CASE REPORT

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Medication Therapy Review of Elderly Who's Receiving Insulin

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Abstract

Background : Patients with chronic disease with stable conditions require continuity of treatment accessible through referral services at primary health facilities.[1] There was potential for patients to receive different kind of services by health care practitioners. It may also caused drug-related problems.[2] Pharmacist had strategic role in the medication management of chronic diseases, to deliver pharmaceutical care.[3] Aim: To identify drug related problems of elderly patient who's receiving insulin. Materials and Methods : A logbook of chronic disease treatment in the integrated service station for elderly (Posyandu Lansia) at Indonesia, East Java, Surabaya was assessed with the Medication Therapy Review (MTR) as systematic process of collecting patient information specifically, to identify drug-related issues, developing a priority list of drug-related issues, and making plans to address them. Results : There was many drug therapy problems such as inappropriateness of insulin types selection, drug substitution without information, patient received an excess amount of insulin pen, incorrect insulin storage and needs attention due to insulin stability. Discussion: Evolving role of community pharmacist through MTR service can improve the patient's understanding of the medications, address any concerns of drug therapy problems, empowering patients to perform self-management and patient health conditions especially in elderly patient and patient using specific device.[4]

Key words : continuity of care, drug-related problems, community pharmacist, MTR.

INTRODUCTION

Medication therapy management (MTM) is a model to enhance collaboration between pharmacists, doctors and other health workers; improve communication between patients and health care teams; and optimizing drug use to improve patient health. One of the elements in MTM is a comprehensive review of patient treatment called Medication Therapy Review (MTR). MTR is comprehensive, ideally the patient reporting all medications currently used to the pharmacist, including all prescription and non-prescription drugs, herbal products, and other dietary supplements. The pharmacist then assesses drug-related issues, including adherence, and worked with patients, physicians, or other health pret alofessionals to determine the appropriate options for solving the identified problems.

Case Presentation

Data Collection

A 64-year-old woman, having diabetes since 11 years ago (at the age of 53 years). Patients were given a combination of Oral Anti Diabetes (OAD) therapy of 5 mg Glyburide taken before first meal and 500 mg of Metformin taken 3 times daily after meals. During the treatment process, patients routine use the medications and only 1-2 times forgot to take the medicine. The level of education is only up to elementary school, but had a good memory of health information. She had high-calorie diet because of often feel hungry and easy for snacking fried foods which are sold, lack of physical activity.

The main complaint

After out of the hospital patients still feel nausea and vertigo, SMBG at the time of fasting and 2 h post prandial still above 300 mg/dL. On December 30, 2016 patients undergo laboratory examination with the following results:

Fasting blood glucose : 378 mg/dL
Prandial blood glucose : 395 mg/dL
Triglyseride : 259 mg/dL

Drug therapy recorded by Pharmacist with homecare on 4 January 2017 with previous medical history is as follows :

	Residual medications from hospital	Medications outpatient 27 Des 2017	Medications outpatient 3 Jan 2017
Name of Insulin	Humalog®Kwik Pen	Novorapid®Flex Pen	Novorapid®Flex Pen
Type of Insulin	Lispro	Aspart	Aspart
Dosage of Insulin	3 x 4 units	3 x 4 units	3 x 6 units
Number of Insulin	2 pens (residual)	2 pens (new prescription)	2 pens (new prescription)

In addition to insulin, the patient also received oral medication as follows :
Glucodex (gliclazide): 1 tablet in the morning
Dimenhydrinate : three times a day
Betahistine 6 mg : three times a day
Gemfibrozil 300 mg : 1 capsule in the evening

Pharmaceutical Assessment

Based on data that has been collected, pharmacists classify the patient's treatment needs as follows Based on data that has been collected, pharmacists classify the patient's medication needs as follows :

	Laboratory Results and Assessment	Drug Related Problems

Indication	Medical problem : DM tipe 2 in Elderly	FPG : 378 mg/dL Prandial : 395 mg/dL SMBG : >300 mg/dL	Need additional drug therapy
Efficacy	Drug therapy : Novorapid® Flex Pen (3 x 6 unit) Glucodex (once daily)		Insulin rapid is ineffective, need dose adjustment or replaced with basal insulin.
Safety	-	-	-
Compliance	Humalog® Kwik Pen (3x 4 units) than swithced with Novorapid® Flex Pen (3 x 6 units)	Patients do not understand the medicine had replaced.	Patients are confused to use the drug, potentially double therapy.

DISCUSSION

Based on the results of pharmaceutical assessment, there are problems in the selection of insulin types seen from the target value of fasting blood sugar and 2 h pp that has not been achieved. The type of insulin that suits the needs of elderly patients is basal insulin combination with oral sulfonylureas or mixed-insulin. Based on Beer's Criteria, the recommended insulin therapy in elderly is non-sliding scale insulin and does not use long acting sulfonylurea.[6] In this case patients get gliclazide, is in accordance with diabetes management guidelines in elderly.

In these patients, therapeutic targets have not been achieved because the combination of insulin rapid and sulfonylurea has not been optimal either from the aspect of choice of therapy or dose. Patients weighing 56 kg had a need for insulin with a dose of 0.1 units/kg of body weight per meal and adjusted based on blood sugar. Patients received an initial dose of 3 times daily 4 units each, the dose and treatment results have not reached the target, dose adjustment required.[7]

Insulin storage also needs attention due to insulin stability. Before use, insulin is stored in the stable temperature range of 2°-8°C. The insulin being used is sufficiently stored at room temperature and protected from heat. Extreme temperature changes can affect the insulin stability caused by hydrolysis.[8,9] In the drug delivery activity to the patient, the pharmacist is the last health worker to be encountered by the patient. In the chronic disease service, the pharmacist needs to pay attention to the residue of the patient's medicine at home. It is important to maintain the effectiveness and efficiency of treatment. In the insulin service with a 3 x 4 unit regimen, it takes 360 units of insulin for 1 month. Patients will get 2 pen insulin that can be used for approximately 50 days, while patients redeem the medicine every month and will receive 2 pen insulin again. This results in an excess of the amount of insulin the patient receives. If insulin storage is not appropriate, it will have an impact on the effectiveness of insulin therapy. In these patients there was considerable residual insulin stored at room temperature because the patient did not have a refrigerator.

Some of the barriers to treatment may be due to cultural issues, educational level, language barriers, literacy levels, and other characteristics of patient communication skills that may affect outcomes. Insulin is a high alert drug, it needs special services to deliver insulin to the patient to be used properly and safely.[10]

Pharmacists have a strategic role in the monitoring and evaluation of patients treatment to detect symptoms that can be attributed to side effects caused by current treatment, interpreting, monitoring, and assessing the outcomes of patients' treatment. Through the MTR service, the Pharmacist may assess, identify, and prioritize treatment related to issues related to the clinical suitability of each drug used by the patient, including benefits versus risk, dose adjustment and dose regimen of each drug, including indication, contraindications, potential side effects, and potential treatment-related problems. Pharmacists have a strategic function to prevent duplication of therapy or unnecessary drugs, monitor patient compliance with treatment, identify illness or untreated conditions, consider medical expenses and consideration of access to health services / drugs and may initiate collaboration with other health care personnel.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS USED

MTM: Medication Therapy Management; **MTR:** Medication Therapy Review; **OAD:** Oral Anti Diabetic; **SMBG:** Self Monitoring Blood Glucose.

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