Editor in Chief's Message

Larry Schuster, DPM, FAPWCA, FACFS

The Editorial Staff of *Synergy* is expanding. The new editors are Cynthia Fleck, RN, BSN, ET/WOCN, CWS, DAPWCA, MBA and Jane Pfliger, MD, CWS, FAPWCA. The Newsletter Editorial Committee is charged to oversee the production and dissemination of *Synergy*. Activities include maintaining and reviewing the publication schedule, including what information should be covered in each issue and deadline dates, reviewing editing and production duties to maximize editorial board efficiency, monitoring costs, coordinating with committees, officers, professional liaisons, and board members to regularly report on their activities, and considering enhancements to newsletter formats, both print and electronic. APWCA members are encouraged to apply for Newsletter Editorial Committee positions.

Many of the improvements in this issue including the production of *Synergy* are the result of the support of Medline Industries, Inc. Advanced Wound and Skin Care. I also wish to thank Dr. Robert Gunther who has spent countless hours on editing and discussing this enterprise. My goal is for *Synergy* to become a force to unite our amorphous and diverse organization. This can be done if we have access to articles by our membership, abstracts and research activities. Please forward these to www.wounds@apwca.org so we can share this information by email, our web site or our hardcopy Newsletter, *Synergy*. I envision a constant flow of information, coming from all directions, that will ultimately improve our ability to heal.

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SYNERGY

THE VOICE OF THE AMERICAN PROFESSIONAL WOUND CARE ASSOCIATON

A. P. W. C. A.

Executive Director's Report

Dr. Steven R. Kravitz

Fellow of American Professional Wound Care Association

The APWCA has just successfully completed its third national conference, which was held in Philadelphia, March 25-27, 2004. There were a total of 350 attendees reflecting a 50 percent increase over last year's attendance. Of those who had attended in 2003, two-thirds returned as registrants for our 2004 conference. We expect a minimum of 50 percent increase next year and are reserving the entire conference space of the Hilton Philadelphia Airport Hotel. Mark you calendar now for the APWCA National Conference March 31 – April 2, 2005.

Many of the APWCA's 2004 accomplishments are highlighted below:

- We have initiated our first research project dealing with the oral delivery of cysteine as a method of stimulating intracellular glutathione to increase the ate of wound healing on chronic wounds. To date, approximately 30 APWCA members are participatng with the research project. Contact the APWCA head quarters for more information if you wish to be cosidered as an investigatory site.
- Dr. Robert Gunther, President of the APWCA and I participated in a 30-minute local cable TV news program. Topics discussed included the malpractice crisis, over documentation, the limited scope of coverage for compression stockings by CMS and background on the Association.
- We are exploring other avenues to engage the public media in order to educate the lay public on current problems that exist in the delivery of wound care.

(continued on page 2)

President's Message

Dr. Robert Gunther

Fellow of American Professional Wound Care Association

As you read this issue of *Synergy*, you will see many changes, updates in the quality of the content and in the appearance of our newsletter. *Synergy's* editorial board has grown and is representative of the diversity of membership of the American Professional Wound Care Association. The growth of this newsletter, under the direction of its Editor in Chief, Dr. Larry Schuster, has always been with the intent of bringing the essence of different fields in medicine that represent the totality of wound care, together in one publication. We hope the interdisciplinary flavor with the various newly appointed editors will show the effects of this synergistic approach.

Dr. Kravitz has noted in the executive director's report some of the many accomplishments of the American Professional Wound Care Association. This is the result of the combined efforts of your Board of Directors, Medical Advisory Board, general membership and is reflective of the dedicated APWCA staff. Another important element to which the sum is greater than its parts are our corporate sponsors. Their generous financial support enables us to establish our various programs and maintain a low dues structure. For instance, we could not produce this newsletter without the efforts of Medline Industries, Inc. Our high quality National Conference and regional seminars would not be possible without the financial support of our sponsors. The educational grants these sponsors provide allow the Association to provide objective information and offer instruction in cutting edge techniques. Our conference exhibitors also contribute to our financial viability and thus our educational impact.

Finally, all of our members are equally important in the overall objectives and mission of the Association. In many ways we are facing similar problems in health care delivery. When clinicians and nurses cannot obtain approval for supplies, this effects the manufacturer and distributors of that product, but most importantly, it negatively impacts the welfare of our patients. This brings the challenge of improving the healthcare system home for the membership, the sponsors, the contributors and our patients. We are succeeding and this is why our association will flourish with rapid growth in membership and address an ever-growing list of healthcare issues that will both challenge and reward us.

Spring-Summer 2004

POST SEMINAR

Volume 1 , Issue 3

Inside this Issue:

APWCA acknowledges the following members for their donations over the past year.

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Executive Director's Report

Steven R. Kravitz, DPM, FAPWCA (Continued from page 1)

- We are developing our online directory of wound healing centers on our web site. Contact APWCA headquarters or our web site for an application today. This is a free service for members and their associated wound care centers.
- We have formed an Ad Hoc committee to investigate the CMS ruling and the limited scope of coverage for patients with edema for compression stockings. We have also met with other organizations to collaborate on this issue.
- We had participated in supporting SB 932 in California in support of podiatrists performing partial foot amputations.
- We have participated in several regional conferences over the past year through which members can attain CE credit hours toward the APWCA requirement to maintain active status (21 hours over a three year perod). Other regional meetings to be attended with APWCA participation in 2004 and 2005 are continually being added to our schedule. Acurrent list of programs can be found in the Education section of this newsletter.
- The APWCA gained increased international recognition by participating in the Latin American Wound Care conference held in September 2003. This year APWCA members are participating in the Second World Union of Wound Healing Societies, July 8-13 in Paris, France. Please contact us if you are going to attend this Conference.
- The APWCA is appreciative of the increasing support of Lippincott, Williams and Wilkins (LWW), the publishers of the APWCA endorsed journal, *Advances in Skin and Wound Care*. The APWCA will be participating in their upcoming 2004 Clinical Symposium on "Advances in Skin and Wound Care", September 30 – October 3 in Phoenix, Arizona. We look forward to having an increased interaction with LWW.
- We have made significant advances in our website and continue to increase its resources. It is user friendly and has been well received.
- We continue as a resource of information to patients and their care givers as well as providing referrals to our members.

So where do we go from here? And how can we continue to be of value to you, our members?

