

# MDT Cushion Evaluation: Repose v Ehob v Equazone

## Aim

The aim of the evaluation was to compare three cushion designs; two current, commonly used community air cushions, the Repose cushion (Frontier Medical Group) and the Ehob cushion (EHOB), and the Equazone cushion (Helping Hand Company). This report includes perceptions of a range of health professionals, and members of the public, after short exposure to the cushions as well as prior experience where relevant.

## Professional Evaluation

Eight health professionals took part in the evaluation; all specialists in the fields of posture, mobility or pressure management, with roles across nursing, therapies and healthcare science. Each professional was given the three cushions; the Repose, the Ehob and the Equazone to trial for a day. For the purposes of the evaluation each cushion was evaluated on the same surface, in a passive manual wheelchair. This was thought to be a worst-case scenario for the cushions as the seat base was a hard board. The evaluator was left to decide for themselves what they wished to do with this setup, and they evaluated the cushion based on a prompt sheet. Evaluators rated certain aspects 1-5 (1 not at all satisfied to 5 extremely satisfied). An interface pressure mapping system (Boditrak, FSA) was also available and used to inform decisions where appropriate.

## Pressure Mapping

Figure 1 shows an indicative pressure mapping screenshot with the Repose. This shows distribution of the pressure through both the thighs and the buttocks. The shape of the cushion can be seen in the pressure mapping in the extension of the cushion taking load where the cells are present at the forward and the rear of the cushion. There are no significant high readings of pressure present as you would expect from a pressure relieving cushion.

Figure 2 shows an indicative pressure mapping screenshot with the Ehob. This pressure map clearly shows the design of the cushion with circular areas offloaded in line with the holes in the cushion. There are then areas of higher pressure present where the offloading is not present, however there are no significant high readings of pressure present, in fact there are no areas of pressure higher than those shown by the repose. The areas of higher pressure do not seem to line up with any bony prominences and therefore the pressure distribution is controlled by the cushion design in this instance.

Figure 3 shows an indicative pressure mapping screenshot with the Equazone. This shows that there is pressure distribution through the thighs and the buttocks although the thighs are taking less load than the buttocks. The 4 quadrant design of the cushion is not immediately obvious, which is positive. The sacral cut out present on the cushion does not show significantly through the pressure mapping, though it is likely to be effective for those with prominent coccyx so long as they sit centrally and at the back of the chair/cushion. The pressure mapping shows effective distribution of load and no concerning areas of high pressure for this individual.

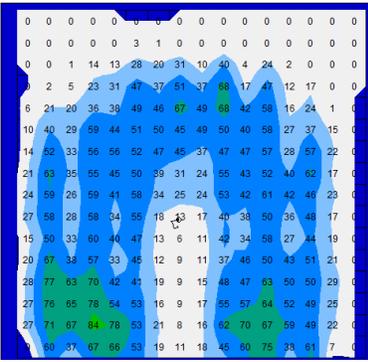


Figure 1 Pressure map of Repose

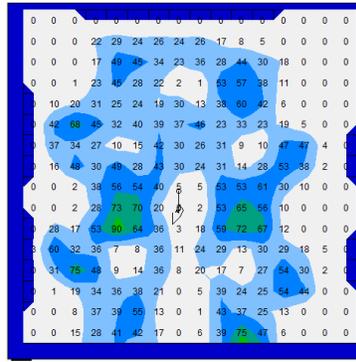


Figure 2 Pressure map of Ehob

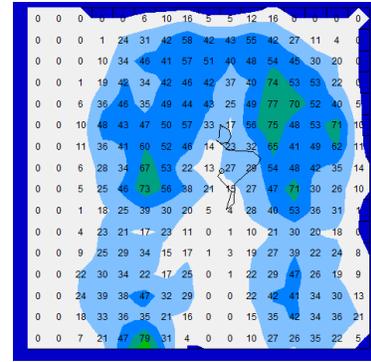


Figure 3 Pressure map of Equazone

## Quantitative results

	Repose	Ehob	Equazone
Support & contouring	2.4	1.9	3.6
Features (pelvic well, pommel, thigh support)	1.8	1.3	2.9
Immersion potential (pressure mapping)	3.5	2.1	3.8
Shear/friction /temperature regulation	3.0	2.8	3.1
Interface to chair	2.5	1.6	3.4
Flexibility of use / adjustability	3.3	2.9	3.4

The above table shows the 1-5 rating for each category of evaluation, averaged between the evaluators. The adjoining comments were summarised, and themes presented in below.

## Summary

As would be expected for cushions designed for pressure distribution, the pressure mapping of each of the cushions do not show any concerns. However as these are taken from only one person, who is non-compromised in their seating and postural needs, the relevance to high risk patients within the community may be minimal. That said they do give an indication of the general performance of the cushion and do highlight the effectiveness of some features.

