

Evaluation of the Uptake of a Novel Tool to Adjust Insulin Boluses Based on CGM Trend Arrows and Insulin Sensitivity (CGM TIME Trial Trend Arrow Adjustment Tool)

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Background

- CGM provides: 288 glucose levels per day, updated every 5 minutes, displayed in real time... But ACTING on information is required
- CGM data interpretation can be difficult³
- CGM use decreases over time & A1c rises^{1,4}
- Pediatric studies: CGM must be used at least 6/7 days to improve A1c^{1,2}
- Early acceptance of CGM predicts extended use^{3,5}
- Algorithms guiding response to CGM improve QoL⁶



- Enable use of dynamic data, beyond SMBG
- Allow proactive adjustments to prevent hypos or high sugars
- Trend arrows "most helpful feature" according to survey of T1D Exchange (92% CGM users indicated arrows were helpful)⁷

CGM Trend Arrows

Comparison of 10/20% vs. TAAT

CGM Trend Arrows	STAR 1 Trial and JDRF CGM Study Group	CGM Time Trial Adjustment Tool based on Insulin Sensitivity ISF = 5
↑	Add 10% to bolus	Add 0.3 units (1.5-ISF = 1.5 ÷ 5 = 0.3)
↑↑	Add 20% to bolus	Add 0.6 units (3.0-ISF = 3.0 ÷ 5 = 0.6)
↓	Subtract 10% from bolus	Subtract 0.3 units (1.5-ISF = 1.5 ÷ 5 = 0.3)
↓↓	Subtract 20% from bolus	Subtract 0.6 units (3.0-ISF = 3.0 ÷ 5 = 0.6)

Comparison of JDRF CGM Study Group and TIME Trial Trend Arrow Adjustment Tools

Example:	JDRF CGM Study Group 10/20% adjustment	CGM TIME Trial Trend Arrow Adjustment Tool based on ISF
1 CHO = 1:10 ISF = 5 Target BG = 6	Total Bolus = 5.28 units	Total Bolus = 5.0 units
40g CHO BG 8 mmol/L (144mg/dl) CGM shows ↑↑	0.88 units for 2 arrows up	0.6 units for 2 arrows up
80 g CHO BG 18 mmol/L (324mg/dl) CGM shows ↑↑	Total Bolus = 12.48 units 2.08 units for 2 arrows up	Total Bolus = 11.0 units 0.6 units for 2 arrows up

Example

Objectives

- Evaluate uptake and use of TAAT through retrospective audit of CGM data of CHEO participants in the multicentre CGM TIME Trial.
- To determine whether use of TAAT was sustained over 6 months
- To examine details of TAAT use (used for up/down arrows, time of day)

CGM TIME Trial Demographic Characteristics

		Simultaneous CGM	Delayed CGM	Overall
Number		20	20	40
Age (yrs)	Mean	12.1	12.03	12.07
	Std Deviation	3.41	3.26	3.29
Gender	Female	35%	50%	42.5%
Race	White	95%	75%	85%
	Other	5%	25%	15%
Diabetes duration (yrs)	Mean	4.5	3.9	4.2
	Range	1-14	1-11	1-14
HbA1c %		7.94	7.81	7.87

