

MINIMED™ 780G SYSTEM

MANAGING EXERCISE



MiniMed™ 780G system

AGENDA

- Type 1 Diabetes & Exercise – benefits, recommendations & challenges
- Impact of exercise on glucose and additional metabolic parameters
- Exercise Management
 - How SmartGuard™ feature adapts to exercise
 - Exercise protocol with MiniMed™ 780G system
- Supplement
 - Comparing strategies: Manual mode vs. SmartGuard™ feature
 - Exercise Protocol Flowchart



TYPE 1 DIABETES & EXERCISE

TYPE 1 DIABETES & EXERCISE

BENEFITS & RECOMMENDATION

BENEFITS^{1,2,3}

- Lipid profile
 - (↑HDL; ↓Trig; ↑LDL size)
- Weight reduction
- Blood pressure
- Insulin sensitivity
- Reduction diabetes-related comorbidities and cardiovascular risk
- Psychological well-being

ADA RECOMMENDATIONS⁴

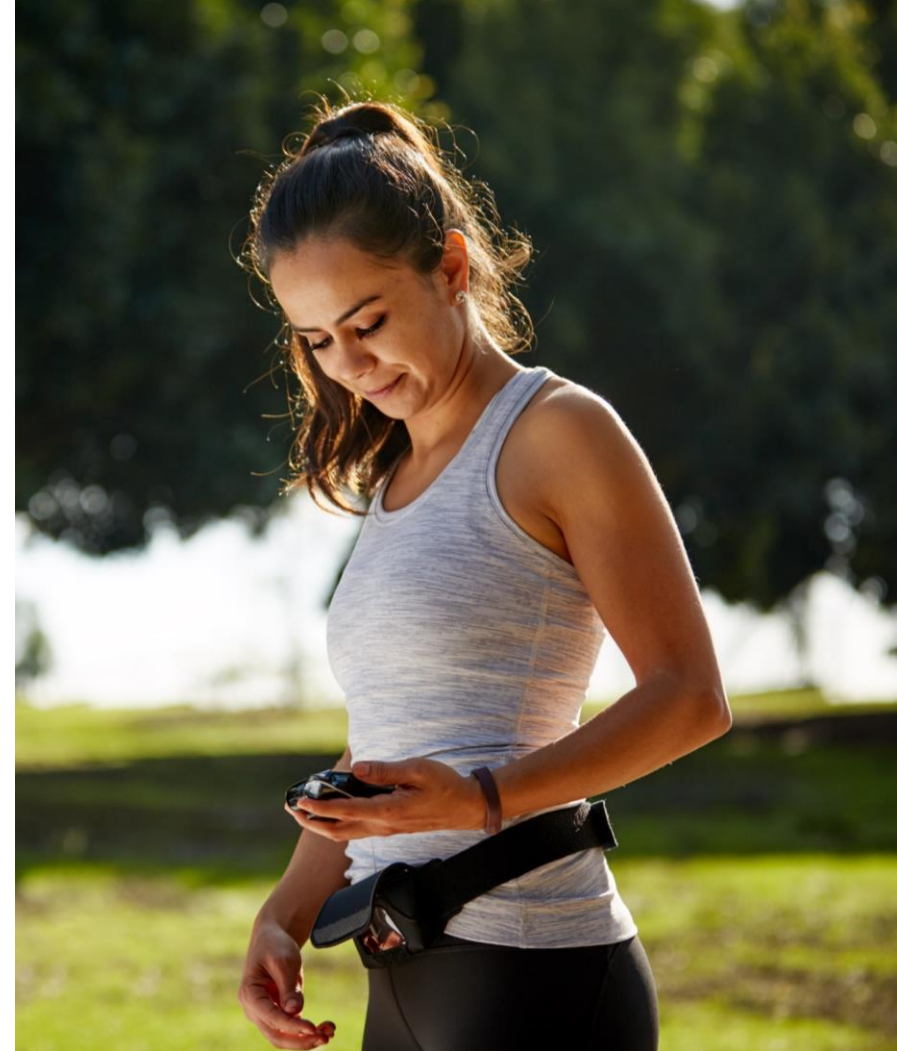
- 150 minutes per week
- Avoid 2 consecutive days without physical activity
- 2-3 sessions/week of resistance exercise on nonconsecutive days



