

Evaluation of the Free Passage of Fluid Through a Non-Adhering Silicone Wound Contact Layer

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ABSTRACT

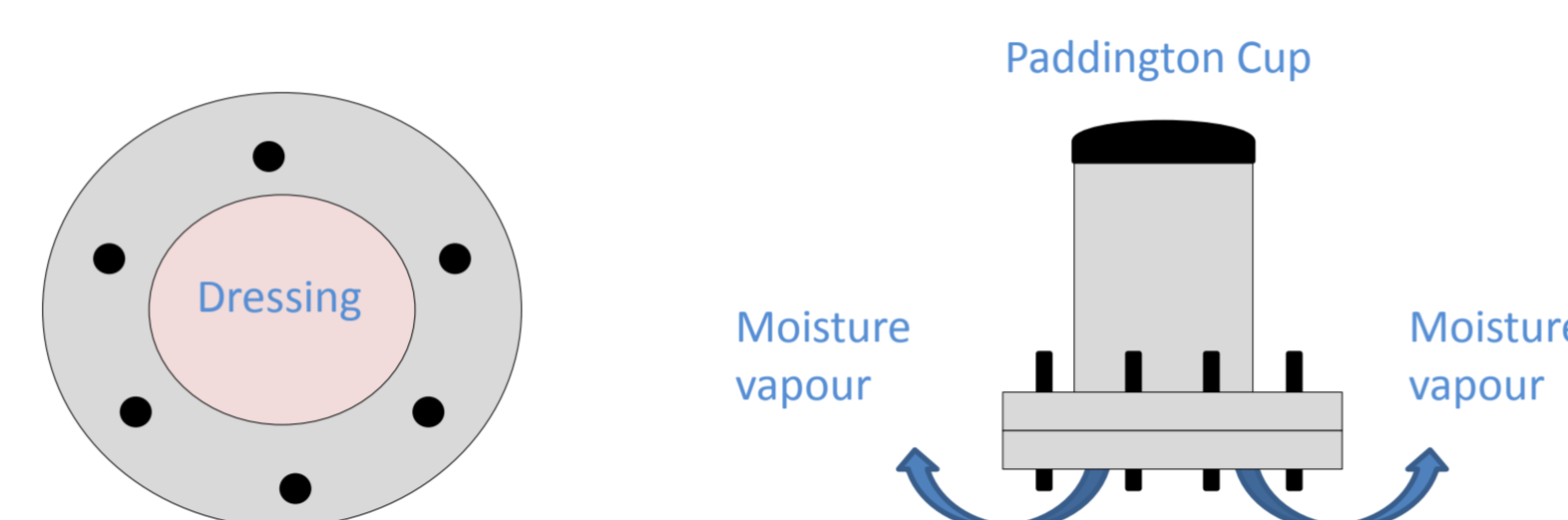
Non-adherent wound contact layers may be used to prevent the adherence of secondary absorbent dressings to the wound. Wounds can produce variable amounts of exudate which must be removed from the wound bed to prevent maceration and deterioration of the wound. If a wound contact layer is used, it is imperative that the dressing is designed not only to be non-adherent but also to allow a free passage of exudate in to the secondary dressing, thereby reducing the risk of pooling of exudate at the wound site. Optimisation of the pore size and open area of the dressing is key in allowing the free passage of fluid.

Several commercially available wound contact layers were evaluated for their ability to allow the free passage of fluid in to a secondary dressing. Fluid passage was assessed using a number of *in-vitro* test methods including WRAP and leg models. A standard test method to evaluate the fluid handling properties of dressings was also used to assess any impact of the presence of the wound contact layer on the performance of a foam dressing.

