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Facilitating diabetes management with an AI-personalized carbohydrate-free bolus calculator for smart insulin pens

Most patients with type 1 diabetes use multiple daily injections of insulin to treat this disease. They need to self-administer, usually using an insulin pen, an insulin dose before consuming their meals. Patients calculate mealtime insulin dose to cover meal-nutrients, principally, carbohydrates. However, this is a challenging task that requires education in carbohydrate counting and good numeracy skills. This is particularly problematic for patients using insulin pens because of the lack of a built-in bolus calculator. The new generation of insulin pens, called smart insulin pens, can connect with smartphones and use a bolus calculator. Still, the existing bolus calculators are not designed for this population. *(Grant funded through 3/31/2024)*