

## **ABSTRACT**

### ***COST EFFECTIVENESS ANALYSIS (CEA) OF NOVORAPID-LEVEMIR VERSUS NOVORAPID-SANSULIN LOG G THERAPY IN TYPE 2 DIABETES MELLITUS INPATIENTS AT RSU MUHAMMADIYAH METRO DURING THE 2023–2024 PERIOD***

**By**

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**Background:** Type 2 Diabetes Mellitus (T2DM) is a chronic disease with a high prevalence that often requires inpatient care and results in substantial healthcare costs. So an economic evaluation is needed to support rational therapy selection. This study aimed to analyze the cost-effectiveness of antidiabetic therapy in hospitalized T2DM patients at RSU Muhammadiyah Metro during the period 2023–2024 using a Cost Effectiveness Analysis (CEA) approach.

**Methods:** This study was a retrospective observational study with a cross-sectional design using secondary data obtained from medical records and hospital financial data. A total of 101 hospitalized T2DM patients were included using purposive sampling. The analysis was conducted from the healthcare provider perspective by including direct medical costs, consisted of antidiabetic drug costs, concomitant medication costs, laboratory examination costs, medical devices, and inpatient care costs. Treatment effectiveness was measured based on the achievement of random blood glucose levels (RBG)  $\leq 200$  mg/dL. Cost-effectiveness was analyzed using the Average Cost Effectiveness Ratio (ACER).

**Results:** Therapy Novorapid-Levemir achieved higher clinical effectiveness (95.59%) compared to Novorapid-Sansulin Log G (90.91%), with a lower average direct medical cost per patient. The ACER value of Therapy Novorapid-Levemir was lower than that of Therapy Novorapid-Sansulin Log G, indicating better cost efficiency. Based on the cost-effectiveness matrix, Therapy A was classified as dominant, as it demonstrated both lower costs and higher effectiveness; therefore, Incremental Cost Effectiveness Ratio (ICER) calculation was not required.

**Conclusion:** In conclusion, the combination of Novorapid and Levemir was the most cost-effective therapy.

**Keywords:** ACER; Cost Effectiveness Analysis; Direct Medical Cost; Insulin Therapy; Type 2 Diabetes Mellitus

## ABSTRAK

### ***COST EFFECTIVENESS ANALYSIS (CEA) ANTARA TERAPI INSULIN NOVORAPID-LEVEMIR DAN NOVORAPID-SANSULIN LOG G PADA PASIEN DIABETES MELITUS TIPE 2 DI INSTALASI RAWAT INAP RSUD MUHAMMADIYAH METRO PERIODE 2023–2024***

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**Latar Belakang:** Diabetes Melitus Tipe 2 (DMT2) merupakan penyakit kronis dengan prevalensi tinggi yang sering memerlukan perawatan rawat inap dan menimbulkan beban biaya kesehatan yang besar. Sehingga diperlukan evaluasi ekonomi kesehatan untuk mendukung pemilihan terapi yang rasional. Penelitian ini bertujuan untuk menganalisis efektivitas biaya terapi antidiabetik pada pasien DMT2 rawat inap di RSUD Muhammadiyah Metro periode 2023–2024 menggunakan metode *Cost Effectiveness Analysis* (CEA).

**Metode:** Penelitian ini merupakan studi observasional retrospektif dengan desain potong lintang (*cross sectional*) menggunakan data sekunder rekam medis dan data administrasi. Sampel penelitian berjumlah 101 pasien DMT2 rawat inap yang dipilih menggunakan teknik *purposive sampling*. Analisis dilakukan dari perspektif penyedia layanan kesehatan dengan memasukkan komponen biaya medis langsung, meliputi biaya obat antidiabetik, obat pendukung, pemeriksaan laboratorium, alat kesehatan, dan biaya rawat inap. Efektivitas terapi diukur berdasarkan pencapaian kadar gula darah sewaktu (GDS)  $\leq 200$  mg/dL. Analisis efektivitas biaya dilakukan melalui perhitungan *Average Cost Effectiveness Ratio* (ACER).

**Hasil:** Terapi Novorapid-Levemir memiliki efektivitas klinis yang lebih tinggi (95,59%) dibandingkan Terapi Novorapid-Sansulin Log G (90,91%), dengan rata-rata biaya medis langsung per pasien yang lebih rendah. Nilai ACER Terapi Novorapid-Levemir lebih rendah dibandingkan Terapi Novorapid-Sansulin Log G, menunjukkan efisiensi biaya yang lebih baik. Berdasarkan matriks efektivitas biaya, Terapi Novorapid-Levemir berada pada posisi dominan (biaya lebih rendah dan efektivitas lebih tinggi), sehingga perhitungan *Incremental Cost Effectiveness Ratio* (ICER) tidak diperlukan.

**Simpulan:** Kombinasi Novorapid-Levemir merupakan terapi yang paling *cost-effective*.

**Kata kunci:** ACER; Biaya Medis Langsung; *Cost Effectiveness Analysis*; Diabetes Melitus Tipe 2; Terapi Insulin