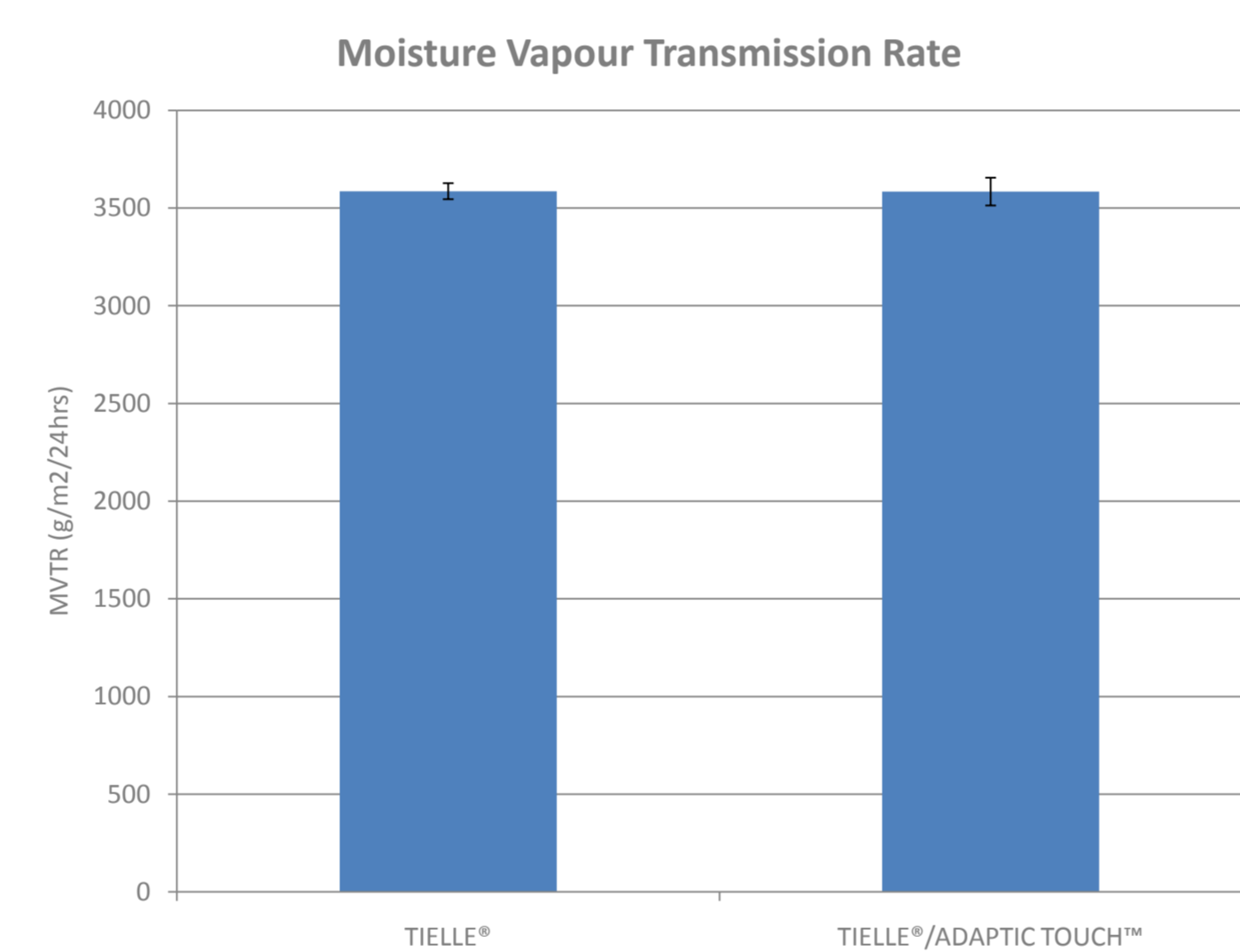
The data showed the primary wound contact layers had allowed passage of fluid through the dressing to varying degrees. A silicone coated non-adherent dressing was shown to allow the free passage of fluid in all models and when used in combination with a foam dressing, no impact was seen on the fluid handling characteristics of the foam dressing. When evaluating non-adherent wound contact layers it is important to not only look at the properties of the primary layer, but also to consider its use in combination with any secondary dressing, and to ensure that it does not compromise the functionality of the secondary product or any adjunctive therapy.

