

# BUDGET IMPACT ANALYSIS OF 5% LIDOCAINE MEDICATED PLASTER COMPARED WITH PREGABALIN OR GABAPENTIN MONOTHERAPY FOR THE TREATMENT OF DIABETIC POLYNEUROPATHY UNDER THE PERSPECTIVE OF BRAZILIAN PRIVATE HEALTHCARE SYSTEM

PSY34

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## INTRODUCTION

- Diabetic polyneuropathy (DPN) is a type of neuropathic pain and a common complication of diabetes (1);
- 5% lidocaine medicated plaster (LMP) is a topical pain-relieving treatment indicated for localized neuropathic pain (2);
- Clinical trials reported that the efficacy of LMP is comparable to pregabalin in the treatment of DPN (3);

## OBJECTIVE

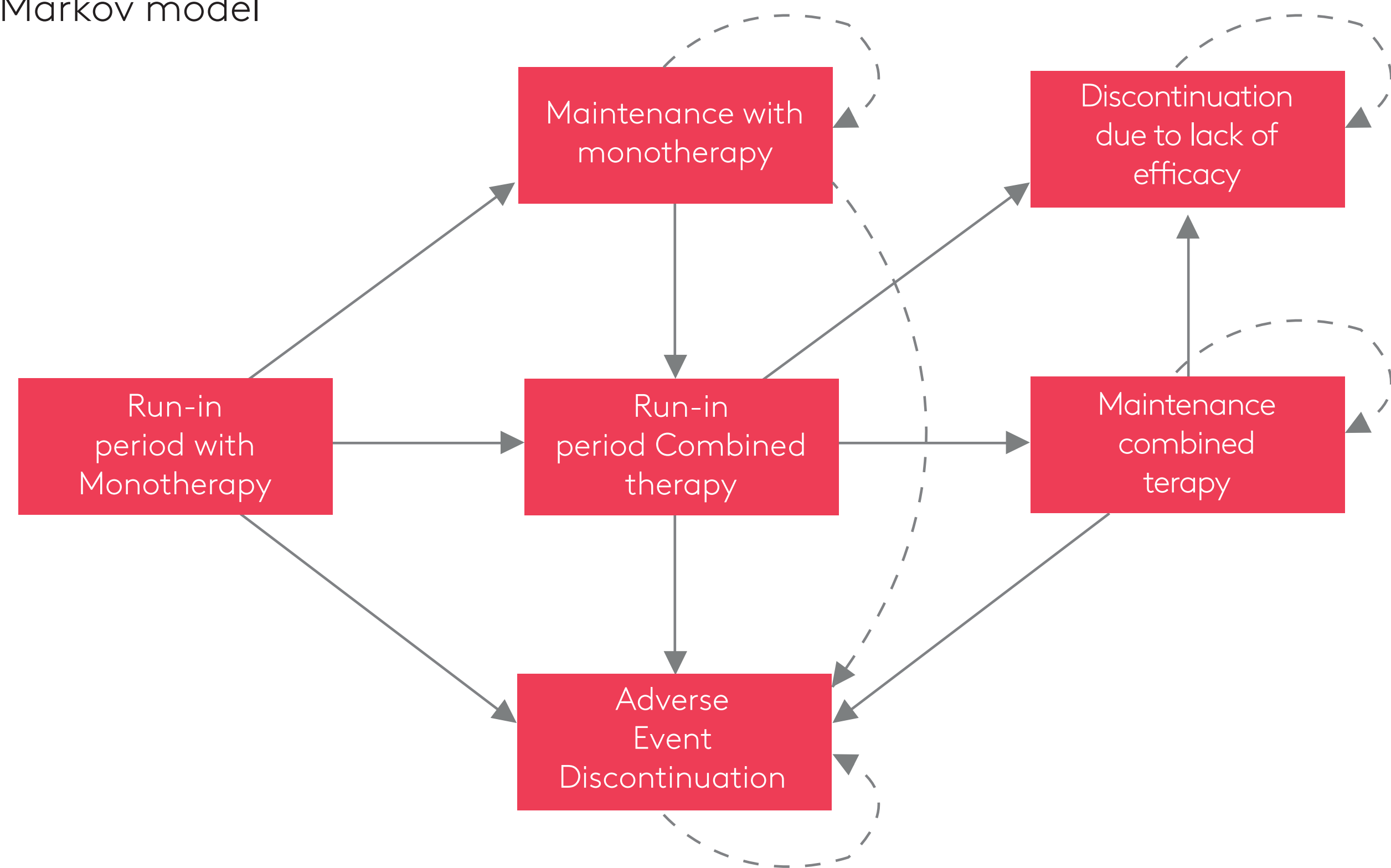
- The objective of this study is to estimate the financial impact of the introduction of LMP monotherapy compared with pregabalin or gabapentin monotherapy in the Brazilian private healthcare system for the treatment of DPN.

