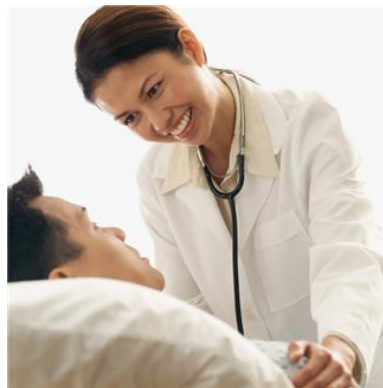
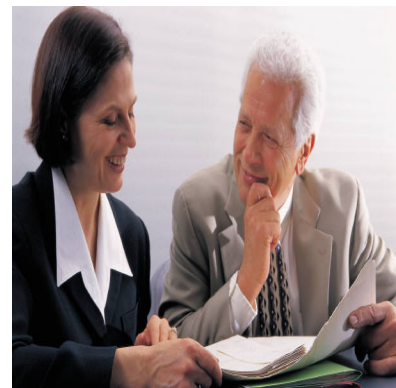


**Final Report: *Treatment Working Group***  
**Recommendations for Obesity Reduction in BC**

FINAL

June 7, 2010



# Obesity Reduction Strategy for BC: Treatment Working Group Report

<b><i>Executive Summary</i></b> .....	<b>3</b>
<b><i>1.0 Introduction</i></b> .....	<b>7</b>
<b><i>2.0 Process</i></b> .....	<b>8</b>
<b><i>3.0 Review of the literature</i></b> .....	<b>8</b>
<b><i>4.0 Working Group Discussion and Recommendations</i></b> .....	<b>10</b>
<b><i>4.1 Overview</i></b> .....	<b>10</b>
<b><i>4.2 Uncomplicated overweight/obesity</i></b> .....	<b>11</b>
4.2.1 Adults.....	11
4.2.2 Children and youth .....	13
<b><i>4.3 Overweight/obesity with metabolic complications</i></b> .....	<b>14</b>
4.3.1 Adults.....	14
4.3.2 Children and youth .....	15
<b><i>4.4 Morbid obesity potentially requiring bariatric surgery</i></b> .....	<b>16</b>
4.4.1 Adults.....	16
4.4.2 Children and youth .....	18
<b><i>5.0 References</i></b> .....	<b>20</b>
<b><i>Appendix 1: ORS Treatment Working Group Membership</i></b> .....	<b>25</b>
<b><i>Appendix 2: Adult Bariatric Surgery Performed in Other Provinces</i></b> .....	<b>26</b>
<b><i>Appendix 3: Youth Bariatric Surgery Performed in Other Provinces</i></b> .....	<b>28</b>

# Obesity Reduction Strategy for BC: Treatment Working Group Report

## Executive Summary

In BC, 600,000 adults (20% of the population) are classified as clinically obese. If overweight adults were included, this number would triple to more than 1.8 million people (60% of the population). In addition, 200,000 children/youth (2 – 17 years old) are overweight or obese. In BC, as is true in other developed countries, the obesity epidemic continues unabated resulting in an ever increasing prevalence of diabetes, cardiovascular diseases, some cancers, asthma, gallbladder disease and osteoarthritis, as well as premature death.

In June 2009, the PHSA Centres for Population and Public Health (CPPH) established a multi-sectoral Obesity Reduction Task Force to lead the development of an Obesity Reduction Strategy (ORS) for BC. Four working groups were struck to make recommendations in the areas of Food, Physical Activity, Treatment and Research & Surveillance. Concurrently underway is the implementation of the Sustainable Childhood Obesity Prevention through Community Engagement (SCOPE) Project, a community-based, intersectoral action project to prevent childhood obesity. This report describes the deliberations and recommendations of the Treatment Working Group.

Members of the Treatment Working Group were in agreement that *prevention* was potentially much more effective than *treatment* in reducing overweight/obesity at a population level. The evidence supporting successful and sustained *treatment* models for overweight/obesity is weak, although a few promising exceptions are emerging. Because the Food and Physical Activity Working Groups were making recommendations to prevent overweight/obesity at a population level, this group focused its efforts on treatment and clinical prevention of overweight/obesity at an individual level.

The most convincing evidence for successful and sustained treatment of obesity is bariatric surgery, which is usually reserved for people who are morbidly obese (Body Mass Index [BMI] 40 kg/m<sup>2</sup> or higher). The evidence of successful intervention for people who are overweight or obese (but not morbidly obese) is less convincing. For this group, the most promising area is early recognition and management in primary care settings. Physician recognition and counselling, intensive team-based counselling (nurse, dietitian, exercise specialist and clinical psychologist) and/or pharmacotherapy and/or meal replacement programs are associated with a modest but statistically significant decrease in weight, however, long-term sustainability of weight loss remains an issue. Commercial weight loss programs have shown some success, although scientifically credible outcome evaluation has been minimal. Sustainability of the weight loss is also an issue with these programs. Research on high intensity, family focused weight management programs for youth who are overweight/obese is starting to show some promising results.

In BC, there are no publicly funded, comprehensive treatment programs for adults who are overweight or obese. Bariatric surgery is available for a small number of morbidly obese adults but access to publicly funded bariatric surgery has declined in recent years. There is a multitude of commercial and self-help programs available but a review of the literature indicates minimal effectiveness at a population level.

There are two publicly funded centres for the treatment of obesity in youth in BC, one in Vancouver and one in Prince George (Centre for Healthy Weights - Shapedown BC Program). The future of the Prince George program is presently on hold and at the time of writing this report, funding renewal had yet to be confirmed. These multidisciplinary programs are ten weeks in duration, involve the family and have broad inclusion criteria. Early data suggests promising outcomes. There is no bariatric surgery program for youth in BC.

This report makes recommendations to address system gaps in areas where evidence is available or shows promise.

**Recommendations:**

1. Develop a continuum of obesity treatment services that address the needs of uncomplicated overweight to morbidly obese people, which ranges from clinical prevention to bariatric surgery.

*Uncomplicated Overweight/Obesity*

2. Improve the early recognition and management of uncomplicated overweight/obesity.
  - 2.1. Develop a clinical obesity prevention and healthy weight management module for the General Practices Services Committee's Practice Support Program to train family physicians in practice innovations that will enable them to better treat these patients.
  - 2.2. Explore alternative payment methods to enhance the flexibility of family physicians in supporting weight reduction in patients that are overweight/obese.
  - 2.3. Work with integrated health networks, primary health care teams and divisions of family practice to develop team-based healthy weight management programs/services in primary care settings.
  - 2.4. Update the 2005 Guidelines and Protocols Advisory Committee recommendations on Overweight, Obesity and Physical Inactivity to reflect current obesity reduction information and treatments.
  - 2.5. Provide education for health care providers about obesity to decrease prejudice and lack of understanding sometimes experienced by obese patients.
  - 2.6. Expand the role of community and non-profit organizations in the personalized screening of overweight/obese people and in the distribution of information related to healthy weights.

3. Develop a clinic for women who are obese and are planning a pregnancy or are pregnant, working with existing antenatal clinics or through referrals to a specialized clinic in a secondary or tertiary care hospital.
4. Work with employers to make workplace wellness a priority and expand the number of workplace-based programs that support health checks, healthy lifestyles, healthy weights and links to community-based programs that focus on overweight/obesity.
5. Improve the early recognition and management of uncomplicated overweight/obesity in children/youth using a family-centred approach.
  - 5.1. Support family physicians in obtaining a yearly height and weight and to systematically plot the BMI on appropriate growth curves in all children age two years and older.
  - 5.2. Work with family physician training programs to ensure they emphasize the early recognition of pathological BMI growth curves and the importance of addressing lifestyle issues with the family and child during regular visits.

