery and wound healing complications; hemorrhage; arterial thromboembolic events; venous thromboembolic events; hypertension; posterior reversible encephalopathy syndrome; renal injury and proteinuria; infusion-related reactions; embryo-fetal toxicity; ovarian failure; and congestive heart failure.

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- The most common adverse reactions (> 10%) with Zirabev use were epistaxis, headache, hypertension, rhinitis, proteinuria, taste alteration, dry skin, rectal hemorrhage, lacrimation disorder, back pain and exfoliative dermatitis.

- The recommended intravenous (IV) dose of Zirabev varies by indication:

| Indication | Recommended Dosage |
|---|---|
| MCC with IV fluorouracil | 5 mg/kg or 10 mg/kg every 2 weeks. Refer to the drug label for the dosing by specific regimen. |
| MCC in combination with fluoropyrimidine-irinotecan-or fluoropyrimidine-oxaliplatin-based chemotherapy | 5 mg/kg every 2 weeks or 7.5 mg/kg every 3 weeks |
| NSCLC | 15 mg/kg every 3 weeks in combination with carboplatin and paclitaxel |
| Glioblastoma | 10 mg/kg every 2 weeks |
| mRCC | 10 mg/kg every 2 weeks in combination with interferon alfa |
| Cervical cancer | 15 mg/kg every 3 weeks in combination with paclitaxel and cisplatin or in combination with paclitaxel and topotecan |

- Pfizer's launch plans for Zirabev are pending. Zirabev will be available as 100 mg/4 mL and 400 mg/16 mL single-dose vials.