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**U.S. FDA Approves DARZALEX® (daratumumab) Split-Dosing Regimen**

*Revised product label allows for new administration option*

HORSHAM, PA, February 12, 2019 – The Janssen Pharmaceutical Companies of Johnson & Johnson announced today that the U.S. Food and Drug Administration (FDA) has approved a split-dosing regimen for DARZALEX® (daratumumab), providing healthcare professionals and patients with multiple myeloma an option to split the first infusion over two consecutive days.<sup>1</sup> The U.S. FDA approval is based on data from the [Phase 1b EQUULEUS \(MMY1001\)](#) clinical study, which demonstrated DARZALEX pharmacokinetic (PK) concentrations were comparable at the end of weekly dosing, regardless of whether the first dose was administered as a split infusion or as a single infusion.<sup>1</sup>

“The first infusion of DARZALEX is an important first step in a patient’s course of therapy, and this approval provides added flexibility for how patients may receive initial treatment,” said Craig Tandler, M.D., Vice President, Clinical Development and Global Medical Affairs, Janssen Research & Development, LLC. “We are committed to exploring options that may improve the overall treatment experience for patients.”

The U.S. FDA approval of a split-dosing regimen for DARZALEX is based on data from the global, multi-arm, Phase 1b EQUULEUS (MMY1001) study in multiple myeloma, which evaluated DARZALEX in combination with various treatment regimens.<sup>1</sup> Splitting the first dose of DARZALEX over two

consecutive days effectively reduced the duration of the first infusion and resulted in a similar rate and pattern of infusion reactions.<sup>1</sup> Data from the study demonstrated that DARZALEX concentrations were comparable at the end of weekly dosing regardless of whether the first 16 mg/kg dose was administered as a split infusion or single first infusion.<sup>1</sup>

The safety profile of DARZALEX was comparable when administered initially as a split or single dose, and no new safety events were observed with a split first dose.<sup>1</sup>

This approval follows approvals in Canada and the European Union in December 2018 for the DARZALEX initial infusion split-dosing regimen.

### **About DARZALEX (daratumumab) Injection for Intravenous Infusion**

DARZALEX is the first and only CD38-directed antibody to receive regulatory approval to treat multiple myeloma.<sup>2</sup> In the U.S., DARZALEX (daratumumab) first received FDA approval in [November 2015](#) as a monotherapy for patients with multiple myeloma who have received at least three prior lines of therapy, including a proteasome inhibitor (PI) and an immunomodulatory agent, or who are double refractory to a PI and an immunomodulatory agent.<sup>3</sup> DARZALEX received additional approvals in [November 2016](#) in combination with lenalidomide and dexamethasone, or bortezomib and dexamethasone for the treatment of patients with multiple myeloma who have received at least one prior therapy.<sup>4</sup> In [June 2017](#), DARZALEX received approval in combination with pomalidomide and dexamethasone for the treatment of patients with multiple myeloma who have received at least two prior therapies, including lenalidomide and a PI.<sup>5</sup> Most recently, in [May 2018](#), DARZALEX received approval in combination with bortezomib, melphalan and prednisone for the treatment of patients with newly diagnosed multiple myeloma who are ineligible for autologous stem cell transplant, making it the first monoclonal antibody approved for newly diagnosed patients with this disease.<sup>6</sup>

In [August 2012](#), Janssen Biotech, Inc. and Genmab A/S entered into a global license and development agreement, which granted Janssen an exclusive license to develop, manufacture and commercialize DARZALEX.<sup>7</sup> For the full U.S. Prescribing Information, please visit [www.DARZALEX.com](http://www.DARZALEX.com).

### **About Multiple Myeloma**

Multiple myeloma is an incurable blood cancer that occurs when malignant plasma cells grow uncontrollably in the bone marrow.<sup>8,9</sup> Refractory cancer occurs when a patient's disease is resistant

to treatment or in the case of multiple myeloma, when patients progress within 60 days of their last therapy.<sup>10,11</sup> Relapsed cancer means the disease has returned after a period of initial, partial or complete remission.<sup>12</sup> In 2019, it is estimated that 32,110 people will be diagnosed, and 12,960 will die from the disease, in the United States.<sup>13</sup> While some patients with multiple myeloma have no symptoms, most patients are diagnosed due to symptoms, which can include bone fracture or pain, low red blood counts, fatigue, high calcium levels, kidney problems or infections.<sup>14</sup>

## **IMPORTANT SAFETY INFORMATION<sup>2</sup>**

### **CONTRAINDICATIONS**

DARZALEX is contraindicated in patients with a history of severe hypersensitivity (eg, anaphylactic reactions) to daratumumab or any of the components of the formulation.