*Overweight/Obese with Metabolic Complications*

6. Expand the Centre for Healthy Weights - Shapedown BC Program to additional centres in selected BC communities, incorporating a component that targets youth who are obese but require less psychosocial intervention (similar to the UK MEND Program).

*Morbidly Obese Potentially Requiring Bariatric Surgery*

7. Develop a publicly funded adult bariatric surgery program in BC, which includes appropriate multidisciplinary pre and post bariatric surgery care and ensures sufficient volumes of procedures to maintain surgeon and staff skills and acceptable standards of care.
  - 7.1. Develop and disseminate provincial-level criteria for bariatric surgery.
  - 7.2. Establish minimum (four months) and maximum (six months) wait times for bariatric surgery in BC.
8. Conduct a cost-effectiveness analysis of skin reduction surgery post bariatric surgery.
9. Explore the feasibility of establishing comprehensive, regional Centres for Weight Management that offer intensive, interdisciplinary, family-centred medical and behavioural management and include a bariatric surgery option for those that meet the eligibility criteria.
10. Pilot a small publicly funded pediatric bariatric surgery program for youth in BC.
  - 10.1. Consider gastric banding as the treatment of choice as it is reversible.
  - 10.2. Centralize the surgical component at BC Children's Hospital in Vancouver to maximize experience. Create capacity for assessment and interdisciplinary post-surgical follow-up to be provided at a small number of specialized centres in BC. Consider program

collaboration with other Canadian centres as part of a pan-Canadian initiative (e.g., Ontario program at Sick Kids).

10.3. Continue post-surgical follow-up until the end of puberty or a minimum of seven years, with appropriate transition to adult care.

10.4. Conduct an outcome evaluation on the pilot program.

# Obesity Reduction Strategy for BC: Treatment Working Group Report

## 1.0 Introduction

The World Health Organization (WHO) has estimated that more than 1 billion adults worldwide are overweight or obese and, of these, at least 300 million of them are obese. In BC, as elsewhere in the world, the obesity epidemic is continuing unabated resulting in an ever increasing prevalence of a range of diseases such as type 2 diabetes, cardiovascular diseases (hypertension, coronary artery disease, congestive heart failure, pulmonary embolism and stroke), various cancers (breast, colorectal, endometrial, esophageal, kidney, ovarian, pancreatic and prostate), asthma, gallbladder disease and osteoarthritis, as well as, premature death. This trend is true even after adjusting for the aging population.

There are several methods used to measure obesity but the most common is the body mass index (BMI). The BMI is defined as a person's body weight in kilograms divided by their height in metres squared ( $\text{kg}/\text{m}^2$ ). Categories for BMI have been defined by the World Health Organization (WHO):

BMI  $<18.5$  ( $\text{kg}/\text{m}^2$ ) = under weight

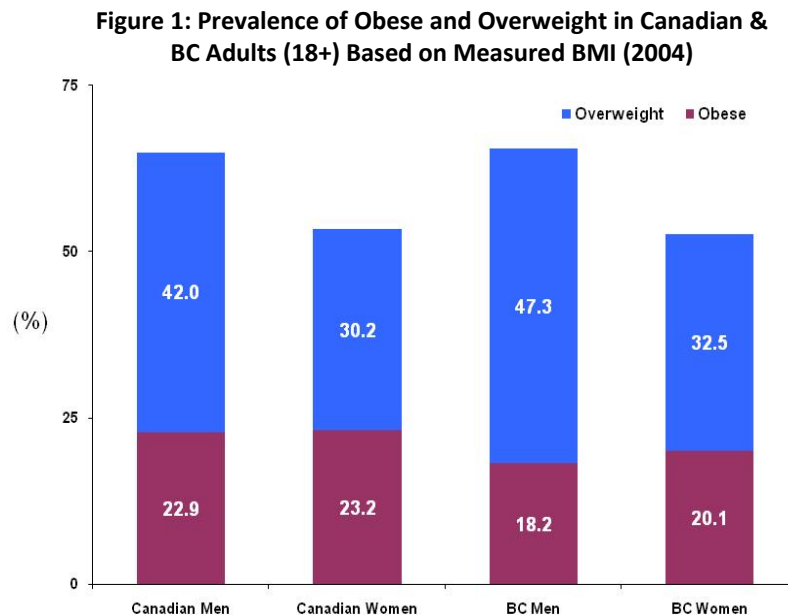
BMI 18.5 – 24.9 ( $\text{kg}/\text{m}^2$ ) = normal weight

BMI 25.0 – 29.9 ( $\text{kg}/\text{m}^2$ ) = overweight

BMI 30+ ( $\text{kg}/\text{m}^2$ ) = obese

Additional BMI categories such as morbidly obese (BMI  $> 40$   $\text{kg}/\text{m}^2$ ) have also been defined.

In BC, 600,000 adults (20% of the population) are classified as clinically obese. If overweight adults were included, this number would triple to more than 1.8 million people (60% of the population). See Figure 1.



Canadian children are also affected by the obesity epidemic. In 1978/79, 3% of children/youth aged 2 to 17 years were obese and 12% were overweight. By 2004, 8% in this age group was obese and 18% overweight. In BC, this translates to 200,000 children/youth between ages 2 and 17 (Shields, M, 2004). Of concern is that the risk of persistence increases with increasing age of the child and severity of obesity.

In June 2009, the PHSA Centres for Population and Public Health (CPPH) established a multi-sectoral Obesity Reduction Task Force to lead the development of an Obesity Reduction Strategy (ORS) for BC. Four working groups were struck: Food, Physical Activity, Treatment and Research & Surveillance. Also underway is the implementation of the Sustainable Childhood Obesity Prevention through Community Engagement (SCOPE) Project, a community-based, intersectoral action project to prevent childhood obesity.

This report focuses on the deliberations and recommendations of the Treatment Working Group.

## **2.0 Process**

The ORS Treatment Working Group met four times between February 2 and May 17, 2010. See Appendix 1 for a listing of members.

The first meeting of the working group focused on bariatric surgery and the second on therapeutic approaches for the treatment of overweight and obese people, with and without complications. The third meeting discussed the integration of the various recommendations identified at the first two meetings and the fourth meeting reviewed the draft report and the recommendations.

## **3.0 Review of the literature**

Several guidelines, systematic reviews and evidence-based articles were reviewed during the development of this report and recommendations. See section 5.0 (References) for a listing (the list is sorted into the same categories as the summary below).

A high-level summary is as follows:

Adults:

- The most convincing evidence for successful and sustained treatment of obesity is bariatric surgery. This is generally reserved for people who are morbidly obese (BMI greater than 40).
- Low- to moderate-intensity physician counselling for obesity, by itself, for clinically meaningful weight loss is generally not supported. Physician recognition and counselling, intensive team-based counselling (nurse, dietitian, exercise specialist and clinical psychologist) and/or pharmacotherapy and/or meal replacement programs is associated with a modest but statistically significant decrease in weight; however, long-term sustainability of weight loss remains an issue.
- The evidence supporting the use of commercial weight loss programs and self-help programs is generally weak, although commercial weight loss programs have been shown to be more



successful than self-help programs. Scientifically credible outcome evaluation in this area has been minimal. Sustainability of the weight loss is also an issue (and is not dependent on the type of weight loss program).

