



Common Drug Review

Pharmacoeconomic Review Report

December 2015

| | |
|------------------------|--|
| Drug | Peginterferon beta-1a (Plegridy — subcutaneous injection) |
| Indication | Treatment of relapsing remitting multiple sclerosis to reduce the frequency of clinical exacerbations and to slow the progression of disability. |
| Listing Request | As per indication |
| Dosage Form(s) | 63, 94 or 125 micrograms of peginterferon beta-1a in a pre-filled syringe or pre-filled pen for subcutaneous administration |
| NOC Date | August 10, 2015 |
| Manufacturer | Biogen Canada Inc. |

Note: At the time of the CADTH Common Drug Review submission for Plegridy, the price submitted by the manufacturer to CADTH was confidential. However, the manufacturer advised during the review that the submitted price does not need to remain confidential, as the submitted price is equivalent to the net wholesaler price at launch.

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners' own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein are those of CADTH and do not necessarily represent the views of Canada's federal, provincial, or territorial governments or any third party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user's own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian *Copyright Act* and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

Redactions: Confidential information in this document has been redacted at the request of the manufacturer in accordance with the *CADTH Common Drug Review Confidentiality Guidelines*.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

TABLE OF CONTENTS

| | |
|---|----|
| ABBREVIATIONS | ii |
| SUMMARY | 1 |
| APPENDIX 1: PRICE-REDUCTION ANALYSIS..... | 5 |
| APPENDIX 2: REVIEWER WORKSHEETS..... | 6 |
| REFERENCES..... | 8 |

Tables

| | |
|---|---|
| Table 1: Cost Comparison Table for the Treatment of Relapsing-Remitting Multiple Sclerosis | 4 |
| Table 2: CDR Scenarios Exploring Price Reductions Required for Peginterferon to be Cost-Neutral to Various Comparators | 5 |
| Table 3: Summary of Manufacturer’s Submission..... | 6 |
| Table 4: Manufacturer’s Summary of Relative Annual Costs of Comparators..... | 7 |
| Table 5: Canada-Wide Public Interferon Market Share by Number of Claims (January 2014 Through June 2015)..... | 7 |

ABBREVIATIONS

| | |
|---------------|--|
| AE | adverse event |
| CDR | CADTH Common Drug Review |
| IFN | interferon |
| NMA | network meta-analysis |
| PegIFN | peginterferon beta-1a (Plegridy) |
| RRMS | relapsing-remitting multiple sclerosis |

SUMMARY

Background

Peginterferon beta-1a (Plegridy) is a polyethylene glycol (Peg)-conjugated interferon beta-1a indicated for the treatment of relapsing forms of multiple sclerosis for adult patients to reduce the frequency of clinical exacerbations and to slow the progression of disability.¹ The manufacturer is requesting a listing in line with the Health Canada indication.

Peginterferon beta-1a is available in 63 mcg, 94 mcg, and 125 mcg pre-filled syringes or pens for subcutaneous injection at a confidentially submitted price of \$830.1538 per dose for all strengths. The recommended dosing of peginterferon beta-1a is 63 mcg at dose 1; 94 mcg at dose 2 in two weeks; and then 125 mcg every two weeks thereafter.

Summary of the Economic Analysis Submitted by the Manufacturer

The manufacturer submitted a cost analysis comparing the annual drug-acquisition cost of peginterferon beta-1a with that of the other interferons (IFNs) available for the treatment of relapsing-remitting multiple sclerosis (RRMS) (i.e., IFN beta-1a 30 mcg weekly, IFN beta-1a 22 mcg or 44 mcg three times weekly, and IFN beta-1b 250 mcg every other day), as well as glatiramer acetate (20 mg daily).² Comparator costs were from the April 2015 Ontario Drug Benefit Exceptional Access Program list prices. On the basis of a published network meta-analysis (NMA), clinical efficacy and safety was assumed to be similar between peginterferon beta-1a and its comparators.³ Health care resource use, other than drug usage, was also assumed to be similar among all comparators.