EXERCISE IN TYPE 1 DIABETES

CHALLENGES IN MAINTAINING EUGLYCEAMIA




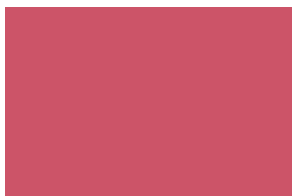
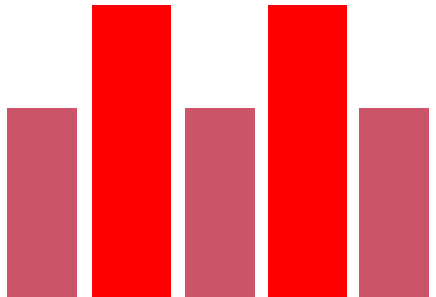

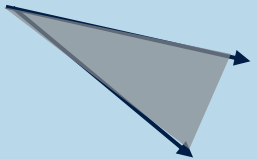
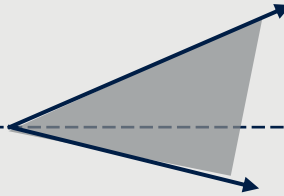
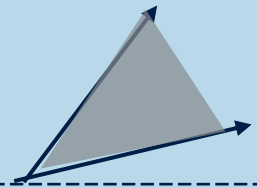
- Pharmacokinetics of subcutaneous infusion of rapid-acting insulin¹
- Pre-exercise glucose levels
- Intra- and inter-individual variation with exercise² in:
 - Glucose utilization vs. glucose release
 - Change in insulin sensitivity
- Challenges for glucose monitoring³
- Fear of hypoglycaemia during and after the exercise
- Patient education and motivation



IMPACT OF EXERCISE ON GLUCOSE & ADDITIONAL METABOLIC PARAMETERS

HOW EXERCISE IMPACTS GLUCOSE LEVELS¹

BASED ON TYPE OF EXERCISE

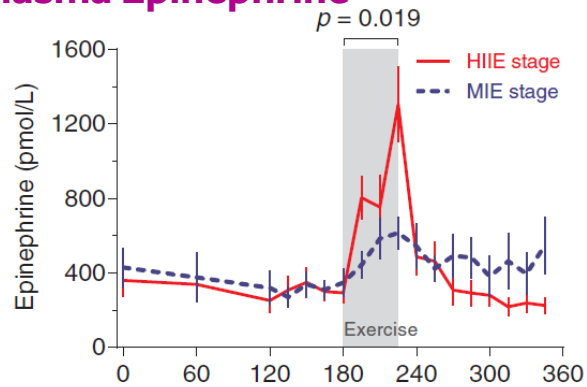
TYPE	AEROBIC 	MIXED 	ANAEROBIC 	
WORK RATE				
GLUCOSE TREND				<p>Counter Regulatory Hormones/Lactate</p> <p>Energy Expenditure/ Insulin sensitivity</p>