- First of all, if you have any suggestions or problems please note that we have an open door policy and encourage you to contact us. We always appreciate your input. In fact, it is an important aspect of APWCA. All of us are valued members of this organization.
- In addition to maintaining the above projects, we have other goals for the upcoming year. These include improving our hard copy bi-annual newsletter, *Synergy* as demonstrated in this Spring-Summer issue of our publication.
- We will also provide our other e-mail news services.
- If you have e-mail access and are not getting e-mail from us on a regular basis, please make sure to first contact your internet provider to make sure our e-mail address (Wounds@apwca.org) is not being blocked as "spam". Also check to make sure that headquarters has your appropriate e-mail address. You should be receiving an e-mail notice from us at least every 4 – 6 weeks.
- We will maintain our insurance initiative to educate the public by striving to obtain increased media exposure on the many problems that providers face in the delivery of wound care. We plan to initiate educational programs for the public at large, including caregivers and patients. We encourage any member interested in joining a committee to contact headquarters.

Finally, we are gearing up for our summer membership drive. We currently have 1300 members in just over three years. As we continue to attract more members we can provide increasing benefits for our members and generate more public awareness through the media regarding many of the problems we all deal with on a daily basis in the delivery of healthcare to our patients.

Third Annual National Conference Re-cap - 2004

Over 350 healthcare professionals attended the 3rd Annual National Conferenceon March 25-27 in Philadelphia. The attendance represented a 50% increase over that of 2003. Registration represented most states in the US. Those in attendance heard from respected faculty members regarding the challenges faced in healing difficult wounds. They also learned practice management skills enabling more effective care with lower economic impact. The momentum began building on Thursday March 25 with Pre-Conference courses that drew an enthusiastic group of dedicated professionals interested in smaller group discussion and opportunity for interpersonal exchange. A successful one-day basic circular frame external fixation course was held on March 25, 2004 at the Hilton Hotel in Philadelphia in conjunction with the American Professional Wound Care Association. The course and workshop was sponsored by R & R Medical, Inc. The Scientific Chairman was Larry R. Goss, DPM, FAPWCA, FACFAS, FACFAOM. The invited faculty were Eric Leonheart, DPM, FAPWCA, FACFAS; Jason Miller, DPM, FAPWCA; and Thomas M. Rocchio, DPM. There were 25 participants in the workshop who received hands on training.

For theoretical minds, a plethora of pre-conference courses were presented including the mechanism of healing, new modalities in treatment, nutrition, biomechanics, and infectious disease. The Friday 9AM Pre-Conference course on "Wound Dressings" was so popular that a dividing wall was opened to accommodate the overflowing crowd. Interest was so great this room had to be doubled in size.

The General Session of the Conference opened with discussions on "The Diabetic Foot and Preventable Limb Loss." According to the Centers for Disease Control and Prevention (2002 study) 6.3 percent of the US population have Diabetes. This area of practice will unfortunately grow as the incidence of Diabetes is expected to double.

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Ongoing Debridement Using an Interactive Debriding Agent

By Elizabeth O'Connell-Gifford, RN, CWOCN, DAPWCA, MBA
and Thomas E. Serena MD, FACS, FAPWCA

The recent 17th Annual Symposium on Advanced Wound Care & Medical Research Forum on Wound Repair provided much needed information on new and innovative technologies as well as multiple strategies on how to optimize wound healing.

A recurring theme at the meeting was the utilization of new technologies to facilitate wound bed preparation. The concept of wound bed preparation applies to both acute and chronic wounds but the focus this year was definitely on the complex, chronic and costly wounds that challenge every wound specialist. Wound bed preparation begins with thorough patient assessment and comprehensive management of patient factors (systemic disease, infection, medications). It then focuses on the critical components of exudate management, debridement, bioburden balance and offloading.

The wound care practitioner has a number of tools to remove non-viable tissue. Surgical debridement remains the mainstay of debridement techniques. However, complex wounds may require ongoing debridement. The short-term removal of necrotic debris and non-viable tissue can be accomplished with enzymatic debriding agents. Yet application of these medications is frequently painful and healthy tissues may be damaged. Wound bed preparation might best be accomplished by initial surgical debridement followed by a dressing/product which continues the debridement process with minimal toxicity to the healthy underlying tissues. One dressing that was highlighted this year was TenderWet by Medline Industries, Inc., which removes necrotic debris while maintaining a moist wound environment.

The concept behind the dressing is simple. Its core contains an absorbent polymer called "polyacrylate." After activation with Ringer's solution, the dressing acquires an affinity for large protein molecules found in wound debris, pathogens and necrotic tissue. A biochemical exchange occurs as the polyacrylate in the core binds large protein molecules and microorganisms, which in turn leads to the release of the Ringer's solution into the wound bed. This fluid rinses the wound, continues to bind wound debris, and provides moisture balance for up to 24 hours.

Surgical debridement is the backbone of wound bed preparation. However technological advances, such as the Tender Wet dressing, allow the wound care practitioner to enhance the affects of surgical debridement by providing ongoing debridement of the wound while at the same time maintaining a moist wound healing environment.

Finally, in this newsletter we introduced the concept of planned serial debridement to describe subsequent surgical debridement procedures after an extensive primary debridement. TenderWet would provide ongoing debridement ("OGD").

Author's Committee

Jane Pfliger, MD, CWS, FAPWCA — *Synergy* Contributing Editor

How would you like to write an article about wound care? APWCA author's committee is seeking practitioners interested in sharing their knowledge and experience by writing an article for publication in a variety of journals. As a professional wound care organization, we have the opportunity to add to the advanced wound management literature by sharing an interesting case study or series, reporting on a clinical study, or completing an article review.

There is also a need for Lay public education. Professional journals and lay magazines are interested in receiving articles for publishing. Options include wound care journals, such as *Ostomy, Wound Management, Advances in Skin and Wound Care, Podiatry Management, WOUNDS* and others. Lay journals include *Prevention* and *Readers Digest* for instance, would be good options to target as well.

Contact Dr. Kravitz or me if you are interested in this exciting project. Sharing your experience and input for all to learn is a great way to advance wound care for everyone! My e-mail address is docjanep@aol.com and my cell phone is 1-208-305-0000. In future issues of the newsletter we will reference articles that have been contributed by members as they are published. In a short time, APWCA has made tremendous strides developing a reputation for advancing quality and providing cutting edge education in wound care. Contributing to this committee is an excellent way of becoming a part of that effort.

