Implications of the Evidence-Based Canadian Obesity Clinical Practice Guidelines to the Practicing Cardiologist

Abstract

Learning Objectives:

At the end of this presentation, participants should be able to:

1. Recognize the increasing prevalence and health impact of obesity
2. Apply the upcoming evidence-based clinical practice guidelines to the management and prevention of obesity in patients with or at risk for cardiovascular disease
3. To understand the role of fat-derived adipokines in the pathogenesis of obesity-linked insulin resistance and atherosclerosis
4. To understand the clinical implications of obesity in the management of global cardiovascular risks

Obesity, especially abdominal obesity, is a prevalent public health hazard associated with increased cardiometabolic risks – cardiovascular disease and type 2 diabetes. Abdominal obesity appears to be better correlated with such comorbidities as type 2 diabetes, dyslipidemia and hypertension, than body mass index (BMI)[1]. Adipose cell-derived cytokines and free fatty acids appear to be the cellular and molecular links between obesity, insulin resistance and type 2 diabetes [2]. A modest 5-10% of body weight loss can lead to significant improvement in blood glucose, lipid and blood pressure values, and cardiovascular risk factors [1-3]. Importantly, a 5 to 7 % weight loss through lifestyle modification can delay the onset of type 2 diabetes in people with impaired glucose tolerance [4].

Lifestyle modification remains the cornerstone therapy for obesity. The optimal rate of weight loss through healthy eating and regular physical activity, is 1 to 2 kg per month [1]. While lifestyle therapy can be effective in inducing modest weight loss over the short-term, it requires intensive ongoing counseling and support to bring about permanent healthy changes.

Pharmacological therapy is an acceptable adjunct when lifestyle modification fails to achieve the desired weight loss. Both orlistat and sibutramine are modestly effective antiobesity drugs approved for long-term therapy[5]. With the availability of more effective and safe antiobesity agents, pharmacotherapy should be considered more often as an integral part of the long-term therapy for weight loss and weight maintenance. One such agent, rimonabant, a cannabinoid receptor-1 antagonist, shows promise in improving cardiometabolic risks by targeting the overstimulated endocannabinoid system in overweight and obese people. Clinical trials with rimonabant significantly reduced abdominal obesity, lowered glucose, increased HDL cholesterol and decreased triglyceride, as well as increased adiponectin levels[6, 7].

The Canadian evidence-based clinical practice guidelines, developed by Obesity Canada, provide practical aids and standards of care to primary care physicians in the management and prevention of obesity in adults and children [8]. Among the key recommendations are: the use of waist circumference, in addition to BMI, to assess health risks in all adults and adolescents; appropriate laboratory investigations; assessment of barriers and readiness to change lifestyle behaviours; a client-focused multidisciplinary team approach to the management of obesity; including lifestyle modification, adjunctive pharmacotherapy and where appropriate, bariatric surgery [9]. The evidence-based CPGs also include population strategies toward the prevention of obesity in children and adults by addressing societal changes in the obesogenic environment we live in.

References:

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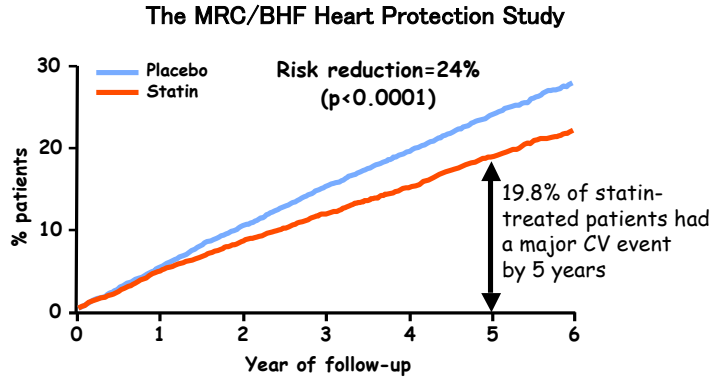
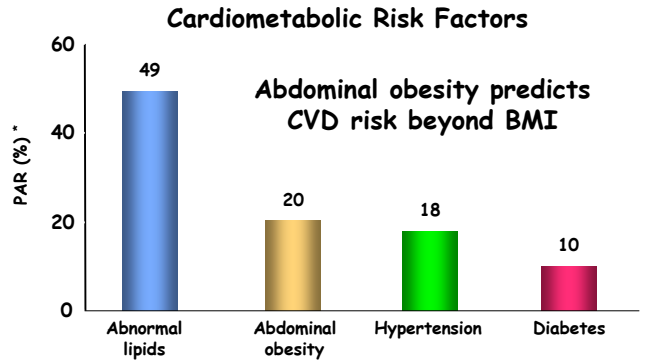
4. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med.* 2002;346(6):393-403.
5. Padwal R, Li SK, Lau DCW. Long-term pharmacotherapy for overweight and obesity: a systematic review and meta-analysis of randomized controlled trials. *Int J Obes Relat Metab Disord.* 2003;27(12):1437-1446.
6. Després J-P, Golay A, Sjöström L, et al. Effects of rimonabant on metabolic risk factors in overweight patients with dyslipidemia. *New Engl. J. Med.* 2005;353:2123-2134.
7. Scheen AJ, Finer N, Hollander P, et al. Efficacy and tolerability of rimonabant in overweight or obese patients with type 2 diabetes: a randomised controlled study. *Lancet.* 2006;368(9548):1660-1672.
8. Lau DCW, Douketis JD, Morrison K, et al. 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children [summary]. *Can Med Assoc J.* 2007;176(8 suppl):S1-S13.
9. Lau DCW. Synopsis of the 2006 Canadian clinical practice guidelines on the mnagement and prevention of obesity in adults and children. *Can Med Assoc J.* 2007;176(8):1103-1106.

