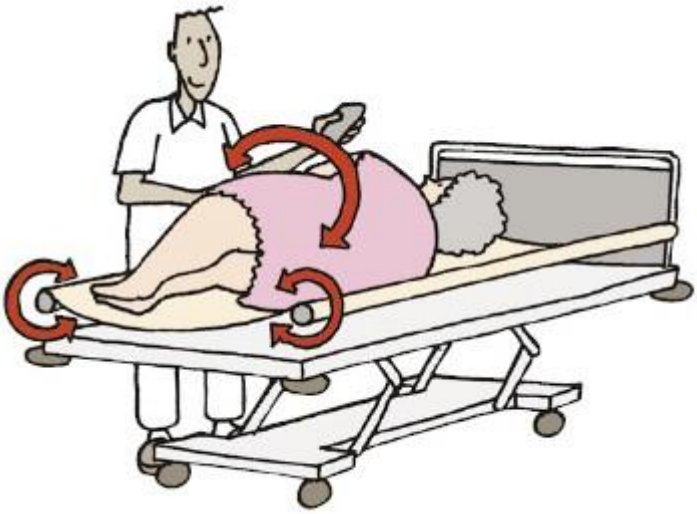
Draaibed 24/7

Final report of the Care for Better 'Draaibed' project.



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About the title: 'Draaibed 24/7'[1].

This study shows that the Draaibed provides effective scope for preventing decubitus. Because decubitus can best be prevented by turning the client at least six times every 24 hours (in combination with a pressure reducing mattress) and the Draaibed allows sometimes for independent turning that is ergonomically sound while minimising the time required, we have added the term '24/7' to the title of this report. After all, preventing decubitus is a 24 hour-a-day, seven-day-a-week job.

[1] The study 'Draaibad 24/7' is produced in the Netherlands. The word 'Draaibed' is the Dutch term for the VENDLET HC-2 that was produced by Vendlet ApS and distributed by Invacare in the Netherlands. VENDLET HC-2 was taken off the market the 1st/3 2012 and replaced by VENDLET V4 and later VENDLET V5.

Publisher's imprint

Acknowledgement

This study has come about thanks to the kind cooperation of four users of the Draaibed. We would like to thank them very much for this. We hope that this report will contribute to the broader dissemination of the findings that they have helped make.

Disclaimer

Illustrations

All the drawings have been done by Auke Herrema and published with consent. Website: www.herrema.demon.nl

Care for Better

Care for Better encourages organisations engaged in long-term care to work on improving quality and on the sustainability of care. The aim of this is to be able to guarantee everyone good care, both now and in the future. Care for Better provides a methodical approach, good examples and advice from experts. Learning from one another is central to this. Themes that Care for Better tackles include fall prevention, medication safety, labour-saving innovations, and care for dementia sufferers. Care for Better is an initiative by the Ministry of Health, Welfare and Sport, and is managed by ZonMw. Implementing organisations include Vilans, TNO-Kwaliteit van Leven and LOCOmotion, while more than 700 care organisations are involved.

Contact

If you want to know more about this project, you can contact Josien Boomgaard (email: boomergo@hetnet.nl).

Invacare and Vendlet

The Vendlet bed studied in this project is distributed by Invacare. Neither Invacare nor Vendlet have been substantively involved in the study or in the interpretation and reporting of the data. Nor have Invacare or Vendlet supported the project financially.

Summary

The central question of this Care for Better 'Draaibed' project is to what extent the use of a Draaibed affects the productivity of care providers. To answer this question, this study examines five practical situations for which the Draaibed is in use. The experiences of clients and care providers have been investigated. In addition, a study of the literature has been conducted and secondary analysis performed on existing research material.

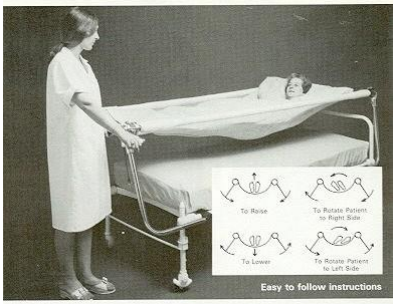
Based on this study, we conclude that a positive impact can be expected from the use of a Draaibed in relation to physical strain, quality of life, ability to cope independently, quality of care, prevention of decubitus, and productivity. Productivity has been quantified for five clients using the Draaibed. It emerges from this that fairly substantial gains in time (between 274 and 821 hours per year per Draaibed user) can be achieved.

