

# Facts about diabetes treatment

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- The main goal of diabetes treatment is to lower blood glucose to recommended target levels since the disease causes blood sugar levels to be too high, which is harmful to the body.<sup>1</sup>
- When people with diabetes are not in good control of their blood glucose, they are at increased risk of developing serious long-term complications of diabetes like heart disease, stroke, kidney failure, blindness, amputations and conditions related to poor blood circulation<sup>2</sup> including erectile dysfunction.<sup>3</sup>
- Over 60% of people with type 2 diabetes are not achieving good blood glucose control on their current treatment.<sup>3</sup>

## Lowering blood glucose

In some cases, good blood glucose control can be achieved by either lifestyle changes or effective anti-diabetic drug treatment or a combination of the two.<sup>1</sup>

Anti-diabetic tablets are a commonly used diabetes treatment. They reduce blood glucose either by increasing the production of insulin or by reducing the amount of glucose produced and/or helping insulin to work better in the body.<sup>4</sup>

Another typical treatment option is insulin therapy. There are different types of insulin based on their onset or duration of action – rapid-, short-, intermediate and long-acting. Insulin can be administered via a pump, pen device or single-use syringe, and, depending on the individual patient needs, insulin therapy may involve from one to four or more injections a day. Insulin therapy works to supplement or replace the body's own production of insulin.<sup>4</sup>

Since diabetes is a progressive disease, the effectiveness of these interventions require constant monitoring and adjustment in order to ensure that people are still achieving recommended blood glucose levels and often a combination of these treatment approaches is needed.<sup>1</sup>

Some of the treatments used in the management of diabetes cause weight gain<sup>5</sup> and are associated with an increased risk of hypoglycaemia, which is when the blood glucose level drops below normal, a condition that can lead to serious symptoms and even coma.<sup>6</sup>

## **Beyond blood glucose**

Type 2 diabetes often coexists with other high-risk conditions such as hypertension, high cholesterol and obesity.<sup>1</sup> Increasingly, diabetes specialists are looking for treatment options that effectively reduce blood glucose while also addressing these other risk factors.<sup>1</sup>

Below is a list of these other risk factors which should also be a target for treatment the long-term management of type 2 diabetes:

- Obesity. Weight gain is one of the biggest challenges in managing type 2 diabetes, as most people with type 2 diabetes are obese.<sup>7</sup> Obesity is well established as a major risk factor of type 2 diabetes.<sup>8</sup> An additional challenge is that weight gain is a common side effect of many treatments for diabetes.<sup>5,9</sup>
- High blood pressure. Three out of four people with type 2 diabetes have high or increased blood pressure.<sup>10</sup> Decreasing blood pressure can reduce the risk of cardiovascular disease and related death.<sup>11</sup>
- Elevated cholesterol. People with diabetes are at a higher risk of heart attack and stroke, which is complicated by the elevated cholesterol associated with type 2 diabetes.<sup>1</sup>

## **Beta cells and disease progression in type 2 diabetes**

Beta cells are the cells in the pancreas that produce insulin. As type 2 diabetes progresses, beta cells produce less and less insulin.<sup>12</sup> Indeed, it's been shown that decreasing beta-cell function is directly related to worsening glucose control in diabetes.<sup>12</sup> At the time of diagnosis, many people with type 2 diabetes have already lost 50% of their beta cell function.<sup>13</sup>

## **Incretin-based therapies for type 2 diabetes**

Incretin-based therapies represent a new class of treatments for type 2 diabetes. Incretins are hormones in the human gut that help the body process sugar properly.<sup>8</sup> One key incretin hormone, called GLP-1 (Glucagon-like peptide 1), appears to be impaired in people with type 2 diabetes and this may be one reason why these people are at risk for abnormally high blood glucose levels.<sup>8,14,15</sup>

In addition, natural GLP-1 also has other beneficial effects in the body that could be useful in the management of type 2 diabetes. These include reducing appetite, lowering blood pressure and improving beta cell and heart function.<sup>8</sup>

However, when natural GLP-1 is released into the body it is quickly broken down by the enzyme, dipeptidyl peptidase-4 (DPP4).<sup>8</sup>

The incretin-based therapies have been developed to overcome this rapid breakdown in order to allow GLP-1 to work longer in people with type 2 diabetes, who, as noted earlier, may have an impairment in their GLP-1 system.<sup>15</sup>

The incretin-based therapies currently comprise:

- GLP-1 receptor agonists
- DPP4 inhibitors

### **GLP-1 receptor agonists added to new ADA/EASD diabetes treatment recommendations**

In 2008, the American Diabetes Association and the European Association for the Study of Diabetes jointly issued a newly revised treatment recommendation that, for the first time, recognises the GLP-1 receptor agonists as an effective treatment option in type 2 diabetes. DPP4 inhibitors are not included in this new treatment recommendation.<sup>16</sup>

## Reference List

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