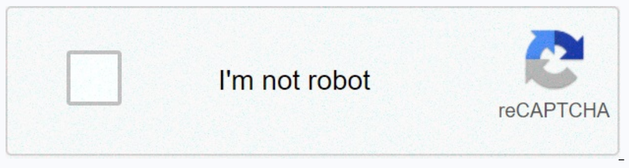

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Metformin missed doses

If you miss taking your medication for oral diabetes, the rules are simple. Here's what you need to know: If you're within three hours of the time you usually take your medication, and normally take your pills twice a day, go ahead and take your medication. If more than three hours have passed, wait for your next scheduled dose. If you are on a long-action medication that you take once a day, take your medication if you are within 12 hours of the missed dose. Otherwise, wait until the next scheduled time to resume taking medication. This plan is suitable for drugs in the classes of sulfonylures (such as glukorol), thiazolidinedione (such as pioglitazone) and biguanides (such as glucophage). For medications such as acarbose (precosa) or repaglinide (Prandin), wait until your next meal to take them. Last Updated: September 2006 A. This patient is a good example of how real life can affect adherence to therapy. Two main issues for the pharmacist to address this situation are medication options and dietary habits, but he could also consider supportive advice regarding this patient's work concerns. MedicationMetformin has a large evidence base to reduce both morbidity and mortality and is rightly first-line therapy in the treatment of type 2 diabetes. This is recommended not only by the National Institute for Health and Care Excellence, but also by the American Diabetes Association and the European Association for the Study of Diabetes.1.2 Metformin reduces plasma glucose through four mechanisms. This: Reduces liver glucose productionIncreates insulin sensitivity in the skeletal muscleImprove the absorption of peripheral glucose and useDelays absorption of glucose in the gastrointestinal tractImportantly, metformin does not stimulate insulin secretion3 so although there is a small risk of hypoglycemia if taken without food, this is minimal compared to other antidiabetic drugs. Metformin, however, can increase the risk of hypoglycemia if used in combination with other antidiabetic drugs. The above mechanisms mean that metformin predominantly increases the effectiveness of insulin and should therefore be taken with meals when endogenous insulin occurs. Gastrointestinal side effects with metformin — especially diarrhea and nausea — are widely recognized. To minimize them, patients may be advised to take their tablets after meals instead of before and the dose should be headlined slowly, over a period of weeks. Often these side effects are most noticeable in the first few weeks after initiation. If patients are warned of side effects and told about the excellent benefits of metformin they are often prone to going ahead with medication for at least a month or two to see if they can cope. For most people, dosing three times a day is used to maximize efficiency (i.e. because they eat three times a day, there is a reduction in resistance when insulin is most needed), but, as seen here, it can be inconvenient for patients and, in I regularly see the lunchtime dose either being forgotten or being omitted on purpose. As a result, meformin is now prescribed at a dose twice a day, taken with the two biggest meals of the day and not necessarily with breakfast and dinner. This dose allows higher doses (eg, 1 g bd) and more comfort for the patient. As for this patient, I would recommend a change to dosage twice a day to the prescriber. The dose would depend on your blood glucose control, but if this is under control I would recommend 500mg with the smallest meal and 1g with the largest. If the control is poor there is the potential of titrate up to 1 g bd. I have also encountered patients taking their metformin at bedtime. This is an unnecessary dose because without the presence of a meal there is only basal action of insulin. It is worth checking when exactly patients take their medicine. Instilling the habit of taking metformin with meals may be of greater benefit if a patient's dose should be increased or another antidiabetic drug, such as a sulfonillurea, it is added, because it can prevent future problems with adherence. Modified release metformin is frequently used in practice, commonly as a dose once a day. It is recommended by NICE, but only after a proper trial of standard metformin where gastrointestinal intolerability prevents the continuation of therapy.1 The cost of this option should be considered; metformin MR 500mg costs £5.32 for 56 tablets, while standard metformin 500mg costs £1.80 for 56.4 In today's health economy it would be a benefit to keep as many patients as possible in standard metformin and slow dose qualification can help achieve this. If a patient cannot tolerate side effects, modified-release metformin would be preferable to switching to a different medication (eg, a sulfonillurea, DPP4 inhibitor, a tiaolidinedione or insulin) - these should be reserved for when therapy should be intensified because they come with their own risks, particularly hypoglycemia. In this case, when the patient is in an early treatment phase, it would be better to encourage him to take his metformin (possibly at a tight dose after talking to the prescriber) rather than recommending a transfer to an alternative class of drug. We don't know your current HbA1c and therefore we don't know how good or bad your long-term blood glucose control is. Without this information it would be prior and probably ill-considered to recommend an alternative. Dietary habits Technically there is no biological reason for people to eat three meals a day, although culturally this is the norm. However, regular meals are recommended in diabetes as a way to minimize fluctuations in blood glucose levels, as it has been shown that and extreme hypoglycemia lead to poorer long-term outcomes. A Cochrane review found that there was limited evidence for any particular diet and that regular exercise had more benefits in reducing HbA1c.5 Regular small meals should it has been linked to a reduced risk of obesity, although it has not been conclusively shown. However, a follow-up study of molecular changes related to meal frequency showed that eating a large meal a day versus three smaller meals increases insulin resistance and glucose intolerance,6 that would best be avoided in patients with