To be able to achieve the above effects, the Draaibed must also be capable of being operated by the client himself or herself. Recently, however, this option has been removed from the new models for safety reasons and the bed can only be operated by a community carer or professional care provider. An option whereby the client himself or herself can operate the Draaibed and which simultaneously guarantees safety therefore needs to be sought as a matter of priority.

Section 1. Introduction

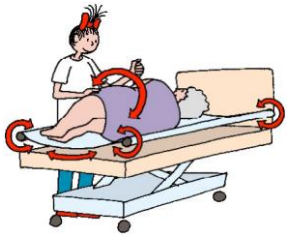
A national monitoring survey of 77 510 clients cared for and nursed in Dutch care and nursing homes shows that 16% of them are entirely bedridden, and that 34% are partially bedridden (Knibbe & Knibbe, 2005). However, this does not mean that these clients, and similar clients in home care, do not move or have to be moved. An aid that is designed to facilitate such transfers is the Draaibed. The Draaibed is a motorised, electrical appliance that can be placed on virtually all existing high-low beds. The care provider, community carer (or the client himself or herself) can use the device to turn, move and flip the client without physical strain. This can be a godsend for heavy clients, very anxious individuals or those in considerable pain, who also cannot help or who even hinder the manoeuvre.

The Draaibed is currently marketed under the product name 'Vendlet bed'. In fact, it is a development of the 'Mecabed' (see Figures 1a-c), which had been marketed by the former company Mecanaids since the 1950s, but which was taken off the market for commercial reasons in 1996. One difference between the old Mecabed and the current Draaibed is that, with the Draaibed, the client stays on his or her own mattress after the turning manoeuvre. With the Mecabed, the client hung in a sort of suspended mat above. The Draaibed is therefore used exclusively to make the transfers possible. This means that any anti-decubitus properties of the mattress can still be exploited. Another difference lies in the automatic control: the Mecabed was still operated manually, whereas the Draaibed is operated electrically.



Figures 1a-c. The Mecabed can be regarded as the forerunner of the current Draaibed.

The Draaibed consists of two tubes that are placed on both sides of the bed (see Figures 2a-c). The long sides of the same sheet, on which the client can lie, are rolled up on each tube. Before the sheet is rolled up, the first part is secured to the tubes by means of touch-and-close tape (see Figures 3a-b). Both tubes can turn to the left or right in motorised fashion. This allows the sheet to be rolled up or unrolled and enables the client lying on the sheet to be moved or turned passively, with any state of supported lying being possible.



Figures 2a-c. The Draaibed with which a client can be moved sideways and turned automatically and passively.

The central question of this Care for Better 'Draaibed' project is to what extent the assumptions set out below have any basis.

First of all, there is claimed to be a link between the independence of clients (whether or not improved by use of the Draaibed) and the physical strain on community carers or care providers. An improvement in the independence of clients means a reduction in the physical strain on community carers or care providers. After all, the more the client himself or herself can do, the less the care provider or community carer has to do.

Secondly, there is claimed to be a possible link with quality of care. If the client is, for example, able to move independently with the aid of a Draaibed, that contributes to quality of life (the client is more comfortable and can determine the moment of turning himself or herself, which contributes to the sense of self-worth).

Following on from this is the third point. Because turning can be done fairly simply, where appropriate by the client himself or herself, decubitus could (in part) be prevented. The threshold for frequent turning is, after all, very low.

Figures 3a-b. The sheet on which the client lies is fastened with the touch-and-close tape to both tubes (source: www.invacare.nl)

Lastly, there may be a link with productivity. After all, the care provider does not have to turn the client so often. With the Draaibed, this can be done by the client or the community carer. Where this cannot be done by the client or community carer, turning with the Draaibed is a much simpler (and therefore also simpler) operation.

The assumptions set out above (more independence, less physical strain, more quality of care and life,

less risk of decubitus and an increase in productivity) have in this 'Draaibed' project been tested with the aid of five case descriptions, a secondary analysis of existing material[2] and a study of the literature. The results of this are set out in this report.

[2] LOCOmotion conducted the BedWeter project with funding from ZonMw (Knibbe, 2003, 2004). The evaluation of the use of the Draaibed in home care formed part of this. In the present study, this material has been studied more closely in the light of current knowledge.