METABOLIC RESPONSES IN TYPE 1 DIABETES¹

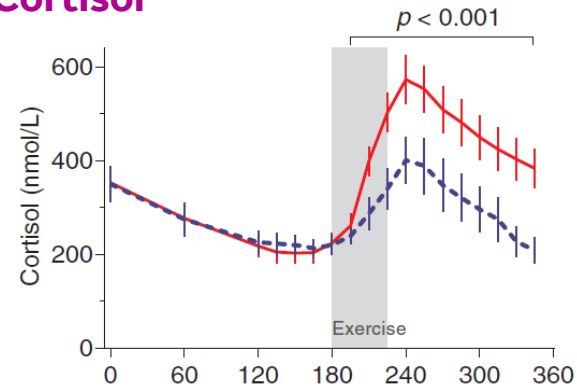
TO HIGH INTENSITY VS MODERATE INTENSITY EXERCISE

— HIIE* stage
 - - - MIE** stage

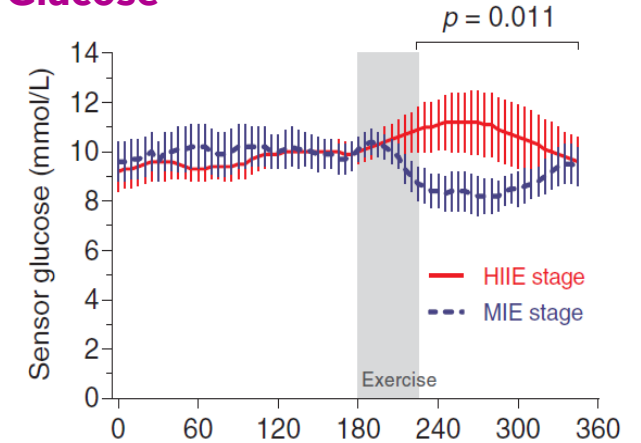
Plasma Epinephrine



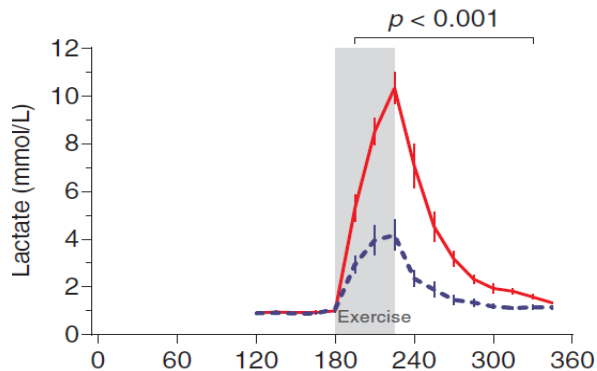
Cortisol



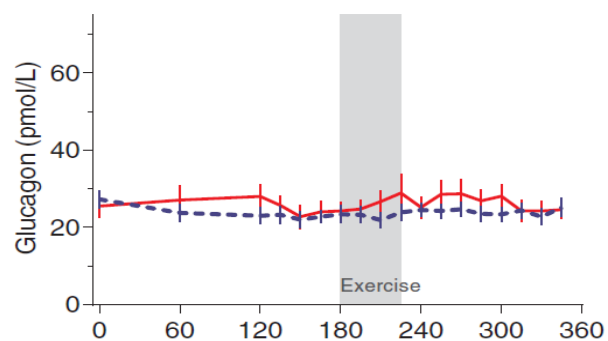
Glucose



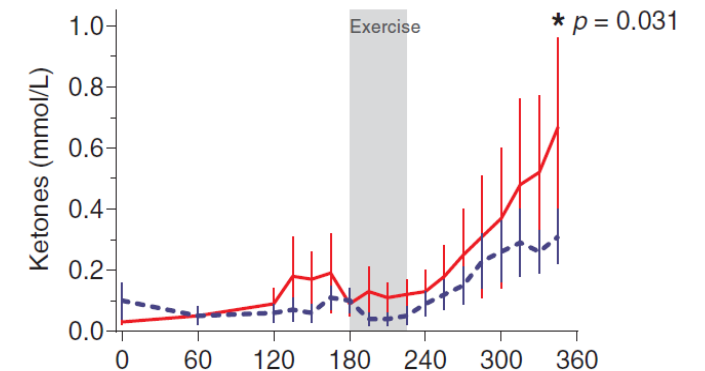
Lactate



Glucagon



Ketones



Jayawardene, DC, et al. *Diabetes Technol Ther* 2017;19(6):340-348.

