2020

IMPACT ANALYSIS OF THE DRAFT PMPRB EXCESSIVE PRICE GUIDELINES

PDCI | MARKET ACCESS

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TOP-LINE SUMMARY

- The PMPRB regulatory changes and Draft Guidelines changes will have estimated revenue impacts to industry of up to $41.8 billion net present value (NPV) over 10 years.
    - This far exceeds Health Canada's estimate of $8.8 billion (NPV) over the same period.
- In most years, at least 50% of new medicines will likely be classified by PMPRB as high-priority (high-risk) Category I.
- Future launches of innovative medicines in Canada will be at risk due to significant price reductions associated with the proposed implementation of the new economic factors to Category I new medicines, including:
    - 82.8% average price reductions for rare disease medicines; and
    - 60.8% average price reductions for oncology medicines.
- The proposed use of a median therapeutic class test will push Canadian list prices toward the lowest international price, which is inconsistent with Canada's economic standing and previous Health Canada assessments.
- Product launch impacts are also foreseeable due to the proposed use of a median therapeutic class test and the risk of disclosing confidential price information.
- Given the projected impact, policy makers should reset the implementation process for the PMPRB reforms to allow for the development of more appropriate, practical and balanced Guidelines.

BACKGROUND & INTRODUCTION

This analysis provides evidence and perspectives to assist policymakers and Canadians to critically assess the impact of PMPRB regulatory changes published in August 2019, as implemented in the Draft Guidelines released on November 21, 2019. The PMPRB's Guidelines are the primary set of rules used to operationalize the PMPRB's regulatory role in setting excessive price ceilings under the *Patent Act* and the *Patented Medicines Regulations.*

The Draft Guidelines represent a dramatic shift in the regulatory approach from the current Guidelines, which use an international schedule of reference countries (the PMPRB7) but also employ an evidence-based approach that considers levels of therapeutic improvement. The current Guidelines are informed by a policy objective: on average, prices of patented medicines in Canada should not exceed the median international price, and in no case should prices of particular patented medicines exceed the highest international price.

The Draft Guidelines apply a revised international schedule (the PMPRB11) and establish the median international price as the upper limit for every patented medicine replacing the highest international price. As such, prices of existing medicines are not grandfathered as the PMPRB Draft Guidelines would suggest. There is no direct consideration of clinical evidence or therapeutic improvement. Rather, for new patented medicines, the Draft Guidelines propose a formulaic application of new economic factors (pharmacoeconomic value, market size, and GDP) without consideration of the inherent uncertainty associated with these factors, particularly estimates of pharmacoeconomic value. Notably, PMPRB has offered no overall policy objective or measurable benchmark against which the Draft Guidelines can be assessed. Indeed, the only official impact estimate ($8.8B NPV over 10 years) is contained in Health Canada's Cost-Benefit Analysis (CBA), which predates the release of the PMPRB's Draft Guidelines.

This analysis is a follow-up to PDCI's critical appraisal of Health Canada's original CBA released in relation to the draft amendments to the *Patented Medicines Regulations* proposed in December 2017.[1] The earlier analyses were prepared before the PMPRB's Draft Guidelines were released in November 2019, and therefore an updated impact assessment is needed to inform discussions regarding the impact of the PMPRB changes. As it stands, PMPRB proposes to finalize the Guidelines prior to the July 1, 2020 effective date of the regulatory amendments, and is not expected to provide a follow on impact analysis even though the proposed Guidelines differ materially from Health Canada's assumptions as expressed in the CBA released in August 2019 in conjunction with the final regulatory amendments.

The methodology and limitations of this analysis are outlined at the end of this document.

This analysis, commissioned by Innovative Medicines Canada, was conducted and reported independently by PDCI Market Access Inc.

FINDINGS

The impacts of PMPRB reforms on the innovative pharmaceutical industry are estimated to be up to $41.8 billion NPV over 10 years. This result is a significant contrast to the $8.8 billion estimated by Health Canada's revised cost-benefit analysis developed prior to the PMPRB's Draft Guidelines.

