

Overview of Bariatric Management

Niccolo Machiavelli, the Prince (1532), wrote “and it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of new order of things”.

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Introduction

The World Health Organisation has identified the 'epidemic of obesity as one of today's most significant world-wide health problems. Obesity in adults now affects three times more people than it did 20 years ago. Two thirds of the adult male, and more than half of the adult female, population are considered overweight or obese Rigby (2005).

Treatment costs the National Health Service (NHS) £48 million a year (DH 2001). This amount increases to as high as £2 billion when the costs to industry in terms of reduced productivity and loss of output are added into the calculation. With an estimated 18 million days lost to sickness and 30,000 premature deaths in 1998, obesity is undoubtedly the major nutritional disorder of the Western World (World Health Organisation (WHO) (2000)).

Bariatric management is a new concept in service provision, implementing a whole systems approach. Under the umbrella of "The science of managing bariatric patients", the concept encompasses not only all service delivery, police, fire brigade, ambulance, undertakers, hotels and retail businesses but also all life activities such as eating, sleeping, socialising, clothing, sports and sexuality.

All obese patients should be accorded their human rights, and organisations should have systems in place that do not impinge on these rights. Equipment and environments should be adjusted so that when bariatric individuals attend clinics, sit in chairs or travel on trains, they are not embarrassed because the furniture is not suitable.

Definitions of obesity and bariatrics

Obesity

The National Institute of Clinical Excellence defines obesity as "a condition in which weight gain has reached the point of seriously endangering health, with some people being more susceptible than others." (2001). When energy

intake (food) is greater than energy expenditure energy storage is promoted resulting in increased body weight.

Bariatrics

Bariatric originated from the Greek word “**baros**” meaning heavy and “**iatics**” (medical treatment). It means the science of providing healthcare for this population.

There are variations in how a bariatric person is defined and what should be the starting point.

The anthropometric parameter of body mass index (BMI) is the standard tool widely used in epidemiological studies to measure body fat. It is simple and reasonably accurate and calculates from body measurements enabling the user to obtain statistical information and to make broad comparisons across genders and ethnic groups.

Tables 1 & 2

| Classification | BMI (kg/m²) | Risk of Co-morbidities |
|------------------------|-------------------------------|---|
| Underweight | < 18.5 | Low (but increased risk of other clinical problems) |
| Healthy Weight | 18.6 - 24.9 | Average |
| Overweight (pre-obese) | 25.0 - 29.9 | Increased |
| Obese (Grade I) | 30.0 - 34.9 | Moderate |
| Obese (Grade II) | 35.0 – 39.9 | Severe |
| Obese (Grade III) | > 40 | Very Severe |

| Body fat mass | | | | |
|----------------------|------------|------------------|----------------|-----------------|
| 10-20% fat | 20-25% fat | 25-30% fat | 30-40% fat | >40% fat |
| Health Weight | Overweight | moderately obese | severely obese | morbidity obese |

Source: Campbell I.W (2004)

An additional measurement used to indicate increased risk is waist measurement Lean *et al* (1998). It is suggested that this is a reasonable measurement of visceral adiposity independent of height. Waist measurement can be a prime measure of being overweight.

A waist circumference in excess of 102 cm carries a four-fold risk of cardiovascular disease development. This is equal to having a BMI over 30. The greater the waist measurement the more abdominal fat will be present further increasing health risks.

In every case, however, clinical judgment must prevail, especially in such cases as athletes, who have greater muscle mass, elderly people, where body height diminishes due to ageing factors, or people with skeletal deformities.

Bariatric definition: literature review

A literature review and consultations with colleagues in America suggested that there is no consistency in what is considered “bariatric”. The body mass index (BMI) (weight in kilograms divided by the square of the height in metres), was accepted world-wide as the measurement of choice. Voelker (2004) identified the Body Mass Index as the most common internationally accepted standard. (Table 1) People with a BMI greater than 40 are considered bariatric. Waist to hip ratio, and a waist circumference of greater than 40 inches in a male and 35 inches in a female, are also recognised measurements of obesity. Campbell (2004) states that waist circumference is so significant that it may become the primary measure of being overweight and is an additional measure that can be used to indicate increased risk (table 2). Lean *et al* (1998) suggests that this is a reasonable measure of visceral adiposity, independent of height.

Further comments from America mentioned water displacement as the most accurate method. Bushard, (2002) defines a bariatric person as anyone who has limitations in health due to physical size, lack of mobility and

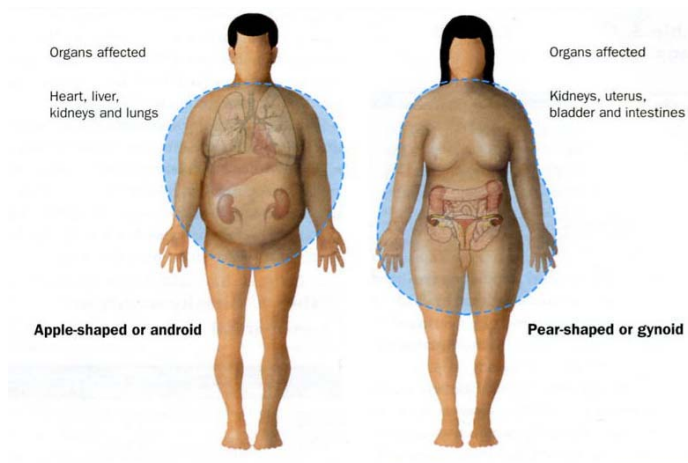
- Pear Abducted Distribution; weight carried below waist: significant tissue between knee
 - Pear Adducted Distribution; weight carried below waist: tissue bulk on outside of thighs
 - Pear Gynoid Distribution; the fat is stored around the hip area.
- Bulbous Gluteal Region Excessive buttock tissues creating protruding shelf.

