



Challenges in Insulin Therapy for Type 2 Diabetes

Regarding the Article “Expert Opinion: A Call for Basal Insulin Titration in Patients with Type 2 Diabetes in Daily Practice: Southeast European Perspective” by Nicolae Hancu et al.

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Dear Editor,

In the manuscript “Expert Opinion: A Call for Basal Insulin Titration in Patients with Type 2 Diabetes in Daily Practice: Southeast European Perspective”, Nicolae Hancu and colleagues have devised a set of clinical guidelines to overcome the shortcoming of insulin therapy [1]. I commend the group for identifying the topic as a major population health deficiency which calls for urgent solutions. I would like to offer a few points for consideration.

Indeed, despite insulin being available as a drug for a century, insulin therapy has been largely ineffective. Most patients with type 2 diabetes who need insulin therapy do not maintain healthy glycemic control, resulting in debilitating and, in many cases, lethal complications which are horrendously costly to treat. Unfortunately, this reality has affected not only the population of southeastern Europe, but the entire Western world [2].

As the group elucidated, the main reason behind the limited success of insulin

management is the lack of titrations frequent enough to overcome the dynamics of insulin requirements. Providers who typically adjust insulin doses cannot do it more than a handful times per year, which is not nearly adequate. Yet achieving the desired glycated hemoglobin (HbA1c) for the first time is unfortunately not enough, and frequent insulin titrations are needed at all times. My group has shown that insulin requirements do not reach a steady state. Most patients who use insulin therapy for type 2 diabetes encounter periods of considerably decreased insulin requirements (mean \pm standard deviation 39.9% \pm 12.6% reduced total daily insulin) that last weeks to months and expose them to hypoglycemia. Consequently, the ability to down-titrate insulin when needed is at least as important as up-titration. Unless frequent titrations are made at all times, these unsafe periods of reduced insulin requirements are overlooked.

Although long-acting insulin-only regimens for long-standing type 2 diabetes is the first insulin regimen to prescribe, most patients will not be able to maintain appropriate and safe glycemic control after about 3 years, and meal insulin boluses will be needed, as previously demonstrated in the 4 T trial [3].

As the authors' guidelines implied, the process of insulin titrations is not intuitive and is time consuming for both providers and patients. Due to lack of time and expertise, I

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suspect that providers will not be able to resolve the need for relentless insulin titrations. Evidently, despite attempts to teach patients how to adjust their insulin at home, average HbA1c in insulin users has not changed for decades [4, 5].

Simply stated, insulin therapy is likely the most dynamic therapy in modern medicine and frequent titrations are needed at all times, such that the demand exceeds healthcare capabilities.

So, how to solve the insulin shortcomings? In my mind it has to be artificial intelligence. As it has been successfully utilized in patients who use insulin pumps for type 1 diabetes with the evolution of a closed loop systems, it should be utilized in the considerable number of patients who inject insulin for Type 2 diabetes [6].

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Compliance with Ethics Guidelines. This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

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