



Adolescent Criteria for Bariatric Surgery



**NATIONWIDE
CHILDREN'S**

When your child needs a hospital, everything matters.SM

When your patient needs specialized care, everything matters.

A national leader in prevention and treatment, the Center for Healthy Weight and Nutrition at Nationwide Children's Hospital offers a comprehensive approach to weight management, with multiple resources for families and physicians and a cross-departmental, integrated approach. This hospital-based center has developed strategies to address all clinical aspects of obesity care, both at the acute and sub-acute levels.

Nationwide Children's is one of only 25 hospitals nationwide selected to participate in the National Association of Children's Hospitals and Related Institutions (NACHRI) FOCUS Group on Obesity, a task force to identify best practices of hospital-based clinical pediatric weight management programs, by examining and refining successful components of the weight management programs at their collective hospitals.

Nationwide Children's is also one of only five institutions nationwide to participate in Teen-LABS, a multi-institution clinical research study funded by the National Institutes of Health (NIH) to understand the benefits and risks of bariatric surgery in adolescents.

Bariatric Surgery Options

The Center for Healthy Weight and Nutrition at Nationwide Children's offers three options for adolescents who meet the criteria for bariatric surgery: gastric bypass surgery, adjustable gastric band surgery and gastric sleeve surgery.

Coordinated Care

The center involves not only expert physicians and nurse practitioners, but also experts in cardiology, adolescent medicine, and pediatric psychiatry and psychology, as well as registered dietitians, specialized nursing personnel, social workers, therapeutic recreation specialists and certified athletic trainers.

Scheduling and Referrals

- :: Phone: (614) 722-6200 :: Fax: (614) 722-4000
- Online: www.NationwideChildrens.org (Click "Request an Appointment.")
- :: Physician Direct Connect Line for urgent physician consultations, call (614) 355-0221 or 1-877-355-0221.
- :: Learn more about our program, access helpful topics and download useful patient resources at www.NationwideChildrens.org/HealthyWeight.
- :: If you have questions or need additional information, please contact the Center for Healthy Weight and Nutrition at (614) 722-4824.

The Bariatric Surgery Team



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Obesity: Definition and Risks

Extreme obesity is associated with much higher rates of co-morbid conditions. Since the 1960s, this class of obesity has increased from 0.9 percent to nearly 6 percent of the population--much higher among ethnic subpopulations. The risks of this are significant:

- Life span is lessened by 10 years or more in adults with extreme obesity, comparable with those who smoke (*Peto et al: Lancet, 2009*).
- The cardiovascular state of those with extreme obesity is extraordinary: 60-70 percent show anatomic and/or physiologic changes reflecting a severely stressed cardiovascular system. Fifteen-year-olds may have a cardiovascular system similar to that of a 50- or 60-year-old. Yet, often, referral for clinical help is not sought.

Resources for Physicians

The Center for Healthy Weight and Nutrition has developed several tools to provide primary care physicians with practical guidance on the approach to the obese child. From videos about our bariatric procedures, to BMI wheels and handouts for patients and their families, we offer information that is helpful as you treat and address health issues regarding obesity.

Visit www.NationwideChildrens.org/HealthyWeight to access these resources online.

Resources for Patients and Families

The Center for Healthy Weight and Nutrition offers:

- Assistance to patients and families about their treatment options as they approach the sensitive issue of weight control.
- Help with insurance issues, and have an excellent track record in obtaining insurance approval. We will work with the carrier's medical director, and can assist the family in obtaining secondary Medicaid insurance for some qualified patients.

Welcome Center

We understand that leaving the comforts of home for treatment can bring special stresses to your patients and their families. To help, our Welcome Center supports many of the unique needs of those arriving at Nationwide Children's from outside central Ohio, including; housing and transportation, Ronald McDonald House – for extended stays, financial counseling, and Interpreters. More information about the Welcome Center is available online at www.NationwideChildrens.org/WelcomeCenter.

Department of Surgery

At Nationwide Children's, our Department of Surgery provides comprehensive surgical care for infants, children and adolescents with congenital and acquired conditions, including major congenital anomalies, traumatic and thermal injuries, and tumors. All outpatients are evaluated in a pediatric surgical clinic in our Outpatient Care Center on our main hospital campus, and at our surgery clinic at the Mansfield *Close To Home*SM Center. We provide ready access to laboratory, radiological and diagnostic services.