APWCA Monitors CMS

There are two primary concerns that the APWCA is currently monitoring and has partnered with other organizations to address if feasible and necessary. These issues are:

1. CMS new proposed fee schedule classifications for skin ulcers. The classifications are based on the amount of area coverage of skin defect only and do not address other conditions such as depth of the lesion, undermining, sinus track and other related aspects that can add significantly to the length of time required to properly treat these lesions.

2. The CMS ruling from October 2003, which allows coverage for compression stockings for patients with current skin ulcers, but not for those who are edematous and at immediate risk for developing ulcers.

Look for an update in the Fall/Winter edition of the Synergy Newsletter and on APWCA e-mail News Update the monthly APWCA service as information becomes available.

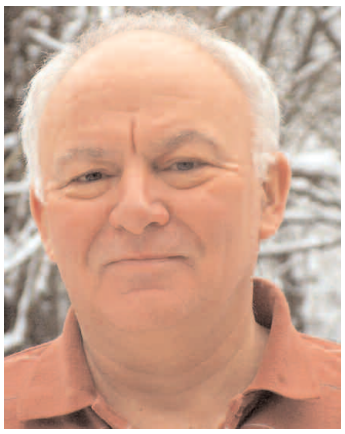
Save the Date!

March 31, April 1 and April 2, 2005 - APWCA Fourth Annual Conference
Hilton Philadelphia Airport Hotel

Featured Articles

The Silver Story

Bruce Gibbons, PhD



Long before the acceptance of the germ theory in the 1800s, man has tried to prevent rot in stored foods and sepsis in his wounds. The ingenuity applied to the preservation of raw foods has thankfully given us interesting products such as cheeses, fermented beverages, and dried and smoked meats that has added interest to our diets even though refrigeration supercedes their need. Sepsis in wounds, on the other hand, has been a greater problem to overcome. Breached and broken skin provides an ideal habitat for the proliferation of microorganisms. Furthermore, as organisms increase in numbers and become established they impede healing and present the risk of deep-seated infection.

Man's search has resulted in the discovery of numerous natural and synthetic substances that possess antimicrobial activity. Interestingly, the presently recognized antimicrobial properties of silver have been empirically evident for more than 3000 years[1]. Vessels constructed of silver were recognized for preserving and rendering water portable long before the crusades. Even the pioneers carried silver coins in their canteens to prevent water borne disorders. The mythical powers of silver were finally deduced in the late 1800s when it was shown by careful experimentation that the antimicrobial activity of silver compounds was completely due to the silver moiety. From this early work came the development of silver nitrate and silver iodide solutions that were administered to the eyes of infants to prevent congenital blindness (Ophthalmia neonatorum) caused by Neisseria gonorrhea. Between the late 1800s and the 1930s, physicians commonly arranged silver preparations that were administered variously as oral, injectable or topical remedies as a primary line of defense against infection. Aside from the routine ophthalmic administration into the eyes of newborn babies, these were largely replaced with newly discovered antibiotics. Silver re-emerged as a front line antimicrobial in the early 1960s as a defense against infection when it was shown to be effective in controlling sepsis (as a 0.5% silver nitrate solution) in serious burn wounds. However its short half-life (requiring multiple applications per day) and propensity for staining (due to reaction with light) both the patient

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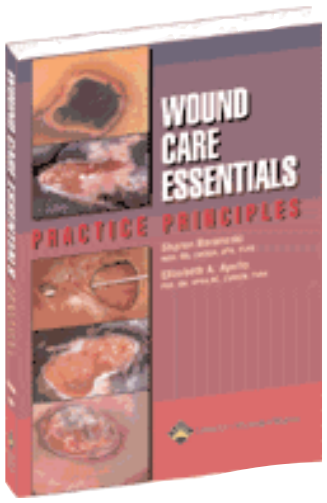
Book Review

Cynthia A. Fleck, RN, BSN, ET/WOCN, CWS, DAPWCA, MBA

Synergy Contributing Editor

Wound Care Essentials: Practice Principles

Sharon Baranoski, MSN, RN, CWOCN, APN, FAAN, DAPWCA and
Elizabeth A. Ayello, PhD, RN, APRN, BC, CWOCN, FAAN, FAPWCA



Bravo! Baranoski and Ayello make an old wound care dog learn new tricks! With 30 contributors and 14 consultants, this 2004 Lippincott Williams and Wilkins publication is a gem! A comprehensive text organized into Part One, Wound Care Concepts and Part Two, Wound Classifications and Management Strategies, this text should be on every wound care clinician's shelf, rookies and experts alike. The authors eloquently cover the obligatory topics like skin A and P, wound assessment, documentation and treatment and include up-to-the-minute issues such as bioburden, wounds in special populations, reimbursement and legal matters relating to wound care. All 20 chapters and 432 pages are filled with insights on responding to issues affecting patients with chronic wounds.

This brand new book delves into the science but doesn't forget the human element in such chapters as quality-of-life and pain management. It additionally appeals to the multidisciplinary audience, from physician to nurse to therapist, as its many contributors are from various fields. Also included is a handy color illustration guide of many wound etiologies, type of procedures and skin conditions. Available in soft cover, this practical text, written by a directory of wound care's "who's who" and edited by two of wound management's finest, "Wound Care Essentials: Practice Principles is sure to be a classic!"

Where to find the newest chronic wound care text? Call toll-free 1(800) 638-3030 and mention code A3Z794CD or go to LWW.com/nursing. The price is $39.95.

The Silver Story

Bruce Gibbons, PhD

and the environment limited its adoption for general wound care. Stabilization in the form of a compound with sulfadiazine prove useful in controlling staining but did not overcome the need to administer silver sulfadiazine multiple times per day. Interestingly, silver only began to appear in association with wound dressings in the last decade. However in a very short period of time silver has become the antimicrobial of choice by manufactures of antimicrobial wound care products so that as of this writing there are now at least 10 different silver containing dressing available to U.S. clinicians for wound care (see table 1).