Section 2. Case descriptions

This study covers five clients who use a Draaibed. The clients have been selected aselectively, i.e. according to the principle of first come, first served. They were principally found via the project leader's professional informal contacts. Three clients live independently (with community care), two clients have been admitted to the care section of a care home and therefore receive, where necessary, professional care in addition to their community care. The clients' conditions range from MS and ankylosing spondylitis to muscular dystrophy, though generally the patients have multiple conditions. More important in this context is the mobility of these five Draaibed users. The five clients are in Mobility Classes C and D and can thus be described as clients unable to reposition themselves in bed. The help needed for this is physically onerous for the care provider or community carer if no preventive measures are taken (Knibbe et al. 2006).

The five Mobility classes (from left to right, from A to E) in illustrated form. Source: Knibbe JJ, Waaijer (2005)

We set out below the results of these five cases, also including the secondary analyses of material from previously conducted studies of the use of the Draaibed.
The results are grouped with the aid of the aspects physical strain, quality of life, ability to cope independently, quality of care, decubitus, and productivity. We end this section with a number of usage tips.

Physical strain
It is striking that in none of the cases studied manual repositions are still performed. It is indicated that manual repositioning without a Draaibed would be difficult. In view of the Mobility classes (C, D) of the clients, that is indeed the case.
In one specific case, in which the repostitionings became too difficult for the mother of a nearly adult child living at home, it emerged that she could nevertheless perform the transfers with a Draaibed. It is therefore possible to postpone or forestall the need for professional care by using a Draaibed. One of the clients further indicated that the Draaibed makes it possible for ageing professional care providers to carry out basic care.

Quality of life and ability to cope independently

The aspects of 'quality of life' and 'ability to cope independently' are in this case very closely connected. Clients experience greater quality of life because the Draaibed has made them better able to cope independently. They do not have to call upon their community carers or professional care providers so often, or even at all, which they often find to be aggravating and annoying (particularly because this is often at night, which is extra aggravating for community carers).

It also happens that clients are less anxious during repostions because the remote control gives them more control over their own situation.

An essential aspect in this context is the fact that the Draaibed can be operated by the client himself or herself. Recently, however, this option has been removed from new models for safety reasons. This option will also be removed from all examples already in use unless the client signs to acknowledge that he or she is aware of and accepts the risk. In practice, we see that clients are 'creative' on this and tinker with the controls so that independent operation is nevertheless possible. This is not, however, a desirable situation given the associated risks and the fact that product liability then lapses. To be able to carry on making optimal use of the Draaibed's facilities, an option guaranteeing both safety and ability to cope independently should therefore be sought as a matter of priority.

'I can turn over independently during the night using the Draaibed. This means I no longer have to impose on anyone. You no longer feel that you are a burden for those around you. You no longer interrupt someone's sleep'.

Quality of care

Various indications that quality of care can be improved through the use of the Draaibed emerge from the collected study material. First of all, the client is happier in bed, chiefly because he or she can move more frequently. At the beginning of the night, one of the clients involved in this study was as far as possible placed in a good position, which he tried to maintain as long as possible. During the night, the client developed cramps and pain and had to be taken out of bed by his wife and put in the wheelchair. That is no longer necessary with the Draaibed.

In some cases we also see that the client is more comfortable because he or she can determine precisely how they will lie. One of the clients involved in this study feels good when she lies comfortably, whereas for her mother it is more of a "gamble" and less precise.

'There is no more lugging me around'.

Then there are clients who indicate that they have less pain and even use fewer painkillers. This is probably connected with the fact that moving can be carried out without touching the care provider and proceeds very smoothly. This last aspect is for that matter not exclusive to the Draaibed. For example, with slides, too, it is often unnecessary to touch the client and the movement can be performed gradually.

Lastly, the high edge formed by the tubes over which the sheet is rolled up and unrolled may give certain clients a feeling of safety and support in maintaining a certain position. This means that they are more relaxed for lying and care.

Decubitus

Based on the data collected in this study, there is an obvious link between use of the Draaibed and the prevention of decubitus. Clients indicate that they suffer less from decubitus because turning in bed is easier and less painful. In situations where turning cannot be carried out independently by the client, turning is performed more frequently (with the change in position often being slightly smaller each time). This also happens because it is less painful for the client and less onerous for the care provider. The thinking behind this is that turning has a preventive effect on the development of decubitus. Based on a brief study of the literature, we examine this in greater depth in the next section.

