
Prior Authorization DRUG Guidelines

Gemzar (gemcitabine)

Effective Date: 1/31/12

Date Developed: 12/14/11 by Albert Reeves MD

Last Approval Date: 1/26/16, 1/24/17, 1/23/18, 1/22/19, 2/18/20,
8/3/21, 2/1/22, 1/31/23, 2/13/24, 2/18/25

Gemcitabine is a pyrimidine antimetabolite that inhibits DNA synthesis by inhibition of DNA polymerase and ribonucleotide reductase.

Pre-Authorization Criteria:

Breast cancer: First-line treatment of metastatic breast cancer (in combination with paclitaxel) after failure of adjuvant chemotherapy which contained an anthracycline, e.g. doxyrubicin (unless contraindicated);

Non-small cell lung cancer (NSCLC): First-line treatment of inoperable, locally advanced (stage IIIA or IIIB) or metastatic (stage IV) NSCLC (in combination with cisplatin);

Ovarian cancer: Treatment of advanced ovarian cancer (in combination with carboplatin) that has relapsed at least 6 months following completion of platinum-based chemotherapy;

Pancreatic cancer: First-line treatment of locally advanced (nonresectable stage II or III) or metastatic (stage IV) pancreatic adenocarcinoma

Off-Label:

Biliary tract cancer, adjuvant therapy; Biliary tract cancer, advanced; Bladder cancer, muscle invasive, neoadjuvant therapy; Bladder cancer, non-muscle invasive, transitional cell, refractory; Cervical cancer, recurrent or persistent; Ewing sarcoma, refractory; Head and neck cancer: nasopharyngeal, locally advanced, advanced, or metastatic; Hodgkin lymphoma, relapsed; Malignant pleural mesothelioma; Non-Hodgkin lymphoma, relapsed or refractory; Osteosarcoma, refractory; Pancreatic cancer, potentially curable, adjuvant therapy; Renal carcinoma, non-clear cell, metastatic; Small cell lung cancer, refractory or relapsed; Soft tissue

sarcoma, advanced; Testicular cancer, refractory germ cell; Thymic malignancies, refractory; Unknown-primary carcinoma; Urothelial carcinoma, locally advanced, unresectable, or metastatic; Uterine sarcoma

NOTE: VCHCP requires that Gemcitabine be prescribed by an Oncologist.

Dosing: Adult

Details concerning dosing in combination regimens should also be consulted. **Note:** Prolongation of the infusion time >60 minutes and administration more frequently than once weekly have been shown to increase toxicity.

Pancreatic cancer, locally advanced or metastatic: I.V.: Initial: 1000 mg/m² over 30 minutes once weekly for up to 7 weeks followed by 1 week rest; then once weekly for 3 weeks out of every 4 weeks

Dose escalation: Patients who complete an entire cycle of therapy may have the dose in subsequent cycles increased by 25% as long as the absolute granulocyte count (AGC) nadir is >1500/mm³, platelet nadir is >100,000/mm³, and nonhematologic toxicity is less than WHO Grade 1. If the increased dose is tolerated (with the same parameters) the dose in subsequent cycles may again be increased by 20%.

Pancreatic cancer, advanced (unlabeled dosing/combinations): I.V.: 1000 mg/m² over 30 minutes weekly for up to 7 weeks followed by 1 week rest; then weekly for 3 weeks out of every 4 weeks (in combination with erlotinib) (Moore, 2007) **or** 1000 mg/m² over 30 minutes days 1, 8, and 15 every 4 weeks (in combination with capecitabine) (Cunningham, 2009) **or** 1000 mg/m² over 30 minutes days 1 and 15 every 4 weeks (in combination with cisplatin) (Heinemann, 2006) **or** 1000 mg/m² infused at 10 mg/m²/minute every 2 weeks (in combination with oxaliplatin) (Louvet, 2005)

Nonsmall cell lung cancer, locally advanced or metastatic (in combination with cisplatin):