### **WARNINGS AND PRECAUTIONS**

**Infusion Reactions** – DARZALEX can cause severe and/or serious infusion reactions, including anaphylactic reactions. In clinical trials, approximately half of all patients experienced an infusion reaction. Most infusion reactions occurred during the first infusion and were grade 1-2. Infusion reactions can also occur with subsequent infusions. Nearly all reactions occurred during infusion or within 4 hours of completing an infusion. Prior to the introduction of post-infusion medication in clinical trials, infusion reactions occurred up to 48 hours after infusion. Severe reactions have occurred, including bronchospasm, hypoxia, dyspnea, hypertension, laryngeal edema and pulmonary edema. Signs and symptoms may include respiratory symptoms, such as nasal congestion, cough, throat irritation, as well as chills, vomiting and nausea. Less common symptoms were wheezing, allergic rhinitis, pyrexia, chest discomfort, pruritus, and hypotension.

Pre-medicate patients with antihistamines, antipyretics, and corticosteroids. Frequently monitor patients during the entire infusion. Interrupt infusion for reactions of any severity and institute medical management as needed. Permanently discontinue therapy if an anaphylactic reaction or life-threatening (Grade 4) reaction occurs and institute appropriate emergency care. For patients with Grade 1, 2, or 3 reactions, reduce the infusion rate when re-starting the infusion.

To reduce the risk of delayed infusion reactions, administer oral corticosteroids to all patients following DARZALEX infusions. Patients with a history of chronic obstructive pulmonary

disease may require additional post-infusion medications to manage respiratory complications. Consider prescribing short- and long-acting bronchodilators and inhaled corticosteroids for patients with chronic obstructive pulmonary disease.

**Interference with Serological Testing** – Daratumumab binds to CD38 on red blood cells (RBCs) and results in a positive Indirect Antiglobulin Test (Indirect Coombs test).

Daratumumab-mediated positive indirect antiglobulin test may persist for up to 6 months after the last daratumumab infusion. Daratumumab bound to RBCs masks detection of antibodies to minor antigens in the patient's serum. The determination of a patient's ABO and Rh blood type are not impacted. Notify blood transfusion centers of this interference with serological testing and inform blood banks that a patient has received DARZALEX. Type and screen patients prior to starting DARZALEX.

**Neutropenia** – DARZALEX may increase neutropenia induced by background therapy. Monitor complete blood cell counts periodically during treatment according to manufacturer's prescribing information for background therapies. Monitor patients with neutropenia for signs of infection. DARZALEX dose delay may be required to allow recovery of neutrophils. No dose reduction of DARZALEX is recommended. Consider supportive care with growth factors.

**Thrombocytopenia** – DARZALEX may increase thrombocytopenia induced by background therapy. Monitor complete blood cell counts periodically during treatment according to manufacturer's prescribing information for background therapies. DARZALEX dose delay may be required to allow recovery of platelets. No dose reduction of DARZALEX is recommended. Consider supportive care with transfusions.

**Interference with Determination of Complete Response** – Daratumumab is a human IgG kappa monoclonal antibody that can be detected on both the serum protein electrophoresis (SPE) and immunofixation (IFE) assays used for the clinical monitoring of endogenous M-protein. This interference can impact the determination of complete response and of disease progression in some patients with IgG kappa myeloma protein.

**Adverse Reactions** – The most frequently reported adverse reactions (incidence  $\geq 20\%$ ) in clinical trials were: infusion reactions, neutropenia, thrombocytopenia, fatigue, nausea, diarrhea, constipation, vomiting, muscle spasms, arthralgia, back pain, pyrexia, chills, dizziness, insomnia,

cough, dyspnea, peripheral edema, peripheral sensory neuropathy and upper respiratory tract infection.

In patients who received DARZALEX in combination with bortezomib, melphalan, and prednisone (DVMP), the most frequently reported adverse reactions (incidence  $\geq 20\%$ ) were: upper respiratory tract infection (48%), infusion reactions (28%), and peripheral edema (21%). Serious adverse reactions ( $\geq 2\%$  compared to the VMP arm) were pneumonia (11%), upper respiratory tract infection (5%), and pulmonary edema (2%). Treatment-emergent Grade 3-4 hematology laboratory abnormalities  $\geq 20\%$  were lymphopenia (58%), neutropenia (44%), and thrombocytopenia (38%).

