

# **“Diabetes Remission and Other Dietary aspects”**

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# Primary care-led weight management for remission of type 2 diabetes (DiRECT): an open-label, cluster-randomised trial

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## Summary

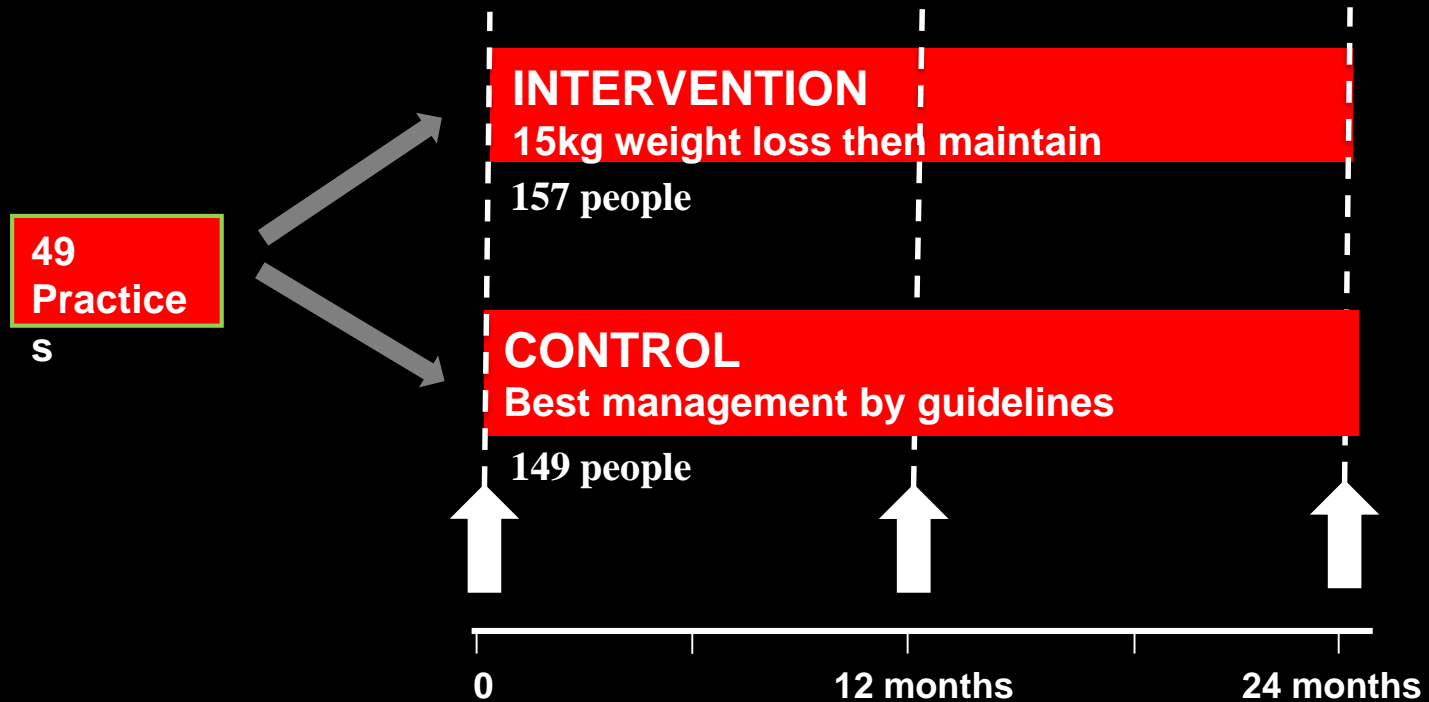
**Background** Type 2 diabetes is a chronic disorder that requires lifelong treatment. We aimed to assess whether intensive weight management within routine primary care would achieve remission of type 2 diabetes.

**Interpretation** Our findings show that, at 12 months, almost half of participants achieved remission to a non-diabetic state and off antidiabetic drugs. Remission of type 2 diabetes is a practical target for primary care.

(Lancet online 2017)

Many thanks to Prof Roy Taylor, University of Newcastle-upon-Tyne for the following slides