Standard Method for Moisture Vapour Transfer Rate (MVTR) of Wound Dressings (Paddington Cups)

- Moisture Vapour Transmission Rate (MVTR) of secondary absorbent foam dressing in combination with ADAPTIC TOUCH™ using European Standards BS:EN 13726 (part 2.3.2) for measuring fluid handling properties of wound dressings
- A circle of diameter 5.5cm is cut from the wound contact layer and the absorbent dressing, secured in the Paddington cup and the whole apparatus is weighed (a)
- 20ml of deionised water is added to the Paddington Cup and the apparatus is weighed again (b)
- The Paddington cups are incubated at 37°C for 24 hours then re-weighed (c). The MVTR value = b-c and is expressed in g/m²



Results



Presence of wound contact layer does not impede moisture vapour transfer rate

Simulated Leg Model

- Two litre Perspex cylinders stood vertically were used to simulate wounded legs
- A small hole was bored into the cylinders through which simulated wound fluid was pumped via silicone tubing
- The wound contact layers and absorbent dressings were placed centrally over the hole on the opposite side to the tubing
- The wound fluid was coloured with blue dye so its passage to the absorbent dressing could be visualized
- The test was run for 24 hours with the "legs" in the upright position

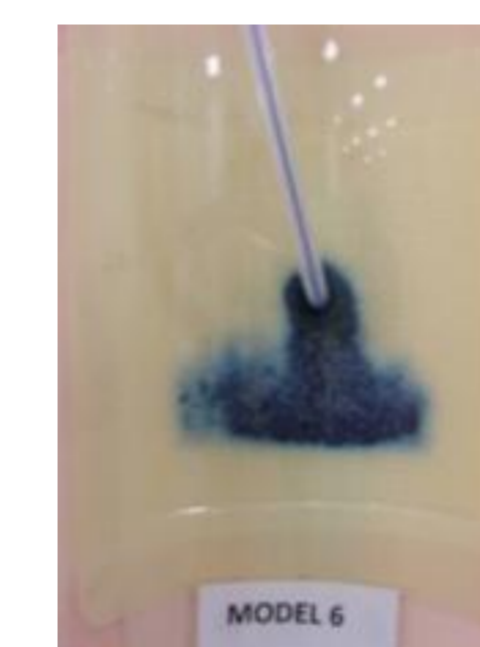
RESULTS



TIELLE® in position



TIELLE® removed from "leg"



TIELLE® / ADAPTIC TOUCH™ in position



TIELLE® / ADAPTIC TOUCH™ removed from "leg"

DISCUSSION

A standard method (Paddington Cup) used to assess the moisture vapour transfer rate (MVTR) of absorbent dressings, was used to assess the impact of combining a primary wound contact layer with a secondary dressing. The results showed that using ADAPTIC TOUCH™ in combination with TIELLE® did not impede the MVTR through the TIELLE® dressing. Maintaining the breathability of the absorbent dressing is vital as it plays a significant role in the dressings wear time and patient comfort.

Evaluation of the commercially available wound contact layers and ADAPTIC TOUCH™ using the WRAP model to assess fluid passage onto the filter paper showed all dressings allowed fluid to pass through to varying degrees. The WRAP models evaluating ADAPTIC TOUCH™, MEPITEL*, MEPITEL* ONE and ASKINA* SILNET showed blue dye to have passed through over a larger area than that from URGOTUL* FLEX although this is more likely to be due to the wicking properties of the absorbent filter paper rather than the wound contact layer as the same volumes over the same time periods were delivered. Ensuring the free passage of exudate to a secondary dressing is essential to the wound as it reduces the likelihood of pooling and to allow the absorbent dressing to perform optimally.

