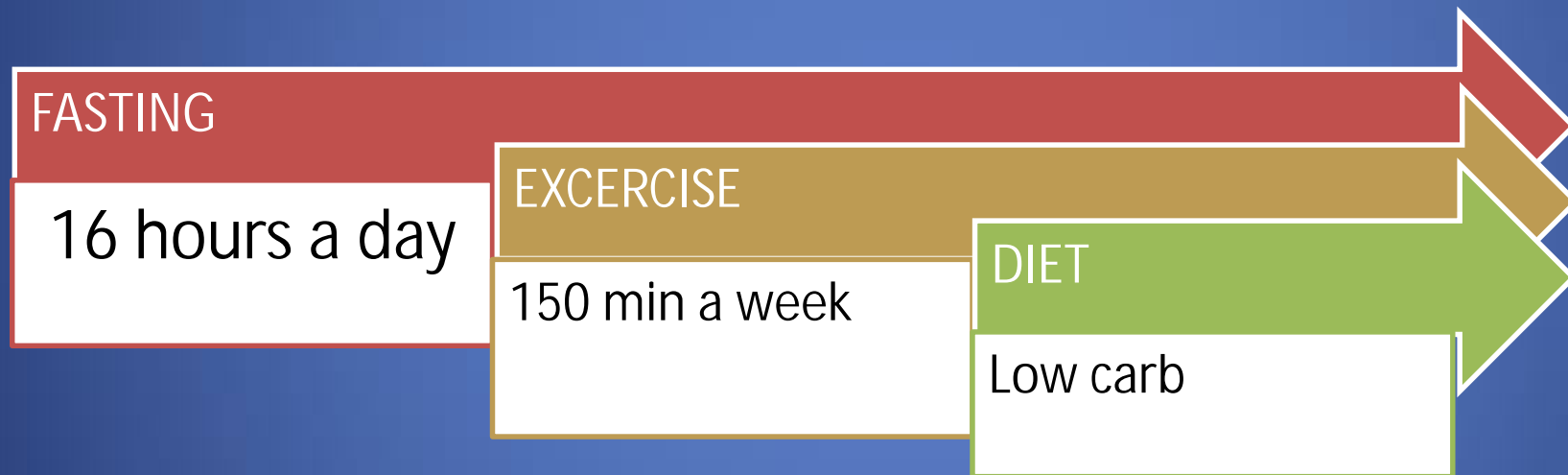


NOT-FED Study

New Obesity Treatment- Fasting, Exercise, Diet



NOSM Northern Research Conference, Kenora, 2018

R Minty, T O'Driscoll, L Kelly, D Poirier, Sioux Lookout

Not-Fed Study is a community-led project and
receives no financial support

- Len Kelly, MD
- Research Consultant Sioux Lookout Meno YaW In Health Centre, Anishinaabe Bimaadiziwin Research Program
- This presentation has not received any financial support