The annual cost of peginterferon beta-1a 125 mcg every two weeks is \$21,584 per patient, which is \$5,343 more than that of glatiramer acetate (\$16,241 per patient per year), \$1,509 to \$3,451 more than that of IFN beta-1b 250 mcg every other day (\$18,133 or \$20,075 per patient per year), \$1,484 more than that of IFN beta-1a 22 mcg three times weekly (\$20,100 per patient per year), cost-neutral to IFN beta-1a 30 mcg weekly (\$21,585 per patient per year), and \$2,885 less than IFN beta-1a 44 mcg three times weekly (\$24,469 per patient per year).

Key Limitations

Clinical Similarity to Comparators Uncertain

The assumption of clinical similarity of peginterferon beta-1a and other IFNs and glatiramer acetate is based on an NMA;³ no head-to-head trials of peginterferon beta-1a versus an active comparator are available. While methodologically well conducted, this manufacturer's NMA considered only annualized relapse rates and three-month and six-month confirmed disability progression in terms of efficacy outcomes. The inclusion of new and expanding lesion rates, as determined by magnetic resonance imaging, as well as the proportion of relapse-free patients at 12 months as outcomes, would have increased certainty in the efficacy of peginterferon beta-1a relative to other IFNs and glatiramer acetate. A recent Cochrane NMA⁴ did not find any significant difference in number of relapses or discontinuations due to adverse events (AEs) at 12 months between peginterferon beta-1a and IFN beta-1a 30 mcg weekly, IFN beta-1a 22 mcg or 44 mcg three times weekly, or IFN beta-1b 250 mcg every other day.⁴ For individual AEs, only the annualized rates of AEs that were reported by 5% or more of patients in the peginterferon beta-1a versus placebo ADVANCE trial⁵ were considered in the manufacturer's NMA.³ The comparative rates for peginterferon beta-1a versus comparators for other AEs, particularly those associated with glatiramer acetate, is unknown. Note that these NMA results should be interpreted with caution due to study heterogeneity in terms of patients' baseline

characteristics, study design, and study duration. For further detail, see the CADTH Common Drug Review (CDR) Clinical Report, Appendix 7.

Variation in Comparator List Prices

At the confidential submitted price of peginterferon beta-1a, the annual per-patient drug cost is equal to that of IFN beta-1a 30 mcg weekly at the price listed by the Ontario Drug Benefit Exceptional Access Program. Both Saskatchewan and Alberta reimburse IFN beta-1a 30 mcg at a lower list price per unit, leading to a lower annual cost than that of peginterferon beta-1a (\$21,038 and \$20,590 per patient, respectively). Although not a CDR-participating drug plan, the list price of IFN beta-1a 30 mcg is even lower in Quebec, leading to a lower annual cost (\$18,328 per patient). For price-reduction scenarios exploring these differences, see Appendix 1.

Secondary Comparators Omitted

While the other IFN treatments and glatiramer acetate are the most clinically appropriate comparators for peginterferon beta-1a (see CDR Clinical Report, section 1.2), other agents are available for the treatment of RRMS, and their relative price compared with peginterferon beta-1a may inform decision-making. The annual cost of peginterferon beta-1a is less than that of the biologics alemtuzumab (\$49,850 per patient in year 1, \$29,910 in year 2) and natalizumab (\$42,007 per patient per year), as well as less than the annual cost of the oral medications dimethyl fumarate (\$23,817 per patient in year 1, \$24,048 in subsequent years) and fingolimod (\$31,085 per patient per year). The annual cost of peginterferon beta-1a is \$1,885 more per patient than that of the oral agent teriflunomide (\$19,699 per patient per year). It should be noted that a recent Cochrane NMA⁴ found that peginterferon beta-1a, along with other IFNs, is less effective than alemtuzumab, natalizumab, and fingolimod in preventing clinical relapses over 12 months of therapy.

Issues for Consideration

Patient Convenience or Adherence

The biweekly dosing schedule of peginterferon beta-1a is less frequent than the dosing schedules of the other injectable IFNs that are indicated for the treatment of multiple sclerosis, which may increase patient convenience or adherence and increase the interval between some side effects, such as flu-like symptoms (see Patient Input Summary, CDR Clinical Report, Appendix 1). For the minority of patients who are unable to administer their own injections, the reduced dosing schedule of peginterferon beta-1a may decrease resources spent on administration by a nurse or support person.