We are one of only three Level I Pediatric Trauma Centers in Ohio. And of the three, we are the only one that is a verified Burn Center by the American Burn Association (ABA) and the American College of Surgeons (ACS). Our pediatric inpatient rehab unit is accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF). And, we have proudly earned the highest honor in nursing excellence with our MagnetTM designation. We are recognized for quality patient care and innovations in nursing practice.

In addition, we are ranked as one of "America's Best Children's Hospitals" by *U.S. News & World Report* in all 10 pediatric specialties, including Cardiology, Orthopedics and Neurosurgery.



Patient Assessment and Diagnosis

The BMI is an excellent screening tool to predict the percent of excess body fat. Ensure that your examination corroborates the BMI screen (*Tables 1a, 1b*). Muscular subjects can have a falsely high BMI.

The first step in counseling about nutrition and fitness routines include a history, exam, previous growth records, and assessment of family medical history. The patient's and family's diet, activity patterns and their sense of urgency about the child's future health risks, will help you understand their willingness to change.

Overweight children require laboratory evaluation. The primary care office can best assist their patients by focusing on obesity prevention, early identification of rising BMI percentile and counseling. Intervention is described by the American Academy of Pediatrics recommendations as Stage 1 –Prevention Plus and Stage 2 – Structured Weight Management, which may require some outside assistance to help you. Stage 3 and 4 interventions are comprehensive and multidisciplinary and are best handled through referral to a formal program.

CALCULATE BMI AND CLASSIFY

$$\text{BMI} = \frac{\text{Weight (lb)}}{\text{Height (in)} \times \text{Height (in)}} \times 703$$

PERCENTILE	CLASSIFICATION
5-84%	HEALTHY WEIGHT
85-94%	OVERWEIGHT
95-98%	OBESE
≥99%	EXTREME OBESITY

Classification Adapted from the Expert Committee Recommendations Summary Report. Refer to BMI percentile growth charts at www.cdc.gov.

Table 1a

BMI PERCENTILE CUT POINTS

Age (years)	85%		95%		99%	
	Boys	Girls	Boys	Girls	Boys	Girls
2	18.2	18	19.3	19.1	—	—
3	17.3	17.2	18.2	18.3	—	—
4	16.9	16.8	17.8	18	—	—
5	16.8	16.8	17.9	19.3	20.1	21.5
6	17	17.1	18.4	18.8	21.6	23
7	17.4	17.6	19.2	19.7	23.6	24.6
8	18	18.3	20.1	20.7	25.6	26.4
9	18.6	19.1	21.1	21.8	27.6	28.2
10	19.4	20	22.2	23	29.3	29.9
11	20.2	20.9	23.2	24.1	30.7	31.5
12	21	21.7	24.2	25.3	31.8	33.1
13	21.9	22.6	25.2	26.3	32.6	34.6
14	22.7	23.3	26	27.3	33.2	36
15	23.5	24	26.8	28.1	33.6	37.5
16	24.2	24.7	27.6	28.9	33.9	39.1
17	24.9	25.2	28.3	29.6	34.4	40.8
18	25.7	25.7	29	30.3	34.4	40.8
19	26.4	26.1	29.7	31	34.4	40.8
20	27	26.5	30.6	31.8	34.4	40.8

Table 1b

Assessment, Treatment and Outcomes in the Patient with Morbid Obesity

Extreme obesity (“*morbid obesity*,” “*super obesity*”) is defined as a child above the 99th percentile BMI or above BMI 40, which is 100 lbs. over ideal body weight for height for a fully-grown teenager or an adult. In this case, the following steps should be taken:

- Assess Family Health Risk– Family (*parents, siblings, grandparents on both sides*)
 - Assess family history of obesity, diabetes, hypertension, cholesterol, heart disease, heart attacks, early death due to cardiovascular disease, stroke
- Do a thorough history and physical. (*See Table 2*)
- Assess blood pressure (*See Table 3*)
- For the child with extreme obesity, at minimum, the following labs are recommended:
 - Fasting lipid profile, Fasting glucose, AST, ALT
- Discuss the weight issue: use “excess weight” or “extra weight” in place of “overweight, obesity or extreme obesity”
- Discuss your concerns about the potential for serious medical problems in the near future and the fact that the child's risk can be managed with quality nutrition and daily activity.
- Assess patient and family attitudes toward weight management for their sense of awareness, urgency and willingness to address the problem.