## DiRECT – a study in routine NHS General Practice



# Baseline data: analysed participants

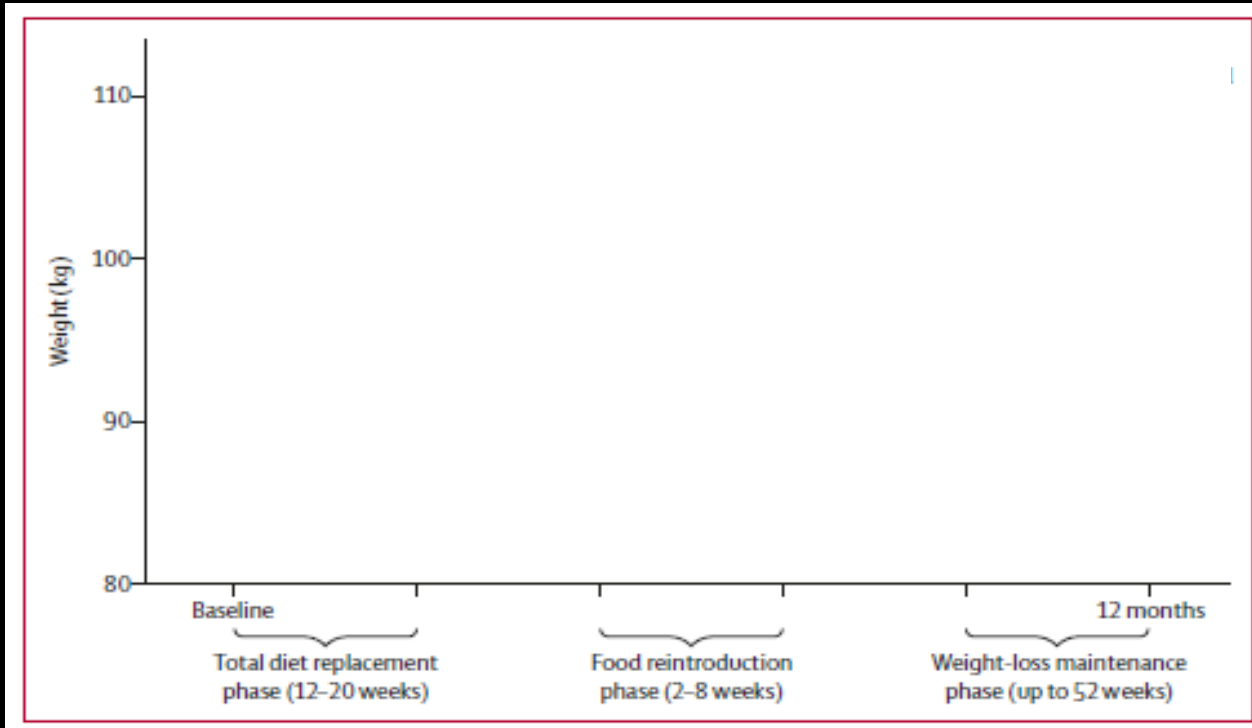
(100%)

Total number	298
Men / women	59% / 41%
Age (years)	54 (SD 7)
Weight (kg)	men 106 (SD 16) women 91 (SD 13)
BMI (kg/m <sup>2</sup> )	35 (SD 4)

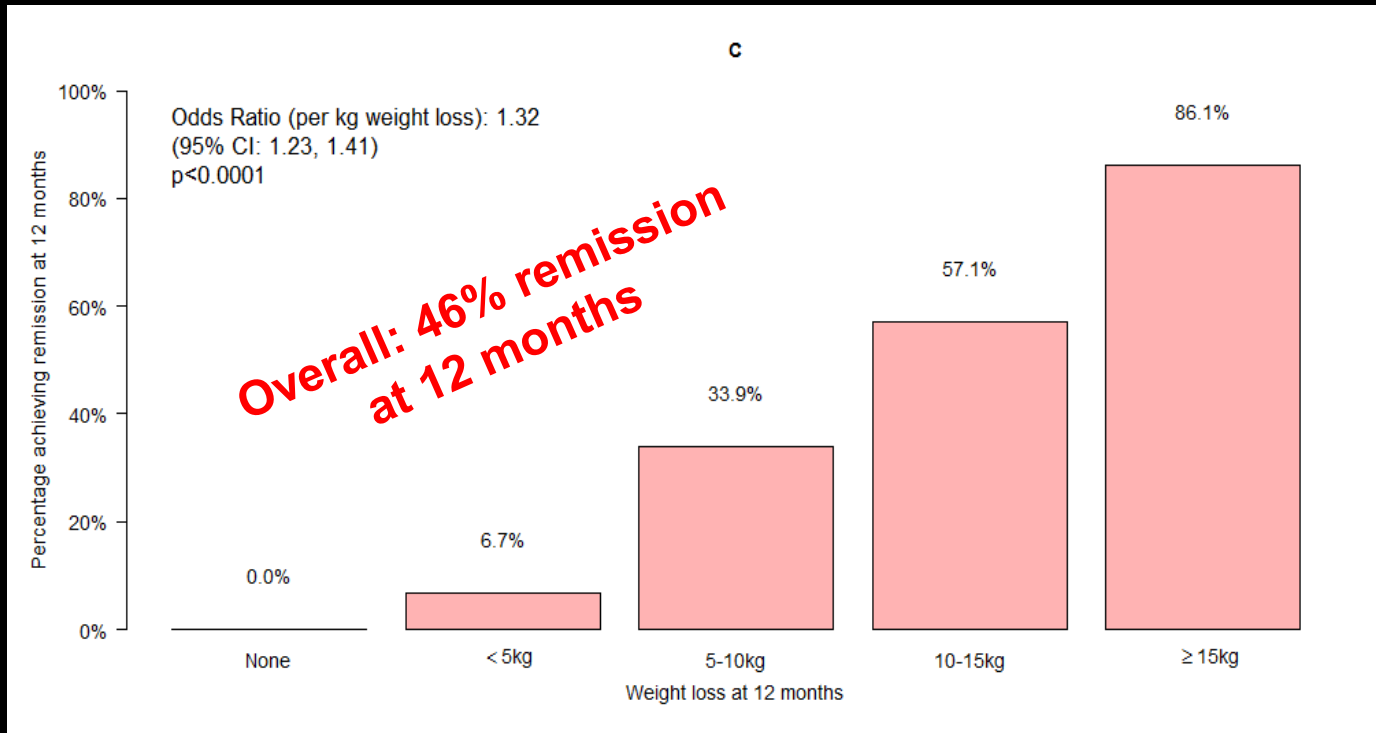
Duration of T2DM (y)	3.1 (SD 1.7)
HbA1c (mmol/mol)	59 (SD14) (7.6%)
Diet alone	24%
1 drug	48%
2+ drugs	28%
Blood Pressure	135/85
Smoking (current)	12%
Former	38%
Never	50%

