



College of Physicians and Surgeons of British Columbia

# Guideline

## Pediatric Obesity

### DETAILS

**Department/program:** Non-Hospital Medical and Surgical Facilities Accreditation Program

**Date:** September 24, 2020

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### PURPOSE

The Non-Hospital Medical and Surgical Facilities Accreditation Program (NHMSFAP) Committee develops professional guidelines to assist physicians in meeting high standards of medical practice and conduct.

A professional guideline reflects a recommended course of action established based on the values, principles and duties of the medical profession. Physicians may exercise reasonable discretion in their decision making based on the guidance provided.

This guideline pertains to the consideration of surgery and anesthesia in the non-hospital setting for children with an elevated BMI.

### BACKGROUND

The Non-Hospital Medical and Surgical Facilities Accreditation Program (NHMSFAP) Committee is responsible for establishing accreditation standards, policies, rules, procedures and guidelines to ensure the delivery of high-quality and safe services in non-hospital facilities.

With the growing prevalence of pediatric obesity, there is an increasing number of obese children presenting for surgery. Childhood obesity is associated with several important comorbidities including type II diabetes, asthma, obstructive sleep apnea, hyperlipidemia, hypertension and heart disease. These comorbidities are predictors of adverse events in children undergoing elective surgery. There is also an increased incidence of perioperative adverse respiratory events in obese children who undergo elective surgery compared with nonobese children.

The careful perioperative evaluation of children with an elevated BMI is essential to the safety of this patient population. This includes determining whether their obesity and comorbid conditions add significant risk to the procedure, the anesthetic or their post-operative recovery. Another important consideration is the facility's capability to perform routine and emergency pediatric-specific techniques (e.g. airway management) and the availability of a perioperative team trained and experienced in managing children with special anesthesia risks.

The NHMSFAP committee has adopted the International Obesity Task Force (IOTF), sex-age-specific body mass index (BMI) cut-offs, originally developed by Cole et al (2000), for determining childhood obesity. The IOTF cut-offs correlate to the widely accepted adult cut-off points of 25 kg/m<sup>2</sup> for overweight and 30 kg/m<sup>2</sup> for obesity.

## PRACTICE GUIDELINES

1. In the non-hospital setting, the pediatric population age range is defined as children aged three (3) and at minimum 12 kilograms in weight to children aged twelve (12) and/or under 24 kilograms in weight.
2. Children must be carefully screened prior to surgery and anesthesia in the non-hospital setting.
3. Height and weight must be measured, and BMI calculated.

- $BMI = \text{weight in kg} / \text{height in metres}^2$

This should be performed one month before surgery so that further screening investigations can be completed as necessary.

4. The international body mass index (BMI) cut-offs must be used to determine if the child is overweight or obese.

*The International Obesity Task Force (IOTF), sex-age-specific body mass index (BMI) cut-offs correlate to the widely accepted adult cut-off points of 25 kg/m<sup>2</sup> for overweight and 30 kg/m<sup>2</sup> for obesity. This approach corrects BMI for age and sex and links it to the current accepted definition of adult obesity.*

5. Overweight children (i.e. adult equivalent BMI > 25 and < 30) may be considered for surgery in the non-hospital setting. When considering surgery and anesthesia for overweight children, the following conditions should be met:
  - Their adult equivalent BMI must be less than 30.
  - Their weight is unlikely to add significant risk to the procedure, the anesthetic or their post-operative recovery.
  - Any comorbid conditions are well-controlled and unlikely to add significant risk to the procedure, the anesthetic or their post-operative recovery.
  - The proposed procedure and anesthesia are unlikely to aggravate or precipitate significant changes in these conditions.
  - A recorded history and physical examination and appropriate laboratory and diagnostic investigations must be completed within 60 days of the surgery.
  - Children with a history of obstructive sleep apnea are **not suitable for surgery under any circumstance** in the non-hospital setting.
6. Obese children (i.e. adult equivalent  $\geq 30$  and < 35) may be considered for surgery in the non-hospital setting. When considering surgery and anesthesia for obese children, the following conditions should be met:
  - Their adult equivalent BMI must be less than 35.
  - Their weight is unlikely to add significant risk to the procedure, the anesthetic or their post-operative recovery.
  - Any comorbid conditions are well-controlled and unlikely to add significant risk to the procedure, the anesthetic or their post-operative recovery.
  - The proposed procedure and anesthesia are unlikely to aggravate or precipitate significant changes in these conditions.

