

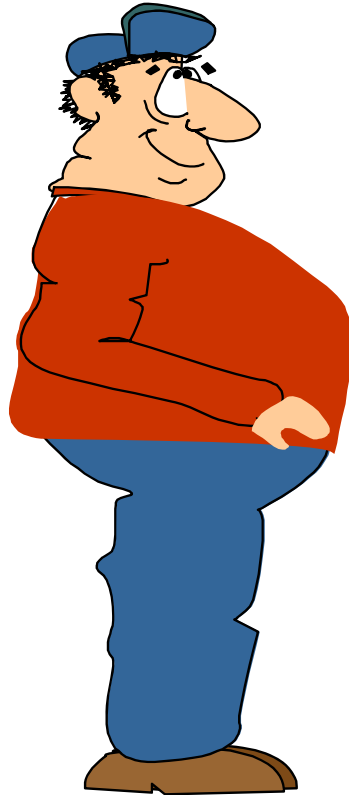
Integrating Services To Achieve Better Outcomes In Obesity Management

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Outline

- Why more resources needed to manage & prevent obesity induced co-morbidities
- Case study demonstrating better outcome with integration of services
- Examples of integration of services in literature
- Examples of integration of services in Australian outpatient setting

The body mass index (BMI)- adults only

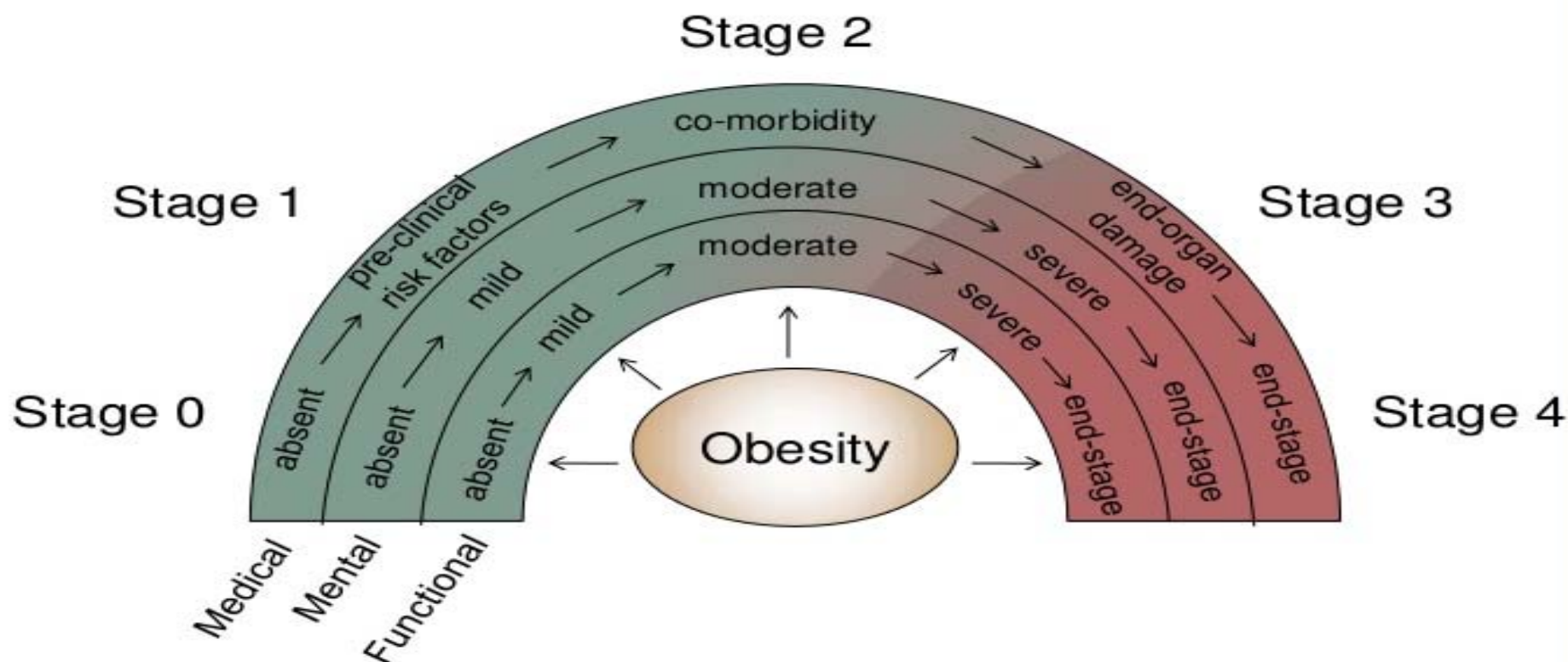


$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

Classification	BMI (kg/m ²)	Risk of co-morbidities
Normal range	18.5–24.9	Average
Overweight	≥ 25	
Pre-obese	25–29.9	Increased
Obese class I	30.0–34.9	Moderate
Obese class II	35.0–39.9	Severe
Obese class III	≥40.0	Very severe

World Health Organization, 1998

Edmonton Obesity Staging System (EOSS)