Results and Conclusions

At the confidential submitted price of \$830.15 per dose, the annual cost of peginterferon beta-1a 125 mcg every two weeks (\$21,584 per patient per year) is identical to IFN beta-1a 30 mcg weekly, \$2,885 less expensive than IFN beta-1a 44 mcg three times weekly, but \$1,484 to \$3,451 more expensive than other available IFNs for the treatment of RRMS, and \$5,343 more than glatiramer acetate.

CDR conducted pricing scenarios considering the reduction in price required for peginterferon beta-1a to be cost-neutral to less expensive comparators, as well scenarios incorporating lower list prices available in some jurisdictions for IFN beta-1a 30 mcg weekly. Price reduction for peginterferon beta-1a varied between 4.6% and 16% when considering IFN options, and 24.6% versus glatiramer acetate.

Cost Comparison Table

Clinical experts have deemed the comparator treatments presented in Table 1 to be appropriate. Comparators may be recommended (appropriate) practice versus actual practice. Comparators are not restricted to drugs, but may be devices or procedures. Costs are manufacturer list prices, unless otherwise specified. Existing product listing agreements are not reflected in the table and, as such, may not represent the actual costs to public drug plans.

TABLE 1: COST COMPARISON TABLE FOR THE TREATMENT OF RELAPSING-REMITTING MULTIPLE SCLEROSIS

| Drug/Comparator | Strength | Dosage Form | Price (\$) | Recommended Dose | Weekly Drug Cost (\$) | Annual Drug Cost (\$) |
|--|---|---------------------------------------|-----------------------------|--|---|---|
| Peginterferon beta-1a (Plegridy) | 63 mcg 94 mcg 125 mcg | SC syringe/pen | 830.1538^a | Every two weeks: dose 1: 63 mcg; dose 2: 94 mcg; dose 3 and thereafter: 125 mcg | 415 | 21,584 |
| Other interferons | | | | | | |
| Interferon beta-1a (Avonex) | 30 mcg/0.5 mL (6 MIU) | Pre-filled syringe or pen | 415.0900 | 30 mcg IM per week | 415 | 21,585 |
| Interferon beta-1b (Betaseron) | 0.3 mg (9.6 MIU) powder for injection | Single-use vial | 110.0000 | 0.25 mg SC every other day | 386 | 20,075 |
| Interferon beta-1b (Extavia) | 0.3 mg (9.6 MIU) powder for injection | Single-use vial | 99.3593 | 0.25 mg SC every other day | 348 | 18,133 |
| Interferon beta-1a (Rebif) | 22 mcg/0.5 mL (6 MIU) 44 mcg/0.5 mL (12 MIU) | Pre-filled syringe, cartridge, or pen | 128.8433 156.8533 | 22 mcg to 44 mcg SC 3 times weekly | 387 471 | 20,100 24,469 |
| Biologics | | | | | | |
| Alemtuzumab (Lemtrada) | 12 mg/1.2 mL | IV solution | 9,970.00 ^b | 12 mg/day for five days followed by 12 mg/day for 3 days after 12 months | Weekly average: year 1: 959 year 2: 575 | Year 1: 49,850 Year 2: 29,910 |
| Natalizumab (Tysabri) | 300 mg/15 mL | IV solution | 3,231.2800 | 300 mg IV infusion every 4 weeks | 808 | 42,007 |
| Other injectable immunomodulatory | | | | | | |
| Glatiramer (Copaxone) | 20 mg/mL | Pre-filled syringe | 44.4960 | 20 mg SC daily | 311 | 16,241 |
| Oral medications | | | | | | |
| Dimethyl fumarate (Tecfidera) | 120 mg 240 mg | Capsule | 16.5164 33.0329 | 120 mg twice daily; after 7 days, increase to 240 mg twice daily | Week 1: 231; subsequent weeks: 462 | Year 1: 23,817; subsequent years: 24,048 |
| Fingolimod (Gilenya) | 0.5 mg | Capsule | 85.1650 | 0.5 mg daily | 596 | 31,085 |
| Teriflunomide (Aubagio) | 14 mg | Tablet | 53.9696 | 14 mg daily | 378 | 19,699 |

IM = intramuscular; IV = intravenous; MIU = million international units; SC = subcutaneous.