- A recorded history and physical examination and appropriate laboratory and diagnostic investigations must be completed within 60 days of the surgery.
  - Children with a history of obstructive sleep apnea are **not suitable for surgery under any circumstance** in the non-hospital setting.
  - A documented preoperative anesthetic consultation should be completed before admission for the surgical procedure, not more than 28 days before surgery and at minimum, one day prior to surgery. The consult should include the possible impact of the surgery, plan for anesthesia and the post-operative course, and the appropriate setting for the surgery. Airway assessment should be given careful attention.
  - The preoperative anesthetic consultation should be completed by an anesthesiologist with pediatric experience and evidence of currency of practice.
  - The appropriate setting for the child to undergo the procedure and anesthetic must be determined and documented by the anesthesiologist performing the preoperative consultation (i.e. non-hospital setting, hospital setting).
  - Anesthesiologists should consider the consequences of drug dosing to body weight with particular attention given to high risk drugs such as opioid analgesics. In general, drug dosages should be calculated using **ideal** body weight and titrated to effect.
7. Children with an adult equivalent BMI  $\geq 35$  are **not suitable for surgery under any circumstance** in the non-hospital setting.

Summary of changes	
2020-09-24	<ul style="list-style-type: none"> <li>• Updated adult equivalent BMI reference table.</li> <li>• Conditions when considering surgery and anesthesia updated for overweight children (adult equivalent BMI <math>&gt; 25</math> and <math>&lt; 30</math>) and mildly obese children (adult equivalent <math>\geq 30</math> and <math>&lt; 35</math>).</li> <li>• Anesthesiology consults should be completed on obese children by an anesthesiologist with pediatric experience and evidence of currency of practice and not more than 28 days before surgery with careful attention given to airway assessment. The anesthesiologist should indicate in the consultation the appropriate setting for the child to undergo the procedure and anesthetic.</li> <li>• Drug dosing considerations.</li> <li>• Children with a history of sleep apnea are not suitable for the non-hospital setting.</li> <li>• Children with an adult equivalent BMI <math>\geq 35</math> are not suitable for the non-hospital setting.</li> </ul>

## REFERENCES

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## CONTACT

For further information, please contact the Non-Hospital Medical and Surgical Facilities Accreditation Program at [nhmsfap@cpsbc.ca](mailto:nhmsfap@cpsbc.ca).

**TABLE**

Revised international IOTF BMI cut-offs ( $\text{kg m}^{-2}$ ) using the pooled LMS curves.

Cole TJ, Lobstein T. Extended international (IOFT) body mass index cut-offs for thinness, overweight and obesity. *Pediatr Obes* [Internet]. 2012 Jun 19 [cited 2020 May 15];7(4):284-94. Web Table W2, Revised international IOFT BMI cut-offs ( $\text{kg/m}^2$ ) using the pooled LMS curves; [2 p.].

Age (years)	Body mass index 25 $\text{kg/m}^2$		Body mass index 30 $\text{kg/m}^2$		Body mass index 35 $\text{kg/m}^2$	
	Males	Females	Males	Females	Males	Females
2	18.36	18.09	19.99	19.81	21.20	21.13
2.5	18.09	17.84	19.73	19.57	20.95	20.90
3	17.85	17.64	19.50	19.38	20.75	20.74
3.5	17.66	17.48	19.33	19.25	20.61	20.65
4	17.52	17.36	19.23	19.16	20.56	20.62
4.5	17.43	17.27	19.20	19.14	20.60	20.67
5	17.39	17.23	19.27	19.20	20.79	20.85
5.5	17.42	17.25	19.46	19.36	21.15	21.16
6	17.52	17.33	19.76	19.62	21.69	21.61
6.5	17.67	17.48	20.15	19.96	22.35	22.19
7	17.88	17.69	20.59	20.39	23.08	22.88
7.5	18.12	17.96	21.06	20.89	23.83	23.65
8	18.41	18.28	21.56	21.44	24.61	24.50
8.5	18.73	18.63	22.11	22.04	25.45	25.42
9	19.07	18.99	22.71	22.66	26.40	26.39
9.5	19.43	19.38	23.34	23.31	27.39	27.38
10	19.80	19.78	23.96	23.97	28.35	28.36
10.5	20.15	20.21	24.54	24.62	29.22	29.28
11	20.51	20.66	25.07	25.25	29.97	30.14
11.5	20.85	21.12	25.56	25.87	30.63	30.93
12	21.20	21.59	26.02	26.47	31.21	31.66
12.5	21.54	22.05	26.45	27.04	31.73	32.33
13	21.89	22.49	26.87	27.57	32.19	32.91
13.5	22.25	22.90	27.26	28.03	32.61	33.39
14	22.60	23.27	27.64	28.42	32.98	33.78
14.5	22.95	23.60	28.00	28.74	33.29	34.07
15	23.28	23.89	28.32	29.01	33.56	34.28
15.5	23.59	24.13	28.61	29.22	33.78	34.43

Age (years)	Body mass index 25 kg/m <sup>2</sup>		Body mass index 30 kg/m <sup>2</sup>		Body mass index 35 kg/m <sup>2</sup>	
	Males	Females	Males	Females	Males	Females
16	23.89	24.34	28.88	29.40	33.98	34.55
16.5	24.18	24.53	29.15	29.55	34.19	34.64
17	24.46	24.70	29.43	29.70	34.43	34.75
17.5	24.73	24.85	29.71	29.85	34.71	34.87
18	25	25	30	30	35	35