

There is such a huge group in the whole world. They can only stay in bed for a long time because of disability or congenital disease called Bedsore. They are unable to move unattended, result in long backlog of back or buttocks and form serious chronic wound pressure sores. Most of their families are in bad financial condition, living in poor mountainous areas, urban fringe or corners of the city without money to cure. In addition, this kind of wound is very intractable. Even if patients have heart and the cation to go to the hospital for treatment, under the limitation of the existing medical resources, it is not possible for the patient to change the hospital for a long time and every dressing change is often the same as that of the minor operation.

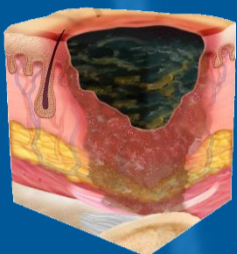
Therefore, we decided to develop pressure ulcer assisted turnover system based on the experience of the wound specialist and the information dozens of patients.

Automatic Body-turning Airbed

What is Bedsore?

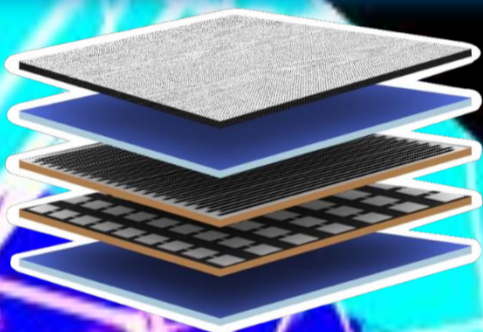
"Bedsore — also called pressure ulcers and decubitus ulcers — are injuries to skin and underlying tissue resulting from prolonged pressure on the skin. Bedsore most often develop on skin that covers bony areas of the body, such as the heels, ankles, hips and tailbone."

--from MAYO CLINIC

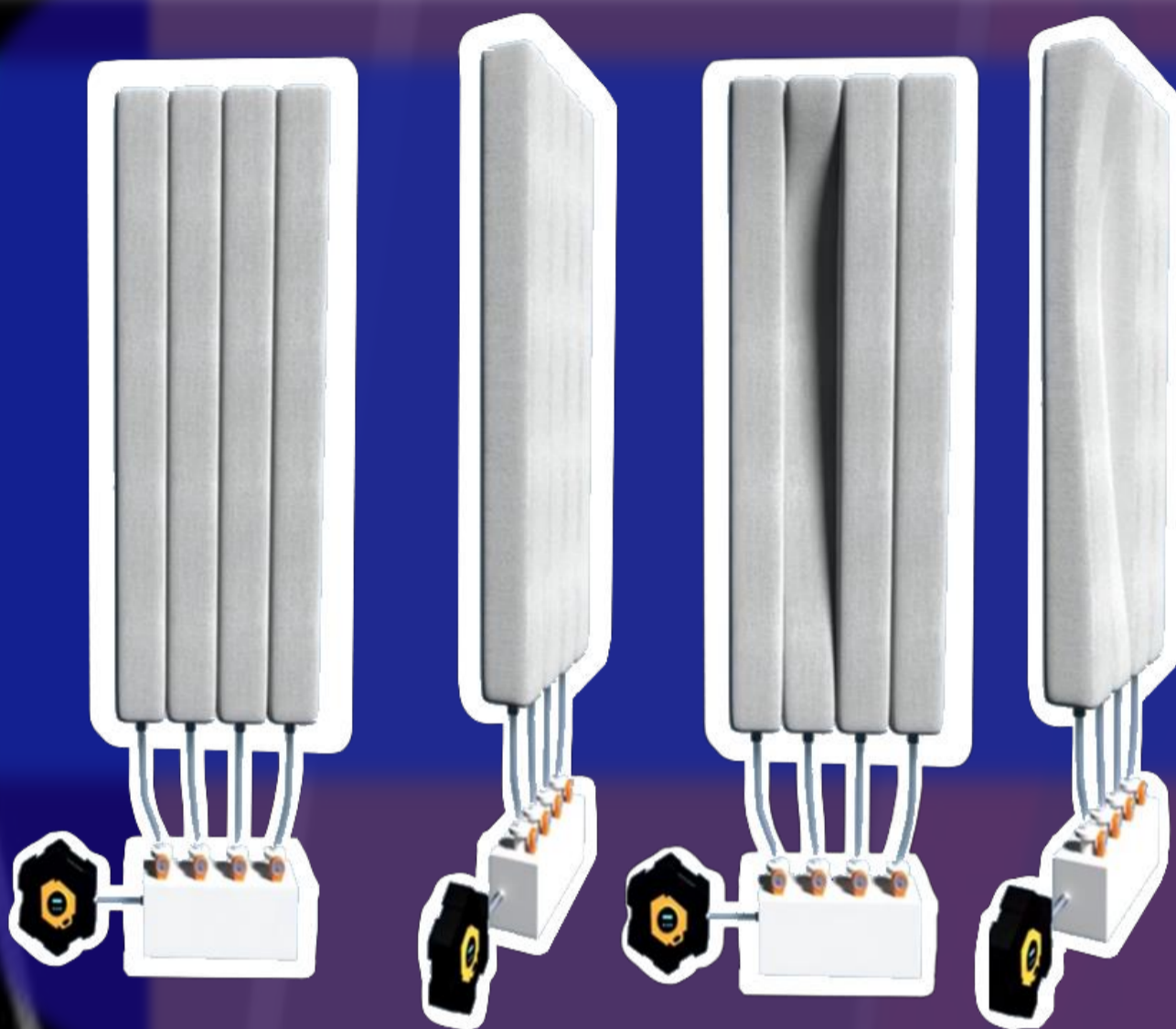


Pictures are from 2016 National Pressure Ulcer Advisory Panel and www.elitecme.com