Grundy and Abate (2003)

Fat distribution differs in men and women, (figure 1), men being predominately apple shaped.

In the apple shaped population, shoulders, face, arms, neck, chest and the upper portion of the abdomen are often distended. The neck may appear compressed with some protrusion of the chest because the stomach, hips, thighs and legs remain thin. In android apple shaped people the fat is more prominent around the waist area. In apple shaped obesity the organs affected are the heart, liver, kidneys and lungs (Campbell 2004).

Figure 1 Typical fat distribution in men and women.



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See References: Peate I. (2005)

Pear shaped obesity is more common in females although it can also present in the male population, (Grundy and Abate 2003). In the pear shaped population the lower parts of the body, hips and legs have increased body fat. In the gynoid pear shaped population the fat distribution is mainly on the hips.

In pear shaped obesity the organs affected are the kidneys, uterus, bladder and intestines.

Co-morbidity

The consequences of obesity for health are many and varied (table 3) with an increased prevalence of diabetes, asthma, heart failure and osteoarthritis. Obesity increases the risk of premature death and of non-fatal but debilitating illnesses that impact on the person's quality of life. The higher the BMI the greater the risk of adverse health effects, upper and lower reduced body functions and physical impairments.

Table 3 - The health consequences of overweight and obesity

| Physical Symptoms | Metabolic Problems | Endocrine Problems | Anaesthetic & Surgical | Psychological & Social |
|--|--|---|---|--|
| Tiredness Breathlessness Varicose veins Back pain Arthritis Oedema Cellulitis Sweating Intertrigo Stress incontinence | Hypertension Hyperlipidaemia Hypercoagulation Type II Diabetes Coronary Heart Disease Stroke Hepatic steatosis | Hirsutism Oligomenorrhea Infertility Menstromenorrhagia Oestrogen-dependant cancers: Breast, uterus, prostate Polycystic ovarian syndrome | Sleep apnoea Chest infections Wound dehiscence Hernia Venous thrombosis | Low self-esteem Distorted body image Depression Cognitive disturbance Isolation Agoraphobia Unemployment Discrimination |

Source: Noble (2001)

Psychological needs

*“Incidentally, compulsive eating is not simply greed, although you may continually berate yourself for your greed. A compulsive eater may well, for example, exercise an iron control in other areas of life and be very disciplined over things that cause other people problems, like the use of time and money.
Tuckwell & Flagg (2000)*

Since the eighties society influences, such as the bombardment by the media with images of lean individuals, and the perception of obesity as a result of gluttony and lack of will power have had a major impact on the social, physical and emotional well being of the individual, in some case leading to Binge Eating Disorders (B.E.D), (this will be discussed further on).

Historically, if you were obese it was seen as a consequence of wealth and obese people, perceived to be rich, were respected.

Friedman et al, (2002) looked at the relationship between obesity and psychological distress. The objective of the study was to examine body image as a potential mediator of the relationship between obesity and psychological distress. Four major themes emerged,: (1) body image evaluation was related to both depression and self esteem; (2) the degree of obesity was correlated with body image; (3) The degree of obesity was associated with depression and self esteem; and (4) the relationship between weight and depression/self esteem was partially mediated by body image. In its conclusion the study found that body image dissatisfaction may be a factor which should be evaluated with obese patients seeking weight-loss treatment and, when evident, should become one target of intervention efforts.

Obesity/bariatrics has a complex aetiology and, more than any other condition, is perceived to be under the control of the individual. In today's society obese persons are subject to intense prejudice and discrimination. Bariatric people are more likely to experience psychosocial ills that are not assessed by any current measure of personality: an example of which is the recently recognised B.E.D.

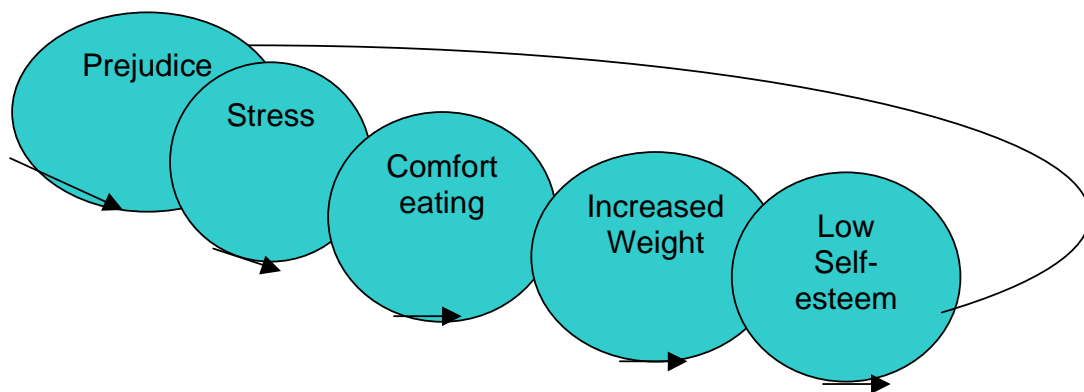
B.E.D characteristics are similar to those of people suffering from bulimia nervosa where the person purges (i.e. vomits etc). In the case of the bariatric person they binge eat without the purging.

