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ANALISIS *DRUG RELATED PROBLEMS* (DRPs) PERESEPAN TERAPI INSULIN PADA PASIEN DIABETES MELITUS TIPE 2 RAWAT JALAN DI RUMAH SAKIT X SAMARINDA

ANALYSIS OF DRUG RELATED PROBLEMS (DRPS) PRESCRIBING INSULIN THERAPY IN TYPE 2 DIABETES MELLITUS OUTPATIENT AT HOSPITAL X SAMARINDA

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Analysis of Drug Related Problems (DRPs) Prescribing Insulin Therapy in Type 2 Diabetes Mellitus Outpatient at Hospital X Samarinda

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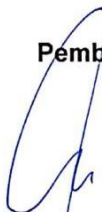**UNIVERSITAS MUHAMMADIYAH KALIMANTAN TIMUR**

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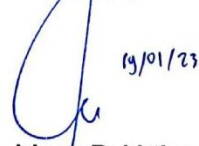Penguji 1

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ANALYSIS OF DRUG RELATED PROBLEMS (DRPs) PRESCRIBING INSULIN THERAPY IN TYPE 2 DIABETIC MELLITUS OUTPATIENT AT HOSPITAL X SAMARINDA

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ABSTRACT

Diabetic mellitus (DM) is a chronic metabolic disorder characterised by chronically elevated blood plasma sugar levels (hyperglycemia). Type 2 DM is the most common and accounts for approximately 90% of DM cases worldwide. The aim of this study was to analyze Drug Related Problems (DRPs) prescribing insulin therapy as a management guideline that can be used as a management reference for outpatient type 2 diabetic mellitus patients at Hospital X Samarinda. This study used a non-experimental descriptive analytic method with data collection carried out retrospectively through medical records of patients for the period January-September 2022. The results showed that the patients who were given the most therapy were monotherapy as many as 5 patients (63%) and 3 patients (38%) received combination therapy. The results of the analysis of DRPs in patients prescribing insulin doses in type 2 diabetic mellitus patients from a total of 11 insulin monotherapy and combination prescriptions. Based on the guidelines of the American Association of Clinical Endocrinology (AACE) there are underdose 2 and overdose 2 insulin. Based on the American Diabetic Association (ADA) there is an overdose of 9 insulins. Based on the Indonesian Endocrinology Association (PERKENI) there was an overdose of 7 insulin from 8 samples of medical records. This study concluded that from 8 medical records, those who received prescriptions for insulin therapy had been effective in achieving glycemic control targets, resulting in effective therapy in 5 patients (63%) of 8 samples of medical records.

Keywords: Type 2 Diabetic Mellitus; Drug Related Problems (DRPs); Insulin Therapy

1. INTRODUCTION

Diabetic mellitus (DM) is a chronic metabolic disorder disease characterized by chronically elevated blood plasma sugar levels (hyperglycaemia) due to a deficiency in insulin production by the pancreas which is genetically inherited and or due to other causes or due to the ineffectiveness of insulin produced. Based on the cause and type of diabetic mellitus, it is generally classified into type 1 and type 2 diabetic mellitus (American Diabetic Association, 2021).

Type 2 diabetic mellitus (Type 2 DM) is a common case and accounts for about 90% of all DM cases in the world (Kalyani et al., 2017). Indonesia ranks 5th out of 10 countries with the highest number of sufferers at 19.5 million in 2021 and is estimated to be 28.6 million in 2045, where the number of DM sufferers in East Kalimantan Province is in second place with North Sulawesi Province at 3.1%. Type 2 DM cases in Samarinda City from 2018 to 2019 ranked 3rd with 21,746 cases out of 10 disease cases (RISKESDAS, 2019).

DM is a chronic disease with high complexity that requires ongoing treatment. DM cannot be cured, but it can be managed and controlled, patients can maintain blood glucose levels within normal levels and can be managed depending on self-management and patient lifestyle (Ernawati et al., 2020).

Based on the guidelines of the American Diabetic Association (ADA) in 2021 and the Indonesian Endocrinology Society (PERKENI) in 2021, DM patients must achieve therapeutic targets with HbA1c < 7% in order to enhance the patient's quality of life and lower the risk of developing microvascular and macrovascular problems. HbA1c is one of the parameters used to

assess optimal glycaemic control, however in Indonesia the target of achieving glycaemic control has not been achieved, the average HbA1c is still above 8% of the desired target of < 7%. Insulin therapy is given to Type 2 DM patients in conditions where the patient has very high blood glucose levels and has an HbA1c value > 7% by providing single therapy (monotherapy) for 3 months, but there is no clinical change and the HbA1c value is > 9% (PERKENI, 2021). Considering the findings of research by (Bathari et al., 2020), it is said that Drug Related Problems (DRPs) occurred, namely the need for additional drug therapy by 26.3% which should be treated with the addition of insulin. This study aims to analyze Drug Related Problems (DRPs) prescribing insulin therapy as a management guideline that can be a reference for management in outpatient Type 2 DM patients at Hospital X Samarinda.

