

Report on New Patented Drug – Pristiq

Under its transparency initiative, the PMPRB publishes the results of the reviews of new patented drug products by Board Staff, for purposes of applying the Board's pre-2010 Guidelines for all new active substances introduced in Canada after January 1, 2002.

Brand Name: Pristiq
Generic Name: (*desvenlafaxine succinate*)
DINs: 02321092 (50 mg tablet)
02321106 (100 mg tablet)
Patentee: Wyeth Pharmaceuticals

Indication – as per product monograph:

For the symptomatic relief of major depressive disorder.

Date of Issuance of First Patent

Pertaining to the Medicine: October 17, 2006

Notice of Compliance: February 4, 2009

Date of First Sale: March 5, 2009 (DIN 02321092)
March 6, 2009 (DIN 02321106)

ATC Class: N06AX23
Nervous system; Psychoanaleptics;
antidepressants, Other antidepressants.

APPLICATION OF THE GUIDELINES

Summary

The introductory prices of Pristiq were found to be within the pre-2010 Guidelines because the cost of therapy did not exceed the cost of therapy of existing drug products in the therapeutic class comparison and did not exceed the range of prices of the same drug products in the comparator countries listed in the *Patented Medicines Regulations* (Regulations) in which Pristiq was sold.

Scientific Review

Pristiq is a new active substance and the PMPRB's Human Drug Advisory Panel (HDAP) recommended that Pristiq be classified as a category 3 new medicine (provides moderate, little or no therapeutic advantage over comparable existing drug products).

The Therapeutic Class Comparison (TCC) test of the pre-2010 Guidelines provides that the price of a category 3 new drug product cannot exceed the prices of other drugs that treat the same disease or condition. Comparators are generally selected from among existing drug products in the same 4th level of the World Health Organization (WHO) Anatomical Therapeutic Chemical (ATC) classification system that are clinically equivalent in addressing the approved indication. See the PMPRB's *Compendium of Guidelines, Policies and Procedures "up to 2009"* for a more complete description of the Guidelines and the policies on TCCs.

The HDAP recommended venlafaxine (Effexor XR), trazodone (Desyrel), mirtazapine (Remeron RD), bupropion (Wellbutrin) and duloxetine (Cymbalta) as the appropriate comparators to Pristiq. They all share the same 4th level ATC class and the same indication as Pristiq. There were no comparative trial data to support the inclusion of drug products outside the 4th level ATC.

The pre-2010 Guidelines provide that the dosage recommended for comparison purposes will normally not be higher than the maximum of the usual recommended dosage. The recommended comparable dosage regimens for Pristiq and the comparable drug products were based on the respective product monographs and supported by clinical literature.

Price Review

Under the pre-2010 Guidelines, the introductory price of a category 3 new drug product will be presumed to be excessive if it exceeds the price of all the comparable drug products based on the TCC test or if it exceeds the range of prices of the same drug product sold in the seven countries listed in the Regulations.

The introductory prices of Pristiq were within the pre-2010 Guidelines as the cost per treatment did not exceed the cost per treatment of the comparable drug products as shown in the table below.

Introductory Period – Pristiq 50 mg per tablet and 100 mg per tablet - (March to June 2009)

Brand Name (generic name)	Strength	Dosage Regimen (per day)	Unit Price	Cost per Treatment (per day)
Pristiq (desvenlafaxine succinate)	50 mg/tablet	1 tablet	\$2.5700 ⁽¹⁾	\$2.5700
Desyrel Dividose (trazodone HCl)	150 mg/tablet	2 2/3 tablets	\$0.5812 ⁽²⁾	\$1.5499
Remeron RD (mirtazapine)	45 mg/tablet	1 tablet	\$1.1700 ⁽²⁾	\$1.1700
Wellbutrin SR (bupropion)	150 mg/tablet	1 tablet	\$0.8260 ⁽²⁾	\$0.8260
Wellbutrin XL (bupropion)	150 mg/tablet	1 tablet	\$0.5190 ⁽²⁾	\$0.5190
Effexor XR (venlafaxine)	75 mg/ capsule	3 capsules	\$1.6110 ⁽²⁾	\$4.8330
Effexor XR (venlafaxine) + Effexor XR (venlafaxine)	150 mg/ capsule + 75 mg/ capsule	1 capsule + 1 capsule	\$1.7039 ⁽²⁾ + \$1.6110 ⁽²⁾	\$3.3149
Cymbalta (duloxetine)	60 mg/ capsule	1 capsule	\$3.5600 ⁽²⁾	\$3.5600
Pristiq (desvenlafaxine succinate)	100 mg/tablet	1 tablet	\$2.5700 ⁽¹⁾	\$2.5700
Desyrel Dividose (trazodone HCl)	150 mg/tablet	4 tablets	\$0.5812 ⁽²⁾	\$2.3248
Remeron RD (mirtazapine)	30 mg/tablet	2 tablets	\$0.7800 ⁽²⁾	\$1.5600
Remeron (mirtazapine)	30 mg/tablet	2 tablets	\$1.2400 ⁽²⁾	\$2.4800
Wellbutrin SR (bupropion)	150 mg/tablet	2 tablets	\$0.8260 ⁽²⁾	\$1.6520
Wellbutrin XL (bupropion)	300 mg/tablet	1 tablet	\$1.0380 ⁽²⁾	\$1.0380
Cymbalta (duloxetine)	60 mg/ capsule	1 capsule	\$3.5600 ⁽²⁾	\$3.5600

