

QUESTIONNAIRE ON THE KNOWLEDGE OF PHARMACISTS TO WORK IN PHARMACEUTICAL CARE IN THE BRAZILIAN PUBLIC HEALTH SYSTEM

1. Diabetes mellitus (DM) is an important public health problem, as it is associated with complications that compromise the productivity, quality of life and survival of affected individuals. Thus, a multidisciplinary approach is essential, in which the clinical pharmacist is inserted in order to optimize the treatment of patients with this morbidity. In the context of pharmaceutical care, DM and its pharmacotherapy, judge the statements below as true or false:

() In patients with type 1 DM, the clinical pharmacist should periodically request the laboratory test of postprandial glycemia, as in these patients it is the parameter that best reflects the glyceimic profile of the last 3-4 months.

() During the pharmacotherapeutic follow-up of patients with DM, the clinical pharmacist must be responsible for the user's needs related to the drugs, through the detection, prevention, and resolution of Problems Related to Pharmacotherapy (PRT).

() In patients with newly diagnosed type 2 DM, the clinical pharmacist should not suggest the prescription of Metformin to the physician, as in these individuals the drug can have a broad antihyperglycemic effect and increase the peripheral sensitizing action of insulin.

() Patients with LADA-type DM (adult latent autoimmune diabetes) are usually obese or overweight, and therefore, this group of patients will necessarily need to be referred by the clinical pharmacist to the professional nutritionist.

The CORRECT sequence, from top to bottom, is:

a) T, T, F, F

b) F, T, F, T

c) **F, T, F, F**

d) F, T, T, F

e) F, F, T, F

2. Diabetes Mellitus affects approximately 1 in 4 elderly people, with more than half of them unaware of the diagnosis. Regarding this health condition in the context of the elderly, mark the alternatives with T (true) and F (false).

() In clinical practice, de-intensification (reduction of excessive treatment) of glycemic control should be recommended, avoiding HBA1c rates lower than 6.5 % for the elderly (60 years or older), due to the increase in global and cardiovascular mortality, in addition to the risk of hypoglycemia.

() Adequate control of glycemic levels should be a priority in the pharmaceutical consultation in elderly people with high clinical-functional fragility, due to the risk of developing complications over the years, such as diabetic retinopathy and nephropathy.

() Due to the high prevalence of polypharmacy in the elderly, it is necessary for the clinical pharmacist to verify the use of drugs that may be associated with hyperglycemia, such as thiazide diuretics, beta-blockers (except Carvedilol), quinolones, atypical antipsychotics (especially Olanzapine and Clozapine), corticosteroids, among others.

() Antidiabetic agents associated with greater cardiovascular safety and lower risk of hypoglycemia should be preferred in the elderly and they include metformin, DPP-4 inhibitors (Linagliptin and sitagliptin), GLP-1 agonists and SGLT2 inhibitors.

() In pharmacotherapeutic follow-up, HBA1c goals should be set depending on the comorbidities of the elderly individual, not exceeding 7.5 %, as well as fasting blood glucose, not exceeding 130 mg/dL.

Mark the alternative with the correct sequence:

a) T, F, T, F, T

b) T, F, T, T, F

c) F, T, F, F, T

d) F, T, T, F, T

e) T, T, T, T, F

3. Evidence-Based Clinical Practice (EBP) is an important component for decision-making in health, including Pharmaceutical Care. Regarding EBP, we can understand it as:

a) Act in which health professionals prescribe and/or dispense drugs, based on their own clinical experiences and/or the clinical experiences of professional colleagues.

b) Use of the best available scientific evidence, associated with the experience of the health professional, to make a clinical decision, taking into account available resources, the needs and preferences of the patient.

c) Use of Internet resources by health professionals to solve their doubts and prescribe or dispense drugs correctly.

d) Practice that seeks to guide clinical decisions solely by scientific sovereignty.

e) Practice based on clinical experience as the best strategy for decision-making in Health.