Drug prices are taken from the Ontario Formulary Exceptional Access Program (September 2015) unless otherwise indicated, and do not include prescription fees, costs of dose preparation, or injection administration. Annual period assumes 52 weeks, or 13 × 4 weeks per year.

^a Manufacturer-submitted confidential price.

^b Régie de l'assurance maladie du Québec Liste des médicaments (September 2015).

APPENDIX 1: PRICE-REDUCTION ANALYSIS

As peginterferon beta-1a is more expensive than some comparators of interest, the CADTH Common Drug Review (CDR) conducted scenarios considering the percentage price reduction required for the cost of peginterferon beta-1a to be cost-neutral to the Ontario list prices of the most commonly prescribed interferon (IFN), the least expensive IFN beta-1a, the least expensive IFN, and glatiramer acetate (Table 2). Additionally, as variation in the list price of medications for relapsing-remitting multiple sclerosis (RRMS) exists across Canadian jurisdictions, CDR considered the price reductions required for the annual cost of peginterferon beta-1a to be cost-neutral to the lowest price for IFN beta-1a 30 mcg among CDR-participating jurisdictions, as well as to the lowest list price of a Canadian jurisdiction (Table 2).

TABLE 2: CDR SCENARIOS EXPLORING PRICE REDUCTIONS REQUIRED FOR PEGINTERFERON TO BE COST-NEUTRAL TO VARIOUS COMPARATORS

| Scenario | Confidential Annual Cost of PegIFN | Annual Cost of Comparator | Price Reduction Required |
|--|------------------------------------|---------------------------|--------------------------|
| Price reduction needed to equal most-prescribed IFN ^a (IFN beta-1a 30 mcg weekly, Avonex, ODB) | \$21,584 | 21,585 | None |
| Price reduction needed to equal lowest CDR-participating jurisdiction list price ^b for IFN beta-1a 30 mcg weekly (Avonex, Alberta Health) | | 20,590 ^b | 4.6% |
| Price reduction needed to equal lowest Canadian jurisdiction list price ^c for IFN beta-1a 30 mcg weekly (Avonex, RAMQ) | | 18,328 ^c | 15.1% |
| Price reduction needed to equal least expensive IFN beta-1a (IFN beta-1a 22 mcg three times weekly, Rebif 22) | | 20,155 | 6.6% |
| Price reduction needed to equal least expensive IFN (IFN beta-1b 250 mcg every other day, Extavia) | | 18,133 | 16.0% |
| Price reduction needed to equal least expensive IFN (IFN beta-1a 30 mcg weekly, Avonex) | | 16,278 | 24.6% |
| Price reduction needed to equal glatiramer acetate (20 mg daily) | | | |

CDR = CADTH Common Drug Review; EAP = Exceptional Access Program; IFN = interferon; ODB = Ontario Drug Benefit; PegIFN = peginterferon beta-1a; RAMQ = Régie de l'assurance maladie du Québec.

Note: Annual costs are calculated using ODB EAP list prices (September 2015) unless otherwise indicated.

^a "Most-prescribed IFN" is based on nationwide public-plan data from IMS Pharmastat, considering market share by number of claims from January 2014 through June 2015. Rebif 44 mcg is the most frequently reimbursed IFN in some individual jurisdictions (Alberta, British Columbia), and is more expensive than PegIFN (using the ODB EAP pricing as well as the list prices of Alberta and British Columbia).

^b Based on the Alberta Health Drug Benefit list price for Avonex of \$395.9696 per dose (September 2015).

^c Based on the RAMQ liste de médicaments price for Avonex of \$352.4625 per dose (September 2015).

While the annual per-patient cost of peginterferon beta-1a is cost-neutral to that of IFN beta-1a 30 mcg weekly using the Ontario Drug Benefit list price, it would need to be reduced by 4.6% to be cost-neutral in the CDR-participating jurisdiction with the least expensive list price, and by 15.1% in the Canadian jurisdiction with the least expensive list price for IFN beta-1a 30 mcg weekly. Similarly, the annual cost of peginterferon beta-1a would need to be reduced by 6.6%, 16.0%, and 24.6% to be equal to the Ontario Drug Benefit list price, based on annual per-patient costs of the least expensive IFN beta-1a, the least expensive IFN, and glatiramer acetate, respectively.