Intervention and Control groups  
well balanced for all criteria

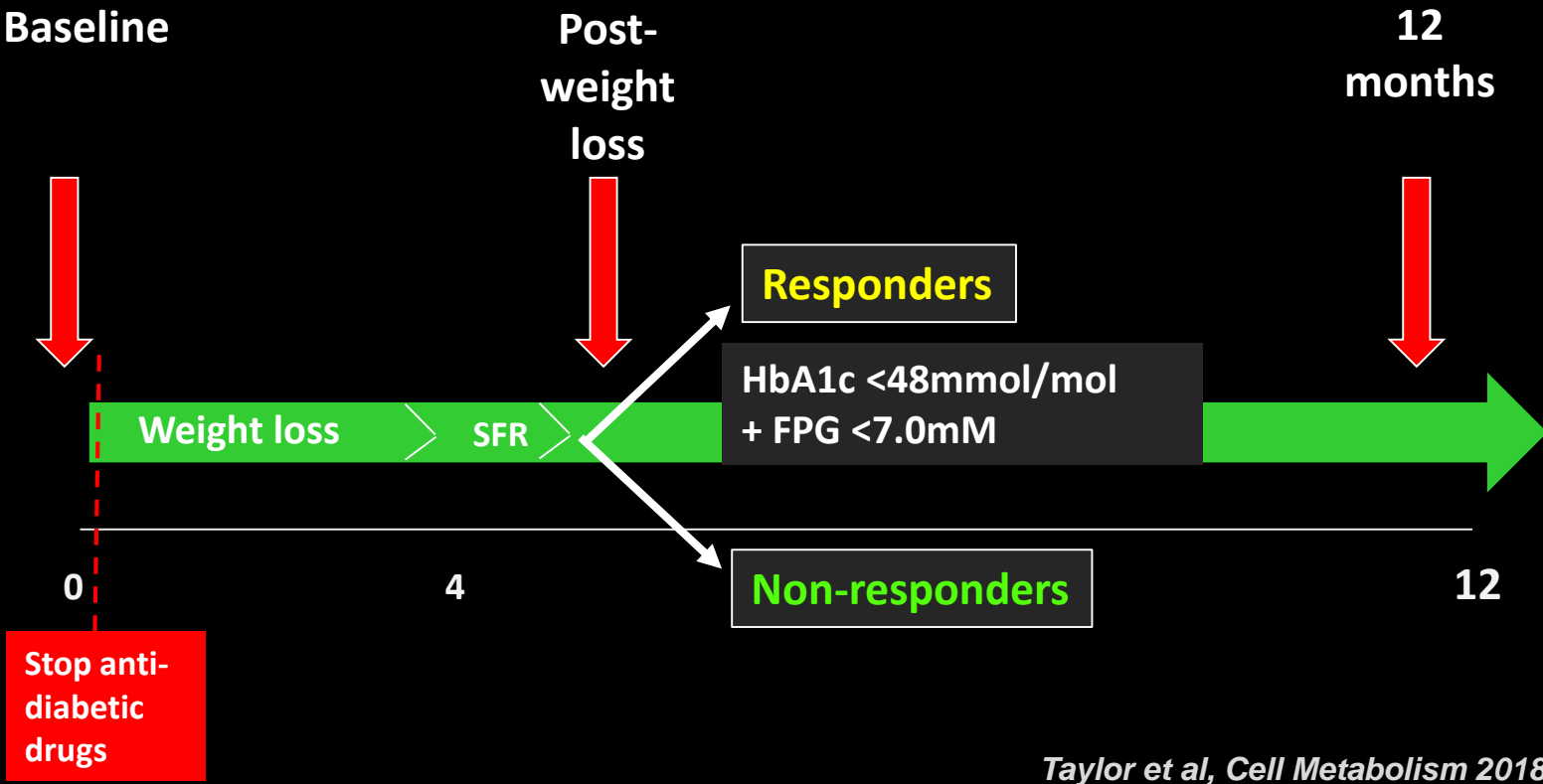
## Results: weight changes over 12 months