4. Patient A.S.M., 33 years old, female, diagnosed with Type 2 Diabetes Mellitus (DM) and Systemic Arterial Hypertension (SAH), without further complications. She uses the following drugs: Losartan 50mg 1-0-0, Enalapril 10 mg 0-0-1 and Metformin 500mg twice daily. She was referred to the Clinical Pharmacy Service due to difficulty with glycemic control. In conversation with the pharmacist, the patient reported not using Metformin as prescribed, due to gastrointestinal discomfort. Regarding this patient and using her knowledge of pharmacotherapy we can state, EXCEPT:

a) The patient may not achieve her glycemic control because she does not use Metformin, which characterizes a Pharmacotherapeutic Problem (PRT) of adherence.

b) Drugs from the Angiotensin-Converting Enzyme Inhibitors (ACE) and/or Angiotensin II AT1 Receptor Blockers (ARB) classes should not be used in women of childbearing age, except when absolutely indicated, due to the possibility of serious effects associated with the use of these drugs if the patient becomes pregnant (teratogenic).

c) Double blockade of the Renin-Angiotensin-Aldosterone System (RAAS) is indicated for patients with Chronic Kidney Disease (CKD) only in case of refractory proteinuria.

d) The lack of glycemic control due to non-use or inappropriate use of Metformin characterizes, in this case, a safety PRT. Gastrointestinal reactions can be controlled by using this drug after lunch and after dinner and using the drug with extended release (XR).

e) The use of Losartan (ACE) and Enalapril (ARB) should be reviewed in the case of this patient, since she has no indication for double blockade of the Renin-Angiotensin and Aldosterone System (RAAS). This association characterizes a pharmacotherapeutic problem for the indication of Losartan or Enalapril.

5. Patient L.M.S., 68 years old, male, diagnosed with type 2 Diabetes Mellitus (DM2), was referred to the clinical pharmacist for health education, aiming at the patient's understanding of the importance of correct treatment and control of blood glucose levels, in order to control the progression of such morbidity and avoid complications and the development of others. Check the INCORRECT alternative:

a) Sexual dysfunction in elderly people with DM is frequent in clinical practice (in men and women) as a result of the recurrence of genitourinary tract infections. As therapeutic alternatives for the treatment of sexual dysfunction, 5-phosphodiesterase inhibitors (Sildenafil) are recommended for men when there are no contraindications; and for women, vaginal lubricating creams and estrogens. It is important to stimulate voluntary urination to avoid early urinary incontinence.

b) Diabetic Retinopathy (DR) is a common and specific microvascular complication of DM. It is recommended to optimize glycemic control and control of Systemic Arterial Hypertension (SAH) to reduce the risk of onset or delay the progression of DR, in addition to the treatment and control of dyslipidemia, to reduce the risk of photocoagulation and worsening of DR.

c) Diabetic foot infections are currently the least frequent diabetic complications and rarely lead to hospitalization. In more severe cases, it is recommended to initially administer parenteral antibiotics.

d) Diabetes Kidney Disease (DKD), which results in Chronic Kidney Disease (CKD), is the main cause of enrollment in renal replacement therapy and is associated with increased morbidity and mortality. Maintaining systolic pressure < 130 mmHg is important to slow the progression of kidney disease and delay the need for dialysis.

e) Diabetic Peripheral Neuropathy (DPN) is caused by chronic hyperglycemia and cardiovascular risk factors. It is a type of pain that gets worse with rest, so the patient should be encouraged to practice physical activities (when there are no contraindications), respecting the individuality of each patient.

