Electric Beds

for children & adults with muscular dystrophy & allied neuromuscular conditions

A guide to help the disabled person, their family or carers and the healthcare professionals advising in the choice of an appropriate bed

To be used in conjunction with:

Chapter 14	*Scales & Templates;*
Chapter 18	*Addresses: Manufacturers/Suppliers/Sources of Advice.*

Introduction

Experience has shown that electric beds are invaluable for boys with Duchenne muscular dystrophy (DMD) and children and adults with all types of muscular dystrophy, spinal muscular atrophy (SMA) and allied neuromuscular conditions. In making a choice there are a number of questions to be answered:

Why are electric beds needed?

Electric beds have eight main uses. These are to:

- alter the height of the bed to help the user to get in and out;
- complement the use of a ceiling hoist, when getting out of bed;
- change the user's position in bed;
- help the user to sit up from lying down (and vice versa) and to sleep in the most comfortable position;
- provide support behind the back and under the knees;
- help postural drainage;
- allow the carers to work at the optimum height to protect their backs;
- provide a height-adjustable surface on which to carry out physiotherapy exercises.

Alter the height of the bed to help the user to get in and out

This is a helpful feature for the following:

- people able to walk or stand to transfer;
- wheelchair users.

People able to walk or stand to transfer

Many people with muscular dystrophy need a bed that can be positioned low enough to allow them to 'flop' into the centre. This is important because when in bed it is very difficult for them to move across the bed. It is also important for some users, that the bed lowers sufficiently to enable them to lift their legs up on to the mattress. The bed must also be capable of rising to a sufficient height to help them to stand up from the edge of the mattress by dropping on to their feet with their legs fully extended. This height adjustment is essential, because unless their knees are fully extended and braced they will collapse to the floor. Equipment that pushes them forwards to take weight on their feet with their knees bent makes it impossible for them to brace back their knees.

Wheelchair users

Because people with a neuromuscular condition usually have severe arm weakness, they are unable to push down on their arms to raise their bottom to transfer sideways. A sliding board will help the process, particularly if it is used 'downhill', and the height adjustability will make this possible. The minimum height of the bed will be crucial and should be checked in relation to the seat height of the wheelchair.

Complement the use of a ceiling hoist, when getting out of bed

It is easier to position the ceiling hoist sling and to attach the straps to the hoist when the person is sitting in the electric bed with their back supported. An electric bed and a ceiling hoist, used in conjunction with a shower chair, Mermaid Ranger (see Chapter 8a *Equipment for Adaptations*) or an extended track into the bathroom (see Chapter 9 *Hoisting*) eliminate all manual lifting within the home.

Change the user's position in bed

Anyone who sleeps on their back can use the bed to sit up independently during the night. If they are able to alter the angle of their shoulders and move their legs, they can then lie down again in a different position. In this way, cramp can be relieved, or a trapped arm or ear released, for example, thus eliminating the need to call for attention. As many parents and/or carers have to get up during the night to help their child (sometimes as often as ten times), the provision of an electric bed is likely to ease the situation and the strain on the family. This is important because, in spite of broken nights, they still have to cope the following day.

For an adult living alone, an electric bed may be the only way of maintaining independence; for many adults it is the only means of their partner or carer getting a less-disturbed night's rest. It may be necessary to use the bed in conjunction with a turning unit (details are included on page 11) or to consider one of the models that tilt laterally.

Help the user to sit up from lying down (and vice versa) and to sleep in the most comfortable position

An electric bed allows the user to sit up in the morning without help; however, for most people with a neuromuscular condition, it is crucial that the backrest rises almost to a right-angle to allow them to sit erect and to lean forward. Conversely, the backrest allows the person to change from sitting to lying down – or to sleep at any angle in between, which may be important if they have a chest infection.

Ideally, when the backrest is raised, it should not pivot from a *fixed* point; its base should move backwards to compensate for the thickness of the mattress and prevent a ridge forming on the surface. This retains the same space on the sitting platform and prevents the possible need to raise the thigh section to prevent the user from slipping down the bed. It also avoids stomach compression and maintains comfort while sitting.

Provide support behind the back and under the knees

The backrest provides support when sitting, and because the footrest can be lowered, a comfortable sitting position can be achieved. This means that going to bed early to read or watch TV does not result in the constant need to call for help to be moved. The angle of the knee bend must be capable of achieving almost a right-angle, not only to provide the correct support behind the knees for anyone with knee contractures but also to continue to make it possible for their legs to be extended forwards.

Help postural drainage

Many children with either DMD or SMA, and some adults, need postural drainage when they have a chest infection. In the past, it has been recommended that the bed action should include the Trendelenburg position of head down and feet up so that, if the person is very thin and it is difficult to clap their chest, this position could be used to drain the chest. However, although as yet there is no Directive issued in the UK, European Standards are now being introduced in Scandinavia, which stipulate that the Trendelenburg position should not be used without 24-hour medical supervision. The alternative suggestion is that the person receives approval from their medical advisors, to be placed in this position in their own home; it is recommended that individuals and their families discuss the advisability of this with their GP or hospital consultant. In addition, it could be discussed whether the knee bend in the mattress platform can be used to achieve a satisfactory position.