## Remissions by weight-loss category at 12 months



# Protocol for pathophysiological studies

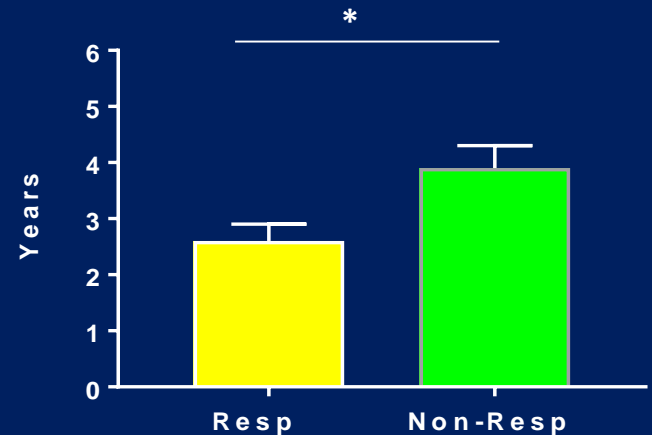


# Baseline determinants of return to non-diabetic glucose control

**Responder    Non-responder**

<b>Age</b>	<b>53 ± 1</b>	<b>53 ± 2</b>
<b>Weight</b>	<b>101 ± 3</b>	<b>102 ± 4</b>
<b>Sex</b>	<b>17/23</b>	<b>9/9</b>
<b>HbA1c</b>	<b>58±2</b>	<b>63±2*</b>
<b>Fasting insulin</b>	<b>108±10</b>	<b>77±9*</b>