In patients who received DARZALEX in combination with lenalidomide and dexamethasone, the most frequently reported adverse reactions (incidence  $\geq 20\%$ ) were: upper respiratory tract infection (65%), infusion reactions (48%), diarrhea (43%), fatigue (35%), cough (30%), muscle spasms (26%), nausea (24%), dyspnea (21%) and pyrexia (20%). The overall incidence of serious adverse reactions was 49%. Serious adverse reactions ( $\geq 2\%$  compared to Rd) were pneumonia (12%), upper respiratory tract infection (7%), influenza (3%), and pyrexia (3%). Treatment-emergent Grade 3-4 hematology laboratory abnormalities  $\geq 20\%$  were neutropenia (53%) and lymphopenia (52%).

In patients who received DARZALEX in combination with bortezomib and dexamethasone, the most frequently reported adverse reactions (incidence  $\geq 20\%$ ) were: peripheral sensory neuropathy (47%), infusion reactions (45%), upper respiratory tract infection (44%), diarrhea (32%), cough (27%), peripheral edema (22%), and dyspnea (21%). The overall incidence of serious adverse reactions was 42%. Serious adverse reactions ( $\geq 2\%$  compared to Vd) were upper respiratory tract infection (5%), diarrhea (2%) and atrial fibrillation (2%). Treatment-emergent Grade 3-4 hematology laboratory abnormalities  $\geq 20\%$  were lymphopenia (48%) and thrombocytopenia (47%).

In patients who received DARZALEX in combination with pomalidomide and dexamethasone, the most frequent adverse reactions ( $> 20\%$ ) were fatigue (50%), infusion reactions (50%), upper respiratory tract infection (50%), cough (43%), diarrhea (38%), constipation (33%), dyspnea (33%), nausea (30%), muscle spasms (26%), back pain (25%), pyrexia (25%), insomnia (23%), arthralgia (22%), dizziness (21%), and vomiting (21%). The overall incidence of serious adverse reactions was 49%. Serious adverse reactions reported in  $\geq 5\%$  patients included pneumonia (7%).

Treatment-emergent hematology Grade 3-4 laboratory abnormalities  $\geq 20\%$  were anemia (30%), neutropenia (82%), and lymphopenia (71%).

In patients who received DARZALEX as monotherapy, the most frequently reported adverse reactions (incidence  $\geq 20\%$ ) were: infusion reactions (48%), fatigue (39%), nausea (27%), back pain (23%), pyrexia (21%), cough (21%), and upper respiratory tract infection (20%). The overall incidence of serious adverse reactions was 33%. The most frequent serious adverse reactions were pneumonia (6%), general physical health deterioration (3%), and pyrexia (3%). Treatment-emergent Grade 3-4 hematology laboratory abnormalities  $\geq 20\%$  were lymphopenia (40%) and neutropenia (20%).

## **DRUG INTERACTIONS**

Effect of Other Drugs on Daratumumab: The coadministration of lenalidomide, pomalidomide or bortezomib with DARZALEX did not affect the pharmacokinetics of daratumumab.

Effect of Daratumumab on Other Drugs: The coadministration of DARZALEX with bortezomib or pomalidomide did not affect the pharmacokinetics of bortezomib or pomalidomide.

## **About the Janssen Pharmaceutical Companies of Johnson & Johnson**

At the Janssen Pharmaceutical Companies of Johnson & Johnson, we are working to create a world without disease. Transforming lives by finding new and better ways to prevent, intercept, treat and cure disease inspires us. We bring together the best minds and pursue the most promising science.

We are Janssen. We collaborate with the world for the health of everyone in it. Learn more at [www.janssen.com](http://www.janssen.com). Follow us at [@JanssenGlobal](https://twitter.com/JanssenGlobal) and [@JanssenUS](https://twitter.com/JanssenUS). Janssen Research & Development, LLC and Janssen Biotech, Inc. are part of the Janssen Pharmaceutical Companies of Johnson & Johnson.