Allow the carers to work at the optimum height to protect their backs

The ability to raise and lower the bed to the optimum height for the carers when they are dressing the person in bed, and also for positioning a hoist sling, is likely to be an invaluable feature, particularly if the carers are of different heights.

Provide a height-adjustable surface to carry out physiotherapy exercises

The same principles apply as outlined in the preceding paragraph.

When is the right time to supply a bed?

The supply of an electric bed is justified when the child or adult is finding it difficult to sit up in bed and/or has difficulty in standing up from the edge of the bed. Provision should not be delayed until either activity is impossible and a helper finds the person too heavy to pull up into a sitting position; nor should it be delayed until regular attention is needed in the night. There is evidence to show that, as far as possible, it is important in the case of children to prevent a pattern of broken nights developing, and this can be achieved by allowing the child to maintain movement in bed with the help of an electric bed. Once a child has established the need to call parents in the night in order to change position, it is hard to break the pattern.

What features are needed and why?

In the choice of beds, the needs of people with neuromuscular conditions are specific and are related to the following:

- bed width;
- design of the mattress platform;
- switch sensitivity;
- number of motors;
- angles of the bed that can be achieved;
- height adjustment and the method used;
- minimum and maximum height;
- provision of bed and grab rails;
- choice of mattress;
- provision of a back-up battery;
- stability (including braked castors), robustness and proven reliability;
- link to an environmental control;
- appearance of the bed.

Bed width

The overall dimensions of the bed are larger than those of standard beds and should be checked carefully when adaptations are planned. In this case it would be prudent to allow sufficient space for the largest model in the width of bed required. Three widths are available:

- single;
- wide single;
- double.

Single
1007mm is the standard width, which is adequate for most people.

Wide single
Some adults who 'flop' into bed need a bed width of **1220mm,** or even a double bed - for their use alone. This may also be the appropriate size for larger teenagers and adults, particularly if they have three sleeping positions and cannot be lifted back into the centre of the bed each time. Some manufacturers will make beds to order, so the size can be specified, if necessary, but this may add to the cost.

Double
A number of firms widely advertise their beds, particularly double beds, in newspapers and magazines; most of these beds are suitable for people who are not disabled, but who want to be able to sit up in bed with their back supported. However, many of these beds do not have the features that are needed by people with neuromuscular conditions.

The decisions relating to double beds (for use by two people) are complicated because of the wish to reconcile the emotional/physical needs of sleeping with a partner with the practical difficulties of a disability, which in the context of this Adaptations Manual are likely to be progressive. This is particularly complex because the priorities will change as the disability increases, but because beds are expensive, it will be prudent to consider the long-term needs. However, although it is important to refer to page 2 in order to relate the uses of these beds with the features of the recommended models, which are included in the charts starting on page 14, only the people concerned know what compromises they are prepared to make.

Only one manufacturer supplies a double bed that has all the recommended features for people with neuromuscular conditions. A single (or wide single) electric bed can be placed adjacent to a standard divan or a purpose-made divan of the same length as the electric bed, to create a 'double bed'. If an existing bed is used, the firm will measure the bed and provide an insert to lengthen the bed. The beds are joined together using steel brackets at the head and foot and have a pine surround with a double headboard and footboard.

The beds can be made up separately with individual fitted bottom sheets and used with a king-size duvet over both beds. Between the beds there will be a gap of approximately **100mm**, but this can be filled in with a mattress insert which is supplied with the bed. This allows independent sleeping positions, and the couple may feel that, although separate mattresses are used, this is an acceptable compromise for a double bed. The alternative is a bed where, if one person sits up, they both sit up; this also increases the cost.

Depending on the width of both the electric bed and the divan, this bed will be at least **2000mm** square and this may significantly reduce the wheelchair circulation space; the implications in relation to the size of the room need to be considered carefully. When adaptations are carried out it is important that the size of the bedroom should be planned around the eventual use of a large bed, even though an electric bed may not be needed immediately. This is not only important for a couple living together, but also for a disabled person, living on their own, who is likely to have a relationship in the future.

Design of the mattress platform

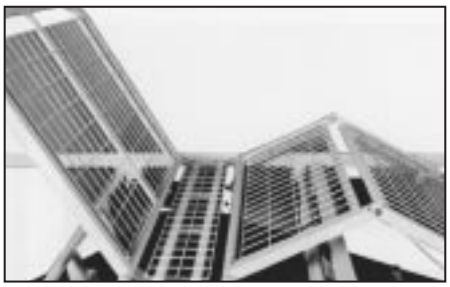
Three factors are important:

- the number of sections;
- size;
- ease of transporting.

The number of sections

Beds are supplied with either three or four sections. A four-sectioned mattress platform is essential because it incorporates a small platform, which remains horizontal. The person sits on this platform and it prevents them from becoming wedged between two of the sections when their knees are raised. Even more important, it prevents them from slipping down the bed when their legs are lowered – because getting back up the bed independently is likely to be impossible and having to lift someone up the bed is a difficult manoeuvre for the carer.

These difficulties are also prevented by a backrest which, when raised, does not pivot from a fixed point. This should move backwards, preventing the lower body from becoming jammed against the knee break, which would cause pressure on the lower stomach and pelvic area.