I.V.: 1000 mg/m² over 30 minutes days 1, 8, and 15; repeat cycle every 28 days **or** 1250 mg/m² over 30 minutes days 1 and 8; repeat cycle every 21 days

Breast cancer, metastatic (AGC should be $\geq 1500/\text{mm}^3$ and platelets

$\geq 100,000/\text{mm}^3$ prior to each cycle): I.V.: 1250 mg/m² over 30 minutes days 1 and 8; repeat cycle every 21 days (in combination with paclitaxel) **or** (unlabeled dosing) as a single agent: 800 mg/m² over 30 minutes days 1, 8, and 15 of a 28- day treatment cycle (Carmichael, 1995)

Ovarian cancer, advanced (AGC should be $\geq 1500/\text{mm}^3$ and platelets

$\geq 100,000/\text{mm}^3$ prior to each cycle): I.V.: 1000 mg/m² over 30 minutes days 1 and 8; repeat cycle every 21 days (in combination with carboplatin)

OFF-LABEL USES: Consult product literature

ADVERSE EFFECTS:

Bone marrow suppression, Hemolytic uremic syndrome, Serious hepatotoxicity (including liver failure and death), Pulmonary toxicity, including adult respiratory distress syndrome, interstitial pneumonitis, pulmonary edema, and pulmonary fibrosis

REFERENCES

1. Addeo R, Caraglia M, Bellini S, et al, "Randomized Phase III Trial on Gemcitabine Versus Mytomicin in Recurrent Superficial Bladder Cancer: Evaluation of Efficacy and Tolerance," *J Clin Oncol*, 2010, 28(4):543-8. [PubMed [19841330](#)]
2. Albain KS, Nag SM, Calderillo-Ruiz G, et al, "Gemcitabine Plus Paclitaxel Versus

Paclitaxel Monotherapy in Patients With Metastatic Breast Cancer and Prior Anthracycline Treatment," *J Clin Oncol*, 2008, 26(24):3950-7. [PubMed [18711184](#)]

3. Andre T, Tournigand C, Rosmorduc O, et al, "Gemcitabine Combined With Oxaliplatin (GEMOX) in Advanced Biliary Tract Adenocarcinoma: A GERCOR Study," *Ann Oncol*, 2004, 15(9):1339-43. [PubMed [15319238](#)]
4. Bartlett NL, Niedzwiecki D, Johnson JL, et al, "Gemcitabine, Vinorelbine, and Pegylated Liposomal Doxorubicin (GVD), a Salvage Regimen in Relapsed Hodgkin's Lymphoma: CALGB 59804," *Ann Oncol*, 2007, 18(6):1071-9. [PubMed [17426059](#)]
5. Bredenfeld H, Franklin J, Nogova L, et al, "Severe Pulmonary Toxicity in Patients With Advanced-Stage Hodgkin's Disease Treated With a Modified Bleomycin, Doxorubicin, Cyclophosphamide, Vincristine, Procarbazine, Prednisone, and Gemcitabine (BEACOPP) Regimen is Probably Related to the Combination of Gemcitabine and Bleomycin: A Report of the German Hodgkin's Lymphoma Study Group," *J Clin Oncol*, 2004, 22(12):2424-9. [PubMed [15136597](#)]
6. Burnett AF, Roman LD, Garcia AA, "A Phase II Study of Gemcitabine and Cisplatin in Patients With Advanced, Persistent, or Recurrent Squamous Cell Carcinoma of the Cervix," *Gynecol Oncol*, 2000, 76(1):63-6. [PubMed [10620443](#)]
7. Carmichael J, Possinger K, Phillip P, et al, "Advanced Breast Cancer: A Phase II Trial With Gemcitabine," *J Clin Oncol*, 1995, 13(11):2731- 6. [PubMed [7595731](#)]
8. Cole PD, Schwartz CL, Drachtman RA, et al, "Phase II Study of Weekly Gemcitabine and Vinorelbine for Children With Recurrent or Refractory Hodgkin's Disease: A Children's Oncology Group Report," *J Clin Oncol*, 2009, 27(9):1456-61. [PubMed [19224841](#)]
9. Correale P, Cerretani D, Marsili S, et al, "Gemcitabine Increases Systemic 5-Fluorouracil Exposure in Advanced Cancer Patients," *Eur J Cancer*, 2003, 39(11):1547-51. [PubMed [12855261](#)]
10. Crump M, Baetz T, Couban S, et al, "Gemcitabine, Dexamethasone, and Cisplatin in Patients With Recurrent or Refractory Aggressive Histology B-Cell Non-Hodgkin Lymphoma: A Phase II Study by the National Cancer Institute of Canada Clinical Trials Group (NCIC-CTG)," *Cancer*, 2004, 101(8):1835-42. [PubMed [15386331](#)]
11. Culine S, Lortholary A, Voigt JJ, et al, "Cisplatin in Combination With Either Gemcitabine or Irinotecan in Carcinomas of Unknown Primary Site: Results of a Randomized Phase II Study - Trial for the French Study Group on Carcinomas of