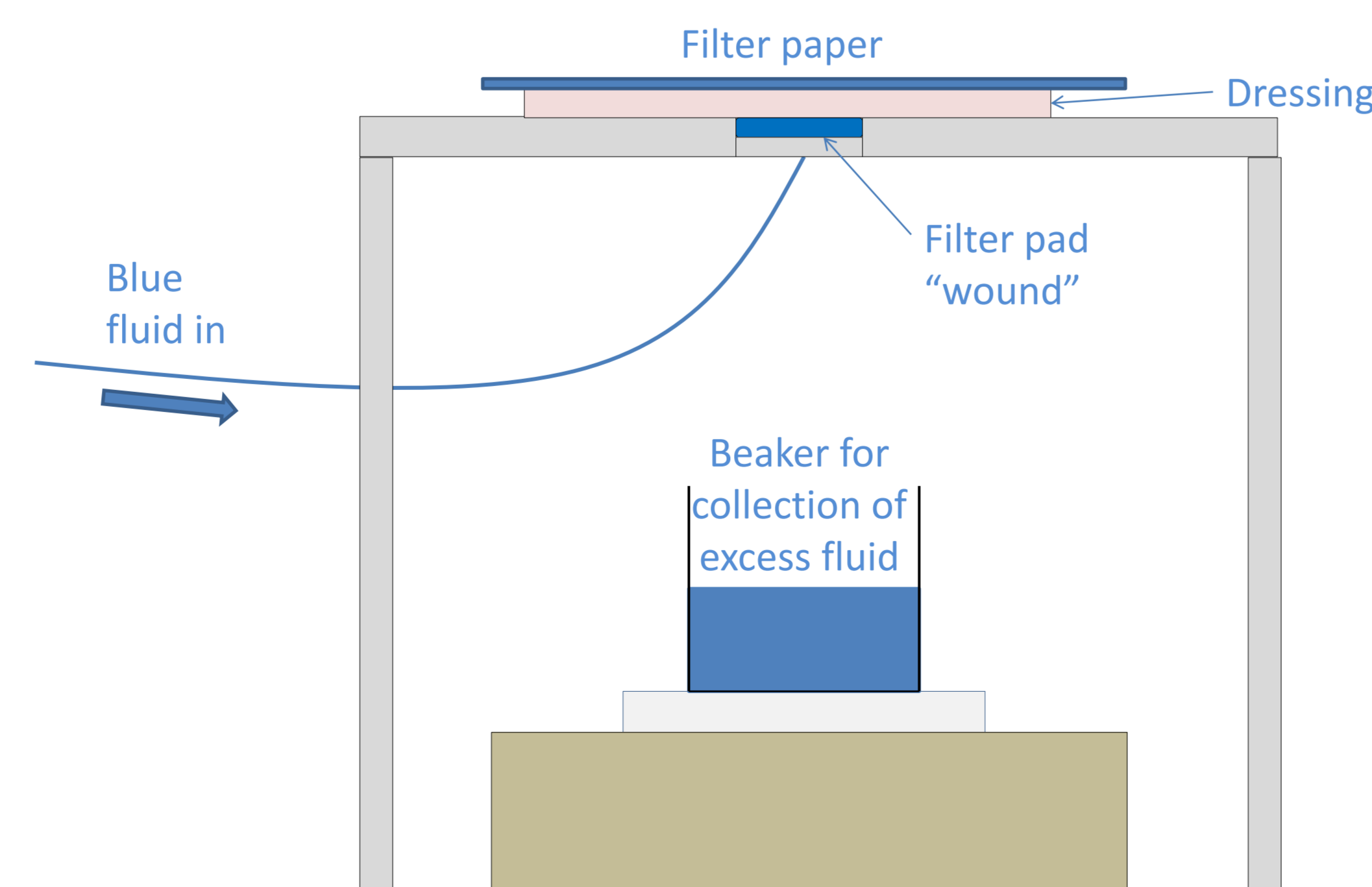
The WRAP model is in a fixed position which does not allow evaluations to be made in other orientation. The simulated leg model allows the evaluation of products to be made in a vertical position. ADAPTIC TOUCH™ was shown to allow the passage of fluid to the absorbent dressing on the vertical leg model.