- There is some evidence that workplace wellness/risk assessment and educational programs may help to prevent or manage obesity. One study identified an overall return on investment of \$1.17 to \$1.00.

#### Pregnant women and breastfeeding:

- Women who are overweight or obese should be encouraged to lose weight prior to pregnancy. Obese women are at higher risk for medical complications and higher rates of cesarean sections. Regular exercise during pregnancy may help to reduce some of these risks.
- Excessive weight gain during pregnancy increases the risk of obesity for the baby from childhood through to adulthood. The same is true for babies of mothers with gestational diabetes.
- Excessive weight gain during pregnancy increases the mother's risk of obesity later in life.
- Breastfed babies are less likely to be overweight as children. The longer the duration of breastfeeding, the lesser the chance of being overweight.

#### Children:

- A high percentage of overweight and obese children remain undiagnosed. Identification is important, as it is the first step in addressing the epidemic. The literature recommends measuring the height and length in all babies and BMI in all children ages two years and older.
- Obese children aged six years and older may benefit from intensive counselling and behavioural interventions. Such moderate to high intensity interventions were feasible only in specialty centres.
- Research on high intensity, family focused weight management programs for overweight/obese youth is starting to show some promising results. Examples of such programs are the UK MEND Program, the Healthy Weight Clinic at Boston MA (which was successfully replicated at seven community health centres) and the Centre for Healthy Weights - Shapedown BC Program.

#### Research:

- Research on the success of various treatment models to reduce obesity is limited, although growing. Further research is needed on treatment models and the management of obesity in all populations.

## 4.0 Working Group Discussion and Recommendations

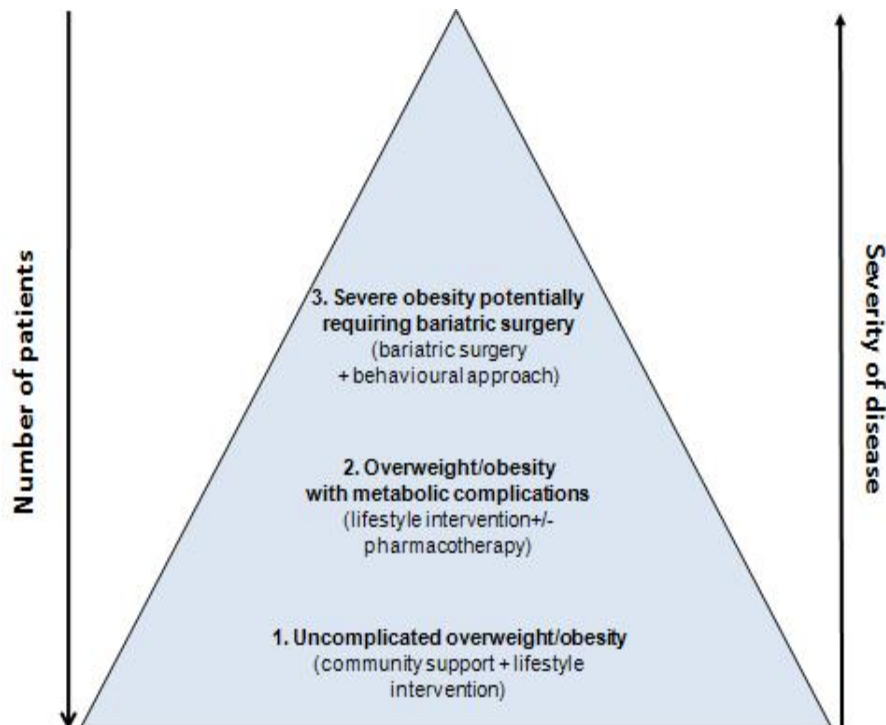
### 4.1 Overview

Members of the Treatment Working Group were in agreement that efforts to reduce obesity at a population level should be directed mainly towards preventive measures. Furthermore, in the field of uncomplicated obesity, the group felt that the difference between prevention and treatment is often very small and that preventive and therapeutic recommendations are usually very similar. The group was aware that other working groups were discussing nutritional and physical activity aspects, and focussed its efforts on treatment and clinical prevention of overweight/obesity at an individual level.

The working group focused on evidence that was available in the literature and used the expertise of its members to make recommendations that would be appropriate for British Columbia. **As a general comment, there was broad agreement that any publicly funded initiative should also be funded for outcome evaluation, given the relative absence of evidence for the treatment of obesity.**

In order to address the issue of obesity treatment, the working group divided the population of obese adult and children into three categories. See Figure 2.

Figure 2: Categories of Overweight/Obesity used for this Report



**Figure 2 (cont'd): Categories of Overweight/Obesity used for this Report:**

1. *Uncomplicated overweight/obesity*: This group comprises the vast majority of people that are overweight or obese in BC. These people may benefit from more limited treatments such as lifestyle intervention.
2. *Overweight/obese with metabolic complications* (e.g., type 2 diabetes or dyslipidemia): In this smaller group of people, weight excess is usually more severe and pharmacotherapy, either for weight loss or for the treatment of complications, may need to be considered in addition to an intensive lifestyle modification approach.
3. *Morbidly obese potentially requiring bariatric surgery*: In this group, obesity and complications are severe and the existing non-surgical interventions are unlikely to be appropriate or have been shown to be ineffective. Patients in this group may benefit from bariatric surgery.

It was acknowledged that there is significant overlap between these groups and that this somewhat arbitrary division was made only to facilitate the discussion.

**Recommendation:**

1. Develop a continuum of obesity treatment services that address the needs of uncomplicated overweight to morbidly obese people, which ranges from clinical prevention to bariatric surgery.

## **4.2 Uncomplicated overweight/obesity**

### **4.2.1 Adults**

**Present situation**

- Comprehensive national guidelines on the prevention and management of obesity are available in Canada. These guidelines, published in 2007 (CMAJ, 2007) summarize the evidence-based recommendations for the prevention and management of obesity in adults. The recommendations are consistent with those in the BC Guideline (GPAC, 2005) and guidelines from other jurisdictions (see list of guidelines in reference list).
- A multidisciplinary intervention that addresses nutrition (balanced diet that reflects the recommendations of Eating Well with Canada's Food Guide, physical activity and behavioural issues) is considered the gold-standard (CMAJ, 2007).
- In BC, similar to many other province and countries, commercial programs as well as many self-help popular books on obesity treatment are available. In most cases, scientifically credible outcome evaluation has been minimal.

- Currently, most of the intervention for uncomplicated overweight/obesity is provided at the primary care level with family physicians and other health care professionals. It is not, however, systematically organized.