## METHODS

### Economic Model

- This Budget Impact Model (BIM) simulated the financial impact of the introduction of LMP for the treatment of DPN, compared with pregabalin or gabapentin monotherapy, in the Brazilian private healthcare system with or without drug coverage;
- Direct medical costs related to the disease, treatment and management of adverse events were estimated annually based on a Markov model published and detailed for a cost-effectiveness analysis (Figure 1);
- Patients entered in the run-in monotherapy state receiving LMP, pregabalin or gabapentin, and moved from one state to another every 30 days, according to their response to treatment;
- Transition probabilities for LMP and pregabalin were extracted from a head-to-head trial (3); for gabapentin, data were extracted from a placebo-controlled trial (4);
- Three Health Maintenance Organization (HMO) perspectives were analysed: Large HMO (mean 461,236 lives), Medium HMO (mean 48,139 lives) and Small HMO (mean 7,623 lives);
- Time horizon was defined as 5 years and costs were estimated annually;
- Results were expressed as cost-differences between a current scenario without LMP and a future scenario considering the incorporation of LMP.

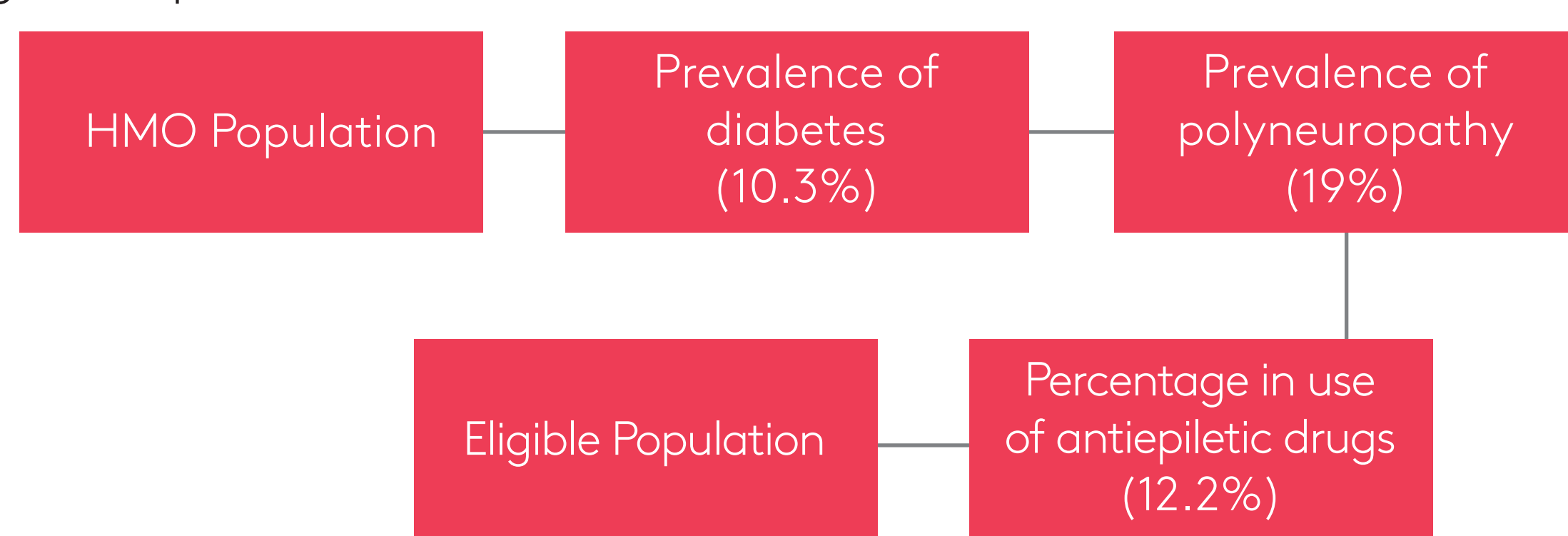
Figure 1. Markov model



### Eligible Population

- To obtain the mean number of health insurances by size in each type of health plan, we conducted an analysis in the database of the National Regulatory Agency for Private Health Insurance and Plans (ANS) in 2016 (5);
- A mean was calculated for each size (small, medium and big) of HMOs;
- To estimate each HMO population, a 0,175% decrease was calculated for 2016, based on 2015 data (5);
- For the following 5 years, a mean of the last 2 years growth rate (0.4% decrease) was applied annually (5);
- The International Diabetes Federation (IDF) estimates that the prevalence of diabetes in Brazil is 10.3% (6);
- A study published by Ziegler et al. showed that painful polyneuropathy is present in 13-26% of this population. We used the mean value (19%) to estimate the number of patients (7);
- The percentage of patients in use of antiepileptic drugs was 12.2% (7).