Remeron RD (mirtazapine) + Remeron RD (mirtazapine)	45 mg/tablet + 15 mg/tablet	1 tablet + 1 tablet	\$1.1700 ⁽²⁾ + \$0.3900 ⁽²⁾	\$1.5600
Effexor XR (venlafaxine)	150 mg/ capsule	2 capsules	\$1.7039 ⁽²⁾	\$3.4078

(1) PPS Pharma, 2010.

(2) Association Québécoise des pharmaciens propriétaires, 2009.

In 2009, both strengths of Pristiq were sold in one country listed in the Regulations, namely, the United States. In compliance with the Guidelines, the prices of Pristiq in Canada did not exceed the prices of the same drug product in this country.

The publication of the Summary Reports is part of the PMPRB's commitment to make its price review more transparent.

Where comparators and dosage regimens are referred to in the Summary Reports, they have been selected by the HDAP for the purpose of carrying out the PMPRB's regulatory mandate, which is to review the prices of patented drug products sold in Canada to ensure that such prices are not excessive.

The PMPRB reserves the right to exclude from the therapeutic class comparison list any drug product if it has reason to believe it is being sold at an excessive price.

In Summary Reports under the pre-2010 Guidelines, the PMPRB refers to the publicly available prices of comparators, provided that such prices are not more than 10% above a non-excessive price in which case no price will be made available. Publication of these prices is for information purposes only and should not be relied upon as indicating the public prices are considered within the pre-2010 Guidelines.

The information contained in the PMPRB's Summary Reports should not be relied upon for any purpose other than that stated and is not to be interpreted as an endorsement, recommendation or approval of any drug product, nor is it intended to be relied upon as a substitute for seeking appropriate advice from a qualified health care practitioner.

References – Pristiq

Patroneva A, Connolly SM, Fatato P, et al. An assessment of drug-drug interactions: The effect of desvenlafaxine and duloxetine on the pharmacokinetics of the CYP2D6 probe desipramine in health subjects. *Drug Metab Dispos* 2008;36(12):2484-91.

Liebowitz MR, Manley AL, Padmanabhan SK, et al. Efficacy, safety, and tolerability of desvenlafaxine 50 mg/day and 100 mg/day in outpatients with major depressive disorder. *Current Medical Research and Opinion*. 2008;24(7):1877-90.

Boyer P, Montgomery S, Lepola U, et al. Efficacy, safety and tolerability of fixed-dose desvenlafaxine 50 and 100 mg/day for major depressive disorder in a placebo-controlled trial. *Int Clin Psychopharmacol*. 2008;23:243-53.

Parikh S, Lam R, and the CANMAT Depression Work Group. Clinical Guidelines for the Treatment of Depressive Disorders: I. Definitions, Prevalence, and Health Burden. *Can J Psychiatry* 2001;46(Suppl 1):13-20.

Psychiatric Disorders: Depression. E-Therapeutics. Canadian Pharmacists Association. Available online with subscription at www.e-therapeutics.ca

Qaseem A, Snow V, Denberg TD, et al, for the Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Using second-generation antidepressants to treat depressive disorders: A clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2008;149:725-33.

Reesal RT, Lam RW, and the CANMAT Depression Work Group. Clinical guidelines for the treatment of depressive disorders: II. Principles of management. *Can J Psychiatry* 2001;46(Suppl 1):21S-28S.

Frank E, Prien RF, Jarret RB, et al. Conceptualization and rationale for consensus definitions of terms in major depressive disorder: remission, recovery, relapse, and recurrence. *Archives of General Psychiatry* 1991.48:9;851-5.

