CASE SERIES

# Excellent Healing of Pediatric Wounds Using Polymeric Membrane Dressings*

Linda Benskin, RN, BSN, SRN (Ghana), Church of Christ Mission Clinic, PO Box 137, Yendi, Northern Region, GHANA, West Africa

Malaria and malnutrition bring anemia and non-healing wounds. Note this girl's pale nail beds. These chronic wounds cleaned up and healed quickly using polymeric membrane dressings.

The polymeric membrane dressings diminished wound pain quite well. They also loosened and absorbed slough (see photo). So, painful wound cleansing was rarely needed at dressing changes.

This boy put a rubber band around his toe to block the pain of a scorpion sting. Polymeric membrane dressings conformed to the raw area well. Granulation formed quickly. The toe survived.

## PROBLEM

Treating wounds in an active pediatric population presents special challenges to clinicians. Pain relief, not just during dressing changes, but especially then, greatly enhances compliance. Dressings must conform well to the wound surface to prevent contamination during exuberant activity. The toxicity of substances used in cleansing or dressing wounds is a serious concern, because young children absorb chemicals through the skin more easily than adults and their immature organs are less able to cope with them. Brisk healing is a major asset as well.

## RATIONALE

Flexible non-toxic polymeric membrane dressings often provide dramatic, drug-free pain relief by inhibiting nociceptor activity at the application site. Their non-adherent design makes dressing removal comfortable as well. They contain a built-in wound cleanser, so no manual wound cleansing is usually needed during dressing changes, allowing for less disruption of new growth at the wound bed and quick and easy dressing changes.

In addition to the built-in wound cleanser, polymeric membrane dressings contain glycerol and a super-absorbent starch. These hydrophilic dressing components draw fluid from the body into the wound bed, floating the slough loosened by the cleanser and pulling it into the dressing with excess wound fluid. The fluid is locked into the dressing as a gel. This fluid flux concentrates the body's natural healing nutrients in the wound bed, safely supporting very rapid wound healing. The glycerol soothes and hydrates dry wounds while the super-absorbent starch takes up excess wound fluid, balancing moisture superbly.

## METHODOLOGY

After initial cleansing and/or debriding the wound, polymeric membrane dressings were applied to exposed surfaces of wound; changed when saturated. Since polymeric membrane dressings usually eliminate the need for wound cleansing at dressing changes, interested parents or older siblings were able to dress the wounds, eliminating long walks to the clinic.

## OBJECTIVES / PURPOSE

1. Discuss how well polymeric membrane dressings maintain good contact in complex wounds in mobile, active patients.
2. Consider the advantages of using polymeric membrane dressings in terms of passive continuous cleansing of the wound bed, which usually eliminates painful and time-consuming wound cleansing during dressing changes.
3. Note that non-toxic polymeric membrane dressings are able to donate moisture to dry wound areas while absorbing excess fluid as needed, promoting rapid wound healing.

## RESULTS

In our clinic in rural northern Ghana, our pediatric patients' wounds, many of which had been chronically infected, stayed clean and healed quickly when we used polymeric membrane dressings and cavity filler. We found that our pediatric patients frequently developed fungal and bacterial infections under conventional modern moist dressings, but we rarely encountered infections under polymeric membrane dressings. The dressings and dressing changes were comfortable to the children, leading to good compliance.

## CONCLUSION

Polymeric membrane dressings were an elegant solution to the challenges presented by pediatric patients at our clinic in West Africa and quickly became our dressing of choice for both acute and chronic pediatric wounds. With the current increase in CA-MRSA, the author feels this unique dressing will quickly gain prominence in developed countries as well.