CAUSE: According to the survey, pressure ulcer is a pressure injury caused by excessive back pressure and blocked blood circulation. Therefore, we concluded that the key to nursing and prevention of pressure sore is turning over. However, pressure sore mattress and air cushion bed on the market can't effectively prevent pressure sore, and can't help disabled patients to turn over.



- Precoat
- PVC
- The Thin Film Pressure Sensor
- The Thin Film Monitor Sensor of Air Pressure
- PVC



SOLUTION: We use air pressure to promote the patient's way, and use multiple air cushions side by side to inflate and deflate to achieve the change of patient's posture and turn over function. For reference, we can help patients turn over according to the left 30 degrees, parallel and 30 degrees on the right side, 2 to deflate and 1 to deflate 50% are used. Contralateral opposite way to achieve this mode. This product can achieve other products can't reach the turning over and incontinence of humidity detection, back pressure distribution alarm to help patients to prevent or relieve pressure ulcers

DETAILED INTRODUCTION:

Our product is a multifunctional mattress for pressure ulcers, sensor, detection, early warning, protection, and auxiliary treatment, and our product has been able to help patients with pressure ulcers to turn over and adjust automatically at regular intervals. If the air pressure is insufficient and fails to reach the predetermined angle, this product can achieve automatic alarm, so as to remind family members remotely and remind the paramedic to manually adjust and recover.

Secondly, we set up the corresponding humidity alarm device between the air cushions for the incontinent patients, and set up the corresponding pressure sensor on the surface of the air cushions to monitor the pressure distribution of the upper back in real time and build the real-time dynamic data analysis, so as to provide treatment suggestions for the future treatment. Furthermore, we redesigned the shape of the air cushion structure, a kind of Steinmetz solid cover structure, which provides more space for the height, reduces the edge space, and reduces the possibility of patients sliding down.

Finally, all of our monitoring data will be uploaded to the mobile application constantly and summed up into the patient's real-time state of pressure and body, which can be recorded at any time. In this way, it is convenient for the development of new instruments and technologies in the future, as well as for faster and more accurate diagnosis based on these data after relapse.

CHARACTERISTICS:

1. The three-dimensional suture structure adopted by our mattress can effectively relieve the pressure and prevent the patient from secondary injury on the air cushion.
2. The function of automatic turning over is added to solve the problem of over pressure and reduce the workload of family members and medical staff.
3. Remote data exchange, find the most appropriate pressure location, detect and report data, prevent the occurrence of pressure sore in advance and give early warning.
4. In the future, our program can provide a large number of patient data for medical staff around the world, so as to facilitate research, establish a better rehabilitation model, and obtain patients' cases
5. Assist in the treatment of pressure sore, the key points need long-term care and treatment, greatly reducing the workload to ensure the completion of the treatment cycle with quality and quantity.
6. Help disabled, chronic patients (bedridden, often sitting still patients) to effectively prevent the generation of pressure sores, so as to avoid secondary diseases.
7. Detect the internal air pressure data, pump and change the gas in real time to keep the air pressure stable.

INTRODUCTION OF SPECIAL COMPONENTS:

1. The mattress is mainly made of PVC material, which has good sealing performance and is good for gas storage. Besides, the material is with little friction and is soft, which is not easy to cause secondary damage to patients.
2. The brushless DC motor is used as the pumping power device, which is with the advantages of continuous and fast rotation speed, high output rating, stable operation and small volume that can continuously inflate the air cushion to maintain the volume.

INTRODUCTION TO SPECIAL PROPERTIES:

This product changes the size of the air cushion to help patients turn over. To reach this goal, the stability of the product and the good air tightness of the product must be ensured. We take the following two methods to ensure the airtightness of the product;

1. We will install an air pressure monitoring meter inside the air cushion, and install a film sensor inside to transmit the data to the app through the signal. The meter and the app together monitoring air pressure changes simultaneously;
2. The three-dimensional stitching of the edge of this product by hot melt glue ensures that there will not be a large amount of air leakage due to the material itself. Simultaneous Air pressure monitoring alarm and the reliable sealing materials can help ensuring the stability of the product

Prospect: This product is expected to become a unique pressure ulcer care mattress in China, which can effectively help pressure ulcer care. It has the advantages of high practicability, low cost, easy production and use. It saves a lot of human care costs and facilitates the care of family members and medical staff. Since we consider all disabled elderly patients in the world as potential users, this product has great potential to become a global hot-sale product after reasonable promotion. Due to the deigns and the material we use, the product can be reused. Therefore, it will not cause large amount of environmental pollution and waste.