APPENDIX 2: REVIEWER WORKSHEETS

TABLE 3: SUMMARY OF MANUFACTURER'S SUBMISSION

| | |
|------------------------------------|--|
| Drug Product | Peginterferon beta-1a (Plegridy) |
| Treatment | 63 mcg at dose 1, 94 mcg at dose 2 after two weeks, then continuing with 125 mcg every two weeks thereafter. |
| Comparators | Interferon beta-1a (Avonex) 30 mcg per week Interferon beta-1b (Betaseron) 250 mcg every other day Interferon beta-1b (Extavia) 250 mcg every other day Interferon beta-1a (Rebif) 22 mcg or 44 mcg three times weekly Glatiramer acetate (Copaxone) 20 mg daily |
| Study Question | Not specified but represents: What is the relative annual acquisition cost of Plegridy (PegIFN) compared with other available interferons and glatiramer acetate for the treatment of RRMS? |
| Type of Economic Evaluation | Cost analysis |
| Target Population | Not specified, assumed general RRMS population |
| Perspective | Not specified, assumed public drug payer |
| Outcome Considered | Annual drug-acquisition cost |
| Key Data Sources | |
| Cost | Manufacturer's confidential submitted price for PegIFN, ODB Exceptional Access Program Formulary (April 2015) for comparators |
| Clinical Efficacy | Published NMA ³ |
| Harms | Non-statistical comparison within NMA publication ³ |
| Time Horizon | One year |
| Results for Base Case | Annual acquisition cost of IFN 125 mcg Q2W (Plegridy): \$21,584; Comparator annuals costs ranged from \$16,241 per patient per year to \$24,469 (Table 4). |

IFN = interferon; NMA = network meta-analysis; ODB = Ontario Drug Benefit; PegIFN = peginterferon beta-1a; Q2W = every two weeks; RRMS = relapsing-remitting multiple sclerosis.

Manufacturer's Results

The manufacturer submitted a cost analysis that included only drug-acquisition costs over a one-year time horizon comparing peginterferon beta-1a with other interferons available for the treatment of relapsing-remitting multiple sclerosis (RRMS) as well as to glatiramer acetate.

The manufacturer's calculated drug costs for its chosen comparators were identical to those calculated by the CADTH Common Drug Review (CDR) in Table 1; therefore, only the manufacturer's summary and relative costs are presented in Table 4.

Glatiramer acetate was \$5,343 less per patient per year than peginterferon beta-1a. The annual costs of the other interferons available for the treatment of RRMS ranged from \$3,451 less than that of peginterferon beta-1a to \$2,885 more. The annual drug cost derived from the confidentially submitted price of peginterferon beta-1a 125 mcg every two weeks is cost-neutral to the annual drug cost of interferon (IFN) beta-1a 30 mcg every week.

TABLE 4: MANUFACTURER’S SUMMARY OF RELATIVE ANNUAL COSTS OF COMPARATORS

| Comparator | Dosing | Annual Drug-Acquisition Cost (\$) | Cost Relative to PegIFN (\$) |
|----------------------------------|------------------------------|-----------------------------------|------------------------------|
| Glatiramer acetate (Copaxone) | 20 mg daily | 16,241 | -5,343 |
| IFN beta-1b (Extavia) | 250 mcg every other day | 18,133 | -3,451 |
| IFN beta-1b (Betaseron) | 250 mcg every other day | 20,075 | -1,509 |
| IFN beta-1a (Rebif) | 22 mcg three times weekly | 20,100 | -1,484 |
| PegIFN beta-1a (Plegridy) | 125 mcg every 2 weeks | 21,584 | Reference |
| IFN beta-1a (Avonex) | 30 mcg every week | 21,585 | 1 ^a |
| IFN beta-1a (Rebif) | 44 mcg three times weekly | 24,469 | 2,885 |

IFN = interferon; PegIFN = peginterferon beta-1a.

