**Title: Achieving Great Heights; Planning A High-Altitude Trek With Type 1 Diabetes: A Case Study**

**Background & Aim:**

Many people with diabetes undertake demanding physical challenges even at extreme altitudes1. Significant glucose variability can occur at high altitude owing to physiological responses, physical activity and environmental factors2. There are limited published data describing the reliability of insulin pumps and AID systems at altitude. We aimed to provide adequate information to prepare a person with type 1 diabetes using a Tandem t:slim X2 Control-IQ pump to trek the Manaslu Circuit in Nepal; 200km over 10 days to an altitude of 5106m.

**Methods:**

A multidisciplinary approach was required to provide advice to enable the individual to safely complete the proposed trek. Advice was sought from AMSL regarding the reliability of the pump, CGM, insulin and consumables; operating altitude for Tandem t:slim X2 insulin pump is up to 3048m3, Dexcom G7 is up to 5000m and temperatures 10-42 degrees Celsius4. Our team, in consultation with the individual, decided to revert to multi dose insulin (MDI). Diabetes Educators provided education for MDI calculations, travel, supplies and sick day advice, caution with CGM interpretation, back up plans for glucose monitoring, and preparing for challenges of physical activity and possible high-altitude sickness.

**Results:**

The Individual reported the most challenging aspects of the trip were changing from pump therapy to MDI, day-time hyperglycaemia whilst trekking, avoidance of nocturnal hypoglycaemia, and questionable accuracy and reliability of the CGM when used in these conditions4. Carbohydrate intake was vastly different from their usual consumption presenting further challenges. No hyperglycaemia that resulted in ketosis, or Level 2 and 3 severity hypoglycaemia was experienced.

**Conclusion:**

The Individual successfully completed the 200km trek at high altitude on MDI. They sought clinical guidance early, which allowed for information gathering and education. The Individual greatly appreciated this enabling support and has been interviewed and information recorded to assist with future hiking at high altitude enquiries.

References

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4. Dexcom, Inc. Dexcom G7 User Guide. 2024 Jun.