In collaboration with nbe

THE GUIDE TO

The Handling of People

a systems approach

6th edition
Editor Jacqui Smith

hop 6

Published by Backcare

THE GUIDE TO

The Handling of People

a systems approach

6th edition

hop6

All rights reserved. No reproduction, copy or transmission of this publication may be made without the written permission of the publisher. No paragraph, illustration or diagram may be reproduced, copied or transmitted except with the written permission of the publishers or in accordance with the Copyright, Designs and Patents Act 1988, or in accordance with the terms of licences issued by the Copyright Licensing Agency.

Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

First published 1981
Second edition 1987
Third edition 1992
Reprinted January 1993 with amendments largely in Chapter 2
Fourth edition 1997
Reprinted February 1998 with revisions
Reprinted August 1998
Reprinted February 1999
Fifth edition 2005
Sixth edition 2011

Designed and produced by Pages Creative, Cheltenham

Illustrations by Gemma Hastilow and Kate Hitchen

Printed by Severnprint, Gloucester, on Purpose Offset 90gsm, Forest Stewardship Council certified

A catalogue record for this publication is available from the British Library
ISBN 978-0-9530582-1-1

Published by BackCare, the charity for healthier backs (registered as the National Back Pain Association).
16 Elmtree Road, Teddington, Middlesex, TW11 8ST

Tel: 020 8977 5474 Fax: 020 8943 5318 Website: www.backcare.org.uk

© BackCare

Forewords

BackCare

Moving and handling of people is, for many, a fact of everyday working life. Emergency and regular medical interventions frequently rely on it. Much of social care cannot be effective without similar assistance. Training staff how to do this is, of course, essential, but this alone is not enough. All too often, without appropriate work design, a clear understanding of the real issues and the monitoring and reinforcing of good practice, things go wrong. The service, the carer and cared for are put at risk both by direct practical mistakes and, more importantly, by the errors of understanding that allow or even encourage mistakes to be made before and after handling people.

It is self evident that mishandling of people could sometimes injure the back or trigger back pain. People with back pain will perhaps, understandably, avoid tasks for fear of aggravating an injury. But most instances of back pain at work are not caused by injury and not caused by work. Responding to them as if they were an injury when they are is, of course, correct. However, responding to them as if they were an injury when they are not is potentially very damaging, leading to care failures, unnecessary incapacity and reduced service performance. The latter is far more common than the former.

The Guide to The Handling of People, now in its 6th edition, provides the leading source of evidence based instruction and guidance.

HOP6 is for service managers, trainers and practitioners. The systems essential to introducing, maintaining, performing and reviewing safe, dignified and purposeful handling cannot be achieved by accident; the subject is far too complex for that and misunderstanding is still the norm. Good judgement is required. The expertise and experience captured in *HOP6* is without parallel. The lessons of research, best practice and professional judgement are combined in one resource.

BackCare is extremely grateful for the significant contribution of the National Back Exchange in the production of this book, and thanks all those who contributed to it as authors, peer reviewers and members of the production team.

Dr Andrew Auty
Chairman of the board of trustees

© BackCare

National Back Exchange

National Back Exchange is an international organisation that is passionate about reducing manual handling risks to both staff and the people they care for, and has been since it was founded in 1988. Then, as now, members have been carrying out research and gathering evidence to improve practice.

Since 2004, National Back Exchange has worked closely with BackCare and the editorial team in the production of *The Handling of People* series and we are again delighted to be involved with the latest edition. The series has been used as evidence of good practice in numerous court cases and has helped organisations, staff and manual handling practitioners across health, social care and education to develop robust training programmes and safer systems of work, based on sound evidence of best practice.

The Guide to The Handling of People, 6th edition, concentrates more on these systems and strategies, taking into account the important elements of manual handling; legal framework, risk assessment, ergonomics and biomechanics. In this edition, there are new chapters concentrating on organisation and policy, training, equipment and staff health and wellbeing to enhance our strategic planning.

As with the previous edition, the practical chapters and two chapters looking at bariatric management, and falls prevention and management, are supported by research and evidence collected by members of National Back Exchange. In order to develop further the field of people handling and to continue to safeguard both staff and those who are dependent on their care, National Back Exchange feels strongly that this research continues.

National Back Exchange has no doubt that this book will be a vital resource and will continue to have a significant impact.

Mike Betts
Chairman

© BackCare

Royal College of Nursing

Thirty years have elapsed since The Royal College of Nursing first collaborated with BackCare to launch the *Handling of Patients – a Guide for Nurse Managers*. Since its involvement in launching this pioneering work, the RCN has expended much effort through its professional and trade union work, in promoting change in healthcare safety culture in an effort to minimise the risk of injury to handlers, and people being handled, alike. In doing so, it benefited greatly from its relationships with BackCare, National Back Exchange and other stakeholders, not least through the RCN Back Pain Panel. Through its legal services, the RCN handled much of the early litigation in the field on behalf of injured members, relying in part on the accepted best practice of the time, set out in successive editions, and succeeded in many cases in persuading the courts that those practices represented what the reasonable employer was under a duty to ensure as a minimum standard to avoid legal liability. I relied on previous editions myself in acting as an expert witness.

The arrival of this 6th edition is a fitting way to celebrate this now seminal publication's 30th birthday, and, with the most helpful introduction by Jacqui Smith, gives us an opportunity to reflect on how far we have travelled during those 30 years. The healthcare workplace is now safer, at least to the extent that handling accidents and acute injury are less frequent, but, sadly, this has not substantially reduced the incidence of musculoskeletal injury, which, along with the physical and psychological injury caused by work related stress and violent assault, remain far too high.

Health and safety law and the Human Rights Act have had a bad press over the years, but sensibly interpreted, as by the authors of this new edition, underpin what is good professional and management practice. The adoption of the "systems" approach, and the provision of tools to inform the careful balancing of risk and benefits, combines good health and safety management and nursing professional practice. Handling assessments in individual cases are not always so easy in practice, and this is where the practical advice in this new edition is so invaluable.

On behalf of the RCN, I commend this new edition to the nursing and caring professions at all levels, as well as to those who manage and fund healthcare provision, and am confident that it will help to further advance standards of care, and of health and safety, for the benefit of all.

Dr Peter Carter
Chief executive and general secretary

© BackCare

Chartered Society of Physiotherapy

The Chartered Society of Physiotherapy (CSP) is delighted to welcome this latest edition of *The Guide to The Handling of People*, which provides the reader with current information relating to all aspects of moving and handling.

Moving and handling people is a core activity of many engaged in health and social care. Local and national organisations have policies in place in order to maintain the health and wellbeing of their workforce, while considering the needs of those to whom they provide care. *HOP6* provides information on current legislation, national policy, core handling skills and examples, alongside evidence based advice and recommendations on the process of assessing risk, planning, recording and implementing management activity. This is delivered in a clear format against which organisations may compare and revise local manual handling policies. It also articulates the competencies required by the workforce to meet the needs of individuals.

Musculoskeletal disorders in handlers continue to be a source of concern, both in lost productivity and in the impact on the handlers' lives. The responsibility for safer moving and handling sits at every level of an organisation, from regular policy review, through budget allocation, to implementation and training. The real value of this publication can be analysed, as the cost of lost productivity through sickness absence from injury is an area of potential cost savings to organisations.

The content of *HOP6* has been written and peer reviewed by acknowledged experts in the fields of moving and handling people and the associated legislation. Chartered physiotherapists use movement and activity in their work and many of the chapters in this resource have been written by members of the CSP. The CSP is campaigning for people to *Move for Health* and to increase their daily activity. Activity is acknowledged as essential for health, yet many adopt an increasingly sedentary lifestyle, poorly equipping them for the demands of manual work, or a healthier older age. This resource provides the detailed framework to help handlers, family and individuals move safely while facilitating movement in those less able to move independently.

I congratulate BackCare on its latest edition of *The Guide to The Handling of People*, which contributes to the health and safety of so many; in particular, to the additional section on moving and handling and enablement in bariatrics, and the prevention and management of falls.

Léonie Dawson
Professional adviser

© BackCare

College of Occupational Therapists

College of Occupational Therapists

Occupational therapists, like other healthcare professionals, have been, and continue to be, predisposed to musculoskeletal disorders, which may be directly related to their involvement with people with both mental and physical disabilities. Having comprehensive guidance and information to assist the therapist to make a sound decision in what can, on occasions, be complex situations, can only assist in reducing risks to both the person being assisted and the person providing the assistance. Assisting and advising people with functional movement and mobility is an integral part of being an occupational therapist and during 2006 the College of Occupational Therapists published its own clinical guidance to manual handling, assisting clinicians to manage the many situations in which occupational therapists find themselves. The 5th edition of *The Guide to The Handling of People* (2005) was an important publication that was influential in developing the aforementioned guidance (COT 2006). The publication focused on both researched evidence and the importance of peer review and the use of assessment tools such as REBA, Mobility Gallery and the Functional Independence Measure, to assist people to make a "balanced decision" where the needs (and opinions) of the person requiring assistance were as important as the health and wellbeing of the person providing the assistance or treatment.

This new 6th edition demonstrates an evolution in the handling of people guidance, building on the extensive information and advice provided in the previous editions, while simultaneously reflecting on the current legislative climate and the most up to date research evidence. Notably a development of the previous editions, the 6th edition addresses key strategies that should be adopted to form the basis of effective management of manual handling risks, areas such as communication, training effectiveness and competencies, and enforces the need for involvement of management at all levels in protecting staff and people within our care from harm or injury.

The 6th edition continues to reinforce the importance of sound and balanced decision making by individual clinicians. It provides valuable and constructive guidance and evidence related to the core principles of safe handling of people and the core skills related to the use and prescription of manual handling equipment, the use of which will assist the therapist to make sound clinical decisions based on the needs of people (clients and handlers alike) within their care, rather than the mere prescriptive application of techniques.

Peggy Frost
Head of professional practice

Sara Thomas
Manual handling consultant
on behalf of The College of Occupational Therapists

© BackCare

Institute of Ergonomics & Human Factors

It is 30 years since the 1st edition of *The Handling of People* series was published and already six years since the 5th edition. There have been many changes in all aspects of this extensive and diverse subject over these 30 years so, as a key reference book for several professions, it is essential that the contents are frequently revised and kept up to date. New developments in technology, evidence, practice and procedures, legislation and even the characteristics of the people to be handled all need to be covered.

There is an increasing understanding of the importance of safe systems of work as recognised and advocated by the Health and Safety Executive and this is complemented by the growing body of knowledge in ergonomics, as systematically applied to health and social care provision and patient safety. *HOP6* has a number of new chapters not included in previous editions, including core hoisting skills, providing a useful insight into the promotion of safer systems or recognition of unsafe or risky systems/practices, together with a summary of the range of devices now available, their operating principles and how to use them. Chapter 3 describes the whole range of ergonomics involvement, especially from a systems perspective, from micro (individual) to macro (organisational) level applications, with the meso level in between. The importance of ergonomics towards influencing the culture of an organisation, as well as protecting health and social care workers, and those to whom they provide care, from harm, comes across convincingly. Ergonomics offers tools to understand problems and assess risks, methods to assist with the design of improved workplaces and working practices and, finally, procedures for effecting successful interventions. These apply at all levels of management and their adoption helps define the "corporate culture".

No book will ever be able to provide all the answers to situations that may confront back care practitioners and others regarding the handling of people. However, by presenting some basic theory together with relevant techniques, equipment and insight into the current legislation plus the encouragement to adopt a systems approach, this edition makes a further significant contribution towards evolving best practice. Personal experience is, arguably, the best form of on the job training. Nevertheless, I would contend that consulting this book to help analyse and reflect on professional judgements, in order to refine and review your professional performance, will enhance your continuing professional development and, thus, professional capabilities.

Dr Dave O'Neill
Chief executive

© BackCare

Health and Safety Executive

I am pleased to provide a foreword to support this latest edition of *The Guide to The Handling of People*, which has been produced by experts from the health and social care sectors who have first hand practical experience of the risks associated with their sectors.

Over the past 30 years, the series has helped a great deal in raising the profile of safer handling practice, providing guidance for practitioners, managers and health and safety professionals.

During this period, safer manual handling techniques have continued to evolve and the range, sophistication and availability of handling equipment has grown. Simultaneously, a wealth of competent advice has been developed and has been made available to NHS and private sector organisations.

Nonetheless, manual handling injury and musculoskeletal disorders continue to cause significant sickness absence. In the NHS alone, musculoskeletal disorders account for around 40 per cent of sickness absence. In social care, handling injuries accounted for over a quarter of all reported injuries to employees in 2009/10.

Moving and handling of people, who are often frail and incapacitated, continues to be an important part of care and nursing activities. Training, as well as access to sound, common sense advice on moving and handling techniques, will enable staff in these sectors to carry out their role more effectively, while minimising the risk of harm to them or those in their care.

This latest guidance builds on previous editions, reflecting the good practice expected in today's health and social care settings when assisting in the movement of patients and service users and offering practical help on how to implement. I am confident this guide will assist further those involved in the handling and moving of people to carry out their important role safely and effectively.

Judith Hackitt
HSE chair

© BackCare

NHS Employers

Department of Health

Partnership for Occupational Safety and Health in Healthcare

The national Back in Work initiative, supported by the Partnership for Occupational Safety and Health in Healthcare (POSHH), a sub group of the NHS Staff Council, is pleased to support the publication of the 6th edition of *The Guide to The Handling of People*.

The Back in Work campaign is aimed at everyone who works in the NHS, whether in an acute hospital, the community or the local GP practice, and is more important than ever at a time when the NHS is about to move into a time of major change. This campaign, which is closely aligned to the wider staff health and wellbeing agenda, aims to show that it is to the benefit of everyone in the NHS, employers as well as staff, to address the problem of work related sickness and of the injuries that cause it. If the numbers of back injuries, musculoskeletal disorders and strains that are suffered by staff can be reduced wherever possible, then NHS users will, in turn, benefit from the healthier, happier staff who are fit for work.

In the NHS, manual handling accidents account for 40 per cent of all sickness absence. The cost to the NHS of manual handling accident related sickness, at a time when employers are looking to make major savings, is probably in excess of £400 million each year. As well as having to take time off because of injury, well motivated and productive people have to give up work because of pain and disability related to manual handling problems and often suffer pain for the rest of their lives.

Compensation claims for manual handling accidents to staff continue to rise and the largest payment to a member of staff in the NHS so far is £800,000. Every NHS employee who retires early because of a back injury costs the NHS at least an extra £60,000, money which could have been saved by effective training and, in the case of an unavoidable injury, fast, proper rehabilitation back into work.

This guide offers an important tool in the campaign by showing how the risks to those moving and handling people can be eliminated or minimised by safer handling practice. The new guide is essential reading for all those with a responsibility for handling people, whether directly or in training and managing others who do, to study BackCare's new guidance.

Julian Topping
Programme lead – health work and wellbeing

© BackCare

Contents

© BackCare

© BackCare

© BackCare

Section 3: Core skills

CHAPTER 9

CHAPTER 10

© BackCare

CHAPTER 11

Section 4: Managing specific risks

CHAPTER 12

© BackCare

© BackCare

Terminology

Throughout this text we have used the generic term "**handler**" to define the person encouraging, guiding, assisting or carrying out a handling task, and the term "**person**" to define the person who is being encouraged, guided, assisted or moved. The only exceptions are where a sentence is clearly referring to a patient, client, nurse or carer in the context of the sentence or where it is a quote from an earlier reference source.

Disclaimer

The risks associated with moving and handling tasks are complex and each situation must be judged on its own merits through a process of suitable and sufficient risk assessment carried out by a competent person(s). The guidance in this book is not intended to be in any way prescriptive and it is unreasonable for any reader simply to follow any aspect of the contents without undertaking an adequate risk assessment that takes full account of all relevant prevailing circumstances.

The authors, the editor, co-editors, collaborators and the publisher cannot accept responsibility for any consequences that might result from decisions made upon the basis of the advice given herein.

© BackCare

© BackCare

Contributors

Editorial team

Editor

Jacqui Smith MSc (Human Factors) MCSP Cert OH

Jacqui Smith is a consultant occupational health physiotherapist with a Master's degree in human factors. She has worked in the fields of occupational health physiotherapy, rehabilitation and ergonomics for more than 35 years. She is a founder member of the National Back Exchange and has been the editor of *column* since August 2000, a contributing author of *Guidance in Manual Handling for Chartered Physiotherapists* (2002 and 2008), and the editor of the 5th edition of *The Guide to The Handling of People* (2005).

Jacqui is a director of Work Fit, an occupational health physiotherapy, ergonomics and manual handling training company based in Leeds, delivering services nationally to diverse organisations, including DWP, the NHS and NHS Plus, local authorities and the private sector.

She has a particular interest and expertise in the systems approach to the prevention and management of work related musculoskeletal disorders in the health and social care sectors, including in the moving and handling of human loads. Since 1987, she has provided expert opinion in more than 1,500 personal injury and criminal cases for claimants, defendants and the HSE, and provided expert opinion to the CSP and HPC in professional practice hearings. Her interest in the relationship between work and health led her to the concept of "work instability", which has provided the platform for many years of research by the Academic Department of Rehabilitation Medicine of the University of Leeds, and to the development of validated clinical and occupation specific screening tools (Work Screens) designed to identify any mismatch between job demands and work ability at a very early stage, with the aim of limiting sickness absence and the risk of work loss (see chapter 8).

Jacqui is currently finalising a CSP guidance document *Guidelines in the carrying out and reporting of functional capacity evaluations* (in press, 2011) and, together with Dr Frances Polak (chapter 4), is working on a revised biopsychosocial model as a basis for further research into early intervention algorithms.

© BackCare

Co-editors

Mike Fray PhD BSc(Hons) BHSc MCSP

Dr Mike Fray is currently working as research fellow in the Healthcare Ergonomics and Patient Safety Unit in the new Loughborough Design School at Loughborough University.

He has worked in the fields of ergonomics, musculoskeletal injuries and rehabilitation, and patient handling for almost 20 years.

Between 1997 and 2010, he was the visiting fellow for the Back Care Management Programme at Loughborough University and he has supported many learning and research outcomes.

His recent PhD research has focused on the areas of measurement of outcomes from patient handling interventions and the improvement of patient handling strategies. Other projects have including using ergonomics methods to evaluate equipment formally for a number of commercial and governmental partners.

Dr Fray has had many peer reviewed journal and conference publications and he was a co-author of *Evidence-based Patient Handling* and the *Derbyshire Interagency Group Codes of Practice*.

He is a member of the European Panel on Patient Handling Ergonomics and is co-writing the ISO Technical Report on Patient Handling Ergonomics.

In 2010, he created a patient handling research forum for graduates of the Loughborough Back Care Management Master's Degree Programme to assist in the improvement of quality and the wider dissemination of patient handling research in the UK.

Julia Love RGN ONC Registered Member of National Back Exchange

Julia Love is an independent manual handling adviser providing support and training within a wide range of health, social care and educational settings. She is a director of LPS Training & Consultancy Ltd, a company based in the North of England, offering support and information to organisations involved in people handling, on risk management systems, equipment and training. Julia carries out risk assessments and bespoke training for the carers of adults and children with complex handling needs. She delivers facilitator training courses which have been adapted for a number of institutions and organisations, including for university lecturers, PCTs, acute NHS trusts, social services, special schools and private hospitals.

Julia has been a speaker at the Disabled Living Foundation and the National Back Exchange conferences and has a special interest in competency assessment. She is a consultant for Joerns Healthcare Ltd and, as part of a professional team, has developed training material and assessment tools.

Julia is a Registered Member of National Back Exchange and has been an active member for a number of years, having been chair of her local group (2004-2008). She is currently the secretary of the National Executive of National Back Exchange.

© BackCare

Contributing authors

Pat Alexander MSc PGDip PGCE MCSP CMIOSH MIfL

Pat Alexander has worked as a consultant manual handling practitioner for many years. She devises strategy, policies and courses at all levels in manual handling and also works as an expert witness in court, having written several reports for the HSE.

Her qualification, at a Master's level, is as a chartered physiotherapist but she also has a Postgraduate Diploma in Back Care and a Postgraduate Certificate in Education.

She has presented at many national conferences and seminars and has also spoken in Florida, Melbourne and Sydney.

Pat has contributed to the 4th and 5th editions of *The Guide to The Handling of People*, the 2nd and 3rd editions of *Manual Handling Guidance for Chartered Physiotherapists* for the CSP, the *IPC Framework and Evidence Based Patient Handling*. She is the co-author of the *Standards in Manual Handling* for National Back Exchange, having previously chaired the Professional Affairs Committee and produced standards for training and trainers.