## BIBLIOGRAPHY


1. Beitz AJ, Newman A, Kahn AR, Ruggles T, Eikmeier L. A polymeric membrane dressing with antinociceptive properties: analysis with a rodent model of stab wound secondary hyperalgesia. J Pain. 2004 Feb;5(1):38-47.
2. Worley CA. So, what do I put on this wound? Making sense of the wound dressing puzzle: Part II. Dermatol Nurs. 2005;17(3):203-205.
3. Fluhr JW, Gloor M, Lehmann L, Lazzerini S, Distante F, Berardesca E. Glycerol accelerates recovery of barrier function in vivo. Acta Derm Venereol. 1999 79: 418-421.
4. Baranoski S, Ayello EA. Wound Care Essentials: Practice Principles. Lippincott Williams & Wilkins. Ambler, PA. 2004.
5. Foresman PA, Etheridge CA, Rodeheaver G. A wound dressing evaluation of partial-thickness rat wounds. SAWC Health Management Pub. 1991; Annual Meeting Power Point Presentation.
6. Fowler E, Papen JC. Clinical evaluation of a polymeric membrane dressing in the treatment of dermal ulcers. Ostomy/Wound Manage. 1991;35:35-38,40-44.
7. Fleck, CA. Managing wound pain: today and in the future. Advances in Skin and Wound Care 2007;20:3,138-145.


This case series was unsponsored. The clinic receives donations from many sources, including Ferris Mfg. Corp., who contributed to this poster presentation. Gloves were often in short supply.

Scalds are often quite painful, and in this location, the dressing needs to be very flexible to maintain good contact with the wound bed. Polymeric membrane dressings were ideal here.

We bevel-cut polymeric membrane cavity filler before placing it into deep ulcers. If it became over-saturated with liquefied slough, it rose up, rather than putting pressure on the wound edges.

This dehisced shoulder incision originally had exposed structures which needed to be kept moist. The moisture-donating quality of polymeric membrane cavity filler met this need.

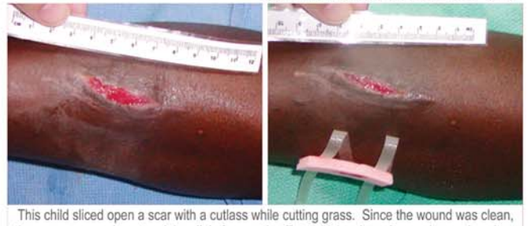
*PolyMem®, PolyMem Max®, and PolyMem Wic® Cavity Filler are made by Ferris Mfg. Corp., Burr Ridge, IL 60527 USA

A simple insect bite can lead to osteomyelitis if infection is not properly addressed. This wound was 0.7 cm deep. Children are unaware of the need to thoroughly clean wounds, and resist such painful procedures. After cleansing, we placed polymeric membrane wound filler deep in the wound with a standard polymeric membrane dressing over it. No more pain, and the wound closed in three weeks.

This schoolgirl came to the clinic to have a keloid on her elbow, which caused her significant discomfort, excised. Using polymeric membrane dressings permitted us to completely avoid disturbing the wound bed at dressing changes. The wound closed quickly. The resultant scar is small and flat.

This baby's mother was forbidden from bringing her to the clinic for treatment, so often the dressings would remain in place for much longer than is desirable. The wound remained moist without maceration, inflammation decreased and it granulated.

Local wound treatments with boiled powdered leaves rotted and then supported nasty infections. The second photo, from the initial day after thorough wound cleansing, shows the maceration caused by the purulent exudate. The third photo was taken only four days later. Polymeric membrane wound filler was needed for only two days. Healing was brisk.



This child sliced open a scar with a cutlass while cutting grass. Since the wound was clean, there was no need to attend the clinic frequently. Extra-thick polymeric membrane dressings absorb more exudate than standard dressings, so they allow for longer intervals between dressing changes. These photos were taken three days apart. A new dressing is pictured.

Presented at: 20th Annual Symposium on Advanced Wound Care (SAWC) · Poster #33 April 28 - May 1, 2007 · Tampa, FL USA; 22nd Annual Clinical Symposium on Advances in Skin & Wound Care · Poster #171 October 11 - 14, 2007 · Nashville, TN USA; 11th Annual Wound Care Congress • Poster #9 October 25 - 27, 2007 • Houston, TX USA; 3rd Congress of the World Union of Wound Healing Societies • Poster #PF240 June 4 - 8, 2008 • Toronto, Ontario Canada; 8th Annual American Professional Wound Care Association • Poster #3 April 2 - 5, 2009 • Philadelphia, PA USA; 41st Annual WOCN Conference • Poster #3228 June 6 - 10, 2009 • St. Louis, MO USA