

Introducing A Scientifically Engineered Dressing That Provides Superior Wound Healing



Fits The Wound
Improves Patient Comfort
Easy Application And Removal

Introducing Altrazeal®

The Product

Altrazeal® is a revolutionary treatment technology which promotes wound healing. The patented dressing is unique among all wound dressings in properties and performance. It has been specially designed to address a number of extrinsic factors that hinder wound care, providing a solution that impacts all phases of wound healing.

Altrazeal® is a methacrylate-based, transforming powder dressing engineered to cover and protect the wound and to provide an ideal moist wound healing environment that supports cellular function and tissue repair. Its non-resorbable, sterile granules aggregate when hydrated with saline to form a moist, flexible, oxygen permeable film that fits and seals the wound.

The skin-like barrier serves many functions that promote healthy granulation tissue growth:

- ◆ seals and protects the entire wound surface
- ◆ allows oxygen transportation
- ◆ manages exudate through vapor transpiration
- ◆ prevents penetration of exogenous bacteria

Altrazeal® enables extended wear time, allowing the wound to heal without disturbing the wound bed with frequent dressing changes.

Wide Range of Applications

Altrazeal® works best on clean wounds with mild to moderate exudation.

Surgical*

Operative Incisions/Wounds
Dermatological Excisions
Dehiscence Wounds

Acute

Skin Graft Donor & Recipient Sites
Trauma/Lacerations (+Skin Tears)
First and Second Degree Burns

Chronic

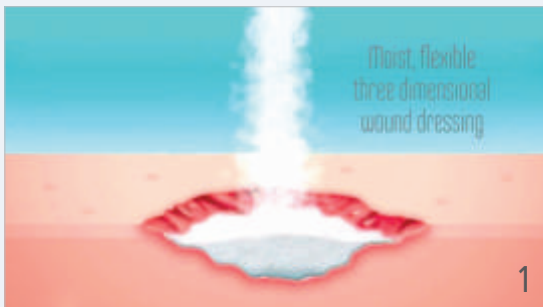
Diabetic Foot Ulcers
Venous and Other Leg Ulcers
Pressure Ulcers

* Indicated for use as a dressing only and not a replacement for sutures

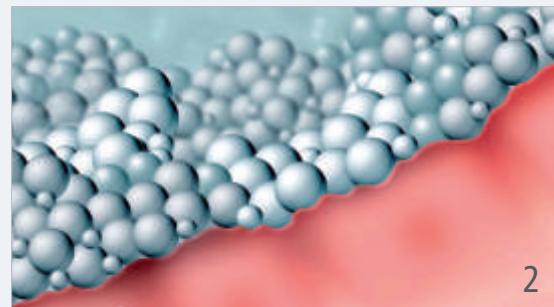
Synergistic applications with other modalities

NPWT Transition Dressing | Total Contact Cast | Compression Bandage | Hyperbaric Oxygen Therapy

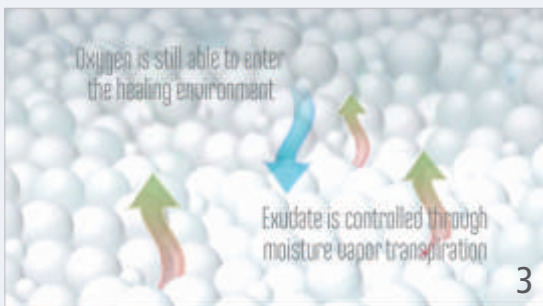
Mechanism of Action



Pour granules to cover the entire wound bed and drip saline to accelerate hydration



Upon contact with moisture, the granules aggregate into a matrix



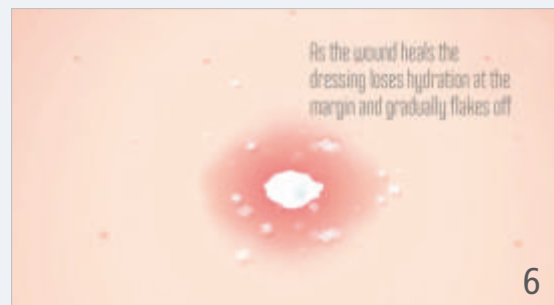
The matrix forms an oxygen permeable dressing that facilitates exudate management



