September 2022

pad Refills

Your dose of drug information in between details

Drug information question: What is the effect of increasing the dose of insulin glargine in people with type 2 diabetes?

Conclusion: The best available evidence indicates that the glucose lowering effect of insulin glargine 100 units/mL plateaus at doses above 0.5 units/kg/day. The largest effect on fasting plasma glucose (FPG) and hemoglobin A1c (HbA1c) occurs at doses ≤ 0.3 units/kg/day.

The BC Provincial Academic Detailing (PAD) Service's June 2019 topic Basal Insulins for Type 2 Diabetes offered the opportunity to discuss the comparative hypoglycemia risk of basal insulins, clinical considerations and costs.[1] Table 3 addressed the Initiation and Titration of Basal Insulin and included this point: Reassess the pharmacologic plan if basal insulin dose exceeds 0.7 to 1 units/kg/day which was a practice recommendation from the American Diabetes Association 2019 Guideline.[2]

Subsequent to the 2019 PAD topic, a post-hoc analysis of insulin glargine 100 units/mL in people with type 2 diabetes indicated an even lower maximum useful dose.[3] This analysis used data from three randomized controlled trials (458 participants) and found that insulin glargine doses exceeding 0.5 units/kg/day had a plateauing effect on fasting plasma glucose (FPG) and hemoglobin A1c (HbA1c) but adversely contributed to weight gain. The greatest reduction in FPG and HbA1c occurred at doses ≤ 0.3 units/kg/day.

Two diabetes clinical practice guidelines have updated their recommendations regarding basal insulin and dose-response. The American Diabetes Association 2021 Guideline and the American Association of Clinical Endocrinologists 2020 Guideline now identify 0.5 units/kg/day as the threshold which should trigger a re-evaluation of basal insulin therapy in people with type 2 diabetes.[4,5]

Members of the PAD team performed a literature search and we did not identify additional randomized control trials examining dose response pertaining to insulin glargine and glargine biosimilars. A search of Clinicaltrials.gov also did not identify ongoing trials researching this question.

[1]BC PAD Service 2019 Basal Insulins for Type 2 Diabetes; [2]American Diabetes Association Diabetes Care 2019;42:S90-S102; [3]UMPIERREZ Diabetes Obes Metab 2019 (PMID: 30724009); [4]American Diabetes Association Diabetes Care 2021;44:S111-S124; [5]American Association of Clinical Endocrinologists Endocr Pract 2020 (PMID: 32022600)

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