

Portable negative pressure wound therapy

Wound healing and surgical site infections have a substantial social and economic cost, and can increase pressure on healthcare systems. The Avelle system from **ConvaTec** uses negative pressure wound therapy with Hydrofiber Technology to support wound management and surgical incision closure.

Negative pressure wound therapy (NPWT) is used to manage wounds by promoting closure through application of mechanical strain to the wound surface, removal of excess fluid and stabilisation of the environment. In 1993, NPWT was first described with the intention of wound healing, and by 1997 it was being used in a clinical setting. Since then, NPWT techniques have been applied in the management of a broad variety of chronic and difficult-to-treat wounds, including diabetic foot wounds, skin grafts and closed surgical incisions. Delayed wound healing and surgical site infections (SSIs) also have a substantial social and economic cost, as well as increasing pressure on healthcare systems across the world.

The original NPWT devices were relatively large and cumbersome, incorporating bulky pumps and canisters for exudate management. Advances in device technology have focused on enabling greater patient mobility, increasing quality of life and improved outcomes. Thus, NPWT use has become more widespread. Recent innovations in the therapy have included the development of more portable and disposable single-patient-use devices, known as dNPWT, that allow treatment to be delivered in an outpatient setting. With a lower cost base, these devices are emerging as a prophylactic option, especially in the field of closed incisions, known as ciNPWT.

The Avelle NPWT system

The Avelle system is the first disposable, portable, canister-less NPWT device to incorporate the benefits of Hydrofiber Technology within the dressing. The Avelle NPWT system combines a sterile dressing and negative pressure applied to the wound by a disposable, portable vacuum pump.

The device is for patients with a low to moderately exuding wound that would benefit from NPWT, such as chronic wounds, acute wounds, traumatic wounds, subacute and dehisced wounds, flaps and grafts, and surgically closed incisions. The Avelle dressing may be

worn for up to seven days, but may need to be changed sooner, depending on the level of exudate and according to clinical need. The Avelle pump is a single-patient-use device that is disposable, portable and battery powered. The pump may be used for up to 30 days and can therefore be used for multiple dressing changes within this period.

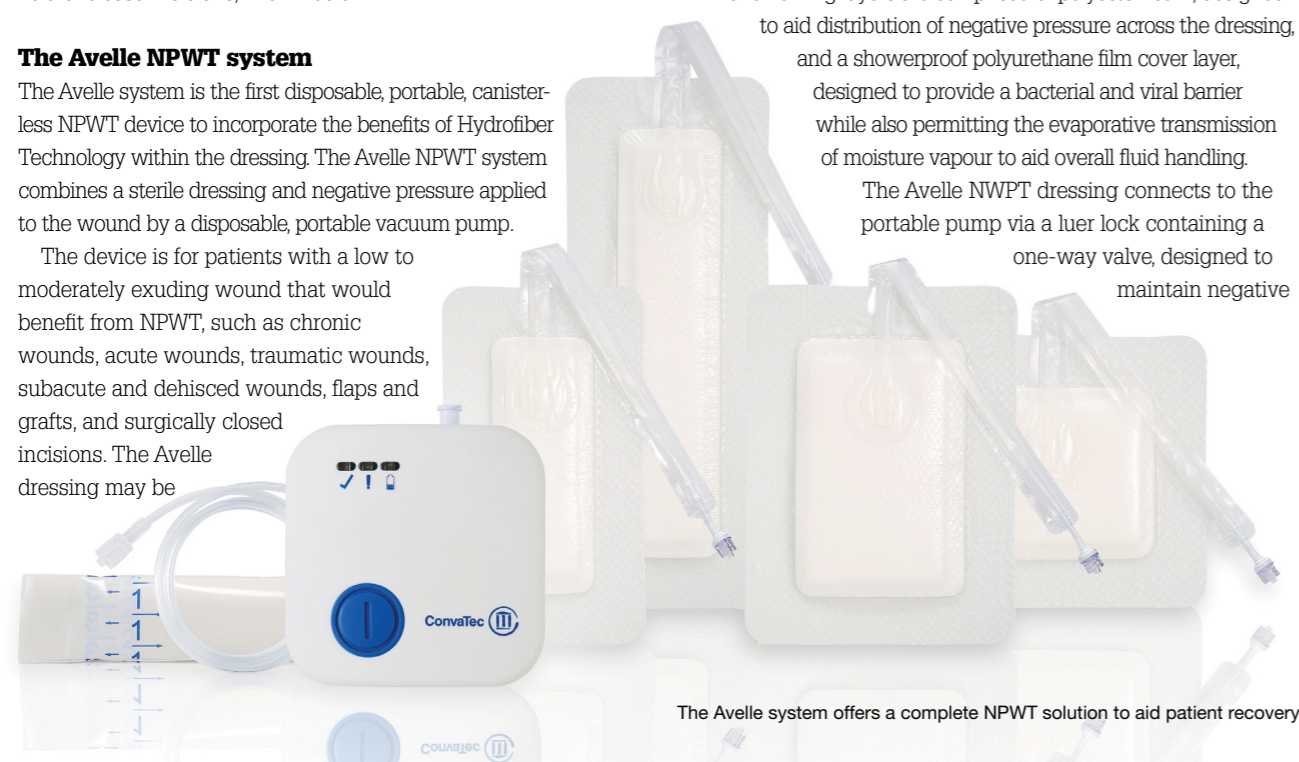
The Avelle NPWT dressing

The Avelle NPWT dressing comprises a wound-contact layer constructed of strengthened Hydrofiber Technology, retaining structural integrity following exudate absorption, and an additional eight layers of Hydrofiber Technology core, fenestrated to enhance fluid-handling capabilities.