Costanzo et al, (1999) found that men were prone to binge eating because of negative emotions (i.e. depression and anger), while binge eating for women was strongly related to diet.

It has been suggested that the onset of binge eating is related to emotional arousal, that is, the person eats to escape the unpleasant emotions he or she is experiencing.

Some 20-46% of bariatric patients have been identified as suffering from BED; (Bruce and Wilfley 1996). A pattern has emerged showing that the bariatric person stays in a cycle that moves repetitively between alternating periods of compulsive over-eating and periods of restrictive eating.

Table 4: Negative impacts of everyday life



Women of all ages have been compulsive over-eaters most of their lives, due to monthly cycles, social interactions and their own psychological well-being (table 4). Both men and women would binge eat if they had failed on a diet and experienced a higher level of depression and disparagement of their body

image, beginning in some cases in early life with heavy children expressing their desire for thinness.

Negative impacts contribute to the downward spiral of the well being of the individual. Prejudice, practicalities of overcoming environmental constraints, access, transportation and seating are all barriers to socialising for these individuals, increasing their feeling of isolation and humiliation and so contributing to their downward spiral of low self esteem.

Social factors

There is a strong societal belief that weight is entirely under the control of the individual, thus giving rise to social stigma. Overweight is routinely ranked as less desirable than a facial disfigurement or physical disability. Individuals prefer to be legally blind or to lose limbs to being bariatric in stature. These attitudes are translated into behavioural problems such as living in isolation or going out for a walk at night so that they are not noticed. To read on their medical notes the words morbid obese, was found to be insulting and humiliating.

Brown and Puhl (2001) identified from their study that systematic discrimination occurs in three important areas of living: work, education and health. Weight Concern (2002) wrote “obese persons are being stigmatised and discriminated against at work, in schools and even within the NHS.”

The prejudice against obesity is at the same stage as racism 50 years ago - overt, expressed and widespread, the sufferer being denied educational opportunities, job promotion and housing.

Obesity has been described as the ‘last remaining socially acceptable form of prejudice’. (Stunkard AJ and Sobal J 1995)

Examples have been found of increasing weight gain leading to children as young as six being described as lazy, dirty, stupid, ugly, cheats and liars, individuals’ hope of entering a desired profession diminishing, and the

appearance of their bodies stigmatised for the moral failure of not controlling their own weight. (Staffieri JR 1967)

If society holds negative attitudes towards obesity, are healthcare professionals involved in its management immune to these beliefs? Evidence suggests the contrary.

Oberrieder et al (1995), in a study of dietetic students and dieticians, found negative attitudes in both groups and that dieticians who were not overweight had a more negative attitude. McArthur and Ross (1997) found dieticians who perceived themselves as overweight had a more negative view of themselves than do other overweight people.

In contrast, McArthur (1995), in a study of non-nutritional and nutritional students, found that both groups rated overweight persons as enjoyable company, trustworthy and as intelligent as others

A group of professionals who might have been expected to express more positive attitudes i.e. psychologists and mental health professionals, also sent negative messages, although the study did find that this did not lead to a more negative diagnosis, or treatment.

Professionals need to work together on these sensitive issues to ensure that psychological needs are part of managing bariatric patients and that they see the individual not the excess weight.

Management

Assessment of need

Assessment is the first step in the intervention process. It identifies goals, equipment needs and care packages that meet the needs of both individuals and of formal and informal carers and improves functional capability. The process balances risk, need and resources against eligibility.

Assessment of need has been identified as the key component in the continuity of patient care. It is the pivot that underpins all other elements of service delivery and it encompasses all agencies in a multi-disciplinary approach.

With the advent of the Human Rights Act (1998) an important addition to the exercise are the wishes of the individual patient. Historically these were excluded and the assessment served only the dual purpose of identifying risk and need and determining eligibility for service provision. (Mandelstam 1999)

For a patient with complex needs, e.g. bariatric persons, this assessment could make the difference between remaining at home with the appropriate control measures in place or re-admission to hospital. It is essential that the assessment ensures that all control measures are in place before the patient is discharged home. If this is badly managed it can be devastating to the individual, spouse and carers involved in the home. Both human and equipment resources should be in place before discharge takes place. When these go wrong the causes are usually lack of risk and needs assessment, and poor communication and co-ordination. Walters (1987) argues that "discharge doesn't begin on the day the decision is made for the patient to be sent home. It should commence on admission".

Kesby (2000) highlighted that there was a lack of understanding about 'joint assessment'. Care planning by all parties is the essential element of community care. Collaboration between all agencies will require a risk assessment that identifies the size and weight of equipment, weight of patient and environmental suitability to reduce the inherent risks associated with handling heavy people.