Figure 2. Eligible Population



Notes: HMO: health maintenance organization

### Market Share

- We evaluated two market share scenarios: Scenario 1 with complete uptake of LMP in the first year and Scenario 2 with a progressive uptake, starting with a 40% market share for LMP in the first year and increasing 15% a year until reaching 100%.

### Resource Use and Costs

- Resources used were retrieved from the literature and validated by a specialist with experience in the Brazilian private healthcare system.
- Costs were calculated for the Brazilian perspective using public tables and databases.
- Drug prices were extracted from the Brazilian Drug Market Regulation Chamber (CMED), fees, materials and procedures were extracted from CBHPM and SIMPRO.

## RESULTS

### Eligible Population

Table 1. Eligible Population

	2017	2018	2019	2020	2021
Large HMO ( mean 461,236 lives)	940	968	997	1027	1058
Medium HMO (mean 48,139 lives)	98	101	104	107	110
Small HMO (mean 7,623 lives)	16	16	16	17	17

### Budget Impact

#### LMP versus pregabalin monotherapy

- LMP, compared with pregabalin monotherapy, without drug coverage, potentially promotes cost savings in all HMO sizes in both market share scenarios:
  - Scenario 1 – 5-year time horizon: estimated cost-savings are up to: \$ 64,457 BRL (Large HMO), \$ 6,727 BRL ( Medium HMO), and \$ 1,065 BRL (Small HMO);
  - Scenario 2 – 5-year time horizon: estimated cost-savings are up to: \$ 45,691 BRL (Big HMO), \$ 4,769 BRL (Medium HMO), and \$ 755 BRL (Small HMO) (Figure 3).

- With drug coverage, the introduction of LMP for the treatment of DPN may produce the following budgetary impact:
  - Scenario 1 – 5-year time horizon: \$ 1,902,867 BRL (Large HMO), \$ 198,603 (Medium HMO), and \$ 31,448 BRL (Small HMO);
  - Scenario 2 – 5-year time horizon: \$ 1,348,875 (Large HMO), \$ 140,783 (Medium HMO), and \$ 22,292 (Small HMO) (Figure 3).

Figure 3. Budget Impact of LMP versus pregabalin monotherapy



Notes: HMO: health maintenance organization

#### LMP versus gabapentin monotherapy

- LMP, compared with gabapentin monotherapy, without drug coverage, potentially promotes cost savings in all HMO sizes in both market share scenarios (Figure 4):
  - Scenario 1 – 5-year time horizon: estimated cost-savings are up to: \$ 1,096,971 BRL (Large HMO), \$ 114,491 BRL (Medium HMO), and \$ 18,129 BRL (Small HMO);
  - Scenario 2 – 5-year time horizon: estimated cost-savings are up to: \$ 77,604 BRL (Large HMO), \$ 81,159 BRL (Medium HMO), and \$ 12,851 BRL (Small HMO).
- With drug coverage, the introduction of LMP for the treatment of DPN may produce the following budgetary impact (Figure 4):
  - Scenario 1 – 5-year time horizon: \$ 3,342,015 BRL (Large HMO), \$ 348,808 (Medium HMO), and \$ 55,231 BRL (Small HMO);
  - Scenario 2 – 5-year time horizon: \$ 2,639,035 (Large HMO), \$ 247,257 (Medium HMO), and \$ 39,152 (Small HMO).

Figure 4. Budget Impact of LMP versus gabapentin monotherapy



Notes: HMO: health maintenance organization

## CONCLUSIONS

- The uptake of LMP in Brazilian with full drug coverage by the private healthcare system for DPN treatment can promote a budgetary impact ranging from \$ 1.3 million BRL to \$ 2.3 million BRL to a Large HMO. However, the use of LMP by HMOs without drug coverage can save costs compared with pregabalin and gabapentin, due to lower adverse events rates.

### Disclaimer

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