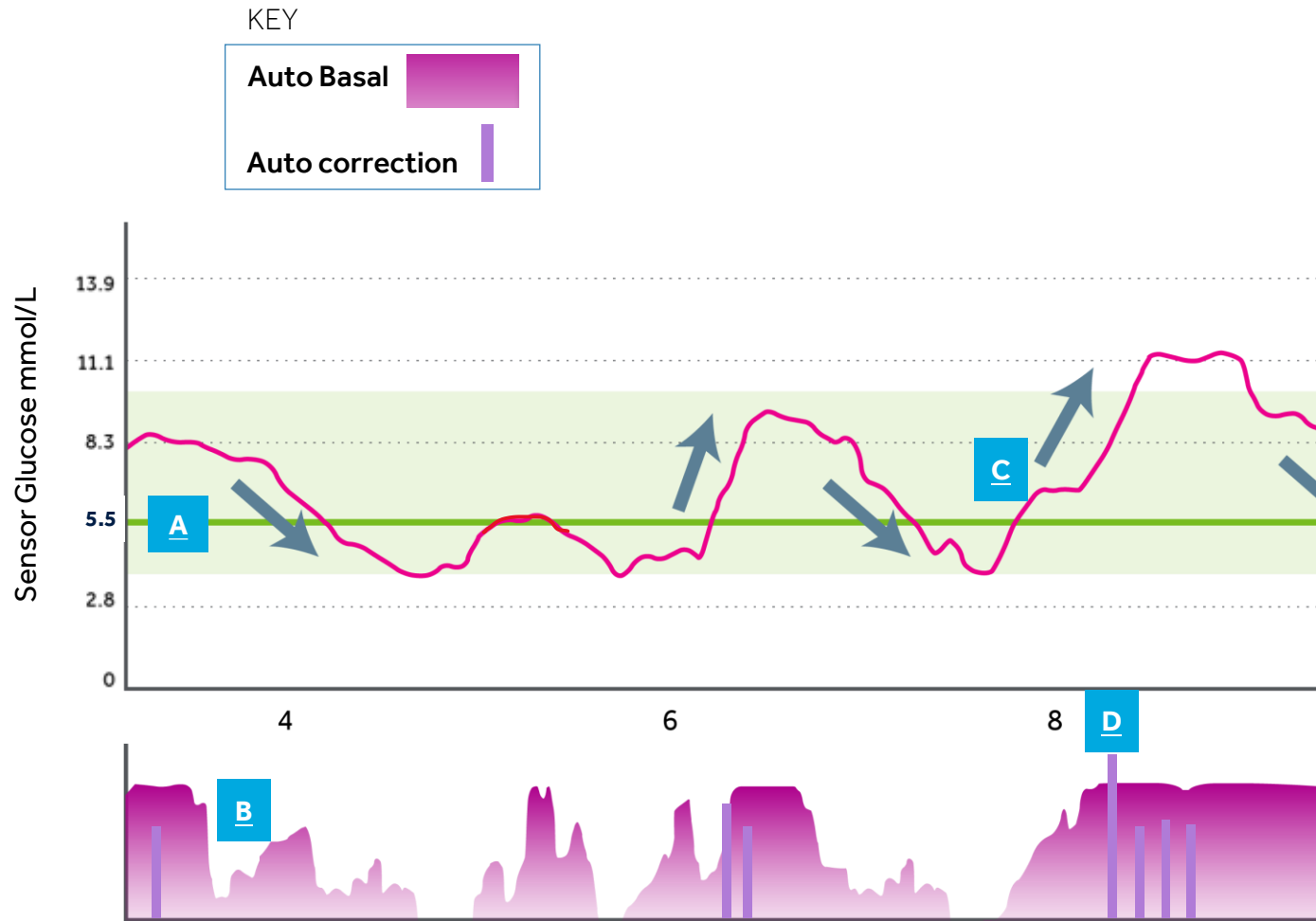
*High Intensity Intermittent Exercise

** Moderate-intensity Exercise

EXERCISE MANAGEMENT

MINIMED™ 780G SYSTEM

HOW SMARTGUARD™ FEATURE WORKS

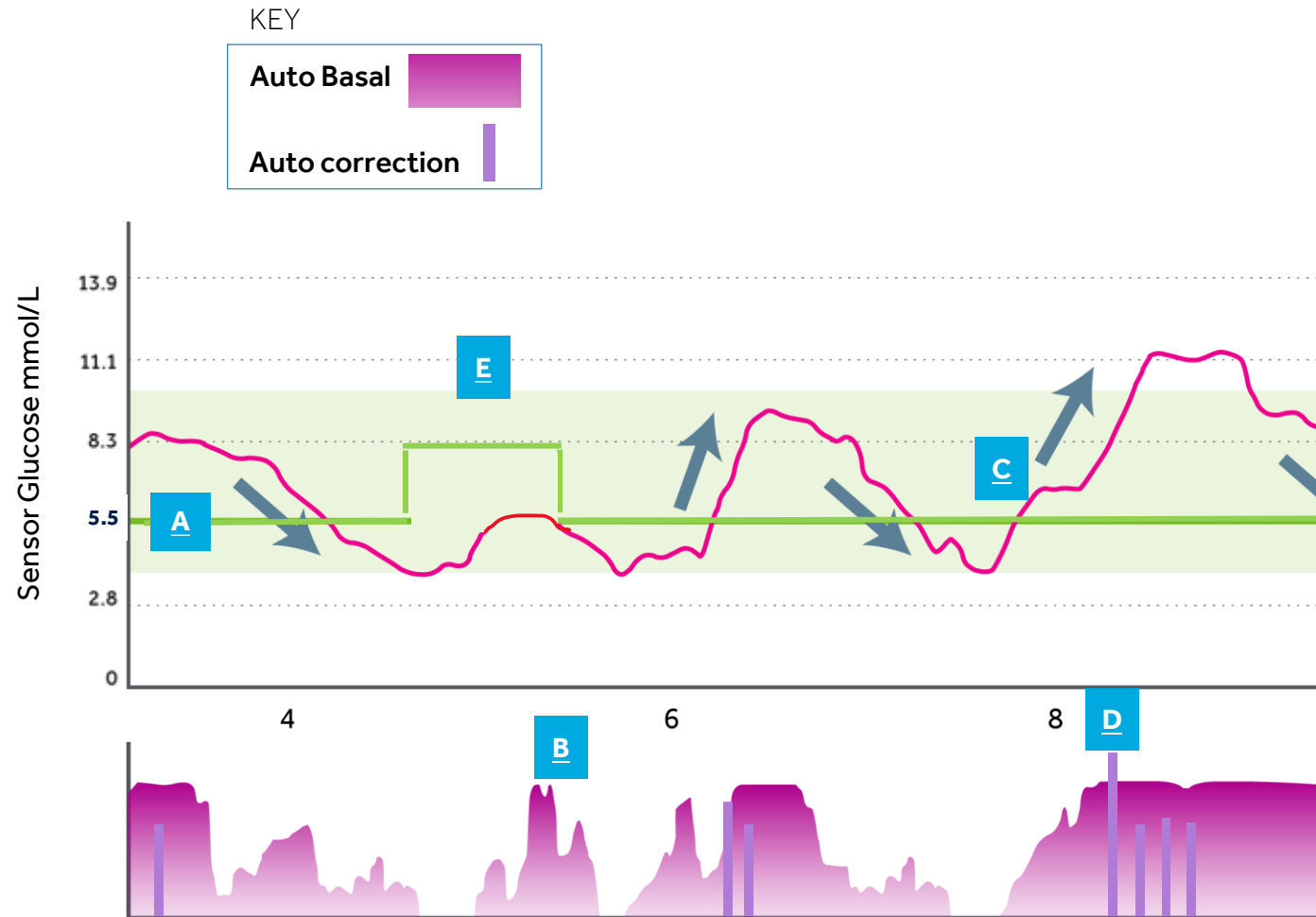


SUMMARY

- A** Selection between the default setting of 5.5 mmol/L, and 6.1 mmol/L or 6.7 mmol/L.
- B** Basal insulin adjusts every 5 mins based on SG values
- C** The Auto correction target is set at 6.7 mmol/L
- D** Auto corrections delivered every 5 minutes if max basal reached and SG is above 6.7 mmol/L, as determined by the algorithm.