PMPRB Reforms*: Revenue Impact to Industry*

Health Canada Pre-Guidelines Assessment		**PDCI Post-Guidelines Assessment**
$8.8 billion NPV over 10 years	➔ ***4.75x***	**Up to $41.8 billion** NPV over 10 years

The impact to industry revenues is the result of significantly lower prices (compared to current PMPRB thresholds[2]) for most new patented medicines, combined with reductions from current non-excessive levels to the median international price for existing patented medicines.

Among new products, oncology medicines would require average price reductions of 60.8% (range 22% - 86%) from PMPRB's current non-excessive levels. Rare disease medicines would require reductions that average 75% (range 20-99%). When weighted by revenue, this results in an 88.0% average price reduction. For many of these products, the dramatically lower prices mandated by the PMPRB Draft Guidelines may not be commercially viable.

[1] PDCI Critical Appraisal of Health Canada CBA, January 2018:. http://www.pdci.ca/wp-content/uploads/2018/01/20180129_PDCI-Critical-Assessment-PM-Regs-Amendments_Report-Final.pdf

[2] In this analysis, "price reductions" for new medicines refers to reductions from current prices that are assumed to be non-excessive under the PMPRB's current Guidelines.

Approximately 66% of Category I (high-priority)[3] products in our sample would be subject to price reductions exceeding 50% from PMPRB's current non-excessive levels due to the application of the new pharmacoeconomic factor (and prior to any additional market size adjustment). Based upon recent CDR and pCODR reviews, over 40% of high-cost Category I products would require price reductions greater than 80% (57% of CDR and 20% of pCODR reviews of high-cost medicines). Non-oncology, non-rare high-risk medicines would require average price reductions of 58.9% when weighted by revenues.

For rare disease medicines, the PMPRB proposes a price adjustment when estimated total prevalence is no greater than 1 in 2,000 and annual revenues do not exceed $12.5 million (see Appendix B). However, this proposed adjustment for rare medicines appears to have only a limited mitigating effect (lessening the impact from an 88.0% to an 82.8% price reduction from current non-excessive levels) and is therefore unlikely to preserve meaningful product launch incentives in the context of significant price reductions from the current PMPRB regime.

Our assessment of recent Canadian Agency for Drugs and Technology in Health (CADTH) review reports and sales data suggests that, in most years, at least 50% of future medicines are likely to be classified as "high-priority" Category I.[4] This and other aspects of the proposed Guidelines would seem at odds with a "risk-based" approach given that more than half of all new patented medicines are anticipated to meet PMPRB's Category I criteria.

The PMPRB's proposed median dTCC test will lower prices Category II medicines toward the lowest international price of the PMPRB11. The median TCC is difficult to model because certain product and class-specific details remain uncertain in the PMPRB's Draft Guidelines but is an area for future study. However, given the available information, in many cases the median TCC test will likely force pricing reductions from the median international price to the lowest international price; an outcome that will likely put some product launches in Canada at risk.

The differences between Health Canada's CBA and PDCI's analysis can be explained primarily by the differences between Health Canada's assumptions and PMPRB's Draft Guidelines. Health Canada's revised CBA assumed the highest international price test of the PMPRB11 for existing medicines[5], whereas PMPRB applies the median international price test of the PMPRB11, representing billions of dollars in reduced revenues that were not included in the CBA. Health Canada also assumed a maximum price reduction of 50%, while the PMPRB has not established a floor for price reductions.

Health Canada presented a large range of potential impacts ($6.4B - $24.9B at a 7% discount rate)[6] given the uncertainty with respect to the use of the PMPRB pricing tools. However, the PMPRB's Draft Guidelines will result in revenue reductions that exceed even the "worst-case" scenario outlined in the Health Canada CBA. Furthermore, the Health Canada CBA reference

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[3] Category I new medicines are referred to as "high-priority" or described as "high-risk" in the Health Canada CBA as they are considered by Health Canada / PMPRB to be at a higher risk of excessive pricing given their annual treatment costs and/or annual sales revenues.