Silver is a naturally occurring element that resides in the heavy metals portion of the periodic chart with the atomic symbol of Ag. Silver has the highest luster and reflectance of any metal making it very popular for use in jewelry, silverware, ornaments and mirrors. Metallic silver is the most common state silver exists in nature. Silver metal (Ago) is extremely stable but under certain conditions will undergo a transition to its ionic form (Ag+) that is highly reactive, which is to simply say that it wants to bind to something that has a negative charge. When it reacts it forms a compound. Therefore silver can exist in at least three different forms, namely the metal, as a compound and as the free dissolved ionic form. The transition of silver amongst the various different forms of silver has enabled wound management dressing manufacturers to develop strategies for preserving silver in their products until application. This is termed the silver reservoir. Some manufacturers have chosen to use a metallic form of silver thereby relying on processes such as oxidation to form the antimicrobial ionic form. Other manufactures have developed unique compounds that are already in an ionic form, needing only dissolution by wound exudates for release (see table 2).

Table 1

Product Brand	Product Description	Manufacturer or Distributor
Arglaes	Silver adhesive thin film	Medline Industries
Acticoat	Silver PE film and alginate	Smith and Nephew
SilvaSorb	Silver hydrophilic polymer and Gel	Medline Industries
Actisorb 220	Silver absorbent pad	Johnson & Johnson
Algidex	Silver alginate	DeRoyal
Silvercel	Silver alginate	Johnson & Johnson
Silverlon	Silver woven nylon	Argentum
Contreet	Silver hydrocolloid	Coloplast
Aquacel Ag	Silver CMC	Convatec
Polymem	Silver Polyurethane foam	Ferris Industries

Silver Reservoir	Brand
	Acticoat
	Silverlon
	Polymem
	Silvercel
Silver Compound	SilvaSorb
	Arglaes
	Aquacel Ag
	Algidex
	Contreet
Ionic Silver	Actisorb 220

Table 2 The antimicrobial reservoir technology used in brands of silver antimicrobial wound care products)

Generally speaking, dressings that use a metallic reservoir void their silver quickly but at a very high concentration compared to dressings that use compounds. Silver compound reservoirs sustain the delivery of silver for longer periods albeit at a lower (yet effective) concentration.

Until the late 1800s little was known about the relationship of these different forms of silver and its antimicrobial action. Those early investigations established that only the ionic form of silver is antimicrobial. That finding led to the discovery that silver was oligodynamic. This means that silver is active with few molecules meaning that very little silver will kill microbes[2]. Indeed it has been shown that an antimicrobial effect can be achieved with as little as 1 part per billion concentrations. Modern silver antimicrobial wound dressings typically release between 2 to 100 parts per million silver into the wound environment. This is between 1000 and 100,000 times the concentration that is effective for many strains of bacteria. Of course not all strains are equally susceptible. Indeed, microbiologists have found certain strains of organisms that are capable of living in the presence of extremely high concentrations of Ag+ such as in the waste tanks for photographic developer. However, virtually every strain of medically relevant microorganism appears to be susceptible to silver. For this reason silver has been called a true broad spectrum antimicrobial agent.

This broad spectrum antimicrobial, which has been in use for nearly 3000 years, amazes microbiologists since there isn't wide spread resistance in the target populations. By comparison, microbial resistance to new antibiotics seemingly occur before there is widespread clinical use. The difference is explained by a number of factors. Examples are firstly, an extremely small amount of silver is needed to kill an organism compared to antibiotics. Secondly, ionic silver binds to multiple targets in an organism at the same time. This means that the organism must spontaneously mutate away susceptibility in each and every one of those targets in a single generation, preferably before exposure, to escape the effect. Thirdly, virtually every microorganism has multiple susceptible sites such as membrane transport, RNA or DNA synthesis, and proteins. And fourthly, the gene cluster that controls resistance in some very special bacteria is far too large to be transmitted on a plasmid to confer resistance on recipients as so often occurs in the case of resistance to antibiotics. Although we know little about acquired resistance over most of that 3000 year history of man's use of silver, we do know that in the last 100 years or so that there have been few reports of clinical resistance to silver.

This remarkable activity on microorganisms has surprised biologists in light of the perception that silver is non-toxic to tissue cells. The explanation offered, without much supporting documentation, has been based on the complex redundancy of physiological processes of tissues cells3. In other words silver might inactivate one pathway to a function but there are several pathways that lead to the same function. Therefore redundancy is protective. This explanation may be partially right in concept but it does overlook the fact that tissue cells are inactivated by silver if they are exposed to a sufficient concentration of the ionic form. Recent studies have revealed that ionic silver in concentrations ranging from 10 to 40 parts per million are cytotoxic to mammalian tissue cells. Most work has been done using mouse and human fibroblasts and keratinocytes. Both of these cell types are extremely important in wound healing. Fortunately almost all silver antimicrobial wound dressings maintain concentrations of silver lower than these toxic levels.

Although clinicians have had several silver antimicrobial wound dressings to choose from there is still considerable confusion as to when and why they should be used. Breached and broken skin as occurs in a wound pro-

(Conitinued on page 11)

The Silver Story (continued from page 7)

vides a feast for microorganisms. Studies have shown that virtually every wound becomes colonized by bacteria[4,5]. Typically acute wounds become colonized by only a few hardy organisms that normally habitat the skin. By contrast, chronic wounds generally develop a polymicrobial colonization with representatives from oral, intestinal and skin origin. For far too long clinicians have considered the mere presence of bacteria in the wound to be of little concern unless they begin to invade and establish an infection. By definition an infection occurs when microbes begin to cause alteration and damage to the tissues. Modern concepts now recognized that microbes, even in small numbers, can indirectly influence wound healing by recruiting a cellular exudates rich in neutrophils. These cells are a good first line of natural defense but the persistent presence of these cells can be erosive to tissues due to their powerful degradative enzyme loads. These enzymes can't distinguish tissue from bacteria.

All the silver antimicrobial wound dressings marketed in the US are only allowed, as a condition of clearance to market, to claim that the product is effective as a barrier to microorganisms. This is not very helpful information to clinicians in deciding when to use the product. Most clinicians are looking for either a solution to an infection problem or to prevent colonization or infection from occurring in wounds. The most appropriate use of antimicrobial wound dressings is in conjunction with systemic antibiotics to clear an overt infection such as cellulites. However clinicians are increasingly finding that the use of antimicrobial dressing for wounds ranging from surgical incision sites to chronic wounds such as pressure sores, leg ulcers and diabetic foot ulcers aids in wound management. In extremely problematic wounds the benefit may be simply controlling odor. In most cases though the incorporation of antimicrobial wound dressings in direct contact with the wound bed is rewarded by progressive changes in the wound towards healing. Often the sign is first noted as a decrease in wound drainage and accumulation of fibrin in the wound. Manufacturers provide important information on how their respective products are most appropriately used and this labeling information should be evaluated before application.

