

# Evaluation of Long-Term Performance Utilizing a High Absorbency Adult Incontinence Brief in a Long-Term Care Setting and its Impact on Overall Skin Health

## Presenter/Investigator:

Karen Lou Kennedy-Evans, RN, CS, FNP  
KL Kennedy, LLC • Tucson, Arizona

**Introduction:** Transepidermal Water Loss (TEWL) is defined as the measurement of the quantity of water that passes from inside the body through the epidermal layer to the surrounding atmosphere via diffusion and evaporation processes. In this trial, TEWL readings were taken using a Vapometer (Delfin Instruments, Kuopio, Finland)\*\*. The Vapometer is a noninvasive closed chamber system which calculates the evaporation rate from the increase of relative humidity in the measurement chamber. A normal TEWL reading for an average healthy adult is around 10 +/- 5.

A high TEWL rate is indicative of a greater chance of skin breakdown due to exposure of urine and stool resulting in a higher moisture level on the skin. A lower average reading indicates a lesser chance of skin breakdown and other related complications. A previous trial on TEWL indicated many standard incontinence products on the market today have a TEWL rate 3-5 times greater than the High Absorbency Adult Incontinence Brief (HAB)\*\*\* brand in this trial. These findings suggest incontinence as a contributing factor in compromising skin integrity which may result in pressure ulcers. Therefore, skin integrity is positively impacted by the reduction of moisture (urine and stool) coming into direct contact with the skin<sup>2</sup>.

## Objective:

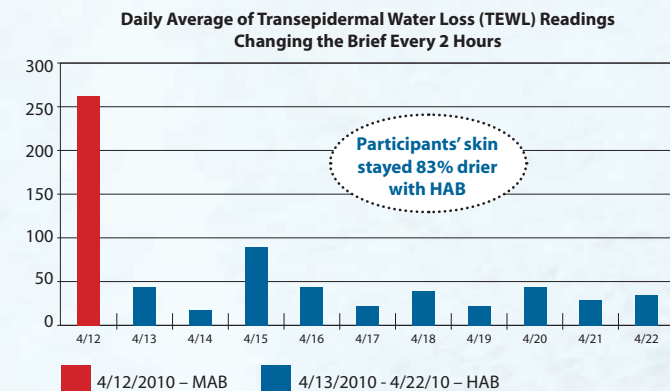
A.) Determine whether the skin under the HAB can be as dry after 8 hours of urine incontinence using the same one brief as the skin under an Industry-Average Moderate Absorbency Brief (MAB)\* is after 2 hours of urine incontinence using a new brief every 2 hours.

B.) Determine the effects of brief selection utilizing TEWL rates in elderly residing in long-term care facilities and monitoring those changes, while in the trial of HAB to be used to capacity or up to 8 hours whichever comes first.

C.) Determine if a lower average TEWL rate may be maintained while wearing the trial's HAB for longer periods of time than standard protocol of changing every 2 hours.

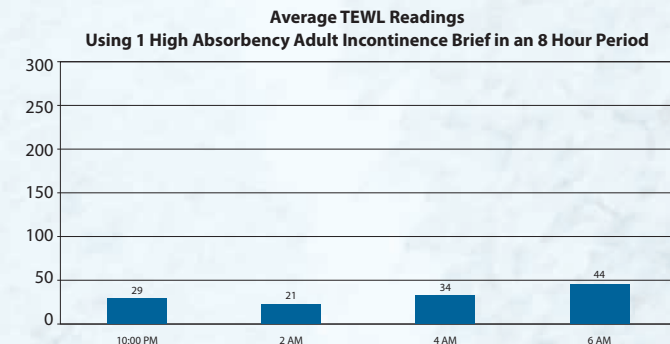
**Methods:** 20 elderly individuals residing in a long-term care facility participated in the trial. The participants underwent TEWL readings with their usual MAB and measurements were taken using the Vapometer. Participants were then acclimated to a HAB where they underwent repeated TEWL measurements for 11 days (figure #1). Ten of the trial participants were monitored up to 8 consecutive hours in a single brief\*\*\*. TEWL readings were measured and recorded approximately every 2 hours on same participants per the facility schedule for checking and monitoring participants as shown in figure #2. All participants returned to MAB at the conclusion of the trial. Data and clinical observations of skin health were collected and recorded by independently contracted nurse researchers.