## **Discussion**

- There was general agreement among the group members, despite the diversity of their professional backgrounds, that existing opportunities for treatment of uncomplicated obesity are limited in BC. There was consensus that primary care providers (family physicians) could play a more important role in the recognition and initiation of obesity management. It was also acknowledged that there is a shortage of general practitioners, that they are already very busy and that obesity management involved long discussions with patients. Existing family physician services could be enhanced by developing primary health care teams trained and skilled at managing healthy weights.
- Similarly, community organizations (such as the Victorian Order of Nurses, a member of the working group) could be an important pillar in the recognition of and distribution of information regarding obesity in their clients.
- Information for the prevention and treatment of uncomplicated obesity was felt to be widely available from various agencies (i.e. BCMA, GPAC) but was not always used optimally.
- Interestingly, although the group members tried to focus repeatedly on the topic of treatment, they also agreed that the evidence supporting a large-scale implementation of successful therapeutic, non-surgical interventions was limited at this time. In contrast the discussion regularly focused on bariatric surgery (where evidence of effectiveness is available) for a limited number of patients, or prevention (with the goal of preventing the development of obesity). The former topic is discussed later in this paper and the latter was discussed in depth by other working groups.
- Many working group participants therefore found it difficult to recommend a major investment in non-surgical approaches for the treatment of existing uncomplicated obesity at the present time.
- The group briefly discussed the impact of obesity on pregnancy. There is in Canada a comprehensive guideline for the management of obesity complications during pregnancy (diabetes, eclampsia) (SOGC, 2010). The guideline emphasizes the importance of a normal pre-pregnancy weight but does not provide specific guidelines to achieve this goal.

## **Recommendations**

2. Improve the early recognition and management of uncomplicated overweight/obesity.
  - 2.1. Develop a clinical obesity prevention and healthy weight management module for the General Practices Services Committee's Practice Support Program to train family physicians in practice innovations that will enable them to better treat these patients.
  - 2.2. Explore alternative payment methods to enhance the flexibility of family physicians in supporting weight reduction in patients that are overweight/obese.

- 2.3. Work with integrated health networks, primary health care teams and divisions of family practice to develop team-based healthy weight management programs/services in primary care settings.
  - 2.4. Update the 2005 Guidelines and Protocols Advisory Committee recommendations on Overweight, Obesity and Physical Inactivity to reflect current obesity reduction information and treatments.
  - 2.5. Provide education for health care providers about obesity to decrease prejudice and lack of understanding sometimes experienced by obese patients.
  - 2.6. Expand the role of community and non-profit organizations in the personalized screening of overweight/obese people and in the distribution of information related to healthy weights.
3. Develop a clinic for women who are obese and are planning a pregnancy or are pregnant, working with existing antenatal clinics or through referrals to a specialized clinic in a secondary or tertiary care hospital.
  4. Work with employers to make workplace wellness a priority and expand the number of workplace-based programs that support health checks, healthy lifestyles, healthy weights and links to community-based programs that focus on overweight/obesity..

#### **4.2.2 Children and youth**

##### **Present situation**

- Similar to adults, comprehensive national guidelines for the prevention and management of obesity are available in Canada. These guidelines, published in 2007 (CMAJ, 2007) summarize the evidence-based recommendations for the prevention and management of obesity in youth.
- Similar to adults, a multidisciplinary intervention that addresses nutrition (balanced diet that reflects the recommendations of Eating Well with Canada's Food Guide, physical activity and behavioural issues is considered the gold-standard (CMAJ, 2007).
- Similar to adults, most of the intervention for uncomplicated overweight/obesity is provided at the primary care level with family physicians and other health care professionals. It is not, however, systematically organized. The Centre for Healthy Weights – Shapedown BC is available as a resource for families upon referral.

##### **Discussion**

- Present evidence suggests that although intervention programs for the treatment of youth obesity have improved, the outcomes remain modest (Luttikhuis, 2009).
- Existing intervention programs for obesity treatment in BC only cater to a minority of overweight and obese youth.

- Similar to adults, it was felt that prevention was extremely important, starting at a very young age. Overall nutritional and activity preventive measures were discussed in the other working groups.
- From a health provider point of view, data have shown that overweight and obesity was only formally recognized in a minority of overweight/obese children despite the fact that weight and height (and therefore BMI) were obtained (Benson, 2009). The group discussed the importance of improving early recognition of childhood obesity in order to provide early assessment of the families and appropriate lifestyle information.
- Information about obesity is available to health professionals from various agencies in BC (BCMA, other).

## **Recommendations**

5. Improve the early recognition and management of uncomplicated overweight/obesity in children/youth using a family-centred approach.
  - 5.1. Support family physicians in obtaining a yearly height and weight and to systematically plot the BMI on appropriate growth curves in all children age two years and older.
  - 5.2. Work with family physician training programs to ensure they emphasize the early recognition of pathological BMI growth curves and the importance of addressing lifestyle issues with the family and child during regular visits.

Other recommendations related to the management of uncomplicated overweight/obesity are included in the adult section (recommendations 1 – 4).

## **4.3 Overweight/obesity with metabolic complications**

### **4.3.1 Adults**

#### **Present situation**

- Treatment for the complications of obesity is much more standardized and effective than the treatment of the underlying condition, obesity, itself.
- Specialized clinics for the treatment of adult complications (type 2 diabetes clinics, lipid clinics...) are available in various clinical settings. Clinical follow up in these clinics usually includes recommendations for weight management.

#### **Discussion**

- The complications of obesity such as type 2 diabetes or hyperlipidemia can be severe and need to be addressed. This is presently performed by family physicians as well as in specialty clinics.
- The importance of prevention was again discussed, and the poor outcomes of the existing programs emphasized.

- There was a short discussion on the use of pharmacotherapy in adults. Most centrally active drugs are being discontinued. Orlistat, a lipase inhibitor, is available. It is expected that new drugs will be coming soon on the market. This was not felt to lead to specific provincial recommendations at the present time.

### **Recommendations**

- No recommendations other than those already listed for uncomplicated overweight/obese.

### **4.3.2 Children and youth**

#### **Present situation**

- Similar to adults, treatment for the complications of obesity is much more standardized and effective than the treatment of the underlying condition (obesity) itself.
- Children and youth with metabolic complications of obesity are usually referred to pediatric endocrinologists for management.
- A recent environmental scan (<http://www.con-initiatives.com>) identified 18 existing youth intervention programs in Canada. They implement different interventions that, however, globally use a similarly comprehensive approach. No outcome evaluation has so far been reported.
- There are two publicly funded centres for the treatment of obesity in youth in BC, one in Vancouver and one in Prince George (Centre for Healthy Weights - Shapedown BC Program). The future of the Prince George Program is presently on hold and at the time of writing this report, funding renewal had yet to be confirmed. These multidisciplinary programs are ten weeks in duration, involve the family and have relatively broad inclusion criteria. They accept in total up to 200/year. Post intervention follow-up/support is offered on an ongoing basis until the child is 17 years old. A number of strategies are being explored in order to sustain or improve outcomes.
- The program at BC Children's Hospital in Vancouver has recently performed a preliminary evaluation of the three-month outcome (unpublished data). It was found that the intervention was effective in preventing a further increase in weight, an important outcome considering the generally rapid weight increase observed in obese adolescents during puberty. There was a small but significant improvement in reported physical activity and psychosocial measures.

#### **Discussion**

- Working group members were aware from their own experiences that, similar to adults, the outcome of non-surgical management of overweight and obese youth remains often modest and short lived, despite recent progress in the field.
- The Centre for Healthy Weights - Shapedown BC Program, while still early days, shows promise for the non-surgical management of youth who are obese. The UK MEND program (similar but less intensive) has had similar positive results (Sacher, 2010).
- The group acknowledged the fact that only a small number of families can be managed in dedicated centres such as the Centre for Healthy Weights - Shapedown BC Program. Therefore,

there is a need to have more stringent criteria so that the most severely affected children and adolescents (complicated obesity) are seen in priority.