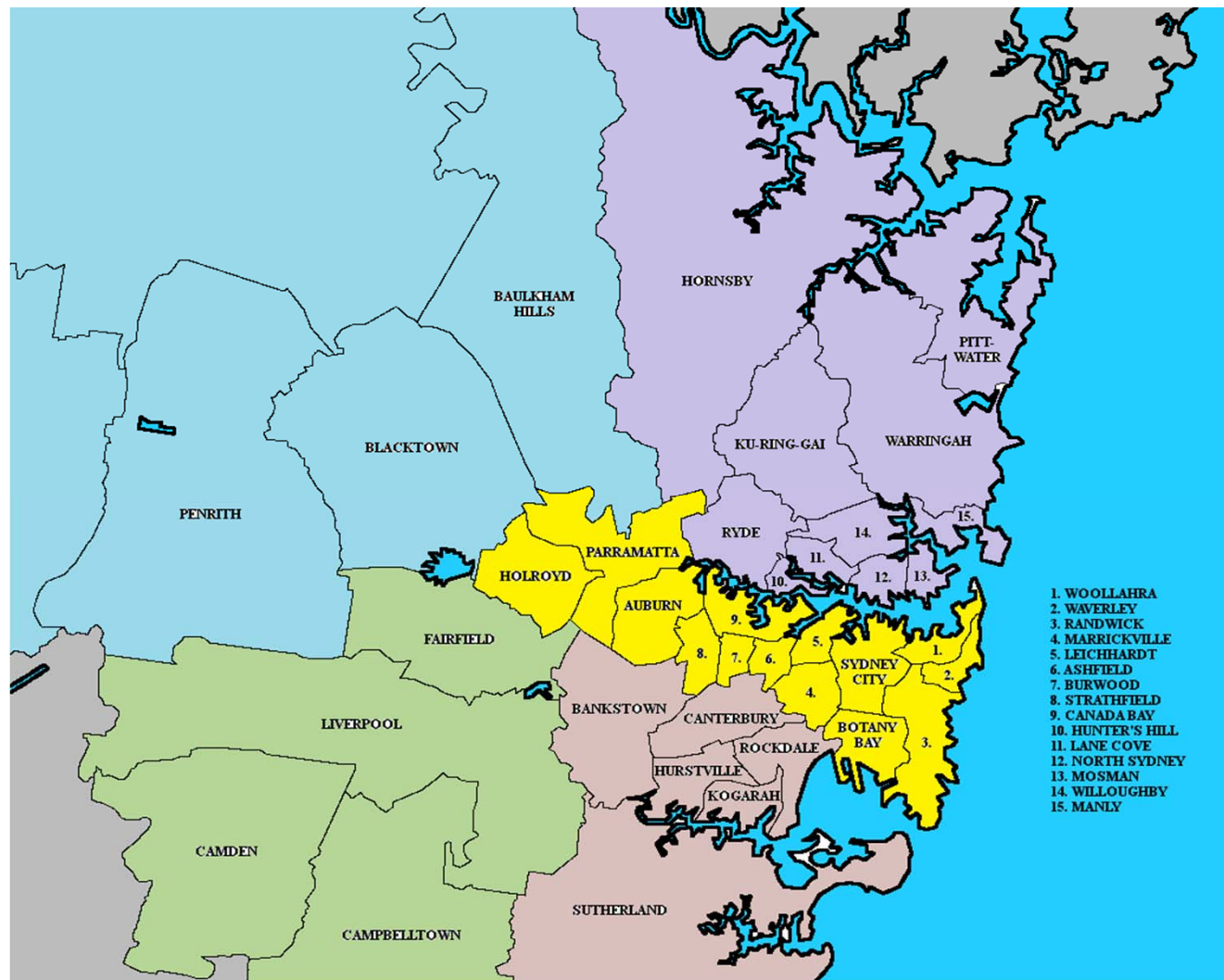


Case Study:

Desperate Plea For Help From Wife of Severely Obese Man SP Feb 2011

- Unannounced visit by Community Nurse and Head of Chronic Disease Management. Severely obese man > 300kg
- “My husband is dying from his weight and no one will help”
- 40 year old man bed bound for over 2 years
- Nursed by wife and 14 year old son

Barriers to Treating Mr SP



- Location of services able to manage bariatric patients as outpatient
- “Can’t patient simply stop eating?”
- “How is patient obtaining his food?”

What Did We Do?



- Home assessment and care till mobile enough to be able to walk to front door with assistance
- Transfer to Camden Hospital Rehabilitation Ward to improve mobility & integrate entry into outpatient medical obesity management clinic
- Would need to integrate obesity specialist services across Health Districts

Recruited RPAH Team & Liverpool Physio



“Steve” Feb 2011

- Unemployed, former tow-truck driver
- Weight 374kg
- BMI 117kg/m²
- Lives with wife + 14 yr. old son (wouldn't attend school)
- “Obesity Immobility Syndrome”
- Bed bound over 2 years



