

Synonym: Vectibix, ABX-EGF, rHuMAb-EGFR, recombinant human anti-EGFR monoclonal antibody

Dosage Forms Available: Sterile, preservative-free solution for injection, 20 mg/mL in 100 mg, 200 mg, and 400 mg single-dose vials.

Pharmacologic Class: Monoclonal epidermal growth factor receptor (EGFR) antibody.

Indications:

FDA-Approved

Refractory, metastatic colorectal cancer in patients whose tumors express the EGFR protein and who experience disease progression during or after treatment with fluoropyrimidine, oxaliplatin, or irinotecan combination chemotherapy.

Pediatric Uses

Not FDA-approved; safety and efficacy not established.

Storage Instructions:

Refrigerate in original carton. Protect from light and freezing.

Reconstitution and Preparation:

Avoid shaking panitumumab solution.

Dilute panitumumab prior to administration.

Using aseptic technique, withdraw the desired dose and dilute with 0.9% Sodium Chloride Injection to a final volume of 100 mL for doses up to 1,000 mg or 150 mL for doses above 1,000 mg, keeping the final concentration less than 10 mg/mL. Mix solution by gentle inversion. Discard any unused portion in vial.

Solution should be clear and colorless, with a few translucent to white, amorphous particles. Visually inspect solution and discard if discoloration is present.

Stability:

Discard any unused portion in vial.

Diluted panitumumab solutions are stable for up to 24 hours under refrigeration or up to 6 hours at room temperature. Discard any unused portion after this time.

Dosage Range, Adult:

Colorectal cancer

6 mg/kg IV every 14 days until disease progression occurs.

Dosage adjustments for toxicity

Discontinue panitumumab permanently if severe hypersensitivity reactions, interstitial lung disease, pneumonitis, or lung infiltration occur.

For mild to moderate infusion reactions, decrease the infusion rate by 50% for the remainder of the dose. Discontinue therapy if severe infusion reactions occur.

Adjust the dose for dermatologic toxicity, as shown in the following table.

Dosage Adjustments of Panitumumab for Dermatologic Toxicities^a	
Grade of severity and occurrence	Recommendation
<i>NCI Toxicity grade 0 to 2</i>	
Patient without previous grade 3 or 4 toxicity	No dosage adjustment necessary.

Dosage Adjustments of Panitumumab for Dermatologic Toxicities ^a	
Grade of severity and occurrence	Recommendation
<i>NCI Toxicity grade 3 or 4</i>	
First occurrence	Delay therapy until rash improves to grade 0 to 2 or for up to 1 month, then resume therapy at 3 mg/kg (50% of normal dose) for the next dose. May increase dose by 1.5 mg/kg (25% of normal dose) on consecutive doses as tolerated, back to the original dose (6 mg/kg/dose). Discontinue permanently if rash does not improve.
Second occurrence	Discontinue permanently.

^a Refer to Appendix F: Common Toxicity Criteria in this section for additional information on toxicity grading.

Dosage adjustment for organ dysfunction

Panitumumab is neither metabolized nor eliminated unchanged in the urine. No dosage adjustment is necessary in patients with mild to moderate renal or hepatic dysfunction. It is unknown whether dosage adjustment is necessary in severe organ dysfunction; monitor these patients closely.

Dosage Range, Pediatric:

No pediatric dosing information is available. Based on current indications, use in children is unlikely.

Extravasation Risk:

Panitumumab is not a known vesicant or irritant. No injection site reactions have been reported.

Administration:

IV infusion. Do not give as IV push or bolus.

Administer through a low protein-binding 0.2- to 0.22-micron in-line filter. Observe patient during administration and for 1 hour afterward.

Flush lines with 0.9% Sodium Chloride Injection before and after IV injection.

Pretreatment regimen

Routine premedication is not necessary to prevent infusion reactions with panitumumab.

Infusion rate

Administer doses up to 1,000 mg over 60 minutes and doses above 1,000 mg over 90 minutes.

Infusion reactions

Reduce infusion rate 50% for the remainder of the infusion in patients with mild or moderate reactions (grade 1 or 2). Consider premedication with diphenhydramine 50 mg IV 30 to 60 minutes prior to subsequent courses.

Discontinue permanently in patients with severe reactions (grade 3 or 4).

Adverse Reactions:

Note: The following adverse events occurred when panitumumab was administered as monotherapy.

Cardiovascular

Peripheral edema (12%).

CNS/Neurologic

Fatigue (26%).