Pat sits on many relevant committees, including that of the National Executive of National Back Exchange, of which she is a Registered Member, and steering committee for Skills for Care.

She also acts as an assessor, endorsing manual handling courses for the College of Occupational Therapy. She is a chartered member of the Institution of Occupational Safety and Health, a member of the Medico Legal Association of Chartered Physiotherapists, the Institute of Learning and is on the expert witness register for the RCN and CSP.

Ruth Boulton MSc RGN ONC

Ruth is a practising registered nurse with over 30 years' experience, largely in the National Health Service and the armed forces.

For the last 12 years, she has also worked as a health and safety inspector for the Health and Safety Executive. During this period, the majority of her work entailed inspection, investigation and enforcement in the healthcare sector. She is currently working as a specialist human factors inspector across a range of industries.

April Brooks MCSP PGDip Health Ergonomics

April is a chartered clinical physiotherapy specialist in the moving and handling of people. She holds a Postgraduate Diploma in Health Ergonomics and was runner-up in the CSP Physiotherapist of the Year Awards 2008 in the category "Achievement of Excellence in Improving Service Delivery".

April has conceived and developed Manual Handling Questions (MHQs), a tool for training, risk assessment and decision making in person handling (*column* 2008). In collaboration, she developed and delivered post registration Moving and Handling, Ergonomics, and Management of Change modules (5-7 days each) at the University of Southampton.

Ken Cookson RMN RGN Dip RSA

Ken is a health care professional (nursing) with 43 years' experience working within the NHS and industry sectors. He has been employed as the manual handling manager/adviser at University Hospital Aintree since 1996.

Ken has a special interest in developing safer systems of work and the risk management of morbidly obese people who may present with mobility problems. Ken is an international presenter and he has published articles in nursing, medical and government journals in the UK and USA, focusing on practical approaches to the management of morbidly obese patients and the complex admission and discharge scenarios that often occur.

© BackCare

Mike Fray PhD BSc(Hons) MCSP
See biography on page xx.

Sue Hignett PhD MSc MCSP MIEHF EurErg

Dr Sue Hignett has worked in the healthcare industry for more than 25 years, the last 15 in ergonomics. She is the director the Healthcare Ergonomics and Patient Safety Unit, Loughborough Design School, Loughborough University. She has carried out research for the Engineering and Physical Sciences Research Council, Health and Safety Executive, Department of Health and industrial sponsors. Dr Hignett is the past chair of the International Ergonomics Association Technical Committee on Hospital Ergonomics and co-chair of the European Panel on Patient Handling Ergonomics.

Jean Hutfield MIHM

Jean is chair of the National Association Equipment Providers (NAEP). She is a highly experienced NHS senior manager, with specific skills and experience in the provision of high quality facilities services to primary care trusts. Her role involves working strategically and operationally both nationally and locally in the commissioning of community equipment services and medical device training.

Jean holds a Certificate in Business Studies, a Diploma in Health Services Management, City and Guilds in Health and Safety, NLP Diploma in Advanced Communications, Prince 2 and IOSH. In addition to her role as NAEP chair, Jean is also chair of both Assist UK and the Assistive Technology Education and Training Partnership Board, and a member of the NHS Training For Innovation Steering Group.

Carole Johnson MCSP Cert Ed

Carole is a chartered physiotherapist in the UK working as a consultant manual handling adviser. She is a Registered Member of National Back Exchange, has been on the committee for a total of nine years and is currently the public relations officer. Carole's work spans 20 years. She specialises in analysis and resolution of simple and complex manual handling – showing there is often a win-win alternative. She speaks nationally and internationally and was one of the authors of *The Guide to The Handling of People* (5th edition) and the Chartered Society of Physiotherapists' publication *Guidance on Manual Handling Physiotherapy* (2008). She loves her work and making a positive difference.

Julia Love RGN ONC Registered Member of National Back Exchange
See biography on page xx.

Michael Mandelstam MSc DipLib

Michael Mandelstam worked at the Disabled Living Foundation and then at the Department of Health. He now works independently, providing legal training. He has written a number of books including *Manual handling: an A-Z of law and practice* (2002), *Community Care Practice and the Law* (2009, 4th edition), *Safeguarding vulnerable adults and the law* (2009), and he is a co-author of *The Guide to The Handling of People* (5th edition).

Sheenagh Orchard RGN RNT Cert Ed(FE) DipNurs(Lond)
Registered Member of National Back Exchange

Sheenagh is an independent trainer and moving and handling specialist. She works in all areas of the health care sector, developing the strategic managements of safe handling and undertaking complex risk assessments. She has worked with social services in projects considering the safe reduction of double handling situations in the community. Sheenagh was a contributing author for *The Guide to The Handling of People* (5th edition), having previously assisted in the development of the *Manual Handling Training and Trainer Guidelines* (NBE issue 1, 2001) and the production of *People Moving People* manual handling training pack (revised 2006).

© BackCare

Frances Polak PhD MSc MCSP HPC Reg

Frances Polak qualified in 1979 and has since worked within the occupational health arena and musculoskeletal outpatient setting, both as a clinician and a researcher. Her main interest is in clinical biomechanics, related to both injury prevention and treatment. Frances has a MSc in research methodology and a PhD from Nottingham University, where her thesis focused on muscle length changes derived from 3D motion analysis data, combined with force and power calculations. Frances currently works in the private sector with a specialist interest in movement and handling in the workplace. Her role includes training and the development of company policies to reduce the risk of musculoskeletal injury. Frances is a member of the Chartered Society of Physiotherapy Regulatory Board, and is immediate past chairman of the Association of Chartered Physiotherapists in Occupational Health and Ergonomics.

Pam Rose MCSP

Pam, a Registered Member of National Back Exchange, is a chartered physiotherapist. She has 25 years' experience as an independent moving and handling trainer and consultant, developing and delivering a vast variety of programmes and courses for many occupational groups across diverse settings and environments.

Pam is the commissioning editor of *column*, NBE's professional journal, and was an external reviewer of the CSP's Manual Handling Guidance in 2008. She has developed an international reputation, having presented papers and workshops in the USA and across Europe as well as the UK.

Pam also has a keen interest in moving and handling equipment design. She has worked with local and global manufacturers in product development and on developing sales teams through training in basic ergonomics, equipment use and best practice in order to understand and meet customer need.

Anita Rush MSc (Health Ergonomics) RGN Dip HCS

Anita is a registered nurse with a Diploma in Health Care Practice, incorporating ENB 298 Care of the Elderly, and a Master's Degree in Health Ergonomics.

She is the clinical lead for equipment provision within Berkshire and continues to undertake complex assessments to devise and implement manual handling and equipment solutions aimed at staff safety and customer enablement.

Anita has grown an international reputation for her work, focusing on bariatric care within the community. In 2008, Anita received the coveted Safety in Care award at the Health and Social Care Awards. She is a member of National Back Exchange, a tutor for the Disabled Living Foundation (DLF), chair of the NBE Bariatric Special Interest Group and is the educational representative on the Council for the National Association of Equipment Providers.

Jacqui Smith MSc (Human Factors) MCSP Cert OH

See biography on page xix.

Melanie Sturman MSc RGN

Melanie is a back care adviser for Norfolk County Council Adult Care Community Services. She has held the post for six years. Since graduating with a MSc in Back Care Management in 2008, Melanie has lectured on the manual handling back care and patient safety management courses run by Loughborough University. Melanie's MSc dissertation was titled *Are falls a problem for Local Authorities?* The dissertation identified falls were a problem and recommended organisations focus on falls management systems. In 2009, Melanie published a joint paper titled *Analysing falls management using failure and mode effect analysis*. Melanie is a regular speaker at National Back Exchange conferences.

© BackCare

Clive Tracey RGN DMS LLB(Hons)

Clive is currently head of tender and policy management at a community NHS trust and a visiting lecturer for Greenwich University covering moving and handling. He started his manual handling career in the late 1980s and became the founder of the Manual Handling Project Team within King's College Hospital. There he formulated a "five star" manual handling strategy and implemented the first UK facilities bed management contract. Clive is co-author of several text books and has written numerous articles related to manual handling.

Having completed a Bachelor of Law degree, he moved into risk management before becoming the clinical excellence director of a large global medical equipment company. He actively uses his clinical, risk management and commercial experience in the furtherance of improved healthcare solutions, assisting NHS trusts and managers in the development of risk based business cases.

External peer reviewers

Jane Bannon RGN PGCert (BackCare), moving and handling adviser.

Sue Barton MSc DipEd MCSP DipTP DipRG&RT Dip THRF, independent consultant in occupational kinetics and manual handling.

Elizabeth Hallows MCSP LPC (Back Care Management), independent manual handling adviser.

Heather Hetherington RGN, freelance manual handling consultant.

Emily Hobson MSc (Ergs) PGCert ED PGC Person Handling and Facilitation Dip COT.

Jo Holmes RM, manual handling adviser, Bedford Borough Council.

Sarah Iceton MA, Dip COT, HPC registered, Registered Member NBE, PGCHSCE, freelance manual handling consultant.

Simon Love BA(Hons) MCSP Registered Member NBE, manual handling consultant, LPS Training & Consultancy Ltd.

Mary Muir BA(Hons) Dip N (Lon) FAETC Person Handling Cert SRN, specialist therapy and regional contracts manager, ArjoHuntleigh.

June Pursey service manager, Bradford and Airedale Community Equipment Service

Cameron Raeburn MSc (Occupational Heath & Ergonomics), moving and handling service lead, NHS Greater Glasgow & Clyde.

Elizabeth Smith LLB, partner, Howard Kennedy Solicitors. Specialist in work related personal injury litigation.

Sara Thomas Dip COT PGD, independent occupational therapy consultant and back care adviser.

Sarah Tunstall BAOT, clinical lead OT and moving and handling adviser and trainer.

William Varnham PCCert Ed Advanced Certificate NMA Efficient Handling and Movement, PGDip Health Ergonomics MSc Back Care Management, back care manager Nottinghamshire Healthcare NHS Trust.

Margaret Ward MSc BSc(Hons) RGN SCM, moving and handling adviser.

Members of the National Back Exchange evidence review panel

Review panel chairman
Jo Holmes RM

Data analysis
Linda Curson RGN Cert Ed
Nicky Sharpe RGN MSc (Back Care Management)
Saintelia Douglas DMS LDP BA(Hons) Cert Ed RGN
Heather Hetherington RGN
Carole Johnson MCSP Cert Ed

© BackCare

Introduction

by Jacqui Smith

This definitive, peer reviewed text book is the sixth in a series first published in 1981. It is intended for all staff working in health, social care and the emergency services, and others who may be involved directly or indirectly with the moving and handling of people.

This includes board/cabinet members, policy makers, budget holders and senior managers responsible for strategic decisions essential for the implementation of prevention-focused safer systems of work, staff health and wellbeing and improved care in relation to manual handling practice.

It is also intended as a resource for back care practitioners, manual handling trainers, including trainers of vocational qualifications on the new Qualifications and Credit Framework (QCF), and the educators in universities of those working towards professional qualifications in health and social care. Person handling, and person handling decision making, are just as much core skills for health and social care professionals as any other area of their practice and, as such, the handling of people falls within professional practice standards and guidelines for competence and safety.

Importantly, this book builds on the 5th edition in recognising that staff health and safety must be balanced with meeting the needs of those of us with altered health status or disability. This includes adults, children, family members and informal carers, who may need advice or temporary/longer term assistance with care, mobility or movement that involves manual handling, and whose lives are affected by manual handling decisions.

No doubt this book will be relied on by the legal profession and expert witnesses involved in person handling related personal injury litigation and/or case management, as has each of the previous editions.

This edition is the sixth in the series of guides, the first four of which were produced in formal collaboration between BackCare (formerly the National Back Pain Association) and the Royal College of Nursing. In the 5th, and this new 6th, edition that collaboration is extended to include the National Back Exchange. We are delighted that this 6th edition is also commended by the Chartered Society of Physiotherapy, the College of Occupational Therapists, the Institute of Ergonomics & Human Factors, NHS Employers and the Health and Safety Executive.

The 1st edition in the series was rightly aimed at nurse managers who were seen as potential agents for change in response to growing concerns about the prevalence of low back pain, injury and work loss in the nursing profession. The thrust of the 1st edition related to key prevention strategies including ergonomics, safety training, pre-employment medical screening and the management of back pain at work through early access to occupational health services and physiotherapy treatment. The response to that publication by NHS employers was limited and involved mainly the provision of typically ad hoc training of limited duration and variable content. There is little evidence that training alone has been effective in reducing risks to staff, or enhancing person comfort, dignity or enablement and in this new edition we must therefore return to the systems approach to prevention first put forward in 1981.

© BackCare

The 2nd and 3rd editions each set updated standards in person handling practice. Each was considered in turn to be the gold standard text of its day and, on reflection, each provides a historical record of "where we were then" – and reminds us how far we have come. Since 1988, the Back Exchange (National Back Exchange from 1994), has provided a national multidisciplinary forum for the exchange of information and the development of consensus on evidence based core person handling practice to support all healthcare professionals seeking to reduce the prevalence of work related disorders and related sickness absence in the health and social care sectors, and to enhance care delivery and enablement.

On 1 January 1993, new legislation was implemented, including the Management of Health and Safety at Work Regulations (replaced in 1999), which required that formal risk assessments should be undertaken by employers as part of their risk management systems. The requirement, in the Manual Handling Operations Regulations 1992 (amended 2002), to avoid hazardous manual handling operations where reasonably practicable and assess those risks that could not reasonably practicably be avoided, did not immediately have a great impact on health and social care providers although they were welcomed by those working in the field of person handling and injury prevention at that time.

The RCN was a key stakeholder in launching the first in this series and it again took the professional lead in responding to the regulations and appended load guidance for the "lifting" of loads – and set down the benchmark that no two nurses should lift a person weighing more than eight stones, even in ideal conditions – the natural conclusion being that the lifting of people would have to cease altogether.

Initially, this led some individuals and organisations to implement increasingly prescriptive and proscriptive approaches to person handling practice and to the implementation of blanket "no lifting" policies and decisions that failed to take adequate account of the social, care and rehabilitation needs of disabled people, or of the full range of legislation impacting on manual handling decisions.

In 2002, the Chartered Society of Physiotherapy made its position clear and set clear guidance in its *Guidance in Manual Handling for Chartered Physiotherapists* by stating that "*it is not always reasonably practicable to avoid manual handling in physiotherapy without abandoning the goal of patient rehabilitation*". Insofar as I am aware, the now commonly utilised term "balanced-decision making" is first used in the CSP publication in respect of manual handling decisions. Similar ethics might be said to apply to the meeting of social, care and enablement needs in community/social settings.

At the beginning of 2003, the High Court attempted to reconcile health and safety legislation with human rights and community care legislation in the landmark *East Sussex* case by, in summary, enjoining the parties to adopt a "balanced approach" in which the family were to be fully involved in the risk assessment and decision making process.

Those working in the field of person handling will recognise that the continuing high prevalence of musculoskeletal disorders in health and social care workers arises not from situations in which effective manual handling risk management systems take account of both the person's and the handlers' needs but, rather, from the ongoing systematic failure in many organisations to implement safer systems of work that address adequate staffing, staff competence, staff health and wellbeing, access to appropriate equipment, supervision, risk assessment, care planning, monitoring and review.

© BackCare

What is new about this 6th edition?

It is now 30 years since the publication of the 1st edition of this guide. Over that period much has changed within health and social care with a paradigm shift in care delivery from the NHS to the community, and more recently towards the personalisation agenda. The relevant health and safety legislation has been variously updated, amended, extended and interpreted, and human rights legislation has refocused attention back on to the needs of the disabled person – which is why we joined the care professions in the first place.

Building on the structure of the 5th edition, Section 1, **Risk assessment and basis for control**, provides an overview of legislation influencing person handling decisions and practice, and provides a logical framework that can assist the process of risk assessment and control. Chapters on ergonomics and biomechanics offer tools and methods that can inform risk control processes.

Entirely new to this 6th edition, Section 2, **Key strategies**, addresses four essential underpinning strategies that must form the basis of any effective systems approach to the management of manual handling associated risk for handlers and people: policy and communications, training effectiveness and competence, accessing equipment and staff health and wellbeing. These key strategies resonate with the ambitions set out in the first of this series. There is good evidence that such approaches are effective and cost effective in not only reducing injury and sickness absence risk, but also through enhanced performance and improved care delivery. As stated at the end of the introduction to the 5th edition "*in the absence of a systems approach, safer handling practice will not flourish*".

The practical chapters of the 5th edition reflected the progress made in manual handling practice as manual handling/back care practitioners have come together to investigate, develop and agree evidence based core principles for safer handling practice. These principles are now well established and provide the focus for Section 3, **Core skills**, including a new chapter on core hoisting skills. These core principles form the basis for many bespoke handling techniques that are unique to specific and developing areas of practice so that it is now prohibitive to include all of these in a core publication. To that end, BackCare has initiated a new series of supplements, addressing specific aspects of manual handling that will be published two or three times a year – 2011 will see the publication of supplements covering Therapeutic Handling and Handling in the Ambulance Service. Longer term plans include Handling in Emergency Situations, Theatre Handling, Handling in the Community and other specialism/sector specific guidance.

Section 4 addresses **Managing specific risks** in two new chapters covering moving and handling/enablement in bariatrics, and the prevention and management of falls, since both subjects are now key areas of core practice.

As in the 5th edition, throughout all of the chapters herein the authors have quoted research evidence where it is available. Each chapter has been subject to extensive peer review by the editorial team, Registered Members of National Back Exchange and others with relevant expertise. In addition to the work of the individual authors, most of the tasks described in each practical chapter were analysed by an evidence review panel consisting of volunteer members of the National Back Exchange, and the results are set out in relation to each task/sub-task.

This guide is not intended to be in any way prescriptive. Review of the evidence recorded will support practitioners to develop their practice and support informed decisions relevant to a particular set of circumstances. There will inevitably be some differences in the approaches taken by trainers/practitioners/handlers to the core practice set out in these chapters. Some of these variations may be more, or less, hazardous to the handler or more, or less, comfortable for the person, or require more, or less, skill. It will, however, be relatively simple in future for evidence to be gathered in relation to these alternatives and compared to that in this book. It is also the case that the particular prevailing circumstances, and the nature and needs of the person, must be key influences on the handling intervention.

© BackCare

Readers must therefore be very clear that a review of a technique in this book, and consideration of the accompanying evidence, does not constitute a risk assessment, although certainly the information provided herein is aimed to develop practice and underpin person handling decisions. The authors hope that the content of this edition will encourage practitioners to appraise critically and develop their own practice within a safer systems framework.

Acknowledgements

I would like to express personal thanks to my co-editors, Dr Mike Fray and Julia Love, the design and publishing team at Pages Creative, the contributing authors, external reviewers and others for their contribution to the production of this 6th edition.

© BackCare

12

People handling for bariatrics, a systems approach

Anita Rush MSc (Health Ergonomics) RGN Dip Health Care Studies
Clinical nurse specialist equipment
Ken Cookson RMN RGN Dip RSA
Manual handling manager/adviser, Aintree Hospitals NHS Foundation Trust

Introduction

The management of people handling for bariatric persons in health and social care presents multiple challenges in terms of communication between agencies, access to, and provision of, equipment, staffing, transport and environmental constraints.

This chapter will address the importance of a systems approach to the issues outlined above and will take account of the needs and dignity of the bariatric person. Factors, including relevant legislation, policy development, communication and strategic planning, will be considered. These, together with the National Health Service Litigation Authority (NHSLA) risk management standards, will form the foundation for the implementation of safer systems of work.

Definition

The origin of the word bariatric comes from the Greek words barys meaning heavy and baros meaning weight. Bariatric medicine is defined as the study of obesity and its causes (Mosby 2006), but the definition of those who may be described as bariatric is less clear. According to Fazel (1997), a bariatric person is anyone weighing 159kg (25st) or more. Cookson (2007) describes a bariatric person as anyone with morbid obesity as defined by the National Institute for Health and Clinical Excellence (NICE 2006). Persons are defined as being morbidly obese if they have a body mass index (BMI) of 40kg/m^2 or more, or they have a BMI of between 35kg/m^2 and 40kg/m^2 with co-morbidities. There are also some systematic variations in "normal" BMI across ethnic groups (Naylor *et al* 2005). For example, in certain Asian populations a given BMI equates to a higher percentage of body fat than the same BMI in a white European population (World Health Organisation (WHO) expert consultation 2004). In these populations, the risks of type II diabetes and cardiovascular disease increase at a BMI below the standard cut off value of 25kg/m^2. In some black populations, however, the converse is true and a particular BMI corresponds to a lower percentage of body fat and consequently lower risks of morbidity and mortality than in a white European population. When comparing obesity in different ethnic groups, it can be more useful to use the definition based on waist/hip ratio than the standard BMI classification (Naylor *et al* 2005).