Symptoms	Signs
<ul style="list-style-type: none"> Anxiety, school avoidance, social isolation (<i>Depression</i>) Polyuria, polydipsia, weight loss (<i>Type 2 diabetes mellitus</i>) Headaches (<i>Pseudotumor cerebri</i>) Night breathing difficulties (<i>Sleep apnea, hypoventilation syndrome, asthma</i>) Day time sleepiness (<i>Sleep apnea, hypoventilation syndrome, depression</i>) Abdominal pain (<i>Gastroesophageal reflux, gall bladder disease, constipation</i>) Hip or Knee pain (<i>Slipped capital femoral epiphysis</i>) Oligomenorrhea or amenorrhea (<i>Polycystic ovary syndrome</i>) 	<ul style="list-style-type: none"> Poor linear growth (<i>Hypothyroidism, Cushing's, Prader-Willi syndrome</i>) Dysmorphic features (<i>Genetic disorders, including Prader-Willi syndrome</i>) Acanthosis nigricans (<i>NIDDM, insulin resistance</i>) Hirsutism and excessive acne (<i>Polycystic ovary syndrome</i>) Violaceous striae (<i>Cushing's syndrome</i>) Tonsillar hypertrophy (<i>Sleep apnea</i>) Abdominal tenderness (<i>Gall bladder diseases, GERD, NAFLD</i>) Hepatomegaly (<i>Nonalcoholic fatty liver disease (NAFLD)</i>) Undescended testicle (<i>Prader-Willi syndrome</i>) Limited hip range of motion (<i>Slipped capital femoral epiphysis</i>) Lower leg bowing (<i>Blount's disease</i>)

Adapted from COAN Implementation Guide.

Table 2

Boys

Ages 3-5

Blood Pressure Levels for Boys by Age and Height Percentile*																
Age by year	BP %	Systolic BP (mmHg)							Diastolic BP (mmHg)							
		← Percentile of Height →							← Percentile of Height →							
		5 th	10 th	25 th	50 th	75 th	90 th	95 th	5 th	10 th	25 th	50 th	75 th	90 th	95 th	
3	90 th	100	101	103	105	107	106	109	59	59	60	61	62	63	63	
	95 th	104	105	107	109	110	112	113	63	63	64	65	66	67	67	
	99 th	111	112	114	116	118	119	120	71	71	72	73	74	75	75	
4	90 th	102	103	105	107	109	110	111	62	63	64	65	66	66	67	
	95 th	105	107	109	111	112	114	115	66	67	68	69	70	71	71	
	99 th	113	114	116	118	120	121	122	74	75	76	77	78	78	79	
5	90 th	104	105	106	106	110	111	112	65	66	67	68	69	69	70	
	95 th	106	109	110	112	114	115	116	69	70	71	72	73	74	74	
	99 th	115	116	118	120	121	123	123	77	78	79	80	81	81	82	

Girls

Ages 3-5

Blood Pressure Levels for Girls by Age and Height Percentile*																
Age by year	BP %	Systolic BP (mmHg)							Diastolic BP (mmHg)							
		← Percentile of Height →							← Percentile of Height →							
		5 th	10 th	25 th	50 th	75 th	90 th	95 th	5 th	10 th	25 th	50 th	75 th	90 th	95 th	
3	90 th	100	100	102	103	104	106	106	61	62	62	63	64	64	65	
	95 th	104	104	105	107	108	109	110	65	66	66	67	68	68	69	
	99 th	111	111	113	114	115	116	117	73	73	74	74	75	76	76	
4	90 th	101	102	103	104	106	107	108	64	64	65	66	67	67	68	
	95 th	106	106	107	108	110	111	112	68	68	69	70	71	71	72	
	99 th	112	113	114	115	117	118	119	76	76	76	77	78	79	79	
5	90 th	103	103	105	106	107	109	109	66	67	67	68	69	69	70	
	95 th	107	107	108	110	111	112	113	70	71	71	72	73	73	74	
	99 th	114	114	116	117	118	120	78	78	79	79	79	80	81	81	

Adapted from the Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents

Table 3

Outcomes in Bariatric Surgery

For the extremely obese teen, bariatric surgery offers the only proven effective means to achieve lasting reversal of cardio-metabolic complications of obesity.

Research at Nationwide Children's and its collaborating institutions shows reversal of hypertension, dyslipidemias, diabetes and sleep apnea within months of surgery.

Scheduling and Referrals

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☛ Physician Direct Connect Line for urgent physician consultations, call (614) 355-0221 or 1-877-355-0221.

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☛ If you have questions or need additional information, please contact the Center for Healthy Weight and Nutrition at (614) 722-4824.



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