Adapted from Tables 2 and 3 in manufacturer’s pharmacoeconomic submission.²

^a Reported as \$0 in manufacturer’s submission; actual annual difference is \$0.68, i.e., effectively cost-neutral.

CADTH Common Drug Review Results

CDR reviewers were able to replicate the manufacturer’s calculations regarding the total and relative drug-acquisition costs of peginterferon beta-1a and its comparators.

After consultation with a clinical expert, CDR reviewers retrieved utilization data for IFN and glatiramer acetate from IMS Pharmastat from January 2014 through June 2015 (Table 5). When all public drug plans reporting IFN reimbursement were included, IFN beta-1a (Avonex 30 mcg) was the most commonly prescribed IFN (39% of claims), followed by IFN beta-1a (Rebif 44 mcg), and IFN beta-1b (Betaseron). These market shares remained stable between quarters throughout the retrieved 18-month period, although there were variations across the reporting jurisdictions. These market shares were used for price-reduction scenario analyses as described in detail in Appendix 1.

TABLE 5: CANADA-WIDE PUBLIC INTERFERON MARKET SHARE BY NUMBER OF CLAIMS (JANUARY 2014 THROUGH JUNE 2015)

| Trade Name | Strength | Total Claims | Market Share, IFN Only | Market Share, Including Glatiramer Acetate |
|-------------------------------|----------|--------------|------------------------|--|
| IFN beta-1a (Avonex) | 30 mcg | 5,872 | 39.1% | 12.1% |
| IFN beta-1b (Betaseron) | 0.3 mg | 2,960 | 19.7% | 6.1% |
| IFN beta-1b (Extavia) | 0.3 mg | 311 | 2.1% | 0.6% |
| IFN beta-1a (Rebif) | 22 mcg | 1,071 | 7.1% | 2.2% |
| IFN beta-1a (Rebif) | 44 mcg | 4,797 | 32.0% | 9.9% |
| Glatiramer acetate (Copaxone) | 20 mg | 33,566 | Excluded | 69.1% |

IFN = interferon.

Data retrieved from IMS Pharmastat January 2014 through June 2015, restricted to public payers.

As the annual cost of peginterferon beta-1a is cost-neutral to the most commonly prescribed IFN (beta-1a 30 mcg weekly) and less expensive than the next most commonly prescribed IFN (beta-1a 44 mcg three times weekly), peginterferon beta-1a is likely to increase costs to drug plans only if its use replaces that of less expensive IFNs (Appendix 1). However, if patients who would have received glatiramer acetate or the oral medication teriflunomide (\$19,699 per patient per year; 5,531 claims from January 2014 to June 2015) are instead prescribed peginterferon beta-1a, per-patient costs to drug plans would increase.

REFERENCES

1. PrPlegridy™ (peginterferon beta-1a) liquid for injection: 125 µg [product monograph]. Mississauga (ON): Biogen Canada Inc.; 2015 Aug 10.
2. Pharmacoeconomic evaluation. In: CDR submission: Plegridy™ (peginterferon beta-1a); 63, 94 and 125 µg/pre-filled syringe or pen. Company: Biogen Canada Inc. [**CONFIDENTIAL** manufacturer's submission]. Mississauga (ON): Biogen Canada Inc.; 2015 Jun.
3. Tolley K, Hutchinson M, You X, Wang P, Sperling B, Taneja A, et al. A network meta-analysis of efficacy and evaluation of safety of subcutaneous pegylated interferon beta-1a versus other injectable therapies for the treatment of relapsing-remitting multiple sclerosis. PLoS One [Internet]. 2015 [cited 2015 Jul 29];10(6):e0127960. Available from: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127960>
4. Tramacere I, Del Giovane C, Salanti G, D'Amico R, Filippini G. Immunomodulators and immunosuppressants for relapsing-remitting multiple sclerosis: a network meta-analysis. Cochrane Database Syst Rev. 2015 Sep 18;9:CD011381.
5. Calabresi PA, Kieseier BC, Arnold DL, Balcer LJ, Boyko A, Pelletier J, et al. Pegylated interferon beta-1a for relapsing-remitting multiple sclerosis (ADVANCE): a randomised, phase 3, double-blind study. Lancet Neurol. 2014 Jul;13(7):657-65.