

Design as a Critical Tool in Bariatric Patient Care

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Abstract

Both men and women in the United States are roughly an inch taller and 25 pounds heavier than they were in 1960, says the National Center for Health Statistics at the Centers for Disease Control and Prevention. An increasing number are also overweight or obese. In fact, obesity has become an alarming epidemic with enormous implications for our health care system. A critical concern is the ability to care physically and emotionally for this segment of the patient population. Respecting patient dignity and delivering optimum clinical care are primary issues, as are establishing procedures for safeguarding the health and well-being of these patients and their caregivers. Design is a critical tool in the care of and the improved long-term clinical outcomes for bariatric patients; success mandates a three-prong approach to the design process: appropriate facilities and space, proper equipment and furnishings, and training and standardized care protocols. Together, these components ensure the ability of a health care provider to adequately care for all patients—including this newest and rapidly growing patient segment—with equality and dignity.

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Introduction

As the country struggles with the environmental effects of big cars, the financial effects of big credit card debts, and the social effects of overstuffed calendars, we are now at a critical juncture where the health care system must address the growing size of the average American. Just like the sizes of our cars, houses, and credit card balances, Americans are getting bigger. Both men and women in the United States are roughly an inch taller and 25 pounds heavier than they were in 1960, according to the National Center for Health Statistics at the Centers for Disease Control and Prevention.¹

This is worrisome because since the mid-1970s an increasing number have become overweight or obese. Data from two National Health and Nutrition Examination Surveys (NHANES) show that among adults aged 20 to 74 years the prevalence of obesity more than doubled from 15% (in the 1976 to 1980 survey) to 32.9% (in the 2003 to 2004 survey).² The bottom line is that an estimated 127 million American adults are currently considered overweight, with 60 million plus of those—or a staggering 30% of the U.S. adult population—considered obese.^{3,4}

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Abbreviations: (BMI) body mass index, (NHANES) National Health and Nutrition Examination Surveys

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The proportion of overweight and obese children is also increasing. The NHANES report that the prevalence of overweight and obesity for children aged 2 to 5 years increased from 5 to 13.9%; for those aged 6 to 11 years, prevalence increased from 6.5 to 18.8%; and for those aged 12 to 19 years, prevalence increased from 5 to 17.4%.⁵ Research clearly demonstrates that overweight children and adolescents are more likely to become obese as adults.⁶ Consequently, the unfortunate supersizing of the American population has no foreseeable end. In fact, obesity has become an alarming epidemic with enormous implications for our health care system.

First, obesity sets the stage for a host of additional medical problems to take root. The Rand Corporation, a nonprofit research group, reports that severely obese people are more than twice as likely as people of normal weight to be in fair or poor health and have about twice as many chronic conditions. This translates into higher health care costs—69% higher for men, 60% higher for women—compared with people of normal weight.⁷ Obesity has also been linked with an increased risk of all-cause mortality; the U.S. Department of Health and Human Services reports that more than 300,000 deaths are associated with overweight and obesity in the United States each year.³

Obesity is considered the best predictor of being newly diagnosed with diabetes. An estimated 21 million people have diabetes in the United States today, representing a 61% increase during the past two decades. Approximately 80% of type 2 diabetes cases are associated with being overweight, reflecting the strong correlation between obesity and the development of diabetes. In fact, the International Diabetes Federation predicts that one in three Americans born today will develop diabetes as a consequence of obesity.⁸

Additional illnesses and medical conditions associated with obesity include coronary heart disease, stroke, hypertension, most types of cancer, asthma, osteoarthritis, joint degeneration, gastroesophageal reflux disease, chronic headaches, liver disease, sleep apnea, gout, lower back pain, and urinary incontinence. Some estimates indicate that 89.5 million health care facility bed days are directly related to the care of obese patients, a figure that does not even factor in care delivered in emergency and outpatient settings.

A second critical concern for hospitals and other health care facilities is the ability to care physically and emotionally for this segment of their patient populations.

