

# Developing Criteria for Pediatric/Adolescent Bariatric Surgery Programs

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## KEY WORDS

adolescent, morbid obesity, adolescent bariatric surgery, centers of excellence

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## abstract

The prevalence of morbid obesity in adolescents is rising at an alarming rate. Comorbidities known to predispose to cardiovascular disease are increasingly being diagnosed in these children. Bariatric surgery has become an acceptable treatment alternative for morbidly obese adults, and criteria have been developed to establish center-of-excellence designation for adult bariatric surgery programs. Evidence suggests that bariatric surgical procedures are being performed with increasing numbers in adolescents. We have examined and compiled the current expert recommendations for guidelines and criteria that are needed to deliver safe and effective bariatric surgical care to adolescents. *Pediatrics* 2011;128:S65–S70

In 1991 the National Institutes of Health Consensus Panel published its findings on the benefits of bariatric surgery; since then, the role of bariatric surgery in the treatment of adult morbid obesity and its comorbidities has been well established.<sup>1-4</sup> Although widely accepted, this consensus excluded the application of bariatric procedures to severely obese adolescents. In the 2004 update, the unique challenges of caring for adolescents were addressed with specific recommendations that adolescent patients “be referred to specialized centers with a multidisciplinary bariatric team capable of providing long-term follow-up care.” In addition, a “commitment to clinical data collection and participation in a central database registry” was also encouraged.<sup>3</sup> The American Society for Metabolic and Bariatric Surgery and the American College of Surgeons have created comprehensive outcomes databases and developed criteria for center-of-excellence designation for adult bariatric surgery centers.<sup>5</sup> Bariatric surgical case volume has been a primary driver of quality outcomes in this model, although recent evidence suggests that other factors may play an important role.<sup>6</sup>

## ADDRESSING THE NEEDS OF ADOLESCENTS

The incidence of obesity in the adolescent population, as defined by the Centers for Disease Control and Prevention, currently approaches 18%. Even more alarming is that an estimated 1% to 2% of US adolescents are considered to be morbidly obese (BMI > 40).<sup>2,7</sup> Within this subgroup of the pediatric population, the likelihood of subsequently becoming a morbidly obese adult is ~80%. Furthermore, there is mounting evidence that cardiovascular risk factors rise quickly, which leads to increased morbidity and mortality in adulthood.<sup>8</sup> On the basis of

these estimates, as well as increased public awareness, it is likely that bariatric surgical case volumes among adolescent patients will continue to increase. A recent review of hospital discharges estimated that 770 adolescents underwent bariatric surgical procedures in 2003 compared with ~105 000 adults.<sup>9</sup> In addition, a review of the Bariatric Outcomes Longitudinal Database, developed by the Surgical Review Corporation to track all patients cared for in American Society for Metabolic and Bariatric Surgery–designated bariatric surgery center-of-excellence programs, revealed that records of only 662 adolescents (aged 14–18 years) have been captured, compared with >260 000 adults during the same time period (Surgical Review Corporation, verbal communication, 2010). What is not clear, however, is how many total surgeries are being performed on an annual basis and what proportion are being entered into databases designed to assess longitudinal outcomes. Although multi-institutional data examining the longitudinal safety and efficacy of adolescent bariatric surgery are currently the main focus of several ongoing studies in the United States, current literature in support of this treatment algorithm remains sparse, as evidenced in a recent comprehensive meta-analysis of available world literature.<sup>10</sup> However, it seems clear that the criteria set for the adult center-of-excellence designation do not adequately address the special needs and issues that arise when caring for extremely obese adolescents.

To promote excellence and safety in the delivery of bariatric surgical care to adolescents, guidelines and criteria for assessing surgeons, clinical programs, and institutions that offer surgical care to this population are needed. Members of the National Association of Children’s Hospitals and Re-

lated Institutions obesity focus group have proposed the following criteria for a pediatric and adolescent bariatric surgery specialty program. Such a center should be designed to meet specific characteristics and have processes in place that will promote excellence in the care of the obese adolescent. The proposed guidelines would apply to all surgeons or institutions performing bariatric surgery on any number of patients who are younger than 18 years.