Many substances have been demonstrated to have antimicrobial activity yet few of them have reached clinical usage. Silver has had the longest history of any known antimicrobial agent. Because of its demonstrated broad spectrum activity, relatively low toxicity to tissues, and the absence of resistance it is not surprising that it is the antimicrobial of choice for incorporation into wound contact products. This agent of choice is rapidly becoming the state of the art in centers that specialize in the management of wounds. This is not without confusion regarding the appropriate applications for use. Generally speaking, silver dressings are appropriately used in the control of bioburden in the wound and its surrounding skin to prevent as well as aid control of infection. The great news is that silver is incorporated into many dressing categories, allowing clinicians to care for a variety of wounds. Get to know these new versatile silver wonders, incorporate them into your plan of care and get use to them since they are here to stay!

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Planned Serial Debridement

Thomas E. Serena MD, FACS, FAPWCA

The best evidence that wound care is an up-and-coming medical specialty is the rising use of "wound speak". The development of a glossary of terms is essential for any emerging field. It facilitates communication and education as well as directing future research. One of the first terms to be placed in the wound care dictionary is wound bed preparation (WBP). WBP describes the early management of the chronic wound. It has four main components: debridement, moisture balance, control of bacterial burden and pressure relief. However additional vocabulary is needed to more precisely define all of the aspects of WBP. Debridement in particular, has markedly different meanings depending on the training of the practitioner and the needs of the patient.

At a recent Wound Healing Cooperative Group meeting, William Ennis related an astute observation made by one of his medical students after spending a day with him in the wound clinic. The student asked why the debridement had not been the same for every patient. A new diabetic patient with a plantar ulcer had been debrided extensively whereas the next diabetic ulcer in an established patient was approached less aggressively. The initial response from the group was, "that's the way we do it." However, the community of wound specialists has not clarified the difference between the types of debridement techniques. Several terms have been employed rather loosely such as "maintenance debridement." Yet there is a clear need for additional terms with more accurate definitions.

Debridement should be termed "primary" when an initial extensive debridement is required, such as the first visit for a patient with an untreated diabetic foot ulcer or a newly diagnosed pressure ulcer. Subsequent debridement is often required and may even be part of the treatment protocol. However, these follow up procedures generally do not require the same degree of tissue removal. This subsequent debridement is best termed, "planned serial debridement." The term maintenace debridement has been used in the past, but from a medical standpoint the word maintaince implies that a specific action may not be necessary. Planned Serial Debridement (PSD), on the other hand, is a far more descriptive term. It implies that the debridement will be performed at regular intervals. It also implies that the debridement is part of the active ongoing care of the patient.

The term "planned" is also important from a reimbursement standpoint. Medicare regulations state that in order to receive payment for a procedure performed within the global period (10 days for debridement) it must be planned. Otherwise procedures performed during the global period are not reimbursed. Finally a phrase must have a good acronym if it is to be user-friendly. "Planned Serial Debridement (PSD)" is an active, user-friendly, descriptive term with a great abbreviation.

The APWCA appreciates the generous grant from **Medline Industries, Inc**. for the underwriting, production and mailing of *Synergy*

MEDLINE

Third Annual National Conference Re-cap - 2004

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Sharon Baranoski, RN, MSN, CWOCN, APN, FAAN, DAPWCA

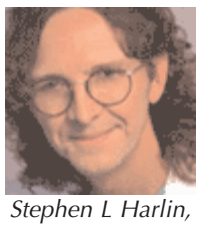
Adrianne Smith, MD, FAPWCA enthusiastic presentation of "Growth Factors and their Role in Wound Healing" kept everyone's attention. We learned to consider the histological, biochemical and clinical changes in the wound to direct wound care rather than what is available to use.

Adrianne Smith, MD, FAPWCA

The lecture on "HIPAA Privacy," by Barry Block, JD, FAPWCA brought up many examples of overdoing HIPAA This unnecessarily causes physicians and nursing staff much wasted time, which could be better spent on patient care. For example, he stated that nursing stations may have boards listing patients' names, room numbers, and their nurse's name on them. If I had a nickel for every hour I've wasted trying to find a patient or his nurse since these new rules, well, I'd have a lot of nickels.

Barry Block, JD, FAPWCA

Due to growing bacterial resistance to antibiotics, silver dressings are being used to reduce the proliferation of bacteria and to curtail or replace the use of topical or systemic antibiotics. Antibiotic-resistant bacteria represent an increasing concern in wound infections since wound colonization by these organisms normally results in aggressive management of the wound complicated by a greatly limited choice of therapeutic antibiotics.



Stephen L Harlin, MD, FAPWCA, The Wound Healing Center

Steven Harlin, MD, a plastic surgeon, displayed the complexities of medicine and documentation through a series of diagrams that evolved into ever greater complexity. His solution was a totally paperless office devoted to wound care. He proudly showed an artwork hung by his wife in place of his file cabinets.

Pregnancy did not stop Beth from missing this conference

Friday evening's top shelf cocktail hour with Hors d'oeuvres provided the opportunity to develop relationships and exchange information. I feel those three or four hours that people stayed were as valuable to the development of our relatively new organization as the excellent lectures presented. This was the first time I socialized with my own hospital's nursing staff. They sat in the front row, attended every lecture and then spent another 2 hours at the cocktail hour; one of them was 8 months pregnant. I gained greater appreciation of their commitment to the difficult work we do.

Saturday morning's session began with an important discussion of "Off-Loading Techniques for the Diabetic Foot." The value of specialized shoe gear has finally been recognized by Medicare and many of our members are becoming involved in dispensing as well as prescribing. Devices to encourage better circulation or diminish edema were discussed by Laura Jacobs MD, PhD FAPWCA. Paul Van Bemmelen, MD shared the "Limitations and Advantages of Vascular vs. Endovascular Surgery." As many of our wound care patients concurrently suffer from multiple ailments, an endovascular technique may very well be enough to heal the wound with a reduction in mortality, morbidity, and hospital length of stay. Accurate documentation is vital to successful outcomes and our conference included a session on "Pressure Ulcer Assessment and Documentation," immediately before lunch.