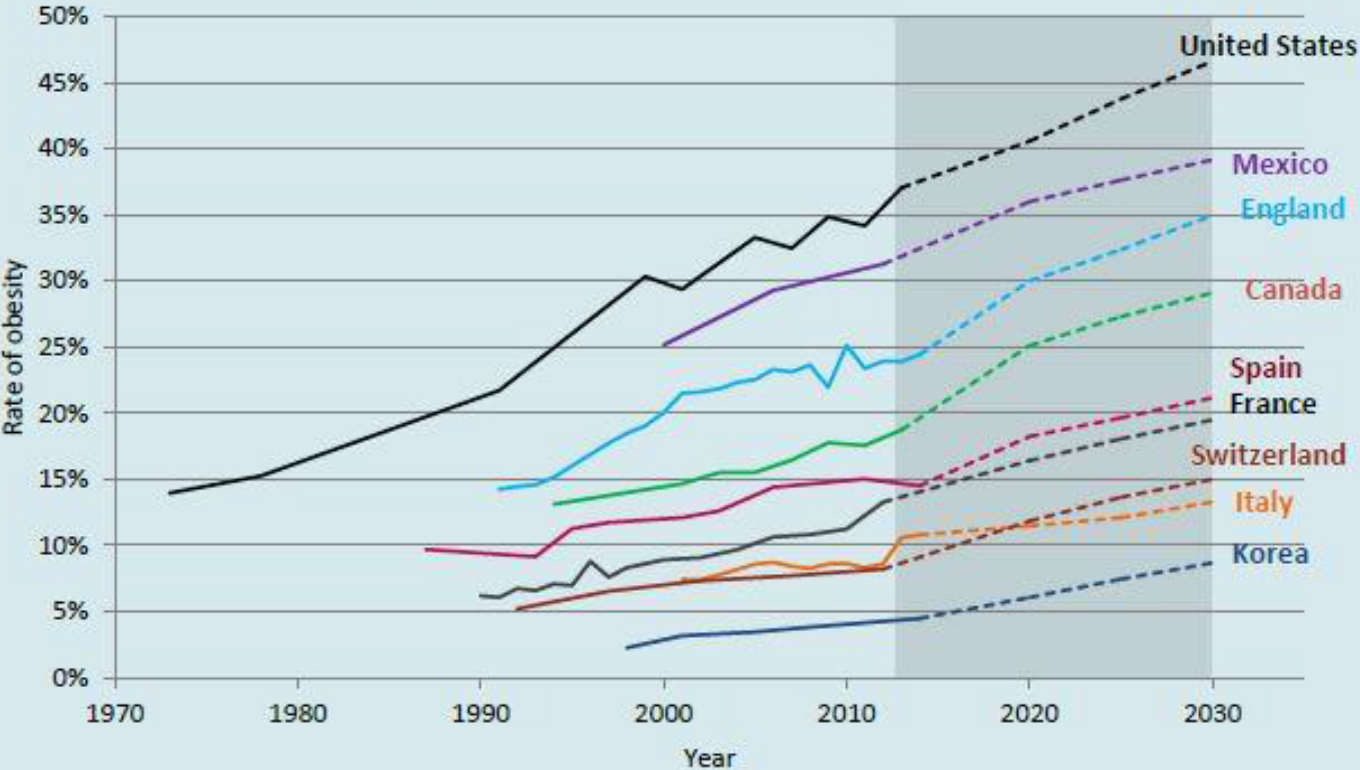
Obesity in Canada

- In 2014, 54% of Canadians were overweight or obese
(33.7% overweight BMI ≥ 25 ; 20.2% obese, BMI ≥ 30)
 - 61.8% of males
 - 46.2% of females
- Obesity increases risk for: diabetes, high blood pressure, cardiovascular events
- Reversing obesity often reverses diabetes and high blood pressure

(Stats Can, Canadian Institute for Health Information 2014)

we're not the only ones, but it's getting worse...