All centers involved in adolescent bariatric care should be encouraged to participate in a national longitudinal database in an effort to objectively refine the criteria for adolescent bariatric surgery specialty programs. The goals of creating such criteria include standardization of practices and process that promote quality care and ensure measurement and reporting of outcomes. These activities will allow for the development of risk-stratification models and refinement of clinical processes and criteria based on objective outcomes data; the ultimate goal is to define best-practice criteria and benchmarks for adolescent bariatric surgery programs.

Although there are many similarities between the proposed criteria and established adult center-of-excellence criteria,<sup>5</sup> several requirements of the pediatric and adolescent bariatric surgery specialty program would differ from those that need to be met by adult centers to better address the needs of this group of patients.

- The surgeon-training requirement could be satisfied by completion of bariatric coursework from relevant professional organizations that offer training in bariatric care (eg, American Society for Metabolic and Bariatric Surgery, American College of Surgeons), co-surgeon experience, and/or proctoring of the initial

case series by an experienced bariatric surgeon. Outcomes for the performance of complex, nonbariatric upper-intestinal procedures could supplement bariatric procedure data for lower-volume surgeons.

- There are no initial hospital/program volume requirements specified. These guidelines are not meant to exclude the development of centers in facilities where services have not previously been offered. However, the multidisciplinary care team should be trained in perioperative and postoperative care of the patient receiving bariatric care.
- An age-appropriate ICU is required for this program compared with a physician certified in Advanced Cardiac Life Support on call 24/7 in the adult program.
- A medical director for the pediatric/adolescent program who is a physician with pediatric expertise is required. The purpose of this requirement is to provide the bariatric team with expertise to evaluate and manage the developmentally unique aspects of pediatric patients and their families.

## PEDIATRIC/ADOLESCENT BARIATRIC SURGERY SPECIALTY PROGRAMS

### Ten Criteria for Proposed Specialty Programs

#### *Institutional Commitment*

The highest levels of an institution's medical staff and administration must commit to excellence in the care of pediatric patients undergoing bariatric surgery. Particularly important is a commitment from both surgery and pediatrics departments in the form of philosophical support of the importance of treating pediatric/adolescent obesity with bariatric surgery and financial support. Evidence of this commitment should include ongoing

in-service education programs in adolescent bariatric surgery and regular administrative review of the program. This requirement refers to a culture in which the staff is prepared to manage morbidly obese adolescent patients with understanding and compassion and to appreciate the medical and psychosocial comorbidities of the disease in this population. The staff should be aware of the basic concepts of bariatric surgery through in-service programs. Direct caregivers should be able to recognize the early signs of common clinical complications (eg, pulmonary embolus, anastomotic leak, infection, bowel obstruction, and other specific device- or procedure-related complications) so that they can be managed promptly.

#### *Medical Home*

The adolescent bariatric care team must demonstrate direct and regular communication with a primary care physician defined as the patient's "medical home" before surgical weight-loss procedures can be considered and/or executed.

#### *Routine Experience*

The institution should be routinely engaged in advanced open and laparoscopic abdominal procedures and be staffed with allied health workers who are familiar with the perioperative care of adolescents with complex abdominal conditions.

#### *Program Staffing*

It is critical that the institution commit to providing adequate staffing for the adolescent bariatric surgical program. The following people are considered vital for providing safe and effective bariatric surgical care to adolescents:

- Surgical director and medical director: Both should be present and involved in bariatric program decisions. They should document

regularly scheduled meetings to address the bariatric program in the institution. These meetings should involve medical staff, nursing, administration, central supply, operating room personnel, and the business office and quality-assurance review.

- The surgical director must be or have been certified by the American Board of Surgery or the American Osteopathic Board of Surgery and/or the Royal College of Physicians and Surgeons of Canada. This person should spend a significant portion of his or her efforts in the field of bariatric surgery. Qualified coverage must be available in the absence of the bariatric surgeon. This person may be primarily an adult bariatric surgeon or a pediatric surgeon with experience in bariatric surgery.
- The medical director will evaluate potential candidates for bariatric surgery and partner with the surgical director to ensure that they meet established operative criteria and have had appropriate medical and behavioral screening to maximize the safety and efficacy of any proposed procedure. Equally important is to identify patients who, by virtue of their medical, psychological, social, or behavioral status, are not acceptable candidates for surgical therapy and whose treatment, therefore, should be postponed or excluded. A critical part of this evaluation process is the mandated participation in a medical weight-loss program for at least 6 months. During this process, screening and treatment of comorbid conditions should be performed. This evaluation should generally be led by the medical director, and the implications of

this workup on the patient's candidacy for a bariatric procedure should be discussed thoroughly as part of the multidisciplinary team meetings and communicated effectively with the patient's primary care provider. In addition, the medical director will assume the responsibility for treatment of any comorbidities identified in the screening process or direct the referral of the patient for subsequent subspecialty evaluation. This person will continue to monitor the various comorbidities through the evaluation process and leading up to the time of surgery.