[4] PDCI conducted an analysis of NAS products approved by Health Canada over the past three years. Assuming the new PMPRB system been applied to these products, 53% of 2017 New Active Substance (NAS) products, 38% of 2018 NAS products, and 55% of 2019 NAS products would have been classified as Category I and would be subject to the new economic price factors. Health Canada's CBA (at page 27) estimates that 49.7% of all new medicines revenues over the next 10 years will be for high-priority Category I medicines.

[5] Health Canada, Cost Benefit Analysis , May 6, 2019, Page 45 "Existing high and low-priority medicines are also expected to be tested against the highest priced country in the PMPRB11 – currently Germany, which has an average price level similar to Canada."

[6] Health Canada, Cost Benefit Analysis, May 6, 2019, Page 60.

discount rate of 7% is not appropriate for pharmaceuticals, given that the CADTH Guidelines dictate a reference discount rate of 1.5% for assessing future costs. The differences in discount rates contribute to a significant underestimation by Health Canada of the impact of the PMPRB Reforms.

CONCLUSIONS

The impact of the new PMPRB system seems likely to significantly exceed previous estimates released prior to the publication of the PMPRB Draft Guidelines. While product launch impacts are beyond the immediate analytical scope of this appraisal, it is foreseeable that future Canadian launches of patented medicines are at risk. As previously discussed in PDCI's 2018 re-assessment, the Health Canada CBA is incomplete since it does not anticipate impacts on product launches and industry research investments such as clinical trials.

In addition, the PMPRB has proposed that the Therapeutic Class Comparison (TCC) test be set to the median cost of available therapies, which frequently includes generic drugs. This leaves no consideration for clinical evidence or therapeutic improvement. The effect of the median-of-TCC will be to reduce list prices of patented medicines toward the lowest international price. The PMPRB has not provided any rationale for adopting the median TCC, nor does it acknowledge the likely impact on pricing. The PMPRB should abandon the median-TCC test.

As discussed above, there is no lower limit as to how far maximum rebated prices can fall under the proposed regime. Policy makers should engage with patentees with a view to identifying reasonable pricing floors for all patented medicines.

A related dimension of the Canadian launch risk is the issue of de facto price transparency. The formulaic manner in which the new economic factors and maximum rebated price concept are to be applied may allow for the back-calculation of confidential pricing information. Companies may be more hesitant to launch in Canada if PMPRB's proposed system is perceived as compromising confidential rebated prices.

In summary, the 10-year NPV impact of the Draft Guidelines is estimated to be $41.8B, almost five times higher than the $8.8B estimate set out in the revised CBA. Given the projected impact, policy makers should reset the implementation process for the PMPRB reforms to allow for the development of more appropriate, practical and balanced Guidelines.

METHODOLOGY

Under the Draft Guidelines, the PMPRB proposes different pricing policies for existing and future medicines. Prices of existing medicines are not grandfathered and are subject to the lower of the median of the PMPRB11 and their current price ceilings. For new patented medicines, the Draft Guidelines outline seven different potential price tests including tests based on the new economic factors. Products not classified as Category I are to be classified as Category II and will be subject to pricing tests that will lower list prices toward the lowest price of the PMPRB11.[7]

For the purpose of consistency with the Health Canada CBA, PDCI built its impact assessment model on Health Canada's baseline assumptions for overall industry growth. However, PDCI applied a discount rate of 1.5%. The 7% discount rate that Health Canada's applied in the CBA is not appropriate for the pharmaceutical sector and significantly understates the impact of the changes. 1.5% is the discount rate mandated by the Canadian Agency for Drugs and Technologies in Health (CADTH)[8] for assessing future costs of pharmaceutical products and is therefore a more relevant discount rate for assessing the impact of PMPRB reforms.