This can be challenging. But quality care delivery can only be achieved by professionals putting the individual in the centre, understanding the individual's problems, re-assessing his or her needs and altering the risk assessment to address any changes. This process must include representatives of all relevant disciplines and service providers.

Systems approach

Stubbs (2000) states that in spite of the range of specialist areas, a general principle runs through the study of ergonomic problems in complex work environments. The best way to achieve a satisfactory solution to managing bariatric people is to use a systems approach. This approach acknowledges that changes or problems in one area may have an influence on another. Two integral parts of an ergonomic approach are interdisciplinary research activities based on anatomy, physiology and psychology. Effective use of ergonomic principles will make the work place safer, healthier and more proactive.

Table 5: Bariatric patient centred pathway



Risk assessment

The fundamental principles of controlling health and safety risks at work are based on the protection of everyone who may be adversely affected regardless of their age, gender and abilities.

Bojanowski (1998) underlined the importance of safety in the work place. The employer has a moral responsibility to ensure that the environment has a safe system of work policy that adheres to current statutory requirements designed to reduce risks within the working environment.

An ergonomic risk assessment based on task, individual, load, environment, and equipment should be completed for all individuals within the care and social environments. This assessment should be the means of determining risk reduction activities that are proportional to the seriousness of the issues in question and their effects on all involved within the environment considered. This will enable a safe system of work to be operated within that environment so as to reduce the risks associated with manual handling tasks.

Ensuring a safe system of work is an essential component of health and safety legislation. The work by design is complex, varied and unpredictable, the load heavy and unstable moved in a variety of awkward unplanned situations increasing the risk of manual handling injury. Pheasant and Stubbs (1994) pointed out that the weight and size of the load lifted increases the risk of low back pain to workers.

An ergonomic risk assessment process is required, relating to the handling of a heavy load, as an extended section to the organisations minimal handling policy. This will identify tasks that involve lifting, lowering, carrying, pulling, pushing, and supporting by hand or bodily force.

Using an ergonomic approach will enable the intrinsic stress of the task to be considered. Risk assessments should lead to reduction of the risks associated with the tasks being undertaken and the working environment of those tasks. If applied inappropriately, however, such assessment may increase the risks associated with handling heavy people.

Potential exposure hazards associated with bariatric management in service delivery are:

- Work related musculoskeletal disorders (WRMSD)
- Insufficient knowledge
- Insufficient training
- Insufficient human resources
- Equipment deficits
- Environmental constraints
- Ignorance of the weight of the individual
- Poor design of work practices.
- Time constraints
- Employees' reluctance to identify and document unmet needs due to ethical and legal implications. Resistance to change
- Relatives' reluctance to have equipment in the house

Knowledge of the weight of the patient is essential. It enables appropriate equipment to be provided and staffing needs identified to reduce the above hazards. Pheasant (1997) identified that people in heavy manual roles are about twice as likely to show signs of advanced disc degeneration by the time they are in their fifties. Poor staffing and unsuitable equipment causes over-exertion injuries to the staff involved. Regular heavy patient handling can cause cumulative damage.

It is now well established, however, that the weight of the load is only one and sometimes not the main consideration affecting the risk of injury.

Manual handling

To prevent the prevalence of WRMSD (work related musculo-skeletal disorders) associated with manual handling tasks the risk assessment process should have three main strategies: selection, training and work design. The assessment of physical exposure to risk factors associated with handling bariatric individuals should take the following into consideration:

- In-depth handling plan e.g. do not move the person on the hoist, move the equipment to the patient. Moving a bariatric patient on a hoist is a high risk activity
- Weight of the patient
- Individual's mobility and capability
- Psychological needs
- Number of persons required to undertake the care (calculated on height weight and body dynamics of the patient). Carers should work within their own body space, so the number of carers required could vary from 4-6 (4 being the absolute minimum, based on the experience of the author).
- Tissue viability
- Pain
- Accessibility of the environment
- Environment space for manoeuvrability of equipment and health providers
- Equipment in place including mattress type e.g. foam or dynamic
- Bed design
- Equipment required
- Personal care
- Attachments e.g. drips, catheters
- Types of transfers required
- Therapeutic handling
- Sling assessment (if required)
- Bariatric equipment resource centre
- Training needs

The organisation's manual handling advisors and tissue viability nurses should be consulted at the initial point of contact with the individual for expert advice.

Hoists and slings

The majority of hoists will take a working load of 30 stone with safety. For bariatric patients the need to buy or rent hoists, and where the hoist is to be kept, must be taken into consideration. Also whether there is a need for a designated area with inbuilt scales and gantry.

The following factors need to be taken into account:

- Positioning of the sling
- Safe working load of the hoist/sling
- Size of the sling: taking into account not only the height and weight of the patient but also his or her shape
- Will the position of the patient enable a safe transfer on and off the bed to be made?
- Does the patient have any ability to assist?
- Sustaining tissue viability with the use of slide sheets
- Attachments
- Working environment e.g. safe working load of the floor

Selecting slings for bariatric individuals is not just a case of measuring the size of the patient and allocating a sling. Some basic understanding of the patient's body dynamics is essential, the more so when the assessment is for a morbidly obese person.