6. Type 2 Diabetes Mellitus (DM2) is divided into four stages according to insulin secretion by pancreatic β cells. These phases are also used to guide non-pharmacological and pharmacological treatment. In this sense, analyze the clinical case: Patient P.M.J., 38 years old, presented the C-peptide test to the physician, whose result showed high insulin production, allowing early diagnosis of DM2. He was referred to the clinical pharmacy service and presented a prescription for Glibenclamide 5 mg. Identify the INCORRECT statement:

a) The patient is in phase 1, therefore, the prescription of an insulin secretagogue (sulfonylureas) is a pharmacotherapeutic problem of indication, being more appropriate, in this case, lifestyle modification associated with the use of Metformin.

b) For phase 1 of the treatment, the initial period of type 2 DM characterized by mild hyperglycemia, the best indication is drugs that increase insulin secretion. Therefore, there is no pharmacotherapeutic problem in the treatment of the patient.

c) If the patient was in phase 2, with a decrease in insulin secretion, the use of Glibenclamide 5 mg would be correct, and it may be necessary to combine it with incretin mimetics, such as GLP-1 analogues (Liraglutide), DPP-4 inhibitors (Linagliptin) or agents that promote glycosuria such as SGLT-2 inhibitors (Dapagliflozin).

d) In phase 3, with the progression of the loss of insulin secretion, in general after a decade of disease evolution, and already with weight loss and/or comorbidities present, it is necessary to associate an injection of depot insulin to the oral agents before the patient sleeps (timely insulinization).

e) In phase 4, finally, when clear insulinopenia predominates, the patient should receive one or two applications of depot insulin (Neutral Protamine Hagedorn - NPH) or long-acting analogues, accompanied by prandial insulin R (rapid) or ultrarapid (analogues) before meals. In this phase 4, an oral sensitizing agent combined with insulinization usually reduces insulin doses and helps to improve metabolic control.

7. M.A.J., female, 60 years old, requests the following medical prescription to be issued:

- **Captopril 25mg one tablet every 8 hours**
- **Diclofenac 50mg one tablet every 12 hours**
- **Metformin 850mg one tablet after lunch**
- **Spironolactone 50mg one tablet after breakfast**
- **Simvastatin 20mg one tablet after dinner**

In conversation with the clinical pharmacist, M.A.J., reported that the back pain for which she used diclofenac had improved, however she continued using it to “prevent” her pain from returning. In this case, mark the CORRECT alternative:

a) The time to use simvastatin is incorrect, since this drug should be used preferably in the morning.

b) Monotherapy with Metformin is not the first option in the pharmacological treatment of type 2 Diabetes Mellitus (DM2). The initial pharmacological treatment of DM2 should be monotherapy with sulfonylurea (example: Glibenclamide).

c) There is a potential drug interaction between Captopril and Spironolactone. Concomitant use of these drugs may result in hyperkalemia. Therefore, it is necessary to monitor.

d) The prescribed dose of Metformin for this patient is the maximum recommended daily dose. Therefore, future increases in the dose of this drug cannot be made for this patient.

e) The chronic use of Diclofenac in this case is characterized as a pharmacotherapeutic effectiveness problem, since at that moment there was no longer “back pain” and its chronic use can cause kidney damage in this patient.

8. Patient L.C.S, 15 years old, 1.75 m, 66 kg, does not consume alcohol and tobacco, sedentary lifestyle (does not play sports for fear of glycemic control). Diagnosed with Type 1 Diabetes Mellitus (DM 1). Uses insulin as prescribed:

- **Before breakfast: 15 units of Neutral Protamine Hagedorn (NPH) insulin + 10 units of Regular insulin;**
- **Before lunch: 10 units of Regular insulin;**
- **Before dinner: 10 units of Regular insulin;**
- **At bedtime: 15 units of NPH insulin.**

They were referred to Pharmaceutical Care to receive instructions on his clinical condition and on the use of insulins, since he reports episodes of hypoglycemia. Evaluate the alternatives related to the case and mark the INCORRECT alternative:

a) **When mixing the insulins to administer them, it is recommended that the patient first draw the NPH insulin into the syringe and then the Regular insulin, and the volume of both corresponds to 25 units. When the patient realizes that an excess of the prescribed amount has passed into the syringe, they must discard the insulin mixture drop by drop, until they reach the correct amount and then apply it.**

b) When the patient checks their capillary blood glucose before going to sleep and it is within normal limits, they choose not to use the 15 units of NPH insulin before going to sleep, as they think it is

unnecessary. This attitude is characterized as a pharmacotherapeutic problem of NPH insulin adherence.