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*This press release contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995 regarding the benefits of DARZALEX<sup>®</sup> (daratumumab) for the treatment of patients with multiple myeloma. The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Janssen Research & Development, LLC, Janssen Biotech, Inc., and any of the other Janssen Pharmaceutical Companies and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research and development, including the uncertainty of clinical success and of obtaining regulatory approvals; uncertainty of commercial success; manufacturing difficulties and delays; competition, including technological advances, new products and patents attained by competitors; challenges to patents;*

*[product efficacy or safety concerns resulting in product recalls or regulatory action; changes in behavior and spending patterns of purchasers of health care products and services; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and descriptions of these risks, uncertainties and other factors can be found in Johnson & Johnson's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, including in the sections captioned "Cautionary Note Regarding Forward-Looking Statements" and "Item 1A. Risk Factors," and in the company's most recently filed Quarterly Report on Form 10-Q, the company's subsequent filings with the Securities and Exchange Commission. Copies of these filings are available online at [www.sec.gov](http://www.sec.gov), [www.jnj.com](http://www.jnj.com) or on request from Johnson & Johnson. Neither the Janssen Pharmaceutical Companies of Johnson & Johnson nor Johnson & Johnson undertakes to update any forward-looking statement as a result of new information or future events or developments.*

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<sup>1</sup> Janssen Research & Development, LLC. A Study of JNJ-54767414 (HuMax CD38) (Anti-CD38 Monoclonal Antibody) in Combination With Backbone Treatments for the Treatment of Patients With Multiple Myeloma. In: ClinicalTrials.gov [Internet]. Bethesda (MD): National Library of Medicine (US). 2000-[cited 2018 July 24]. Available at: <https://clinicaltrials.gov/ct2/show/NCT01998971> Identifier: NCT01998971

<sup>2</sup> DARZALEX Prescribing Information, June 2018.

<sup>3</sup> Janssen Biotech, Inc. "DARZALEX® (daratumumab) Approved by U.S. FDA: First Human Anti-CD38 Monoclonal Antibody Available for the Treatment of Multiple Myeloma." Issued November 16, 2015.

<sup>4</sup> Janssen Biotech, Inc. "DARZALEX® (daratumumab) Approved by U.S. FDA in Combination with Two Standard of Care Regimens for the Treatment of Patients with Multiple Myeloma Who Have Received At Least One Prior Therapy." Issued November 21, 2016.

<sup>5</sup> Janssen Biotech, Inc. "DARZALEX® (daratumumab) Approved by the U.S. FDA in Combination with Pomalidomide and Dexamethasone for Patients with Multiple Myeloma Who Have Received At Least Two Prior Therapies." Issued June 16, 2017.

<sup>6</sup> Janssen Pharmaceutical Companies of Johnson & Johnson. "Janssen Announces DARZALEX® (daratumumab) U.S. FDA Approval for Newly Diagnosed Patients with Multiple Myeloma who are Transplant Ineligible." Issued May 7, 2018.

<sup>7</sup> Janssen Biotech, Inc. "Janssen Biotech Announces Global License and Development Agreement for Investigational Anti-Cancer Agent Daratumumab." Issued August 30, 2012.

<sup>8</sup> Kumar, SK et al. Leukemia. 2012 Jan; 26(1):149-57.

<sup>9</sup> American Cancer Society. "What Is Multiple Myeloma?" Available at: <http://www.cancer.org/cancer/multiplemyeloma/detailedguide/multiple-myeloma-what-is-multiple-myeloma>. Accessed August 2018. Accessed February 2019.

<sup>10</sup> National Cancer Institute. "NCI Dictionary of Cancer Terms: Refractory." Available at: <https://www.cancer.gov/publications/dictionaries/cancer-terms?CdrID=350245>. Accessed February 2019.

<sup>11</sup> Richardson, et al. "The Treatment of Relapsed and Refractory Multiple Myeloma." ASH Education Book. January 1, 2007 vol. 2007 no. 1 317-323.

<sup>12</sup> National Cancer Institute. "NCI Dictionary of Cancer Terms: Relapsed." Available at: <https://www.cancer.gov/publications/dictionaries/cancer-terms?CdrID=45866>. Accessed February 2019.

<sup>13</sup> American Cancer Society. "Key Statistics for Multiple Myeloma." Available at: <https://www.cancer.org/cancer/multiple-myeloma/about/key-statistics.html>. Accessed February 2019.

<sup>14</sup> American Cancer Society. "Diagnosing Multiple Myeloma From Test Results." Available at: <http://www.cancer.org/cancer/multiplemyeloma/detailedguide/multiple-myeloma-diagnosis>. Accessed February 2019.