The dressing fits and seals the wound to form a skin-like barrier



It also prevents entry of microorganisms



The dressing flakes off as the wound heals

Easy Application and Removal

The Process



Step 1: Select a mild to moderately exuding wound



Step 2: Clean and prepare the wound for application



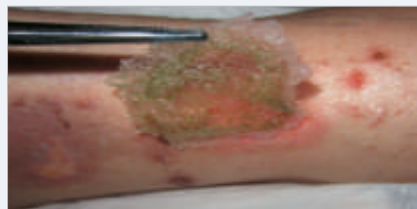
Step 3: Pour granules to cover the wound bed, using a spatula if required, to form a thin, uniform layer of Altrazeal[®]



Step 4: Accelerate transformation by dripping or spraying saline or an equivalent



Step 5: Secondary dressing is not required. Apply only if deemed clinically necessary



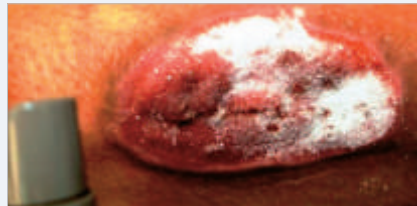
Step 6: To change the dressing, moisten Altrazeal[®] with saline and remove with forceps

Important Information

- ♦ One blister pack can cover a 10 cm x 10 cm area
- ♦ Secondary dressing not required unless clinically necessary
 - Typically in highly exuding wounds or in high friction areas
 - Dressing should be non-adherent and non-occlusive
- ♦ Patients may shower with the dressing
 - Special care should be taken not to submerge the dressing
- ♦ Change dressing if clinically necessary
 - Typically applied for 7 days, but may be worn for longer
- ♦ Do not apply with oil-based products as they prevent proper transformation



Superficial wounds require a 1 to 2 mm layer of Altrazeal[®]



Apply saline carefully to avoid submerging the dressing



Visible margin facilitates wound inspection without dressing removal



Altrazeal[®] dries and flakes off like a scab as the wound heals

The Altrazeal® Advantage

Single Product – Multiple Features

Ideal Dressing Properties*	Altrazeal® Properties
Promotes wound healing	Provides ideal moist wound healing environment that supports cellular function and tissue repair
Maintains a moist wound environment	Absorbs ~68% water of its hydrated mass
Acceptable to the patient	Comfortable for the patient. Wound margin visibility and extended wear time enables inspection without requiring a dressing change. Flexible dressing contours to the wound bed. Significantly improved comfort was evidenced in patients with split thickness skin graft donor sites**
Provides a physical barrier	Fits, covers and protects the entire wound surface
Permits gaseous exchange	Oxygen can enter the wound healing environment
Non-adherence to wound	No peripheral or secondary adhesives required. Powder aggregates on hydration into a matrix that seals and covers the wound bed without affecting the intact skin around the wound
Permits easy removal without pain or trauma	Easily removed by saturating the dressing with saline and lifting off with forceps
Capable of absorbing excess exudate	Facilitates exudate management which is vital to reducing the risk of peri-wound maceration
Impermeable to microorganisms	Prevents exogenous bacteria from entering the wound
Ease of use	Easy application and removal
Cost effective	Extended wear time enables reduced dressing changes and nursing interventions

* Thanh Dinh, Hau Pham, Aristidis Veves, *Emerging Trends in Diabetic Wound Care*, Wounds Feb 10, 2002

** Ojan Assadian, Brett Arnoldo, Gary Purdue, Agnes Burris, Edda Skrinjar, Nikolaus Duschek, David J Leaper, *A Prospective, Randomized Study of a Novel Transforming Methacrylate Dressing Compared with a Silver-containing Sodium Carboxymethylcellulose Dressing on Partial-Thickness Skin Graft Donor Sites in Burn Patients*, International Wound Journal 2013

Unique Product – Unmatched Benefits

Property	Altrazeal®	Hydrogel	Foams	Hydrocolloid	Hydrofiber	Alginate
Secondary/peripheral adhesive not required	✓	✗	✗	Sometimes	✗	✗
Secondary dressing not required	✓ most cases	✗	✓	✓	✗	✗
Fills and seals the wound	✓	✗	✗	✗	✗	✗
Intimate wound contact	✓	✗	✗	✗	✓	Moderate
Manages wound exudate	✓	✗	✗	✗	Low	Low
MVTR *	High	Low	Mixed	Low	—	—
Barrier to microorganisms	✓	✗	Mixed	Mixed	✗	✗
Remains flexible over joints	✓	✗	✗	✗	—	—
Dressing change frequency	1/week or less	3-4/week	3-4/week	3-4/week	2-4/week	2-4/week