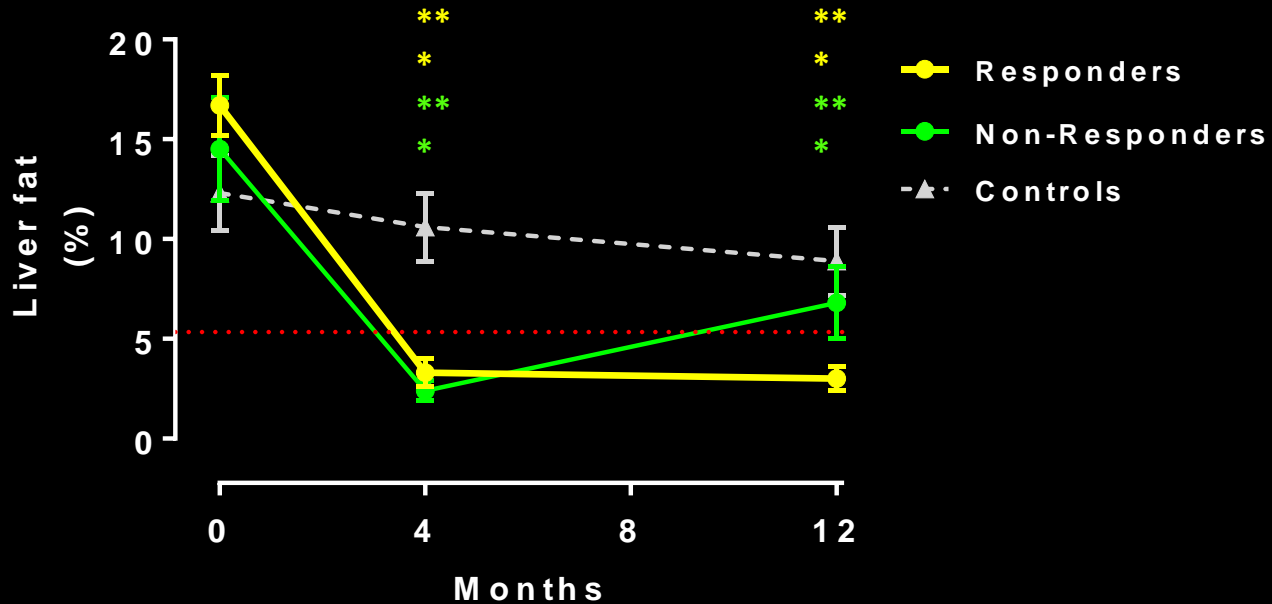
**Duration of diabetes**



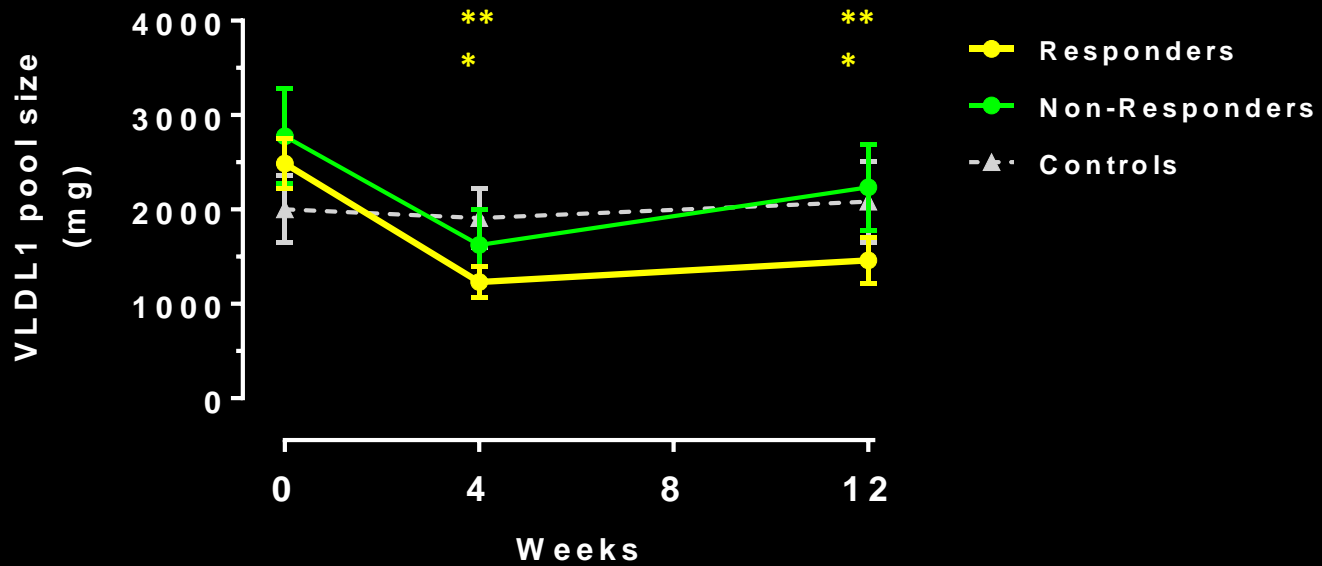
*Taylor et al, Cell Metabolism 2018 28(4):547-556*



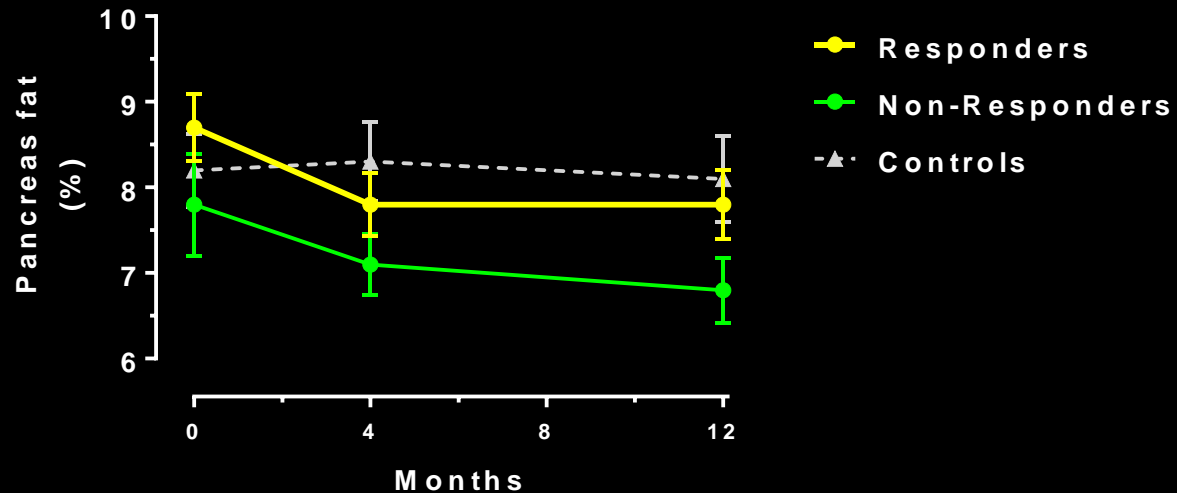
## Liver fat in Responders, Non-responders and Controls