- Unknown Primary (GEFCAPI 01)," *J Clin Oncol*, 2003, 21(18):3479-82. [PubMed [12972523](#)]
12. Cunningham D, Chau I, Stocken DD, et al, "Phase III Randomized Comparison of Gemcitabine Versus Gemcitabine Plus Capecitabine in Patients With Advanced Pancreatic Cancer," *J Clin Oncol*, 2009, 27(33):5513-8. [PubMed [19858379](#)]
 13. Dalbagni G, Russo P, Bochner B, et al, "Phase II Trial of Intravesical Gemcitabine in Bacille Calmette-Guerin-Refractory Transitional Cell Carcinoma of the Bladder," *J Clin Oncol*, 2006, 24(18):2729-34. [PubMed [16782913](#)]
 14. De Giorgi U, Rosti G, Aieta M, et al, "Phase II Study of Oxaliplatin and Gemcitabine Salvage Chemotherapy in Patients With Cisplatin-Refractory Nonseminomatous Germ Cell Tumor," *Eur Urol*, 2006, 50(5):1032-8. [PubMed [16757095](#)]
 15. Dileo P, Morgan JA, Zahrieh D, et al, "Gemcitabine and Vinorelbine Combination Chemotherapy for Patients With Advanced Soft Tissue Sarcomas: Results of a Phase II Trial," *Cancer*, 2007, 109(9):1863-9. [PubMed [17385194](#)]
 16. Ecklund JW, Trifilio S, and Mulcahy MF, "Chemotherapy Dosing in the Setting of Liver Dysfunction," *Oncology (Williston Park)*, 2005, 19(8):1057- 63. [PubMed [16131047](#)]
 17. Edelman MJ, Belani CP, Socinski MA, et al, "Outcomes Associated With Brain Metastases in a Three-Arm Phase III Trial of Gemcitabine- Containing Regimens Versus Paclitaxel Plus Carboplatin for Advanced Non-Small Cell Lung Cancer," *J Thorac Oncol*, 2010, 5(1):110-6. [PubMed [20035187](#)]
 18. Floyd J, Mirza I, Sachs B, et al, "Hepatotoxicity of Chemotherapy," *Semin Oncol*, 2006, 33(1):50-67. [PubMed [16473644](#)]
 19. Heinemann V, Quietzsch D, Gieseler F, et al, "Randomized Phase III Trial of Gemcitabine Plus Cisplatin Compared With Gemcitabine Alone in Advanced Pancreatic Cancer," *J Clin Oncol*, 2006, 24(24):3946-52. [PubMed [16921047](#)]
 20. Hensley ML, Blessing JA, Degeest K, et al, "Fixed-Dose Rate Gemcitabine Plus Docetaxel as Second-Line Therapy for Metastatic Uterine Leiomyosarcoma: A Gynecologic Oncology Group Phase II Study," *Gynecol Oncol*, 2008, 109(3):323-8. [PubMed [18394689](#)]
 21. Hinton S, Catalano P, Einhorn LH, et al, "Phase II Study of Paclitaxel Plus Gemcitabine in Refractory Germ Cell Tumors (E9897): A Trial of the Eastern Cooperative Oncology Group," *J Clin Oncol*, 2002, 20(7):1859-63. [PubMed