To show the mattress platform sections and their relationship in size

Size

The leg sections in the mattress platforms are more or less the same length in most of the models, which is a problem when a small child is using a bed. However, some models have a smaller hip-to-knee section to cater for the needs of these children; it should be checked whether this section can be enlarged when the child grows. Conversely, very tall people can have an extension on to the end of the platform, or a model which can be manufactured longer (see charts on pages 14-20).

Ease of transporting

Most, if not all electric beds divide into two parts – the wheel-base and the mattress platform. However, in order to reduce the weight that has to be carried when the bed is installed, it may also be important that the *platform* divides into two parts (although it is vital that this is not at the expense of the other recommended features). This additional feature is essential when the bed has to be carried up to the first floor or when the user is planning to move the bed from one venue to another.

Switch sensitivity

It is essential that beds for anyone with a neuromuscular condition have super-sensitive switches. The importance of the switch cannot be stressed sufficiently, bearing in mind the muscle-wasting effect of muscular dystrophy and the need to control the bed independently. Most controls are supplied with a tight spiral cord, which can be stretched to reduce the tension that would otherwise cause it to spring out of reach.

Number of motors

The number of motors influences both the actions of the bed and the ability to alter the bed height. There are four choices:

- one-motor bed;
- head raising unit;
- three-motor bed;
- four-motor bed.

One-motor bed

For many years, this was the only type of bed readily available at a reasonable cost. As the switch is operated, the head and foot of the bed move simultaneously to place the person in a supported position. Unfortunately, this type of bed has three major disadvantages:

- for people who are able to extend their legs, the automatic bending of the knees encourages knee contractures;
- it is impossible to alter the position of the legs in relation to the back, in order to adopt the most comfortable position possible;
- the height of the bed cannot be altered.

Head-raising unit

Inexpensive units are available to place under the mattress to raise the head of the bed only. Usually, these are unsatisfactory as a *permanent* solution for anyone with a neuromuscular condition, because sitting up with the legs straight places a strain on the back of the knee, particularly if there is any degree of contracture. Also, the person tends to get pushed down the bed and, without the strength to push down on the arms, is unable to move back up again. However, because these units are portable, they may be useful to provide limited help when away from home, or as a temporary measure while waiting for a bed to be supplied. In addition, some couples may prefer a bed elevator on their double or king-size bed to provide support to sit up, even though this equipment lacks the functions of a four-motor electric bed.

If the unit raises the head and at the same time flexes the hips and knees slightly, so that the user is sitting in a hollow, they may become unbalanced. As with all equipment, it is necessary for an assessment to be carried out.

Centromed Ltd

Marcon Lifting Systems (Turnblade Ltd)

Three-motor beds

Two motors provide the ability to change the position of the legs and back independently of each other and the third allows the height of the bed to be adjusted independently. However, alternative positions for the user's legs cannot be achieved by this means, and manual operation does not provide the independence needed.

Four-motor beds

These are the recommended models for people with muscular dystrophy and SMA, and have the invaluable advantage of two motors to alternate the leg actions, to provide support behind the knees when knee contractures are present, and to raise the person's legs if necessary to reduce oedema. The third motor raises the head of the bed and the fourth alters the height.

A number of beds are promoted as four-motor beds, but two of these motors are used to alter the height. As a result, although the user is able to control the knee break, the foot section can only be operated manually by the carer.

Angles of the bed that can be achieved

The angles of the bed are critical (see pages 16 – 18). The backrest must rise to an angle of at least **70°** because anything less would make it difficult to lean forward. The knee break must be able to achieve approximately **90°** to ensure the bed is suitable for anyone with severe knee contractures. In addition, the leg section of the bed must be capable of lowering, ideally electrically, to allow the option of a comfortable sitting position to be adopted.

Height adjustment and the method used

The base of the frame affects the method of altering the height of the bed, as follows:

- fixed height;
- hydraulic;
- electric.

Fixed height

Fixed-height beds are not recommended, as height adjustment is essential. Some Local Authorities are refusing to provide home care if the bed is not height adjustable.

Hydraulic

Altering the height of a bed with a hydraulic footpump demands a certain amount of physical effort on the part of the carer and has been known to cause foot injuries. The financial saving is not considered worthwhile in relation to the additional physical stress. It also denies independence to anyone able to stand or walk.

Electric

Electric beds are operated effortlessly and can be adjusted independently by the person using the bed.

Minimum and maximum height

The mattress platform of the recommended models have a height-adjustment range of between **345 – 560mm**. It may be important to offer a choice in the range of height that is possible, because the ability to achieve the minimum height is usually at the expense of the maximum height. The exception is the 750 Extra Low model from *Scan Mobility Ltd.* With its 'low-built lift', the mattress platform can be lowered to **240mm**, but because the height range is **560mm**, the maximum height is not compromised. On some models this variation can be organised with the insertion of spacers in the sleeves where the castors are attached; these spacers are removed to enable the bed height to be as low as possible and added to increase the maximum height. In addition, the depth of the mattress can alter the height of the bed, and the firmness of the edge of the mattress may influence the person's ability to stand up from the bed.

