

# Observation of the Incretin Effect in Critically Ill patients

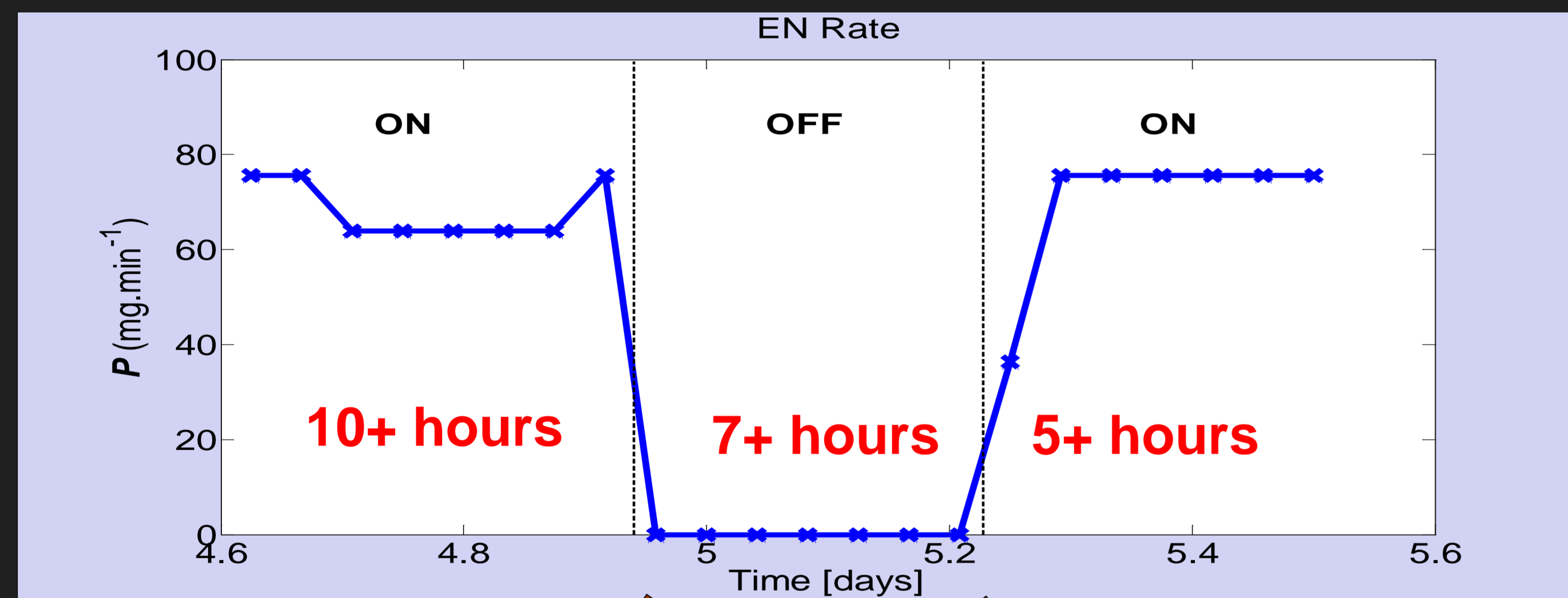
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## Objective

The impact of endogenous insulin secretion and its interaction with feeding method (enteral - EN or parenteral - PN) in glycemic control protocols is unknown. This study examines whether there is any evidence for an EN - driven incretin effect.

## Method

The incretin effect was observed via changes in a lumped insulin sensitivity parameter in 52 patients on SPRINT glycemic control. Patients with diabetes were excluded.