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HOW THE SMARTGUARD™ FEATURE ADAPTS TO EXERCISE



SUMMARY

- E** Temp Target can be set to 8.3 mmol/L from 30 mins to 24 hours (in 30 mins increments). At that interval NO Auto corrections are administered.
- B** Basal insulin adjusts every 5 mins based on SG values, avoiding post exercise highs if anaerobic or lows post aerobic exercise.
- D** Auto corrections delivered every 5 minutes if max basal reached and SG is above 6.7 mmol/L, as determined by the algorithm. The safe correction bolus module decreases the correction dose if a low is predicted.

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HOW TEMP TARGET IS SHOWN IN CARELINK™ REPORTS

Thursday 12-12

TDD 36.5U

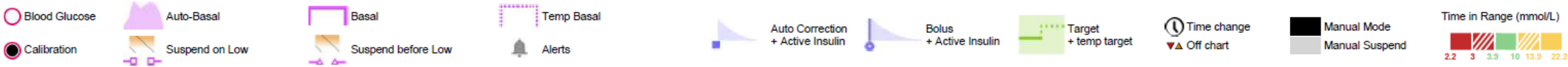
Total Basal 55% | 20U

Total Bolus 45% | 16.5U

{ Bolus 34% | 5.6U

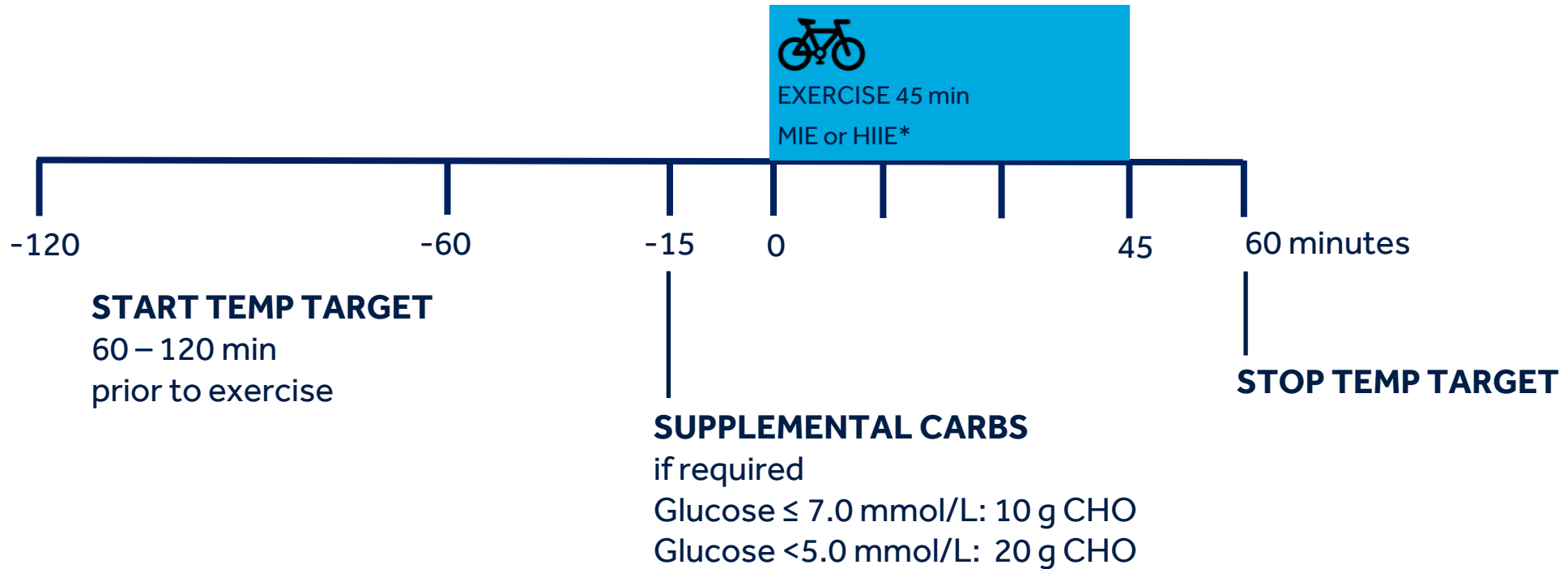
+ Auto Correction 66% | 10.9U }

Time in Range



EXERCISE PROTOCOL MINIMED™ 780G SYSTEM

FOR A COMMON 45 MIN EXERCISE WHEN USING SMARTGUARD™ FEATURE



EXERCISE STRATEGY WHEN USING SMARTGUARD™ FEATURE

KEY MESSAGES

DO'S

- Discuss exercise strategy with patient
- Start Temp target 1-2 hours before the exercise
- Start exercise in target range
- If needed, consider replacement carbs before and during exercise - but do not enter in the SmartGuard™ bolus screen*
- If disconnecting the pump for exercise (i.e., contact sport), suspend insulin delivery to ensure correct TDD - but limit stopping the pump to the minimum