All members and conference attendees were invited to attend the APWCA Annual Meeting on Saturday afternoon. Dr. Gunther, President, stated: "The APWCA has grown geometrically in the past three years. "The Synergy established by our diversity results in the APWCA as greater than the sum of our parts." Our Keynote address was delivered by Thomas Kwyer MD, FAPWCA, an international speaker on "The Effects of Glutathione in Health and Disease." Dr. Kwyer has also contributed the chapter, "Implications of Nutraceutical Modulation of Glutathione with Cysteine and Cysteine in General Health," to a new clinical text, *Professional Voice: The Science and Art of Clinical Care,* 3rd Edition.

"The Marriage of Surgical and Adjunctive Therapies" was presented by Dr. Lee Sanders, a man who truly has demonstrated his dedication to the ideal of multidisciplinary organizations. Dr. Sanders, PPMA member from Lebanon, PA, was elected President for Health Care and Education of the American Diabetes Association (ADA). He is the first podiatrist to hold this position.

Dr. Murry Abramson offered the last lecture for our Conference. "Drug Resistant Bacteria" are becoming one of the major stumbling blocks to therapeutic regimens. We profited from his insight into alternative methods for diminishing the bacterial burden of wounds.

People raised many questions at the final Full Faculty Panel who stayed until all participants were energized by new insights, enhanced skills and new friendships as a result of our conference.

Thomas A. Kwyer, MD

Glutathione and Wound Repair

It has been noted that chronic wounds including diabetic, venous, arterial and pressure ulcers are slow to heal in patients with poor nutritional status. This reduction in the rate of healing may be directly related to the availability of the precursors (L-glutamine, L-cysteine and glycine) of an essential tripeptide, glutathione (GSH). A deficiency of GSH can adversely affect cellular repair[1]. Conversely, strategies to enhance the level of GSH in the wound appear to hold promise[2].

This case presentation is one of nearly two dozen cases in which enteral delivery of GSH precursors was associated with an acceleration of the healing rate in chronic wounds. A growing body of evidence suggests that central repletion of GSH is likely to favorably influence fibroblast proliferation, wound healing rate and clinical outcomes.

Case Study

A 76-year-old female patient was admitted to the nursing home on March 12, 2002. Admitting diagnoses included pernicious anemia, weight loss, malnutrition and diplegia. She had undergone surgical resection of a neoplasm of the anterior right leg earlier in March of 2002. The wound did not heal for the next 5 months.

On August 13, 2002, the patient was placed on a bioactive protein supplement containing GSH precursors (Fig. 1). Her dose was 20 grams twice daily. One week later, the wound demonstrated a significant increase in granulation tissue (Fig. 2) and by August 27, 2002 the wound was completely epithelialized (Fig. 3) without any other change in the patient's wound care or medical treatment.

Figure 1

Figure 2

Figure 3

Discussion

Providing GSH precursors enterally has been shown to increase whole blood GSH levels in a dose related fashion, Fig. 4. and Fig. 5. Repletion of intracellular stores of GSH appears to be a worthwhile strategy since depletion of intracellular stores of GSH has been strongly correlated with a disruption of the temporal course of wound healing metabolism and a reduction in wound strength in the GSH depleted animals[1]. Depletion of GSH has been shown to occur in clinical situations that would benefit from optimal wound healing.

Two common clinical factors relevant to the healing process have been documented to significantly reduce GSH: critical illness and surgery. Intensive care unit patients were shown to have a 60% reduction in reduced and total GSH compared to matched healthy controls ($p < 0.001$)[3]. Elective abdominal surgery is associated with a consistent 40% reduction in skeletal muscle reduced and total GSH within the first 24 hours ($p < 0.01$ to $p < 0.001$) and these levels remained low at 72 hours ($p < 0.01$) [4-6].

GSH metabolism has been evaluated in a number of cell lines, tissues and clinical conditions. Both circumstances of adequate and diminished GSH levels have been studied and reveal how maintaining optimal GSH levels can protect cells under stress and how inadequate levels can jeopardize normal cellular functions. Two important cell lineages in wound healing are fibroblasts and the major cells of the immune system: antigen presenting cells (macrophages and dendritic cells) and lymphocytes. Dysfunction in these cell lines are likely to lead to delays in wound healing.

GSH and Fibroblasts

Studies of fibroblasts in cell culture demonstrate the important role of GSH in fibroblast growth and by inference in wound healing. Adequate GSH levels protect fibroblasts from hyperbaric oxygen-induced growth reduction[7] while blockade of GSH synthesis in NIH3T3 fibroblasts provoked a dose-dependent inhibition of cell growth[8]. This implies that de novo GSH synthesis in fibroblasts is required for cell activation and proper S and G2 phase transit and progression through the cell cycle[9]. Over time, synthesis of intracellular GSH in actively growing cultures of NIH3T3 fibroblasts gradually decreases as these cells become quiescent[10]. However, increasing GSH can stimulate quiescent fibroblasts[10]. The increase in cellular GSH that occurs in quiescent, serum-stimulated cells is a result of nutrient repletion rather than mitogenic stimulation[11].

GSH and the Immune System

There is strong evidence that GSH has a number of key functions throughout the immune system starting with antigen processing[12] and Th1 cytokine predominance[13] in antigen-presenting cells. Evidence shows that low intracellular GSH levels in antigen-presenting cells which posses a stronger affinity for cystine as a precursor for GSH synthesis and which determine whether Th1 or Th2 responses predominate, are correlated with defective processing of unique antigens (Ag) with disulfide bonds[13]. Normal lym-

