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The mattress manufacturer has tested the technology used in the Panacea Immerse mattress to assess its comfort and pressure redistribution properties.

A full study, entitled *Prevention and Treatment of Pressure Ulcers with a Unique Open-Cell Foam Mattress with a Modified Top Layer in General Medical-Surgical Patients*, is included for your convenience.



The findings show that, when used properly as part of a comprehensive care program, the Panacea Immerse technology ***did not lead to skin breakdown in patients with intact skin at the time of admission***, and ***improved existing skin integrity in over 75% of patients with existing decubitus ulcers***.

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# ***Prevention and Treatment of Pressure Ulcers with a Unique Open-Cell Foam Mattress with a Modified Top Layer in General Medical-Surgical Patients***

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## **Clinical Problem**

Pressure reduction and redistribution is essential in the prevention of pressure ulcers. Reports of viscoelastic foam use in specific clinical populations suggest that these surfaces may be more effective than devices classified as Group 1 under Medicare policy and the literature.<sup>1, 2, 3</sup> Previous in vivo studies have shown that the Open-Cell Visco Mattress with Modified Top Layer offers greater average and maximum weight reductions versus other viscoelastic mattresses<sup>4</sup> with a 49.2% reduction in average peak pressure.<sup>5</sup> It is unknown if routine use of the Open-Cell Visco Mattress with Modified Top Layer in general medical-surgical patients may be more effective than traditional Group 1 support surfaces. Therefore, we conducted an evaluation in medical-surgical patients to analyze the potential of this technology to aide in reducing the incidence of new pressure ulcers and healing existing ones.

## **Methodology**

- During a 30-day period, medical-surgical patients were randomly placed on one of six Open-Cell Visco Mattresses with Modified Top Layers upon admission to a central Connecticut hospital or upon transfer from the critical care unit and prospectively evaluated during hospitalization.
- Data on diagnosis, sex, age, weight, length of stay, body mass index (BMI), Braden scores, PUSH Tool scores, and skin condition were recorded for all patients who were placed on the Open-Cell Visco Mattress with Modified Top Layer.
  - Braden Scores were determined on admission or transfer, daily and upon discharge.
  - Skin assessment was performed daily.
  - PUSH Tool scores were calculated for patients who were admitted with wounds or developed wounds regardless of etiology on admission and at discharge.
  - Discharge skin assessment included the following:
    - Did skin intact on admission remain so at discharge?
    - Did skin with altered integrity on admission improve at discharge as determined by PUSH Tool score?
    - Did patient develop alteration in skin integrity while hospitalized?
    - If yes, what type of alteration?
  - Professional caregivers and patient comments were also noted.

## Results

### Demographics

- 54 patients used one of six identical mattresses over a 30-day period.
- Sex: 33 males, 21 females
- Mean age: 67.4 (range 39–99)
- Mean length of stay: 3.87 days (range 2–9)
- Two patients expired as was expected (i.e., were admitted as hospice care)

### Body Mass Index

- Mean BMI: 27.5 (range 14.3–47.9)
- Percentage underweight as determined by BMI: 5.6%
- Normal weight: 31.4%
- Overweight: 29.6%
- Obese: 33.4%

### Braden Scale Scores

- Mean on admission: 17.5 (range 9–23)
- Low or no risk: >18 (n=13)
- Mild risk: 15–18 (n=32)
- Moderate risk: 13–14 (n=7)
- High risk: 10–12 (n=1)
- Very high risk: <9 (n=1)
- Mean on discharge: 17.6 (range 8–22)

### Admission Skin Assessment

- Skin integrity altered at time of placement on mattress: 20.3% (n=13 patients)
- Type of skin integrity alteration: pressure ulcers (n=5), venous leg ulcers (n=1), surgical incisions (n=2), skin tears (n=2), irritant dermatitis (n=2), cellulitis from dog bite (n=1)

### Pressure Ulcer Data

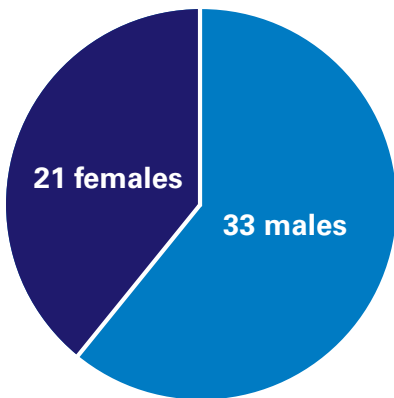
- Pressure ulcers on admission: 9.2% (n=5 patients with 9 pressure ulcers)
- Patient #1: Stage II on sacrum; Stage I on each buttock (total of 3 ulcers)
- Patient #2: Stage I ulcers: sacrum, right and left sacroiliac (total of 3 ulcers)
- Patient #3: Stage II on heel
- Patient #4: Stage IV on heel
- Patient #5: Stage I on sacrum
- Mean Pressure Ulcer Scale for Healing (PUSH Tool) score: 5.1 (range 2–9)
- 1 patient with 3 pressure ulcers: healed
- 2 patients: ulcers improved by discharge
- 2 patients: pressure ulcer showed no improvement but did not worsen as expected (hospice patient)
- Most impressive result reported by nursing staff: 99 y.o. dying patient admitted with 3 Stage I pressure ulcers; no fluid intake; hypotensive; Braden score declining daily; on MS drip for pain
- No worsening of existing pressure ulcers that were considered to be Kennedy Terminal Ulcers (KTUs) in hospice patients
- No new ulcers developed