Figure 5: Projected rates of obesity



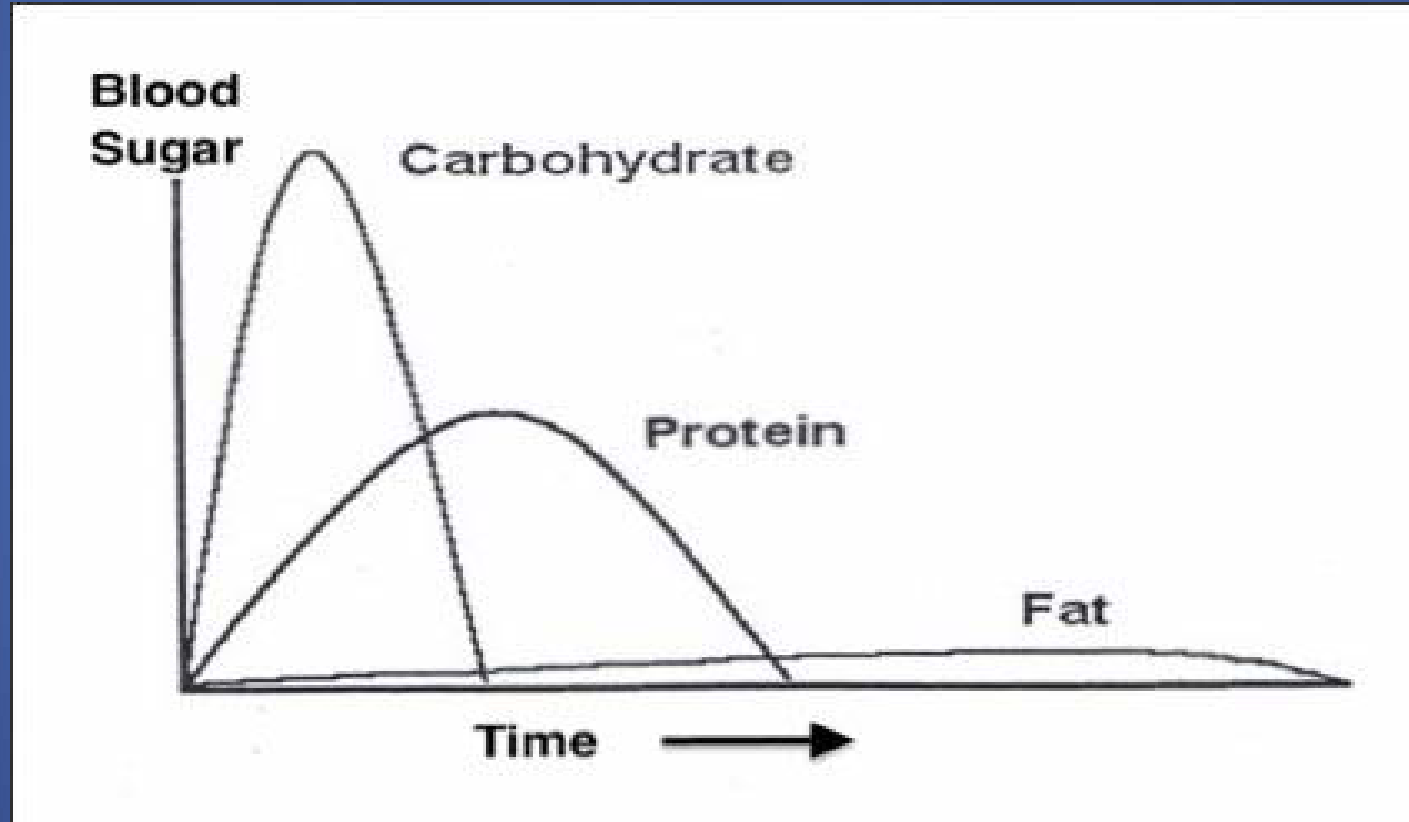
Note: Obesity defined as Body Mass Index (BMI) $\geq 30\text{kg/m}^2$. OECD projections assume that BMI will continue to rise as a linear function of time.
Source: OECD analysis of national health survey data.

'Insulin hypothesis'

The endocrine vs the caloric hypothesis of obesity:

- foods which produce a rise in insulin cause weight gain, since insulin is a growth hormone and necessary for fat storage:
 - Obesity = ↑carb intake, *NOT necessarily* ↑ calorie intake.

Fat, protein, carbohydrates: glucose, insulin response



Carbohydrates

.... tastes good, but makes us fat....