Substantial Residual CV Risk in Statin-treated Patients



Heart Protection Study Collaborative Group, 2002

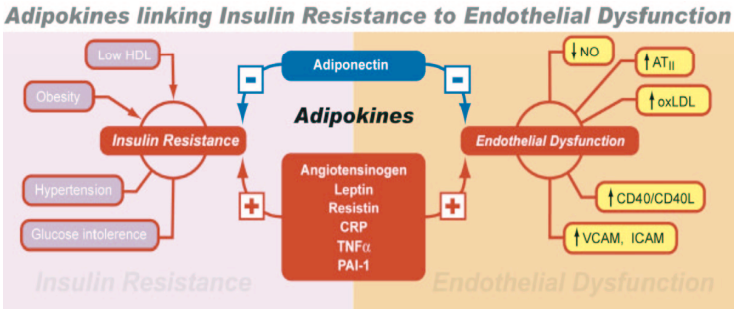
INTERHEART Study: Abdominal Obesity & Acute MI



Proportion of MI in the total population attributable to a specific risk factor
PAR: population attributable risk

From Yusuf S et al, 2004

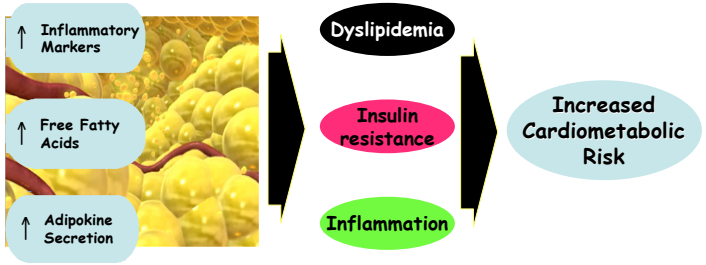
Adipokines and Cardiometabolic Risk



From Lau DCW, et al. Am J Physiol 288:2031-2041, 2005

Abdominal Adiposity and Increased Cardiometabolic Risk

Visceral fat = High Risk



Adapted from Lau DCW, Can J Cardiol 22(suppl B):85-90B, 2006

CPG Recommendations on Classification of Obesity

- We recommend measuring BMI in all adults, and in children and adolescents (aged 2 years and older) [Grade A, Level 3]
- We recommend waist circumference measurement in all adults to assess obesity-related health risks [Grade A, Level 3]

Lau et al, Can Med Assoc J 2007;176 (8 suppl):S1-S13

Body Weight Classification by Body Mass Index (BMI)

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

Classification	BMI (kg/m^2)	Risk of co-morbidities	
		WC <102/88	>102/88 cm *
Healthy wt	18.5-24.9	Normal	
Overweight	25.0-29.9	Increased	High
Obese Class I	30.0-34.9	High	Very high
Class II	35.0-39.9	Very High	
Class III	≥ 40.0	Extremely High	

* WC (waist circumference) cut-offs: >102 cm men and > 88 cm in women

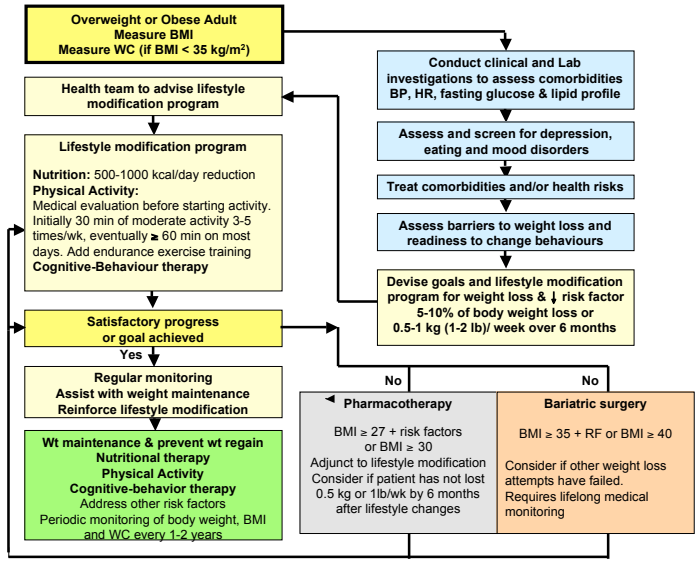
Canadian guidelines for body weight classification in adults. Ottawa: Health Canada; 2003

Waist Circumference Cut-points

Risk Factors	Cut Points	
Central obesity	Men	Women
– European, Mid-east	> 94 cm (37 in)	> 80 cm (31.5 in)
– S. Asians, Chinese	> 90 cm (35 in)	> 80 cm (31.5 in)
– Japanese	> 85 cm (33 in)	> 90 cm (35 in)

For East Mediterranean, Middle East (Arab) and sub-Saharan African, use European cut-points
For South and Central American, use South Asian cut-points

Adapted from Lau et al, Can Med Assoc J 2007;176 (8 suppl):S1-S13



Key Messages

- Obesity is a societal and public health issue!
- Obesity predisposes to the development of related metabolic abnormalities leading to increased cardiometabolic risks
- Devise realistic goals, and a modest 5-10% weight loss through lifestyle intervention and pharmacotherapy can prevent diabetes and may lower CVD
- Obesity is a chronic disease and requires a long-term solution, which includes lifestyle intervention and when indicated pharmacotherapy and bariatric surgery
- Prevention of obesity requires changes in built environment and workplace that favour healthy living and activity
- The CPGs are a call to action to bring together all stakeholders to address the necessary action to reduce the prevalence of obesity and obesity-related illnesses