Minimum height

The minimum height may be crucial for sideways transfer from a wheelchair, particularly as movement is easier 'downhill' - and for anyone who has dificulty lifting their legs into bed. A low height may be important for a small child (e.g. with SMA) who, with the help of an electric bed, can get out of bed independently. However, in this case, the base of a bed table or mobile hoist may not fit under the bed.

Maximum height

The maximum height will be essential to increase the clearance under the bed if either a bed table or a mobile hoist is used, or to allow a tall carer to work at a comfortable height. Furthermore, it may be needed to provide the vital additional millimetres necessary for adults using the height of the bed to get into a standing position.

Provision of bed and grab rails

There are two types of rails:

- side bed rails;
- grab rails.

Side bed rails

Rails may be considered essential to ensure safety and to provide a feeling of security, bearing in mind the maximum height of the bed. However, if a bed is positioned against a wall, only one rail will be necessary (unless it serves as a grab rail to help the user to turn over or move in bed). The rails should be easy for the helpers to lower and raise without pinching their fingers.

The effect of rails on side transfers for adults must be considered carefully to ensure that the rail does not increase the gap between the chair and the mattress and jeopardise the disabled person's independence getting into bed. It must be assessed whether the rail can be removed and whether help will be needed.

The possible danger of either a child under the age of 12, or a small adult, trapping their head or body in the gap between rails should be prevented with the supply of net or padded covers. Where the bed has moving parts - as in adjustable beds - additional vigilance is needed. When bed rails are used with an air mattress or mattress overlay, the height of the rail must be sufficient to prevent the person rolling over the top. When the bed and/or specialist mattress is assessed, a 'Risk Assessment' must be carried out on the suitability of the bed rail for the individual user. See section on safety on page 11.

Grab rails

Grab rails are usually approximately **500mm** long and stand **50mm** proud of the bed frame. It should be possible to clamp them in any position on the frame and they may be a help to adults when getting into bed, or moving in bed. Overhead grab poles will not be suitable because of the difficulty anyone with a neuromuscular condition has in reaching upwards.

Choice of mattress

There is a choice of three types of mattress:

- interior sprung;
- foam;
- specialist mattresses and mattress overlays.

Interior sprung

An interior-sprung mattress is likely to be the most comfortable. These mattresses are sprung across the width of the bed, so that they bend where necessary. However, a ridge is sometimes caused where the mattress bends, particularly on beds where the backrest pivots from a fixed point (i.e. there is no backward movement of the backrest when elevating) see chart on page 16 - and a mattress overlay may be needed to overcome the consequent discomfort.

Foam

There is a tendency for foam mattresses to cause sweating and sometimes the user (particularly if they are overweight) can feel the mattress platform underneath. A **150mm** depth of mattress is needed by anyone weighing over **82kg**, but a **100mm** depth should be adequate for everyone else. The bed supplier may also offer the option of a specialist foam mattress.

Specialist mattresses and mattress overlays

A survey was carried out with the help of a number of disabled children and adults, to try to find out which are the best types of mattress or mattress overlays to ensure:

- comfort in the night;
- to restrict the number of times that they need to be turned or moved.

Thirteen mattresses or overlays were assessed by each participant in the trial over at least 2 weeks in any one month, and questionnaires were completed. The result was that most disabled children and adults find specialist mattresses helpful, but that there was no statistical evidence that any type was more valuable than another. Therefore, it is important to assess the alternatives and where necessary to ask for an extended trial over a couple of weeks.

As previously mentioned, the depth of the mattress and its firmness will influence the ability to stand up from the edge of the bed. Also, it may be important to balance the need for comfort in bed with the need for a firm surface to allow as much movement as possible.

Provision of back-up battery

Because the electrical features are essential, these beds must have the benefit of fully rechargeable batteries that provide between **48** and **72** hours of normal use in the event of mains power failure.

Stability (including braked castors), robustness and proven reliability

Some disabled people spend more time in bed than others and the bed must be robust to reflect this additional use, particularly when the user is heavy. The bed must be able to withstand the 'snatch weight' involved when adults sit down suddenly and heavily as they get into bed. The frame must have braked castors to ensure safety and stability, and it is vital that the model chosen is stable at its maximum height.

When a bed is an important part of the coping strategy for a disabled person (or for their carers), reliability and trouble-free use are essential. This is discussed again in relation to the alternative models now available.

Link to an environmental control

Identification of the recommended beds that can be linked to the Possum, RSL Steeper and SRS Technology environmental controls are included in the chart on page 18. This will be necessary only when a user is unable to operate the touch-sensitive hand controls or reach for the handset.

Appearance of the bed

Although appearance comes last in the list (because funding personnel may not feel this is an important feature) individuals and families would place much more emphasis on the need for the bed to look attractive. Disability equipment should no longer be clinical in appearance. Most of the beds have attractive wooden headboards, and a valance can be used, where necessary, to hide the frame and mechanism of the bed.

Can the bed turn the user over?