The weight distribution of the patient should be considered according to their body type, e.g. apple or pear. A 'pear body type' will present with excess weight on the thighs. A sling with a long leg to wrap round the leg will be needed for these people. If there is excess weight on the inside of the leg then care is needed to ensure that there is nothing to cause friction and so damage the skin between the thighs.

In the case of patients with a large bulbous gluteal region inserting the sling will cause difficulties. In particular it will be difficult to position the sling over

the shelf area, especially if the individual is seated. This can be overcome by using sliding sheets to insert the sling.

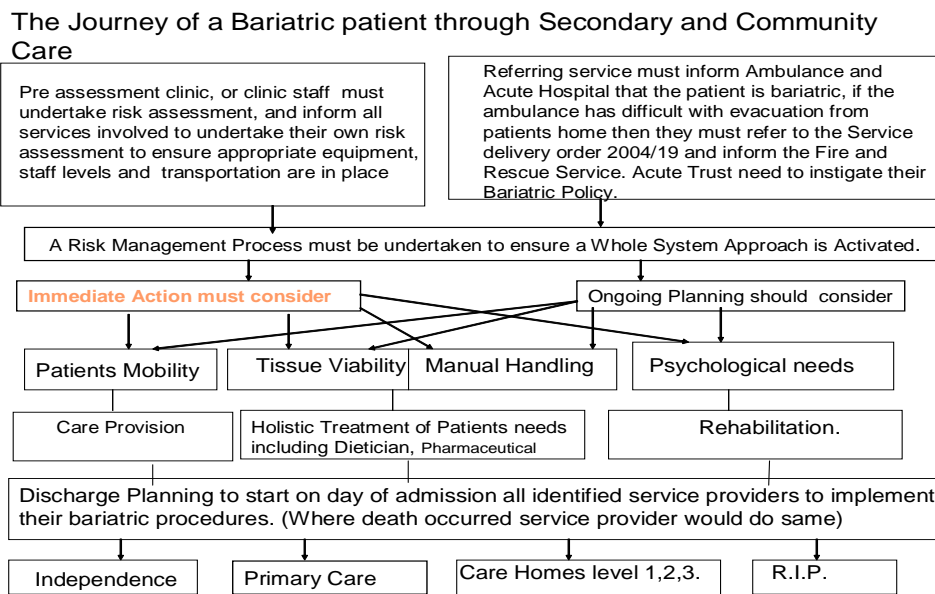
Manual handling – policies and management and training

Because of the diversity of the tasks, staff should be given training that takes into account the holistic approach of managing bariatric individuals including: psychological needs, co-morbidities, manual handling, risk assessment, sensitivity and personal care. It should be down to each organisation to deliver a training program for staff to meet their individual needs.

There should be half days or full days devoted to study and training specifically related to the minimal handling of bariatric patients for all employees involved in bariatric care.

An efficient quality service is provided by eliminating or reducing exposure to unnecessary manual handling risk. Standards should be set that encompass a holistic approach establishing a bariatric manual handling culture, within a reduced risk environment.

Table 6:



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Community care

The home environment - general

In the discussion with the bariatric person, the assessment should include their home environment, access, and where the equipment is to be installed, whether upstairs or on the ground floor. If upstairs, then consideration must be given to the safe working load of the floor of the home or flat, and advice should be sought from a competent professional within the local council. This can be sought from a structural engineer, or if NHS, from the Estates Department.

The general rule of thumb, based on the experience of the author, is that a ground floor room, 3 metres square, can bear 2000 kilos. The safe load for a floor upstairs will be less, so it is very important to get advice on the strength of a first floor before putting equipment for a bariatric person in place there. There should be sufficient room space for the equipment to be used and manoeuvred and to accommodate four or more carers undertaking the tasks. The floor space should be large enough to permit other equipment to be used, e.g. mobile or gantry hoists, glideabout commodes, wheelchairs, stretchers (in acute environments), and the handling of a patient who falls. The carers (who themselves might be obese) should have enough space around the bed area to facilitate safe posturing that does not require them to bend. The ideal dimension is that there should be not less than 1.5 metres at all times between the walls of the room and the equipment.

The normal width of doorways is 30 inches and in most cases these will require widening since the equipment for a bariatric patient, e.g. commode wheelchair, would normally be wider.

Personal care

Standard bathrooms are unlikely to be adequate for bariatric individuals. The layouts in homes and some care environments would be incapable of

accommodating the weight of the individual. This would particularly be the case with porcelain toilets especially if they are not floor mounted. The area around the toilet should allow for an extra wide commode, i.e. 40 inches, with extra access space of 3 feet for carers to attend the individual's needs. There should also be room for a 360° turn when using the glideabout commode.

The preferred option is to have a commode by the side of the individual's bed. If access to the bathroom toilet allows a commode over the toilet with side access for personal hygiene this is a more acceptable practice.

Using a bath is not recommended for bariatric individuals; where possible a shower facility should be provided. Shower chairs are becoming more readily available for bariatric individuals.

Personal hygiene

Maintaining skin integrity for bariatric patients is a challenge. Excoriation of skin in the individual's skin folds, e.g. breast, abdominal fold, and groin area, is common in bariatric patients. Bathing for most bariatric individuals is not an option as the majority of them are unable to access the bath. A shower may not be available.