There are other obesity related co-morbidities that can have an affect on a number of bodily systems including respiratory, cardiovascular, musculoskeletal, psychological, reproductive and

© BackCare

gastrointestinal. Hypertension, diabetes and ischaemic heart disease are consequences of morbid obesity. Mobility can be affected due to osteoarthritis in the weight bearing joints as a result of increased strain. Some types of cancer are more prevalent in obese subjects, including breast and endometrial cancer in women and colorectal and prostate cancer in men. Obesity can lead to depression and social exclusion or discrimination. It may lead to bullying at school and prejudice in the working environment. A significant consequence of all these co-morbidities is that the mortality rate is increased (Webber 2001). Bushard (2002) suggests that, when dealing with extremely heavy trauma victims, organisations need to take an holistic view and consider several factors in addition to weight, including:

- impact on mobility
- space requirements
- staffing levels.

Having a clear definition of the term bariatric within an organisation's policies, procedures and protocols will influence which control measures will need to be implemented. It will identify roles and responsibilities, bottom up and top down within the organisation, to ensure action is taken in a timely manner. An ambiguous definition may well result in action not being taken at the correct time. Based on single trigger factors, a bariatric policy may state that action must be taken for persons weighing 159kg (approx 25st) or more, but what happens if the person is only 158kg?

The scale of the problem

Bariatric persons are at increased risk of ill health due to the associated co-morbidities and it is therefore foreseeable that this group represents an increased potential for hospital admissions and social care support.

There are estimated annual costs of £4.2 billion linked to the treatment of co-morbidities and this could double by 2050 (NHS Information Centre 2009a). There are one million people in the UK who meet the criteria for bariatric surgery based on NICE guidelines. Despite this, there were less than 4,000 weight loss procedures carried out in 2009. Providing surgery to just five per cent of those eligible would offer savings to the NHS of £382m over a three year period (see Table 12.1). Savings reaching £1.3 billion could occur if surgery was provided to 25 per cent of those eligible (Office of Health Economics 2010a). Some of these benefits occur due to the person having the ability to return to work which can offset the cost of surgery. There may be financial gains due to a reduction in state benefits paid out (see Table 12.2).

It may appear that the solution is to provide better access for NHS patients to have bariatric surgery but, according to the Association for the Study of Obesity (ASO), there is still controversy surrounding bariatric surgery. Improved selection criteria and more long term studies are needed to follow up patients after surgery. Certain procedures may cause additional metabolic and cosmetic problems that may result in additional NHS costs (ASO 2010).

TABLE 12.1 ECONOMIC IMPACT IF FIVE PER CENT OF ELIGIBLE PATIENTS WERE TO RECEIVE BARIATRIC SURGERY

Component	Year 1 £m	Year 2 £m	Year 3 £m	Total year 1 to 3 £m
Paid hours gained	135	135	135	405
NHS costs/savings	–8	56	56	104
Total savings	127	191	191	509
Cost of surgery (excluding aftercare costs)	–127	0	0	–127
Total economic impact	**0**	**191**	**191**	**382**

Source: Office of Health Economics 2010

TABLE 12.2 ECONOMIC IMPACT IF 25 PER CENT OF ELIGIBLE PATIENTS WERE TO RECEIVE BARIATRIC SURGERY

Component	Year 1 £m	Year 2 £m	Year 3 £m	Total year 1 to 3 £m
Paid hours gained	579	579	579	1,737
NHS costs/savings	–8	56	56	104
Total savings	571	635	635	1,841
Cost of surgery (excluding aftercare costs)	–546	0	0	–546
Total economic impact	**25**	**635**	**635**	**1,295**

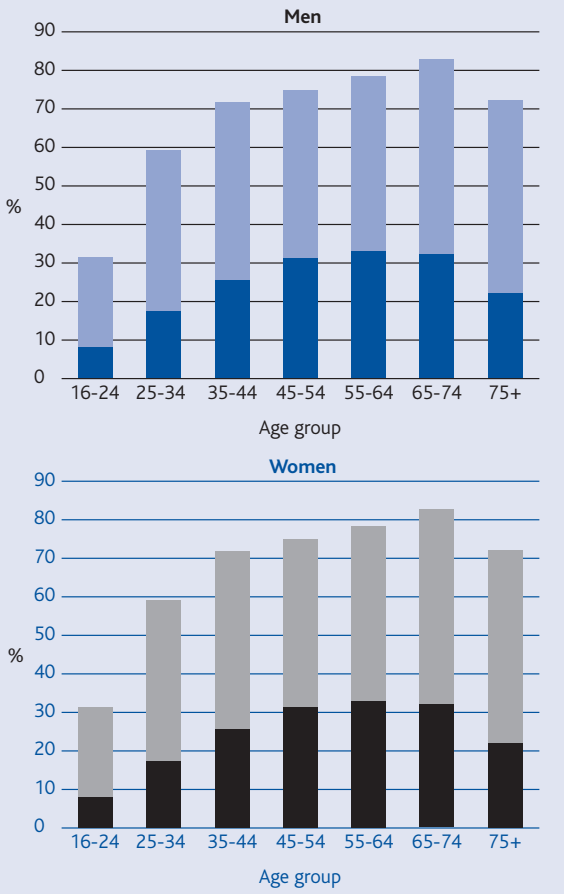
Source: Office of Health Economics 2010

It is foreseeable that some of these persons will present with mobility problems. The risk must also be addressed for those in primary care who may be seen by their GP or who may be attending specialised weight management facilities. Understanding the scale of the problem is important if proactive measures are to be in place in hospitals or the community. The Health Survey for England 2008 (NHS Information Centre 2009b) was a general population survey of adults and children located at 16,056 addresses and 1,176 randomly selected postcodes.

The United Kingdom combined has the fifth largest rate of obesity in developed countries (Office of Health Economics, 2010b). The 2008 survey revealed that obesity remains a significant public health problem in England, (see Fig 12.1), with 24 per cent of men and 25 per cent of women defined as obese. It also highlighted that most men and women who were overweight or obese also had a high or very high waist circumference. This takes into consideration the issue of fat distribution, which is not always acknowledged in the BMI classification.

The WHO (2000) suggests that waist circumference is defined as the mid point between the lower rib and the upper margin of the iliac crest. The significance of this relates to the impact of a large abdomen on manual handling procedures if mobility is lost, and will be discussed later in this chapter.

© BackCare



© 2010, reproduced with the permission of The Health and Social Care Information Centre. All rights reserved.

Fig 12.1 Obesity prevalence chart

Bariatric body shapes and dynamics

Knowledge of bariatric body shape and dynamics is important as it has an impact on the way a person is able to assist in movement and therefore on the delivery of care. The person's body shape may also have implications when considering environmental constraints and equipment provision to reduce the inherent risks. All these factors combined can have an influence on risk, care provision and, ultimately, the person's dignity.

Understanding the different types of body shape, their clinical implications and potential impact on mobility will enable organisations and practitioners to relate to the individual's associated problems, ie personal care, ambulation, rehabilitation. The excessive weight of bariatric persons will increase joint stress, affect body movement, and decrease lung mobility.

Following long periods of hospitalisation, regaining mobility is critical for bariatric persons. Not only is it challenging for a bariatric person who may be emotionally fragile and fearful of falling, but also for the handlers who are undertaking the rehabilitation programme. The planning should include a multidisciplinary team that considers the bariatric person's unique ambulation needs such as:

- muscle tone high or low
- trunk stability
- range of movement
- head control.

Manufacturers of equipment specifically used for bariatric persons would benefit from insight into the implications of bariatric body dynamics. The width and depth of chairs is relatively easy to resolve but low height adjustment essential for mobilisation remains a challenge. This can be problematic, especially for those riser recliner chairs that have integrated leg rests. Clothing such as theatre gowns should be sized appropriately to maintain dignity and, in the event of death, it is essential to have access to a concealment bag that is the correct shape and weight capacity. Correctly sized blood pressure cuffs are essential in order to obtain an accurate reading. Cuffs that are too small will create a higher reading compared to the correct sized cuff.

The maximum safe working load of electric profiling beds has increased significantly over the last 10 years but another important feature is the facility to adjust width. Many bariatric persons may weigh less than the maximum weight capacity of the bed but remain uncomfortable due to the standard bed width. Some caution must be exercised when selecting bariatric bed and mattress combinations – the capacity of the mattress may not always be equal to the capacity of the bed frame. An understanding of body dynamics and clinical judgement is beneficial when making this selection.

Observation and practice will assist the practitioners to identify body shapes as follows.

Anasarca

This is severe generalised oedema in which large amounts of body fluid (commonly lymphatic) have leaked into soft tissues and are obstructed from returning to central circulation via the lymphatic vessels.

The impact is:

- markedly reduced range of movement, resulting in inability to flex limbs or whole body segments
- centre of gravity shifting toward knees when person is seated
- diminished ability to flex at the waist, combined with difficulty breathing when reclined
- decreased heat dissipation, resulting in profuse sweating
- increased susceptibility to skin shear and tears
- extreme waste elimination difficulties
- frequent need for mechanical ventilation assistance.

Tissue viability

Maintaining skin integrity is an integral part of bariatric management. Each body shape comes with associated risks of tissue damage.

Bariatric persons are susceptible to friction damage due to increased skin area and diminished energy absorption. For example, a bariatric person reaching for a drink and rotating his/her body can unwittingly create a skin tear. The skin is

© BackCare

unable to meet the shear tension loads imposed and simply separates and tears (Dionne 2002).

Atypical pressure ulcers, such as those not located over a bony prominence, can be particularly problematic when associated with obesity. Regular repositioning and continence management may be difficult. The lesions may be exacerbated by local moisture retention that can lead to maceration, infection and delayed healing.

Apple shapes

Apple shaped bariatric persons are at an increased risk of skin breakdown between skin folds due to reduced vascularity of adipose tissue. Pressure ulcers may also develop in unique locations, between and below skin folds, as a result of pressure across the buttocks and other areas of high adipose tissue concentration such as the abdomen/pannus. In these instances, there is a need to offload the pannus or large skin folds to prevent skin on skin pressure. Pressure ulcers can also occur in locations where tubes and other devices have been compressed (European Pressure Ulcer Advisory Panel 2010).

Fig 12.2 Apple ascites

Fig 12.3 Apple pannus

Apple ascites distribution

Dionne (2002) classified apple ascites to enable a clinical description of persons who, like those dominated by right sided heart failure, often demonstrate a rigid abdominal wall. Bariatric persons with this distribution carry weight high, the navel doesn't wander and the abdomen may be rigid in the presence of ascites (fluid collection). Leg size may be relatively normal and there could be limited drifting of the abdomen below the belt line (see Fig 12.2).

The impact is:

- limited trunk flexion
- frequently intact hip and knee flexion
- shortness of breath on exertion
- pillow required for head support when reclined
- poor supine or prone position tolerance
- poor ambulation.

Apple pannus

The person carries weight high but the abdomen is quite mobile. The navel wanders and the abdomen (apron or pannus) hangs toward the floor, although leg size may be relatively normal (see Fig 12.3).

The impact is:

- better ambulation with intact hip and knee flexion
- better supine and prone position tolerance
- pannus fills entire lap, may hang between thighs obstructing lymphatic flow
- susceptible to atypical skin damage between the inner thighs and pannus due to friction and moisture
- susceptible to atypical pressure ulceration and fungal infection under the pannus and between the skin folds.

Pear shapes

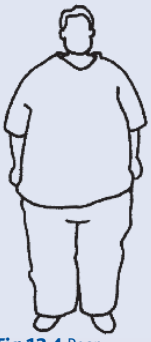


Fig 12.4 Pear abducted

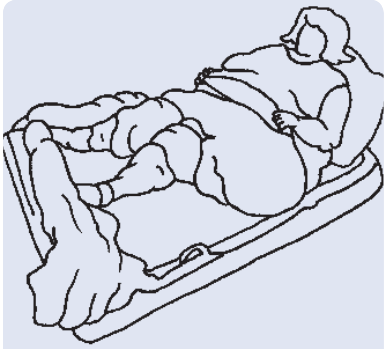


Fig 12.5 Pear adducted

Pear abducted

The person carries weight on the inside of their thighs, with increased adipose tissue around the hips, buttocks and thighs, preventing them from touching or the thighs becoming parallel. Friction and moisture dominate pear abducted body shape, the effects of friction being five times worse where moisture is present. Dionne (2002) states that pericare is a risk factor in pear abducted persons excoriation due to their inability to reach the perianal region effectively. All body shapes are important when planning mobilisation techniques, repositioning and undertaking visual skin inspections especially within the skin folds (see Fig 12.4).

The impact is:

- lack of supine position tolerance
- difficulty rolling
- hip and knee flexion limitations, may often sit with legs fully extended and spread
- groin moisture and urine elimination problems
- susceptible to atypical pressure ulceration between the pannus and inner thighs
- center of gravity toward knees.

Pear adducted

The weight is carried predominantly below the waist, with tissue bulk on the outside of the thighs, allowing the legs to close and the knees to make contact. Dionne (2002) identified that pear adducted persons can fully adduct their knees until the femoral condyles make contact. This pear adducted distribution of adipose tissue allows for log rolling as the tissue bulk is usually mobile. This enables better supine to long or semi-long sitting and short sitting postures and, in addition, is much better for pericare and personal hygiene (see Fig 12.5).

The impact is

- better waste elimination and hygiene
- better rolling ability, supine and prone tolerance
- hip and knee flexion limitations – the person often sits with the knees extended (not spread)
- clear access between legs for leg support placement
- centre of gravity toward knees.

© BackCare

Bulbous gluteal shelf

Excessive buttock tissue creates a posterior protruding shelf that significantly alters seating and supine posture (see Fig 12.6). Bariatric persons may demonstrate a shelf of excessive tissue protruding posteriorly from the plane of their pelvis in sitting positions. However, they may be limited in sitting and supine posture secondary to postural related pain. In supine, excessive tissue bulk on the posterior aspect of the pelvis pushes the person's hips upward relative to the plane of his/her trunk (Dionne 2002).This is then painful for the bariatric person as his/her back arches, therefore reducing trunk support (see Fig 12.6).

The impact is:
- mixed waist to hip ratio
- limited supine tolerance and impaired sitting
- gluteal shelf causes forward seating alteration
- pillow may be required behind shoulders for reclined, supine or even upright sitting.

Fig 12.6 Bulbous gluteal shelf

The size, shape and distribution of body mass and physical ability in each individual always has an effect on the degree and type of assistance that is required during person handling. It follows that a person specific risk assessment must be carried out in order to assist in the management of all relevant risk factors, including anthropometrics and body dynamics. However, in respect of these conditions and situations, there is a clear need to ensure that any organisation and its partners have the capacity to deliver these solutions, and all possible problems should be considered within a strategic systems approach.

A systems approach

The effective management and safer handling of bariatric persons requires a collaborative multidisciplinary and multiagency approach. This should be based on established and effective lines of communication, standardised policies and shared protocols. This will underpin access to relevant expertise, crisis management pathways, shared protocols, complex assessment and equipment prescription and provision in order to ensure that the person's journey is seamless and dignified. This provides cohesion and consistency through the system with the ultimate goal of enabling the integration of the person back into society and, ideally, to their own home. The ideal management of the bariatric person can occur only if there is a full understanding of the needs of that person within his/her home, the community and within an acute hospital environment. The management systems must be designed in a way that directs and supports the handler to select appropriate methods and equipment. Cheung *et al* (2006) states:

> "...no one person has the entire picture of the process, especially if it occurs across multiple providers and locations. A multidisciplinary team, consisting of members with different viewpoints of the person care experience, is ideal"

Hignett *et al* (2007), when looking at the bariatric pathway, identified five key areas:
- patient factors
- building/vehicle space and design
- manual handling/clinical equipment and furniture
- communication
- organisational and staff issues.

Cheung *et al* (2006) identified similar factors in which failures and consequences could occur:
- location of equipment for transportation
- door sizes not sufficient for access and egress
- staff not aware of appropriate equipment use
- inadequate medical management of the obese person
- inadequate education of the obese person.

Stubbs (2000) describes a systems approach to ergonomics problems in complex working environments. The concept considers the whole problem and how each component can have an effect on another. This methodology is transferable to the management of bariatric persons in primary and secondary care.

A systems approach would identify and address the main issues that could occur in any part of the bariatric person's journey. This could be related to primary care or the community or extend into secondary care and hospital admission.

For this gold standard to occur, there is a need for the fences to come down and a paradigm shift by the different stakeholders to identify key persons to form an alliance in key areas such as policy making, communication and equipment standardisation. Legislation, risk assessment, training and education and ergonomics are common factors shared by each agency and a common interagency policy can pull together the best solutions from each.

Collaboration, sharing responsibility and pooling resources, despite having a different employer, can be beneficial for a person's care and safer outcomes. This has worked well in areas such as complex admissions and discharges. The use of multidisciplinary and multiagency input has been successful. Acute hospital staff, ambulance trust, social services and fire service staff have all been utilised together with shared reports and solutions being considered.

Complex discharge situations can occur with bariatric persons wanting to be discharged to their own home. Situations may occur when the person's body shape and dynamics may preclude entry back into the home without substantial intervention. Some properties may have door entrances limited to 76cm. If the person is unable to walk through, then it could be difficult or impossible to use the appropriate width wheelchair or trolley (see Figs 12.7 and 12.8). Offering alternative accommodation or nursing home may be a solution but potentially have an impact on human rights (Cookson 2008).

© BackCare

Fig 12.7 Person unable to climb a 19cm step but was able to mobilise on a slight incline.

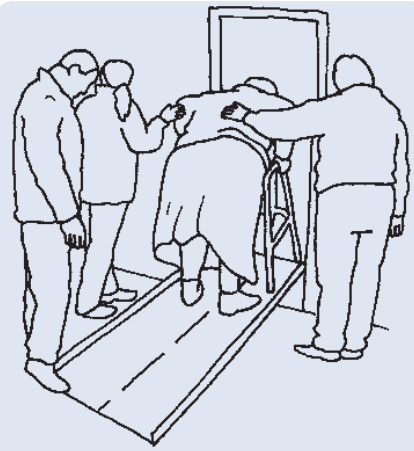


Fig 12.8 Note that the person's hip width is almost equal to the door width at 76cms (30 inches). In this scenario a wheelchair could not have been used if the person had been unable to weight bear.

Legislation

Health and safety legislation places a responsibility on the employer to provide a safe system of work through the mechanism of identifying, assessing and managing foreseeable and unavoidable risks (see also chapter 2).

In health and social care, a well-defined manual handling of loads policy is essential to address the specific clinical and personal needs of bariatric persons (Hignett *et al* 2007). The role of policy is to set down the objectives of the organisation and the protocols it will establish in order to meet those objectives. The policy needs to link into individual organisational manual handling policies and across all service providers and address:

- roles and responsibilities
- interdepartmental communication channels
- equipment provision
- resuscitation
- fire evacuation
- interdepartment transfers including radiography, theatres, pathology rehabilitation
- processes in the event of a death
- discharge planning to include transportation home.

It is useful to provide information to support the policy, for example:

- contact names and telephone numbers, including out of hours contacts
- equipment available
- equipment suppliers' telephone numbers (including out of hours)
- information/education on general handling guidelines to include:
  - weighing techniques
  - bed manoeuvres
  - lateral transfers using pat slide
  - transfer from bed to chair
    - mobile
    - immobile person
  - inserting slings and hoisting
  - mobilising
  - handling heavy limbs
  - personal care
  - toileting.

Policy is the keystone that should support and inform the strategic approaches discussed in section 2 of this publication.

There may be a financial consequence if an organisation does not have systems in place to review and track the efficacy of risk assessments and subsequent controls. The NHSLA Risk Management Standards (2010) provide guidelines for achieving the minimum organisational structures in relation to risk management. These standards are NHS specific but are applicable to independent sector providers of NHS care. Organisations attaining the different levels from one to three will receive significant reduction in insurance premiums if they can demonstrate that they have the relevant structures in place. Failure mode effects analysis (FMEA) is an organisational tool that can be applied to the management of bariatric persons (Cheung *et al* 2006).