**Results:** Initial TEWL readings\* of all 20 participants revealed 13 with readings greater than 200 gm/m<sup>2</sup>, including one participant with a reading of 675 gm/m<sup>2</sup>. These initial readings indicate an extremely high moisture level against the skin of these participants. Average baseline TEWL readings prior to the HAB were 265.82 gm/m<sup>2</sup>. HAB average baseline TEWL readings decreased to less than 100 gm/m<sup>2</sup> within 24 hours after changing to the HAB with average readings of 42.74 gm/m<sup>2</sup> making this statistically significant. There is statistical significance at P<0.05.



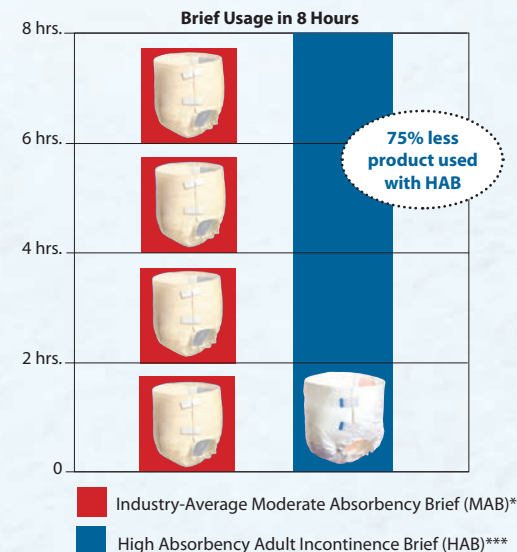
- Initial average TEWL reading in MAB was over 266 with 13 participants over 200.
- Average of 42.74 was achieved after only 24 hours upon conversion to HAB.
- A 622% reduction in the average TEWL moisture level reading was achieved upon conversion from the MAB to the HAB.

Figure #1



- Average TEWL rates of all participants in trial using 1 High Absorbency Adult Incontinence Brief from 10:00 PM until change 6½ to 8 hours later.
- All participants in the 8 hour trial were checked Q2 hours and TEWL rates were recorded.
- All participants previous to trial were changed Q2 hours using industry-average moderate absorbency brief. All patients in trial utilized 1 High Absorbency Adult Incontinence Brief instead of 4 in an 8 hour shift. TEWL rates were consistently below industry average as indicated by previous trial.

Figure #2



- In a controlled trial, the High Absorbency Adult Incontinence Brief reduced the need for brief changes by up to 75% when compared to an industry-average moderate absorbency brief.
- These trials also demonstrate that the HAB maintains drier skin as measured by TEWL compared to the MAB.
- Reduced changes and drier skin are contributing factors to overall participant comfort and well being.

**Conclusion:** Longer wear times of the trial's High Absorbency Adult Incontinence Brief (HAB) resulted in dryer skin and lower TEWL readings than institution's Industry-Average Moderate Absorbency Brief (MAB) being changed every 2 hours. This trial suggests the design and construction of a HAB does have an impact on TEWL readings<sup>3,4</sup>. Changes occur, though not always visually apparent, as soon as 24 hours after placement in the HAB suggesting a reduction in product utilization while maintaining TEWL rates consistent with healthy skin. This suggests both optimal clinical and fiscal outcomes may be achieved by utilizing the HAB.

\* Industry-Average Moderate Absorbency Brief (MAB)

\*\* Vapometer (Delfin Instruments, Finland)

\*\*\* Tranquility® Premium OverNight™ Disposable Absorbent Underwear and ATN™ (All-Through-the-Night) Disposable Brief (Principle Business Enterprises, Ohio) (HAB)

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