* ULURU Inc. Data

Clinical Experiences

Surgical Wound – Mid Abdomen

Patient: 59 years, male, obese

Condition: Pelvic fracture, leakage from PEG tube requiring laparotomy

Treatment: NPWT for 7 days followed by Altrazeal® as transition dressing



Day 1: Altrazeal® Application



Day 7: Dressing Change



Day 21: Dressing Change



Day 28: Wound Closure

Surgical Wound – Caesarean Section

Patient: Mid-30s, female, obese

Treatment: Sutured and sealed with single Altrazeal® application for 8 days

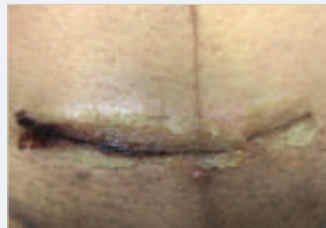
Patient reported reduced pain and wound remained free of infection



Day 1



Day 2



Day 8: Before Removal



Day 8: After Removal

Surgical Wound – Ankle Fracture

Patient: 78 years, female

Condition: Ankle fracture, plate osteosynthesis, vulnery disturbance

Treatment: Sutured and sealed with Altrazeal®



Before Treatment



Day 1



Day 5



Day 11

Diabetic Foot Ulcer – Toe Amputation

Patient: 62 years, female

Condition: Amputation for diabetic gangrene. Daily dressing change with Cutimed Sorbact and ablation of necrosis

Treatment: Two 15-day applications of Altrazeal®



Before Treatment



Day 1



Day 15



Day 30

Diabetic Foot Ulcer – Total Contact Cast

Patients: 6 patients with Wagner Grade-2 foot ulcers

Treatment: Altrazeal® with wound veil and contact cast

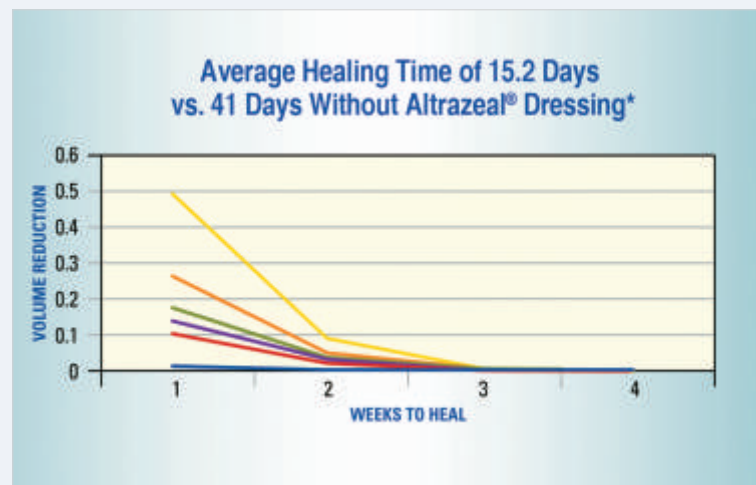
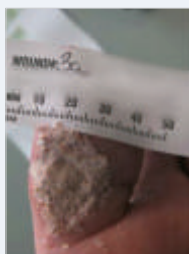
5 of 6 patients healed in 2 weeks. Patient-6 healed in 3 weeks but wound volume decreased by 97.2% at week 2



Patient A



Patient B



* Diabetic Foot Ulcer Data – Bohn, G.B., *Transforming Powder Dressing Combined with Total Contact Cast May Shorten Days to Heal Wagner Grade 2 Neuropathic Diabetic Foot Ulcers*, Poster presentation IR 011, Clinical Symposium on Advances in Skin and Wound Care 2009 Fall Meeting, San Antonio, TX

Clinical Experiences

Venous Ulcer – Compression Therapy

Patient: 93 years, female, 4 ulcers for 8 years

Treatment: Previously treated with conventional dressings changed 2-3 times per week. Altrazeal® applied for two 30-day applications with Prontosan in combination with Allevyn to absorb exudate. Compression bandages changed weekly. After 30 days, 1 ulcer had healed and others reduced in size. After 63 days all 4 ulcers had healed