11919245]

22. Janus N, Thariat J, Boulanger H, et al, "Proposal for Dosage Adjustment and Timing of Chemotherapy in Hemodialyzed Patients," *Ann Oncol*, 2010, 21(7):1395-403. [PubMed [20118214](#)]
23. Knox JJ, Hedley D, Oza A, et al, "Combining Gemcitabine and Capecitabine in Patients With Advanced Biliary Cancer: A Phase II Trial," *J Clin Oncol*, 2005, 23(10):2332-8. [PubMed [15800324](#)]
24. Ko AH, Dito E, Schillinger B, et al, "Phase II Study of Fixed Dose Rate Gemcitabine With Cisplatin for Metastatic Adenocarcinoma of the Pancreas," *J Clin Oncol*, 2006, 24(3):379-85. [PubMed [16344320](#)]
25. Kollmannsberger C, Beyer J, Liersch R, et al, "Combination Chemotherapy With Gemcitabine Plus Oxaliplatin in Patients With Intensively Pretreated or Refractory Germ Cell Cancer: A Study of the German Testicular Cancer Study Group," *J Clin Oncol*, 2004, 22(1):108- 14. [PubMed [14701772](#)]
26. Leu KM, Ostruszka LJ, Shewach D, et al, "Laboratory and Clinical Evidence of Synergistic Cytotoxicity of Sequential Treatment With Gemcitabine Followed by Docetaxel in the Treatment of Sarcoma," *J Clin Oncol*, 2004, 22(9):1706-12. [PubMed [15117993](#)]
27. Li YF, Fu S, Hu W, et al, "Systemic Anticancer Therapy in Gynecological Cancer Patients With Renal Dysfunction," *Int J Gynecol Cancer*, 2007, 17(4):739-63. [PubMed [17309673](#)]
28. Look KY, Sandler A, Blessing JA, et al, "Phase II Trial of Gemcitabine as Second-Line Chemotherapy of Uterine Leiomyosarcoma: A Gynecologic Oncology Group (GOG) Study," *Gynecol Oncol*, 2004, 92(2):644-7. [PubMed [14766260](#)]
29. López A, Gutiérrez A, Palacios A, et al, "GEMOX-R Regimen is a Highly Effective Salvage Regimen in Patients With Refractory/Relapsing Diffuse Large-Cell Lymphoma: A Phase II Study," *Eur J Haematol*, 2008, 80(2):127-32. [PubMed [18005385](#)]
30. Louvet C, Labianca R, Hammel P, et al, "Gemcitabine in Combination With Oxaliplatin Compared With Gemcitabine Alone in Locally Advanced or Metastatic Pancreatic Cancer: Results of a GERCOR and GISCAD Phase III Trial," *J Clin Oncol*, 2005, 23(15):3509-16. [PubMed [15908661](#)]
31. Maki RG, Wathen JK, Patel SR, et al, "Randomized Phase II Study of Gemcitabine and Docetaxel Compared With Gemcitabine Alone in Patients With Metastatic Soft Tissue Sarcomas: Results of Sarcoma Alliance for Research Through Collaboration Study 002," *J Clin Oncol*, 2007, 25(19):2755-63. [PubMed [17602081](#)]