c) It is recommended to perform at least four capillary blood glucose tests a day, preferably distributed in pre-prandial periods (before breakfast, lunch, dinner and supper). Such measures allow the patient to take immediate actions to adjust insulin doses.

d) It is important that the clinical pharmacist advises the patient that the insulin is administered alternately (rotating), and can be applied in different regions of the belly, arms and legs, in order to avoid lipohypertrophy, which are nodules or lumps of fat that interfere with the absorption of insulin, affecting its effectiveness.

e) When practicing sports, the patient should be instructed to reduce their insulin dose prior to a physical activity program, and capillary blood glucose monitoring should be performed hours after the activity, as the risk of hypoglycemia is not limited to the moment of exercise activity, but to periods after it. Thus, the patient should be encouraged to practice physical activities in order to avoid losing glycemic control.

9. Regarding Gestational Diabetes (GD):

I –It is defined as any degree of reduced glucose tolerance, the diagnosis of which occurs before or during pregnancy.

II- The diagnosis is made through active search with provocative tests that employ glucose overload.

III- In the pharmacotherapeutic follow-up of patients with gestational diabetes, monitoring of capillary blood glucose should be performed. Glycated hemoglobin is not a good parameter for monitoring, as hemoglobin in pregnancy undergoes physiological variations that may alter the result.

IV- The complications most frequently associated with gestational diabetes are for the mother: cesarean section and pre-eclampsia; and for the fetus: prematurity, microsomia, shoulder dystocia, hypoglycemia and perinatal death.

V- The treatment of gestational diabetes includes nutritional education, practice of physical activity and, when indicated, the use of drugs such as: metformin (assessing the risk x benefit) and insulin.

Check the **CORRECT** alternatives:

a) I, II, III and V

b) I, III, IV

c) II, IV, V

d) II, III, V

e) I, II, IV and V

10. Systemic arterial hypertension (SAH) and heart failure (HF) are two diseases closely associated with patients with diabetes mellitus (DM). Because they have a complex and heterogeneous pathophysiology, multidisciplinary care is required with the inclusion of pharmaceutical care in the treatment of these patients. In the context of pharmaceutical care for patients with DM, their pharmacotherapy and associated comorbidities, check the CORRECT alternative.

a) Most patients with type 2 DM are overweight, have SAH and dyslipidemia, however, pharmaceutical care interventions should be targeted and centered on DM2 as this is the underlying disease and has the highest mortality.

b) The clinical pharmacist should suggest the deprescription of insulin in patients with type 1 DM who also have chronic heart failure, as the drug is not safe for this group of patients.

c) Beta-blockers (e.g. Propranolol) are drugs of great importance in the treatment of HF, however, in patients who also have DM, they may mask symptoms of hypoglycemia. In these patients, the clinical pharmacist would classify this pharmacotherapeutic problem (PRT) as “effectiveness”.

d) The clinical pharmacist suggesting the prescription of hydralazine for patients with DM2+SAH who presented hyperkalemia with the use of ACE inhibitors or ARBs, is not a therapeutic possibility.

e) All alternatives are incorrect.

Questions from Reis et al. (in order: questions 7, 10 and 21 of the questionnaire validated by Reis et al., 2017

11. Arterial hypertension is a non-transmissible chronic disease that affects more than 30 % of the Brazilian population. Analyze the statements below about the treatment of this disease.