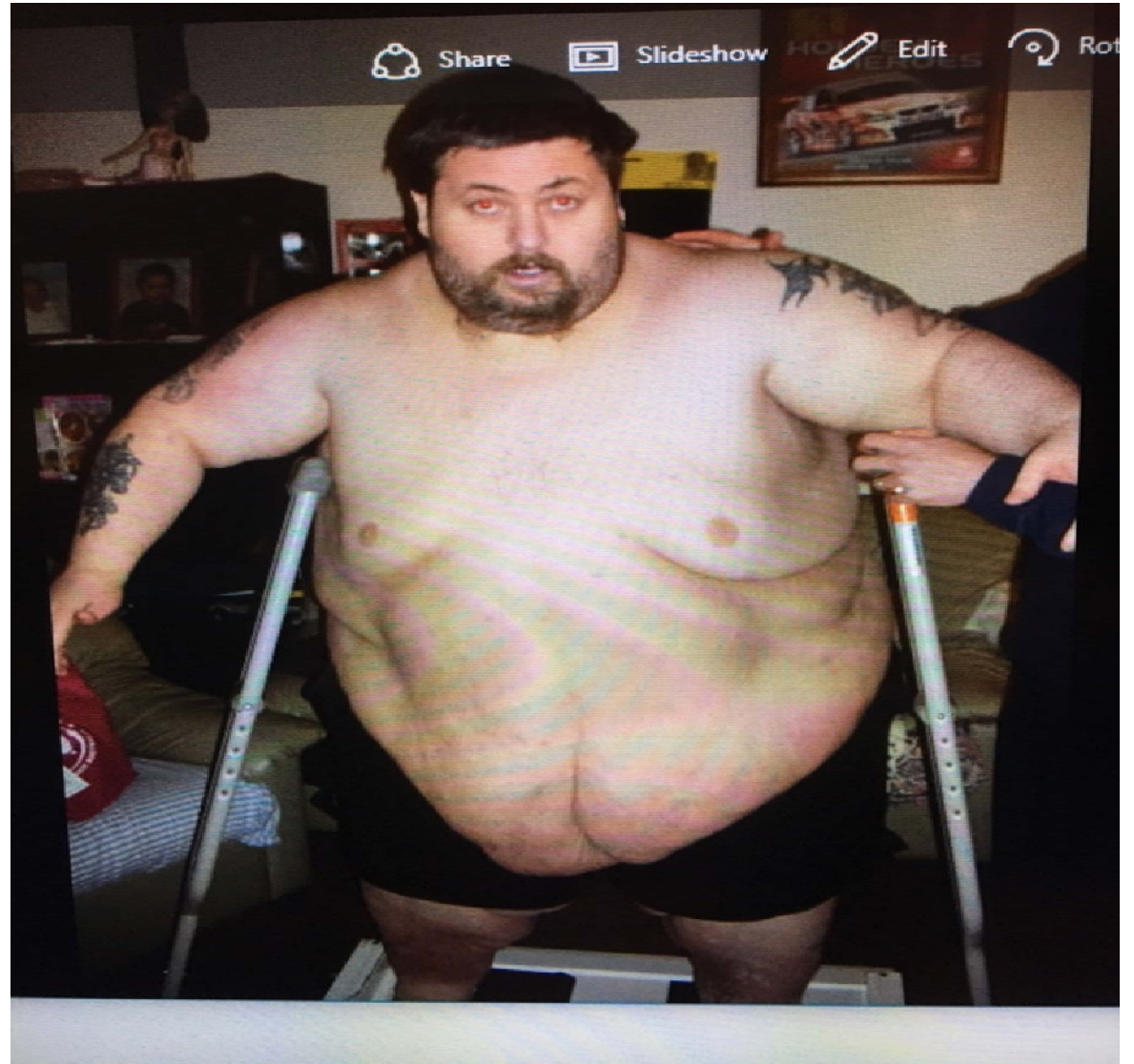


“Steve” Feb 2011

- Depression, severe bilateral knee OA, GORD
- RPAH team instituted Very Low Energy Diet (Optifast meal replacements)
- Physiotherapy home visits

“Steve” Nov 2011

- Lost 97 kg, & with assistance of 2 able to walk to front door
- Transferred to Camden Hospital Rehabilitation Ward



Nov 2011

- Short admission Camden Hospital Rehabilitation ward to improve mobility
- Simultaneously enrolled into specialised outpatient weight management clinic, “Metabolic Rehabilitation Program”



Metabolic Rehabilitation Program

Camden Hospital Nov 2011

- Comprehensive integrated MDT; medical, nursing, dietetics, psychology, physiotherapy, podiatry, exercise physiology
- On-site supervised group exercise classes



Camden Hospital MRP Gym



Camden Hospital MRP Gymnasium



“Steve” Dec 2011-12

- Discharged back home after 3 week admission when could “car transfer”
- Weight 264 kg
- Lost further 15kg over 6 months then weight plateaued for 3 months. Improved mobility
- Referral to Public Bariatric Surgery Clinic Concord Hospital

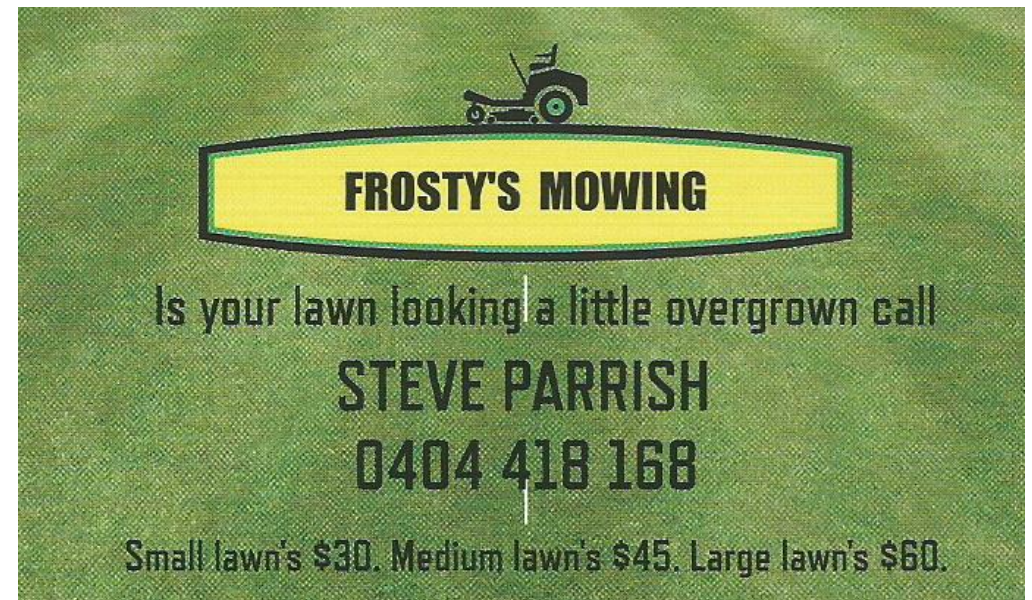


“Steve” Feb 2013-16 : Sleeve Gastrectomy 234kg



“Steve” Feb 2016

- Weight 175.1 kg, BMI 55.6 kg/m²
- Skin reduction surgery
- Mobility dramatically improved
- Looking for full time employment, started lawn mowing business in interim