### Discharge Skin Assessment

- Did skin intact on admission remain so at discharge?  
*Yes, for 41 subjects with skin intact on admission*
- Was skin with altered integrity improved at discharge?  
*20.3% (13 patients) admitted with altered integrity; 10 of these improved at discharge*
- Did patient develop alteration in skin integrity while hospitalized?  
*None of 54 patients developed alteration in skin integrity during one-month trial*
- All patients reported positive comments regarding comfort. Staff reported greater ease of transfer, turning and improved patient mobilization/mobility as compared to traditional surfaces

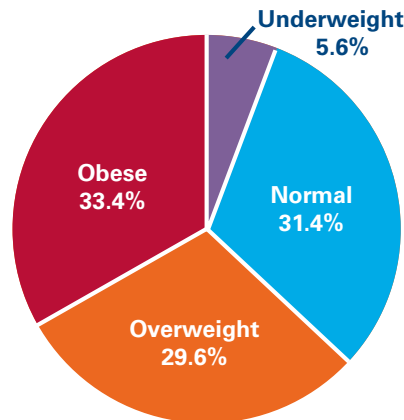
# Results

## DEMOGRAPHICS



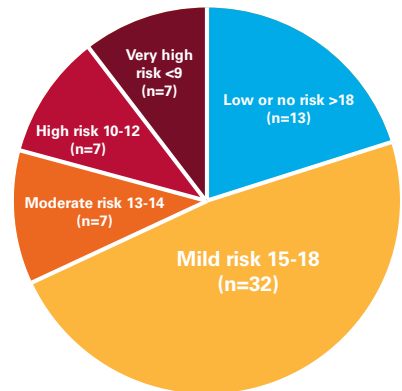
54 patients used one of six identical mattresses over a 30-day period.

## BODY MASS INDEX



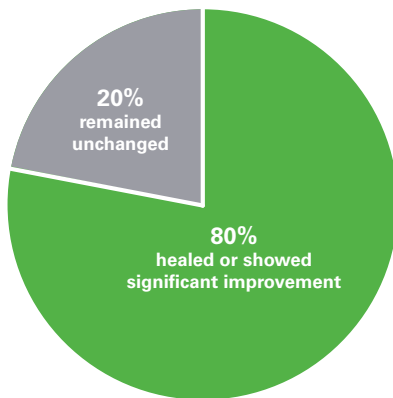
Mean BMI 27.5 (Range 14.3-47.9)

## BRADEN SCALE SCORES / RISK LEVEL



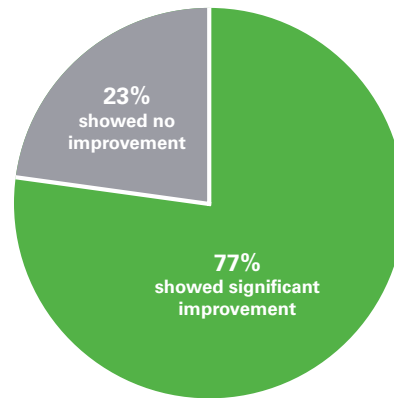
Mean risk level on admission 17.5 (range 9-23), Mean risk level on discharge 17.6 (range 8-22)

## PUSH (PRESSURE ULCER SCALE FOR HEALING)-EXISTING PRESSURE ULCER PATIENTS



Of the close to 10% of patients who were admitted with pressure ulcers, 80% healed or showed significant improvement and 20% remained unchanged.

## PUSH (PRESSURE ULCER SCALE FOR HEALING)-ALTERED SKIN INTEGRITY PATIENTS



Of the 23% of patients who suffered from a skin integrity alteration at time of admission, 77% improved by discharge.

## Conclusion

Based on theoretical calculations in this group of patients, the Open-Cell Visco Mattress with Modified Top Layer used in this evaluation was at least as effective in preventing and managing pressure ulcers as the combination of a foam mattress plus static air overlay, the current standard of care for medical-surgical patients. The facility may expect significant cost reduction by eliminating static air overlays and using the Open-Cell Visco Mattress with Modified Top Layer. Because patients with existing pressure ulcers showed evidence of improvement, the new mattress may warrant classification as a Group 2 support surface. Further study is recommended.

## Notable Findings

- 75% of patients had a Braden scale score of <18 and thus, were at risk.
- There were **zero** incidents of new pressure ulcers for **all patients**.
- More than 20% of the patients were admitted with altered skin integrity. 77% of these patients improved at discharge.
- Close to 10% of the patients had pressure ulcers on admission. 80% of these patients improved or healed; 20% remained unchanged.
- Hospital staff reported greater ease of turning and transfer and increased patient mobilization as compared to surfaces used under current protocol.
- P.T. reported improved patient compliance with physical therapy.
- All patients reported positively regarding comfort.

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