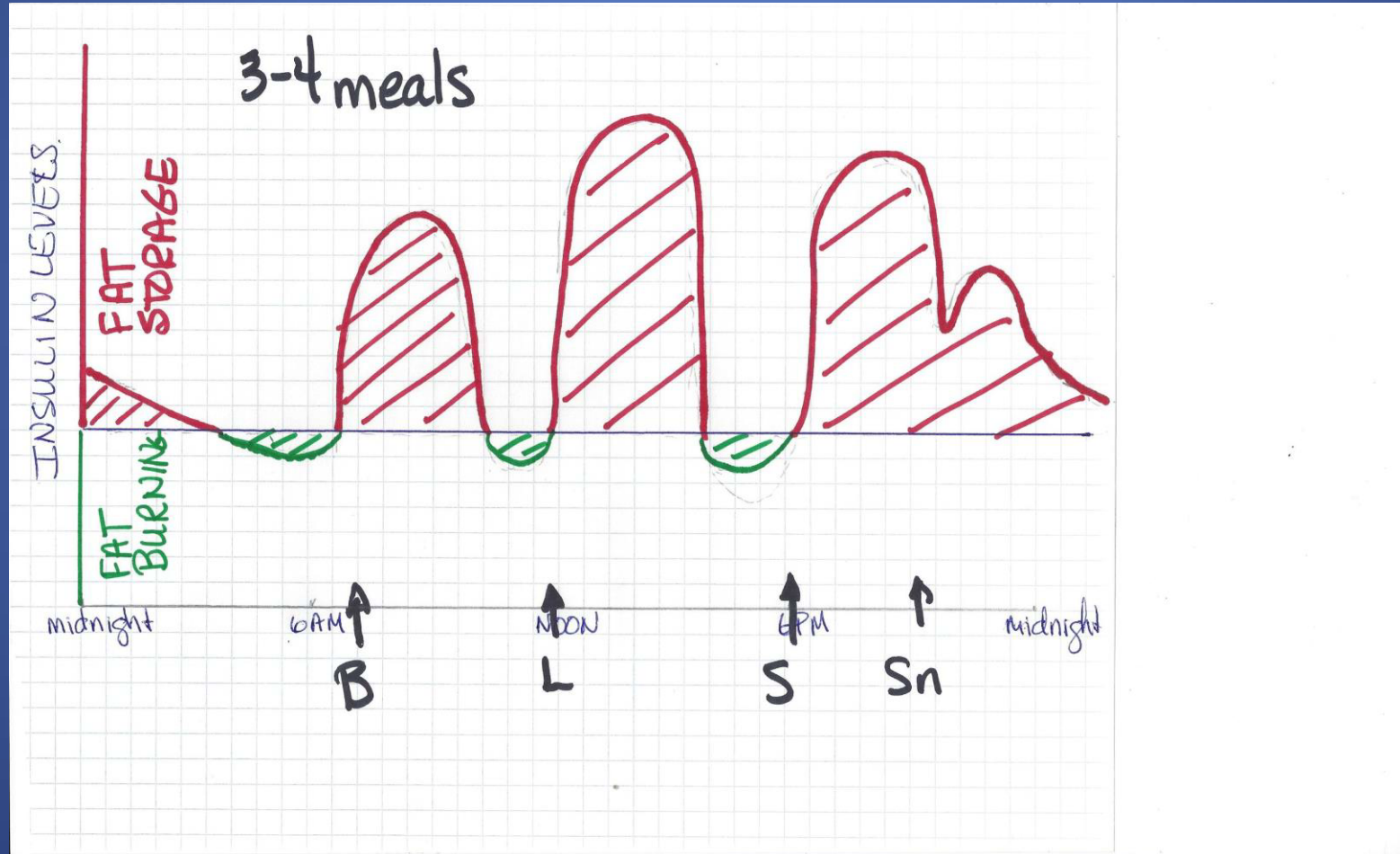
Foods associated with weight gain

- Most adult (20+) North Americans generally gain one pound per year
- That means by 60 years of age, we may be carrying 40 extra pounds
- The most offending foods in a 4 year-4 lb weight gain are:
 - Potato chips (1.7 lbs)
 - Potatoes (including fries) (1.3 lbs)
 - Sweetened pop drinks (1 lb)
- These foods all contain many calories from simple carbohydrates (sugars)

(Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men. Mozaffarian, Hao, Willett, Hu. NEMJ 2011;364:2392-404.) prospective study of n=120,877