2. METHODS

Research with descriptive analytic non-experimental design, which is a research method without a treatment to the research subject with a descriptive research design conducted by making a description of a situation objectively based on existing data. Data collection was carried out retrospectively, namely tracing past data through medical record sheets of outpatient type 2 diabetic mellitus patients at Hospital X Samarinda in 2022.

All respondents who met the inclusion and exclusion criteria were sampled using the Total Sampling technique. Data analysis was carried out using medical record data of outpatients with type 2 diabetic mellitus at Hospital X Samarinda. Data collected retrospectively were then analyzed descriptively, analyzing data by describing and presenting sample data into an orderly form transferred to the data collection sheet of prescribing pattern formulation and Drug Related Problems (DRPs) presented in the form of descriptions and narratives and tables.

3. RESULTS AND DISCUSSION
3.1. Patient Medication Profile

The distribution of drug use based on the type of insulin therapy prescribed in patients with type 2 diabetic mellitus (Type 2 DM) undergoing outpatient care can be seen in Table 1:

Table 1. Distribution by Type of Insulin Therapy

Type of Insulin	Insulin Mechanism of Action	Total	Percentage
Monotherapy			
Aspart (Novorapid)	Rapid Acting (RA)	1	20%
Glulisine (Apidra)	Rapid Acting (RA)	1	20%
Detemir (Levemir)	Long Acting (LA)	1	20%
Glargine (Lantus)	Long Acting (LA)	2	40%
Total		**5**	**100%**
Combination			
Novorapid+Lantus	RA + LA	2	67%
Novorapid+Levemir	RA + LA	1	33%
Total		**3**	**100%**

Based on Table 1, it was found that the most common type of therapy was monotherapy for 5 patients (63%) namely Glargine (Lantus) for 2 patients (40%) and combination therapy for 3 patients (37%) namely Novorapid + Lantus for 2 patients (67%). This study is in line with the theory from (PERKENI, 2021) which states that as an initial regimen basal insulin can be used at a dose of 0.2 units/kgbb, with the time of administration adjusted to the patient's routine and the type of insulin used. The combination of insulin can provide a better reduction in blood glucose levels because it can meet the needs of basal insulin and prandial insulin, the incidence of hypoglycaemia and weight gain is better controlled (Rukminingsih & Nova, 2021).

3.2. Drug Related Problems (DRPs) Profile

The results of the analysis of incorrect dose DRPs in insulin prescriptions for patients with type 2 diabetic mellitus (DM Type 2) who undergo outpatient care can be seen in Table 2 :

Table 2. DRPs Profile of Insulin Dosage

Types of DRPs	Sub DRPs	Total		
		AACE 2020	ADA 2021	PERKENI 2021
Incorrect dose	Underdose	2	-	-
	Overdose	2	9	7
Total Insulin		11		

In this study, the appropriateness of insulin doses was calculated based on the guidelines of the American Association of Clinical Endocrinology (AACE), the American Diabetic Association (ADA) and the Indonesian Endocrinology Society (PERKENI). The results of the DRPs analysis on the prescription of insulin doses for type 2 diabetic mellitus patients from the total prescription of 11 types of insulin from 5 monotherapies and 3 combinations (2 types of insulin) can be seen in Table 2.

Based on the American Association of Clinical Endocrinology (AACE) guideline, the correct dose is 5 insulin (4 monotherapy and 2 from combination therapy), underdose 2 insulin from 1 from combination therapy, overdose 2 insulin, namely 1 monotherapy and 1 from combination therapy. Based on the American Diabetic Association (ADA), the correct dose is 2 insulin (1 monotherapy and 1 from combination therapy) and overdose 9 insulin, namely 4 monotherapy and 3 from combination therapy. Based on the Indonesian Endocrinology Society (PERKENI) there is an appropriate dose of 4 insulin (1 monotherapy and 2 from combination therapy) and an overdose of 7 insulin, namely 4 monotherapy and 2 from combination therapy.