In the qualitative comparison of the cushions, most of the general comments were negative as the group were making a critical evaluation of the cushions. The main comments for each of the cushions were as follows. With the Repose, there was concern as to 'bottoming out', as well as it being easy to puncture for which the consequence would be high. The pressure benefit of the Repose has been shown over many years. The thicker lateral columns encourage loading away from the central pelvic bones. With the Ehob, there was concern it may have limited immersion potential for those with bony anatomy and that that the format/material could be potentially 'abrasive' for those with frail skin. With the Equazone, it was commented that the cushion may be short for some people, therefore the need to be prescribed correctly was imperative. Some evaluators felt the contouring of the sacral cut out could be a little wider and deeper and there could be more volume under the thighs. This cushion relies on

people sitting centrally. The failsafe of foam means that it shouldn't 'bottom out'.

For the quantitative comparison the Ehob was consistently rated lower or equal to the other two cushions in every category. The Equazone was rated higher or equal to the Repose in all, bar the regulative category.

It is important to recognise relative applications for the different designs. The Repose and EHOB are both thin and purposed particularly as overlay cushions. The Equazone has slightly more height so may be relevant as an overlay, or as a stand-alone cushion. Consideration of extra height on seat set-up is important. The ability for a cushion to stay in place is also crucial, with all three cushions having options of a securing strap. The cushions may differ in the way they resist shear and friction effects on the skin and how they affect the skin microclimate. With all cushions that contain air the primary considerations are ease of set-up, maintenance and longevity. These cushions require checking regularly that they remain effective, and their performance over time is likely to change somewhat. There are merits to each cushion in this sense, though where there are concerns the Equazone could offer a safer option due to its hybrid format. As noted, the Equazone does rely more on a consistent sitting position.

All three cushions adhere to British Standard testing for fire safety BS7175/6.

## Public Evaluation

13 members of the public were invited to rate the cushions on comfort and support on a simple 0-10 scale. This was done to see if the public would have a similar outlook to the professionals.

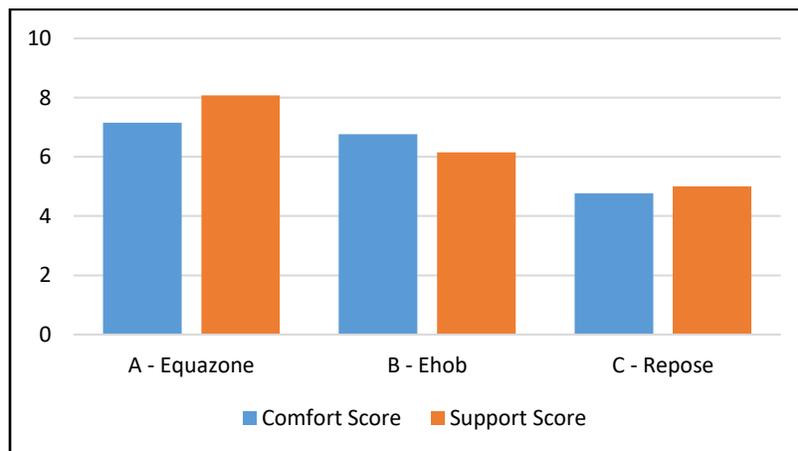


Figure 4 Public scores

Figure 4 displays the average (mean) score given to each cushion in relation to comfort and support collated from the 13 public respondents. Respondents used their own understanding of the terms 'comfort' and 'support'.

The cushions ranked in the same order for both comfort and support. The Equazone had the highest average score for both, then the Ehob, and then the Repose being last for both. The Equazone and the Ehob had very similar average scores for comfort with the Equazone only 0.5 points higher than the

Ehob, whereas for support the Equazone was scored significantly higher than both. Public respondents felt more stable on the Equazone. The members of the public had no pressure history nor where high risk of such.

## General comments

*This evaluation represents informal feedback from a limited evaluation of the cushions. It includes some opinions and suggestions which may have little evidence base. Scores are simply the opinion of professionals, and based from varied prior experience of the cushions. Those assessing are specialists in the field of seating and pressure management, and may be biased towards high-end expectations of equipment.*

*Please be aware generic feedback on a piece of equipment, particularly supporting surfaces, is vague because efficacy is so dependent on individual users, and how the equipment is used. What is beneficial for one person is likely to be poor for many others. Cushions have a variety of function and usability requirements. Comparisons are more informative when in view of a particular client, or client group.*

*Pressure mapping does not tell the full story, and should be used with caution. It is difficult to derive strong conclusions from pressure data in terms of cushion review, since it is a snapshot in time and it represents one particular set-up with one particular person. This person is often sensate, has mobility, and good soft-tissue mass around the supporting service; they are in many ways not a high risk individual. Cushion and chair set-up, relative to the individual, will largely affect the outcome.*

*An equally critical important factor than type of cushion is the set-up - appropriate sizing, and the location within a supportive seating environment, well suited to the user. A range of options of cushion and sizes is paramount if being considered for community equipment store settings.*

**See the 'All Wales Best Practice Guidelines: Seating and Pressure Ulcers' for more information on cushion types, and key principles for cushion selection:** AWTVNF, PUPIS. *All Wales Best Practice Guidelines: Seating and Pressure Ulcers.* London: Wounds UK, 2019



## Pressure Ulcer Prevention and Intervention Service