32. Masters GA, Declerck L, Blanke C, et al, "Phase II Trial of Gemcitabine in Refractory or Relapsed Small-Cell Lung Cancer: Eastern Cooperative Oncology Group Trial 1597," *J Clin Oncol*, 2003, 21(8):1550-5. [PubMed 12697880]
33. Merimsky O, Meller I, Flusser G, et al, "Gemcitabine in Soft Tissue or Bone Sarcoma Resistant to Standard Chemotherapy: A Phase II Study," *Cancer Chemother Pharmacol*, 2000, 45(2):177-81. [PubMed 10663634]
34. Monk BJ, Sill MW, McMeekin DS, et al, "Phase III Trial of Four Cisplatin-Containing Doublet Combinations in Stage IVB, Recurrent, or Persistent Cervical Carcinoma: A Gynecologic Oncology Group Study," *J Clin Oncol*, 2009, 27(28):4649-55. [PubMed 19720909]
35. Moore MJ, Goldstein D, Hamm J, et al, "Erlotinib Plus Gemcitabine Compared With Gemcitabine Alone in Patients With Advanced Pancreatic Cancer: A Phase III Trial of the National Cancer Institute of Canada Clinical Trials Group," *J Clin Oncol*, 2007, 25(15):1960-6. [PubMed 17452677]
36. Morgan C, Tillett T, Braybrooke J, et al, "Management of Uncommon Chemotherapy-Induced Emergencies," *Lancet Oncol*, 2011, 12(8):806-14. [PubMed 21276754]
37. National Comprehensive Cancer Network® (NCCN), "Clinical Practice Guidelines in Oncology™: Pancreatic Adenocarcinoma," Version 2.2011. Available at http://www.nccn.org/professionals/physician_gls/PDF/pancreatic.pdf
38. Navid F, Willert JR, McCarville MB, et al, "Combination of Gemcitabine and Docetaxel in the Treatment of Children and Young Adults With Refractory Bone Sarcoma," *Cancer*, 2008, 113(2):419-25. [PubMed 18484657]
39. Nowak AK, Byrne MJ, Williamson R, et al, "A Multicentre Phase II Study of Cisplatin and Gemcitabine for Malignant Mesothelioma," *Br J Cancer*, 2002, 87(5):491-6. [PubMed 12189542]
40. Palmieri G, Merola G, Federico P, et al, "Preliminary Results of Phase II Study of Capecitabine and Gemcitabine (CAP-GEM) in Patients With Metastatic Pretreated Thymic Epithelial Tumors (TETs)," *Ann Oncol*, 2010, 21(6):1168-72. [PubMed 19880439]
41. Pectasides D, Pectasides M, Farmakis D, et al, "Gemcitabine and Oxaliplatin (GEMOX) in Patients With Cisplatin-Refractory Germ Cell Tumors: A Phase II Study," *Ann Oncol*, 2004, 15(3):493-7. [PubMed 14998855]
42. Pfisterer J, Vergote I, Du Bois A, et al, "Combination Therapy with Gemcitabine and Carboplatin in Recurrent Ovarian Cancer," *Int J Gynecol Cancer*, 2005, 15 (Suppl 1):36-41. [PubMed 15839957]