Under health and safety legislation, local authorities have the same responsibilities as health organisations in providing a safer system of work through risk assessment. When conflicts arise, local authorities will refer to their own legal department on a case by case basis for a resolution.

Risk assessment

Generic assessment

Risk assessment underpins all other decisions and actions that may be taken to provide a safer environment. Depending on the complexity of the situation, it may require a single person or a multidisciplinary and collaborative agency approach. It is the first step of the intervention process that identifies goals, care packages, equipment, training and education needs.

It is foreseeable that bariatric persons will, at some time, require intervention within community, primary or secondary services. Ideally, local organisations will have in place interagency protocols, based on proactive generic risk assessment, that identify:

- roles and responsibilities of the individual services personnel
- contact names and telephone numbers
- communication channels.

© BackCare

A proactive approach would ensure that foreseeable activities are considered before the event and not reactively, even during the hours of admission.

The generic risk assessment should consider the tasks, load, environment and individual capability of carers. Bespoke equipment may be needed; there may be environmental and ergonomics concerns or space constraints. It is feasible that there could be an impact on staffing levels, but this may not always be the case. The prompt provision of specific and appropriate equipment can sometimes mitigate the additional risk and need for extra staff.

The Department of Health recommends that the boards of NHS organisations spend proportionate effort and resources on managing their risks (National Patient Safety Agency (NPSA) 2008). The NPSA has developed a risk matrix score that considers consequences to the organisation in addition to injury to staff and patients and which may be seen as helpful to highlight areas that require priority attention. The outcome can be utilised to support a business case, especially where equipment is needed. Lack of equipment and staffing levels can impact on service provision and would therefore attract a higher score, requiring early intervention.

Person specific assessments

Person specific assessments are essential and should form part of the care plan. The design and format of person assessment tools are varied and a balance needs to be attained. A lengthy complex assessment tool is unlikely to promote compliance and a brief, non-specific tool may miss relevant points.

There is a requirement to have some synergy between the organisation's policy and the assessment tool. If the policy states that assessments must be carried out within six hours of admission, be dated and signed by the admitting nurse, then the form must incorporate these fields. If reviews are to be carried out at specific times, then, again, the form design should facilitate this. Consideration should be given as to whether the form content and layout reflects policy requirements and would be robust in the event of a clinical audit. Person assessment tools can be adapted to incorporate the requirements of bariatric persons (see Appendix 12.1). This is an example of a form used in Aintree Hospitals NHS Foundation Trust and has been subject to a pilot study, clinical audit and evaluation.

An example community assessment tool for a bariatric person appears in Appendix 12.4. Written for the London Borough of Sutton (Cassar 2010), it demonstrates how a person assessment tool can be interchanged within organisations to reflect the environment in which it is being used.

Safer systems of work

St John Holt (1999) identifies five basic steps essential for producing a safer system of work that can easily be applied to the management of bariatric persons:

- assessment of the task
- hazard identification and risk assessment
- identification of safer methods
- implementing the system
- monitoring the system.

These basic health and safety principles can be applied to a bariatric person journey throughout an episode of care.

The model shown in Fig 12.9 outlines the five main points to ensure a safer system.

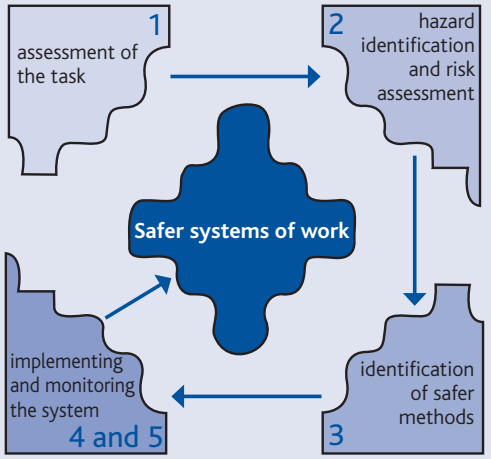


Fig 12.9 Safer systems of work model

Assessment of the tasks

If treatment and care was required for a bariatric person in primary or secondary care today, consider what activities and intervention would be required, eg weighing, lateral transfer, turning and transportation.

Hazard identification and risk assessment

Which of these tasks would prove to be hazardous based on the resources and existing control measures that you have in place? The person may have limited mobility and need to be moved in and out of bed – without a hoist this would be potentially hazardous and a high risk scenario. What is the remaining level of risk?

Define safer methods

The tasks have been identified, those that are hazardous are now highlighted and risk scored. Safer control measures can now be identified and a way to implement them. The chosen solutions should be evidence and research based. The findings at this stage can be used to support a business case and the risk matrix score can be used as supporting evidence and help prioritise.

Implement safer methods

The solutions can now be implemented and supported, if applicable, by the appropriate training.

Monitoring and audit

There is a requirement to monitor any changes that may have been put in place. Introducing changes and potential solutions can sometimes give rise to an additional and previously unforeseen hazard.

National Health Service Litigation Authority (NHSLA)

The NHSLA risk management standards are not statute but a quality assurance scheme that provides an opportunity for Trusts to receive a reduction in premiums relating to Clinical Negligence Scheme for Trusts (CNST) and Risk Pooling Scheme for Trusts (RPST). The standards vary depending on the type of organisation but are applicable to primary and secondary care

© BackCare

and also the independent sector if providing NHS care. The risk management standards have been developed as a result of the clinical, health and safety negligence claims received by the NHSLA.

The standards contribute to, and supplement, a systems approach and, although no direct mention is made of bariatric persons, there are measurable criteria for moving and handling within the different standards. There are moving and handling criteria within Standard 2, ie competent and capable workforce and Standard 3, ie safer environment.

NHSLA Level 1 moving and handling – risk assessments

The minimum requirement here would require the organisation to demonstrate that approved documentation is in place and that the duties of specific staff are outlined. There must be guidance on the techniques to be used for the moving and handling of persons and inanimate loads and this must include instructions on the use of any equipment.

The standard specifically mentions the risk assessment of persons and inanimate loads and how access to specialist advice is provided. There must be an organisational overview and monitoring of compliance with the standards. From this, we can see that compliance with level 1 starts to set the foundation stones for risk assessment documentation and the management of bariatric persons can be integrated into these standards.

NHSLA Level 2 moving and handling – risk assessments

For level 2, the organisation must be able to demonstrate compliance with the objectives set out in level 1. If the documentation specifies that all persons will be risk assessed within six hours of being admitted, then this must be demonstrated. If a policy specifically makes reference to the risk assessment of bariatric persons, then this will be subject to a compliance audit too.

NHSLA Level 3 moving and handling – risk assessments

Compliance at level 3 clearly shows that systems are in place regarding the risk assessment of persons and inanimate loads. There will be approved policies, risk assessment tools and methods to monitor that assessments are taking place. Perhaps one of the main advantages here is that the organisation must demonstrate what it does with the evidence acquired from risk assessments. It is not acceptable to complete risk assessment documentation then fail to act on the findings. The use of risk registers, organisational overviews and risk matrix scoring all form part of a systems approach and these systems can then be used for the benefit of all persons, including bariatric persons (see Appendix 12.2).

Policies

There is a statutory requirement under section 2(3) of the Health and Safety at Work etc Act 1974 for employers to provide systems of work that are safer and supported by policies and procedures (HSE 1974). Policies are therefore required by law. They outline the duties and responsibilities for executives, managers and staff. There will be many different policies within a large organisation and very often some are interlinked. For instance, the manual handling of loads policy may have a link with the falls management policy and the organisational risk management policy.

The management of bariatric persons will be incorporated into the manual handling of loads policy for the organisation, but this raises the question of whether a local policy is sufficient. The admission and discharge process for bariatric persons crosses many boundaries, with the potential for problems at any stage in the journey. A single complex discharge process for a bariatric person may involve a number of internal and external agencies:

- manual handling adviser
- tissue viability nurses
- discharge planners
- ward staff
- occupational therapists and physiotherapists
- ambulance service
- fire service
- social services
- home loan store
- primary care
- housing authorities
- private and local authority nursing care.

The use of multiagency collaborative policies can provide a more seamless approach as outlined by Rush (2006).

Audit

Clinical audit has a pivotal role in any systems approach to the management of bariatric persons in order to ensure that systems are being implemented effectively. Even where appropriate assessment tools may be in place, they cannot be effective if they are either not completed or the findings are not acted upon (see Fig 12.10).

Organisations have a responsibility to implement and monitor a minimal handling culture for the handling of persons and this should logically involve bariatric persons. There must be a system of incident reporting that highlights and provides insight into good and bad practice. The framework should encompass:

- monitoring outcomes so that appropriate corrective action can be taken
- adverse incident reporting/near misses, so that incidents using root cause analysis can be acted upon, and risk reduction actions implemented
- number of persons managed
- frequency and nature of the manual handling injuries recorded
- causation.

Education and training

The development of competency and confidence through education and training is an important element of a systems approach to bariatric management but should never be relied upon as a sole strategy.

There is a statutory requirement to carry out manual handling training for those staff at risk but the legislation is not explicit. No guidance is given regarding duration, frequency and content (HSE 1999).

The education programme should be fit for purpose and designed to enable an organisational approach bottom up and top down. It should provide a personal knowledge base in

© BackCare

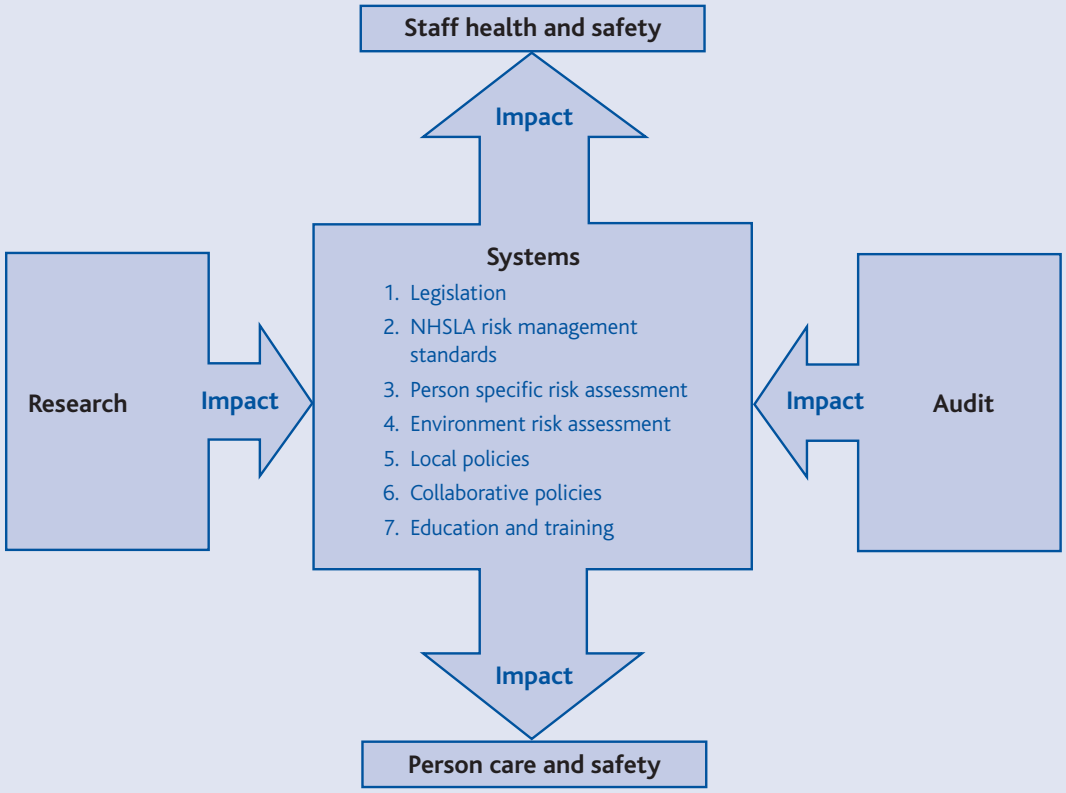


Fig 12.10 Systems diagram © 2010 Ken Cookson

bariatric management that enables staff to be versed in managing the potential risks involved. There is some merit in interagency training schemes, such as the All Wales Passport (2010); this modular approach standardises training across organisations and avoids duplication when employees change employers. (See also chapter 6 for more details regarding training systems.)

If a more specific level of training is required, then modular programmes could be developed addressing the intrinsic and extrinsic factors associated with bariatric management from NVQ to degree level, enabling the emergence of competent practitioners in bariatric management. A suggested outline for such a programme might reasonably cover:

- managing risks and challenges
- physical/physiological aspects
- sociocultural issues
- psychosocial factors
- planned intervention:
  - unexpected
  - unplanned.

Ergonomics systems

There is strong evidence that using an ergonomics approach can be beneficial. Stubbs (2000) outlines an ergonomics model to determine match or mismatch between the individual and the task. Intervention may be training or redesign and requires a multidisciplinary team approach. The use of an ergonomics systems approach acknowledges that changes or problems in one area may have influences on another. A study of current manual handling training systems (Haslam *et al* 2007) reinforces the advantages of a multidimensional approach and the need for ergonomics intervention and redesign. Therefore, as part of a systems approach, organisations may develop education programmes that take into account the holistic nature of bariatric handling management.

It is important to look at building and equipment design in order to reduce the potential imbalance between the worker and the task. A proactive approach to this will avoid any loss of dignity that can occur, especially when services are provided for the bariatric person. Access and egress into buildings and consulting rooms should not be overlooked. Appropriate seating may be needed and a means to transport the person if he/she has limited mobility.

Implementing safer systems of work

Initial assessment

The person's assessment should start at the initial point of contact, which could either be a planned assessment or an emergency intervention. If planned, the pre-assessment preparation would include evaluation of the medical history and background information as written in the referral documentation. In an emergency intervention, the initial assessment would be based on information gathered at the point of contact, documented and be ongoing throughout the episode. The assessment should be part of the care plan process and involve the multidisciplinary team and the external

© BackCare

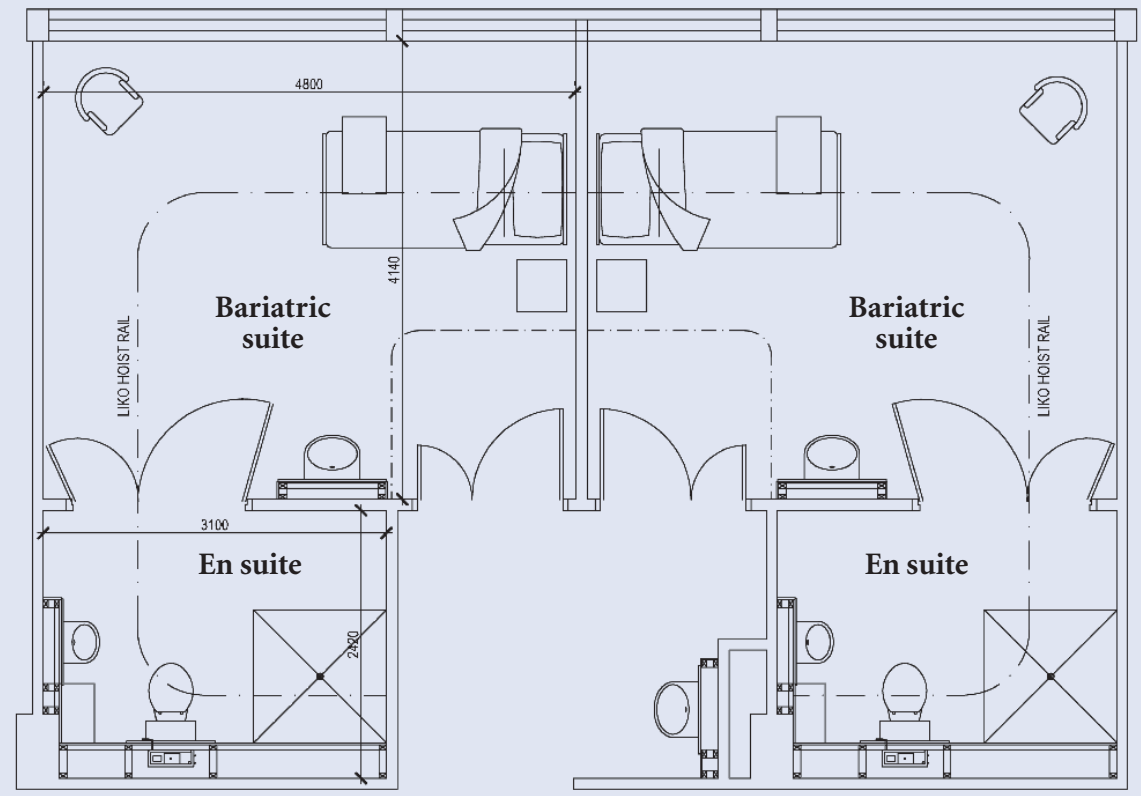


Fig 12.11 Bariatric en suite with overhead hoist

agencies that will be involved throughout the person's journey to ensure dignity and a seamless service.

In order to reduce the risk of injuries to staff and person, it is important that the person's mobility/manual handling and personal needs are risk assessed and documented. This should include:

- the degree of independent mobility
- all predictable handling assistance required
- any handling aids which should be used
- the minimum number of staff required to assist in all handling tasks.

Consideration should also be given to how the person could be handled in the event of a fall, a cardiac arrest or a fire evacuation. Maintaining the correct pace of cardiac compressions to a depth of 5 or 6cm is fatiguing. The problem can be exacerbated if correct posture cannot be attained due to limitations in bed height adjustment. The manual handling of a bariatric person will be beyond the capability of an individual handler. The person's weight and body dynamics will exceed the capability of most carers and a potentially hazardous situation will ensue.

There are contributory and emerging themes that cross all boundaries of health and social care and can make everyday tasks dramatically more hazardous. These themes will be discussed in more detail and in the practical techniques:

- transportation – planned and emergency
- repositioning the person in bed
- lateral transfers
- lifting a limb
- personal care
- rehabilitation
- the falling person.

The person's weight

The weight of the person should be determined and recorded accurately as soon as possible to ensure that the equipment provided is fit for purpose and the maximum capacity is not exceeded.

Weighing should be undertaken in private to preserve dignity. This can be problematic, especially if the person is not mobile. In the community, the local equipment loan store might provide and deliver scales to enable weighing within the home environment. There is a plethora of scales suitable for discreet weighing and should be part of every organisation's equipment provision. These include:

- integral bed scale
- hoist scales
- stand-on scale
- wheelchair/bed scales
- portable load cells for beds and trolleys
- integral floor scales.

Environments

A care environment that is too small to manage bariatric persons increases the risk of musculoskeletal injury to handlers. The area within different community environments or hospitals should have the spatial capacity to enable manoeuvrability of equipment and accommodate the

© BackCare

appropriate number of handlers. There should be sufficient space for equipment to undertake tasks using good body dynamics and posture. Any assessment should also include door widths, ability to manoeuvre in bathrooms, landings and stair widths. Hignett *et al* (2007) carried out functional space experiments to determine the incompressible space required for different tasks associated with bariatric persons. It was concluded that a width of 3.93 metres and length of 4.23 metres was needed. This exceeds the Department of Health Estates and Facilities measurements of 3.6 metres width and 3.7 metres length.

Figs 12.11 to 12.13 illustrate a successful side room design, specifically intended for, but not restricted to, bariatric persons. The design was highly commended for innovation and significantly improved the management of bariatric persons. The installation of an overhead track hoist system facilitates a transfer from the bed to the shower room and any point in between (see Figs 12.14 to 12.16). As a comparison, see Figs 12.25, 12.26, 12.27 and 12.28 where a gantry hoist is being used in an area that has not been designed for the management of bariatric persons. The procedure is not compromised but the temporary erection of the gantry hoist is taking up two bed spaces.