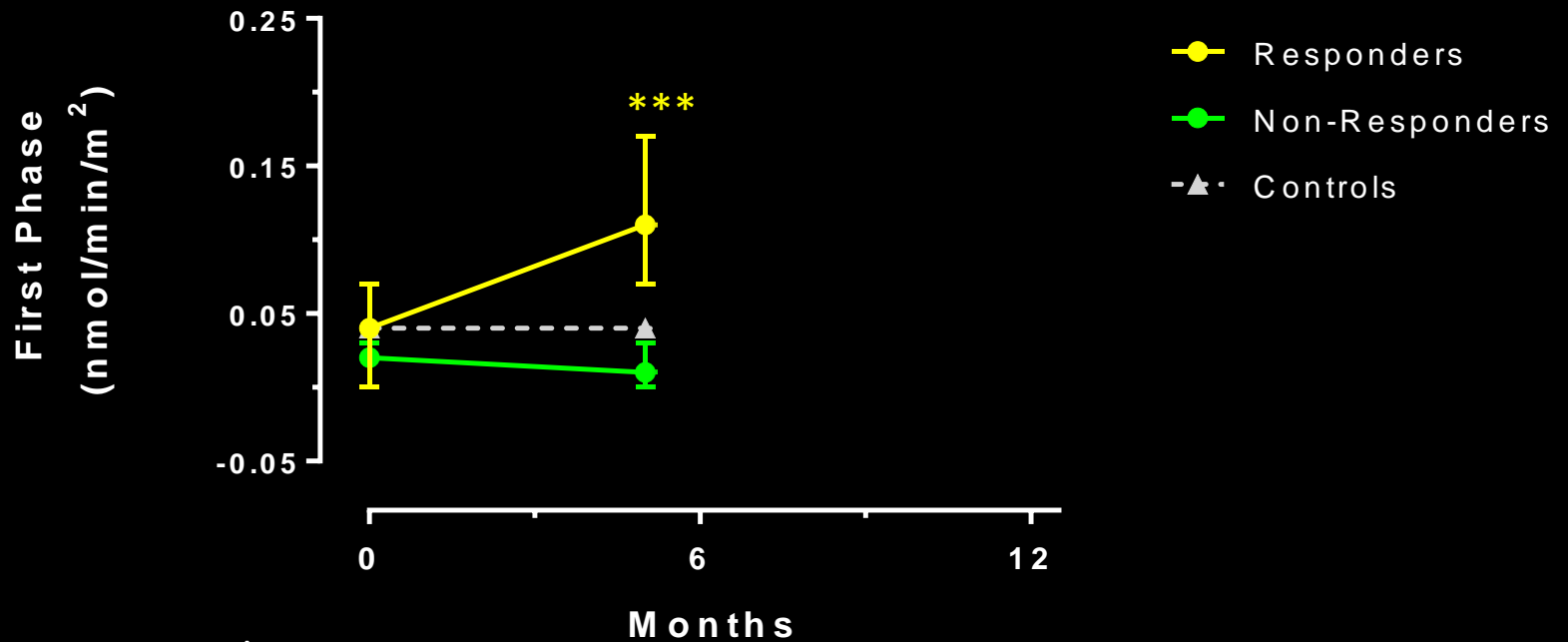
## VLDL1 pool size in Responders, Non-responders and Controls



