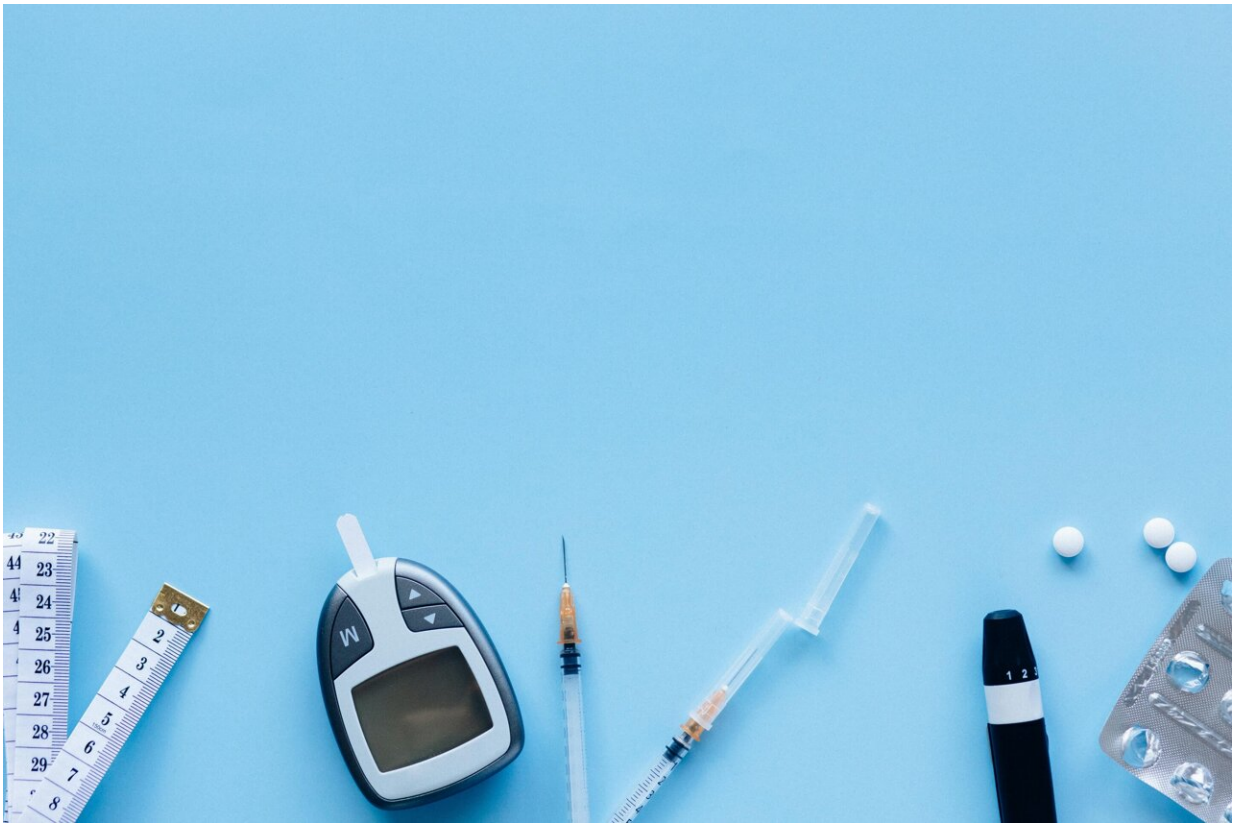


Inhaled insulin could improve lives of patients with diabetes

April 25 2024



Credit: Nataliya Vaitkevich from Pexels

Millions of people around the world live with diabetes mellitus. Many of them have medication and specific dietary management approaches to help them maintain stable blood sugar levels. However, recent

innovations, such as inhaled insulin, the hormone made by the pancreas, which controls blood sugar, have sparked hope for more effective and user-friendly treatments.

Diabetes is characterized by insufficient [insulin](#) production or ineffective insulin utilization. It causes many health problems and risks for those with one of the various forms of the disease. Risks include [cardiovascular disease](#) and microvascular complications such as eye, nerve, and kidney disorders. There is also the risk of acute problems that can lead to sudden death.

Conventional treatments rely on daily insulin injections or insulin pumps used in conjunction with regular blood glucose monitoring. Such regimens can be complicated and are associated with discomfort, [time constraints](#), and the need for precise dosing, to avoid unpredictable blood sugar levels and severe complications.

Inhalable insulin offers a new approach to diabetes management. Using devices, similar to those used by people with asthma or other [chronic lung diseases](#), including nebulizers and metered-dose inhalers it is possible to dispense a precise amount of insulin into the patient's lungs from where the hormone will be absorbed into the bloodstream quickly and effectively allowing for rapid action when needed.

One such drug, Afrezza, a fast-acting inhalable insulin, was given US Food & Drug Administration (FDA) approval in 2014 and remains the only inhaled insulin product on the market. It represented an important step toward a new approach to diabetes treatment. Some earlier inhaled therapies had not proven themselves safe or effective. Afrezza has a more reliable pharmacokinetic profile, which will give patients greater convenience and improved control of their blood sugar levels.

Writing in the *International Journal of Nano and Biomaterials*, a team

from India explains that insulin inhalers could improve patient adherence to their drug regimen and thus outcomes by providing a non-invasive and user-friendly alternative to traditional administration methods.

Priya Patel and Bhavisha Kacha of the Department of Pharmaceutical Sciences at Saurashtra University in Gujarat, India, add that nanotechnology could help drive the next steps in developing even more effective inhaler-type drug delivery systems for treating [diabetes mellitus](#).

More information: Priya Patel et al, Inhaled insulin: current steps towards diabetes treatment, *International Journal of Nano and Biomaterials* (2024). [DOI: 10.1504/IJNBM.2024.137687](https://doi.org/10.1504/IJNBM.2024.137687)

Provided by Inderscience

Citation: Inhaled insulin could improve lives of patients with diabetes (2024, April 25) retrieved 5 May 2024 from

<https://medicalxpress.com/news/2024-04-inhaled-insulin-patients-diabetes.html>

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