- The role of the medical director, however, does not end with the bariatric surgery. Rather, the medical director should remain actively engaged with patient care throughout the postoperative period by monitoring excess body-weight loss, nutritional status, and changes in obesity-related comorbid conditions (including necessary alterations in associated medication regimens). Specifically, presurgical pharmacologic treatment modalities associated with various comorbid conditions will require regular reassessment by the medical director, with development of weaning regimens as appropriate during the period of weight loss. In addition, long-term monitoring beyond the immediate postoperative period must be provided to help achieve and maintain optimal weight loss. As such, the medical director will also assume an important role in the process of transitioning the medical care of the patient to an age-appropriate practitioner or program as the patient reaches adulthood.

- Allied health worker: A qualified and specially trained allied health worker (eg, physician's assistant or advanced practice nurse) with experience in the management of morbidly obese pediatric and adolescent surgical patients is needed to act as a bariatric patient care coordinator. This role is dedicated to the coordination of care, close monitoring, and continuing education needed in the preoperative and postoperative care of adolescent patients undergoing bariatric care. There must be a smooth transition between the primary care provider, the outpatient weight-management clinic, and the perioperative inpatient stay. The coordinator functions as the patient and family advocate throughout the process.

- Psychologist/psychiatrist: A dedicated child and adolescent psychologist/psychiatrist with significant experience in pediatric obesity, bariatric evaluation, perioperative support, and eating disorders is needed to provide comprehensive assessment to identify risk factors associated with poor adherence to medical recommendations, protective/supportive factors that would assist in medical adherence, and comorbid psychosocial conditions that would require additional referral and treatment. Information about risk-taking behavior and protective factors and comorbid psychosocial conditions can be integrated into goal-setting to increase the likelihood that initial goals are realistic and able to be maintained. In addition, the psychologist should provide overarching interventions to enhance motivation to change and target barriers to medical adherence within the multidisciplinary treatment setting.

- Social worker: A dedicated social worker is strongly recommended

to assist the bariatric team in evaluation of the psychosocial needs that may arise postoperatively and to assist with triage/referral to mental health professionals when indicated.

- Dietitian: A dedicated registered dietitian with professional credentialing in pediatric weight management and experience in weight-loss surgery is required. Nutritional recommendations for the treatment of the adolescent undergoing weight-loss surgery can be classified into 4 areas: nutritional assessment; education; nutritional needs; and monitoring of nutritional status. The assessment should include a review of current eating habits and behaviors as well as assessment of family support regarding provision of a supportive environment. The registered dietitian should also review laboratory parameters before surgery and correct, either via counseling or supplementation, any apparent nutrient deficiencies. The educational component should incorporate the adolescent's cognition and learning style and should cover healthy food choices, development of meal plans, and dietary modifications specific to the proposed procedure. Preoperatively, the clinician should establish nutritional goals with the adolescent that reinforce principles to be used in the postoperative period. The approach to ensuring optimal postoperative nutritional needs should be evidence-based whenever possible. Protein requirements are estimated at 60 to 90 g/day in adolescents who have undergone gastric bypass, gastric-banding, and gastric-sleeving. Energy needs should be established at or ~10% below estimated basal metabolic rate to maximize weight loss. Micro-nutrient needs depend on the nature of the surgical procedure. Mon-

itoring of nutritional laboratory values with the medical director should occur before surgery, at regular intervals during the first 12 months, and annually thereafter. In addition to ensuring that nutritional needs are met, it is also important to evaluate the potential barriers/issues that are unique to the adolescent population. Examples may include, but are not limited to, influences associated with peer group environment, social aspects of eating, mindful eating principles, and pregnancy/breastfeeding in females.