Productivity

It seems very likely that the use of the Draaibed may also save time. This could also increase the productivity of the individual care provider. The gain in time arises from the fact that the client can perform the transfers himself or herself with the Draaibed. The use of (community) care is then no longer needed for the transfers. In the case of home care, the care provider may even no longer have to come along any more. This reduces not only work time but also travel time (which is not paid, but which of course nevertheless exists). Here, too, we can see the great importance of being able to operate the Draaibed independently, which, as said, is no longer possible with the new models. For a more precise assessment of the relationship between the use of a Draaibed and productivity, see Section 4 of this report.

Tips

We have gathered together the following tips which, without any claim to completeness, may make the Draaibed easier to use:

- Make sure that the sheet is rolled up smoothly on the rollers. It does not need to be completely straight – an overlap of 1 - 2 cm at the ends of the sheet does not affect traction power. Smooth the sheet with your hands while it is being rolled up. Pull the sheet off and taut again if it gets creased.
- Where appropriate, a urine bag can be secured to the sheet. Use long tubes because the bag must be placed a bit further away than usual.
- Ensure sufficient sheets so that there are always one or more spare sheets to allow washing, drying and preparing.
- Use a sleeping bag (see quotation alongside)
- When getting dressed, use a slide in combination with the Draaibed. This may be useful when, for example, applying the sling or putting on clothing.
- If the sheet is not stretched too tautly, the Fowler and Trendelenburg positions of the bed are also to be used. If the sheet is too taut, it is sufficient to turn the sheet back slightly.

‘Our 11-year-old son with muscular dystrophy has been using the Draaibed for a year. He turns himself with it independently at night. We have hung the remote control from the bed’s hand grip so that he can always access it. Because his duvet was to begin with always getting snarled up, he now sleeps in a sleeping bag. This means that he stays warm on all sides. We push the pillow into the sleeping bag, so that turns as well’.

Section 3. Turning and decubitus

In this section we examine the relationship between decubitus and turning. The question that we want to answer is to what extent can turning actually prevent decubitus. With this in mind, we have conducted a limited search of the literature. The data presented below come mainly from authoritative studies by the CBO (2002), Goosens (1994) and Defloor (2000, 2005).

Underestimated problem

Decubitus can be described as any form of tissue death caused by the action on the body of compressive, shearing or frictional forces, or a combination thereof. The problem is common. In teaching hospitals, around 13% of all patients have decubitus, with the figures for general hospitals, care homes and home care being 23%, 30% and 17% respectively. Annually, around EUR 0.6 billion is spent on the prevention and treatment of decubitus. Decubitus thus seems to be an underestimated problem, and its treatment or prevention appears necessary.

Turn, turn, turn

We should next acknowledge that there are not yet any effective methods of treating decubitus. The need to prevent decubitus is thus adequately stated.

The literature also shows that the only demonstrably effective way of preventing decubitus is to *mobilise* the client. This is awkward in practice because high-risk clients are precisely those clients who have problems with their mobility. It is therefore necessary to offer turning or repositioning. Turning means the regular changing of position, which means that all points supporting the body (the pressure points) are alternately loaded and relieved. This can be done actively (by the client himself or herself) or passively (by something or someone else).

24/7

The starting point for turning is to reduce pressure forces and shorten the duration of action of these forces. The underlying physiological explanation is that the time for which tissue has a deficient blood supply as a result of being 'compressed' is limited and no tissue damage occurs. The tissues can, as it were, 'breathe'. It is essential in this context that the turning is carried out frequently. The question is then how often this should take place. Many articles on the prevention of decubitus cite the rule of thumb that high-risk individuals should be turned every 2 to 3 hours. The use of special anti-decubitus mattresses does not make turning unnecessary in this connection. Turning is also only appropriate if applied precisely. In other words, 24 hours a day, seven days a week (24/7).

Six times a day is sufficient

However, this is very demanding for community carers and any professional care providers. Turning must therefore be performed 8 to 12 times a day and per client. In practice, this is often scarcely possible. Recent research by Defloor (2005) nevertheless demonstrates that when turned every four hours on a pressure-reducing mattress (for which the pressure is at least 20 to 30% lower than on a non-pressure-reducing mattress), clients are at significantly lower risk of developing decubitus. This would mean that turning six times every 24 hours would be sufficient (in combination with a pressure-reducing mattress). In the next section we will use this figure for quantifying productivity in relation to use of the Draaibed.