- I. Non-pharmacological treatment should be instituted soon after the diagnosis of the disease, becoming a daily therapeutic strategy in the control of hypertension.**
- II. Non-adherence to drug treatment is one of the main causes of inadequate blood pressure control in patients with high blood pressure.**
- III. After starting drug treatment, it is no longer necessary to continue non-drug treatment.**
- IV. For most patients, the therapeutic goal for blood pressure values should be < 140/90 mmHg.**
- V. Some patients may present some clinical conditions (e.g. diabetes mellitus, coronary artery disease, others) associated with arterial hypertension, and therefore, have pressure values < 120/80 mmHg as a therapeutic objective.**

Mark the correct alternative:

- a) All items are correct;
- b) Only four items are correct;
- c) Only three items are correct;**
- d) Only two items are correct
- e) Only one item is correct.

12. L.M.L, Caucasian, female, 10 years old, weight 30 kg, height 1.40 m, lost a lot of weight in the last few weeks (5 kg), increased diuresis, drinking a lot of fluids.

- **• Current medical history: She has no diagnosed illness. Relevant past medical history: none.**
- **• Current drug history: acetaminophen drops when she has a cold.**
- **• Relevant history of past drugs: does not show**
- **• Family history: father and mother alive, with no diagnosed chronic disease.**
- **• Results of clinical and laboratory tests: Fasting blood glucose 310 mg/dL.**
- **• The child's parents arrive at the pharmacy with the following prescription: Glibenclamide 5 mg 1cp early in the morning.**

Regarding the above case, which alternative is correct?

- a) Patient has a picture suggestive of type 1 diabetes mellitus and the choice of drug was appropriate for this patient, as glibenclamide will stimulate the patient's pancreas to produce and secrete insulin again.

b) Patient has a picture suggestive of type 2 diabetes mellitus and the choice of drug was appropriate for this patient, as glibenclamide will stimulate the patient's pancreas to return to producing and secreting insulin.

c) Patient has a picture suggestive of type 1 diabetes mellitus and the choice of drug was inappropriate for this patient, as glibenclamide needs the patient to have active beta cells to exert its pharmacological effect.

d) Patient has a picture suggestive of type 2 diabetes mellitus and the choice of drug was inappropriate for this patient, as glibenclamide needs the patient to have active beta cells to exert its pharmacological effect.

e) Patient has a picture suggestive of type 2 diabetes mellitus and the choice of drug was adequate for this patient, as glibenclamide reduces the insulin resistance that is present in most patients with this disease.

13. The World Health Organization (WHO) is committed to the implementation of a National Medicines Policy, mainly in developing countries, with actions aimed at managing quality Pharmaceutical Assistance, encouraging the rational use of medicines. Therefore, consider the statements below:

Pharmaceutical Assistance and Pharmaceutical Care are characterized as activities exclusive to the pharmacist, who is the only health professional capable of developing them.

BECAUSE

Pharmaceutical Assistance can be divided into two major areas: management technology (which presents activities aimed at management) and drug use technology (containing activities related to the rational use of drugs, such as prescription and dispensing). Therefore, it can be said that Pharmaceutical Care is inserted in the context of Pharmaceutical Assistance.

Which of the following statements is CORRECT:

- a) both statements are true and the second justifies the first.
- b) both statements are true, but the second does not justify the first.
- c) Both statements are false.
- d) only the first statement is true.
- e) only the second statement is true**

Authors: Luanna Gabriella Resende da Silva, Samara Ribeiro de Souza², Marlon Silva Tinoco, Mayra Rodrigues Fernandes, William Neves Oliveira, Paulo Roque Obreli-Neto, Vinicius Silva Belo, Mariana Linhares Pereira, André Oliveira Baldoni

Reference questions 11, 12, 13

Reis TM, Zanetti ACB, Obreli-Neto PR, Gonçalves AMRF, et. al. (2017). Pharmacists in dispensing drugs (PharmDisp): construction and validation of a questionnaire to assess the knowledge for dispensing drug before and after a training course. *Revista Eletrônica de Farmácia*, 14(4).