Respecting patient dignity and delivering optimum clinical care are primary issues, as are establishing procedures for safeguarding the health and well-being of these patients and the caregivers assigned to them. Health care workers sustain nearly five times more overexertion injuries than the average worker, according to the U.S. Bureau of Labor Statistics.⁹ This figure is destined to increase as more bariatric patients enter our health care system, while at the same time the average age of nurses caring for these patients is also rising. Twenty-eight percent of hospitals responding to a 2004 survey by Novation, a health care contracting services firm, reported an increase in workplace injuries related to lifting obese patients.¹⁰

The increase in obese patients significantly impacts the type and kind of health care services provided. One example of the impact to hospitals is the drastic rise in the number of bariatric surgeries performed annually. The American Society for Metabolic and Bariatric Surgery estimates that 205,000 people with morbid obesity underwent weight loss surgery in 2007, up from 13,000 in 1998.¹¹

So What Is a Hospital to Do?

According to the Planning and Design Guidelines for Bariatric Healthcare Spaces produced by the American Institute of Architects, the “average size” patient for whom hospitals should be designing now weighs 330 pounds. When designing for bariatric patients, however, that measurement increases to 1000 pounds.¹² This shift requires a brand new approach to the design of just about every space within the hospital environment.

HDR Architecture advocates specific design solutions as a critical tool in the care of and the improved long-term clinical outcomes for bariatric patients. We have learned through experience the importance of proactive solutions and partner with our health care clients to address these issues as early as possible in the design process. Retrofitting existing rooms to accommodate bariatric patients is much more costly than planning from the beginning for the necessary space and equipment needs during the programming and planning of spaces. Consequently, we advocate a three-prong approach to successful bariatric patient care design:

- appropriate facilities and space
- proper equipment and furnishings
- training and standardized care protocols

Appropriate Facilities and Space

Hospital boards are all faced with a variety of different situations, but they all must come to the same conclusion—providing for the safe and effective care of bariatric patients. One of the first steps in doing this is to determine the proportion of bariatric patients to the whole patient population to best determine the quantity of rooms that, through either addition or alteration, can accommodate this group. Forecasting the bariatric population is important in the planning phase to adequately prepare for future needs.

Hospitals preparing to provide optimal care for bariatric patients must provide adequate spaces and a safe built environment for these patients—beginning with the outside of the facility.

Anticipating the patients' hospital experience begins with ramps and handrails at entrances to facilitate access to the building. Readily available bariatric wheelchairs with plenty of clearance through the hospital entry communicate to the patient that the hospital is equipped to address their medical needs properly. Elevators should feature increased door clearance and weight capacity. It has not been uncommon for obese patients to be transported on freight elevators in order to accommodate either the size of the transport equipment or the patient's weight—a humiliating experience that should be avoided at all costs.

Increased door clearances and storage spaces are also necessary to accommodate oversized wheelchairs, gurneys, and beds, as well as portable lift equipment. Wider door standards should apply for diagnostic and treatment rooms, inpatient rooms, and surgical suites—all areas where a bariatric patient is treated.

For inpatient rooms, standard practice is to increase the space for each room by approximately 100 square feet beyond the size of a typical room, providing for a 5-foot clearance around beds. This additional room is necessary due to specialized equipment (such as lifts), as well as for the additional nursing staff members often required to care for the bariatric patient. In those instances where mounted lifts rather than portable ones are being used, ceilings require additional steel reinforcement to be designed into the structure to support these devices.

In bathrooms, bigger shower stalls should feature heavy-duty grab bars. Additional options to consider for showers are multiple handrails, larger seats, and hand-held showerheads. Oversized toilet seats are another

preferred option. Toilet fixtures and sinks should be mounted to the floor versus the wall, although care should be taken that floor-mounted sinks do not interfere with wheelchairs. Bathrooms should be sized to allow for staff assistance on two sides of the patient at the toilet and shower.