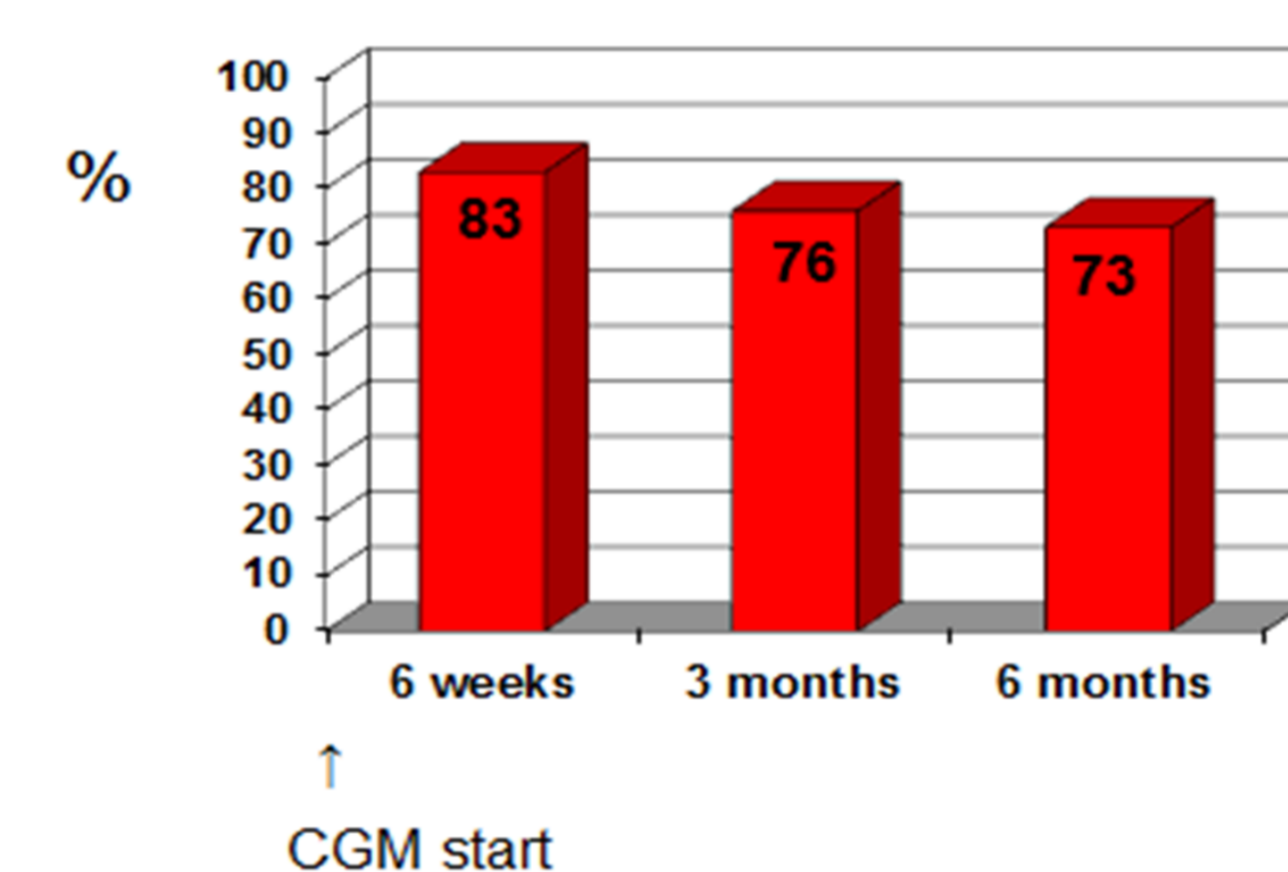
Methods

- 40 CHEO participants in TIME Trial
- CareLink data reviewed over 6 week periods:
 - at CGM initiation
 - 3 months
 - 6 months
- CareLink Professional 'daily details'
 - when subject makes an adjustment for arrows, this is shown as "difference"
- Correlated with ISF and CGM sensor tracing