- There was a short discussion regarding the importance of pharmacotherapy in youth. Presently only one drug is approved in adolescents in the USA (orlistat, a lipase inhibitor) and none approved for adolescents in Canada). Orlistat provides additional weight loss in adolescents (age greater than 10 years) who are also receiving a comprehensive, multidisciplinary intervention. It was felt that no specific recommendations needed to be made at the provincial level regarding the use of pharmacotherapy.

## **Recommendations**

6. Expand the Centre for Healthy Weights - Shapedown BC Program to additional centres in selected BC communities, incorporating a component that targets youth who are obese but require less psychosocial intervention (similar to the UK MEND Program).

## **4.4 Morbid obesity potentially requiring bariatric surgery**

### **4.4.1 Adults**

#### **Present situation**

- Bariatric surgery offers the best hope for substantial and sustainable weight loss in the extremely obese, with an acceptable safety profile in well-selected patients. As such, it is the most effective tool available for the treatment of obesity in this group.
- Bariatric surgery is presently performed in BC and is available to a small number of patients. In Victoria, gastric bypass is performed in about 50 patients each year and is publicly funded (Dr B Amson). This number represents a decrease compared to previous years (150-200 patients/year until 2008). The patients are screened according to approved criteria and the waiting list is about two years. Public funding is not available for laparoscopic adjustable gastric banding (LAGB), which is the least invasive of the bariatric surgeries and usually does not require an overnight hospital stay.
- At the Richmond Hospital, both MSP covered and private bariatric surgery is offered in the form of laparoscopic gastric sleeve resection and LAGB. A bariatric nutrition program supports the surgical program.
- In the rest of the province, it is estimated that a few hundred privately paid surgeries take place every year. This includes procedures in the False Creek Surgical Centre in Vancouver, Delta, Surrey, and Kelowna. Most of these surgeries are LAGB.
- There is presently no ongoing bariatric surgery program at St. Paul's Hospital (suspended in 2002) or at Vancouver General Hospital. In addition, an unknown number of persons are having bariatric surgery out of province that is paid for privately or is partially covered according to existing reciprocal agreements between provinces.
- Adult guidelines are available for the selection of patients for bariatric surgery at the Society of American Gastrointestinal and Endoscopic Surgery (SAGES).



## Discussion

- Bariatric surgery is cost-effective in adults (Pico J et al, 2009).
- There is no centre of excellence in bariatric surgery in BC and no agreed upon provincial criteria for publicly funded surgeries. Some of the other provinces have, or are in the process of developing centres of excellence which provide the full spectrum of weight management services (e.g., Alberta and Ontario).
- There is only a small number of BC surgeons trained in bariatric surgery and interested in performing these interventions.
- In existing centres performing bariatric surgery, pre and post surgery coordinated, multidisciplinary care is not systematically available. This was felt to be crucial to ensure that a patient's co-morbidities and mental health issues are fully addressed and that patients are adequately prepared for the lifelong weight management and behavioral modification required for a successful outcome.
- The number of morbidly obese people in BC is very large (in the 80,000 – 100,000 range), making it unrealistic to recommend that as a criteria for bariatric surgery. The Working Group proposed that a small sub-group be eligible (maybe 1,000 per year). Instead of defining an appropriate number of surgeries/year, the group discussed the need to agree not only on a maximum wait time for bariatric surgery (suggestion of six months) but also a minimum wait time (suggestion of four months) to ensure appropriate evaluation of the patient.
- Multidisciplinary care should include (but not be limited to) a psychological, nutritional, physical activity component pre and post-operatively in addition to surgical care.
- See Appendix 2 for a summary of adult bariatric surgery performed in other provinces.
- The group discussed whether it would be better to have dedicated centres that focus on the provision of bariatric surgery and pre and post surgical support requirements or more global centres that offer intensive, interdisciplinary, family-centred medical and behavioural management to overweight/obese people with metabolic complications (with a bariatric surgery option for those that meet the eligibility criteria). While the group agreed that the latter is a long-term vision, resource limitations necessitate a phased approach with the immediate priority being the establishment of dedicated centres that focus on the provision and support for bariatric surgery. These centres will provide the infrastructure to support people in the future that are overweight/obese but are not surgical candidates.

## Recommendations

7. Develop a publicly funded adult bariatric surgery program in BC which includes appropriate multidisciplinary pre and post bariatric surgery care and ensures sufficient volumes of procedures to maintain surgeon and staff skills and acceptable standards of care.
  - 7.1. Develop and disseminate provincial-level criteria for bariatric surgery.
  - 7.2. Establish minimum and maximum wait times for bariatric surgery in BC.
8. Conduct a cost-effectiveness analysis of skin reduction surgery post bariatric surgery.

9. Explore the feasibility of establishing comprehensive, regional Centres for Weight Management that offer intensive, interdisciplinary, family-centred medical and behavioural management and include a bariatric surgery option for those that meet the eligibility criteria.

#### **4.4.2 Children and youth**

##### **Present situation**

- Bariatric surgery is presently not performed in obese youth in British Columbia and the working group was not aware of any information on the number of obese youth getting surgery outside of the province, if any.
- Ontario recently approved a provincial pilot program that targets youth age 13-17 years with complex morbid obesity, defined as having a BMI  $\geq$  95th percentile for their age and gender, as well as at least one of: an obesity-related co-morbidity requiring specialty care; other co-existing significant chronic illness; or a BMI  $\geq$  99th percentile for their age and gender. Initially, this three-year, pilot program will assess 50 complex patients per year in a multidisciplinary setting, representing a small subset of the estimated 3800 children age 2-18 years who are thought to present with complex morbid obesity. It is expected that about ten patients will be eligible for bariatric surgery every year. Gastric banding, a reversible procedure, has been chosen.
- In the USA, there is increasing evidence that bariatric surgery (usually performed through a non-reversible procedure, Roux en Y), promotes massive and prolonged weight loss in youth. Long-term outcomes are being investigated in terms of complications of the surgery, growth and development and quality of life.
- Official guidelines for eligibility and assessment are available for youth (Pratt, 2009).
- See Appendix 3 for a summary of youth bariatric surgery performed in other provinces.

##### **Discussion**

- There was a consensus that bariatric surgery is effective and should be made available in BC, despite being relevant to a small proportion of the obese population only.
- Similar to adults, it was felt that a bariatric surgery clinic could be either stand-alone (youth would be referred directly to the clinic for assessment of the surgical indication) or part of a multidisciplinary clinic that would assess a large number of obese youth and consider various options, including bariatric surgery.
- There was concern that the first option would require a larger investment (as it implies that specialized intervention programs would be in place) while the second option would automatically stigmatize the patients as “difficult cases.”
- The role of general practitioners and community paediatricians was emphasized as was the need to be informed of the criteria for referral to the bariatric surgery clinic.
- There was concern that the procedure could be recommended without proper assessment of the family situation. It was suggested that a thorough assessment should include the family as a whole and should ensure that allied health professionals are included in the assessment as well as the follow up.

- See section 4.4.1 for a summary of the discussion regarding dedicated centres that focus on the provision of bariatric surgery and pre and post surgical support requirements versus more global centres that offer intensive, interdisciplinary, family-centred medical and behavioural management to overweight/obese people with metabolic complications.

## **Recommendations**

10. Pilot a small publicly funded pediatric bariatric surgery program for youth in BC.

10.1. Consider gastric banding as the treatment of choice as it is reversible.

10.2. Centralize the surgical component at BC Children's Hospital in Vancouver to maximize experience. Create capacity for assessment and interdisciplinary post-surgical follow-up to be provided at a small number of specialized centres in BC. Consider program collaboration with other Canadian centres as part of a pan-Canadian initiative (e.g., Ontario program at Sick Kids).