- Exercise specialist: An exercise physiologist or physical therapist with experience in the treatment of morbidly obese adolescents is highly encouraged to optimize associated parameters in the postoperative period, including musculoskeletal conditioning, postural alignment, flexibility, strength, tone, balance, gait, developmental skills, cardiovascular tolerance, and pain control. Providers should be knowledgeable of local resources for physical activity available to their patients within the community and should be available to educate hospital and clinic staff in appropriate mobility logistics within the perioperative period (including the sage use of bariatric-specific patient-transfer equipment).
- Consultative services: a full complement of consultative specialists is required for the care of morbidly obese pediatric or adolescent surgical patients, including the immediate availability of critical care services. At a minimum this includes an anesthesiologist, pulmonologist, cardiologist, interventional radiologist, endocrinologist, infectious disease specialist, and respiratory therapist. Flexible endoscopy (experienced surgeon or gastroenterologist) should be readily available. The

facility must have an ICU staffed 24/7 with qualified intensivists experienced in managing critically ill morbidly obese pediatric patients with ventilators and invasive hemodynamic monitoring.

### *Multidisciplinary Review*

The adolescent bariatric surgery program should maintain a multidisciplinary pediatric and adolescent bariatric surgery committee for regular discussion and review of each candidate for surgery. Documentation of committee activity should reflect involvement of the surgical director, medical director, program coordinator, behavioral health practitioner, physical activity specialist, and nutritionist/dietician. Ad hoc members of the care team could include other specialists such as a pulmonologist, endocrinologist, cardiologist, gastroenterologist, otolaryngologist, orthopedist, and/or ethicist (or ethics committee).

### *Specialized Equipment*

The institution must maintain medical equipment and specific instrumentation designed for the care of morbidly obese patients throughout the patient care environment, which might include a range of equipment deemed suitable for the full spectrum of extremely obese patients.

- Hospital beds, gurneys, gowns, blood pressure cuffs, walkers, clinic examination room and waiting room furniture, scales, wheelchairs, and toilets must accommodate obese patients and family members.
- Patient-transfer systems for morbidly obese patients must be in place wherever care is provided. Staff must be trained in the handling of morbidly obese patients so that they do not injure the patients or themselves.
- Operating room tables and surgical equipment designed to accommo-

date morbidly obese patients must be available.

- Computed-tomography units, fluoroscopy tables, and nuclear medicine equipment with sufficient weight capacity to handle morbidly obese patients should be locally accessible.

### *Standardized Care*

The adolescent bariatric program should use clinical pathways, both in the ambulatory and inpatient settings, that facilitate the standardization of care for the relevant bariatric procedure. It is the surgeon's responsibility and duty to select which primary operation(s) he or she will perform, but the expectation is that the procedure(s), regardless of the choice, will be performed in a standardized manner. Similarly, the surgeon should determine the details of the planned perioperative care. These details will be documented so that each member of the surgeon's team is aware of the care plan and is prepared to follow the outlined process.

### *Follow-up Care*

The adolescent bariatric program must be dedicated to a goal of long-term patient follow-up of at least 75% at 5 years with a monitoring and tracking system for outcomes and agreement to provide deidentified patient data in a manner consistent with Health Insurance Portability and Accountability Act (HIPAA) regulations. In an effort to optimize longitudinal database analysis, all patients who undergo surgery will be entered and tracked in a prospective manner. Compliance with long-term postoperative follow-up care is critical for appropriate monitoring of weight-loss velocity and to provide anticipatory guidance and goal-setting for both the patient and his or her family. Specific areas of concern include weight regain, pregnancy, and malnutrition. Given the importance of micronutrients for vital metabolic and developmental functions (for

patients and for potential fetuses), programs must document long-term nutritional status including the assessment of macronutritional and micronutritional elements appropriate for the specific bariatric procedure and communicate with the treating obstetrical services.

### Support Groups

The adolescent bariatric program should sponsor organized and super-

vised support groups using in-person and/or electronic formats for all patients who have undergone or are considering undergoing bariatric surgery at the institution. Support-group activities should be documented, including group locations, meeting times, supervisor, curriculum, and attendance.

### Transition Care

Adolescent programs should have a transition plan in place for the long-

term monitoring and care of its patients. This transition may take the form of a paired adult program in which appropriate long-term care can be provided if the procedure is performed in a dedicated pediatric facility.

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