The wound-contact layer is surrounded by a silicone adhesive border that gently secures the dressing in place to the peri-wound skin. The Hydrofiber wound-contact layer and the core of the dressing form a gel upon contact with wound exudates, and are designed to help create a beneficial, moist wound environment for healing and locking out potentially harmful bacteria. In wounds where a filler layer is required, use of AQUACEL Extra or AQUACEL dressings would be appropriate in combination with the Avelle NPWT dressing.

The remaining layers are comprised of polyester foam, designed to aid distribution of negative pressure across the dressing, and a showerproof polyurethane film cover layer, designed to provide a bacterial and viral barrier while also permitting the evaporative transmission of moisture vapour to aid overall fluid handling.

The Avelle NPWT dressing connects to the portable pump via a luer lock containing a one-way valve, designed to maintain negative



The Avelle system offers a complete NPWT solution to aid patient recovery.

pressure for up to 60 minutes, should the pump need to be disconnected from the dressing. Upon application, the Avelle NPWT system produces a continuous negative pressure of 80mmHg (+/-20mmHg) across the wound or incision surface. A negative pressure of 80mmHg has been shown to enhance microvascular blood flow in an in-vivo peripheral wound model.

Complete incision management

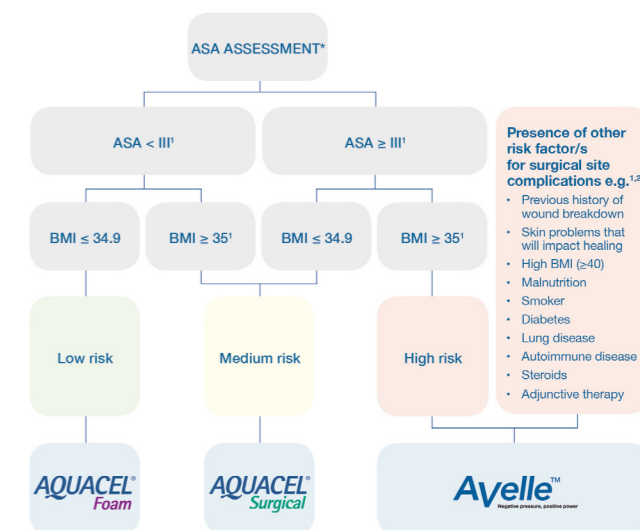
The use of ciNPWT is a viable option for many operative procedures, including abdominal, cardiothoracic, colorectal, obstetric, orthopaedic, paediatric, plastic/breast, trauma and vascular surgery. It thus plays an increasingly important role in wound management, enhancing various interventions in a patient's post-operative pathway.

This form of management can reduce incision-line tension, decrease oedema, improve lymphatic drainage, reduce seroma and haematoma, prevent incision complications such as dehiscence and improve scar quality. Application of ciNPWT has also been shown to reduce length of hospital stay and readmission rates.

It is recommended to start closed-incision negative pressure therapy (ciNPWT) immediately after the closure of the incision, stopping management between seven days and the time point to remove stitches; for example, 12 days.

The World Health Organisation guidelines on the prevention of SSIs have made a conditional recommendation regarding use of NPWT. According to the guidelines, "the prophylactic use of NPWT in adult patients with primarily closed surgical incisions has been reported to also decrease the incidence of surgical wound dehiscence". Avoidance of surgical site complications may:

- reduce morbidity and mortality
- reduce length of hospital stay and unplanned readmissions
- improve hospital efficiency
- reduce indirect and direct healthcare costs
- reduce social and psychological costs
- enhance oncological survival



ConvaTec can provide a comprehensive solution for post-operative incision management.

- enhance patient satisfaction and departmental or institutional standing.

The Avelle NPWT system incorporates Hydrofiber Technology into a portable NPWT device, allowing patients to experience the combined benefits of NPWT and Hydrofiber Technology for up to 30 days. An incision pathway (pictured) demonstrates how a variety of risk factors can be considered to help reduce SSIs, length of stay, readmissions and expenditure, as well as improve patient outcomes when managing closed incisions. Complete incision management solutions from ConvaTec ensure that the right product, for the right patient, is applied at the right time. ■

References available upon request.

Further information
ConvaTec
www.convatec.co.uk