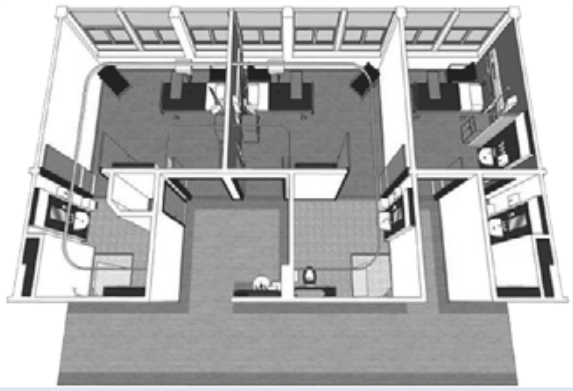


Fig 12.12 Bariatric en suite with overhead hoist

Fig 12.13 Bariatric en suite with overhead hoist

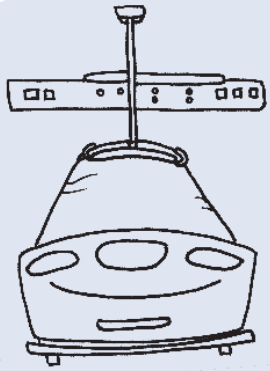


Fig 12.14 Ceiling track route starts above the bed

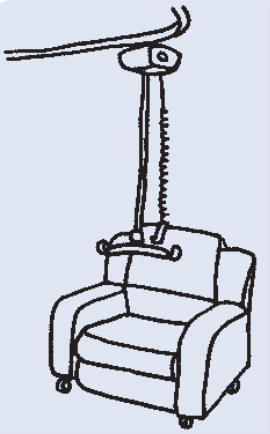


Fig 12.15 Ceiling track route now over the chair

© BackCare

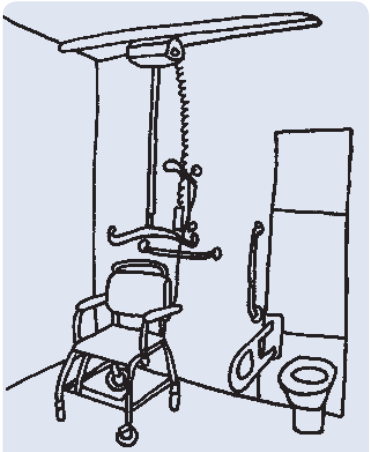


Fig 12.16 Ceiling track route now ends over the toilet and shower area

Community

Access and egress is an important consideration within different environments, whether it be hospital, care home or person's home. Special evacuation and extrication methods may be required for those persons residing at levels above the ground floor, or where the entrance to the home is limited. Where these limitations exist, a comprehensive risk assessment should be completed in conjunction with the ambulance service. If further help is required, then this could include the fire service.

CASE STUDY: SAFE EXTRICATION

A bariatric person (165kg, 26st) fell at home. Due to her limited mobility, she lived downstairs in the lounge/dining room. Two days after the fall, it was agreed that due to the pain in the person's leg, an X-ray was required.

Both the ambulance service and nurse specialist met at the person's house to assess extrication. The side of the house was not wide enough due to an extending chimney breast. It was not possible to use the front door due to the large step leading up from the front path. The incompatible dimensions of the hallway and bariatric stretcher prevented the necessary 90 degree turn required for access and egress.

The assessment identified that further intervention was required. A call was made to the fire service which assisted with the assessment and a plan of action was agreed.

- Using the back entrance and alleyway, the person could be moved into the ambulance.
- The back fence would need to be removed.
- A steel ramp would need to be built over the garden from the alleyway to the patio door of the house.
- A ramp would need to be built up to the patio door height.
- Using bariatric slide sheets, a lateral transfer onto the bariatric trolley would be carried out.
- The person would need to be transported out on the bariatric trolley, through the patio door, across the ramps onto the concrete pathway and into the ambulance.

The person was successfully moved to the acute trust, which had been informed of the person's impending arrival. The ramp has been left in place for the person's return home.

Access and egress is an important consideration when assessing the person within the home and any other relevant care environments. Special evacuation and extrication methods may be required for those persons residing at levels above the ground floor. Plans should be in place to cover adverse incidents and hospital admissions, either planned or unplanned. The relevant person within the local fire and ambulance service should be aware of the situation and involved in any planning.

Before installing any equipment, it is necessary to consider the load bearing capacity of floors and ceilings. The advice of a competent person, ie a structural engineer, should be sought in all cases. As a general rule of thumb, a solid ground floor can sustain a load of 2,000kg (315st), based on a 3x3 metre square room with a solid concrete floor. The first and upper floor rooms will accommodate less weight bearing because of the structure of most buildings. If the ground floor is not solid, then a competent person will need to advise on the suitability of joists and types of floor in conjunction with room size.

Hospital

Planners and practitioners should look carefully at access and egress and consider where the person is going to be cared for. The outcomes will be dependent on the person's capability. If the person is fully dependent, it might be necessary to adapt the environment at each stage of the person's journey through the hospital system. These areas may include radiology, theatres, lifts, corridors and bathrooms. Nilsson (2006) suggests the recommended bathroom dimensions are 4,000mm x 2,300mm. The toilet/shower room, ideally, should be 2,700mm x 4,600mm, with at least 800mm on either side of a floor mounted toilet, and the toilet placed 200mm from the wall.

- A traditional floor mounted ceramic pan will take a load of about 20 stone. The maximum weight capacity of a lavatory seat will vary and is dependent on the model and manufacturer.
- Cantilever style wall mounted toilets may be less suitable for bariatric persons and the handlers will need to refer to the manufacturers' specifications.
- If it is not possible to ascertain the weight capacity of the toilet, a solution would be to purchase a height adjustable heavy duty toilet surround.

Controllers of care environments should seek the guidance of an expert planner or practitioner if planning for a bariatric person admission. The expert planner or practitioners will understand the relationship between the person's body dynamics, dependency, staffing numbers, equipment manoeuvrability and spatial needs. Muir (2009) studied the space within critical care areas which were spatially limited, particularly where a person was totally dependent. Insufficient space would restrict nursing activities from six practitioners working from all four sides of the bed. There was restricted space for lateral transfers and manoeuvrability of a hoist. Muir recommends the critical care environment be at least 3,780mm long and 4,000mm wide, with the acute environment extending to 8,200mm.

© BackCare

Hignett *et al* (2007), on behalf of the HSE, produced a research document that looked at the risk assessment and planning process for bariatric persons. The research explored the functional space to determine the spatial requirements for the safer care of bariatric persons. This study identified a functional spatial requirement of 16.61m^2, but, if lateral transfers were included, it required extending to 17.54m^2.

The community or hospital environment may be the pivotal point of the bariatric person's lifestyle transformation. Planning the environment should be holistic, evidence based and person centred. Kilpatrick *et al* (2009) discuss an optimal caring and healing environment that consists of five equal components. These five components can be transferred into any health and social care setting (see Fig 12.17):

- an attitude and consistent behaviour of caring
- a person centred approach
- culturally competent health, social care provider
- safety, cleanliness
- integration of the ARTS (A ¼ aesthetics, R ¼ recreational movement, T ¼ therapeutic and S ¼ spiritual).

These essential elements promote caring and healing to nurture, educate and serve bariatric persons to assist in their transition, transformation and transcendence in healing and lifestyle transformation.

Fig 12.17 Caring and healing environment model (Kilpatrick *et al* 2009)

A person centred approach enables bariatric persons to be viewed as a whole, including advocacy, empowerment and respecting autonomy, voice, self determination and participation in decision making.

Quality of care and retention of dignity can be delivered and enhanced by the provision of equipment fit for purpose within an appropriate environment. This standard, together with increased staff numbers, will not only ensure quality management in a dignified manner but is more likely to encourage enablement rather than disablement.

Equipment for bariatric persons

All the necessary and appropriate equipment must be provided, ensuring the safe working load is appropriate so that activities of daily living can be facilitated. There is also a requirement for improved ergonomic conditions as the equipment is likely to be heavier and wider than standard.

There is a common misconception that bariatric persons can be accommodated by simply asking for equipment designed for a "large size". Most of the attention focuses on a bed and hoist to accommodate the person. These items are only part of the overall needs and practitioners need to analyse tasks and consider other handling aids that can be used to facilitate these tasks.

All equipment used by the bariatric person must be fit for purpose, supporting their body dynamics and anthropometrics. Standard items of equipment all have relatively low weight limits, **which must not be exceeded under any circumstances**. See Fig 12.18.

Fig 12.18 114kg (18st) capacity commode, buckled frame left front due to overload by 267kg (40st) person

Organisations will need to consider the implications of renting or buying and should bear in mind the following questions:

- Is the equipment needed available from one company or several?
- Is the equipment compatible with other equipment used?
- What are the timescales from ordering to delivery?
- Does the rental cost exceed the buying cost?
- Will the company convert the rented item to a purchase?
- If purchasing, where is it going to be stored when not in use?
- Who will assemble, maintain and service the equipment?
- Will warranty issues be addressed in the contractual agreement from the outset?
- What is the manoeuvrability of the bed through the hospital environment, including lifts?

For community based services, additional considerations may include:

- Will the community equipment loan store be able to provide and deliver from a standard list of bariatric resources?
- Will the equipment needed come direct from a specialist manufacturer?
- Will the equipment break down into component parts for ease of delivery and assembly in the person's home?

Responsibility for maintaining equipment under the LOLER and PUWER would depend on the following:

- if a capital purchase, then the purchasing organisation would transfer responsibility to their medical engineering department
- if the equipment is leased, then, as part of the leasing agreement, the supplier would be responsible for service/maintenance of the equipment.

Certificates of compliance must be issued. In all cases, the certificates should be easily accessible and recorded for audit purposes.

© BackCare

Beds

Bariatric beds should fit the person from the time of provision. The bed should have efficient profiling functions, including low height, and be width adjustable. Access and egress via the foot end is desirable and if scales are fitted they should conform to class 3 standards. Grade 3 non-automatic weighing instrument (NAWI) scales (NWML 2008) should be used in healthcare premises for the calculation of medication, treatment and monitoring (Medical Device Equipment Alert 2008). A NAWI requires the intervention of an operator during weighing. For example, to deposit on, or remove from, the load receptor the load to be measured and also to obtain the result.

Class 4 (less accurate domestic type scales) may be in use but only for monitoring/recording persons' weights on their notes in GP consulting rooms, community settings (peripatetic visits), nursing homes, and when there is no risk the scales will be used to weigh someone under the age of 18 – regardless of the clinical environment. The mattress surface should match the weight capacity of the bed, but there are inconsistencies. There has been a gap in the market for the ideal product, with beds having some, but rarely all, of the required features.

Some insight into the design and use of bed rails is important, especially when beds are used for bariatric persons. Bed rail design is a complex matter with the horizontal and vertical rail gap dimensions being determined by anthropometric data. The gaps are spaced and sited to minimise the risk of entrapment should the person attempt to climb out. The decision to use bed rails for any person regardless of size should always be based on a risk assessment.

In addition to the increased risk of entrapment, there is a further potential hazard that can occur due to the relative height of the bed rails in relation the person's body. The rail height may be less effective with bariatric persons and can be made worse if incompatible frame and mattresses are used. There may be slight variations in bed frame length and width and this can impact on the efficacy of dynamic and static mattress surfaces if not selected carefully.

When the person's mobility is compromised, then handling should be kept to an absolute minimum. This can be facilitated by using electrically operated profiling beds fitted with a suitable pressure relieving mattress to reduce the risk of tissue damage. Points to consider when choosing a bed are:

- Safe working load of the bed in all profiling states.
- The width of the bed to ensure the handlers do not overreach while carrying out care tasks. A wide bed is more comfortable for the person but increases biomechanical risk for the carers. A narrow bed reduces reach for the carers but can restrict movement for the person (see Fig 12.19).

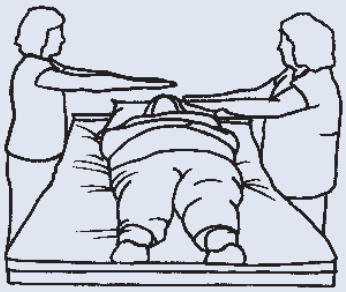


Fig 12.19 Measuring correct bed size

- Compatibility of the mattress and bed – the bed frame and mattress capacities may not be equal.
- Bed and hoist compatibility – does the bed go low enough and the hoist high enough to ensure smooth transfers on and off the bed to avoid any potential tissue damage through shear or friction?
- Interaction of the bed within the care environment – is there sufficient space for the equipment and handlers to move as the equipment will be wider than the norm, and the number of handlers will exceed three? The design of the bed should offer sufficient low height adjustment to encourage independent movement into bed.
- Positioning the person at a 45-degree angle allows apple shaped persons an easier breathing position without slipping down.
- Does the bed rail have a gap in the down position? Ideally, this should be minimal to facilitate transfers and limit obstruction for the handlers.
- The handlers' weight should also be taken into account as, in some instances, one or more handlers may need to get on the bed to undertake a task.
- Consider how the person gets on and off the bed, in some circumstances they will fall into bed, and use a rocking motion to get out.

Lateral rotational therapy

The use of positioning therapy for the management of respiratory conditions in critically ill persons has long been recognised. An additional feature of beds fitted with lateral tilt profiling is that the person repositioning can be facilitated and pressure relief improved.

Goldhill *et al* (2007) suggested that persons with a high BMI benefited more than others – recognising that these persons may be more likely to have respiratory compromise and because of their body stature they might receive less manual handling repositioning and turning.

Consideration should be given to:

- Lateral rotation therapy can be used for persons with or without tissue damage. It improves pressure redistribution, reduces shear and microclimate control benefits when there is evidence of shear injury. Lateral rotation therapy offloads the pressure.
- Lateral rotation surfaces can be used to help turn the person, making it easier and safer to perform linen changes, examinations and other routine tasks.
- Where maximum inflation can be used, it will provide a firmer surface, making it easier for the handlers to reposition persons in bed, perform procedures or transfer them to another surface.
- Maintenance of skin integrity.
- Manual handling techniques.
- The high/low function of the bed, with regard to handlers' posture.
- Person dignity.

Lateral rotation therapy reduces cost, the length of stay for high risk persons in critical care environments, improves persons' outcomes and provides safer systems of work.

Turning mattress

The purpose of the pressure redistributing turning mattress system is to provide therapeutic benefits through continuous

© BackCare

low pressure and low air loss and aid person management. European Pressure Ulcer Advisory Panel (EPUAP) and National Pressure Ulcer Advisory Panel (NPUAP) (2010) Pressure Ulcer Prevention and Treatment Guidelines (1,2) place a strong emphasis on pressure redistribution immersion and envelopment in order to minimise tissue interface pressure.

CASE STUDY: CHOICE OF APPROPRIATE BED

A bariatric person weighing 254kg (40st) was being cared for in the community in a two storey house. She had been known to the community nursing team for many years for management of her lymphoedematous legs.

This person had previous episodes of cellulitis, which were usually managed at home with appropriate antibiotic therapy. However, during one episode, she became unwell and her mobility decreased. This resulted in long periods sitting in the riser recliner chair as she was unable to get into bed due to the weight of her legs. She then had a fall, was unable to get up herself and was on the floor for three hours.

Pressure damage was discovered when the district nurse visited the following day and it was decided that care was unable to continue at home. An admission to a community hospital in-patient unit was arranged.

Unfortunately, the hospital was not informed of the person's weight and on arrival no suitable equipment was available. The time delay to source equipment meant the person having to wait several hours. Once the equipment was in place, the senior back care practitioner educated the staff on its use and safer handling techniques.

The person's height restricted independent access in and out of bed due to the combined height of the bed and mattress. This resulted in the person having to be hoisted for all transfers. Over a period of time, the person's mobilising capability became diminished and her fear of falling increased.

The goal of the multidisciplinary team was to increase the person's mobility to enable discharge. Unfortunately, the bed and mattress were too high, and the chair provided was too low.

A multidisciplinary case conference was arranged to include the person and her family. It was decided that other equipment options were to be sourced as the person was keen to go home without a hoisting system in place.

The chosen bed facilitated the person's independence; it provided the high/low functionality necessary to reduce the manual handling risks for personal care and treatment tasks.

Once the bed was supplied, lift pants in conjunction with a hoist were used to start mobilising the person who had been bed bound for a significant time. The lift pants supported the whole body and gave the person the confidence to take those first steps. They provided freedom of movement, while relieving some or the entire burden of body weight. They lifted safely, allowing the person to move on his/her own without the risk of falling. Six months after being admitted to hospital, the person was able to return home independently with the bed used in hospital.

A bariatric bed was sourced that enabled the person access and egress from the foot of the bed see Figs 12.20 and 12.21 showing the lying to sitting features of the bed that facilitated the person's independence etc.

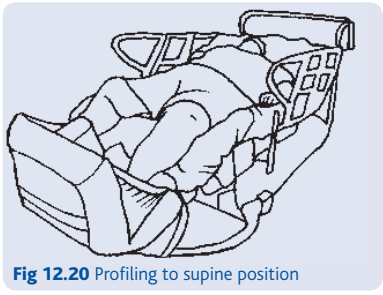


Fig 12.20 Profiling to supine position

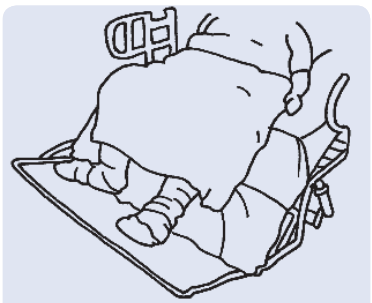


Fig 12.21 Profiling to sitting position with foot access and egress

Consideration must be given to the width of the bed required for community use as well as to the person's access and egress. It is rare for a bariatric person to sit on the edge of the bed and lift his/her legs up into the bed. When prescribing the bed, it is essential to observe the person's activity to ensure that he/she is able to get in and out of bed, and therefore remain independent.

Slide sheets

Low friction slide sheets can be a useful item to facilitate safer handling manoeuvres but clinical factors and the risk assessment need to be taken into account.

Moving bariatric persons around the bed is a challenging task, often requiring three or more handlers. When carrying out this task, it is important to minimise friction and shear when positioning the person correctly (Mastrogiovanni *et al* 2003). Bariatric persons can be positioned using different types of equipment, including slide sheets, which may decrease the risk, but carers should be aware and trained in their use.

The shape, size and style of slide sheets vary enormously and the choice should consider the following:

- the task being undertaken
- the dependency level of the person and whether they can assist in the task
- the number of handlers available
- reach and stretch for the handlers to undertake the task.

© BackCare

If the slide sheet is too big, this may be hazardous as too much material interferes with the smooth low friction action. If too small, the slide sheets may be difficult to insert and cause the handler to reach and stretch to find the material under the person to move them.

To assess for a suitable size, the person should be measured at his/her widest point while lying down to determine the maximum width, ie abdomen, hips, upper body, thighs, legs. Flat slide sheets are preferable if hoist slings are to be inserted between the two flat sheets (see chapter 11, Task 11.4k-n). Consider also:

- the width of the bed
- the type of mattress being used, eg static or dynamic, and can the dynamic mattress be programmed to a firm static mode?

Repositioning sheet

A repositioning sheet is a useful aid when used with a hoist, ideally an overhead gantry or ceiling mounted type. This is preferable to using a mobile hoist as it reduces the number of care staff required and enables position changes while reducing the risk of friction injuries. Kirton (2008) identified that the repositioning of persons using a repositioning sheet reduces the risk of the person sustaining tissue damage and nursing staff sustaining injury.

Used with an overhead hoist, it is also a tool that can reduce the pushing and pulling forces for handlers and potentially their risk and exposure to musculoskeletal injury.

The repositioning sheet becomes the bed sheet but the requirement to leave the repositioning sheet under the person should be considered, based on clinical factors, including:

- the person's tissue viability
- the breathability of the fabric
- any rough or uneven edges to the sheet
- the compatibility with the prescribed pressure reducing systems.

Fig 12.22 and Fig 12.23 show how the repositioning sheet is attached to the hoist to lift the person off the bed for repositioning. The loops are placed on the sling bar from the head to calves. It is not essential to connect all loops.

Fig 12.24 shows the sling bar parallel to the person. The person's body weight will stop the sheet from being pulled out from underneath. Using the hoist, slowly turn the person. If the person has a large pannus, pillows will need to be positioned appropriately on the support surface to protect the pannus. Also, correct positioning of the head, arms and legs will need to be done before the roll is started. The handler, with the control, must be facing the person in order to monitor the turn.