### Transition off EN (ON/OFF)

• Feed turned off for 7+ hours

### Transition on EN (OFF/ON)

• Feed turned on again for 5+ hours

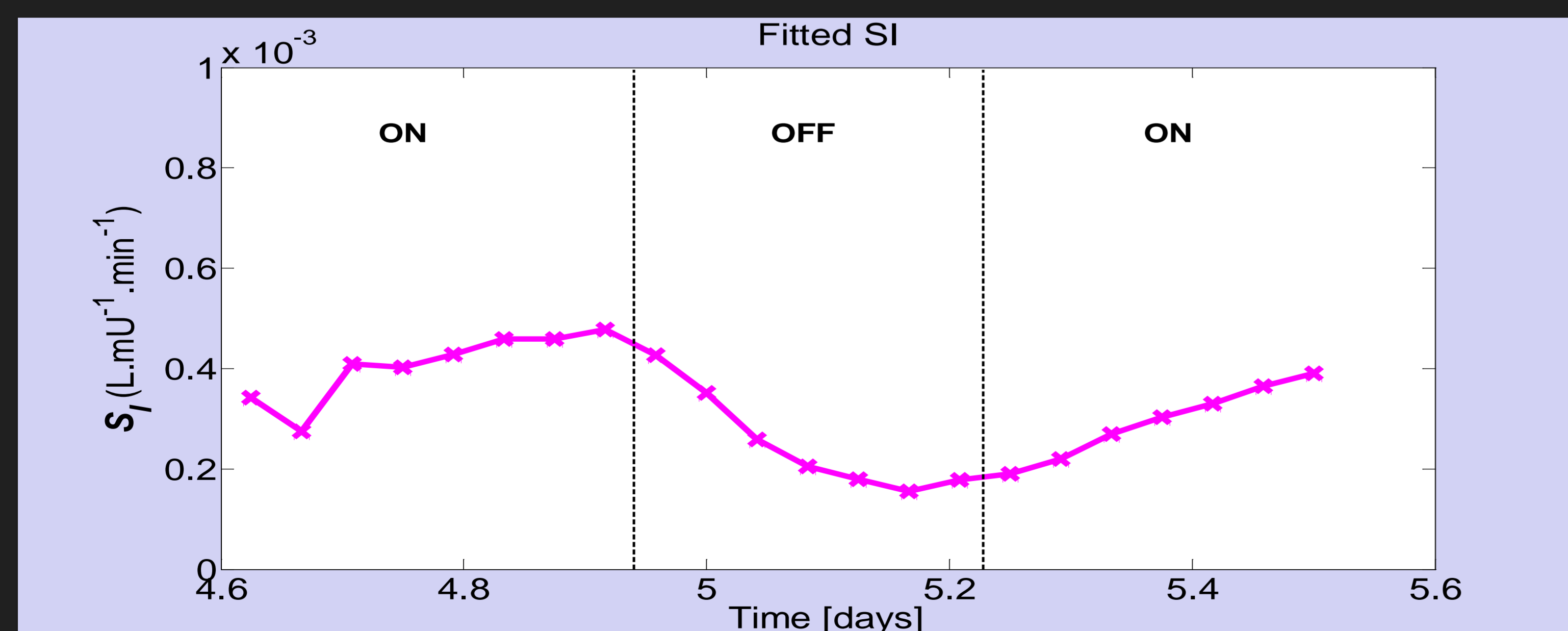
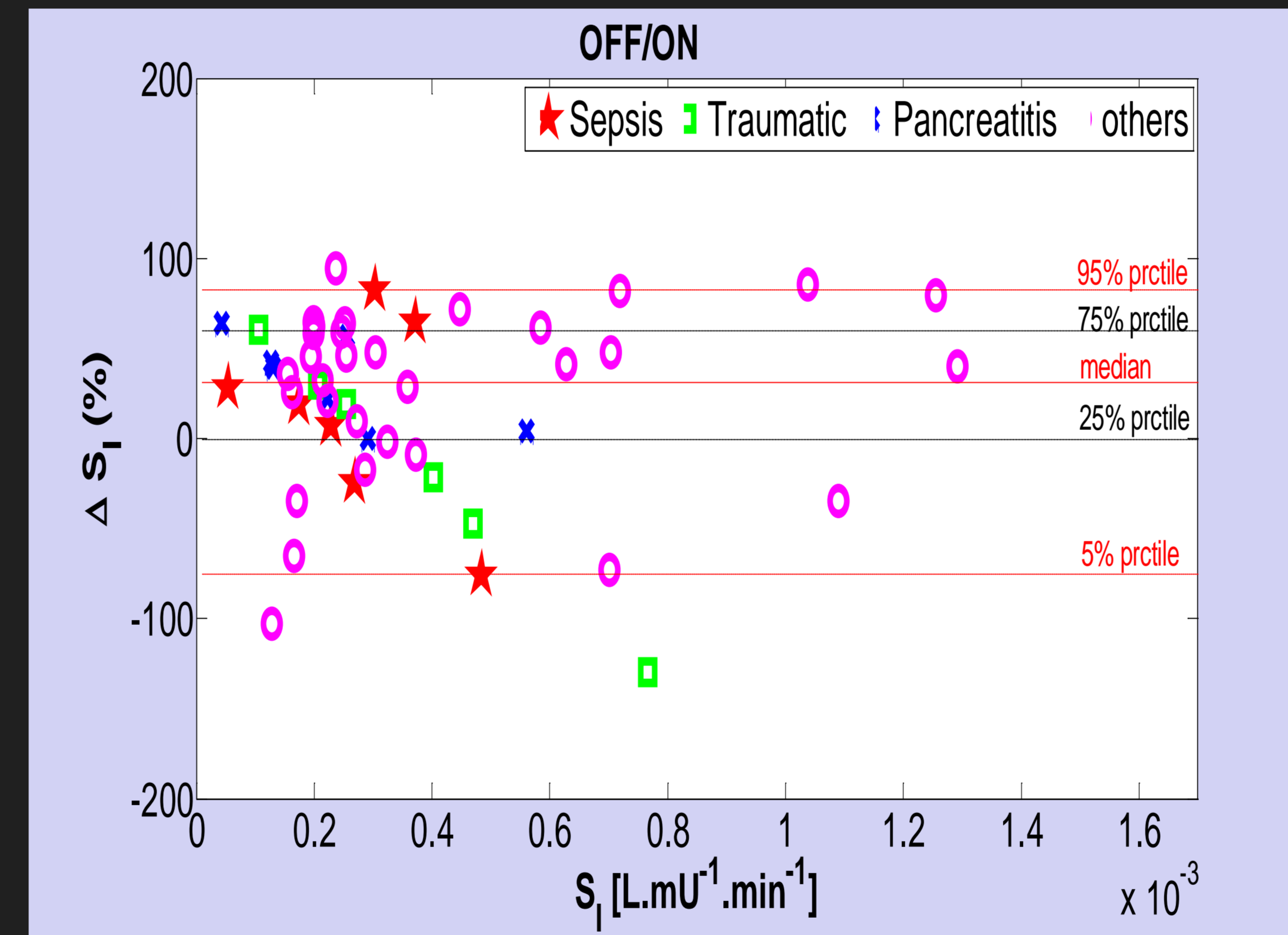
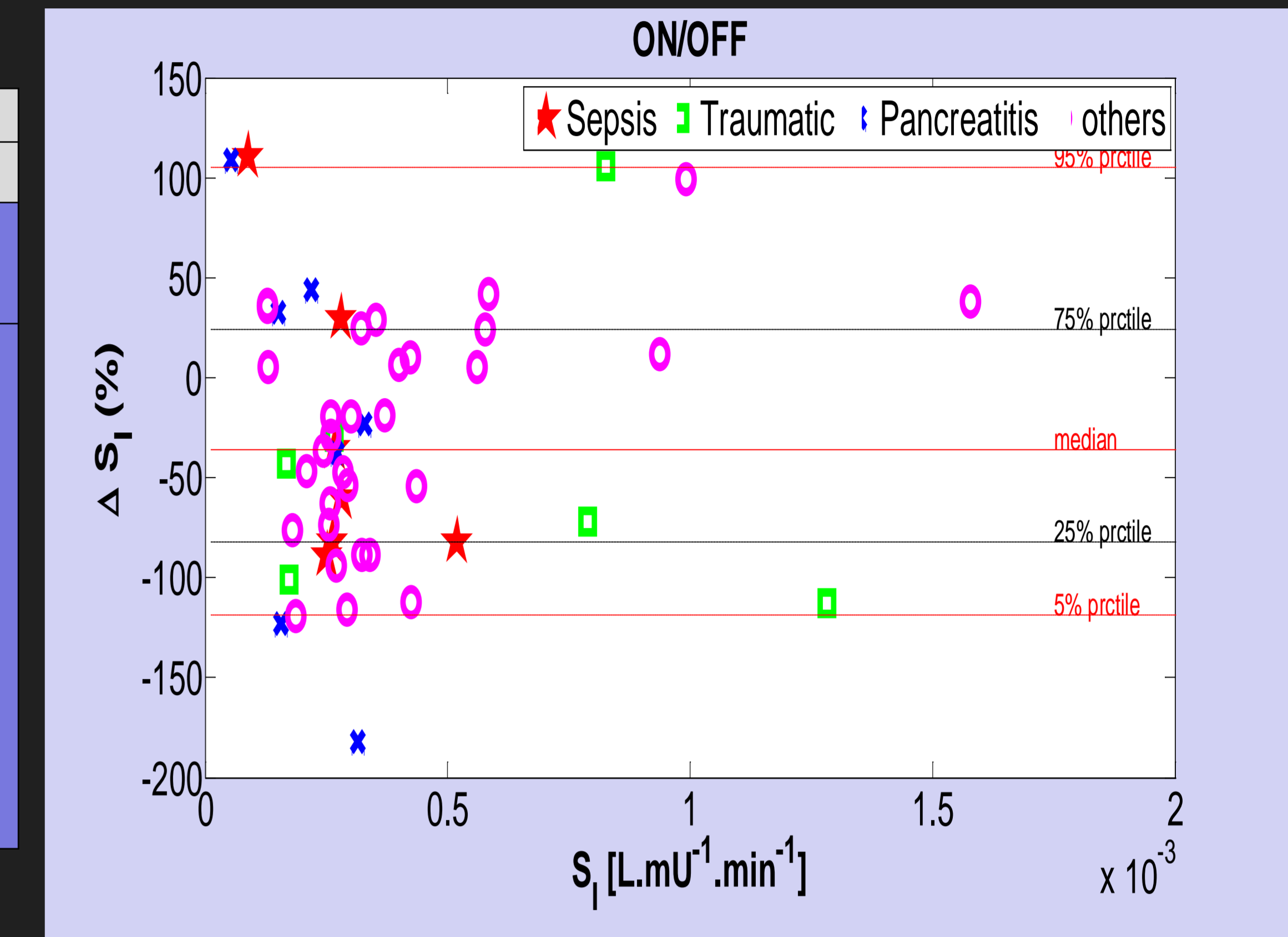