10.3. Continue post-surgical follow-up until the end of puberty or a minimum of seven years, with appropriate transition to adult care.

10.4. Conduct an outcome evaluation on the pilot program.

See recommendation 9 under section 4.4.1 (applies to adults and children/youth).

## 5.0 References

### Guidelines/Evidence Papers

#### Canada

1. Davies, G. et al. (2010). *Obesity in pregnancy*. Clinical Practice Guideline. *J Obstet Gynaecol Can* 32(2): 165–173
2. Guidelines and Protocols Advisory Committee. (2005). *Overweight, obesity and physical inactivity*. <http://www.bcguidelines.ca/gpac/pdf/obesity.pdf>
3. Lau, D. (2007). *Management and prevention of obesity in adults and children: role of the health care team in the evaluation and management of obesity*. Canadian Clinical Practice Guideline. *CMAJ*. 176 (8 Suppl), S1-13.

#### United Kingdom (UK)

4. Centre for Maternal and Child Enquiries and The Royal College of Obstetricians and Gynaecologists. (2010). *Management of women with obesity in pregnancy*. UK. <http://www.rcog.org.uk/files/rcog-corp/CMACERCOGJointGuidelineManagementWomenObesityPregnancya.pdf>
5. National Institute for Health and Excellence. (2006). *Obesity*. [http://www.oxha.org/knowledge/publications/uk\\_nice\\_guidelineonobesity\\_dec06.pdf](http://www.oxha.org/knowledge/publications/uk_nice_guidelineonobesity_dec06.pdf)

#### United States (US)

6. Mechanick, J et al. (2008). *Metabolic & bariatric surgery medical guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient*, Jointly published by the American Association Of Clinical Endocrinologists, the Obesity Society and the American Society For Metabolic & Bariatric Surgery. <http://www.ace.com/pub/pdf/guidelines/Bariatric.pdf>
7. Society of American Gastrointestinal and Endoscopic Surgeons. (2008). Guideline for the Clinical Application of Bariatric Surgery. <http://www.sages.org/publication/id/30/>
8. US Preventive Services Task Force:
  - a. Agency for Healthcare Quality and Research. (2003). *Screening for obesity in adults*. <http://www.ahrq.gov/clinic/3rduspstf/obesity/obesrr.pdf>
  - b. Agency for Healthcare Quality and Research. (2010). *Screening for obesity in children and adolescents*. <http://www.ahrq.gov/clinic/uspstf10/childobes/chobesrs.pdf>
  - c. Agency for Healthcare Quality and Research. (2003). *Behavioural counselling in primary care to promote a healthy diet*. <http://www.ahrq.gov/clinic/uspstf/uspstf/uspstf-uspsdiet.htm>

## Australia

9. National Preventive Health Taskforce Obesity Working Group (2008/09). *Technical Paper 1: Obesity in Australia: A Need For Urgent Action*.  
<http://www.health.gov.au/internet/preventivehealth/publishing.nsf/Content/tech-obesity-toc>

## Organization for Economic Co-Operation and Development (OECD)

10. Sassi, F, Lauer, J and Chisholm, D (Nov 29, 2009). Improving lifestyles, tackling obesity: The health and economic impact of prevention strategies. *OECD Health Working Paper No. 48*.  
[http://www.oalis.oecd.org/oalis/2009doc.nsf/LinkTo/NT00006EF2/\\$FILE/JT03274746.PDF](http://www.oalis.oecd.org/oalis/2009doc.nsf/LinkTo/NT00006EF2/$FILE/JT03274746.PDF)

## Systematic Reviews

### Adults

11. Bodkin, A, Ding, H and Scale, S, Obesity. (2005). *An Overview of Current Landscape and Prevention-Related Activities in Ontario*. Produced for the Public Health Agency of Canada – Ontario/Nunavut. Ontario Chronic Disease Prevention Alliance.  
[http://www.ocdpa.on.ca/rpt\\_Obesity\\_Current\\_Landscape.htm](http://www.ocdpa.on.ca/rpt_Obesity_Current_Landscape.htm)
12. Tsai AG and Wadden, T. (2009). Treatment of obesity in primary care practice in the United States: a systematic review. *J Gen Intern Med*. 24(9):1073-9.
13. US Task Force on Community Preventive Services (2010). *A systematic review of selected interventions for worksite health promotion*. 38(2), Supplement, S237-S262. <http://www.ajpm-online.net/article/PIIS0749379709007521/abstract>.

### Pregnancy and Breastfeeding

14. Arenz S, Ruckerl R, Koletzko B and von Kries R. (2004). Breast-feeding and childhood obesity - a systematic review. *Int J Obes Relat Metab Disord*. 28, 1247-1256.  
<http://www.ncbi.nlm.nih.gov/pubmed/15314625>
15. Birdsall, K, Vyas, S, Khazaezadeh, N and Oteng-Ntim, E. (2009). Maternal obesity: a review of interventions, Department of Women's Health, St Thomas' Hospital, London, UK.  
<http://www3.interscience.wiley.com/journal/121675836/abstract>
16. Boland, M. (2005, reaffirmed Feb 2009). Exclusive breastfeeding should continue to 6 months (2005, reaffirmed Feb 2009), Canadian Pediatric Society, *Pediatric Child Health*. 0(3):148.  
<http://www.cps.ca/english/statements/n/breastfeedingmar05.htm>
17. Harder T, Bergmann R, Kallischnigg G, Plagemann A. (2005). Duration of breastfeeding and risk of overweight: a meta-analysis. *Am J Epidemiol* 162:397-403.
18. National Center for Chronic Disease Prevention and Health Promotion Division of Nutrition and Physical Activity. (2007). *Is breastfeeding associated with a reduced risk of pediatric overweight?* From CDC Research to Practice Series, No. 4 Meta analysis Review  
[www.cdc.gov/nccdphp/dnpa/nutrition/pdf/breastfeeding\\_r2p.pdf](http://www.cdc.gov/nccdphp/dnpa/nutrition/pdf/breastfeeding_r2p.pdf)

19. Owen, CG, et al. Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. *Pediatrics* 2005; 115, 1367-1377.

### **Children and Youth**

11. Luttikhuis, H. (2009). *Evidence-based child health: A Cochrane Review Journal*. 4 (4), 1571-1729.
12. Whitlock EA, O'Connor EP, Williams SB, Beil TL and Lutz KW. (2008). Effectiveness of weight management programs in children and adolescents. Prepared for the Agency for Healthcare Research and Quality, *Evid Rep Technol Assess* (Full Rep). Sept (170):1-308.  
<http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=hserta&part=A286907>
13. Whitlock EP, O'Connor EA, Williams SB, Beil TL and Lutz KW. (2010). Effectiveness of weight management interventions in children: A targeted systematic review for the USPSTF. *Pediatrics*. 2010 Feb;125(2):e396-418.  
<http://pediatrics.aappublications.org/cgi/content/abstract/peds.2009-1955v1>

### **Bariatric Surgery (Adults and Youth)**

14. Buchwald H, Estok R, Fahrbach K, Banel D, Jensen MD, Pories WJ, Bantle JP andge I. (2009). type 2 diabetes after bariatric surgery: systematic review and meta-analysis. *Am J Med* 122:248–256.
15. Picot J, Jones J, Colquitt JL, Gospodarevskaya E, Loveman E, Baxter L andgg AJ. (2009). The Clinical Effectiveness and Cost-Effectiveness of Bariatric (weight loss) Surgery for Obesity: A Systematic Review and Economic Evaluation, *Health Technol Assess*. Sep; 13(41):1-190, 215-357, iii-iv. <http://www.ncbi.nlm.nih.gov/pubmed/19726018>.
16. Pratt JS, Lenders CM, Dionne EA, Hoppin AG, Hsu GL, Inge TH, Lawlor DF, Marino MF, Meyers AF, Rosenblum JL and Sanchez VM. (2009). Best Practice Updates for Pediatric/Adolescent Weight Loss Surgery. *Obesity (Silver Spring)*. 17(5):901-10. Epub 2009 Feb 19.  
<http://www.ncbi.nlm.nih.gov/pubmed/19396070>.