Washing underneath the skin folds is a difficult task for bariatric patients since the weight of the folds is too heavy for the individual to lift and wash underneath. Individuals often suffer skin breakdown, rashes and exczematous lesions resulting from perspiration, friction and lack of cleanliness. All of these require careful intervention to prevent bacterial or fungal growth.

Drying the skin under the folds is critical; leaving the skin underneath the folds wet encourages fungal and bacterial growth. In some circumstances, leaving a soft cloth between the skin folds would reduce friction and absorb moisture.

In females wearing a bra might not be an option as it could further aggravate any skin problems.

Showering facilities would enable a thorough cleaning of the skin folds to be undertaken, but a risk assessment would be required to ensure the task was undertaken within a safe system of work.

Bed bathing would be the preferred option for non-mobile patients to reduce the inherent risks associated with the use of a hoist, unless a gantry system and hydraulic bath enable a safe system of work.

Toileting

Bariatric persons find elimination difficult, due to their relative immobility and size. The size and safe working load of the toilet inhibit normal elimination. The use of urinals, either sitting on the edge of the bed or standing, may accordingly provide better relief for men. Female patients prefer slipper pans as they are smaller and do not dig into the flesh. These give the patient a sense of security. For patients requiring assistance with the insertion of a slipper pan, the use of a hoist would be the more comfortable way of undertaking the task. It is possible for the patient to be rolled on to the slipper pan but the width of the bed may not allow this procedure. Raised toilet seats designed for easy access for personal hygiene, together with hand rails, are the preferred option as these can offer better positioning and aid independence when standing and for personal hygiene.

Commodes

The use of commodes does not normally present too much of a problem. There can, however, be difficulties moving around rooms and positioning over toilets. Some commodes have the width but not the depth, which means the individual has to perch on the commode.

Four wheeled braked commodes with removable or collapsing arms and adjustable folding foot rests should be the preferred choice. These allow easy

transfer and provide a comfortable fit. An added feature would be side access, which allows a user to carry out personal hygiene.

Incontinence

Incontinence pads should be fit for the purpose and meet the needs of the individual - standard issue may not be suitable. Giving bariatric people inappropriate incontinence pads will detract from their dignity. The majority of bariatric people have stress incontinence. A referral to the incontinence advisor for careful assessment is therefore essential to ensure that the pads prescribed are fit for the purpose.

Catheterisation

This task requires much preparation and needs to be well planned. It will involve several members of staff holding the abdomen thereby adding to the patient's discomfort.

The procedure should be explained carefully to the patient including the number of staff taking part.

Depending on the experience of the member of staff undertaking the catheterisation, the task can take time (in America they turn the patient on his or her stomach for easier access), and handling of the abdomen can increase the risk to carers of WRMSD.

Bed assessments

Most individuals are unable to lie down due to breathing difficulties, beds are too high for them to lift their legs up onto the bed independently, so once in bed, they cannot get out. To maintain their independence, they remain in their armchairs and sleep in them with their legs down. This compounds their mobility problems as fluid collects in their legs resulting in leg ulcers.

It is the increased body fat on the chest and intra-abdominal area that makes breathing more strenuous with poor oxygen intake and gas exchanges. Breathing problems due to fat on the chest and intra-abdominal area make breathing more difficult and lead to the inability to lie down.

Bed assessments need to take into account the appropriate weight of the bed, whether it can take the weight of the mattress, what will be a suitable height for the patient to get on and off, and whether leg raisers should be provided for patients with heavy legs. If a dynamic mattress is used this will affect the height of the bedrails, requiring these to be higher. When in sitting or a semi – recumbent position, the backrest of a bed needs to be adjusted to accommodate the gluteal region.

Consideration must be given to:

- Height and width of the bed
- Safe working load of the bed, to include the weight of the mattress and of health staff caring for the patient
- Suitability of the bed design
- Width of the bed to enable patient to be turned from side to side
- Sustaining tissue viability
- Working environment

Beds come in many different designs, but caring for a bariatric individual of over 191 kg, in weight, in a 3 feet bed causes problems when the individual needs to be turned.

When purchasing a bed and mattress it is important to make sure that both have the capacity to support a bariatric person i.e. the mattress may have a larger capacity than the bed base.

Providing a wider bed could be hazardous to carers because of the need to reach and stretch. A bed that turns the patient from side to side to minimise these handling risks is a solution to this.

Using a bed that enables the individual to walk off the end, and that can turn into a chair, will benefit the individual, carers and physiotherapists carrying out rehabilitation. Some beds extend for personal care tasks.

The possibility that the bed can be lowered and raised, especially within the community environment, therefore needs to be considered.

Mattresses

Pressure relief mattresses are either static (foam) or alternating (dynamic, low air loss systems). According to the Agency for Healthcare Research and Quality (1992) "the difference lies in the measured ability of the support surface to lower interface pressure to below capillary closing levels".

Foam mattresses allow individuals more independence as they are able to assist with turning and getting in and out of bed. Dynamic mattresses can make individuals dependent as getting in and out of bed and moving around in bed is more difficult than with foam.

The mattress needs to accommodate the patient's weight and to work in conjunction with the bed it is supplied with.

