

Diabetes Drug and Process of Drug trials

Abstract

Lifestyle choices, including eating a healthy diet, exercising and staying at a healthy weight, are key to managing type 2 diabetes. But you also might need to take medication to keep your blood sugar, also called glucose, at a healthy level. Sometimes one medication is enough. In other cases, taking several medications works better.

The list of medications for type 2 diabetes is long and can be confusing. Take time to learn about these medicines how they're taken, what they do and what side effects they may cause. That can help you get ready to talk to your health care provider about diabetes treatment choices that are right for you. Causing the pancreas to make and release more insulin. Blocking the action of enzymes in the intestines that break down carbohydrates, slowing how quickly cells take in carbohydrates.

Improving cells' sensitivity to insulin, limiting the kidneys' ability to take in sugar, which increases the amount of sugar that leaves the body in urine, slowing how quickly food moves through the stomach. Some people with type 2 diabetes can control their blood glucose level by making lifestyle changes. These lifestyle changes include consuming healthy meals and beverages, limiting calories if they have overweight or obesity, and getting physical activity.

Introduction

Diabetes is a complex disease that often requires a person with diabetes to follow a number of self-care practices, such as taking medications to control and manage their diabetes. In addition, persons with diabetes often have comorbid chronic conditions, including cardiovascular disease (CVD), hypertension, and depression, which often require taking multiple medications [1]. This chapter describes both trends and current medication use and self-care practices among persons with diabetes. The majority of the chapter focuses on previously diagnosed diabetes defined by self-report of diagnosis by a health care professional. To place medication use among adults with diagnosed diabetes in the context of the larger adult population, it also includes data on persons with no diabetes, prediabetes, and undiagnosed diabetes. Persons without diabetes or with prediabetes or undiagnosed diabetes are classified based on glycosylated haemoglobin (A1c) or fasting plasma glucose levels among adults without diagnosed diabetes [2, 3].

Many people with type 2 diabetes need to take diabetes medicines as well. These medicines may include diabetes pills or medicines you inject, such as insulin. Over time, you may need more than one diabetes medicine to control your blood glucose level. Even if you do not take insulin, you may need it at special times, such as if you are pregnant or if you are in the hospital for treatment [3]. If you have gestational diabetes, you can manage your blood glucose level by following a healthy eating plan and doing a moderate-intensity physical activity, such as brisk walking for 150 minutes, each week. If consuming healthy food and beverages and getting regular physical activity aren't enough to keep your blood glucose level in your target range, a doctor will work with you and may recommend you take insulin. Insulin is safe to take while you are pregnant.

No matter what type of diabetes you have, taking diabetes medicines every day can feel like a burden sometimes. New medications and improved delivery systems can help make it easier to manage your blood glucose levels. Talk with your doctor to find out which medications and delivery systems will work best for you and fit into your lifestyle [4].

Process of Drug Trials

The guidelines and algorithm that follow are derived from two sources. One source is the clinical trials that address the effectiveness and safety of the different modalities of therapy.

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Received: 02-Dec-2022, Manuscript No. jdmc-22-83470; **Editor assigned:** 05-Dec-2022, PreQC No. jdmc-22-83470; **Reviewed:** 19-Dec-2022, QC No. jdmc-22-83470; **Revised:** 26-Dec-2022, Manuscript No. jdmc-22-83470 (R); **Published:** 31-Dec-2022; DOI: 10.37532/jdmc.2022.5(6).100-102

Here, the writing group reviewed a wide variety of studies related to the use of drugs as monotherapy or in combination to lower glycaemia. Unfortunately, the paucity of high-quality evidence in the form of well-controlled clinical trials that directly compare different diabetes treatment regimens remains a major impediment to recommending one class of drugs, or a particular combination of therapies, over another [5].

The second source of material that informed our recommendations was clinical judgement, that is, our collective knowledge and clinical experience, which takes into account benefits, risks, and costs in the treatment of diabetes. As in all clinical decision making, an evidence-based review of the literature must also be supplemented by value judgements, where the benefits of treatment are weighed against risks and costs in a subjective fashion [6]. While we realize that others may have different judgements, we believe that the recommendations made in this new iteration of our treatment algorithm will guide therapy and result in improved glycaemic control and health status over time.

Instruments for Drug Injecting in Case of Diabetes

There are so many types of instruments

Pen

An insulin pen looks like a writing pen but has a needle for its point. Some insulin pens come filled with insulin and are disposable. Others have room for an insulin cartridge that you insert and replace after use. Many people find insulin pens easier to use, but they cost more than needles and syringes. You may want to consider using an insulin pen if you find it hard to fill the syringe while holding the vial or cannot read the markings on the syringe. Different pen types have features that can help with your injections. Some reusable pens have a memory function, which can recall dose amounts and timing [7]. Other types of “connected” insulin pens can be programmed to calculate insulin doses and provide downloadable data reports, which can help you and your doctor, adjust your insulin doses.

Pump

An insulin pump is a small machine that gives you steady doses of insulin throughout the day. You wear one type of pump outside your

body on a belt or in a pocket or pouch. The insulin pump connects to a small plastic tube and a very small needle. You insert the plastic tube with a needle under your skin, and then take out the needle. The plastic tube will stay inserted for several days while attached to the insulin pump [8]. The machine pumps insulin through the tube into your body 24 hours a day and can be programmed to give you more or less insulin based on your needs. You can also give yourself doses of insulin through the pump at mealtimes.

Inhaler

Another way to take insulin is by breathing powdered insulin into your mouth from an inhaler device. The insulin goes into your lungs and moves quickly into your blood. You may want to use an insulin inhaler NIH external link to avoid using needles. Inhaled insulin is only for adults with type 1 or type 2 diabetes. Taking insulin with an inhaler is less common than using a needle and syringe [9].

Artificial Pancreas

An artificial pancreas is a system of three devices that work together to mimic how a healthy pancreas controls blood glucose in the body. A continuous glucose monitor (CGM) tracks blood glucose levels every few minutes using a small sensor inserted under the skin that is held in place with an adhesive pad. The CGM wirelessly sends the information to a program on a smartphone or an insulin infusion pump. The program calculates how much insulin you need. The insulin infusion pump will adjust how much insulin is given from minute to minute to help keep your blood glucose level in your target range [10]. An artificial pancreas is mainly used to help people with type 1 diabetes.

Conclusions

Type 2 diabetes is epidemic. Its long-term consequences translate into enormous human suffering and economic costs; however, much of the morbidity associated with long-term micro vascular and neuropathic complications can be substantially reduced by interventions that achieve glucose levels close to the nondiabetic range. Although new classes of medications and numerous combinations have been demonstrated to lower glycemia, current-day management has failed to achieve and maintain the glycemic levels most likely to

provide optimal healthcare status for people with diabetes.

Acknowledgement

None

Conflict of Interest

None

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