“Steve” & Family Feb 2017



Obesity Integrated Management: Examples in Literature

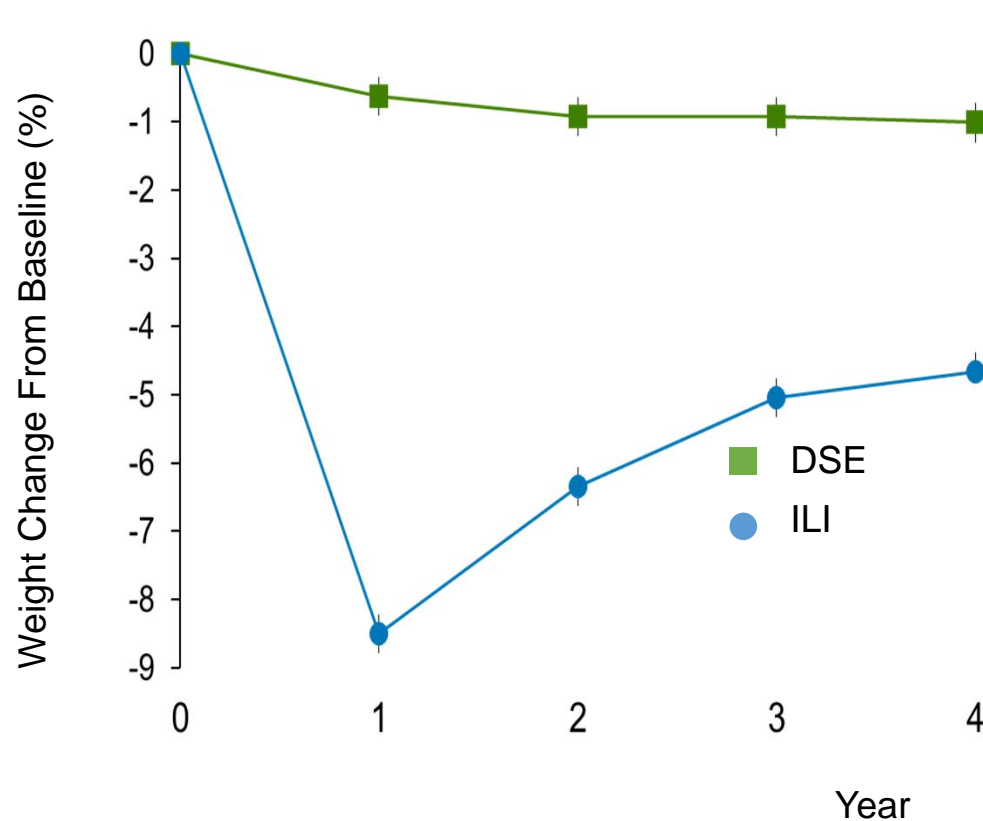
Components of Weight Management Programs

- Lifestyle Management
- Pharmacological Treatments
- Bariatric Surgery

Seven “S’s” of Obesity Management Programs

- **Standard Advice** (diet, exercise, behavioural)
- **Specific Advice** (individual patient assessment by dietitian, EP, psychologist, physiotherapist, etc)
- **Supervision** (exercise, shopping, cooking)
- **Support** (individual, groups, carers)
- **Shrinking Meal Sizes & Snacks** (meal replacements, pre-prepared meals & snacks, smaller plates)
- **Saxenda & Xenical**
- **Surgery** (bariatric and skin)

Weight Loss in Look AHEAD Trial [S 1,2,3,4,5](#)



	Baseline	
	ILI	DSE
n	2,496	2,502
Women (%)	1,480 (59)	1,491 (60)
Age at randomization (years)	59 ± 7	59 ± 7
Duration of diabetes (years)	7 ± 7	7 ± 6
BMI (kg/m ²)	35.9 ± 6.0	36.0 ± 5.8
Fitness (METS)	5.2 ± 1.5	5.1 ± 1.5
Diabetes		
A1C (%)	7.3 ± 1.1	7.3 ± 1.2
Number of prescribed medications	1.5 ± 0.9	1.5 ± 0.9

DSE, diabetes support and education; ILI , intensive lifestyle intervention.
 Look AHEAD Research Group, Wing RR. *Arch Intern Med.* 2010;170(17):1566–1575.

Original Article

Bariatric Surgery **versus** Intensive Medical Therapy for Diabetes — 5-Year Outcomes

Philip R. Schauer, M.D., Deepak L. Bhatt, M.D., M.P.H., John P. Kirwan, Ph.D., Kathy Wolski, M.P.H., Ali Aminian, M.D., Stacy A. Brethauer, M.D., Sankar D. Navaneethan, M.D., M.P.H., Rishi P. Singh, M.D., Claire E. Pothier, M.P.H., Steven E. Nissen, M.D., Sangeeta R. Kashyap, M.D., for the STAMPEDE Investigators

Conclusions

- Five-year outcome data showed that, among patients with type 2 diabetes and a BMI of 27 to 43, bariatric surgery **plus** intensive medical therapy was more effective than intensive medical therapy alone in decreasing, or in some cases resolving, hyperglycemia.