The combination of bed, mattress, bed rails, bumpers and hoists must be a match. If the bed does not go low enough and the hoist high enough then the individual will not clear the bed to be transferred to another piece of equipment.

Mismatch of equipment is common so careful consideration should be given to the types of equipment that are being used in conjunction with each other

Chairs

Most bariatric patients sleep in chairs because they cannot lie flat or raise their legs into bed. Therefore, in preference to a single motor a dual motor chair should be provided. This will enable the patient to change position. The chair also requires pressure-relieving properties so as to obviate the need for a cushion.

Consideration must be given to:

- The body dynamics of the patient
- Where the chair is being used
- Environmental constraints
- The necessity for dual motoring
- Height and depth of the chair
- Purpose
- Pressure relieving properties
- Number of persons required to install equipment

Mobility

Some wheelchairs are too heavy and wide for one person to push, (raising the question whether this is good manual handling). If the wheelchair is self propelled, the user would need good upper body strength to move the wheelchair physically. Such wheelchairs require large doorways and a large turning circle, not always achievable in a standard home.

Powered wheelchairs raise similar considerations to those which are self propelling, are much heavier and raise even more problems with manoeuvrability within the home environment

Walking aids

These can be cumbersome and difficult to manoeuvre through doorways. Without a tray, users find them difficult when carrying other equipment. The size of the walking aid needs to accommodate the individual's body dynamics otherwise the aid may force the user to walk at a difficult angle.

Eating and drinking

It is essential that advice should be sought from a dietician and an appropriate dietary management regime adopted. Bariatric individuals are at risk of malnutrition due to illness, resulting in lethargy and depression. A bariatric individual's weight gain could be the result of medication, reduced mobility and fluid retention.

Clothing

Clothing is a major problem for bariatric individuals, most getting their clothes from America or catalogues. There are now a few manufacturers in this country and they can be found on the internet. In hospital the dignity of individuals is diminished. In some cases individuals have to wear two gowns when moving around.

Telecare

Telecare is the way forward, bringing services to individuals instead of transporting them to clinics. Telecare in this area is in its infancy. With the right equipment, however, an individual could be monitored within his or her own home environment. For example, it would be possible to monitor how many times an individual goes to the cupboard or fridge. An alarm at a centre would alert staff to the individual's eating habits. This concept requires much further study and research.

Secondary care

Hospital care

The patient and carer are integral and equal partners in the transportation, caring discharge planning, and giving personal information to the carer the individual must give consent.

Before transportation is provided for an individual, his or her needs and risk factors should be assessed which should cover the importance of maintaining patient dignity, and respect

A full holistic assessment must be undertaken. The necessary actions must be identified, discussed and agreed with the individual, carers and other service providers, before the appointment, admission or discharge, including any financial implications.

The individual and carer must be given the opportunity to discuss the arrangements and any anxieties they may have with a member of the staff providing the service.

Ever effort must be made to ensure the individual feels confident about the task in hand.

Transportation

At the present time ambulance services are not equipped to transport bariatric individuals. They may, therefore, compromise work practices and take unnecessary risk.

Patient transport services fare a little better. For planned visits to hospital an assessment of foreseeable risks must have been undertaken by the service provider to ensure appropriate transport and resources are in place to undertake the transportation.

In the event of an emergency, the ambulance service must be informed that a bariatric individual is involved by the individual contacting them. The ambulance service should have in place a bariatric handling policy to address the foreseeable risks associated with handling bariatric individuals. Once informed of the individual's existence they must inform the admitting hospital so that all equipment is in place on the patient's arrival.

Wound healing

Excess weight makes individuals more prone to lower limb fracture. With the consequential additional weight of plaster of paris, this creates a real risk of the skin breaking down in addition to the usual complications of bed rest.

Bariatric individuals suffer poor wound and fracture healing time as a result of poor oxygenation, circulation and malnutrition.

Bariatric individuals are at increased risk of leg ulcers due to cellulitis and oedema, mostly because they do not go to bed and, when eliminating, they are unable to dry themselves properly so they suffer excoriation and groin inflammation.

The provision of adequate dressings is likely to be difficult and these may not stay in place due to the shape of the legs. Manufacturers are, however, getting better at producing bigger dressings.

Pharmaceutical

As the services responsible for the administration of drugs, nurses, medical staff and pharmacists need to be aware of the importance of knowing patients' actual and ideal body weight. Weighing creates many problems and much embarrassment – the current solutions are public weighbridges, meat scales in hospital kitchens or wheelchair scales.

Some drugs act more effectively on bariatric people so the dosage has to be carefully assessed. If in doubt seek the advice of your pharmacist. See ref. (Blouin & Warren 1987).

Rehabilitation

There are unique rehabilitation, care, and appropriate equipment challenges for this population especially when they have a BMI greater than 40 and weigh in excess of 30 stone (191 kg).

Working with bariatric patients has foreseeable risks. The patient's mobility problems increase the risk of work related musculoskeletal disorders to health professionals and carers, as these patients will exceed the guideline weights set by the HSE (1998).

Moving and handling patients is an integral part of health and social care (Brown & Wilson 2002). Health and social care staff are required to increase their physical effort when handling bariatric patients when equipment is unavailable to help with the task.