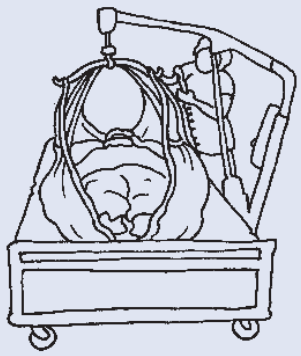


Fig 12.22 Repositioning sheet vertical lift strap attachment configuration

Fig 12.23

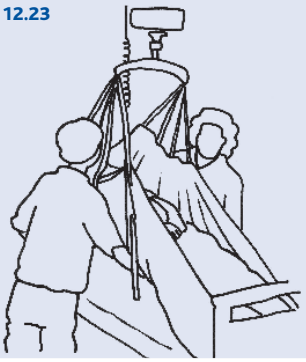


Fig 12.24 Final stage of turning process using a repositioning sheet. Handlers in control, facing the bariatric person

Hoists

Hoists are essential pieces of equipment in bariatric person management for dependent person transfers as well as potential retrieval from the floor after falls. If they are not fit for purpose, they will increase the risk of musculoskeletal injury to both handlers and persons. The risk assessment process should consider whether a floor based mobile hoist or overhead ceiling and gantry type is more suitable. More information on this subject can be found in chapter 11.

Mobile hoists

The following should be considered for the use of a mobile hoist:

- Any environmental constraints? There needs to be enough circulation space for hoist and chair manoeuvrability.
- The potential spinal forces on the carers when manoeuvring the mobile hoists will increase significantly when hoisting bariatric persons as compared to overhead systems. This will be increased on a carpeted floor. The number of staff needed to use a mobile hoist for a bariatric person needs to be considered.

© BackCare

- Motorised wheels and spreader bars may decrease or eliminate the pulling/pushing risk.
- Hoists are generally used indoors but in extreme circumstances and complex discharge cases for bariatric persons there may be a requirement to hoist outdoors. Consideration of slopes, gradients and rough ground should be made.
- The width of sling bar may need to expand with the sling width.
- Mobile hoists may be more suitable for lifting persons from the floor, but the environmental constraints and the amount of exertion required to manoeuvre the hoist with a bariatric person should be considered.
- Are weighing scales attached? The lift height can be reduced with certain hoist scales fitted above the spreader bar.
- Is the hoist to be used for more than one person?

Overhead hoists

It is often considered a better solution to have an integral ceiling track system or an overhead gantry hoist. Environmental constraints will need to be considered as the gantry needs to fit over a wider bed, chair and/or a commode, often taking up two bed spaces. This will also apply to the community environment.

Overhead gantry hoists travel on a load bearing beam and this can either be performed as a manual action or can be powered, further reducing the forces required. Depending on the design, the hoist may be sited head to foot or side to side and therefore provides a means to move the person up the bed or in and out of bed, for transfers and rehabilitation.

The following should be considered if a gantry hoist is to be used:

- Gantry hoists come either static or on wheels. The wheeled gantries may be more suitable for rehabilitation.
- A ceiling track "H" or traverse system enables more flexibility of movement and provides increased lift height when weighing the person.
- The design of sling bar may need to be different according to the body dynamics of the person. Many bariatric persons find the four point spreader bar (see chapter 11) creates a more comfortable lifting position than a traditional "coathanger" style.

A number of factors will need to be considered before placing a hoist in any environment within a hospital or community setting. The hoist will need to be ergonomically compatible within the allotted space. Is the height adjustment range appropriate for the person in order to facilitate a smooth transfer and mobilisation? Other factors to consider within the community setting will relate to the position and location of power sockets, along with the load bearing capacity of the floor structures.

CASE STUDY: BED TO CHAIR HOISTING PROCEDURE

A 53 year old male bariatric person weighing 222kg (35st) suffered a stroke following significant abdominal surgery. He was initially nursed in critical care and required a specific bariatric bed with a dynamic mattress surface to minimise risk of pressure ulcers.

The person was mobile prior to being admitted but the extent of the surgery and minor stroke had contributed to some weakness to one side and rendered him immobile.

The person had no cognitive impairment and was able to cooperate with moving and handling tasks within the bed. As the surgical condition improved, the next step was to provide intensive stroke rehabilitation and he was transferred from critical care to the appropriate ward.

The bed was designed with foot egress and an integral dynamic mattress surface. The hoist was a mobile gantry design fitted with twin motors. The bedside chair was appropriate for the weight and dimensions of the person. The standard ward side rooms did not have the spatial requirements to accommodate all the equipment. The hoist was therefore assembled in a ward bay area and occupied two bed spaces.

The bed was wide enough to allow the person to move freely and, because he could cooperate, it was relatively easy to insert the sling. Transfer from bed to chair was possible and from here he made good progress with the rehabilitation programme and was discharged home fully mobile within a few weeks (see Figs 12.20, 12.25-12.29).

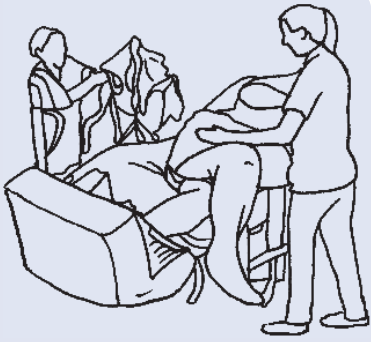


Fig 12.25 Person able to roll and raise leg to assist with sling insertion

Fig 12.26 Appropriate width bed and bed rails facilitate sling insertion

© BackCare

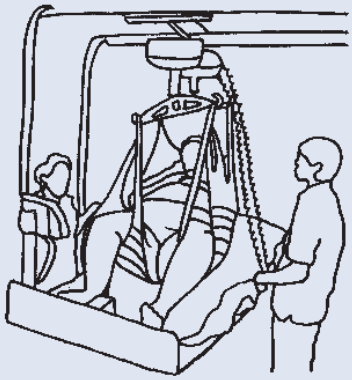


Fig 12.27 Operating twin motors requires synchronisation and maybe one or two handset controls

Fig 12.28 Person is seated and waiting for final adjustments to feet

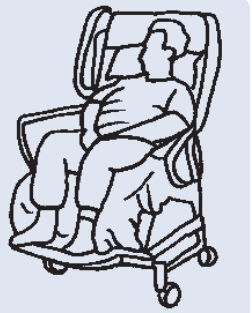


Fig 12.29 Final adjustment to leave in a comfortable position

Seating

Chairs can be static but are also available with a range of powered functions, including rise and recline.

There are four main types of bariatric seating.

Chairs can be:

- static, with optional drop down arms
- powered riser recliner style, with either two or four motors fitted
- specialised electric, height adjustable type that tilt in space, adjust from a chair to stretcher position to facilitate a lateral transfer
- tilt in space chairs.

Bariatric persons often sleep in powered reclining chairs as they can be used to enable their mobilisation. Static chairs should be height adjustable and a drop down arm may be useful to facilitate lateral transfers. It is advisable that chairs used within care organisations, where possible, have a castor brake facility on the chair. However, this has a contraindication, as it will raise the height of the chair and impact on independent transfers. The risk assessment will need to identify which is the priority – either braked castors or enabling independent transfer.

To date, there remains a lack of anthropometric data to aid the design of bariatric chairs. A chair width in excess of 76cm is often required and capacities up to 381kg (60st) are available.

Riser recliner chairs aid bariatric rehabilitation and independence. They can be used in cases where the person's legs are too heavy to lift into bed. They also reduce the amount of exertion required by the person to achieve sit to stand activities. When prescribing chairs, consider the following:

- The height, depth, seat width and safer working load.
- The pressure relieving properties of the chair.
- Does the leg rest of the chair have a safer working load that accommodates the weight of the person's legs and pannus?
- Does the chair provide a comprehensive range of independent adjustments that enables cardiac management, effective pulmonary function and lymphatic drainage and secretion?
- Does the chair enable supine positioning of the person without flexing or extending? This can be useful for persons with apple shapes. It enables reduced flexion at the waist/hips and also causes minimal arterial blood pressure changes and improves oxygenation (Perilli *et al* 2000).
- Functional spatial requirements for the person.
- When procuring a chair consider the fabric option, especially if the chair is to be part of a bariatric resource from local community equipment stores. Will the fabric be suitable for decontamination/cleaning processes?
- Does the surface texture of the chair fabric facilitate the insertion of slide sheets or slings? Inserting slide sheets behind the person can be more difficult if there is friction and resistance due to incompatible surfaces.

Transportation

The bariatric person's journey, in essence, can begin within any environment(s). The service provider attending to transport a bariatric person, whether on a planned or emergency basis, will require the knowledge and experience of established protocols and lines of communication. This will establish integrated professional interventions throughout the person's journey(s).

The assessor needs to consider:

- how it will begin
- evacuation from the person's home
- transportation to and from hospital, clinics etc
- access and egress.

Bariatric persons are often independently mobile but there may be some limitations regarding the ability to walk a long distance or negotiate an incline. For this reason, there is often a need to plan and procure appropriate and timely transportation. It comes under two categories:

Planned transportation

Planned extrication should be proactive, with communication between all service providers. A multi service risk assessment process should be undertaken to ensure the person journey is seamless and may include:

- ambulance and fire services (non-emergency)

© BackCare

- a taxi service
- the person's own transport via relatives.

Emergency transportation

In an emergency, the delay in extrication impacts on person outcomes, especially if associated with trauma. Possible scenarios may include:

- emergency services fire and ambulance triggered by 999 call
- team in attendance may be multidisciplinary and multiagency, with specialists from the community and/or acute trust if collaborative policies are in place.

Transportation trolley

Ideally, this should have a capacity of at least 250kg (39st) and needs to be wider than the standard 65 or 70cm wide trolley – a width of 75cm is more suitable. A backrest adjustment should be powered or gas assisted to reduce the pushing/pulling forces required to adjust the backrest. An understanding of the bariatric body dynamics is needed as apple shaped persons cannot lie flat on their back. It is advantageous for the trolley to have adjustable back and knee break profiling to reduce the risk of the person sliding down the trolley. This also minimises the risk of shear and friction.

Wheelchairs

Bariatric wheelchairs need to accommodate more than just the weight of the person. The width, length, depth and body dynamics would need to be considered. A person that has pear shaped characteristics will require wider leg rests.

When prescribing or procuring a wheelchair, the following further considerations may need to be factored into the provision:

- Availability of wheelchair design.
- Is a ramp needed when entering a building?
- The compatibility of the wheelchair with thresholds and ramps (see Fig 12.30).
- The width of doorways.
- Turning circle required for manoeuvring the wheelchair – which will need to be in excess of the usual 1,200mm.
- Number of persons required/available to manoeuvre the wheelchair.
- Is there a need to transfer the wheelchair into a vehicle? What is the weight?
- The distance the wheelchair needs to be pushed, and any slopes.
- Is there a removable motor available to eliminate the pushing/pulling forces?
- What weight does a hospital lift take?

If a self propelled wheelchair is used, the individual will require sufficient upper body strength to mobilise physically and all the above considerations would need to be assessed.

CASE STUDY: TRANSPORTING A PERSON TO HOSPITAL

A person weighing 191kg (30st) needed to see a urologist. He had problems with a catheter, which could not be solved by the district nurse or GP. The person lived in a small extension to his elderly parents' home.

The person was refusing to go to hospital as his previous experience had been terrifying. He had sustained pressure damage from lying on an inappropriate couch until a suitable bed arrived.

A multi service risk assessment took place, involving the person's parents. The room size and front door width were measured and an emergency protocol planned:

- the front door required removal to enable trolley access and egress
- manoeuvrability within the room would just about facilitate the bed and trolley being side by side
- a bariatric trolley with the foot end entering first into the environment would enable a hoist lateral transfer utilising the fixed track already in place.

The access route to the house was a long, steep slope and consideration was given to the pushing and pulling forces as outlined in the Manual Handling Operations Regulations 1992 (as amended 2002). Concerns related to person dignity as the long slope did not allow privacy. The home was near a school so it was essential that the task be carried out in the early morning to minimise interest from the public.

The tailgate capacity of the ambulance was assessed to ensure that it would not be exceeded with the total weight of the person and trolley. Having undertaken these precautions and communicated results to the receiving hospital enabled the person to be admitted and treated with an overnight stay before returning home next day.

It is important to undertake a risk assessment to assess the pushing/pulling forces for all mobile transportation. Where possible, the transportation should be motorised to reduce these forces.

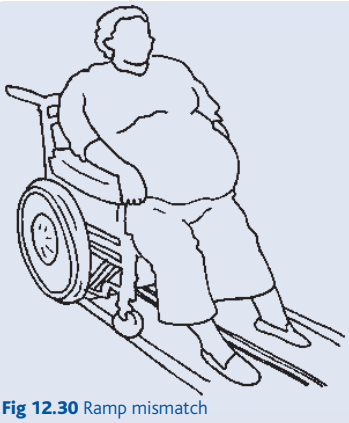


Fig 12.30 Ramp mismatch

Specific areas for concern

The previous sections provide a range of information that supports the systems approach within health and social care organisations. There needs to be proactive risk assessment on an individual and organisational basis and clear policies, procedures and processes identified to deliver the environments, skills and equipment to control the risks of moving very heavy persons effectively. The systems in place in various health and social care locations are improving and guidance for some specific locations and functions is described in this section.

© BackCare

Independent living

Wherever possible, bariatric person care and social care delivery should be focused on independent living. In the event of a medical deterioration that is not life threatening, wherever possible, care delivery should be maintained within the person's home.

CASE STUDY

A person weighing 286kg (45st), living in a terraced house, slept and sat in a riser recliner chair. The chair broke, so the person reverted to his only supporting surface, which was his divan bed and mattress. The GP was called out because the person had developed a pressure sore on his abdomen due to long periods of lying on the mattress.

The district nurse visited to dress the wound and found the person cyanosed and breathless. The person refused hospital admission and was referred to intermediate care for ongoing care provision.

The intermediate care sister undertook a risk assessment, which identified that immediate equipment provision was required to enable the service to provide a safer system of work for the staff and to address the person's breathing problems.

Equipment provided:
- bariatric bed and mattress
- riser recliner chair
- bariatric commode.

The rental equipment was delivered within 24 hours.

The care staff were trained in using this equipment and visited the person twice a day to undertake personal care, dress the abdominal wound and clean under the person's large pannus. The training was cascaded to all care staff in the service.

Social services were involved in regards to providing a wet room. All this was discussed at a multidisciplinary meeting held at the person's home to explore all the options available for keeping the person at home. At this meeting, the person agreed that the emergency services could be informed of his circumstances. Once this had been agreed, the ambulance service visited and undertook an evacuation risk assessment.

With the above systems in place, the person remained at home for six weeks after the initial intervention processes had been implemented. Unfortunately, he had a fall in the bathroom and required hospital admission, which was undertaken seamlessly due to recent risk assessments and service implementation.

Complex admission/discharges

The complexity of hospital admission and discharge is a worrying experience for most bariatric persons and professionals trying to organise the transfer. Timing the transfer with the ambulance service's specialist vehicle and staffing availability can delay the person's admission to hospital or discharge home. Organisations should have bariatric care pathways in place that have been developed by multidisciplinary teams and services that enable the bariatric person's seamless transfer. The pathway should identify specific communication channels, cross boundaries information sharing and equipment provision in a timely manner. All service providers should educate staff members on how to implement the care pathway. This multidisciplinary input should include:
- social services
- emergency services
- community care
- primary care trusts
- acute/secondary care.

Hignett & Griffiths (2009) identified the need for a pathway approach to the management of bariatric persons. This approach is guided by legislation and must be supported strategically and supplemented with policies, procedures and protocols.

These will include:
- risk management processes
- policies and procedures
- safer systems of work
- quality assurance standards
- audit
- education and training
- access to competent persons.

Investigative procedures – CT, MRI, fluoroscopy scanners

Extreme obesity and body mass may sometimes preclude the person from routine investigations or require a transfer to another hospital. The limitations stem from the table capacity or the diameter of the tube and, while some persons may not exceed the table weight capacity, their body dimensions exceed the diameter of the tube. Typical tube dimensions can be 50 or 60cm. Some fluoroscopy systems may have high load capacity tables but these are compromised by being fixed height and necessitating a step up.

Standard high load capacity steps may not be wide enough for the bariatric person so it is important to source a wide step, ideally with a supporting handle. The table is fixed height due to the position of the X-ray tube below the table.

It can be difficult to insert the plate beneath the person when a chest X-ray is required. Low friction slide sheet pockets can help with this task. There could be technical difficulties with the movement of adipose tissue when the scanner table moves. Air assisted devices can facilitate lateral transfers onto the examining table. The air assisted mats are radiolucent and extension hoses are available to permit use in MRI scanners.

Some risk reduction features are designed into the items of equipment used in the radiography department. A range of tables is available, offering variable adjustment and some can profile vertically. Floating tables, based on using "hovercraft" technology, are also available. An important point to note is that the maximum safe working load will vary depending on the type and design of the equipment. These same principles also apply to operating tables.

© BackCare

Resuscitation

The revised algorithms provided in the Resuscitation Council (UK) 2010 guidelines apply to bariatric persons as the physiological principles of resuscitation are unchanged. However, there is a recognised poor outcome due to morbid obesity, body shape and mass. This results in a mentally challenging and more complex scenario for the physician or rescuer (Eadie 2004).

Some guidance relating to the manual handling and practical aspects of resuscitation and bariatric persons is mentioned in the *Guidance for safer handling during resuscitation in healthcare settings*, Resuscitation Council (2009). Undertaking cardiopulmonary resuscitation will require practical amendments to the organisation's locally agreed resuscitation policies and procedures to ensure the wellbeing of staff and good clinical outcomes, where reasonably practicable, for the person.

The Resuscitation Council guidelines recommend that fit for purpose equipment is used to transfer bariatric persons, that they should not be lifted and electric profiling beds should be used to enable appropriate care. The beds should have good height range adjustment and ideally be width adjustable. The criteria for carrying out cardiac compressions with the person in a profiling stretcher/chair would be determined by the degree of stability, firmness and manufacturers' guidelines. Recovery from floor level may require the use of an air assisted lifting device as illustrated in Task 12.6.2b. This device provides a stable base and is firm enough to continue cardiac compressions, if required.

A concealment trolley of appropriate size and weight capacity may be needed if the resuscitation attempt is unsuccessful. Market choice is limited for this item of equipment but an alternative is to modify an existing high load capacity trolley. It is possible to have bespoke stainless steel frames and shroud covers fabricated to fit existing trolleys. These can be made without impacting on the integrity of the trolley structure and made to a height that will encompass a very large abdomen.

Mortuary

The handling of deceased bariatric persons within a mortuary environment can be complex and will impact on medical staff, porters, undertakers, scientific and technical staff. The ergonomic design of the building and integrated equipment is an important aspect that plays a part in determining safer systems of work.

Mortuaries in older establishments may have restricted space, making it difficult to improve the ergonomic design. In addition, there are Department of Health guidelines that must be adhered to, ie HBN 20 Facilities for mortuaries and post mortem room services (NHS Estates 2005).

The systems and equipment in place will vary depending on the organisation, and some mortuaries may not be attached to a hospital. The range of manual handling activities will be very similar and fall within the following categories:

- receipt of the body – may be internally via a concealment trolley or from an external source by ambulance
- transfer from trolley into the fridge
- transfer from fridge to the post mortem area
- transfer from trolley to the post mortem table
- preparing the chest, abdominal and skull cavities for post mortem
- transfer from fridge to the relatives' viewing room
- transfer from trolley to the undertakers' coffin.

Each category must be risk assessed and the appropriate control measures applied. In some cases, the same equipment and methods used for a living person would be appropriate. These would include hoists with horizontal stretcher attachments, lateral transfer boards and variable height trolleys.

Other control measures will be specific to the mortuary environment and should not be overlooked, especially during major refurbishments and new builds. This will include:

- multifunctional combined concealment, transportation and stacking trolley
- extra wide fridges and appropriately spaced stacking shelves
- double ended fridges that link the body receipt area and the post mortem room
- motorised and height adjustable body stacking trolleys
- variable height and tilting post mortem tables
- variable height dissecting tables
- extra wide high capacity post mortem tables
- overhead hoisting systems, post mortem and collection areas.

Safer policies and protocols are still needed within a new and ergonomically designed mortuary. The fridges may be wider but stacking bariatric bodies on high shelves can be difficult even when using a motorised trolley with powered rollers. Systems should be in place to stack bariatric bodies in the lower section of the shelving area. This will be easier biomechanically if no motorised trolley is available.

Conclusion

Evidence that the bariatric population is increasing creates the need for a proactive rather than reactive approach to caring for this population. Organisations must ensure that processes are in place to facilitate a person's journey through an episode of care that benefits both handlers and the person. This should include equipment provision, education and providing environments that promote person dignity.

