

# Clinical Benefit of Noncontact, Low-Frequency Ultrasound therapy\* St. Agnes Continuing Care Center

A member of Mercy Health System  
Philadelphia, Pennsylvania

Jane Nguyen, PT, DPT; Lori Thomas, PTA; and Lisa Cotterall, PT, DPT, CWS

## Introduction

Healing chronic wounds in medically complex patients is a persistent challenge in the long-term acute care (LTAC) setting.

## Methods

This case series evaluated the clinical effectiveness of noncontact, low-frequency ultrasound therapy\* on chronic wounds in an LTAC setting. Clinical effectiveness was assessed through changes in wound tissue, dimension, and drainage. Patient selection was based on wound severity, failure of the wound to improve with standard treatment, the patient's ability to give consent, and adequate length of stay for treatment. Three patients were followed during their stay in an LTAC facility.

## Outcomes

All of the wounds decreased substantially in volume and percentage of necrotic tissue after the ultrasound therapy.

## Discussion

When used as an adjunctive therapy, ultrasound may hasten wound volume reduction, thus facilitating earlier transition from LTAC to the next level of care or a secondary procedure, such as skin graft or skin substitute.

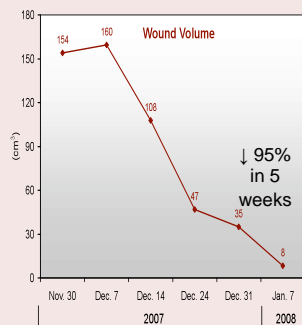
\* MIST® Therapy, Celleration, Eden Prairie, MN. ML-66151\_A, Eff. Date: 6/10/08

### Patient #1 Spinal Abscess

57-year-old man with a full-thickness wound (*Pseudomonas* infection) over his spine resulting from a spinal abscess with cord compression treated with incision and drainage in October 2007. Medications: warfarin, metoprolol, sertraline HCL, digoxin, and low-molecular weight heparin. From Oct. 17 to Dec 5, wound was treated with negative pressure wound therapy (NPWT). Noncontact ultrasound (4 min, 3 times/week) was administered from Dec 5 through Jan 7. Dressing was enzymatic debriding ointment and gauze. Wound volume decreased by 95% over 5 weeks of noncontact ultrasound therapy (see photos and graph below).



Nov 30, 2007      Dec 22, 2007      Jan 7, 2008

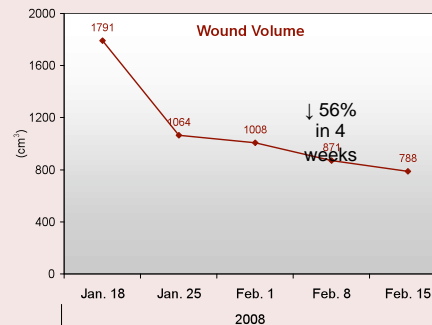


### Patient #2 Surgically Débrided Pressure Ulcer

73-year-old woman with an infected Stage IV pressure ulcer (*Klebsiella pneumoniae* and *E. faecalis*) surgically débrided Jan. 16, 2008. Medical history: diabetes, pancreatic cancer, colitis, diabetic ketoacidosis, ventilator-dependent respiratory failure, Whipple procedure. Medications: insulin, metoprolol, acetaminophen/hydrocodone, clonazepam, hydromorphone, amlodipine, cholestyramine, escitalopram. Noncontact ultrasound (10 min, 3 times/week) and NPWT dressing were administered Jan 18 through Feb 15. Wound volume decreased by 56% with 4 weeks of noncontact ultrasound and NPWT (see photos and graph below) despite multiple complications s/p surgery, including hemoglobin drop from 9.9 to 5.6 gm/dl requiring blood transfusion, elevated blood glucose, and low pre-albumin.



Jan 18, 2008      Feb 15, 2008

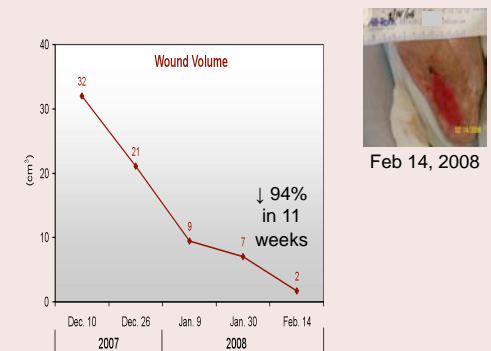


### Patient #3 Diabetic Foot Ulcer

64-year-old female with a diabetic foot ulcer (*Klebsiella pneumoniae* and *Proteus mirabilis*) on the right heel prior to admit on Nov 30, 2007. Medical history: diabetes, peripheral neuropathy, hypertension, non-ST segment elevation MI, stroke, vascular bleeding, anemia, and glaucoma. Medications: lorazepam, hydromorphone, allopurinol, vancomycin, acetaminophen, zomepirac, citalopram, epoetin alpha, metoprolol, insulin, furosemide, ondansetron. Noncontact ultrasound (4-6 min, 3 times/week) and NPWT were administered Dec 3 through Feb 15. Wound volume decreased by 94% with 11 weeks of treatment (see photos and graph below) despite elevated blood glucose, BUN, and creatinine; hemoglobin 8.0-8.5 gm/dl; and prealbumin 10-18 mg/dl.



Nov 30, 2007      Dec 21, 2007      Jan 9, 2008



**Disclosures:** The authors received no financial support for this study. Funding for poster production was provided by Celleration.