Kineticare Tilting Bed System

Although some of the recommended beds will not turn the occupant over, the Kineticare Tilting Bed System is available. This consists of a power unit with a sub-mattress (i.e. an inflatable bag, which is positioned under the existing mattress on the bed). Using low air pressure, the pump slowly inflates one side of the sub-mattress while the other deflates and the unit can be programmed to turn the person every half-hour, hour or 2 hours. Although the unit is unlikely to be satisfactory unless *the users sleep on their back*, it has been shown to reduce the pressure on the body. Work continues to produce a pump with a remote-control, touch-sensitive switch that can be operated independently by the person in bed - and this should be available soon. The Muscular Dystrophy Campaign has a unit that can be lent on an extended trial to anyone for whom the demonstration has proved successful. Contact *Daily Care Ltd.*

Marcon (Turnblade Ltd)

Lateral tilt on powered beds

Two of the beds included in the chart on page 14 will tilt the user from side to side and assessment is recommended. Unfortunately, the lateral tilt is at the expense of other features and therefore, prioritising the actions required - coupled with the need to compromise - may be necessary when choosing the most satisfactory bed.

Princess 5000*: Action Assist Ltd*
Baltic*: Centromed Ltd*

Limitation of the lateral-tilting facility on both powered beds and the Kineticare System

It is important to appreciate that although a tilting action will relieve pressure and may improve comfort, it will not reposition limbs. When turned on their side, some adults will have sufficient movement to be able to do this independently, but it is likely to be a residual problem for boys with DMD.

How can a bed be assessed and who should attend the assessment?

Both the child and his parents, or the adult, must assess the value of a bed, either at the nearest Disabled Living Centre or by asking the firm to arrange a home demonstration. It is essential that this is co-ordinated with the Muscular Dystrophy Campaign Family Care Officer, the occupational therapist or any other advisor who is making an application for funding. Where appropriate, it will be essential to liaise with the district nurse or health visitor attached to the GP practice, because a bed is usually considered to be community nursing equipment and their opinion may be asked for by the budget holder. If the district nurse or health visitor knows the family and was present at the assessment, they will be in a good position to support the application, although supply may not be either straightforward or guaranteed.

Does the bed comply with safety standards?

All products must be 'CE marked' to meet the requirements of the Medical Devices Directive and where possible, the guidelines of the British Standard EN 1970:2000, *"Adjustable Beds for Disabled Persons"* [1] should be followed. This includes standards for beds that are intended for use by people over 12 years old. Unfortunately, this report is very expensive, but extracts in relation to rails are reproduced in the Medical Devices Agency booklet *"Bed Safety Equipment"* [2]. As yet there are no UK published standards for beds for younger children, but readers should be aware of the booklet *"Advice on the Safe Use of Bed Rails"* [3].

What service and support is offered for breakdown and maintenance?

It is important that service arrangements can be made with the supplier and that there is an efficient procedure for repairing beds when necessary. This should be checked at the time of the assessment.

Who should supply the funding and maintain the bed, specialist mattress and turning unit?

From experience, electric beds have proved so invaluable to boys with DMD and to children and adults with other neuromuscular conditions that, following a thorough assessment, there should not be any difficulty in justifying the need.

Electric beds, specialist mattresses and other accessories are usually considered to be nursing equipment, in which case the supply is the responsibility of the Health Authority. The professional advisor should make an application to the community physician or paediatrician, senior nursing officer or Trust manager. In other areas, beds are considered to be equipment to increase independence and are supplied by Social Services, or in some cases by joint Social Services/Health Authority Home Loan stores.

Unfortunately, there are areas where neither the Health Authority nor Social Services Department have accepted the responsibility for supplying beds and mattresses; applicants should therefore be warned that either a successful outcome cannot be guaranteed or that there might be a delay prior to supply, if finance is a problem towards the end of the financial year. Conversely, there may be money in the budget that will be forfeited if it is not spent, and is, therefore, unexpectedly available to pay for a bed.

In desperation, disabled people, their parents or advisors resort to writing to charities and voluntary groups to fund beds. Often, because of the urgency, this is the only course of action. Unfortunately, private funding usually places the responsibility for maintaining the bed on the user or the family, although some Social Services Departments may agree to provide a maintenance contract. In these circumstances, ownership of the bed is forfeited, but this may be a price worth paying in order to be free of any ongoing costs.

However, the provision of beds and accessories should be seen as the responsibility of statutory services. Where possible, the appropriate department or personnel should be informed of future needs spanning several years, so that the cost can be built into long-term budgets.

Which models are the most appropriate for people with neuromuscular conditions?

There would appear to be a large market for electric beds because the number of additional models becoming available is increasing rapidly. However, many of these beds are termed 'community beds' because they are easier to transport and install in a private house, but they are likely to lack the robustness and stability of the well-tried and tested models - and do not offer the required features. Disabled people are 'heavy' users of beds and reliability over a number of years is essential, so the additional cost, which is marginal in relative terms is a price worth paying.

The range of beds available has been assessed extensively by boys with DMD, by children and adults with other neuromuscular conditions, and by their professional advisors. The most satisfactory models, bearing in mind the essential features that have been discussed in this chapter, are included in the chart on the next page.

What are the specifications of the recommended beds?

The chart on the next page itemises the relevant features of each bed in relation to the needs of children and adults with muscular dystrophy and allied neuromuscular conditions. If other beds are to be considered, the specifications must be comparable.