Before Treatment



Day 30



Day 63



After Treatment

Venous Ulcer

Patient: 72 years, female

Condition: Chronic venous insufficiency. Wound healing stagnation with moderate exudation

Treatment: Application of Altrazeal®. Wound healed with no pain and no infection



Wound on Day 1



Application of Altrazeal®



After 8 Weeks



After 12 Weeks of Treatment

Arterial Ulcer

Patient: 70 years, female

Condition: Extremely painful non-healing medial malleolus, progressively worse despite debridement and IV ABs

Treatment: Methotrexate, G-CSF, neutrophils, Prednisone and Altrazeal®. **Avoided amputation**



Before Treatment



Day 21



Day 56



Day 84: Wound Closure

Decubitus – Pressure Ulcer

Patient: 62 years, female, decubitus external ankle PDK

Condition: Unfavorable prognosis with history of brain surgery (1987), hydrocephalus, epilepsy, encephalopathy, ICH, DM II, hypothyreosis, immobilization, malnutrition, PEG

Treatment: Altrazeal® and Prontosan for 35 days



Before Treatment



Day 1



Day 11



Day 35

Peristomal / Periwound Skin Complication

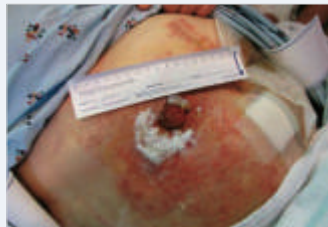
Condition: Stoma complicated by muco-cutaneous separation and peristomal skin wounding

Treatment: Mucosal skin separation was filled with Altrazeal® and sealed with the stomal appliance to avoid leakage

Appliance wear time was extended with the Altrazeal® application which contributed to healing the peristomal skin



Before Treatment



Day 1: Application of Altrazeal® and Stomal Appliance



Day 8: Condition Healed

Wound Abscess

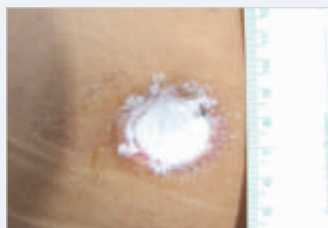
Patient: 45 years, female, wound abscess after injection

Condition: Intra-gluteal injection of antiphlogistic medication. Development of fever and erythema

Treatment: Altrazeal® applied and left in place after necrosectomy



After Necrosectomy



Application of Altrazeal®



Day 5



Day 24: Wound Closure

Clinical Experiences

Trauma Wound – Skin Tear

Patient: 92 years, female, chronic wound from skin tear on anterior tibial surface

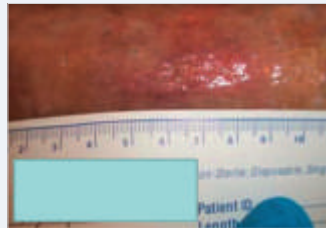
Treatment: Altrazeal® applied after debridement and assessment. Dressing changed and evaluated weekly



Wound on Day 1



Application of Altrazeal®



Day 28

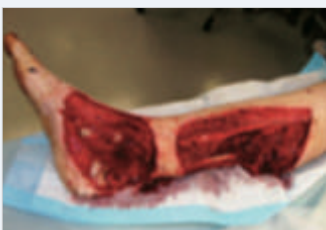
Combat Trauma Wound – NPWT and Grafting

Patient: 22 years, male, infantry soldier

Condition: IED blast injury to lower leg and ankle fracture exposing tendons and a segmental nerve deficit

Initial Treatment: Serial debridement, NPWT for 10 days prior to free flap

Post-op Treatment: NPWT over skin grafted areas with Altrazeal® for two weeks



Initial Wound
Post Debridement



1 Week Post Free Flap
with Altrazeal®



3 Weeks Post Grafting

Second-Degree Burn

Patient: 58 years, female

Condition: Second-degree partial thickness burn after accidental contact with boiling water

Treatment: Application of Altrazeal® – 1st and 2nd dressing for 7 days each, 3rd dressing for 15 days



Wound on Day 1



Day 7: After 1st Dressing



Day 15: After 2nd Dressing



Day 30: After 3rd Dressing

Skin Graft – Donor Sites

Patient: 20 burn patients

Condition: 2 skin graft donor sites per patient (split-thickness skin grafts)