diabetes. Recent media interest has focused on alternative day fasting. This diet involves eating without restrictions in one day, then a highly restricted diet (less than 600 calories a day for men and 500 calories for women) in the next. This is one way to reduce calories overall and a 10-week trial found that this was a viable diet option to help obese patients lose weight and reduce the risk of developing coronary artery disease.7 However, this diet has not been tested in patients with diabetes. In addition, it would have implications for therapy. For example, do patients still take medication on fasting days? This is especially relevant in patients who are on insulin or sulfonylures, where medication without food can lead to dangerous hypoglycemia. Patients who are only kept on metformin are more likely to be able to cope with varying diets, but these should not be carried out without discussion with their health team. Weight loss is often a key focus on type 2 diabetes and a balanced low-fat, low-salt diet should be encouraged. NICE recommends a diet high in fiber, fruits and vegetables with a low glycemic index and low in saturated fat.1 Rate count and a low glycemic index (GI) are often recommended by dietitians. Carbohydrated count is mainly used in patients with type 1 diabetes or with type 2 diabetes treated with insulin. It may seem a little premature in metaformin-only treated, but awareness of carbohydrates can help patients better understand their diets and identify areas for improvement. A low GI diet is also a sensible recommendation, but patients need to understand the limitations of relying on this measure and that doesn't necessarily indicate that a food is healthy. For example, the presence of fat reduces GI values so that a bag of chips can have a lower GI value than boiled potatoes. Patients interested in adopting this diet should also be educated about the importance of maintaining a low-fat diet (people with diabetes do not metabolize fats properly and have a higher cardiovascular risk) and to ensure that they eat a balance of carbohydrates, fats and proteins. Maintaining a healthy and well-balanced diet is the key recommendation for patients, but a pragmatic approach should be taken. Although we may want patients to Dietary advice this is not always possible and those who work shifts or who have irregular meal patterns should be advised to take their metformin when they have a meal, regardless of the time of this meal. Note that snacking can cause problems, especially if high-fat or high-sugar snacks are selected. It may be useful to explore reasons for missing meals. For example, if our patient tends to have a couple of breaks for snacks, they might be able to take a longer break instead. Or if snacks because it's easier to grab a cookie than make a sandwich, a conversation about food choices and weather could help. Diabetes UK offers a balanced insight into a number of dietary questions, including in low GI diets and fasting for Ramadan. This patient could be encouraged to eat well balanced (and take his metformin) just before starting one shift and another when finished. Key pointsMetformin prescribed twice a day should be taken, ideally, with the two biggest meals of the day. It is worth asking patients when exactly they take their metformin because not all will be taken with meals. Modified release metformin should be reserved for where gastrointestinal side effects with standard release metformin are unacceptable. Regular meals minimize fluctuations in blood glucose levels. The alternative day fasting diet has been shown to help with weight loss and reduced cardiovascular risk, but has not been tested in patients with diabetes. Patients with diabetes are protected from discrimination at work under the Equality Act 2010.Patients' fears about their diabetes affecting their employment status should be taken seriously. In this case, these are already affecting the treatment of this patient, causing him to miss meals and medication, and possible problems could worsen if his treatment is altered. The Equality Act 2010 brings together and expands existing anti-discrimination legislation, and pharmacists need to be aware of it. Part of the law's goal is to prevent discrimination by, or arising from a disability, including discrimination by employers. Although diabetes is not considered by most people to be a disability, workers with diabetes will be protected under the law, which defines disability as physical or mental impairment that has a substantial and long-term adverse effect on a person's ability to carry out normal day-to-day activities. However, it is important to note that other factors can affect a patient's ability to carry out their work. Hypoglycemia in the workplace is a serious consideration, both for the health of patients and for their colleagues, especially when engaging activities such as driving or operating heavy machinery. Ideally, patients should discuss their diabetes with their employer, occupational therapy department or human resources. Some employers may not be insured if an employee has not declared their condition and are therefore willing to be told at the earliest opportunity. This patient must be to discuss your condition, with the required that you do not have to affect your employability – it may mean that you find it easier to manage your condition so that your employer can strive to make sure you have enough time to eat a meal instead of snacks. Patients' concerns about stigma should be discussed as appropriate. corresponding case. patients should not tell their colleagues about their condition, which could become a source of support and encouragement. It may be worth recommending patients join a local support group or read the UK Diabetes Employment and Diabetes brochure, which offers sensible advice. SummaryThere are a number of considerations here to take away. For this patient, the three main points would be: Taking metformin only with meals. Try to adhere to a balanced diet and eat as regularly as possible, avoiding high sugar and high-fat snacks. Talk to someone you trust in work to win support. Ask the expert The authors will be available to answer questions online on the subject of this article until July 29, 2013. Victoria Ruszala is a diabetes specialist pharmacist at the North Bristol NHS Trust Trust