Dermatologic

Skin toxicity in up to 90% of patients, including erythema (65%), acneiform rash (57%), pruritus (57%), exfoliation (25%), rash (22%), skin fissures (20%), acne (13%), dry skin (10%). Severe skin toxicity occurs in up to 16% of patients and may be complicated by infection such as sepsis or abscess. Paronychia (25%), other nail disorder (9%).

Dermatologic toxicity occurs after a median of 14 days, peaks in severity 15 days after starting therapy, and resolves a median of 84 days after discontinuation. Adjust panitumumab dose if severe skin toxicity occurs (see Dosage Range, Adult section). Symptoms may be treated with supportive care including emollients, wet compresses, topical corticosteroids, oral antihistamines, colloidal oatmeal, topical or oral antibiotics, pain medications, or liquid bandages.¹⁻³

GI Moderate to low potential for nausea and vomiting; abdominal pain (25%), constipation (21%), diarrhea (21%), stomatitis (about 7%).

Metabolic Delayed hypomagnesemia (39%), occurring at least 6 weeks after starting therapy; severe hypomagnesemia (4%), may require magnesium replacement therapy (2%).

Respiratory Cough (14%). Pulmonary fibrosis occurs rarely (less than 1%), including interstitial lung disease, pneumonitis, and lung infiltration; in the 3 reported cases, symptoms developed after 1 to 23 doses.

Special senses Ocular toxicity (15%), including conjunctivitis (4%), ocular hyperemia (3%), increased lacrimation (2%), and eye or eyelid irritation (1%). Ocular toxicity occurs after a median of 14 days, peaks in severity 15 days after starting therapy, and resolves a median of 84 days after discontinuation. Eyelash growth disorder (6%).

Miscellaneous Infusion reactions: Hypersensitivity, anaphylactoid reaction, fever, chills, and dyspnea may occur during the infusion (4%). Severe reactions occur in about 1% of patients, although no fatalities have been reported. Routine premedication is not necessary. For mild to moderate reactions, decrease the infusion rate by 50% for the remainder of the dose. Discontinue therapy if severe infusion reactions occur and provide supportive care as needed, including epinephrine, corticosteroids, IV antihistamines, bronchodilators, oxygen, or IV fluids.

General deterioration (11%).

Drug Interactions: No specific drug interaction studies have been conducted with panitumumab. Concomitant administration of drugs with similar pharmacologic effects may cause additive side effects, including toxicity.

The frequency and severity of diarrhea may increase when panitumumab is given concomitantly with irinotecan. To minimize risk of severe diarrhea, avoid using panitumumab in combination with irinotecan-containing regimens.

Special Precautions: Follow Safe Handling procedures when preparing, administering, or dispensing panitumumab (refer to Sample Policy in this manual or your institution-specific protocol).

Monitor vital signs (ie, heart rate, blood pressure, respiratory rate, temperature) every 15 to 30 minutes during the infusion and for 1 hour afterward.

Monitor serum electrolytes, including magnesium and calcium, at baseline and for 8 weeks after completing therapy. Hypomagnesemia was accompanied by hypocalcemia in some patients.

Sunbathing and sun exposure may exacerbate dermatologic toxicity. To decrease the potential for dermatologic reactions, instruct patients to limit their exposure to sunlight and sunlamps during therapy.³

Avoid use in patients who are breast-feeding. Panitumumab may be secreted into breast milk. The manufacturer recommends that women avoid breast-feeding during therapy and for 2 months after the last panitumumab dose.

Avoid use in pregnancy. Panitumumab binds to the EGFR and may interfere with fetal development. Warn patients about potential risk to the fetus prior to starting therapy, especially patients of childbearing potential or those with partners of childbearing potential. The manufacturer recommends that women avoid becoming pregnant during therapy and for at least 6 months after the last panitumumab dose.

Antibodies to panitumumab have been detected in approximately 1% of patients in clinical trials, but clinical significance cannot be determined.

References:

- ¹ Saif MW, Cohenuram M. Role of panitumumab in the management of metastatic colorectal cancer. *Clin Colorectal Cancer*. 2006;6(2):118-124.
- ² Alexandrescu DT, Vaillant JG, Dasanu CA. Effect of treatment with a colloidal oatmeal lotion on the acneiform eruption induced by epidermal growth factor receptor and multiple tyrosine-kinase inhibitors. *Clin Exp Dermatol*. 2007;32(1):71-74.
- ³ Management of rash and other dermatologic effects during anti-EGFR treatment: for healthcare professionals. Thousand Oaks, CA: Amgen; 2006.