Surgical Treatment And Medications Potentially Eradicate Diabetes Efficiently “STAMPEDE” Trial

Schauer P NEJM 2017

- All patients
- Endocrinologist
- Diabetes Educator
- Dietitian
- Research nurses
- Multiple visits
- Early use & titration meds

Table 1. Primary and Secondary End Points at 5 Years.*

End Point	Study Group			P Value†		
	Medical Therapy (N=38)	Gastric Bypass (N=49)	Sleeve Gastrectomy (N=47)	Gastric Bypass vs. Medical Therapy	Sleeve Gastrectomy vs. Medical Therapy	Gastric Bypass vs. Sleeve Gastrectomy
Body weight—kg						
At baseline	105.0±14.4	106.8±14.9	100.4±16.8			
At 5 yr	99.0±17.0	83.4±15.3	81.9±15.0			
Change from baseline	-5.3±10.8	-23.2±9.6	-18.6±7.5	0.003	0.003	0.01

Obesity Integrated Management in Australian Clinical Setting

MOS Clinic population over time

	2015	2005*	2000	1992
Age	49 \pm 13	47 \pm 13	42.9 \pm 13	45 + 17
%M%F	31% 69%	32% 68%	25% 75%	25% 75%
Ht	1.66	1.66 \pm 0.1	1.66 \pm 0.1	1.65 + 0.1
Wt	130.3	129.13 \pm 32	126.4 \pm 30.5	101.5 + 24.4
BMI	47.2	46.5 \pm 10	45.5 \pm 9.2	37.0 + 8.5

Metabolic Rehabilitation Program 2003 [S 1-7](#)



Metabolic Rehabilitation Diabetes Program

- Multidisciplinary medical & allied health review
 - dietetic, psychology, exercise physiology, physiotherapy
- Compulsory Intensive Exercise programme
 - ≥ 3 supervised on-site exercise classes by EP/Physio
 - Overall ≥ 330 minutes prescribed structured moderate intensity activity weekly
- Medications & Meal Replacements
 - Weight neutral diabetes medications (metformin, acarbose)
 - VLED used if appropriate

MRC Concord Gym 2003



Metabolic Rehabilitation Clinic Concord

Patient baseline characteristics

Gender	
Males	21 (45%)
Females	26 (55%)
Age (years)	61.3 \pm 9.1
Body weight (kg)	104.7 \pm 20
BMI (kg/m ²)	38 \pm 5.7
Waist circumference (cm)	113 \pm 12.6
Duration of diabetes (years)	11.0 \pm 7.0