Gartlehner G, Hansen RA, Thieda P, et al. Comparative effectiveness of second-generation antidepressants in the pharmacologic treatment of adult depression. Comparative Effectiveness Review No. 7. Rockville, MD. Agency for Healthcare Research and Quality. January 2007. Available at: www.effectivehealthcare.ahrq.gov/reports/final.cfm

Papkostas GI. Tolerability of modern antidepressants. *J Clin Psychiatry* 2008;69(Suppl E1):8-13.

Papakostas GI. Limitations of contemporary antidepressants: tolerability. *J Clin Psychiatry* 2007;68(Suppl.10):11-7.

Demyttenaere K, Adelin A, Patrick M, et al. Six-month compliance with antidepressant medication in the treatment of major depressive disorder. *Int Clin Psychopharmacol*. 2008;23(1):36-42.

Masand PS. Tolerability and adherence issues in antidepressant therapy. *Clin Therapeutics* 2003;25(8):2289-304.

Papakostas GI, Fava M. Predictors, moderators, and mediators (correlates) of treatment outcome in major depressive disorder. *Dialogues Clin Neurosci*. 2008;10(4):439-51.

Karasu TB, Gelenberg A, Merriam A, et al. Work Group on major depressive disorder. Practice guideline for the treatment of patients with major depressive disorder. Second Edition. American Psychiatric Association 2000. Available at: www.psychiatryonline.com/pracGuide/pracGuideChapToc_7.aspx

Kennedy SH, Lam RW, Cohen NL, et al, and the CANMAT Depression Work Group. Clinical guidelines for the treatment of depressive disorders: IV Medications and other biological treatments. *Can J Psychiatry* 2001;46(Suppl.1):38S-58S.

Vis P, van Baarewijk M, Einarson T. Duloxetine and Venlafaxine-XR in the treatment of major depressive disorder: A meta-analysis of randomized clinical trials. *Ann Pharmacother*. 2005;39:1798-807.

Nemeroff CB, Entsuah R, Benattia I, et al. Comprehensive analysis of remission (COMPARE) with venlafaxine versus SSRIs. *Biol Psychiatry*. 2008 Feb 15;63(4):424-34.

Qaseem A, Snow V, Denberg TD, Forciea MA, Owens DK; Clinical Efficacy Assessment Subcommittee of American College of Physicians. Using second-generation antidepressants to treat depressive disorders: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2008 Nov 18;149(10):725-33.

Sopko MA Jr, Ehret MJ, Grgas M. Desvenlafaxine: another "me too" drug?. *Ann Pharmacother*. 2008 Oct;42(10):1439-46.

Ellis P; Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression. Australian and New Zealand clinical practice guidelines for the treatment of depression. *Aust N Z J Psychiatry*. 2004 Jun;38(6):389-407.

European Medicines Agency. Questions and answers on the withdrawal of the marketing application for Ellefore (International non-proprietary name (INN): desvenlafaxine). October 23, 2008. Available:

<http://www.emea.europa.eu/humandocs/PDFs/EPAR/ellefore/H-932-WQ&A-en.pdf>

Feiger AD, Tourian KA, Rosas GR, Padmanabhan SK. A placebo-controlled study evaluating the efficacy and safety of flexible-dose desvenlafaxine treatment in outpatients with major depressive disorder. *CNS Spectr*. 2009 Jan;14(1):41-50.

Boyer P, Montgomery S, Lepola U, Germain JM, Brisard C, Ganguly R, Padmanabhan SK, Tourian KA. Efficacy, safety, and tolerability of fixed-dose desvenlafaxine 50 and 100 mg/day for major depressive disorder in a placebo-controlled trial. *Int Clin Psychopharmacol*. 2008 Sep;23(5):243-53.

Liebowitz MR, Manley AL, Padmanabhan SK, Ganguly R, Tummala R, Tourian KA. Efficacy, safety, and tolerability of desvenlafaxine 50 mg/day and 100 mg/day in outpatients with major depressive disorder. *Curr Med Res Opin*. 2008 Jul;24(7):1877-90.

Septien-Velez L, Pitrosky B, Padmanabhan SK, Germain JM, Tourian KA. A randomized, double-blind, placebo-controlled trial of desvenlafaxine succinate in the treatment of major depressive disorder. *Int Clin Psychopharmacol*. 2007 Nov;22(6):338-47.

Liebowitz MR, Yeung PP, Entsuah R. A randomized, double-blind, placebo-controlled trial of desvenlafaxine succinate in adult outpatients with major depressive disorder. *J Clin Psychiatry*. 2007 Nov;68(11):1663-72.