Section 4. Productivity

In this section we quantify the increase (or decrease) in productivity as a result of use of the Draaibed. We base our analysis on the five cases employed in this study. In this context, we always calculate the difference between the situation with and without the Draaibed. We would point out that we assume that the Draaibed is, if the client can do this independently, also operated by the client. As indicated above, that is no longer the case with the new models of the Draaibed.

Case 1 (living at home).

If this client did not have a Draaibed, more professional care would be needed. A single care provider is currently needed, which costs 75 minutes a day. Without a Draaibed, the care would have to be provided by two care providers and would take longer. In total, that would amount to three hours a day, a difference of one and three-quarter hours per day. Without the use of the Draaibed, this means turning additionally being needed twice for 15 minutes at night. The community carer would assist in that event.

If a Draaibed had not been available in this case, that would cost two and a quarter hours every 24 hours. That amounts to 821 hours on an annual basis. At an hourly rate of pay of €22.00, that amounts to €18 068.00 on an hourly basis.

Case 2 (living at home)

If there was not a Draaibed, an extra half an hour's care by two care providers would be needed. In total, that is a time saving of one hour.

If a Draaibed had not been present in this case, that would cost one hour every 24 hours. On an annual basis, that amounts to 365 hours. At an hourly rate of pay of €22.00, that amounts to €8 030.00 on an hourly basis.

Case 3 (living at home)

If this client did not have a Draaibed, greater use of community care alone would be needed. This would entail 45 minutes a day for transfers within the limits of the bed plus another 10 minutes extra a day for getting dressed and undressed (because the Draaibed's facilities cannot be used).

If a Draaibed had not been present in this case, that would cost 55 minutes every 24 hours. That amounts to 335 hours on an annual basis. Because the work is done by a community carer and the latter does not receive any financial compensation for this, it is not readily feasible to convert this to euros. Were a professional care provider to be used for this work, on the other hand, the costs would be a minimum of €7 370.00. We refer to a 'minimum' because a professional care provider would have to claim more hours owing to travel time (which cannot be declared).

Case 4 (intramural)
If this client did not have a Draaibed, greater use of (community) care would be needed. This entails around 45 minutes a day for the transfers in bed (during ADL activities) and for turning.

If a Draaibed had not been present in this case, that would cost 45 minutes every 24 hours. That amounts to 274 hours on an hourly basis. At an hourly rate of €22.00, that amounts to €6 023.00 on an annual basis.

Case 5 (intramural)
If this client did not have a Draaibed, greater use of care would be needed. That amounts to around 90 minute a day. This is needed to repostion regularly and to perform transfers during care.

If a Draaibed had not been present in this case, that would cost 90 minutes every 24 hours. That amounts to 548 hours on an annual basis. At an hourly rate of €22.00, that amounts to €12 045.00 on an hourly basis.

All in all, we can see substantial gains in time as a result of the use of the Draaibed. Using the Draaibed in the interests of raising productivity therefore certainly seems appropriate.

Nevertheless, we can see considerable variation in the five cases. The maximum calculated 'gain' is €18 068.00, the minimum €6 023.00. This may first of all arise from the relatively small number of cases (5), which does not benefit reliability. In addition, we have assumed the time indication estimated by users. Although the expert interviewer (homecare occupational therapist) asked thorough questions about this during the visits, this remains somewhat subjective. We will therefore have to regard the amounts specified as indicative.

We emphasise that the 'gain' identified excludes the reduction in physical stress (transfers within bed, turning associated with decubitus risk and care operations such as dressing and undressing in bed, in which changes in position on the mattress are needed) and the prevention of decubitus that we may expect on the basis of this study from the use of the Draaibed.

Although we have substantiated both items, it is not yet possible to quantify this in terms of gain in time or euros. Nevertheless, both aspects are essential when considering whether to employ a Draaibed.

Lastly, in the foregoing sections we have used the word ‘gain’ very deliberately in inverted commas. The gain is, after all, only achieved by scrapping these hours, i.e. by economising on personnel. However, we assume that the time gained is in any event partly invested in quality of care and contact time with clients. Based on the results of this project, the use of the Draaibed provides various starting points, particularly on aspects such as ability to cope independently and quality of life, for being able to make improvements (see Section 2).

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