A spare column has been included in the chart, so that it can be photocopied and sent to the appropriate firm to record the details of their bed. This will allow the disabled person to make an informed choice.

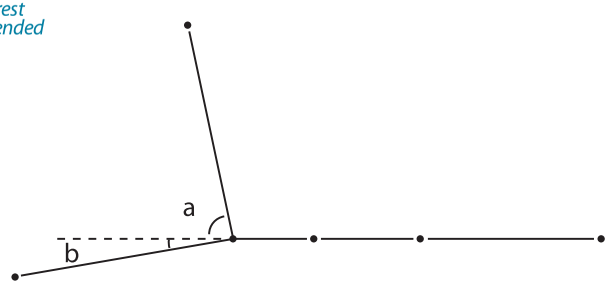
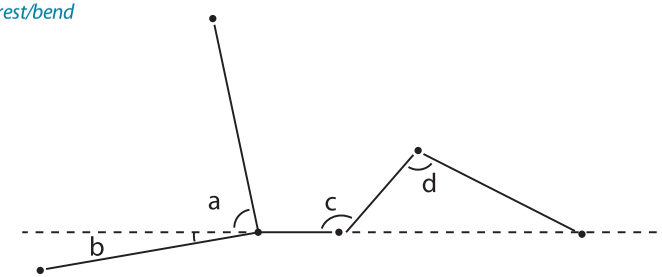
Comparative chart of electric bed features of recommended models

Model & name of manufacturere/supplier ⇨	**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
PRINCIPAL REASONS for RECOMMENDATION									
Specifications of recommended beds ⇩	Used for many years by people with MD & allied conditions, who have experienced robustness & reliability of the beds				Tilt user laterally, to aid independance or reduce frequency of manual turning (do not reposition user)		Alternative double bed to increase choice	Made-to-measure models for individual needs	
	All actions & facilities needed by people with MD & allied neuromuscular conditions are included - see information below			Aesthetically popular & all sizes available, but independant leg control is restricted. Important to check sections 3, 5 & 6 on chart	Some actions & facilities needed by people with MD & allied neuromuscular conditions are not available - & priorities will need to be established. (Please check columns carefully)				
		Complete range of sizes including children's							
BED FRAME									
Single	✓	✓	✓	✓	✓	✓	✓	✓	
Wide single	✗	✓	✗	✓ 2 sizes	✓	✓	✓	✓	
Double	✗	✓	✗	✗	✓	✗	✓	✓	
Head and foot board	Beech	Beechwood	Wood panelled	Many options	Several options	Beechwood	Several options	Several options	
MATTRESS PLATFORM									
Four-section	✓	✓	✓	✓	✓	✓	✓	✓	
Child's four-section platform	✗	✓ on 710 (thigh section **150mm** shorter)	✗	✓	✓	✓	✓ seperate child's model available	✓ can be made to suit individual child	
Breaks into how many sections to transport?	2	3	4	3	4	7	2	2	
OVERALL SIZE									
Width — Single	**1007mm**	**1010mm**	**1135mm**	**1000mm**	**915mm**	**1010mm**	**900 or 1000mm**	**stnd.1030mm**	
Wide single	✗	**1220mm**	✗	**1100 & 1300mm**	**1040mm**	**1161mm to order**	**various**	**any to order**	
Double	✗	**2160mm**	**2100mm**	**2100mm**	**1220mm**	**✓ adjoining to order**	**1800 or 2000mm**		
Length	**2110mm**	**2120mm**	**2185mm**	**2110mm**	**2115mm**	**2200mm**	**2050mm**	**2140mm**	
Extension	**200mm**	**150mm**	✗	**200mm**	✗	✗	**200mm**	**any to order**	

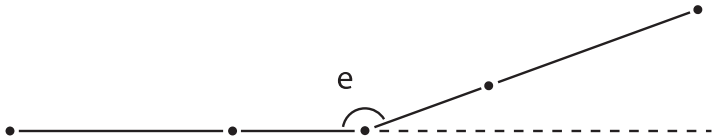
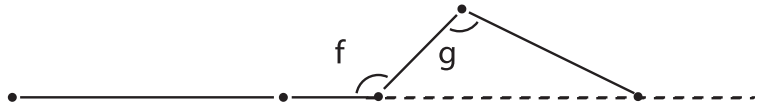
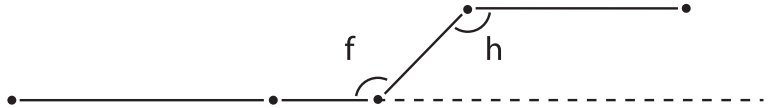
Comparative chart of electric bed features of recommended models (continued)

Specifications of recommended beds *(continued)*	**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
RAILS									
Side Rails	✓	✓	✓	✓	✓	✓	✓	✓	
Description	Wood	Collapsible wooden	Drop-down metal	Wooden fold away	Drop-down metal	Metal with wood laminate	Various	Collapsible wooden	
Rail gaps less than **60mm**	**70mm**	**120mm**	✓	✓	✓	**110mm**	Can be less than **60mm**	**120mm**	
Or covering supplied	Covering available	Net or padding available	Covering not necessary	Padding available	Padded sides	Padding available	Padding available	Padding available	
Grab rails	✓	✓	✓	**860mm** (head) **590mm** (foot)	✓	Top & middle section of side rail	✓	✓	
Length	**390mm**	**230mm**	**530mm**		**220mm**		various to order	top section of side rail	
Height above mattress platform (mattress depth must be deducted to measure clearance)	**280mm** **250mm**	**90 or 200mm**	**185mm**	Various to order	**390mm**	With side rail raised, top rail: **257mm** middle: **172mm**	Various to order	**300mm**	