International price comparison analyses were conducted for over 400 products (Drug Identification Numbers or DINs) of existing patented medicines to assess the impact of the changes to the schedule of reference countries (i.e., to the PMPRB11). This dataset includes 137 DINs of Category I products identified in Heath Canada's CBA and all New Active Substance products approved by Health Canada in 2017 and 2018 [2017-2018 New Active Substances (NAS) sample]. PDCI assembled publicly available ex-factory prices[9] for Canada and the PMPRB11 countries and assessed the impact of reducing Canadian prices to the Median International Price (MIP). Throughout it is assumed that the current prices of the medicines reviewed are considered to be non-excessive under the PMPRB's current Guidelines.

Canadian public and private market claims data[10] were used to assess impact to individual medicines and to produce average impacts weighted by revenues for all steps in the analysis. The impact estimate for existing medicines reflects the average Canadian-to-Median international price (PMPRB11) multiplied by the annual baseline expenditure of existing medicines from Health Canada's CBA.

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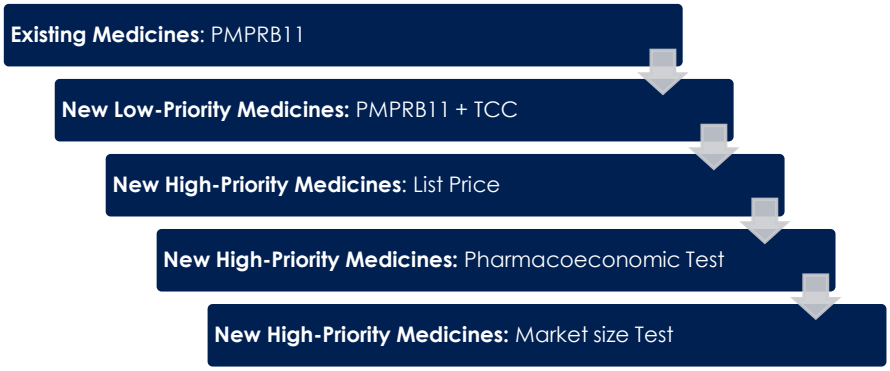
[7] See PMPRB Draft Guidelines November 2019: https://www.canada.ca/en/patented-medicine-prices-review/services/consultations/draft-guidelines.html

[8] CADTH, *Guidelines for the Economic Evaluation of Health Technologies*: *7.1* "In the reference case, costs and outcomes that occur beyond one year should be discounted to present values at a rate of 1.5% per year."

[9] Ex- Factory prices were sourced from public price sources in each of the PMPRB11 reference countries in accordance with the provisions of the Patented Medicines Regulations

[10] Claims data were supplied by IQVIA

Figure 1: Incremental Approach to Impact Assessment



For the impact calculation on new medicines, an incremental approach was employed per the PMPRB's Draft Guidelines (see Figure 1). First, we conducted a PMPRB11 MIP analysis. To account for the median domestic Therapeutic Class Comparison (dTCC) test, we assumed that Canadian prices would fall to the midpoint of the MIP and Lowest International Price. It should be noted this may be a conservative assumption given that in many cases the dTCC would result in a price that is lower than the lowest international price due to the inclusion of generic medicines.

For new Category I products, we then conducted a review of publicly available CADTH review reports. This review consisted of the 100 most recent Common Drug Review (CDR) reports and the 79 most recent pan-Canadian Oncology Drug Review (pCODR) reports in which a Cost Utility Analysis was conducted. This included reviews for all Category I medicines identified in the CBA and 2017-2018 NAS Samples. We calculated the price reductions from list prices that would be required to meet the pharmacoeconomic value price according to the PMPRB's formula for all Category I products with annual drug acquisition costs above $30,000 per patient (see Appendix A). In the case of oncology products, we followed the criteria of PMPRB's 2018 New Meds Watch Report, published January 2020, in which products with 28-day cycle costs exceed $5,000 were considered 'High Cost'. Data for products reviewed by CADTH's pCODR program for oncology medicines was more limited than for CADTH's Common Drug Review program. Of the 79 most recent pCODR reviews, only 30 could be used to calculate the impact of PMPRB's pharmacoeconomic factor. As such, pCODR data were extrapolated for the oncology market based on available information.

