Switching to a Biosimilar

The option to switch a patient on a stable, long-term therapy from a reference biologic to a biosimilar can bring up questions for prescribers, care teams, and patients. The table below includes trials supporting the switch from a reference product to a biosimilar.

Product	Biosimilar	Trials Supporting the Switch
REMICADE (INFLIXIMAB)	**Avsola** (infliximab-axxq)	Comparative clinical efficacy and safety of the proposed biosimilar ABP 710 with infliximab reference product in patients with rheumatoid arthritis[4] · In a multicenter, randomized double-blind, 50-week equivalence study, patients (n= 279 for each treatment group) were randomized to receive 3-mg/kg infusions of ABP 710 or infliximab reference product at predetermined intervals based on initial randomization and then following re-randomization at week 22 • **The efficacy and safety results support similarity with no clinically meaningful differences between ABP 710 and infliximab reference product. In addition, the study demonstrated that the safety and immunogenicity of ABP 710 were similar to those of the RP and that efficacy and safety were not impacted by a single switch from infliximab RP to ABP 710.**
	Inflectra (infliximab-dyyb)	Long-term efficacy and safety of biosimilar infliximab (CT-P13) after switching from originator infliximab: Open-label extension of the NOR-SWITCH trial[1] · A 26 week extension study (NOR-X) was performed to assess the efficacy, safety, and immunogenicity in patients maintained with Inflectra versus patients switching from Remicade to Inflectra · This study included 380 patients who had Crohn's Disease (127; 33%), Ulcerative Colitis (80, 21%), Spondyloarthritis (67,18%), Rheumatoid Arthritis (55, 15%), Psoriatic Arthritis (20, 5%), and Chronic Plaque Psoriasis (31, 8%) • **Study results showed no difference in safety and efficacy in patients maintained on Inflectra and those switched from Remicade to Inflectra** · Switching from originator infliximab to the biosimilar CT-P13 in 313 patients with inflammatory bowel disease[2] · In a prospective observational cohort study, all adult IBD patients (195 Crohn's Disease, 118 Ulcerative Colitis) on Remicade treatment, at four hospitals, were switched to Inflectra • **Study results showed no significant changes in clinical disease activity, drug trough levels, patient QOL, or proportion of patients in remission**
	Renflexis (infliximab-abda)	Safety, immunogenicity and efficacy after switching from reference infliximab to biosimilar SB2 compared with continuing reference infliximab and SB2 in patients with rheumatoid arthritis: results of a randomized, double-blind, phase III transition study[3] · This study followed 584 patients that: a) started on Renflexis and continued on Renflexis, b) started on Remicade and continued on Remicade, and c) started on Remicade and switched to Renflexis at week 54 • **Study results showed that efficacy, safety and immunogenicity profiles remained comparable in all treatment groups up to week 78**