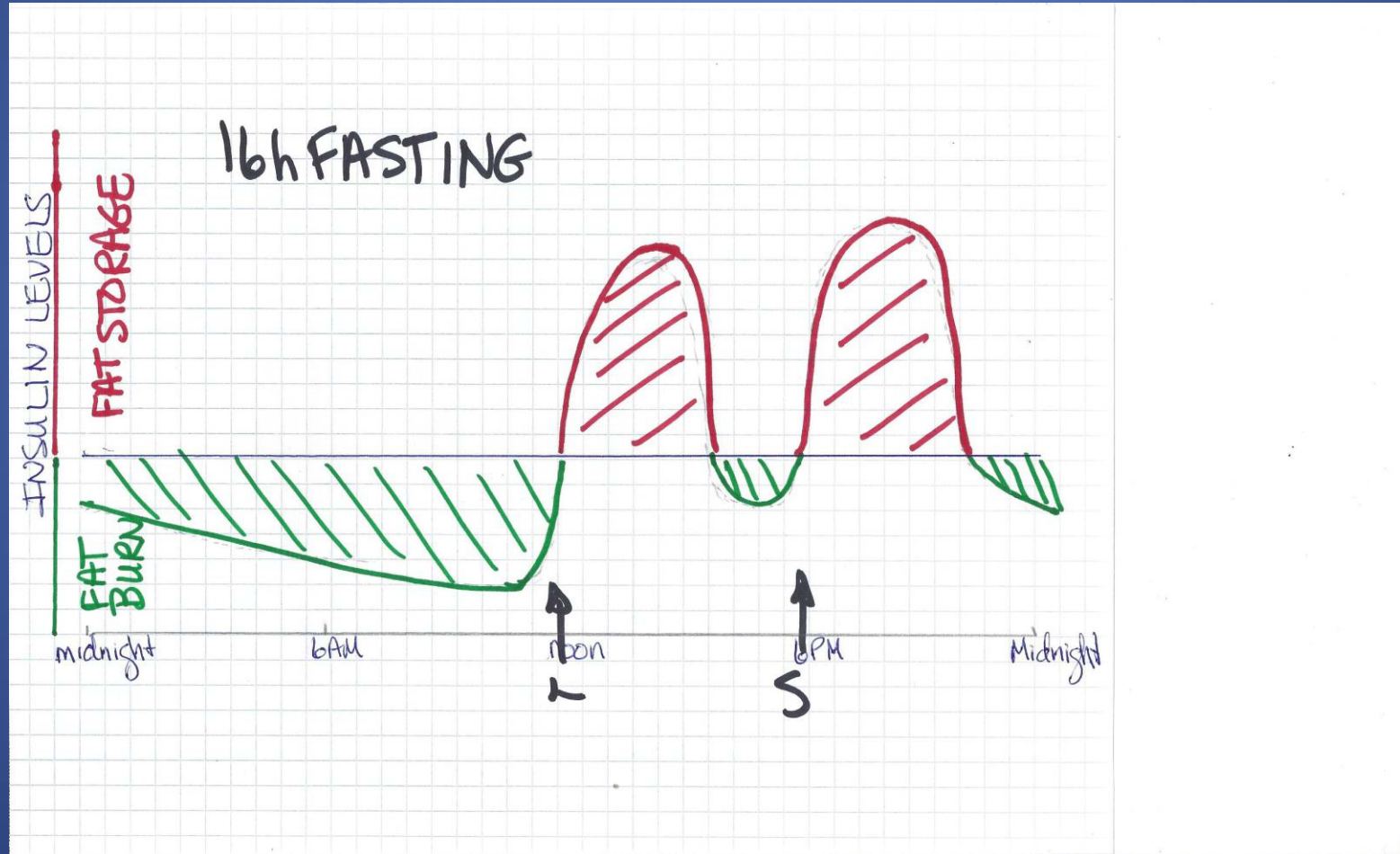
Regular eating insulin response

(lots of fat storage, little fat burning)



Intermittent fasting insulin pattern

(more time for fat burning)



Fat or carbs both add taste to foods...

- Low carb diets generally contain higher amounts of fat or protein
- Recent evidence suggests that dietary fat is not a health risk
- Recent large Canadian-led Dietary outcomes study – 2017 demonstrates that dietary fat intake is not associated with cardiovascular risk and may even be protective:

Association of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries

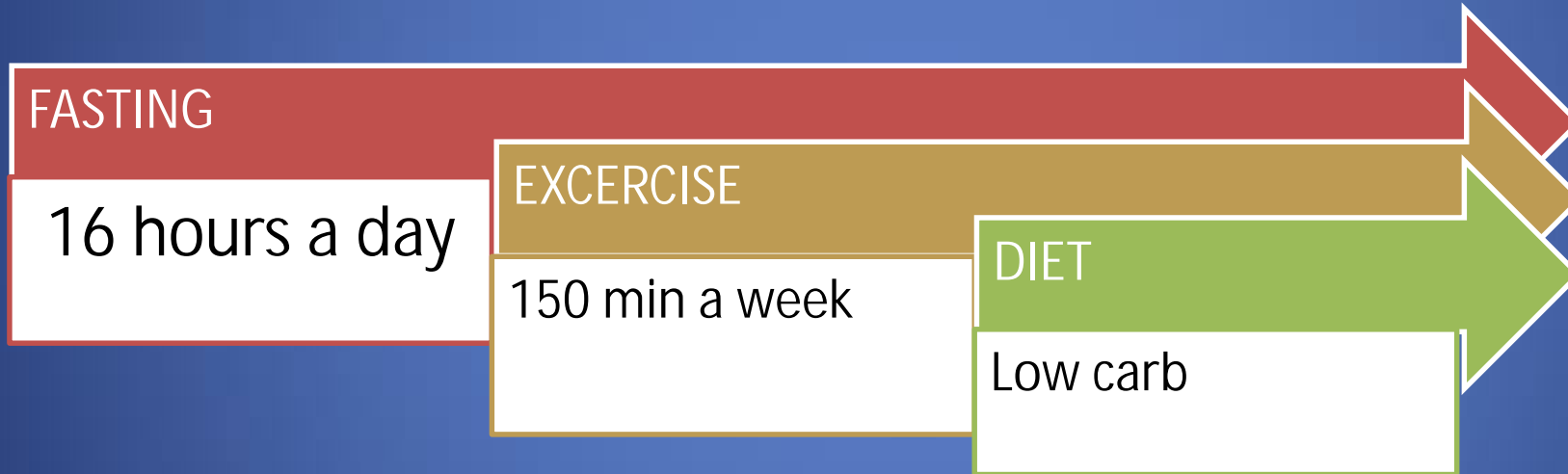
- Dietary intake of 135,335 individuals; median follow-up of 7.4 year:
 - *“High carbohydrate intake was associated with higher risk of total mortality, whereas total fat and individual types of fat were associated with lower total mortality.”*
 - *“Total fat and types of fat were not associated with cardiovascular disease, myocardial infarction, or cardiovascular disease mortality, whereas saturated fat had an inverse (protective) association with stroke.”*