Equipment provision for bariatric persons is not straightforward and bespoke equipment will predominantly be required to meet individual need. Organisations must have in place a clear policy statement, identified competent assessors who can risk assess environments, provide equipment information, accessibility and train formal/informal carers.

Nursing staff may be apprehensive and may have an inherent anxiety about being injured when caring for bariatric persons. It is possible to allay these anxieties by educating the workforce and providing specific facts regarding bariatric persons that will enhance safety and promote high quality care. Providing bariatric care with dignity for the person is important and an understanding of the different body shapes and dynamics will contribute to this decision making process.

The installation of equipment and the provision of training are not sufficient to improve quality of care and reduce manual

© BackCare

handling risks to staff and persons. Evidence based practice and robust management systems are essential for progress to be made. The systems should incorporate statutory requirements, policies, protocols, risk assessment and quality assurance standards as a minimum requirement. Compliance is essential and, therefore, any systems implemented must be tested and formally audited. The risk management of bariatric persons is not a one-off process. It should remain high profile and be continually active to promote high quality care for persons and a safer environment for staff.

The previous pages have outlined the statutory, quality assurance and local organisational systems that are essential to facilitate the safer handling and management of bariatric persons within hospital or the community. The following pages will address a range of core practical techniques and illustrate the type of equipment that can be used. The techniques may be transferable into a variety of different scenarios within hospital or the community and the decision to use them should be based on a suitable and sufficient risk assessment that takes account of the person's clinical condition and all other relevant person specific and environmental risk factors.

© BackCare

PRACTICAL TECHNIQUES

Task 12.1 Repositioning a person in bed

The risks associated with this task increase significantly in bariatric management and risk reduction plans need to be implemented. The following equipment should be considered in terms of short, medium and long term control measures:

- the bed
- turning mattress/turning beds (see Task 12.1b)
- slide sheets
- repositioning sheets.

See Task 10.1 in chapter 10.

Options for moving the bariatric person up the bed, include:

- asking the person to move themself
- moving up with slide sheets
- using a repositioning sheet (see page 208) plus hoist
- using a hoist and appropriate sling.

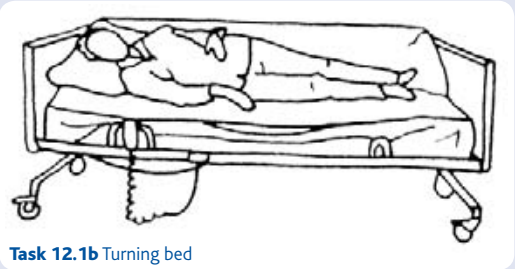
Note: Before turning or rolling, consider sliding the person to the edge of the bed away from the direction of the roll to accommodate the abdominal pannus. If the starting position is incorrect, the person may be too far over with the abdominal pannus close to the edge. See Task 12.1a.

Turning in bed

This can also be achieved using the repositioning sheet or slide sheets.

Consider the person's body dynamics, especially if the person is an apple pannus. The width of the bed will need to be sufficient to ensure that the pannus is supported and is not overhanging. Before undertaking the task, pillows should be positioned on the bed to support the turning pannus.

Task 12.1a Person too near the edge due to incorrect starting position



Task 12.1b Turning bed

Task 12.2 Personal care

Accessing under the pannus to the perineal area for hygiene care or to wash and dry the person within the skin folds requires caregiver exertion and is potentially a high risk task. One possible solution is a combined hoist and multistraps that can move the pannus upwards, but this is not an option in all cases. Points for consideration:

- can the person assist by moving or holding the pannus
- whether the pannus is pliable
- the risk of the multistrap slipping during the task
- how long the person can tolerate the pannus being supported by the multistraps.

Possible alternatives if this combination doesn't work, would be:

- strategically positioning slide sheets or towel fitted as follows
  - Recline the back rest down as far as possible, reverse tilt the bed for gravity assist and then move the pannus towards the patient's chest by walking up the pannus. Insert the towel or sliding sheet with the handlers holding the sliding sheet or towel at an angle to give access under the pannus.
  - Position person correctly by rolling him/her to one side, position another sliding sheet on the flat of the bed with the pannus positioned on it. Position your hands on the pannus and, using the combination of the sliding sheet and a massage movement, manoeuvre upwards. Proceed to clean as required. Repeat for the other side.

For the bariatric person in end stage heart and lung failure and not able to lay flat, this may prove a more comfortable and dignified method.

Note: Rest breaks should be mutually agreed between handlers as these tasks might require more exertion.

Sub-task 12.2.1 Positioning limbs

The manual lifting and supporting of limbs can be a high risk scenario with risk of musculoskeletal injury to the handler and also the person. Chaffin *et al* (1999) and Pheasant (1992) refer to the weight of limbs and associated calculations. Chaffin identifies that a leg will be 15.7 per cent of the total body mass and an arm 5.1 per cent. For example, if a person weighs 200kg (31st) the leg weight would be 200 x 15.7 per cent = 31.4kg. This does not take account of the additional weight occurring due to conditions such as lymphodema.

Positioning limbs for personal care and dressing changes is, therefore, a potentially hazardous and difficult task when it involves bariatric persons. This task can be made easier by the use of limb supports of various designs (see Task 12.2.1a).

© BackCare

There are different sized limb lifters available and some can be used with a hoist. Consideration needs to be given to:

- the safety and comfort of the person who may need to have his/her limb held in a potentially awkward position for a long period of time
- neurovascular issues
- joint problems
- potential tissue damage from the sustained pressure on the skin
- the momentum required by the carers to secure the bandages.

Equipment options:

- leg lifters attached to the bed or free standing
- slide sheets to position limbs in the bed
- mobile/gantry hoist with limb slings
- mobile limb lifter
- limb attachment for theatre tables.

Task 12.2.1a Lifting a limb using mechanical aid

Sub-task 12.2.2 Managing leg ulcer dressings in the community

Managing bariatric heavy limbs is a constant problem for nurses in all settings. The postural positioning for nurses when attempting to apply dressings and bandages does not allow for best practice and most nurses will agree that they experience discomfort/low back pain during such tasks.

Undertaking leg ulcer dressings does have musculoskeletal risk factors for the nurses – individual to each nurse – often related to the difficulty of some nurses with kneeling.

Managing the task of leg ulcers is not one single task but a combination of tasks identified below:

Task 1

- prepare the clean dressings
- prepare the environment
- obtain a bowl of warm water
- move the bowl to the person's side.

Task 2

- remove the contaminated dressings
- disposal.

Task 3

- wash and inspect the leg(s)
- dry.

Task 4

- apply dressing
- apply bandaging.

Task 5

- clear up
- wash hands
- write the notes.

The above tasks can vary from 30 minutes to two hours and may need the attendance of more than one nurse. The nurses can work together or one visits early to undertake tasks 1-3, and 5, the second nurse arriving later to complete task 4.

In most instances, the nurses will use the person's own stool, a garden kneeling pad, or develop a technique which is most comfortable to them. Sitting on the flooring with legs spread, or kneeling, is not comfortable, especially if the nurse is having to support the limb. Most nurses will identify the inspection of the leg as the most difficult, due to the positions they are required to maintain while looking at the back of the legs.

Task 12.3 Hoist transfer from bed to chair

See chapter 11, Task 11.4 and notes starting on page 205 on equipment and suitable hoists.

Task 12.3a Lateral hoist, bed to chair transfer, three staff – person able to assist

- The number of staff required will be determined by the level of risk, including the person's clinical condition and ability to assist (see Task 12.3a).
- Twin motors and spreader bars will facilitate a better range of movement by moving shoulders or legs independently.
- When using twin motors, the lift must be synchronised to prevent overloading of one motor.
- A single motor can be used but it may require a more appropriate design of spreader bar for the bariatric person.

© BackCare

Task 12.4 Lateral transfer from bed to bed/trolley

See chapter 10, Task 10.9

Points to consider for lateral transfer of bariatric persons:

- use only equipment designed for the purpose
- slide sheets should be the correct width – too narrow and too large may cause problems
- extension straps fitted to slide sheets may improve the handlers' posture and facilitate the move
- any gaps should be minimal or bridged with an appropriate transfer board
- hoist systems with a stretcher sling attachment may be appropriate.

Task 12.4.1a Air assisted hover system – bed to trolley

Task 12.4.1b Air assisted hover system – operating table to trolley

Sub-task 12.4.1 Air assisted lateral transfers – hover systems

These devices use the hovercraft principle to move the person on a cushion of air and are commonly used to slide persons laterally from bed to trolley or trolley to operating table as recommended by Baptiste *et al* (2006) (see Task 12.4.1a and b).

The original use was for the management of extremely heavy persons but the versatile nature enhances any lateral transfer, regardless of the person's weight. The hover devices do not generally have a restricting upper weight limit. The mat width tends to be the limiting factor but a range of widths are available. The fabric make up of the mat is designed to be laundered if required and single person use mats are an option.

Extension straps can be fitted to air transfer devices but caution must be exercised as control can be lost if excessive effort is applied.

Task 12.5 Assisted walking

Assisting a patient to stand has been identified as a major cause of back pain (Ruszala & Musa 2005). When rehabilitating bariatric persons, we need to consider equipment that facilitates best practice and the person's mobility.

Understanding the diversity of bariatric body shape and movement patterns is extremely important in the rehabilitation programme in order to treat specific persons safely and effectively. Dionne (2002) suggests that bariatric people move in a wide variety of ways. The body shape determines the bariatric persons' limitations in postural control and the way they stand and learn how to maintain their centre of gravity. Daus (2002) suggests they usually avoid standing by pulling themselves forward because of the fear of falling and Dionne (1997) says they may develop compensatory activities. Bariatric people, therefore, will often require specific mobilisation techniques.

Dionne's egress test (DET) is a useful method for assessing the ability to mobilise from a sitting to a standing position including weight bearing and taking steps. The process involves three repetitions to rise from the bed starting with just one or two inches. Once standing, the person is then asked to step in place by raising a foot completely clear of the ground. This, too, must be repeated three times. The final test is to step forward and return. The heel of the stepping foot must move forward to at least the toe level of the static foot. The DET is considered a success if the person can complete the tasks with only minimal tactile intervention from the assessor. Smith (2008) carried out a study to compare therapists trained in DET methods and nurses untrained in the technique. The result showed a high level of reliability and agreement with the trained staff and newly instructed personnel (Smith 2008).

When rehabilitating a bariatric person, the following needs to be considered:

- a careful assessment needs to be undertaken of the person's ability to weight bear and/or assist, especially when he/she has been in bed for a considerable time
- a bed that converts to a chair is often useful, as well as a riser recliner chair
- the width of the walking frames may need to encompass the excess adipose tissue
- the types of sling that will be appropriate for rehabilitation, as bariatric persons may have breathing difficulties and often cannot tolerate constriction around their chest

© BackCare

- are there adequate numbers of staff with appropriate skill and training to undertake the task?

Sub-task 12.5.1 Hoist slings for assisted walking

A number of sling styles are available and careful assessment of the person's needs must be taken into consideration. If he/she cannot tolerate a walking vest/harness, then alternative designs incorporating a "pant" design may be more appropriate. Choice of slings may be determined by:

- the person's tissue viability status
- any wound healing issues
- potential rib injuries
- environmental constraints and the type of equipment available
- staff competency.

Persons would require some weight bearing capacity, cognitive response and compliance in the task.

Task 12.5.1a Hoist slings for assisted walking

Task 12.5.1b Hoist sling for unaided walking

Task 12.6 Retrieving a person off the floor

Assisting a fallen person off the floor is another challenging task for handlers and is described in more detail in chapter 13 (Tasks 13.4-13.10). Depending on the injuries incurred and the dependency level of the person, three options are open to handlers:

- Encourage the person to get up slowly by themself using normal body movement.
- Use an inflatable device that can be positioned under the person and raise him/her up. This can be a seated device or a supine device.
- Hoist system.

Task 12.6.1b Rolling to insert deflated, lifting cushion

Sub-task 12.6.1 Inflatable lifting chair – fully inflated position

The seated device has been designed to assist the heavier person into sitting and lift him/her from the floor, either independently or with assistance. It offers a comfortable and dignified solution and can be used anywhere, indoors or outside. The clinical condition of the fallen person and lifting capacity of the device should always be considered before proceeding to raise from the floor. See chapter 13 (Task 13.10)

Task 12.6.1a Positioning the lifting cushion

Task 12.6.1c Re-adjusting the lifting cushion

Task 12.6.1d Rolling the person back onto the lifting cushion

© BackCare

Task 12.6.1e Supporting the knees so person doesn't slide

Task 12.6.1f Inflating the lifting cushion

Task 12.6.1g Three chambers inflated

Task 12.6.1h All chambers inflated

Task 12.6.1i Rising from the lifting cushion

Sub-task 12.6.2 Inflatable lifting device – supine position

If the person's clinical condition precludes sitting and the use of a hoist or inflatable seat to assist him/her is not appropriate, another option is to use an air assisted lift device that allows the person to remain in a supine position. The device is placed under the person by log rolling him/her onto it and has four chambers which are inflated independently and sequentially, starting from the bottom. The person is then raised to a level that will facilitate a lateral transfer onto a stretcher, bed or trolley. The extremely high load capacity makes this device particularly useful for bariatric persons and can be used together with the air assisted lateral transfer device to recover the person from the floor.

Task 12.6.2a Air inflated lifting device

Task 12.6.2b Rescue from floor and transfer to trolley (300kg, 47st)

Sub-task 12.6.3 Hoist off the floor

See Task 11.7 in chapter 11.

- An overhead system is preferred and more stable.
- Bariatric persons can be hoisted from floor level using a mobile hoist but the procedure can be complex.
- Hoisting bariatric persons from floor level is not condemned but safer options are available, including the use of air assisted devices (see Task 12.6.2b).
- Some hoists may have horizontal attachments for supine lifting, which may reduce the maximum lift capacity as the wide load can make the hoist unstable.
- Lifting from floor level is one occasion when the use of hoist brakes may be indicated.
- A diagonal approach is usually the most practical when using a mobile hoist
- An alternative flat lift method must be used if major fracture and/or spinal injury suspected (NPSA 2011).

© BackCare

References

All Wales NHS Manual Handling Training Passport and Information Scheme (2007), Swansea. www.wales.nhs.uk/documents/All%2DWales%2DNHS%2DManual%2DHandling%2DTraining%2DPassport%2Dand%2DInformation%2DScheme%2DV2%2Dfinal%2Epdf Accessed 1 November 2010.

Association for the Study of Obesity (2010), Press release Access to NHS Weight Loss Surgery, www.aso.org.uk/wp-content/uploads/downloads/2010/09/100121-Press-Release-Bariatric-Surgery.pdf accessed 7 October 2010.

Baptiste, A, Boda, SV, Nelson, AL, Lloyd, JD & Lee, WE, III (2006), Friction-Reducing Devices for Lateral Person Transfers: A Clinical Evaluation, *AAOHN Journal*; Apr 2006; **54**, 4; pg 173.

Bushard, S (2002), Trauma in Persons who are Morbidly Obese *Cardiometabolic risk and weight management*, Vol **2** No 1, p14-16, January 2007.

Cassar, S (2010), Manual Handling Protocol for People who are Bariatric or have exceptional needs. The London Borough of Sutton.

Chaffin, D, Anderson, G & Martin, B (1999), *Occupational biomechanics* (3rd ed), New York: Wiley.

Cheung, DS, Maygers, J, Khouri-Stevens, Z, De Grouchy, L & Magnuson, T (2006), Failure Modes and Effects Analysis: Minimizing Harm to Our Bariatric Patients. *Bariatric Nursing and Surgical Patient Care*, Volume **1**, Number 2, 2006 p107-114.

Cookson, K (2007), *Large but unseen: bariatric persons and manual handling*.

Cookson, K (2008), Complex admission and discharge situations – bariatric patients, *column,* **20.3** Winter 2008 pages 8-11, ISBN1461-0922.

Daus, C (2002), Rehab and the Bariatric Person Rehab Management. *The Interdisciplinary Journal of Rehabilitation* January:14(9) **42**, 44-45.

Dionne, M (1997), *Treating the Bariatric Patient*, PT & OT, January 1997.

Dionne, M (2002), One Size Does Not Fit All *Rehab Management*, March 2002, Vol **15**; No 2. Accessed 25 November 2010 www.rehabpub.com/features/32002/1.asp.

Eadie, R (2004), Resuscitative challenges in the obese patient. Obesity. *NAASO's newsletter,* Vol **2** No 8.

European Pressure Ulcer Advisory Panel & US National Pressure Ulcer Advisory Panel (2010), International Pressure Ulcer Guidelines for Prevention and Treatment Quick Reference Guide accessed via: www.epuap.org/guidelines.html.

Fazel, E (1997), Handling of Extremely Heavy Persons, *column,* Vol **9.2**, Apr 97, p13-16, National Back Exchange, Towcester 1997.

Goldhill, D, Imhoff, M, McLean, B & Waldmann, C (2007), Rotational bed therapy to prevent and treat respiratory complications a review and meta-analysis, *American Journal of Critical Care,* January 1007.

Haslam, C, Clemes, S, McDermott, H, Shaw, K, Williams, C & Haslam, R (2007), *Manual Handling Training – Investigation of current practices and development of guidelines*, Health and Safety Executive Research Report RR583.

HSE (1974), Health and Safety at Work etc Act 1974.

HSE (1992), Health and Safety Executive, The Manual Handling Operations Regulations 1992 (as amended), Her Majesty's Stationery Office.

HSE (1999), The Management of Health and Safety at Work Regulations 1999, Her Majesty's Stationery Office.

Hignett, S, Chipchase, S, Tetley, A & Giffiths, P (2007), *Risk assessment and process planning for bariatric person handling pathways*, Health and Safety Executive Research report RR573.

Hignett, S & Griffiths, P (2009), Risk factors for moving and handling bariatric persons. *Nursing Standard,* **24**, 11, p40-48.

Kilpatrick, MK, Esterhuizen, P & Drake, D (2009), An Optimal Caring/Healing Environment for Obese Clients *Bariatric Nursing and Surgical Person Care,* Vol **4**, number 2 2009 Mary Ann Liebert Inc.

Kirton, H (2008), Helping make 1:1 care mean 1:1 care! 8th Annual Safe Patient Handling and Movement Conference, Poster presentation, 11-15 March, 2008. Tampa, Florida.

Mastrogiovanni, D, Phillips, EM & Fine, CK (2003), The bariatric spinal cord-injured person: challenges in preventing and healing skin problems, *Topics in Spinal Cord Injury Rehabilitation,* **9** (2): 38-44.

Medical Device Equipment Alert (2008), Alert MDEA (NI2008/036) issued 23 May 2008.

Mosby's Medical Dictionary, 7th edition 2006. Mosby Elsevier.

Muir, M (2009), Clinical Developments and Metabolic insights in Total Bariatric Person Care, *Bariatric Times* March 2009.

Naylor, P, Raynsford, H, Kurowski, P, Demis, J & Goodwin, A (2005), Choosing Health in the South East: Obesity, South East England Public Health Observatory, www.sepho.org.uk/Download/Public/9783/1/SEPHO%20obesity%20report%20Nov%2005.pdf.

NHS Estates (2005), HBN 20 Facilities for mortuaries and post mortem room services. Department of Health ISBN 0113227159, Crown copyright.

NHS Information Centre (2009a), *Health Survey for England* (2008), Physical Activity and fitness – Summary of key findings, p12, ISBN 978-1-84636-371-9, www.ic.nhs.uk/webfiles/publications/HSE/HSE08/HSE_08_Summary_of_key_findings.pdf accessed 14 January 2011.

NHS Information Centre (2009b), *Health Survey for England* (2008), Physical Activity and fitness – Summary of key findings, p3, ISBN 978-1-84636-371-9. www.ic.nhs.uk/webfiles/publications/HSE/HSE08/HSE_08_Summary_of_key_findings.pdf accessed 14 January 2011.

NHSLA (2010), National Health Service Litigation Authority. Risk Management Standards for Acute Trusts and Primary Care Trusts and Independent Sector Providers of NHS Care. Website www.nhsla.com/RiskManagement/accessed 19 July 2010.

NICE (2006), Obesity Guidance on the presentation, identification, assessment and management of overweight and obesity in adults and children. National Institute for Health and Clinical Excellence Document, CG43, http://guidance.nice.org.uk/CG43/Guidance/Section.

Nilsson, B (2006), Bariatric person handling joined up Management Development Diversity Delivery Institute of Healthcare Management Annual Conference & Exhibition Manchester 2005 *N Journal*; March 2006; **54**, 3; pg 113.

