

Estimate of Insulin Use in Type 2 Diabetes

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As type 2 diabetes mellitus becomes more common worldwide, the amount of insulin needed to effectively treat type 2 diabetes effectively is crucial but unknown. It also remains unclear how alternative treatment algorithms would affect global insulin use and type 2 diabetes complication rates.

We developed a microsimulation of the type 2 burden from 2018 to 2030 across 221 countries and territories. This work was undertaken using prevalence projection data from the International Diabetes Federation (IDF) and from 14 cohort studies representing more than 60 percent of the global type 2 population for haemoglobin A1c (HbA1c), treatment, and weight data. We estimated the number of people with type 2 diabetes expected to use insulin, international units (IU) required, and disability adjusted life years (DALYs) gained by improved insulin access under alternative treatment algorithms.

The overall number of people with type 2 diabetes (approximately 96.5 percent of all people with diabetes) was estimated to increase from 405.6 million in 2018 to 510.8 million in 2030. Overall insulin use would increase from 516.1 million 1000IU vials (95 percent CI: 409.0, 658.6 million) to 633.7 million per year (95 percent CI: 500.5, 806.7 million) between 2018 and 2030. Without improved insulin access, 7.4 percent (95 percent CI: 5.8 percent, 9.4 percent) of the 510.8 million people with type 2 diabetes in 2030 would use insulin.

If insulin were widely accessible and prescribed to achieve a target HbA1c of seven percent (53 mmol/mol), the number of people with type 2 diabetes using insulin would increase to 15.5 percent (95 percent CI: 12.0 percent to 20.3 percent). If HbA1c of 7 percent was universally achieved, insulin would avert 331,000 DALYs per year by 2030 (95 percent CI: 256,600, 437,100); DALYs averted would increase by 14.9 percent with access to newer oral glycaemic agents, and by 44.2 percent with achievement of HbA1c of eight percent (64 mmol/mol) among people over 75 years old, due to lower rates of hypoglycaemia.

The amount of insulin required to treat type 2 diabetes is expected to increase by over 20 percent over the period 2018–2030. Insulin treatments may avert more DALYs if HbA1c targets are higher for older adults.

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