- Plus minus values are means \pm SD

Bishay RH, et al Clinical Diabetes 2013

Metabolic Rehabilitation Clinic Concord

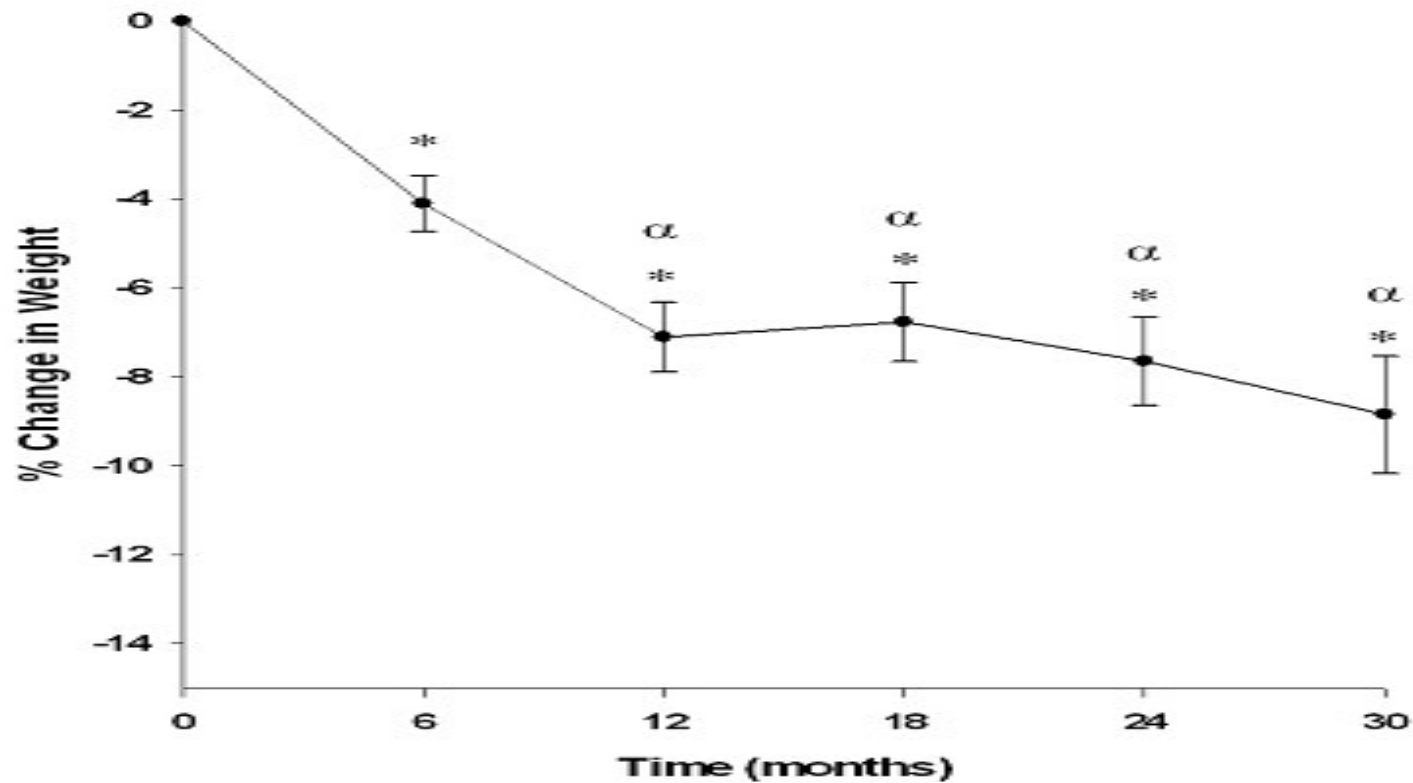
Patient baseline characteristics

HbA1c (%)	8.2 \pm 1.6
Systolic blood pressure (mmHg)	137 \pm 18.6
Diastolic blood pressure (mmHg)	79.9 \pm 9.1
Low density lipoprotein (LDL) (mmol/L)	2.54 \pm 0.9
High density lipoprotein (HDL) (mmol/L)	1.34 \pm 0.8
Triglycerides (mmol/L)	2.1 \pm 1.1
No. of co-morbidities	4.8 \pm 2.0
No. of medications	5.9 \pm 2.8

- Plus minus values are means \pm SD

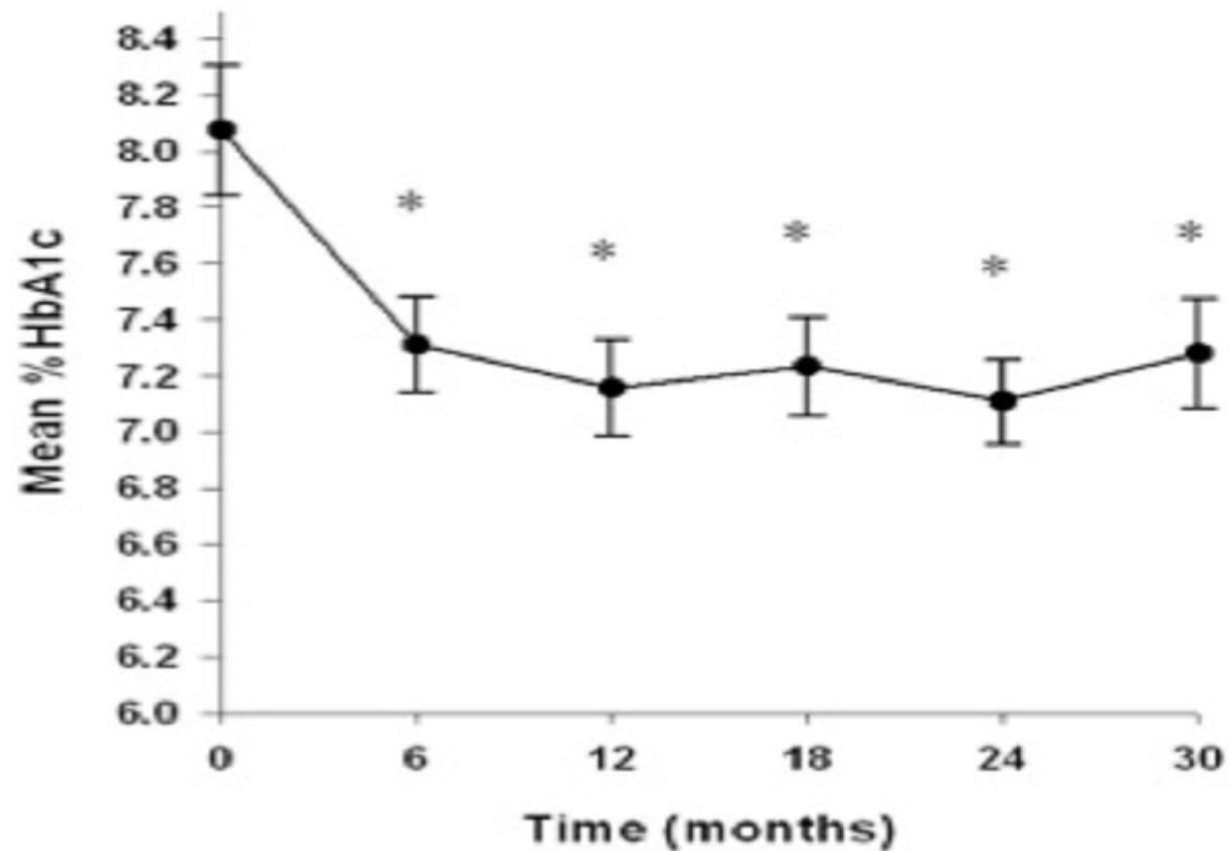
Bishay RH, et al 2013

% Weight Change MRP Concord



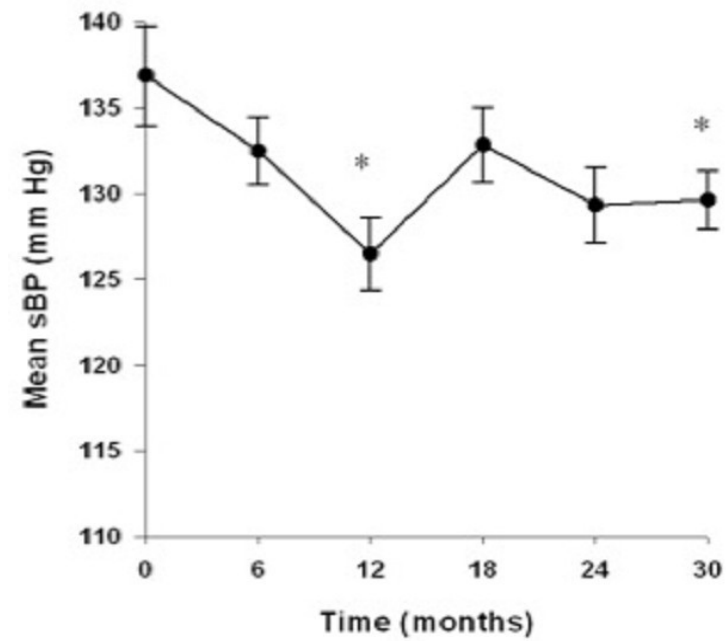
$p < 0.001$, 12 and 30 months Bishay RH, et al Clinical Diabetes 2013