## Pancreas fat in Responders, Non-responders and Controls

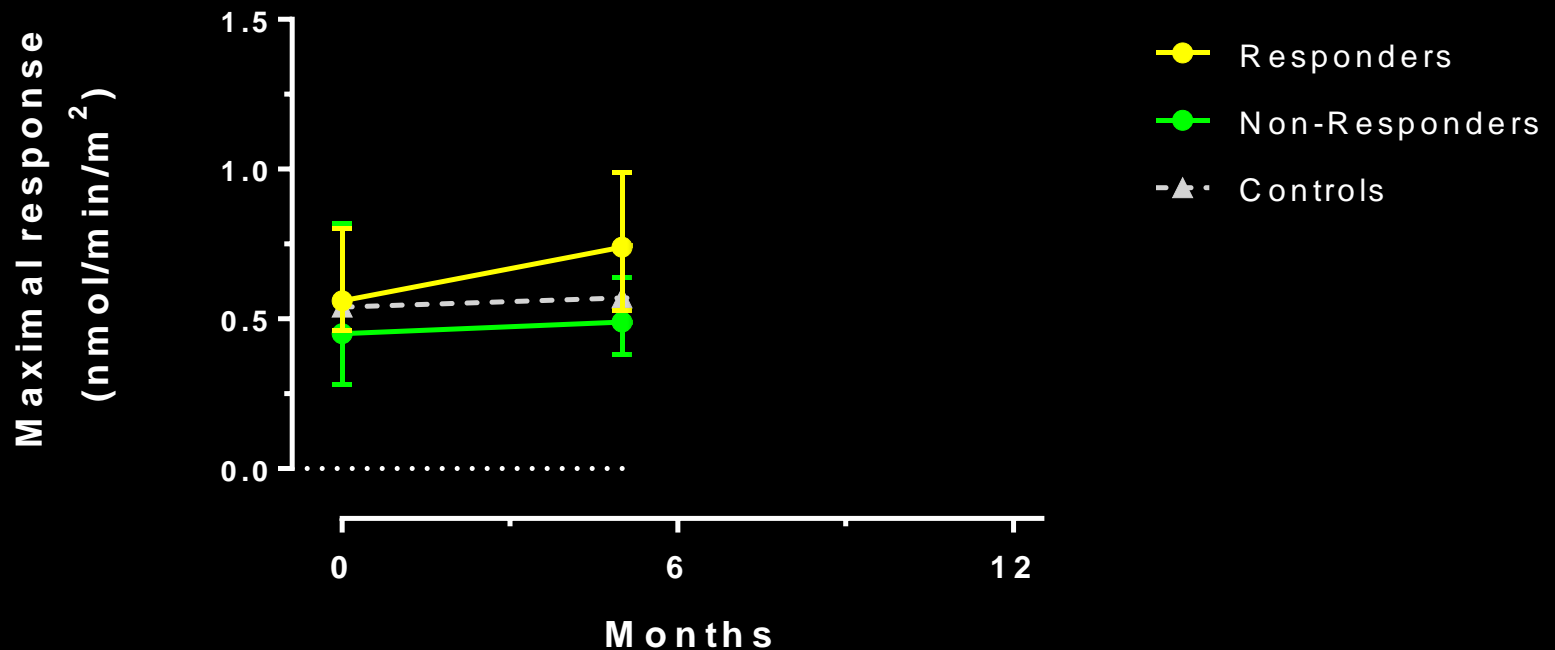


# Change in acute insulin secretion



Median  $\pm$  interquartile range

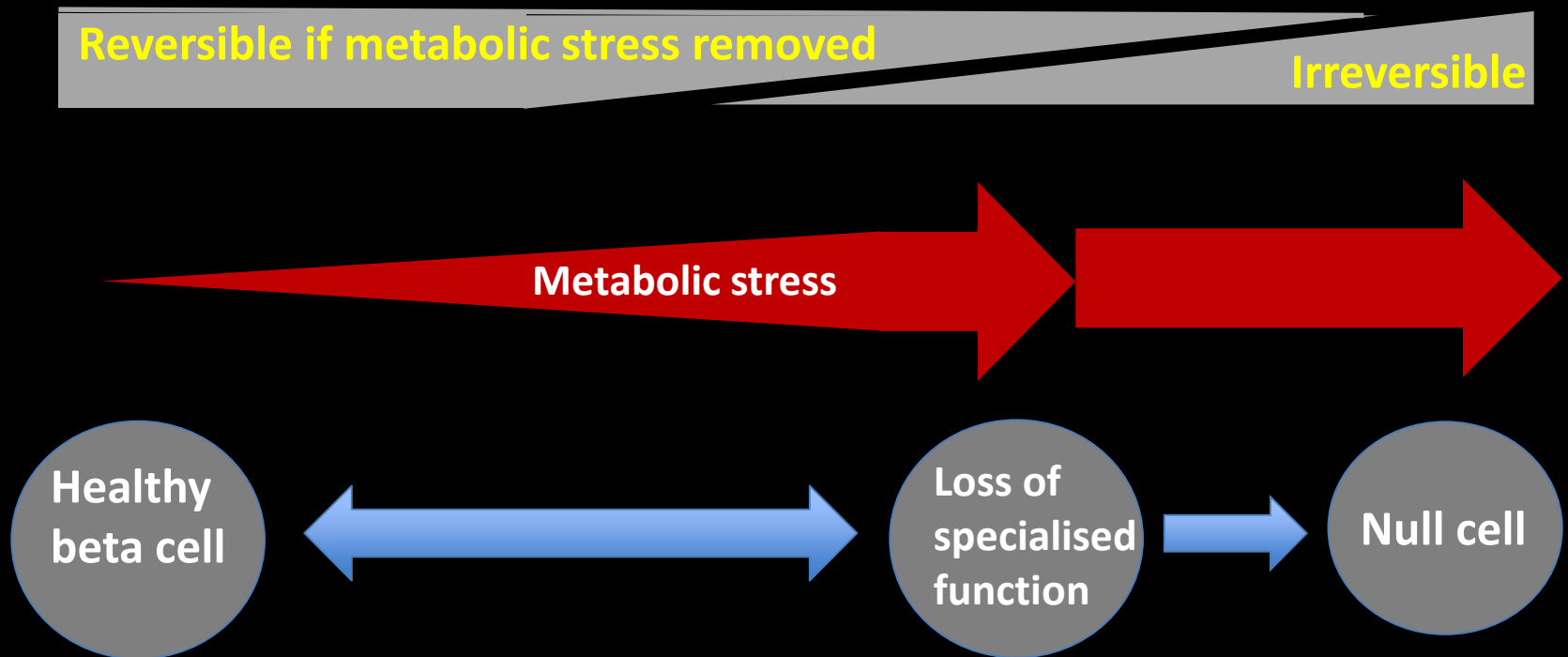
# Change in maximal insulin secretion



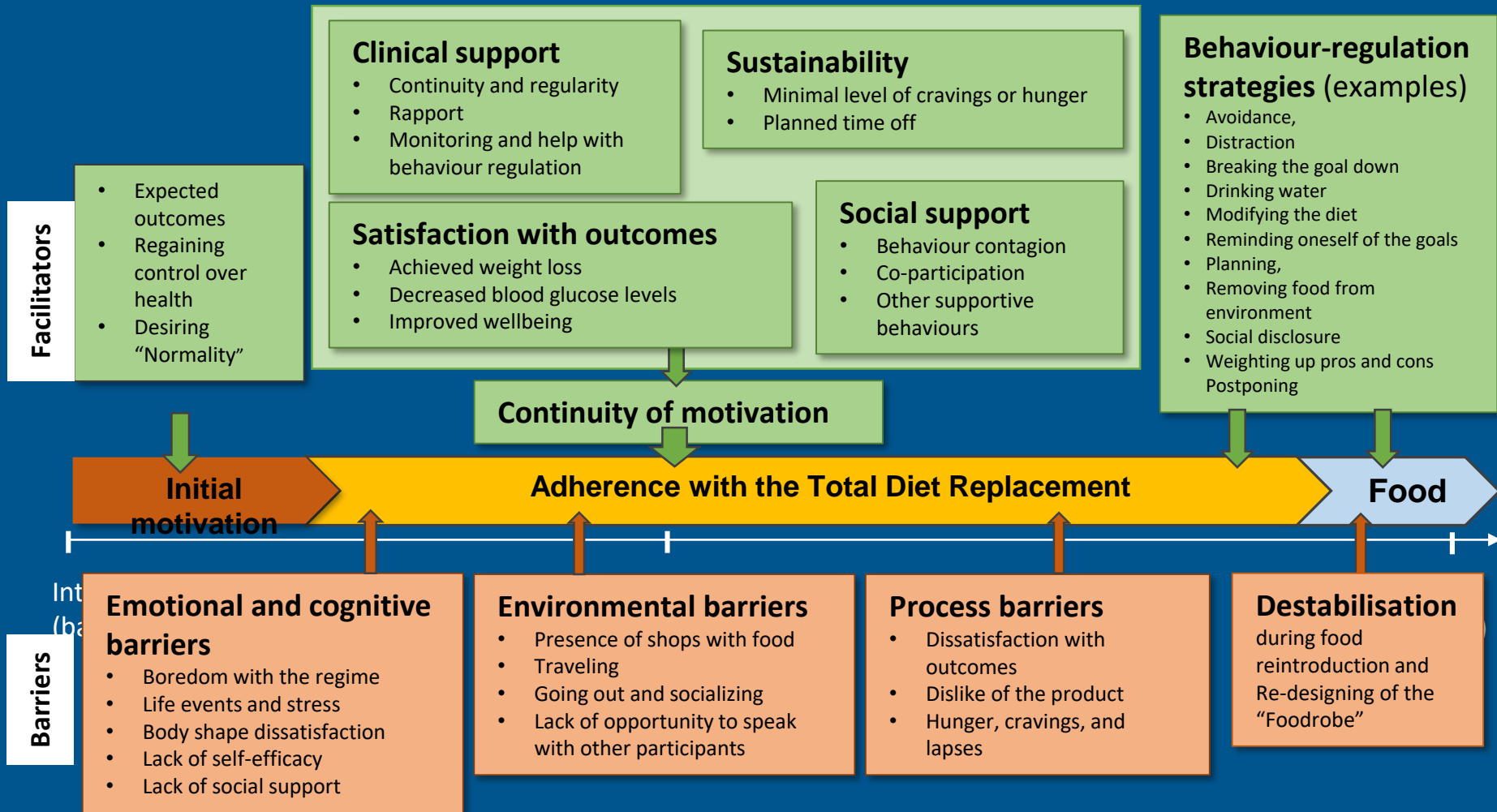
Median ± interquartile range

Taylor et al, Cell Metabolism 2018 28(4):547-556

# Dedifferentiation explains the beta cell in type 2 diabetes



*Pinnick 2010; Talchai 2012; White 2013; White, Diabetes Care 2016*



# Diabetes management – Dietary aspects

- Some proposals that high fat diets are more appropriate for people with T2 Diabetes than low fat/high carbohydrate diets
- This has always been the case for some patients with markedly impaired B-cell function, but is it appropriate for all people with diabetes?
- SACN, NHS-England and Diabetes UK have embarked on an assessment of the literature – next meeting December 12– report out for consultation Summer 2019, final report Spring 2020
- Need to be cautious when considering claims made by other organisations about the benefits of ‘Low Carb diets’ until this report is finalised.