- Turn off Temp target at end of exercise (~15 mins after exercise)
- Post-exercise meal: consider bolus modification
- Trust the system and let the algorithm do the work

DONT'S

- Rapidly rising glucose levels immediately before exercise
- Overtreating hypoglycaemia
- Entering replacement carbs in the SmartGuard™ Bolus screen*
- Exercising with high insulin on board
- Carb-loading pre-exercise

SUPPLEMENT

COMPARING STRATEGIES MANUAL MODE VS.
SMARTGUARD™ FEATURE
EXERCISE PROTOCOL FLOWCHART

EXERCISE STRATEGY¹

CSII/MANUAL MODE VS. SMARTGUARD™ FEATURE – 1/2

	CSII/Manual mode	SmartGuard™ feature
Contraindication - For both CSII/Manual mode & SmartGuard™ Feature	<ul style="list-style-type: none"> Recent severe hypoglycaemia Significant hyperglycaemia (>15.0 mmol/L) Ketosis (\geq1.5 mmol/L) 	
Pre-Exercise Meal Bolus - For both CSII/Manual mode & SmartGuard™ Feature	<ul style="list-style-type: none"> Meal Bolus >120 min Prior: Usual Bolus +/- Correction Meal Bolus <120 min Prior: Reduce bolus <ul style="list-style-type: none"> 25% for light exercise, 50% for moderate exercise 75% for high intensity exercise 	
Pre-Exercise Basal Adjustment - Different approach for CSII/Manual mode vs. SmartGuard™ Feature	<ul style="list-style-type: none"> 50-80% reduction 90min pre-exercise OR Pump suspension at exercise start 	<ul style="list-style-type: none"> Temp Target 1-2 hours prior to exercise <p>Should pump be disconnected (i.e. contact sports), it must be suspended – but limit this to a minimum</p>