MRP Concord Changes in HbA1c Bishay RH, et al Clinical Diabetes 2013



$p < 0.001$ for both 12 and 30 months

SYSTOLIC BLOOD PRESSURE Bishay R et al 2013



Actual change in Systolic Blood Pressure (SBP) during Metabolic

Rehabilitation ($p=0.027$ for 12 months and 0.163 for 30 months)

MRP vs Traditional Diabetes Clinic Concord

Lih, et al. *Journal of Diabetes Research* 2015

	MRP (n=40)	DC care (n=40)	P-value
Weight (kg)			
Baseline	106.2 ± 18.2	100.8 ± 17.9	0.78
% Change at 12 months	-7.65 ± 1.74	-1.76 ± 2.60	<0.0001
% Change at 30 months	-9.70 ± 2.13	-0.98 ± 2.65	<0.0001
HbA1c (%)			
Baseline	8.2 ± 1.6	7.9 ± 1.9	0.56
% Change at 12 months	-0.95 ± 0.28	-0.35 ± 0.34	0.08
% Change at 30 months	-0.86 ± 0.31	-0.12 ± 0.33	0.04

Camden Hospital MRP Gymnasium



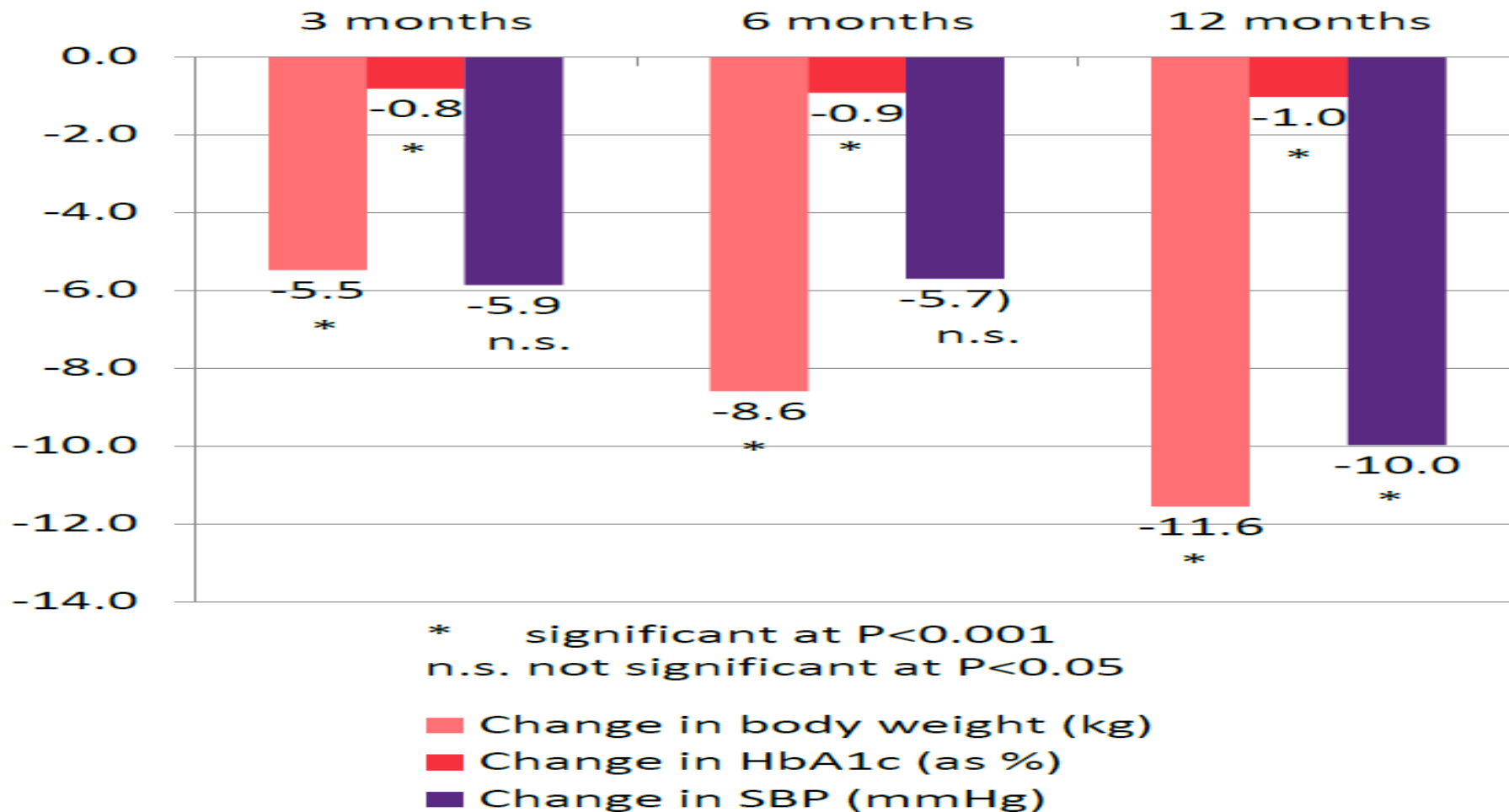
Metabolic Rehabilitation Program Camden Hospital 2011