The higher the patient's level of knowledge of their disease and how to use insulin, the more appropriate the dose of insulin that can be given to the patient (Ratnasari & Bhargah, 2018). In this study, the results of analyzing the effectiveness of achieving glycemic control goals of wrong dose DRPs in insulin prescribing for type 2 DM patients undergoing outpatient care can be seen in Table 3 :

Table 3. Prescribing Effectiveness Profile of Insulin Therapy

	Total			Percentage
	AACE 2020	ADA 2021	PERKENI 2021	
Effective	5	5	5	63%
Ineffective	3	3	3	37%
Total	8			100%

Taking into account the outcomes of the study of Table 3 above, it was found that the number of Type 2 DM patients who received effective therapy results was 5 patients (63%) and 3 patients (37%) from 8 medical record samples. The effectiveness of achieving glycaemic control goals was assessed based on the guidelines used in this study the American Association of Clinical Endocrinology (AACE) 2020 sets glycaemic control goals of HbA1c < 7%, GDP 80-110 mg/dL, GD2JPP < 140 mg/dL. The American Diabetic Association (ADA) 2021 set glycaemic control goals of HbA1c < 7%, GDP 80-130 mg/dL, GD2JPP < 180 mg/dL. And the Indonesian Endocrinology Society (PERKENI) 2021 sets glycaemic control goals of HbA1c < 7%, GDP 80-110 mg/dL, GD2JPP < 180 mg/dL.

4. CONCLUSION

The profile of prescribing insulin therapy treatment in patients with type 2 diabetic mellitus shows that the most therapy given is monotherapy as many as 5 patients (63%), including Glargine (Lantus) is mostly prescribed with a percentage of 40%. Meanwhile, as many as 3 patients (37%) received combination therapy of rapid acting insulin with long acting, including Novorapid with Lantus as many as 2 patients (67%).

The patient's DRPs profile after analyzing 8 samples of medical record data obtained the results of the DRPs analysis on the prescription of insulin doses for patients with type 2 diabetic mellitus from the total prescription of 11 types of monotherapy and combination insulin. Based on the American Association of Clinical Endocrinology (AACE) guidelines, there were 2 underdose and 2 overdose of insulin. Based on the American Diabetic Association (ADA) there is an overdose of 9 insulin. Based on the Indonesian Endocrinology Society (PERKENI) there was an overdose of 7 insulin from 8 medical record samples. The amount of insulin dose discrepancy in the guideline used in this study is due to monotherapy or combination insulin therapy adjusted to the patient's body condition in responding to insulin.

5. ACKNOWLEDGMENT

6. CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this research.

7. REFERENCES

American Association of Clinical Endocrinology "Consensus Statement on the Comprehensive Type 2 Diabetes Management Algorithm - 2020 Executive Summary," Endocrine Practice, 26(1), 107-139.

American Diabetic Association, (2021). Classification and diagnosis of diabetes: Standards of Medical Care in Diabetes 2021. Diabetes Care, 44(Supplement 1), S15-S33.

Bathari, A. C. R., Rahmawati, F., & Sari, I. P. (2020). Hubungan Drug Related Problems (DRPs) Obat Antidiabetika terhadap Ketercapaian Kendali Glikemik pada Pasien Rawat Inap Diabetes Melitus Tipe 2 dengan Komplikasi Nyeri Neuropati. Jurnal Manajemen Dan Pelayanan Farmasi (Journal of Management and Pharmacy Practice), 10(4).

Ernawati, D. A., Harini, I. M., & Gumilas, N. S. A. (2020). Faktor-Faktor yang Mempengaruhi Tingkat Kepatuhan Diet pada Pasien Diabetes Melitus Tipe 2 di Kecamatan Sumbang Banyumas. Journal of Bionursing, 2(1), 63-67.

Kalyani, R. R., Golden, S. H., & Cefalu, W. T. (2017). Diabetes and aging: unique considerations and goals of care. Diabetes Care, 40(4), 440-443.

KEMENKES. (2019). Pedoman Pelayanan Kefarmasian Pada Diabetes Melitus. Kementerian Kesehatan Republik Indonesia.

PERKENI. (2021). Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa di Indonesia 2021: PB.PERKENI.

Ratnasari, N. L. M. N., & Bhargah, A. (2018). Pola penggunaan insulin pada pasien diabetes mellitus tipe 2 di poli penyakit dalam RSU Negara Periode Juli-Agustus 2018. Intisari Sains Medis, 9(3).

RISKESDAS. (2019). Data dan Informasi kemiskinan kabupaten/kota tahun 2018. Jakarta: Badan Pusat Statistik.

Rukminingsih, F., & Nova, V. C. (2021). Penggunaan Insulin Pada Pasien Diabetes Melitus Tipe 2 Peserta Jkn Di Instalasi Farmasi Rawat Jalan Rumah Sakit St. Elisabeth Semarang. Jurnal Ilmiah Ibnu Sina, 6(1), 79-86.

LAMPIRAN

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by Putri Ayu Lestari

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