DeMartinis NA, Yeung PP, Entsuah R, Manley AL. A double-blind, placebo-controlled study of the efficacy and safety of desvenlafaxine succinate in the treatment of major depressive disorder. *J Clin Psychiatry*. 2007 May;68(5):677-88.

Anderson IM, Ferrier IN, Baldwin RC, Cowen PJ, Howard L, Lewis G, Matthews K, McAllister-Williams RH, Peveler RC, Scott J, Tylee A. Evidence-based guidelines for treating depressive disorders with antidepressants: a revision of the 2000 British Association for Psychopharmacology guidelines. *J Psychopharmacol*. 2008 Jun;22(4):343-96.

Institute for Clinical Systems Improvement (ICSI). Major depression in adults in primary care. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); May 2008. 84 p. [244 references]. Available: http://www.icsi.org/depression_5/depression_major_in_adults_in_primary_care_3.html

National Institute for Health and Clinical Excellence. Depression: management of depression in primary and secondary care. April 2007. Available: <http://www.nice.org.uk/nicemedia/pdf/CG23NICEguidelineamended.pdf>

Bauer M, Bschor T, Pfennig A, Whybrow PC, Angst J, Versiani M, Möller HJ; WFSBP Task Force on Unipolar Depressive Disorders. World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines for Biological Treatment of Unipolar Depressive Disorders in Primary Care. World J Biol Psychiatry. 2007;8(2):67-104.

Lam RW, Kennedy SH. CPA Position Statement. Prescribing Antidepressants for Depression in 2005: Recent Concerns and Recommendations. Available: <http://publications.cpa-apc.org/media.php?mid=143>

Cipriani A, Furukawa TA, Salanti G, Geddes JR, Higgins JP, Churchill R, Watanabe N, Nakagawa A, Omori IM, McGuire H, Tansella M, Barbui C. Comparative efficacy and acceptability of 12 new-generation antidepressants: a multiple-treatments meta-analysis. Lancet. 2009 Feb 28;373(9665):746-58.

Papakostas GI, Thase ME, Fava M, Nelson JC, Shelton RC. Are antidepressant drugs that combine serotonergic and noradrenergic mechanisms of action more effective than the selective serotonin reuptake inhibitors in treating major depressive disorder? A meta-analysis of studies of newer agents. Biol Psychiatry. 2007 Dec 1;62(11):1217-27.

Montgomery SA, Baldwin DS, Blier P, Fineberg NA, Kasper S, Lader M, Lam RW, Lépine JP, Möller HJ, Nutt DJ, Rouillon F, Schatzberg AF, Thase ME. Which antidepressants have demonstrated superior efficacy? A review of the evidence. Int Clin Psychopharmacol. 2007 Nov;22(6):323-9.

American Society of Health-System Pharmacists. AHFS Drug Information® (2009). In: STAT!Ref Online Electronic Medical. Bethesda: American Society of Health-System Pharmacists; 2009.

Lieberman DZ, Montgomery SA, Tourian KA, et al. A pooled analysis of two placebo-controlled trials of desvenlafaxine in major depressive disorder. Int Clin Psychopharmacol. 2008 Jul;23(4):188-97

pms-Tryptophan. Product Monograph dated May 10, 2004. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=64617>

Desyrel. Product Monograph dated October 29, 2004. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=5119>

Remeron. Product Monograph dated March 5, 2009. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=67852>

Remeron RD. Product Monograph dated February 19, 2009. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=72897>

Wellbutrin SR. Product Monograph dated February 12, 2008. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=61184>

Wellbutrin XL. Product Monograph dated February 12, 2008. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=76060>

Effexor XR. Product Monograph dated March 11, 2009. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=60600>

Cymbalta. Product Monograph dated February 24, 2009. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=78681> (Accessed April 29, 2009).

Apo-fluoxetine. Product Monograph dated May 9, 2005. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=19962>

Celexa. Product Monograph dated November 17, 2006. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=63077>

Paxil CR. Product Monograph dated September 12, 2008. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=72855>

Paxil. Product Monograph dated September 12, 2008. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=43575>

Zoloft. Product Monograph dated November 10, 2004. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=13392>

Luvox. Product Monograph dated December 20, 2005. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=11751>

Ciprallex. Product Monograph dated August 28, 2008. Available online at: <http://webprod.hc-sc.gc.ca/dpd-bdpp/info.do?lang=eng&code=74862>

Kennedy SH, Parikh SV, Eosfeld BS. Depression. In: Gray J, ed. *Therapeutic Choices*, 5th edition, Ottawa, ON. Canadian Pharmacists Association 2007, pp60-77.