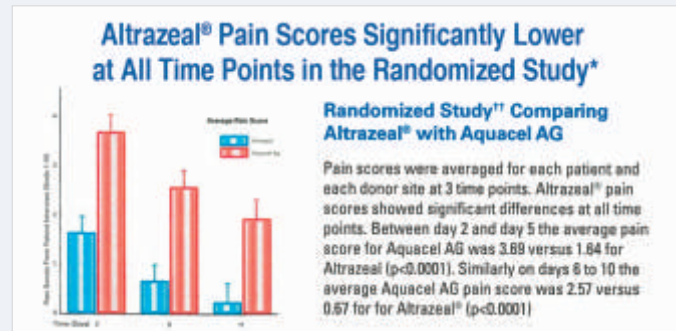
Treatment: Comparative use – Altrazeal® and Aquacel AG. Patients reported less pain and greater comfort with Altrazeal®



At Application



At Healing



* Ojan Assadian, Brett Arnoldo, Gary Purdue, Agnes Burris, Edda Skrinjar, Nikolaus Duschek & David J Leaper, *A Prospective Randomized Study of a Novel Transforming Methacrylate Dressing Compared with a Silver-containing Sodium Carboxymethylcellulose Dressing on Partial-Thickness Skin Graft Donor Sites in Burn Patients*, International Wound Journal 2013

Skin Graft Fixation – LSE and Meshed STSG

Patient: 2 patients

Treatment: Altrazeal® used for graft fixation for STSG and bioengineered skin substitutes

Grafts were meshed and Altrazeal® filled spaces in graft securing it in place

Avoided problems with disturbing grafts with dressing change. Maintained moist environment without fluid build up



Patient A: Burn – Sutureless and Clipless Fixation of STSG



Patient B: DFU – LSE Fixation with Altrazeal® and Contact Cast

Clinical Evidence

Publications:

- Use of a Nanoflex powder dressing for wound management following the debridement for necrotising fasciitis in the diabetic foot. Ryan H. Fitzgerald, Manish Bharara, Joseph L. Mills, David G. Armstrong. International Wound Journal, Vol 6 No 2, 2009.
- Treatment of Partial Thickness Burns in Outpatient Settings. David W. Voigt, MD, Medical Director, Director of Burn Research, Saint Elizabeth's Regional Burn and Wound Care Center, Lincoln, Nebraska; Dhaval Adhvaray, MD, PhD, St. John, PhD Uluru, Inc. Addison, TX. 2011 SAWC Meeting, Grapevine, Texas.
- APWCA Case #3: A Unique Aggregating Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD.

Presentations

- The Design and Performance of a Novel Transforming Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. APWCA Case #3: A Unique Aggregating Powder Dressing. Here are some clinical applications for this wound care product.
- Use of a Nanoflex powder dressing for wound management following debridement for necrotising fasciitis in the diabetic foot. Ryan H. Fitzgerald, Manish Bharara, Joseph L. Mills, David G. Armstrong. 2009 Wound Management Meeting, Philadelphia, PA.
- Altrazeal®: magia o realidad. DRA. D^a M^a ISABEL ROMO SÁNCZ¹, JULIA M. HERNÁNDEZ CARRERA². DOCTORA EN ENFERMERÍA POR LA UNIVERSIDAD DE SALAMANCA - ESPAÑA - PROFESORA ESCUELA DE ENFERMERIA EN ENFERMERIA DE ATENCIÓN PRIMARIA - SALAMANCA - ESPAÑA.
- Resumen. Introducción. Llevamos más de tres décadas escuchando que "las heridas crónicas, son un reto para enfermería". El reto lo hemos conseguido, desde 1985, en que comenzamos a cambiar parámetros, tipos y formas profundas en la forma de curar. Desde hace treinta años, como digo, muchos somos los profesionales de enfermería, que manejamos el "lenguaje de las heridas" de una forma clara y sabiendo lo que hay que hacer. Las novedades, en cuanto a la cura de heridas, se nos presentan a través de las consultas a los profesionales sanitarios, de Enfermería y Medicina. En el mundo de los polímeros, han aparecido actualmente uno llamado Altrazeal®, un polvo transparente en matriz sintética de polímero que correctamente utilizado, acelera considerablemente la cicatrización.