## **Articles/Studies**

### **Adults**

17. Baker, K et al. Using a Return-On-Investment Estimation Model to Evaluate Outcomes from an Obesity Management Worksite Health Promotion Program. (Sept 2008). *Journal of Occupational and Environmental Medicine*. 50(9), 981-990. <http://www.ncbi.nlm.nih.gov/pubmed/18784545>
18. Dansinger, M, Gleason, J, Griffith, J, Selker, H and Schaefer, E. (2005). Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction A Randomized Trial. *JAMA*. 293(1), 43-53. <http://jama.ama-assn.org/cgi/content/abstract/293/1/43>
19. Heshka, S, Anderson, J and Atkins, R. (2003). Weight loss with self-help compared with a structured commercial program. A randomized trial. *JAMA*. 289(14):1792-1798.  
<http://www.ncbi.nlm.nih.gov/pubmed/12684357>

20. Ostbye, T, Dement, J and Krauss, K. (2007). Obesity and Workers' Compensation Results from the Duke Health And Safety Surveillance System, *Arch Intern Med.* 167(8): 766-773.  
<http://www.ncbi.nlm.nih.gov/pubmed/17452538>
21. Trueman, P and Flack, S. (Dec 2006). Economic evaluation of Weight Watchers in the prevention of obesity. *Clinical Excellence*, Birmingham.
22. Tsai, G and Wadden, T. (2005). An Evaluation of Major Commercial Weight Loss Programs in the United States. Systematic Review: *Ann Intern Med.* 142:56-66.  
<http://www.annals.org/content/142/1/56.abstract>

### ***Pregnancy and Breastfeeding***

23. Boney, C, Verma, A, Tucker R, Vohr, B (March 2005). Metabolic Syndrome in Childhood: Association with Birth Weight, Maternal Obesity, and Gestational Diabetes Mellitus. *Pediatrics* 115(3), e290-e296 (doi:10.1542/peds.2004-1808).<http://pediatrics.aappublications.org/cgi/content/abstract/115/3/e290>
24. Mamun, A, Kinarivala, M, O'Callaghan, M, Williams, G, Najman and Callaway, L. (March 17, 2010) Associations of excess weight gain during pregnancy with long-term maternal overweight and obesity: evidence from 21 y postpartum follow-up. *Am J Clin Nutr.*  
<http://www.ajcn.org/cgi/content/abstract/91/5/1336>
25. Oken E, Rifas-Shiman SL, Field AE, Frazier AL, Gillman MW. (Nov 2008). Maternal Gestational Weight Gain and Offspring Weight in Adolescence. *Obstet Gynecol.* 112(5), 999-1006.  
<http://www.ncbi.nlm.nih.gov/pubmed/18978098>
26. Schack-Nielsen L et al (2010). Gestational Weight Gain in Relation to Offspring Body Mass Index and Obesity from Infancy through Adulthood. *Int J Obes (Lond).* 34(1), 67-74.
27. Stuebe AM, Forman MR, Michels KB *Int J Obes (Lond).* (2009). Maternal-recalled gestational weight gain, pre-pregnancy body mass index, and obesity in the daughter. *International Journal of Obesity.* 33(7), 743-52. <http://www.nature.com/ijo/journal/v33/n7/abs/ijo2009101a.html>
28. Vohr, B and Boney, C. Gestational diabetes: The forerunner for the development of maternal and childhood obesity and metabolic syndrome? (2008). *The Journal of Maternal-Fetal & Neonatal Medicine.* 21(3), 149 – 157.  
<http://www.informaworld.com/smpp/content~content=a790807923~db=all~jumptype=rss>

### ***Children and Youth***

29. Anand, S, Adams, W and Zuckerman, B. (2010). Specialized care of overweight children in community health centers. *Health Affairs*, 29(4), 712-717.  
<http://content.healthaffairs.org/cgi/content/abstract/29/4/712?rss=1>
30. Kalarchian, M et al. (October 2009). Family-based treatment of severe pediatric obesity: A randomized, controlled trial, *Pediatrics.* 124(4), 1060-1068.  
<http://pediatrics.aappublications.org/cgi/content/abstract/124/4/1060>

31. Sacher, P, Kolotourou, M, Chadwich, P, Cole, T, Lawson, M, Lucas, A and Singhal, A. (2010). Randomized controlled trial of the MEND Program: A family-based community intervention for childhood obesity. *Obesity*. 18, S62-S68.

<http://www.nature.com/oby/journal/v18/n1s/full/oby2009433a.html>

32. Shields, Margot and Tjepkema, Michael. (2004). Regional Differences in Obesity. *Statistics Canada*. Retrieved on September 1, 2009 from: <http://www.statcan.gc.ca/studies-etudes/82-003/archive/2006/9280-eng.pdf>

***Bariatric Surgery (adults and youth):***

33. Adams, T, Gress, R and Smith, S. (Aug 23, 2007). Long-Term Mortality after Gastric Bypass Surgery. *N Eng J Med*. 357(8):753-761. <http://content.nejm.org/cgi/content/short/357/8/753>

34. Buchwald, H. (2005). ASBS Consensus Conference Statement. Bariatric surgery for morbid obesity: Health implications for patients, health professionals, and third-party payers. *Surgery for Obesity and Related Diseases*. 1, 371–381.

[http://www.asbs.org/html/pdf/2004\\_ASBS\\_Consensus\\_Conference\\_Statement.pdf](http://www.asbs.org/html/pdf/2004_ASBS_Consensus_Conference_Statement.pdf)

35. Christou, N and Efthimiou, E, (June 2009). Bariatric surgery waiting times in Canada. *Can J Surg*, 52(3), 229-234. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2689726/>

36. Dixon JB, O'Brien PE, Playfair J, Chapman L, Schachter LM, Skinner S, Proietto J, Bailey M & Anderson M. (2008). Adjustable gastric banding and conventional therapy for type 2 diabetes: a randomized controlled trial. *JAMA*. 299, 316–323

37. Maggard MA, Shugarman LR, Suttorp M, et al. (Apr 5, 2005). Meta-analysis: surgical treatment of obesity. *Ann Intern Med*. 142(7), 547-559. <http://www.annals.org/content/142/7/525.full>

38. Ontario Ministry of Health and Long-Term Care Press Release: *Ontario Increases Bariatric Surgery Capacity* (May 2009).

39. Sjöström, L, Narbro, K and Sjöström, D. (Aug 23, 2007). Effects of bariatric surgery on mortality in Swedish obese subjects. *N Engl J Med*. 357(8), 741-752.