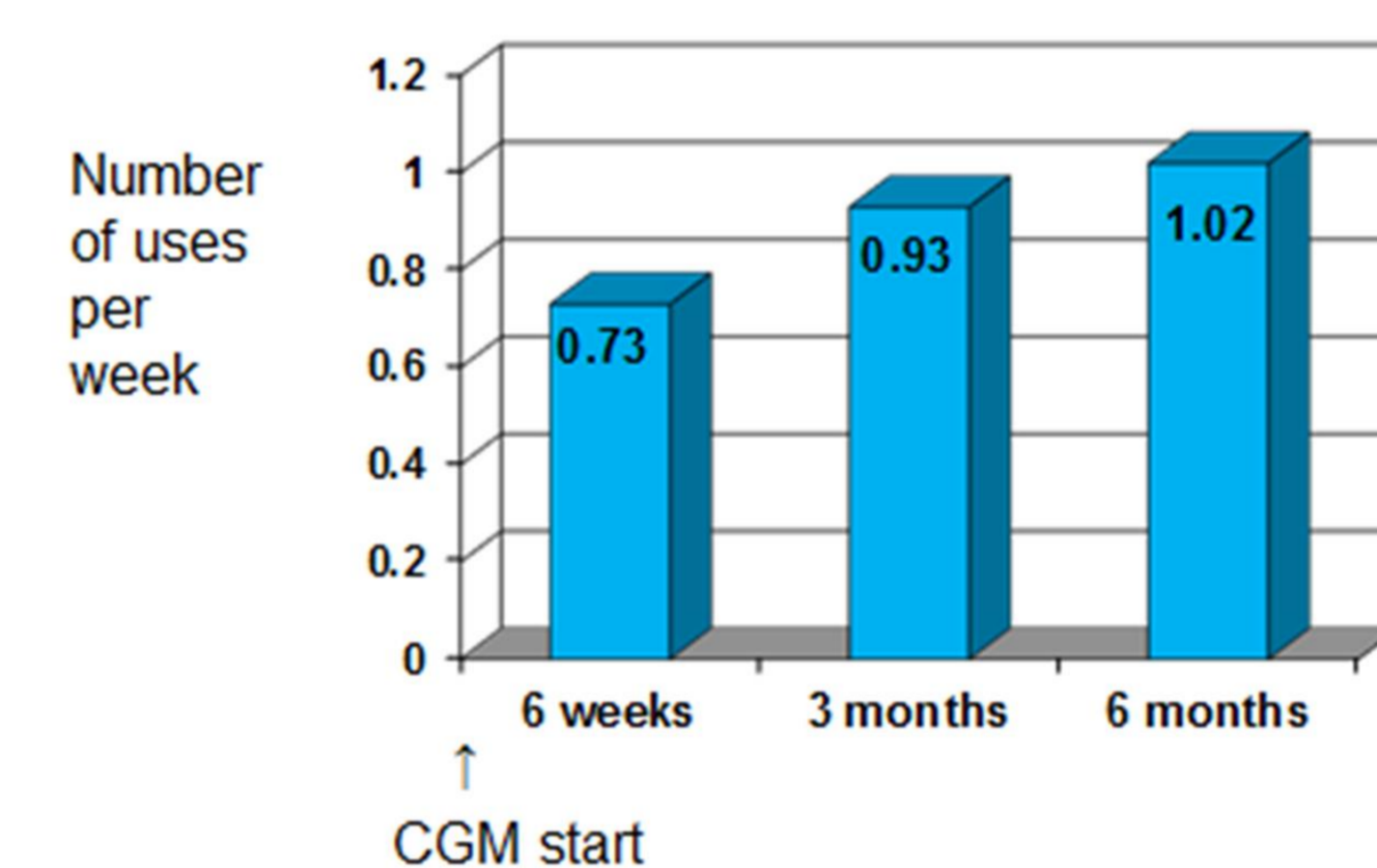


Results

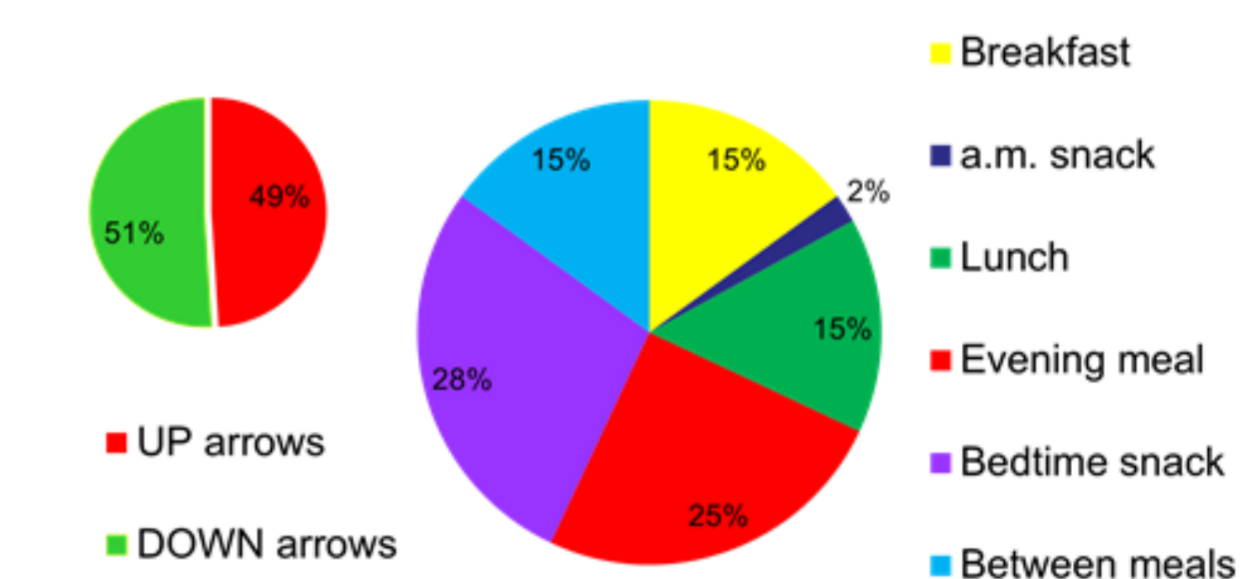
% Subjects using TAAT



Frequency of use of TAAT



Details of Use of TAAT



Conclusions

- TAAT uptake was high (87.5%) & sustained over 6 months following CGM initiation (73%)
- Frequency of use was variable; subjects used TAAT to avoid low & high sugars; most frequently used in evenings
- A prospective study is underway to evaluate the effect of TAAT on postprandial glycemic control, ease of use and patient satisfaction

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