CONCLUSIONS

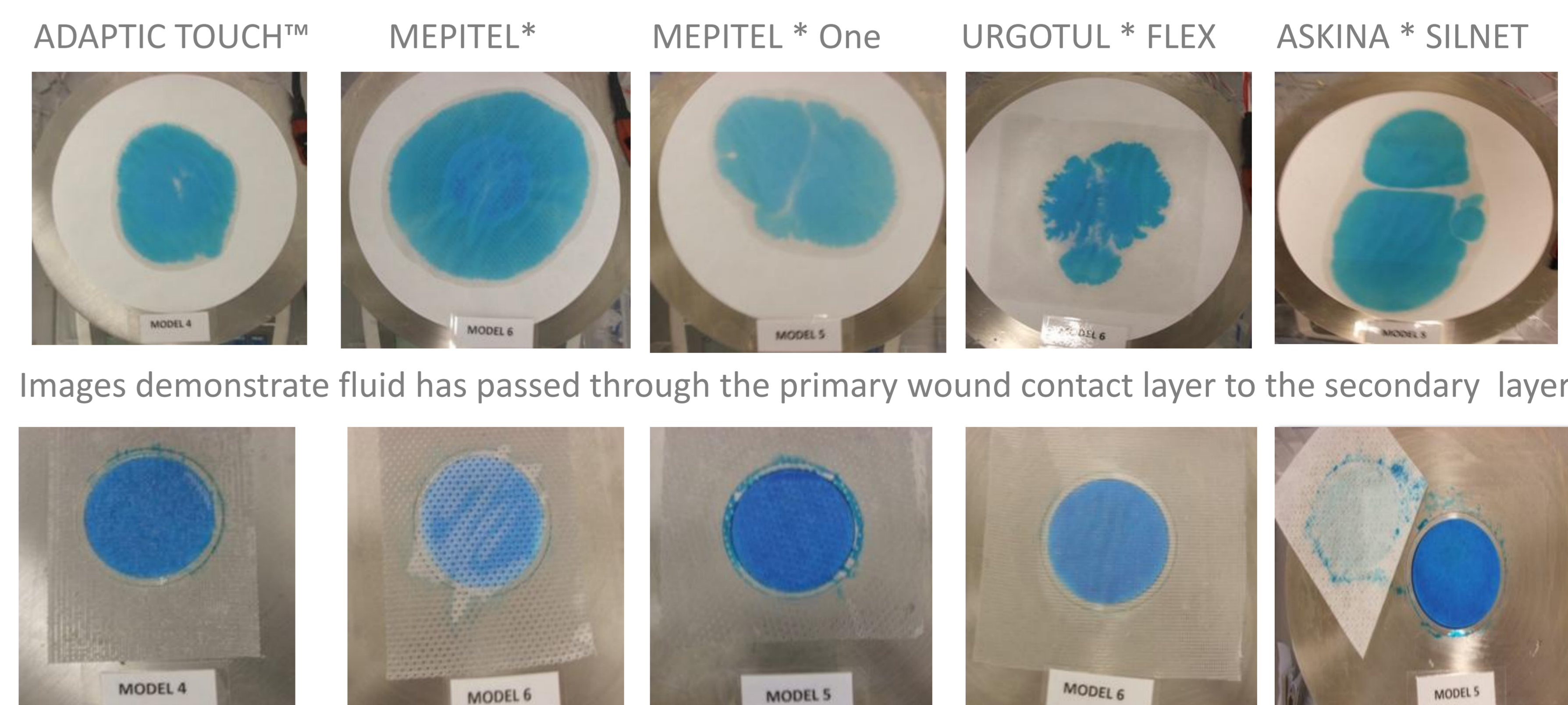
When assessing wound contact layers it is important to consider all aspects of how the dressing may be used. Clinicians may choose to use an absorbent dressing over the wound contact layer, particularly on patients that have exuding wounds. *In-vitro* and *in-vivo* evaluations have demonstrated the ability of ADAPTIC TOUCH™ to allow free passage of fluid to a secondary dressing in a number of simulated models.

WRAP (Wound Care Research for Appropriate Products) Model

- Method developed in collaboration with clinicians, healthcare industries and academics for measuring fluid handling ability of wound dressings
- An absorbent pad is used to spread the fluid across the surface simulating wound fluid production across the surface of a wound
- Wound contact layers were applied flat to a stainless steel plate over the absorbent pad (as to wound)
- Absorbent filter paper was placed on top of the dressing
- Fluid was pumped continuously for 2.5 hours into the dressing from below simulating wound fluid production in a wound
- The wound fluid was coloured with blue dye so its passage to the filter paper could be visualised



RESULTS



Images demonstrate fluid has passed through the primary wound contact layer to the secondary layer