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Figure 4

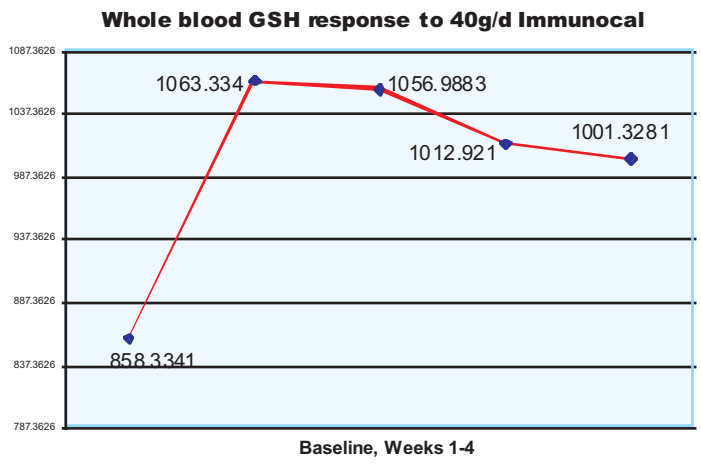
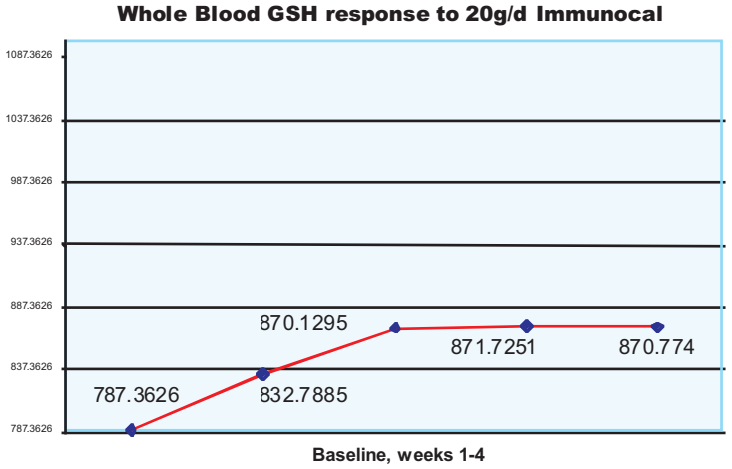


Figure 5



GSH Research Project

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phocyte proliferation in response to mitogenic lectins is also directly dependent upon GSH availability. However, lymphocytes depend on cysteine secreted by macrophages for GSH synthesis[14-16]. Hence, GSH has a pivotal role in the earliest reactions of the immune system.

GSH-dependent processes are also important in relatively late stages of the immune response and include steps such as IL-2 receptor expression and IL-2 production[17]. Glutathione also regulates the binding, internalization, degradation, and T-cell proliferative activity of IL-2; alterations of cellular GSH concentration may thus affect the growth and replication of IL-2-sensitive cytotoxic T-cells[18]. The effect of GSH on IL-2 production and the subsequent mitogenic response is even more pronounced in older subjects[19].

GSH and Wound Repair

Given these findings, it is not surprising to discover that enhancing GSH levels has been associated with acceleration in wound resolution rates. To date, 80% of the nearly two dozen chronic wounds (12 to 64 weeks duration) have resolved within 6 weeks when the patients took the GSH enhancing protein supplement even though no other alterations were made in their wound care regimens.

As remarkable as these results are, further investigation is necessary. Fortunately, the protein source for GSH precursors is FDA approved (FDA category of GRAS, generally recognized as safe) and does not require phase I testing. Expanded open trials are presently underway under the auspices of the American Professional Wound Care Association. These and other outcome studies will ultimately document the efficacy of enhancing GSH as mechanism to accelerate wound repair in chronic and acute wounds alike.

Please contact David Noe at (866) 662-3376 or at www.ammunomed.com for the references for this article.

APWCA Email News Updates by Mail Program Now Available

APWCA traditionally updates its membership through a service called "APWCA eMail News Update". If you do not have internet access or if you prefer to receive APWCA monthly updates mailed to you we are now offering a subscription service for $25 per year and will be renewable August 1 each year. Monthly updates are till available for no charge through eMail however if you prefer hard copy mailed to your office please forward $25 made payable to APWCA and mail to APWCA, 853 Second Street Pike, Richboro, PA 18954, or fax to: 215-364-1146 with a request and charge card information. Be sure to include your name, mailing address, phone number, and request to participate in the "APWCA eMail News Updates by Mail" program.

APWCA Research Project Update

The open trial project sponsored by AmmunoMed that was kicked off at the APWCA annual meeting in Philadelphia has resulted in the participation of over 25 member clinicians using the product in 54 chronic wound care patients to date. Even at this early stage, we have had reports of the dramatic improvement of difficult wounds. One example: Dr. Steven Goldstein was very pleased with the progress of his first patient to participate - a 2.3 cm deep wound was completely closed within 5 weeks. The goal of having 60 patients participate should be reached very soon. These outcomes will be utilized to strengthen the background for the SBIR grant that APWCA is interested in applying for, in partnership with AmmunoMed.

For further information please contact:
Dave Noe at 866-662-3376 or dnoe@ammunomed.com

Diversity of Membership

Synergy in Purpose

Members Remember

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Eleven Fold Reduction in Irritation Associated with the Use of Amino Acids Using Patented Laser Electromagnetic Resonance Technology

Todd Ovokaitys, MD, Chief Executive Officer and Founder of Gematria Products, Inc., Carlsbad, CA
Darlene McCord, PhD, Founder of McCord Research, Glenbrook, NV

Abstract

Recent studies have demonstrated that the use of amino acids, as nutritional supplements, as well as topical nutrients, causes an inflammatory response and this response is indicated in the mixed results accorded amino acid therapies. There is scientific evidence that laser homogenization of these molecules reduces the inflammatory response by eleven fold while increasing the bio-availability of the amino acids on a biochemical basis. A patented laser optical technology has been successfully used to alter the molecular configuration of amino acids.It uses holographic technology and light waves, to generate wave forms resonating to create more uniform molecular structures without degrading nutritional or treatment values. A new laser enhanced molecular complex, known as Olivamine™, has been developed. The molecular complex combines amino acids that participate in the formation of collagen along with their co-factors,Vitamin B3 and B6,and potent free radical scavengers in a new Qudrapeptide™. The new Qudrapeptide™ is suitable for use when a patient is at risk of skin breakdown and the course of treatment involves the reduction of irritation.

Methods and Materials

To demonstrate the effectiveness of Olivamine™ in a topical treatment regime for patients with skin breakdown, patients were assessed and enrolled into a study using Remedy products. The outcomes appear to validate the research showing that Olivamine™ is effective in the treatment of damaged skin.

The products met all the criteria of the care plan in that the product was a skin protectant that could aid in the tissue treatment process. Also important, the product is an over-the-counter (OTC) drug under the guidelines of the FDA's Skin Protectant Monograph.