NPSA (2008), A risk matrix for risk managers National Patient Safety Agency www.npsa.nhs.uk accessed 19 July 2010.

NPSA (2011), Rapid Response Report NPSA/2011/RRR001, Essential care after an inpatient fall NHS 2011 www.codp.org.uk/documents/Essential%20care%20after%20an%20inpatient%20fall%20supporting%20information.pdf.

NWML (2008), Guidance to the Non-Weighing Instruments

© BackCare

Regulations 2000 as mended by the 2008 NAWI (amendment) Regulations 2008.
Office of Health Economics (2010a), Shedding the Pounds, Obesity Management, NICE Guidance and bariatric surgery in England, p4 ,The Office of Health Economics, Whitehall, London, September 2010.
Office of Health Economics (2010b), Shedding the Pounds, Obesity Management, NICE Guidance and bariatric surgery in England, p5 ,The Office of Health Economics, Whitehall, London, September 2010.
Perilli, V, Sollazzi, L, Bozza, P, Modesti, C, Chierichini, A, Tacchino, RM & Ranieri, R (2000), The Effects of the Reverse Trendelenburg Position on Respiratory Mechanics and Blood Gases in Morbidly Obese Persons during Bariatric Surgery. *Anaesthesia and Management*, December 2000, Vol **91**, No 6, 1520-1525.
Pheasant, S (1992), *Bodyspace*, London: Taylor & Francis Ltd.
Resuscitation Council (UK) (2009), *Guidance for safer handling during resuscitation in healthcare settings*, Working group of the Resuscitation Council (UK), London, November 2009, pages 28-29.
Resuscitation Council (UK) (2010), *Resuscitation Guidelines 2010*. ISBN 978-1-903812-21-1, Resuscitation Council (UK), London, October 2010.
Rush, A (2006), An Overview of Bariatric Management, www.dlf.org.uk/factsheets/Overview%20of%20Bariatric%20Management.pdf, Disabled Living Foundation Accessed 29 August 2010.
Ruszala, S & Musa, I (2005), An evaluation of equipment to assist person sit-to-stand activities in physiotherapy, *Physiotherapy*, **91**(1), 35-41, March 2005.
Smith, BK (2008), A pilot study evaluating physical therapist-nurse inter-rater reliability of Dionne's egress test™ in morbidly obese patients. www.thefreelibrary.com/A+pilot+study+evaluating+physical+therapist-nurse+inter-rater...-a0200409972 accessed 9 November 2010.
St John Holt, A (1999), *Principles of Health and Safety at Work* 5th edition, p105, IOSH Services 1999, Wigston Leicestershire, ISBN 0901357243.
Stubbs, DA (2000), Ergonomics and Occupational Medicine: future challenges. *Occupational Medicine*, Vol **50**, No 4 pp277-282.
Webber, J (2001), The co-morbities of obesity, *Practical Diabetes,* Int 2001, **18**(8), 293-296.
WHO (2000), Obesity: Preventing and Managing the Global Epidemic WHO Technical report Series 894, WHO Geneva 2000 http://whqlibdoc.who.int/trs/who_trs_894.pdf.
WHO expert consultation (2004), Appropriate body mass index for Asian populations and its implications for policy and intervention strategies, *The Lancet*, 2004; 157-163.

© BackCare

Appendix 12.1 Person assessment tool

Manual handling risk assessment for persons

NB: All persons must undergo an assessment:

- within six hours of admission (Assessment Code 1)
- on transfer from another ward (Assessment Code 2)
- if there is a change in the person's general condition (Assessment Code 3)
- weekly review from date of most recent assessment (Assessment Code 4)

Person ID label	**Ward:**	**Date of admission:** - - / - - / - -	**Time of admission:** (24-hour clock): - - / - -	**Grade of admitting nurse**
	Admitting nurse name:			
	Admitting nurse signature:			
Assessment date	- - / - - / - -	- - / - - / - -	- - / - - / - -	- - / - - / - -
Assessment time (24-hour clock)	- - / - -	- - / - -	- - / - -	- - / - -
Reason for assessment (code: top of page)	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
For verification of assessment as per policy — **RGN Signature**				
For verification of assessment as per policy — **RGN Name**				
Re-assessment done by: (Signature)				
Re-assessment done by: (Name)				
Re-assessment done by: (Grade)				
MOBILITY Does the person have any mobility problems? NB: mobility may deteriorate at different times of the day due to medication, fatigue etc.	Y N	Y N	Y N	Y N
COMMUNICATION DEFICIT Does the person have any communication deficit, eg can't respond to simple commands?	Y N	Y N	Y N	Y N
SPECIAL RISKS Is the person at special risk, eg recent CVA, post operative, amputee, neurological deficit, pressure ulcers, wounds, infections, external lines, alcohol, new fall etc?	Y N	Y N	Y N	Y N
WEIGHT Does the person's weight impact on mobility, available space, transferring, staffing levels or necessitate special bariatric equipment?	Y N	Y N	Y N	Y N
FALLS HISTORY Is there any known history of falls within the home or hospital environment?	Y N	Y N	Y N	Y N

If the answer to ANY question is YES, please see Care Plan Guidelines (overleaf)

If the answer to any question is NO, then reassess if the person's condition changes OR weekly.

© BackCare

Appendix 12.2 Example of organisational overview

Organisational overview – manual handling risks – progress and relevant costs

	Risk + Matrix score	Source of risk	Action	Responsibility	Timeframe	Progress of action
1	Manual handling bariatric persons	Insufficient riser recliner chairs. **Identified by review**	Purchase additional riser recliner chairs x 4 **Cost £13,719.00**	All directorates Trust wide	March 2009 Review April 2010	Purchased chairs x2 September 2009 Trust H&S budget
	Matrix score 12 Also impacts on quality of care					
2	Manual handling bariatric persons	Insufficient bariatric commodes **Identified by risk assessment 2008 MH Advisor**	Purchase additional more robust high load capacity commodes x 10 **Cost £5,911.00**	All directorates Trust wide	March 2009 Review April 2010	Purchased commodes x5 September 2009 Trust H&S budget
	Matrix score 12 Also impacts on quality of care					
3	Manual handling stroke persons	Postural and musculoskeletal hazard during acute stage and rehabilitation of stroke persons. Risk assessment by physio staff. **Identified by review physio staff**	Replace inadequate and 10-year old-stand aid hoist with more appropriate therapeutic hoist, ie Sara Plus Hoist **Cost £8,409.00**	Clinical business manager	March 2010	Capital expenditure April 2010 Action complete
	Matrix score 12 Also impacts on quality of care					
4	Manual handling cardiac persons from seated to standing	Bedside chairs too low – a variety of sizes needed. **Identified by risk assessment at ward level, ie cascade trainer**	Partially resolved – six chairs purchased 2008. An additional six chairs are required **Cost £1,800**	Ward manager	March 2010	Funding not identified
	Matrix score 6 Also impacts on quality of care					
5	Hydrotherapy person hoist improvements Overhead tracking hoist required to extend service provision and improve access and egress to pool for morbidly obese persons	Potential for staff and person injury during access and egress to pool including emergency extrication	Install overhead tracking hoist to permit horizontal and seated access and egress and increased weight capacity from 160kg (25st) to 200kg (31st) **Cost Total £7,972.95**	Physiotherapy manager		Project funded and hoist ordered – for completion August 2010
	Matrix score 9					

© BackCare

Appendix 12.3 Record of service users who are bariatric or who have exceptional needs

Please record information about those service users for whom there has been a need for specialist equipment due to their size, shape or weight. Please note this includes all service users even if there is no manual handling involved.

Service user name:	Weight:	Height:
Address:		
Phone number:	Paris number:	

Outline the main reason for the need for specialist equipment:

List the items of equipment you got from the ICES stores and list any items you needed to order externally and state from where you sourced these items.

List below any additional costs for these items.

Did you need the services of an external professional/expert, if so whom?

Did you use the bariatric protocol to help manage the service user?

How did the person's size impact on the number of carers you recommended?

Did you weigh the person in their home, if so how?

What problems or difficulties did you have when managing this service user?

Please email this form to the Manual Handling Advisor and retain a copy in the service user's case notes.

This must be completed by the home care provider as a means to ensure equipment in the home will be suitable.

© BackCare

Appendix 12.4 Bariatric moving and handling assessment checklist for home use

Please complete if the person's weight is suspected to be in excess of 18 stones/114kg or if their body dynamics and shape exceed the dimensions of the supporting surface

Name:		Date of assessment:
Contact details:	Name and contact details of assessor:	
Date of moving and handling full assessment:	What is the service user's current weight?	Where and when was the last weight taken?
Is the weight likely to change?– give details:		

This form is a checklist to ensure the service user has equipment with an adequate Safe Working Load (SWL).

What equipment is required?	If on site, name the equipment and note the Safe Working Load?	If to be ordered, name equipment. What is the minimum SWL required?	Follow up action and by whom. (If none required, put NR)	Date when correct equipment is in place and add signature
Profiling bed				
Mattress				
Commode				
Shower chair				
Toilet surround Raised toilet seat Bath seat Bath hoist				
Armchair or riser chair				
Dining room chair				
Mobile hoist and sling Overhead hoist				
Standing hoist and sling				
Slide sheets (check dimensions and purpose of use)				
Other small handling aids				
Wheelchair				
Walking aids				
Any other equipment				

Training needs: Please check all current carers are familiar with the use of the above equipment and adequate instructions are on site and necessary training is arranged. Please record training provided in the use of any specialist equipment.

Please check if person is to use transport or leave the premises that preparations are made to ensure the journey will be safe and the destination has appropriate systems of work in place.

Contact Occupational Therapy or the Manual Handling Co-ordinator for advice or refer to the LBS bariatric protocol. Do not use equipment with an inadequate Safe Working Load

Assessor's signature: _____ Date: _____

Manager's signature: _____ Date: _____

© BackCare

Personal moving and handling profile and risk assessment

Service user's name:	Assessor:
Date of birth:	Organisation:
Address:	Contact details:
	Date of initial assessment:
	Re-assessment suggested date:
Computer number:	Date re-assessed:

a) Summary of service user's physical conditions and any relevant diagnosis:
Complete level of mobility and identified risk factors following assessment. _____

_____

b) Approximate height, weight and build of service user: _____

When was the person last weighed? _____

If weight possibly over 18 stones/114 kilos, please also complete a bariatric checklist

c) Does this service user have a recent history of falling? If yes, give details. YES/NO
NB Follow your service procedure and refer to London Borough of Sutton Safer Manual Handling Policy for falls protocol

_____

_____

d) Action to be taken following a fall:

_____

e) Does this service user require any assistance with moving and handling? YES/NO
If the answer is *no* you *do not need* to complete the rest of this form, but ensure you have a summary of the service user's ability in (a) above.

_____

f) Is the assistance required *only* verbal encouragement? YES/NO
If the answer is yes, please summarise in (g) below the verbal prompts that are necessary.

_____

g) List the moving and handling tasks that need to be done (eg chair to commode transfers etc) and state current method being used.
If only verbal prompting is necessary, please write the prompts required ensuring re-ablement goals are met.

Task 1 _____

Task 2 _____

Task 3 _____

Assessor signature _____
Service user has received and understood the factsheet and accepts the care

Manager signature _____

Manager name _____

Service user/advocate signature _____

© BackCare

Risk factors

Risk factors – the service user/load

Note any factors that may affect the handling of this service user.

Does the service user have any of the following problems? (Put an X in the relevant boxes.)

Please indicate how the service user or carer is affected in the comments box below.

- ☐ Pain
- ☐ Osteoporosis
- ☐ Weakness (site)
- ☐ Poor balance (sit/stand)
- ☐ Impaired mobility
- ☐ Difficulty weight-bearing
- ☐ Incontinence catheter/bowels
- ☐ Inability to co-operate
- ☐ Loss of co-ordination
- ☐ Loss of feeling (site)
- ☐ Pressure sores/broken skin
- ☐ Anxiety/depression
- ☐ Attachments, eg syringe driver/colostomy
- ☐ Involuntary movements (eg tremor/spasms)
- ☐ Unpredictable behaviour
- ☐ Comprehension and cognitive problems/memory loss/learning impairment
- ☐ Visual/hearing/speech impairment
- ☐ Cultural issues – service user family preferences

Comments:

_____

_____

Is this service user able to assist physically with any of the transfer? If yes, give details. YES/NO

_____

_____

_____

Risk factors – the staff

Would any specific staff group be more at risk handling this service user?
For example, very tall or short, history of knee or back problems, inexperienced, pregnant? YES/NO

Do the tasks require any special knowledge or skills? YES/NO

Have all the team got the knowledge and skills required? YES/NO

Is there any follow up action required? If yes, detail here: YES/NO

_____

How many staff are required? _____

© BackCare

Risk factors – the task

Do the manual handling tasks referred to in (g) on the front page involve any of the following? (Put an X in the relevant boxes.)

	Task 1	Task 2	Task 3		Task 1	Task 2	Task 3
Awkward position	☐	☐	☐	Lifting a dependent weight	☐	☐	☐
Stooping	☐	☐	☐	Holding load away from body	☐	☐	☐
Reaching	☐	☐	☐	Is the task repetitive?	☐	☐	☐
Twisting	☐	☐	☐	Lifting weight from below knees or	☐	☐	☐
Pushing/pulling	☐	☐	☐	above shoulders			

Additional comments/summary of risk factors above (relate to tasks). How do these things affect risk to service user or carer?

Risk factors – the environment

Locations in which the tasks are completed Location 1 _____ Location 2 _____ Location 3 _____

Do any of the above have the following risk factors? (Put an X in the relevant boxes.)

	Location 1	Location 2	Location 3		Location 1	Location 2	Location 3
Limited space	☐	☐	☐	Uncontrolled pets	☐	☐	☐
Stairs/slopes	☐	☐	☐	Electrical hazards	☐	☐	☐
Poor lighting	☐	☐	☐	Excessive furniture	☐	☐	☐
Clutter	☐	☐	☐	Difference in furniture height	☐	☐	☐
Hazardous flooring	☐	☐	☐	Lack of space under bed	☐	☐	☐
Trip/slip hazards	☐	☐	☐	Low working surface	☐	☐	☐

Additional comments /summary of risk factors above and how they affect risks to service user or carer:

List current manual handling equipment in use

Equipment name:				
	YES/NO	YES/NO	YES/NO	YES/NO
Is the service in date?	☐	☐	☐	☐
Is it in good condition?	☐	☐	☐	☐
Does it belong to service user?	☐	☐	☐	☐
Does it belong to ICES?	☐	☐	☐	☐

Are there disposable slides? YES/NO

If so, are they labelled as disposable? YES/NO

Is the Safe Working Load of all equipment appropriate for the service user? YES/NO

Is there any other equipment required to perform safely any of the tasks or any follow up work required? Give details and order from OT/ICES store now (date equipment requested and by whom).

© BackCare

Control measures

Give details below as to moving and handling techniques to be used to complete each task with minimal risk.

State any short-term action if equipment is to be supplied and is not yet available.

If using equipment, eg sliding sheet, specify size, name and technique to be used.

Ensure that if there is a hoist in place there is a detailed hoist plan.

Include a description of what the service user is able to do for themselves during the manoeuvre and how carers can promote service user participation. You may also refer to Sutton locality manual handling procedures to help you.

Task number and description	Details of method to be used including equipment and technique	Date of changes

© BackCare

Risk evaluation matrix

Step 1 – Likelihood *(frequency or probability)*	
Score	**Description**
1 RARE	Do not believe will happen, one off. Exceptional circumstances
2 UNLIKELY	Not expected but possible. Could occur at some time
3 POSSIBLE	May occur at some time
4 LIKELY	Will probably occur
5 ALMOST CERTAIN	Likely to occur on many occasions. A persistent issue

Step 2 – Severity *(consequence)*		
Score	**Impact on individual**	**Impact on organisation**
1 INSIGNIFICANT	No injury No apparent injury	No risk to the organisation No impact on service No impact on environment
2 MINOR	First Aid Minor injury or minor illness up to one month	Minimal risk to organisation Slight impact on service Slight impact on environment
3 MODERATE	Temporary incapacity. Short term monitoring. Additional medical treatment required up to one year	Some service disruption Potential for adverse publicity, avoidable with careful handling Moderate impact on environment
4 MAJOR	Major injury (reportable) Major clinical intervention Permanent incapacity	Service restriction Adverse publicity Impact of reputation Major impact on environment
5 CATASTROPHIC	Death	National media interest Severe loss of confidence in organisation

Likelihood *(frequency)*	**Step 3 – Risk matrix likelihood x severity**				
	1 INSIGNIFICANT	**2 MINOR**	**3 MODERATE**	**4 MAJOR**	**5 CATASTROPHIC**
5 CERTAIN	**5 L**	**10 M**	**15 H**	**20 H**	**25 H**
4 LIKELY	**4 L**	**8 M**	**12 H**	**16 H**	**20 H**
3 POSSIBLE	**3 L**	**6 M**	**9 M**	**12 H**	**15 H**
2 UNLIKELY	**2 L**	**4 L**	**6 M**	**8 M**	**10 H**
1 RARE	**1 L**	**2 L**	**3 L**	**4 M**	**5 H**

KEY:

H High risk. Urgent action required. **SEEK EXPERT ADVICE NOW**

M Medium risk, senior manager attention required. Be alert.

L Low risk, local manager responsibility, manage by routine procedures

RISK LEVEL

	Task 1	Task 2	Task 3
Service user	☐	☐	☐
Staff	☐	☐	☐

PLEASE CHECK THAT YOU HAVE GIVEN DETAILS OF ACTION REQUIRED IN ABSENCE OF EQUIPMENT. ORGANISE ANY FOLLOW UP ACTION NOW!

ANY CHANGES MUST BE CONTINUED ON THE REVIEW SHEET AND THE DATE OF THE CHANGES/RE-ASSESSMENT ENTERED ON THE FIRST PAGE

Assessor's signature: _____ Date: _____

Team manager's signature: _____ Date: _____

© BackCare

Personal moving and handling profile and risk assessment – review sheet

Service user's name:	Assessor:
Date of birth:	Organisation:
Address:	Contact details:
	Date re-assessed:
	Date re-assessed:
Computer number:	Date re-assessed:

Task number and description	Details of *updated* method to be used including equipment and technique. Please ensure counter signature for any changes	Print name, sign and date

© BackCare

© BackCare

Index

© BackCare

© BackCare

E

F

G

© BackCare

H

I

J

K

L

© BackCare

M

N

O

P

© BackCare

Q

R

S

© BackCare

T

U

V

W

© BackCare

Y

© BackCare

Back to work?

More than four million working days are lost each year as a result of back pain. On any given day, one per cent of the working population is on sick leave due to back pain.

BackCare, the charity for healthier backs, has published a number of booklets which offer advice on how to reduce back pain. These include:

Back Care at Work – An Ergonomic Guide to Manual Handling
Back Care at Work – Lifting the lid on Better Back Health
Safer Handling of People in the Community
*A Carer's Guide – Safer Moving and Handling of People**

* In partnership with Fife Moving & Handling for Family Carers Project Group

For more information telephone: 020 8977 5474 or email info@backcare.org.uk
Website: www.backcare.org.uk
Forum: www.backcare.org.uk/forum
BackCare helpline: 0845 130 2704
BackCare app: for iPhone, iPad, iPod Touch available on iTunes

Backcare

The Charity for Healthier Backs
www.backcare.org.uk

THE GUIDE TO

The Handling of People

a systems approach

This latest edition of BackCare's internationally recognised *Handling of People* series provides a fresh approach to the integration of strategy and systems of work for anyone involved in the moving and handling of people.

Extensively updated, the 6th edition of this gold standard guide includes four major new sections:

- Legal framework, risk assessment, ergonomics and biomechanics methods and requirements for patient/person safety and injury prevention
- Key strategies for organisation, training, equipment, work, health and wellbeing essential to safer handling practice
- Practical chapters setting out evidence based best practice in core manual and equipment skills
- Special circumstances, including key pathways and case studies.

This indispensable guide balances the twin ambitions of reducing risk and improving working lives with person safety, choice and enablement through the mechanisms of enhancing core competencies at both systems and practice levels.

The Guide to The Handling of People, 6th edition, is essential reading for practitioners, decision makers and budget holders, or for anyone who is accountable for providing safer systems of work.

6th edition

Backcare

ISBN: 978-0-9530582-1-1

9 780953 058211