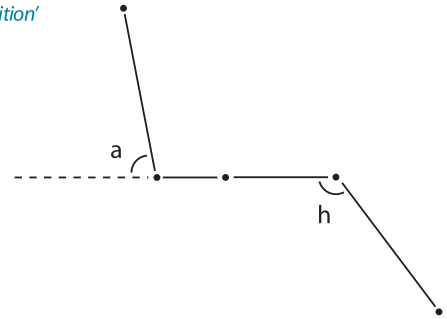
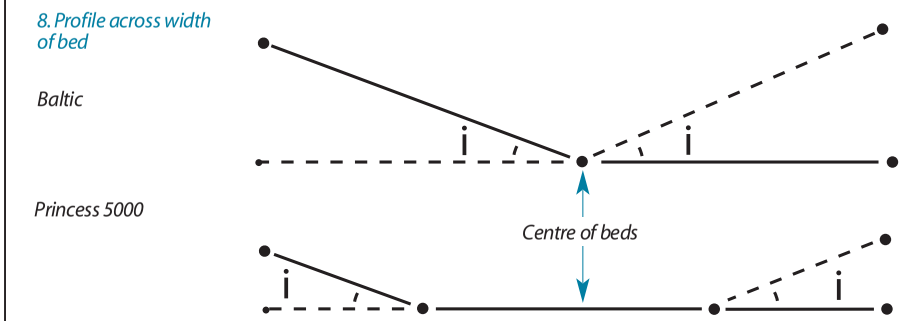
Comparative chart of electric bed features of recommended models (continued)

Specifications of recommended beds *(continued)*	**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
CASTORS									
Braked castors	**4**	**4**	**2**	**4**	**4**	**4**	**4**	**4**	
Central locking	✓	✓	✗	✓ on handset	✗	Dual locking	✓	✗	
CONTROL									
Number of motors	**4**	**4**	**4**	**4**	**6**	**4**	**3 or 4**	**4**	
1. Electric control: raise backrest	✓	✓	✓	✓	✓	✓	✓	✓	
1. Raise backrest with legs extended 				*2. Raise backrest/bend hip & knees* 					
a) Angle of backrest when elevated	**76°**	**75°**	**80°**	**75°**	**70°**	**75°**	**75°**	**70°**	
b) Angle of backrest/lowered beyond horizontal ie. head lower than body	Horizontal only, but Trendelenburg option available		**10°**	**14°** Trendelenburg option, but not user controlled for safety	Horizontal only, but Trendelenburg option available	Trendelenburg standard for user control. Lockout facility for carer control only	Horizontal only, but Trendelenburg option available	Trendelenburg option available	
Backward movement of backrest when elevating	✓	✓	✗ (See page 9)	✓	✓	✗	✓	✗	
2. Electric control: raise backrest/bend hip & knees	✓	✓	✓	✓	✓	✓	✓	✓	
c) Angle at hip bend	**104°**	**130°**	**120°**	**105°**	**140°**	**105°**	**105°**	**130°**	
d) Angle at knee bend		**100°**	**90°**	**118°**	**105°**	**132°**	**95°**	**120°**	

Comparative chart of electric bed features of recommended models (continued)

Specifications of recommended beds *(continued)*	**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
CONTROL									
3. Electric control: raise legs with head & trunk flat	✓	✓	✓	✗ by manual leg ratchet only (i.e. operated by a helper)	✓	✗	✓	✗	
									
e) Angle at hip bend with knees straight	160º	160º	168º	135º	140º	N/A	135º	N/A	
4. Electric control: bend hip & knees with head & trunk flat	✓	✓	✓	✓	✓	✗	✓	✗	
									
f) Angle at hip bend	135º	130º	100º	135º	140º	N/A	135º	N/A	
g) Angle at knee bend	100º	100º	90º	95º	95º	N/A	95º	N/A	
5. Electric control: bend hip & knee & raise feet above head with head & trunk flat	✓	✓	✓	✗ by manual leg ratchet only (i.e. operated by a helper)	✓	✗	✓	✓	
									
f) Angle at hip bend	135º	130º	100º	135º	140º	N/A	135º	135º	
h) Angle at knee bend with lower leg parallel to bed platform	135º	130º	100º	125º	140º	N/A	125º (manually operated)	160º	

Comparative chart of electric bed features of recommended models (continued)