Recent study in Lancet Public Health

- 15,428 adults 45-64 followed for 25 years:
 - negative long term association between life expectancy and low (and high) carb diets
 - plant-based fats were superior to animal ones
- The low-carb group however had significantly ($p < 0.001$):
 - more smokers (78% vs 51%)
 - more diabetics (13% vs 10%)
 - higher BMI's (28.0 vs 27.4)
 - more male participants (53% vs 36%)

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Methodology

- 2 year prospective study of weight loss
 - primary outcomes: weight loss, change in waist size
 - Secondary outcomes: changes in labs (A1c, Lipids), bp/DM meds, self-reported quality of life.
- Staggered start of 87 self-referred patients
- Initial average BMI 35.4 kg/m² (obese >30)
- Informed written consent for chart access to labs and measurements
- Ethics approved by Sioux Lookout Meno Ya Win Health Centre Research Review and Ethics Committee
- No funding

Results- 6 month self-report

Health Status

n= 38	Excellent	Very good	Good	Fair	poor
Initial (%)	3	18	63	13	3
6 Month (%)	<u>26</u>	42	32	0	0

Energy and Exercise

n= 38	Increased	Unchanged	decreased
ENERGY LEVEL (%)	<u>51</u>	46	3
EXERCISE (%)	22	75	3

Results- 6 month self-report... cont'd

Dietary changes

n= 38	Increased	Unchanged	Decreased
FAT (%)	<u>42</u>	42	16
PROTEIN (%)	<u>51</u>	49	0
CARBOHYDRATE (%)	3	16	<u>82</u>

Fasting

Average hours fasting/day (range)	15 (12-16)
Number of days/week (range)	6.27 (6-7)

Results- 6 month check up (n=65)

Blood pressure

Systolic, mm Hg	↓ 2.58
Diastolic, mm Hg	↓ 1.14

Serology

A1c	↓ 0.18
LIPIDS	
Total cholesterol	↑ 0.10
LDL	↑ 0.17
HDL	↑ 0.07
TG	↓ 0.20

Results- 6 month check up (n=65)

n= 69	6/12
Initial average weight, kg	90.7
Weight loss av, kg, (%)	7.2 (8%) (<u>16 lbs</u>)
BMI change, %	<u>-11%</u>
Waist circ. change, cm	-9.2 (3.6 inches)

Summary at 6 months, (n=65)

- Average weight loss is 7.3kg (16.0 lbs)
- A1 decreased 0.19%
- Clinically insignificant changes in lipid values:
 - Total chol: +0.13; HDL +0.07; LDL: +0.07; TG: -0.20
- 70% rated their health was better than before the intervention; 50% patients note an increase in energy level
- Increased awareness of nutrition, consumption for pts and md's.

Conclusion

- A community-wide initiative with focus on diet and lifestyle
- Intermittent fasting and low carb diets are a low resource strategy for weight loss, even in a busy rural primary care clinic.
- Further information at: "hughallenclinic.com"