<http://content.nejm.org/cgi/content/full/357/8/741>



## Appendix 1: ORS Treatment Working Group Membership

Member	Title/Organization
Andrew Kmetc	Senior Surveillance Epidemiologist, Population & Public Health Provincial Health Services Authority
Arlene Cristall	Clinic Coordinator, Centre for Healthy Weights. BCCH
Brad Amson, MD	Bariatric Surgeon, VIHA
Bev Gutray	Executive Director, Canadian Mental Health Association (CMHA) BC Division
Connie Coniglio	Director, Health Literacy, BCCH
Dean Kolodziejczyk, MD	Medical Consultant, Medical Services Branch Ministry of Health Services
Ehud Ur, MD	Vancouver Coastal Health
Jean-Pierre Chanoine, MD (Chair)	Pediatric Endocrinology, BCCH
John Millar, MD	Executive Director, Population Health Surveillance & Disease Control Planning, PHSA
Jim Thorsteinson, MD	BC College of Family Physicians
Shamim Jetha, MD	Past President, BC College of Family Physicians
Leza Muir	Pacific Blue Cross
Linda Lane-Devlin	Executive Director, Victoria Order of Nurses (VON) Canada – Western Region, BC Site
Lydia Drasic	Director, Provincial Primary Health Care & Population Health Strategic Planning, PHSA
May Tee, MD	University of British Columbia
Nam Nguyen, MD (Co-Chair)	Vancouver Coastal Health
Penny Sneddon	Psychologist, Centre for Healthy Weights, BCCH
Phyllis Stoffman	Manager, Centres for Population & Public Health, Provincial Health Services Authority
Sharon Dean	Director Provincial Affairs, Western Region at Canada's Research Based Pharmaceutical Companies
Wilma Arruda , MD	BCMA Council on Health Promotion (COHP) Committee , Child and Youth Health

## Appendix 2: Adult Bariatric Surgery Performed in Other Provinces

<b>New Brunswick</b>	<b>Private:</b> A few private clinics perform laparoscopic adjustable gastric banding (LAGB).	
	<b>Public:</b> New Brunswick public health insurance covers gastric bypass and LAGB procedures which are both performed in public hospitals. They have a waiting list. The province will pay for surgical and hospital costs for patients to go out of province but will not cover other expenses.	
<b>Nova Scotia</b>	<b>Public:</b> Nova Scotia public health insurance covers gastric bypass and LAGB procedures. Only gastric bypass is performed in public hospitals. They have a waiting list. The province will pay for surgical and hospital costs patients to go out of province for both gastric bypass and LAGB but will not cover other expenses.	
<b>Ontario</b>	<b>Private:</b> Several private clinics perform LAGB. Average charge is \$16,000 which includes routine follow-up visits	
	<p><b>Public:</b> In 2009 Ontario announced an additional \$75 million dollars in spending so that by 2011/2012 Ontario's bariatric surgical capacity will be 2,085 cases per year. Four Centres of Excellence will be established to provide pre and post bariatric surgical care as well as non-surgical support services. Presently Ontario (OHIP) pays for 1,600 out-of-country bariatric surgery cases/year. Doing these cases in province will save \$10,000 per case.</p>	<p><b>Criteria</b></p> <p><b>A.</b> BMI &gt;35 kg/m<sup>2</sup> and &lt;40 kg/m<sup>2</sup> and</p> <ol style="list-style-type: none"> <li>1. Coronary heart disease or</li> <li>2. Diabetes or</li> <li>3. Obstructive sleep apnea or</li> <li>4. Medical refractory hypertension despite optimal medical management</li> </ol> <p><b>OR</b></p> <p><b>B.</b> BMI &gt;40 kg/m<sup>2</sup> for greater than 2 years</p>
<b>Quebec</b>	<b>Private:</b> Many private clinics for perform LAGB procedures.	
	<b>Public:</b> Quebec has two of the largest bariatric surgery programs in Canada: the MUHC performs about 150 bariatric surgeries per year and University Laval performs about 250. Quebec will pay for bariatric surgery at a private clinic or out of province if the patient is eligible and has waited more than 6 months.	

<b>Saskatchewan</b>	<b>Private:</b> Since 2009, one private clinic performs LAGB procedures in Regina.	The clinic is designed to assist in the care of those clients whose BMI is between 40 kg/m <sup>2</sup> and 60 kg/m <sup>2</sup> . In certain instances, clients with a BMI between 35 kg/m <sup>2</sup> and 40 kg/m <sup>2</sup> may be considered for treatment at the clinic, particularly if they have two or more additional conditions which are being managed, such as cardiopulmonary problems, severe sleep apnea, severe diabetes mellitus or physical problems interfering with lifestyle. Other criteria are that the patient must be between 18 and 60 years old, a non-smoker and cannot be pregnant or lactating. Family doctor assesses the patient's condition and, if he/she feels the patient may benefit from the surgery, he/she will refer to the RQHR Bariatric Surgeon. Patient is assessed by the RQHR Bariatric Surgeon and, if considered to be a good candidate, will be referred to the Bariatric Surgery Assessment Clinic. At the clinic, a multi-disciplinary team of health specialists work with the patient. To be considered a surgical candidate, the patient must remain in the program for a minimum of six months, have attended all appointments and all three support group meetings, and have maintained or lost weight. The request for surgery will be reviewed by the team. If all criteria are met, the person will be placed on a surgical wait list. The laparoscopic Roux-en-Y gastric bypass will be the surgical procedure performed. Following surgery, length of stay in the hospital is expected to be 4 days.
	<b>Public:</b> Bariatric Surgical Assessment Clinic opened in Regina in 2009. Saskatchewan health care covers gastric performed in public hospitals. They have a waiting list. The province will pay for surgical and hospital costs for patients to go out of province but will not cover other expenses.	
<b>Alberta</b>	<b>Private:</b> Many private clinics for LAGB.	<b>Criteria:</b> EOSS: Edmonton Obesity Staging System
	<b>Public:</b> Alberta pays for LAGB and gastric bypass surgery in publicly funded hospitals.	
<b>Provinces With No In Province Bariatric Surgery Capability</b>		
<b>PEI</b>	PEI will pay for surgical and hospital costs for patients to go out of province for gastric bypass but will not cover other expenses.	
<b>Manitoba</b>	Manitoba will pay for surgical and hospital costs for patients to go out of province for gastric bypass and will also cover other expenses.	
<b>Newfoundland/ Labrador</b>	Newfoundland/Labrador will pay for surgical and hospital costs for patients to go out of province for gastric bypass, but not LAGB and will not cover other expenses.	

### Appendix 3: Youth Bariatric Surgery Performed in Other Provinces

Ontario	Criteria	Process	Research
<p>Toronto's Hospital for Sick Children is the first and only centre in Canada offering lap band bariatric surgery to pediatric patients. Toronto's Hospital for Sick Children opened a clinic in 2010. The program expects to admit 50 patients this year, of which up to 15 may undergo gastric banding, which is adjustable and reversible.</p>	<p>Patients aged 12 to 17 with complex severe obesity, which involves having a BMI of greater than the 95th percentile for their age and gender, and at least one of: an obesity-related condition requiring specialty care, another co-existing significant chronic illness, or a BMI greater than the 99th percentile.</p>	<p>Incoming patients will go through an assessment and an intensive behaviour modification program to determine the best course of treatment. For those who are eligible, laparoscopic band surgery is an available option.</p>	<p>The program also involves an evaluation component, in which patient outcomes will be monitored following the surgery</p>