- Altrazeal® Transforming Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- A Randomized Clinical Study Comparing a Novel Transforming Powder Dressing with a Silver-Containing Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- A New Treatment in Mesh Skin Graft Procedures Using a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- A Procedure Using a Single Dressing Application for the Bolstering of Mesh Skin Grafts. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Graft Fixation and Wound Moisture Management with Transforming Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Treatment of a severe burn with a novel transforming powder dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Rush Hospital, Medical Center, Rush Medical College, Chicago, IL.
- Controlling Wound Healing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Calculation, Measurement, and Application of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- "Release" and "Adhesion" of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Physical, Chemical, and Mechanical Properties of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Antimicrobial Effect of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Formulation and Characterization of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Nanoflex technology. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Development of a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Delivery of PDGF Using a Novel Powder Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Modification of Nanoparticle Aggregate Surfaces to Affect Cell Adhesion. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.
- Controlled Release of Iodine By Diffusion From Povidone-Iodine Dressing. Brock A. Liden, DPM and John V. St. John, PhD. 2009 Wound Management Meeting, Philadelphia, PA.

international wound journal International Wound Journal ISSN 1742-4901

ORIGINAL ARTICLE
A prospective, randomised study of a novel transforming methacrylate dressing compared with a silver-containing sodium carboxymethylcellulose dressing on partial-thickness skin graft donor sites in burn patients
Ojan Assadian¹, Brett Arnold², Gary Purdue², Agnes Burris², Edda Skrinjar², Nikolaus Duschek³ & David J. Leaper⁴
1. Ojan Assadian, PhD, St. John, PhD Uluru, Inc. Addison, TX. 2011 SAWC Meeting, Grapevine, Texas.

A novel methacrylate powder dressing (Altrazeal®) for hard-to-heal wounds: case report
M. FRACCALVIERI, U. MOROZZO, M. SALOMONE, E. RUKA, R. PAVA
Reprinted from ACTA VULNOLOGICA Vol. 17 - No. 4 - Pages 187-192 (December 2014)
EDIZIONI MINERVA MEDICA - TORINO

Use of a Nanoflex powder dressing for wound management following the debridement for necrotising fasciitis in the diabetic foot. Ryan H. Fitzgerald, Manish Bharara, Joseph L. Mills, David G. Armstrong. International Wound Journal, Vol 6 No 2, 2009.
Treatment of Partial Thickness Burns in Outpatient Settings. David W. Voigt, MD, Medical Director, Director of Burn Research, Saint Elizabeth's Regional Burn and Wound Care Center, Lincoln, Nebraska; Dhaval Adhvaray, MD, PhD, St. John, PhD Uluru, Inc. Addison, TX. 2011 SAWC Meeting, Grapevine, Texas.

Testimonials



“Altrazeal® transforming powder is one of the most versatile wound care products in the market and we have used it in a wide range of wounds with great results. The long wear time

of this material makes it an attractive dressing as it allows the wound to heal undisturbed and can be used efficiently in combination with other therapies such as compression bandages and contact casts. Since instituting Altrazeal® in our practice we have seen patients heal at a much steeper trajectory. We are now able to heal some of these wounds in 14 days of application versus the standard 35 days.”

— Greg Bohn, MD, UHM/ABPM, MAPWCA, FACHM
President, American Board of Wound Healing



“My experience with Altrazeal® demonstrates the ability of the novel transforming powder to rapidly heal wounds occurring in a notoriously difficult area, namely the distal lower extremity of an

elderly patient. Applications and dressing changes were simple and painless, while compliance and nursing care were non-issues. Healing was rapid and economical. Because of its unique ability to contour exactly to every wound, novel transforming powder may well have a broad range of potential applications and uses in wound healing.”

— Steven Smith, MD, Mohs Surgery
Former President, Massachusetts Academy of Dermatology

“Altrazeal® is truly a revolutionary technology that will change the way we think about wound dressings. My clinical experience has demonstrated excellent outcomes with improved wound healing trajectories in a wide variety of wound types. Positive patient feedback including less pain, a single application with extended wear time, and no need for a secondary dressing is reflected in improved adherence to care plans.”



— Jeff Niezgoda, MD, FACHM, MAPWCA, CHWS
Vice President, American Professional Wound Care Association
Former President, American College of Hyperbaric Medicine

Acknowledgments

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ULURU Inc.

4410 Beltway Drive, Addison, TX 75001, USA
T: +1 (214) 905-5145 | F: +1 (214) 905-5130

www.altrazeal.info | www.uluruinc.com