The market size test was subsequently addressed based upon the PMPRB's policy intent to implement progressive price ceiling reductions based on market size tiers starting at $25 million for most medicines (See Appendix B). Final figures are presented in terms of net present value (NPV) based on a discount rate of 1.5%. Our analysis is subject to several limitations, including being based upon currently available information and subject to assumptions and factors that remain unclear given that the Guidelines have not yet been finalized (see below for limitations).

LIMITATIONS

The analysis above reflects best estimates based upon presently available information and our current understanding of the Draft Guidelines and their implications. The impact analysis is subject to assumptions and factors that remain unclear given that the Guidelines have not been finalized and there are unanswered questions, notably with respect to the timing of their implementation. Ultimately, due to the nature of the proposed changes and therapeutic class price referencing, the impact will vary considerably based on product-specific and class-specific features.

Due to data limitations regarding public sector confidential rebates, and for comparison purposes to Health Canada's CBA, our analysis adopts a 1-to-1 ratio between price and revenue reductions (if prices go down 10%, then revenues are lowered by 10%).

However, we would note that our analysis of existing medicines may also have a counter-acting underestimation bias due to the PMPRB's proposed "lowest-of" test among existing price ceilings (Non-Excessive Average Price) and the median of the PMPRB11. This is problematic as current price ceilings are based on average prices net of benefits offered to customers.

Many of these existing medicines may experience price reductions well below prices offered internationally. These average transaction prices are currently confidential and therefore were not captured in the above analysis. Regardless, as discussed above, we believe our analysis employing the median is more reflective than the CBA of the PMPRB's policy intent and impact.

Further, we did not model the impact of new provisions with regard to international therapeutic class comparisons and reasonable relationship tests which could have significant impacts for some products not otherwise captured.

Finally, our model may significantly understate the overall impacts due to the evolving international pharmaceutical pipeline and movement towards higher-cost specialty medicines. These medicines are likely to be those most significantly impacted by the new regulatory factors within the PMPRB regime. The Health Canada CBA assumes that Category I medicines will account for 6% of total expenditures on patented medicines over the next ten years, despite acknowledging that approximately 50% of new product revenues will be for high risk medicines. Analysis of revenue data from IQVIA's claims databases indicate that this is likely a significant underestimation of the future expenditure share of Category I medicines and therefore the overall impact of the proposed pricing reforms is likely to be much greater.

APPENDIX A: PMPRB FORMULAIC APPLICATION OF THE PHARMACOECONOMIC FACTOR

For medicines that provide health benefits relative to current care, the PEP is calculated as:

$$PEP = \frac{P_1 (PVT * \text{Incremental QALYs} + \text{Treatment Cost} - \text{Incremental Costs})}{\text{Treatment Cost}}$$

For the purpose of this calculation:

- **PVT** is the Pharmacoeconomic Value Threshold of $60,000/QALY;[17]
- **P_1** is the list price of the medicine used in the agency's reporting;
- **Incremental QALYs** are the point estimate of incremental QALY gains of the medicine over the comparator in the agency's base case cost-utility analysis model, expressed in present value;
- **Incremental Costs** are the point estimate of incremental costs of the medicine over the comparator, expressed in present value; and
- **Treatment Cost** is the point estimate of the costs per patient of the medicine over the time horizon studied by the agency's report, expressed in present value. This value is limited to the medicine being assessed and excludes the cost of other medicines used jointly with the medicine being assessed or of medicines used to treat side effects.

APPENDIX B: FORMULAIC APPLICATION OF MARKET SIZE ADJUSTMENT FOR CATEGORY I (RARE DISEASE ADJUSTMENT IN RED)

Annual revenues	Incremental adjustment factor	MRP	
		Medicines with a PEP	Medicines without a PEP
<$12.5M	+50%	1.5 * PEP	Lower of LIP, dTCC, iTCC
$12.5M-$25M	0%	PEP	
$25M–$50M	-10%	PEP adjusted by applicable factor	Lower of LIP, dTCC, iTCC adjusted by applicable factor
$50M–$75M	-20%		
$75M–$100M	-30%		
$100M–$125M	-40%		
$125M+	-50%		