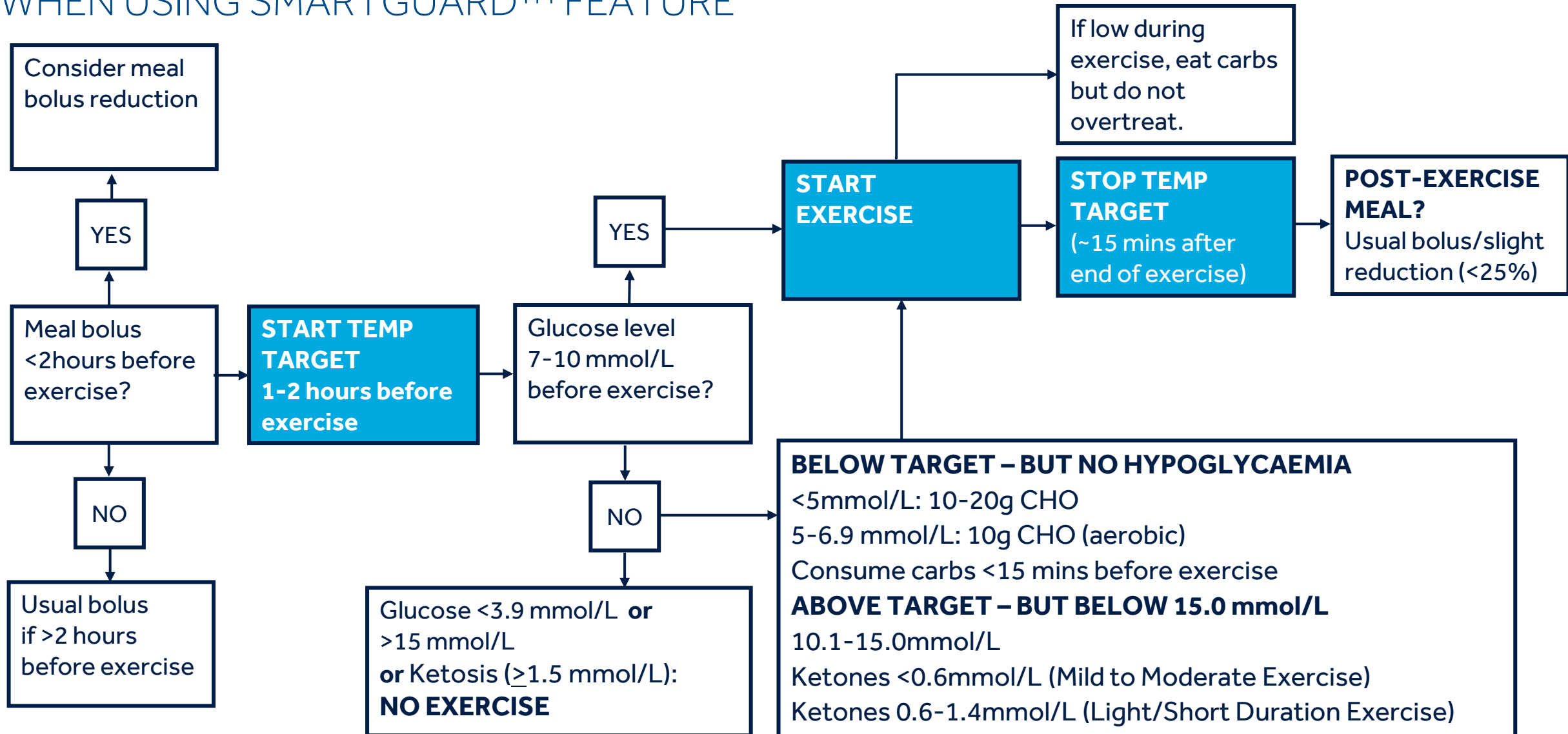
EXERCISE STRATEGY¹

CSII/MANUAL MODE VS. SMARTGUARD™ FEATURE – 2/2

	CSII/Manual mode	SmartGuard™ feature
Pre-Exercise Glucose <7.0mmol/L - Different approach for CSII/Manual mode vs. SmartGuard™ Feature	<ul style="list-style-type: none"> <5mmol/L: 10-20g CHO 5-6.9 mmol/L: 10g CHO (aerobic) 	<ul style="list-style-type: none"> As per Manual mode Give <15min prior to exercise
Pre-Exercise Glucose 7-10mmol/L - For both CSII/Manual mode & SmartGuard™ Feature	<ul style="list-style-type: none"> 0g CHO 	
Pre-Exercise Glucose >10.0mmol/L - For both CSII/Manual mode & SmartGuard™ Feature	<ul style="list-style-type: none"> 10.1-15.0 mmol/L: Start Exercise <ul style="list-style-type: none"> Ketones<0.6 (Mild to Moderate Exercise) Ketones 0.6-1.4mmol/L (Light/Short Duration Exercise) 	
Post-Exercise Meal - Different approach for CSII/Manual mode vs. SmartGuard™ Feature	<ul style="list-style-type: none"> 0- 50% bolus reduction 	<ul style="list-style-type: none"> Usual bolus/slight reduction (<25%)
Post-Exercise Basal Adjustment - Different approach for CSII/Manual mode vs. SmartGuard™ Feature	<ul style="list-style-type: none"> 20% reduction for 6 hours (@ bedtime) 	<ul style="list-style-type: none"> Temp target off (approx. 15 mins after exercise)

EXERCISE PROTOCOL

WHEN USING SMARTGUARD™ FEATURE



QUESTIONS

DISCLAIMER

See the device manual for detailed information regarding the instructions for use, indications, contraindications, warnings, precautions, and potential adverse events. For further information, contact your local Medtronic representative.

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