Figure 1. A patient example of incretin effect analysis flow chart

## Results

Time* (hr)	ON/OFF						
	Blood Glucose ( $\Delta BG$ )			Insulin Sensitivity ( $\Delta S_i$ )			
	Median	IQR	p-value	Median	IQR	p-value	$S_i$ ( $\uparrow$ )
-2	0%	[0,0]%	1.0	0%	[0,0]	1.0	50%
-1	0%	[-3,6]%	1.0	0%	[-10,12]%	0.9	50%
0	-1%	[-9,5]%	0.7	-2%	[-16,18]%	0.7	46%
1	-2%	[-12,8]%	0.6	-9%	[-30,23]%	0.3	38%
2	-1%	[-12,9]%	0.6	-10%	[-45,15]%	0.05	27%
3	-4%	[-15,10]%	0.5	-29%	[-59,15]%	0.01	29%
4	0%	[-16,17]%	0.4	-36%	[-82,24]%	0.001	37%



Time* (hr)	OFF/ON						
	Blood Glucose ( $\Delta BG$ )			Insulin Sensitivity ( $\Delta S_i$ )			
	Median	IQR	p-value	Median	IQR	p-value	$S_i$ ( $\downarrow$ )
-2	0%	[0,0]%	1.0	0%	[0,0]%	1.0	50%
-1	-1%	[-6,2]%	0.6	4%	[-13,12]%	0.9	39%
0	-1%	[-9,6]%	0.9	8%	[-14,23]%	0.9	40%
1	-3%	[-11,7]%	0.6	14%	[-5,29]%	0.5	33%
2	-2%	[-10,15]%	0.9	25%	[-10,46]%	0.3	29%
3	1%	[-12,15]%	0.7	32%	[-5,53]%	0.05	32%
4	6%	[-15,18]%	0.5	31%	[-1,60]%	0.03	25%

Figure 2. BG and  $S_i$  changes at ON/OFF and OFF/ON EN transitions when  $t^*=4$

## Key Outcomes

The insulin sensitivity shifts at both feed transitions were consistent with an active incretin effect. The SPRINT glycemic control protocol maintained stable glucose despite the altered patient physiology

## Conclusions

A significant incretin effect was observable at a cohort level. The impact was stronger for the OFF/ON transition indicating that this effect was suppressed by long-term continuous EN infusions. These results provide the data to design conclusive studies, as well as to inform glycemic control protocol development.