43. Poplin E, Feng Y, Berlin J, et al, "Phase III, Randomized Study of Gemcitabine and Oxaliplatin Versus Gemcitabine (Fixed-Dose Rate Infusion) Compared With Gemcitabine (30-Minute Infusion) in Patients With Pancreatic Carcinoma E6201: a Trial of the Eastern Cooperative Oncology Group," *J Clin Oncol*, 2009, 27(23):3778-85. [PubMed [19581537](#)]
44. Pouessel D, Culine S, Becht C, et al, "Gemcitabine and Docetaxel as Front-Line Chemotherapy in Patients With Carcinoma of an Unknown Primary Site," *Cancer*, 2004, 100(6):1257-61. [PubMed [15022294](#)]
45. Santoro A, Magagnoli M, Spina M, et al, "Ifosfamide, Gemcitabine, and Vinorelbine: A New Induction Regimen for Refractory and Relapsed Hodgkin's Lymphoma," *Haematologica*, 2007, 92(1):35-41. [PubMed [17229633](#)]
46. Schilder RJ, Blessing J, and Cohn DE, "Evaluation of Gemcitabine in Previously Treated Patients With Non-Squamous Cell Carcinoma of the Cervix: A Phase II Study of the Gynecologic Oncology Group," *Gynecol Oncol*, 2005, 96(1):103-7. [PubMed [15589587](#)]
47. Seliger G, Mueller LP, Kegel T, et al, "Phase 2 Trial of Docetaxel, Gemcitabine, and Oxaliplatin Combination Chemotherapy in Platinum- and Paclitaxel- Pretreated Epithelial Ovarian Cancer," *Int J Gynecol Cancer*, 2009, 19(8):1446-53. [PubMed [20009905](#)]
48. Tannir NM, Thall PF, Ng CS, et al, "A Phase II Trial of Gemcitabine Plus Capecitabine for Metastatic Renal Cell Cancer Previously Treated With Immunotherapy and Targeted Agents," *J Urol*, 2008, 180(3):867-72. [PubMed [18635226](#)]
49. Tempero M, Plunkett W, Ruiz Van Haperen V, "Randomized Phase II Comparison of Dose-Intense Gemcitabine: Thirty-Minute Infusion and Fixed Dose Rate Infusion in Patients With Pancreatic Adenocarcinoma," *J Clin Oncol*, 2003, 21(18):3402-8. [PubMed [12885837](#)]
50. Valle J, Wason H, Palmer DH, et al, "Cisplatin Plus Gemcitabine Versus Gemcitabine for Biliary Tract Cancer," *N Engl J Med*, 2010 362(14):1273- 81. [PubMed [20375404](#)]
51. van Haarst JM, Baas P, Manegold Ch, et al, "Multicentre Phase II Study of Gemcitabine and Cisplatin in Malignant Pleural Mesothelioma," *Br J Cancer*, 2002, 86(3):342-5. [PubMed [11875695](#)]
52. Venook AP, Egorin MJ, Rosner GL, et al, "Phase I and Pharmacokinetic Trial of Gemcitabine in Patients With Hepatic or Renal Dysfunction: Cancer and Leukemia Group B 9565," *J Clin Oncol*, 2000, 18(14):2780-7. [PubMed [10894879](#)]
53. von der Maase H, Hansen SW, Roberts JT, et al, "Gemcitabine and Cisplatin Versus

Methotrexate, Vinblastine, Doxorubicin, and Cisplatin in Advanced or Metastatic Bladder Cancer: Results of a Large, Randomized, Multinational, Multicenter, Phase III Study," *J Clin Oncol*, 2000, 18(17):3068-77. [PubMed 11001674]