MRP Diabetes Camden 2014

	MRP Completers (≥12 months)			
Patients	All N=53	Men n=25	Women n=28	P-value
Age (years)	59 (11)	59 (11)	59 (11)	0.87
Gender (female)	53%			
Weight (kg)	130 (30)	143 (31)	118 (24)	0.002
BMI (kg/m ²) n=48	45 (8)	46 (9)	45 (8)	0.74a
Waist circumference (WC, cm) n=37	134 (18)	145 (19)	124 (12)	<0.001
High WC (≥102 cm men, ≥88 cm women)	100%	100%	100%	
Systolic blood pressure (mmHg) n=50	136 (17)	137 (19)	135 (15)	0.67
Diastolic blood pressure (mmHg) n=51	77 (14)	80 (16)	74 (11)	0.10
No. of years since diagnosis of diabetes n=32	10.8 (7.6)	9.4 (7.1)	12.0 (8.0)	
HbA1c (as %) n=52	8.1 (1.5)	8.2 (1.8)	8.0 (1.3)	0.70

Figure: Within-group mean decrease in clinical outcomes



Poster Presentation at the Australian Diabetes Society and the Australian Diabetes Educators Association Annual Scientific Meeting 2016, 24th - 26th August 2016

Integrating Obesity Management Programs across Health Districts

Sydney & SWS LHD Bariatric Surgery Program



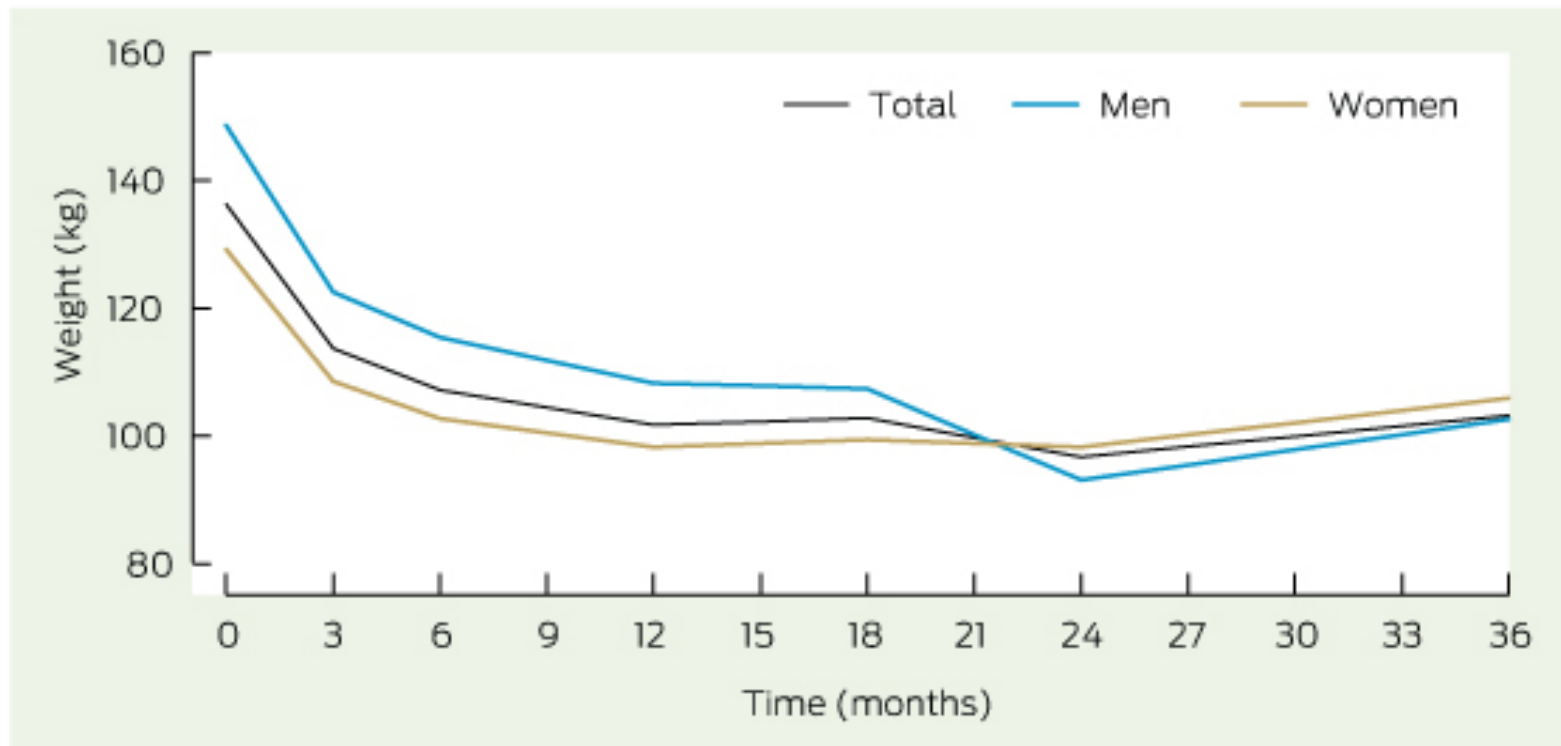
First publically funded bariatric surgery program
in NSW

Concord Hospital Surgery & Clinic



Publically Funded Bariatric Surgery

Lukas N, et al MJA 2014



Key Points

- Local integration of services needed to manage complex Stage 3-4 Obesity Induced Chronic Disorders
- Intensive lifestyle management is becoming increasingly needed to prepare patients for bariatric surgery
- Metropolitan integration of services needed until specialised units established to manage Stage 4 Obesity Induced Chronic Disorders
- Cost effectiveness of intensive integrated obesity management models c/w traditional models of care needs to be studied