Hignett et al (2003) suggested that there was a lack of evidence in the rehabilitation setting related to equipment options for stand and walk systems and that more research into the handling of patients in rehabilitation activities should be undertaken as a matter of priority.

The nature of any move will depend on the bariatric patient's ability to bear his or her own weight and to assist. Following a comprehensive risk and mobility assessment, bariatric patients might move about using either a mobile walking device or mechanical assistance all of which have safe working load weight limits.

- Crutches
- Frames with or without wheels
- Sticks

- Tripods
- Hoists
- Slings

Mobility is especially difficult for bariatric patients after surgery. The restricted mobility resulting from their excess body weight hinders them from responding to the usual post-operative encouragement to the patient to achieve early mobility. The surgery results in increased strain on the patient's joints and leads to breathing and cardiovascular impairments. A further constraint on mobility is the patient's lack of confidence in his or her ability to move around on their own again.

From the outset of the patient's journey, whether planned (pre-assessment clinics) or in an emergency, there is a need to provide a safe system of work. The weight of the patient needs to be established and recorded to ensure that suitable equipment is available at admission, that it meets the working load of the patient and respects his or her dignity.

Adequate human resources need to be provided to safeguard the health and safety of the staff and to reduce the inherent risks associated with handling and moving bariatric patients.

A safe system of mobility requires systematic step-by-step consideration. A bariatric protocol should be completed encompassing risk assessment, moving and handling assessment and the provision of suitable equipment.

Mechanical devices for rehabilitation and mobility

- Bed that converts to a chair
- Standing and walking hoist
- Riser/recliner chair (refer to pg. 26)

Lift pants

Lift pants enable bariatric patients to be moved by means of a gantry or mobile hoist. The lift pants facilitate safe and secure standing and gait training for the patient with poor balance and leg function. They permit freedom of movement while relieving some of the body weight and give confidence to the patient (Liko). They also reduce the inherent risks associated with moving bariatric patients.

Mechanical hoists

Lifting heavy patients entails great responsibility. The Viking XL (Liko) is ready for gait training and can be an invaluable aid to rehabilitation, even for extremely heavy patients. Developed for very heavy patients, specially equipped with armrests (as an accessory), it is also suitable for average-sized people.

The Freespan gantry (Liko) concept makes possible the lifting of bariatric patients up to a weight of 60 stone (400 kgs). The lift unit can be easily moved in all directions over a large area, giving patients the same directional freedom of movement. An A frame can be used by the patient to assist with walking, the gantry further reduces the risks associated with pushing and pulling when using a mobile hoist.

Facilitating the mobility of a bariatric patient is certainly challenging, but improvements in equipment technology in the field of patient handling have resulted in improvements in both safety for health care staff and in patient comfort. However, as Cookson (2002) states, "equipment alone is not the answer to improving quality of care unless supported by sound clinical assessment, robust policies and procedures which in turn bring about systems of work that are safe for both the patient and carers".

In the event of death

The responding service will need to risk assess the task of removing the body to ensure that it is moved with dignity and respect using suitable equipment and transport.

If the body is to be moved to the mortuary, this can be done by using the bed of the deceased if a trolley is not available. When the fridges are not big enough the undertakers should be contacted as soon as possible so as to eliminate the need for the body to lie in an unsuitable fridge.

Making a business case

The problem of creating a suitable home or hospital environment is augmented by lack of knowledge about the equipment available and how to make a successful case for funding. A business plan can assist this process. It can be in the form of a report, direct presentation or part of a risk assessment report.

The report needs to include local and national statistics concerning prevalence and adverse incidents that have occurred relating to bariatric care.

It will be necessary to have examined the costs of hiring and buying, and the 'on costs' and to do a comparison chart. It will also be necessary to look at the weekly costs and the length of stay of the individual and to make sure that rental is not more costly than an outright purchase. Renting will of course include all the service repairs in the cost. In the case of outright purchase the length of the warranty needs to be established, whether call out charges are extra, whether the response time is 2 hours or 48 hours and what are the on costs if a 2 hour response time is wanted. V.A.T also needs to be added.

In presenting or sending out the report, consideration should be given to who it is going to and what will they be looking for. The report should focus on the issues of value for money, and whether the equipment has been trialled. Cost savings should also be shown.

In conclusion, the provision of equipment for bariatric persons is not straight forward. Predominately bespoke equipment will be required to meet individual need. Equipment providers should have a clear policy statement. Competent assessors should be identified who can risk assess environments, provide information about equipment and accessibility and train formal and informal carers.

Anita Rush

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For further information see:

Rush AJ (2002) **A Study to Investigate Bariatric Care in the Community**
Dissertation for Master of Science in Health Ergonomics. Robens Centre for Health Ergonomics EIHMS University of Surrey

Relevant organisations

Agency for Healthcare Research and Quality www.ahrq.gov

National Obesity Forum (NOF) www.nationalobesityforum.org.uk

Association for the study of Obesity (ASO) www.aso.org.uk

National Heart, Lung, and Blood Institute (NHLBI)

www.nhlbi.nih.gov/index

The Obesity Awareness and Solutions Trust (TOAST) www.toast.uk.org.uk

International Obesity Task Force www.iotf.org.

LIKO. Hoist manufacturer and supplier www.liko.co.uk

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