Specifications of recommended beds *(continued)*	**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
CONTROL (continued)									
6. Electric control: raise back & lower legs to place user into 'armchair position'	✓	✓	✓	✓ by tilting bed forwards only (may not be suitable for smaller child)	✓	✓ by tilting bed forwards only (may not be suitable for smaller child)	✗ (need to decide if prepared to comprimise)	✗ (need to decide if prepared to comprimise)	
6. 'Armchair position' 				*8. Profile across width of bed* 					
a) Angle of raised backrest	**76°**	**75°**	**80°**	**89°**	**70°**	**70°**	**N/A**	**N/A**	
h) Angle at knee bend with lower leg below the horizontal platform	**161°**	**148°**	**156°**	**166°**		**132°**	**N/A**	**N/A**	
7. Electric control: height adjustment	✓	✓	✓	✓	✓	✓	✓	✓	
Minimum height top of platform to floor	**360mm**	**360mm** also **230mm**	**332mm (415mm** with adaptors)	**355 or 395mm**	**305mm**	**350mm**	**375mm (200mm** with adaptors)	**400mm**	
Maximum height top of platform to floor	**820mm**	**810mm**	**692mm (775mm** with adaptors)	**700 or 795mm**	**780mm**	**800mm**	**800mm**	**800mm**	
Sensitive switch control	✓	✓	Order MD control	✓	✓	✓	✓	✓	
Possum, RSL Steeper, SRS compatible	✓	✓	✓	✓	✓	✗	✓	✓	
Control on lead or fixed	Lead standard/fixed special	Lead	Lead	Lead standard/fixed optional	Lead standard	Fixed (either side)	Lead standard/fixed optional	Lead	
Back-up battery (stnd/optnl)	✓	✓optional	✓ standard	✓ standard	✓ 24-42 hours	✓ standard	✓ optional	To lower only	
8. Electric control: side tilt	✗	✗	✗	✗	✓	✓	✗	✗	
i) Angle of right/left turn	**N/A**	**N/A**	**N/A**	**N/A**	**35°**	Programmed **8°** user op **30°**	**N/A**	**N/A**	
Automatic turn settings	**N/A**	**N/A**	**N/A**	**N/A**	½ hr,1, 2 or 4 hourly	½ hr,1 hr or 1 ½ hrs user operation overides automatic turning	**N/A**	**N/A**	

Comparative chart of electric bed features of recommended models (continued)

Specifications of recommended beds *(continued)*		**Guldmann Flexus 2** *Moderna Contracts Ltd*	**Scan 750** *Scan Mobility Ltd*	**Super Baltimore** *Huntleigh Healthcare Ltd*	**3080PH Volker** *BaKare Beds Ltd*	**Baltic** *Centromed Ltd*	**Princess 5000** *Action Assist Ltd*	**Bed in Bed** *Theraposture Ltd*	**Homecare bed** *Ashworth Trading*	
MATTRESS										
Spring-interior mattress		✓	✓	✓	✓		✓ to order	✓	✓	
Width x length	Single	**900 x 1960mm**	**850 x 2000mm**	**940 x 1990mm**	Any size or depth to order	**N/A**	**900 x 2032mm**	Size & firmness to order	Size & firmness to order	
	Wide single	✗	**1200 x 2000mm**	✗			**1040 x 2032mm**			
	Double	✗	**2000 x 2000mm**	✗			✗			
Depth		**130mm** (others to order)	**200mm**	**200mm**			**172mm** (others to order)	To order	To order	
Foam mattress		✓	✓	✓	✓	✓	✓	✓	✓	
Width x length		**900 x 1960mm**	**850 x 2000mm**	**920 x 1960mm**	Any size to order	Any size to order	**890 x 2032mm**	Any size to order	Any size to order	
Depth		**100mm** (others to order)	**150mm**	**125mm**			**172mm** (others to order)			
Specialist mattress		✓	✓	Vaperm	✓	✓	✓	✓	✓	
OPTIONAL ACCESSORIES										
Extension piece		✓	✓ built in	✗	✓	✓ made to measure	✓ to order	✓	✓	
High base adaptors		✓	✗ not necessary	✓	✓	✓	✗	✓	✗ not necessary	
Side rail net covers		✓	✓	✗ not necessary	✗	✗	✓	✓	✓	
Side rail padded covers		✓	✓		✓	✓	✓	✓	✓	
Grab rails		✓	✓	✓	✓	✓	✓	✓	✓	
Mattress retaining straps		✓	✓	✓	✗ not necessary	✓	✓	✓	✓	
Overbed table		✓	✓	✗	✓	✗	✓	✓	✓	
SAFETY STANDARDS										
Does bed conform to safety standards? See page 11		✓	✓	✓	✓	✓	✓	✓	✓	

References

1. BS EN 1970: 2000, *Adjustable Beds for Disabled Persons*. British Standards Institute, 2001.

   Available from:
   BSI Customer Services, 389 Chiswick High Road, London. W4 4AL. Tel: 020 8996 9001.

2. Skeet, Julia et al, *Bed Safety Equipment: an Evaluation*. Medical Devices Agency, Department of Health, 2002.

3. Device Bulletin, *Advice on the Safe Use of Bed Rails.* Medical Devices Agency, Department of Health, 2001. Ref. MDA DB2001(04).

MDA publications are available free to health and social care providers, on written request from:

England: Medical Devices Agency, Business Services, 9th Floor, Hannibal House, Elephant & Castle, London. SE1 6TQ. tel: 020 7972 8360. fax: 020 7972 8124. e-mail: bs@medical-devices.gov.uk
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