Case Studies

Marge Groom, RN, BSN, ET/CWOCN, DAPWCA.

A 95 year-old patient was admitted to the Extended Care Facility (ECF) on 1-1-04 from an assisted living facility with primary diagnosis of pneumonia and C-difficile diarrhea.Secondary diagnosis of ASHD, CAD, hyperlipidemia and a history of CABG in 1994.Patient is incontinent of urine.She has limited mobility and is only capable of standing to pivot to sit in the chair.

3-18-04
Prior to start date of the Olivamine™ containing Skin Repair Cream

On admission, she had a Braden score of 14. There is evidence of bruising to upper and lower extremities, bilateral ankle edema, buttocks is reddened but without open areas, her skin appears to be "tissue paper" thin.

The patient's albumin was 2.5 g/dL on February 23,2004. The patient had numerous scabbed areas within the bruised regions, and the scrapings were negative for scabies.The care plan objectives included: Improving the overall skin tissue quality, and resolving the reddened and damaged area in perineal region.

3-31-04
After approximately 10 days of treatment

On March 23, 2004 the Olivamine™ containing Skin Repair Cream was used to treat these areas.The patient showed excellent results from hydration of the skin and disappearance of the red blotchy markings.

A 78 year-old female patient was admitted to ECF on August 21, 2003 with a primary diagnosis of hypothyrodism, poor appetite and rheumatoid arthritis. Secondary diagnosis of depression, hypertension, COPD and a history of sacral and L wrist fractures, MI in 1979, CVA in 2000, and facial surgery related to cancer. She has decreased mobility due to the rheumatoid arthritis,neuropathy of left leg, and her fingers are severely contracted.

3-18-04
Initial photo,prior to initiation of Olivamine™ containing dimethicone protectant barrier product

Upon admission, her Braden score was 15. She was on complete bedrest and not able to assist with turning or positioning. She had a waffle type mattress placed on her bed.Lab values included: albumin 3.1, WBC 8.1 and H/H 15.1/44.9. She presented with an open area on the L.buttocks and an area measuring 0.7 cm covered with eschar. The patient received various treatments before starting the Olivamine™ containing dimethicone protectant barrier product.Based on her assessment,the care plan objectives included:

- Treat periwound skin
- Improve tissue quality
- Resolve tissue damage in buttocks region

On March 18, 2004 treatment with the Olivamine™ containing dimethicone protectant barrier product was initiated.The patient showed excellent results by March 31, 2004. The superficial partial thickness wound had healed and the periwound skin showed marked improvement.

(Continued on page 10)

3-31-04
After approximately two weeks. Notice that the containing dimethicone protectant barrier product skin shows marked improvement.

Advanced Skin Care

(Continued from page 9)

Conclusion

Amino acids, while beneficial, cause an inflammatory response that may not be desirable and that potentially effect treatment outcomes.Amino acids that have been molecularly altered by photoacoustic resonance and placed into delivery systems that enhance their bioavailability appear to provide improved treatment outcomes. In the two case studies presented here, care plan objectives were achieved in two weeks or less. Topically, applying these enhanced amino acids and other cellular nutrients accomplished the care plan objectives:

- Prevented further skin breakdown
- Decreased denuding of compromised area
- Promoted healing to restore intact skin
- Allowed for caregiver compliance to provide proper care necessary for healing and prevention of new skin breakdown

Refrences

1. Bergstrom N, Bennet MA, Carlson CE, et al. *Treatment of Pressure Ulcers in Adults. Clinical Practice Guideline, Number 15*. AHCPR Publication No.95-0652. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, U.S.Department of Health and Human Services. December 1994
2. Skin Protectant Drug Products for the over-the-counter Human Use; Final Monograph, Department of Health and Human Services, Federal Register June 4, 2003
3. USP NO. 6064500, Strachan: John Scott, Holographic Optical Devise and Method of Manufacturer, Issued May 16, 2000

Upcoming Seminars

July 8-13, 2004: Second Congress of the World Union of Wound Healing Societies, Palais des Congres, Paris France ; For further information contact APWCA headquarters or the WUWHS Website

August 22-25, 2004: The American Podiatric Medical Association (APMA) Annual Scientific Meeting; Boston , Mass. ; Boston Marriott Copley Place ; For further information contact: APWCA headquarters or the APMA by web site or 800-275-2762 ext. 275

September 11-13 2004: The Eighth Annual Wound Care Congress, New Orleans, LA, register online at woundcarecongress.org or by phone at (800) 722-0080

September 23-26, 2004: APMA Region 10 meeting; Biloxi Mississippi; Grand Casino, Bayview; For further information contact APWCA headquarters or Dr. John Saeva, General Chairman, 850-650-6492
*(APWCA 2 hrs. CME approved)

September 30 – October 3, 2004: Clinical Symposium on Skin and Wound Care, The Conference for Prevention and Healing; Phoenix, AZ; Phoenix Civic Plaza, Hyatt Regency Phoenix; For further information contact
800-346-7844 x 7750 or 7798, or on the web.

October 9-10, 2004: Mount Sinai in conjunction with the New York College of Podiatric Medicine; Mount Sinai New York, New York; For further information contact Dr. Melvyn Grovit office, Program Chairman and Chairman Department of Medical Sciences, New York College of Podiatric Medicine; 212-410-8045
* (APWCA 5 hrs. CME Pending)

October 27-30, 2004: Nurse Practitioners National Conference, Baltimore, MD; Possible Satellite Lecture, Not confirmed at time of printing; Contact APWCA headquarters and check web site as information becomes available

November 5-7, 2004: Pennsylvania Foot and Ankle Society; Scranton, PA; Amount of Wound Care hours in this foot and ankle conference not available at time of printing; Contact APWCA headquarters and check web site as more information becomes available

November 13-14, 2004: Academy of Continuing Podiatric Education; Englewood, NJ; Amount of Wound Care hours in this podiatric conference not available at time of printing; Contact APWCA headquarters and check web site as more information becomes available or contact General Chairman,
Dr. Robert Marcus 201-928-0808

November 20-21, 2004: Academy of Continuing Podiatric Education; Los Angeles, Beverly Hills, CA; Amount of Wound Care hours in this podiatric conference not available at time of printing; Contact APWCA headquarters and check web site as more information becomes available or contact General Chairman,
Dr. Robert Marcus 201-928-0808