54. Waters JS, Moss C, Puyle L, et al, "Phase II Clinical Trial of Capecitabine and Gemcitabine Chemotherapy in Patients With Metastatic Renal Carcinoma," *Br J Cancer*, 2004, 91(10):1763-8. [PubMed 15505625]
55. Xu Q, Zhang Y, and Trissel LA, "Physical and Chemical Stability of Gemcitabine Hydrochloride Solutions," *J Am Pharm Assoc*, 1999, 39(4):509-13.
56. Zhang L, Zhang Y, Huang PY, et al, "Phase II Clinical Study of Gemcitabine in the Treatment of Patients With Advanced Nasopharyngeal Carcinoma After the Failure of Platinum-Based Chemotherapy," *Cancer Chemother Pharmacol*, 2008, 61(1):33-8. [PubMed 17909810]
57. Oh D-Y, He AR, Qin S, et al. Durvalumab plus gemcitabine and cisplatin in advanced biliary tract cancer. *NEJM Evidence*. <https://evidence.nejm.org/doi/10.1056/EVIDoa2200015>. Published online June 1, 2022
58. Oettle H, Post S, Neuhaus P, et al. Adjuvant chemotherapy with gemcitabine vs observation in patients undergoing curative-intent resection of pancreatic cancer: a randomized controlled trial. *JAMA*. 2007;297(3):267-277.
59. Oettle H, Neuhaus P, Hochhaus A, et al. Adjuvant chemotherapy with gemcitabine and long-term outcomes among patients with resected pancreatic cancer: the CONKO-001 randomized trial. *JAMA*. 2013;310(14):1473-1481.
60. Palmieri G, Buonerba C, Ottaviano M, et al. Capecitabine plus gemcitabine in thymic epithelial tumors: final analysis of a phase II trial. *Future Oncol*. 2014;10(14):2141-2147.
61. Pfisterer J, Vergote I, Du Bois A, et al. Combination Therapy with Gemcitabine and Carboplatin in Recurrent Ovarian Cancer. *Int J Gynecol Cancer*. 2005;15(suppl 1):36-41
62. Zhang Y, Chen L, Hu GQ, et al. Final overall survival analysis of gemcitabine and cisplatin induction chemotherapy in nasopharyngeal carcinoma: a multicenter, randomized phase III trial. *J Clin Oncol*. 2022;40(22):2420-2425.

Revision History:

Date Reviewed/No Updates: 1/16/13 by A. Reeves MD Date
 Approved by P&T Committee: 1/31/12; 1/29/13 Date Reviewed/No
 Updates: 1/28/14 by C. Sanders MD Date Approved by P&T
 Committee: 1/28/14
 Date Reviewed/No Updates: 1/13/15 by C. Sanders, MD
 Date Approved by P&T Committee: 1/27/15
 Date Reviewed/Updated: 3/31/15 by C. Sanders, MD; R. Sterling, MD
 Date Approved by P&T Committee: 1/26/16
 Date Reviewed/No Updates: 1/24/17 by C. Sanders, MD; R. Sterling, MD
 Date Approved by P&T Committee: 1/24/17
 Date Reviewed/No Updates: 1/23/18 by C. Sanders, MD; R. Sterling, MD
 Date Approved by P&T Committee: 1/23/18
 Date Reviewed/No Updates: 1/22/19 by C. Sanders, MD; R. Sterling, MD
 Date Approved by P&T Committee: 1/22/19
 Date Reviewed/No Updates: 2/18/20 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 2/18/20
 Date Reviewed/ Updated: 8/3/21 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 8/3/21
 Date Reviewed/No Updates: 2/1/22 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 2/1/22
 Date Reviewed/No Updates: 1/31/23 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 1/31/23
 Date Reviewed/No Updates: 2/13/24 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 2/13/24
 Date Reviewed/Updated: 2/18/25 by H. Taekman, MD; R. Sterling, MD
 Date Approved by P&T Committee: 2/18/25

Revision Date	Content Revised (Yes/No)	Contributors	Review/Revision Notes
1/24/17	No	Catherine Sanders, MD; Robert Sterling, MD	Annual review
1/23/18	No	Catherine Sanders, MD; Robert Sterling, MD	Annual review
1/22/19	No	Catherine Sanders, MD; Robert Sterling, MD	Annual review
2/18/20	No	Howard Taekman, MD; Robert Sterling, MD	Annual review
8/3/21	Yes	Howard Taekman, MD; Robert Sterling, MD	Updated definition section. Formatting changes.
2/1/22	No	Howard Taekman, MD; Robert Sterling, MD	Annual review
1/31/23	No	Howard Taekman, MD; Robert Sterling, MD	Annual review
2/13/24	No	Howard Taekman, MD; Robert Sterling, MD	Annual review
2/18/25	Yes	Howard Taekman, MD; Robert Sterling, MD	Updated definition, dosing information, off label use and adverse reaction sections