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Product	Biosimilar	Trials Supporting the Switch
EPOGEN/ PROCRIT (EPOETIN ALFA)	**Retacrit** (epoetin alfa-epbx)	Switching from Epoetin Alfa (Epogen®) to Epoetin Alfa-Epbx (RetacritTM) Using a Specified Dosing Algorithm: A Randomized, Non-Inferiority Study in Adults on Hemodialysis[5] · 434 patients with anemia and chronic kidney disease undergoing maintenance hemodialysis and receiving routine intravenous (IV) Epogen® were randomized 1: 1 to switch to IV Retacrit or continue standard-of-care (Epogen®) for 24 weeks, using analogous versions of the FMCNA ESA-dosing algorithm • **The study concluded switching to Retacrit was non-inferior to continuing Epogen in maintaining hemoglobin levels in patients receiving hemodialysis, when both ESAs were dosed using a specified algorithm** Intravenous epoetin alfa-epbx versus epoetin alfa for treatment of anemia in end-stage kidney disease[6] · Randomized controlled trial of subcutaneous epoetin alfa-epbx versus epoetin alfa in end-stage kidney disease[7] · Study participants previously taking Epogen/Procrit were randomized to either remain on Epogen/ Procrit or were switched to Retacrit. The two trials that were part of the biosimilar clinical development program for Retacrit were 2 randomized, multicenter, double-blind, active-controlled trials in adult subjects with CKD on hemodialysis · Study EPOE-10-13 was a comparative efficacy and safety study (n=320) in which Retacrit or Epogen/ Procrit reference product was administered subcutaneously for 16 weeks · Study EPOE-10-01 was a comparative efficacy and safety study (n=612) in which Retacrit of the Epogen/Procrit reference product was administered intravenously for up to 24 weeks • **Retacrit demonstrated no clinically meaningful differences in efficacy compared to Epogen/Procrit**
NEULASTA (PEGFILGRASTIM)	**Fulphila** (pegfilgrastim-jmdb)	Safe Switch of Treatment From the Reference Product to RGB-02, a Proposed Biosimilar Pegfilgrastim: Analysis of the Results of Three Clinical Trials[8] · Efficacy, safety and PD data of two PK/PD studies (enrolling 110 and 150 healthy volunteers, respectively) and a comparative efficacy and safety study (enrolling 239 breast cancer patients) were analyzed in order to assess whether treatment switch from Neulasta® to RGB-02 has any impact on the PD response, efficacy or safety · Patients in the reference arm of the comparative efficacy and safety study were switched to RGB-02 treatment following the first two chemotherapy cycles • **The mean duration of severe neutropenia (DSN) values after the therapy switch were similar to the values prior to the switch and the switched arm did not show decreased efficacy compared to the arm received RGB-02 from the first cycle. Safety results, including immunogenicity of the studies did not reveal any negative impact of the treatment switch.**
	Fylnetra (pegfilgrastim-pbbk)	No Studies Available*
	Nyvepria (pegfilgrastim-apgf)	No Studies Available*
	Stimufend (pegfilgrastim-fpgk)	No Studies Available*
	Udenyca (pegfilgrastim-cbqv)	No Studies Available*
	Ziextenzo (pegfilgrastim-bmez)	No Studies Available*

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Product	Biosimilar	Trials Supporting the Switch
NEUPOGEN (FILGRASTIM)	**Nivestym** (filgrastim-aafi)	No Studies Available*
	Releuko (filgrastim-ayow)	No Studies Available*
	Zarxio (filgrastim-sndz)	Safety and efficacy of alternating treatment with EP2006, a filgrastim biosimilar, and reference filgrastim: a phase III, randomized, double-blind clinical study in the prevention of severe neutropenia in patients with breast cancer receiving myelosuppressive chemotherapy.[9] · This study evaluated 109 patients who completed the study after randomization to receive only one product (biosimilar or reference) and two arms received alternating treatments every other cycle (biosimilar then reference or vice versa over six cycles). • **The study found non-inferiority after switching between reference product and biosimilar and there were no clinically meaningful results after switching regarding efficacy, safety or immunogenicity.**
AVASTIN (BEVACIZUMAB)	**Alymsys** (bevacizumab-maly)	No Studies Available*
	Mvasi (bevacizumab-awwb)	No Studies Available* [10]
	Zirabev (bevacizumab-bvzr)	No Studies Available*
HERCEPTIN (TRASTUZUMAB)	**Herzuma** (trastuzumab-pkrb)	No Studies Available*
	Kanjinti (trastuzumab-anns)	Trastuzumab Biosimilars in the Therapy of Breast Cancer – "Real World" Experiences from four Bavarian University Breast Centers[11] · Retrospective study that looked at over 200 patients in four Barvarian university clinics · In three of the four clinics, patients with both ongoing as well as newly initiated IV trastuzumab therapies in all therapeutic indications were switched from the reference drug to the biosimilar • **The anti-HER2 therapy could be switched successfully and safely to trastuzumab biosimilars at the Bavarian university hospitals**
	Ogivri (trastuzumab-dkst)	No Studies Available*
	Ontruzant (Trastuzumab-dttb)	No Studies Available*
	Trazimera (trastuzumab-qyyp)	No Studies Available*

*At the time of the literature search, there were no studies available including the biosimilar switching to the reference product

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