Proper Equipment and Furnishings

Historically, hospitals preferred to rent specialized equipment for the infrequent obese patient. As this percentage of their patient population is increasing, many hospitals now find it more economically beneficial to purchase the appropriate equipment. In an effort to explore how hospitals are currently responding to the increasing need for specialized equipment, facilities, and supplies to care for obese patients, Novation surveyed directors of materials management and directors of surgical services for its "2004 Obese Patient Care Survey Market Research Report." The most common new supplies cited by respondents to the Novation survey included wheelchairs, beds, lifts, and commodes, at a mean estimated cost of \$43,015 per room. The most common new product categories included furniture, surgical supplies, and, especially, lifting and transfer equipment—in fact, 55% of respondents said their organizations have purchased special equipment to help turn, raise, and lower patients.¹⁰

Furnishings for spaces that are often overlooked, but which are vitally important, are the lobby and waiting areas. Obese patients and visitors are oftentimes reluctant to sit for fear of not fitting in standard-sized furniture. Consequently, up to 15 to 20% of reception and family waiting room seating should accommodate obese individuals, which may require purchasing steel-reinforced furniture. Loveseats are often a preferred option because they are not so obviously intended for obese individuals.

A diverse range of bariatric beds are now available, some that even come with built-in scales to ensure that accurate weights are recorded for doctors who need this information to determine correct prescription dosages. Some beds have pressure relief mattresses that inflate and deflate by section to relieve pressure sores, a problem that can occur easily with obese patients who are hard to turn and reposition. Another interesting option is Goretex sheets, which allow skin to breathe better.

Lifting equipment is mandatory for bariatric patient care. It can take five or six nurses to lift an obese patient; with

the proper lift system—either portable or mounted—two caregivers can often handle the task.

Finally, hospitals need to consider the air conditioning system supplying cool air to bariatric rooms. Because obese patients oftentimes require cooler temperatures, either portable cooling equipment or total heating, ventilation, and air conditioning systems need to be designed to accommodate this temperature preference.

Training and Standardized Care Protocols

The proper care of bariatric patients begins with a thorough understanding of the physical, mental, and psychosocial needs of the obese. Consequently, proper training is essential in preparing caregivers for evaluating, treating, and monitoring these patients. The ultimate goal for a bariatric patient is enhanced wellness. Caregivers need to understand their role in getting bariatric patients on the road to regaining mobility and normal activity—two elements essential to the rehabilitation of this patient population.

Equally important is training caregivers in the practice of good body mechanics. Safe lifting and patient handling are critical components to preventing injury. Staff members also need to understand how the design of bariatric patient rooms and the proper equipment can assist them in providing care while preventing injuries. The result is fewer worker compensation claims, less sick time, and improved efficiencies because fewer staff members are needed for patient care. Many hospitals also report lower employee turnover and greater staff satisfaction.

Standardized work processes can also be helpful. Some hospitals utilize a “checklist” for bariatric patient care in order to reduce errors. Finally, it is imperative that training is ongoing and that information and protocols are updated and disseminated to all caregivers on a regular basis.

Concerns regarding the rising rate of obesity are rippling throughout the public health community, which in turn has issued a call to action for schools, public health educators, health care professionals, and the public at large to take steps to halt and hopefully reverse this troubling trend. The architecture community has also come under fire, with demands being issued to design physical activity back into our urban and built environments. In the meantime, though, astute health care executives are recognizing the direct correlation between the proper design of their facilities and their

ability to adequately care for all patients—including this newest and rapidly growing patient segment—with equality and dignity.

Measuring Obesity¹³

Body mass index (BMI) is a number calculated from a person’s weight and height. BMI is an inexpensive and easy-to-perform method of screening—only height and weight measurements are needed—for weight categories that may lead to health problems (Table 1).

Table 1.
Calculating Body Mass Index^{a,b}

Calculating BMI using kilograms and meters (or centimeters)
Formula: $\text{weight (kg)/[height (m)]}^2$
Example:
Weight = 68 kg
Height = 165 cm (1.65 m)
Calculation: $68 \div (1.65)^2 = 24.98$
Calculating BMI using pounds and inches
Formula: $\text{weight (lb)/[height (in)]}^2 \times 703$
Example:
Weight = 150 lbs
Height = 5’5” (65”)
Calculation: $[150 \div (65)^2] \times 703 = 24.96$
Standard weight status categories associated with BMI ranges for adults are as follow:
Underweight: below 18.5
Normal: 18.5 to 24.9
Overweight: 25 to 29.9
Obese: 30 to 39
Morbid obesity: above 39
^a From Department of Health and Human Services, Centers for Disease Control and Prevention. ¹³
^b Two-thirds of adult men and women in the United States with type 2 diabetes have a BMI of 27 or greater.

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