

Snap, Dose and Estimate: Revolutionising Carbohydrate Counting Using Artificial Intelligence (AI)

Carbohydrate counting remains central to glycaemic management in diabetes, yet many describe it as one of the most burdensome aspects of self-management. Traditional approaches require estimation of carbohydrate content and matching to insulin using insulin-to-carbohydrate ratios. Simplified strategies, such as the exchange system or plate method, reduce complexity but still rely heavily on individual judgement of portion size and meal composition.

Although effective in principle, real-world accuracy of carbohydrate counting is variable and dependent on sustained engagement. Many struggles with mixed meals, takeaway foods, and portion estimation, contributing to glycaemic variability.

We present a case of an individual with Type 1 Diabetes on multiple daily injections who independently adopted ChatGPT to estimate carbohydrate content from meal photographs after ongoing difficulty with mixed-meal calculations. Despite prior education, there was persistent uncertainty with takeaway and rice-based meals. Following adoption of photo-based Artificial Intelligence (AI) estimation, continuous glucose monitoring demonstrated improved postprandial glycaemic control, alongside increased confidence in daily decision-making.

We will present emerging evidence evaluating artificial intelligence (AI) in carbohydrate estimation across multiple fronts including Generative AI versus dietitians, Generative AI versus individuals, and AI versus AI. Early data suggest that photo-based generative AI can achieve clinically acceptable accuracy, particularly when contextual inputs are incorporated. This paradigm reframes carbohydrate estimation from a cognitively demanding calculation to an intuitive, image-assisted process. This presentation will also offer a glimpse into the broader potential of generative AI beyond carbohydrate estimation.

This approach is scalable across clinical settings, from Type 1 Diabetes on injections or pumps to insulin-treated Type 2 Diabetes. Integrating AI into routine care has the potential to reduce cognitive burden, enhance adherence, and improve real-world insulin dosing not by replacing clinicians, but by augmenting human decision-making.

282 words