POSITION STATEMENT

Clean vs Sterile: Management of Chronic Wounds

This document is a collaborative effort of the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) and the Wound Ostomy Continence Nurses Society (WOCN). Its purpose is to review the evidence on which chronic wound care practice is based and to present approaches for chronic wound care management. Areas of controversy include a lack of agreement on the definitions of "clean" and "sterile" technique and a lack of consensus as to when each is indicated in the management of chronic wounds. Current wound care practices are extremely variable and are frequently based on rituals and traditions as opposed to a scientific foundation.

Definitions

Various definitions associated with wound care have been proposed, published, and debated. Terms have been used interchangeably, all subject to the individual's interpretation. The following definitions are an attempt to provide a point of reference for the terms used in this document.

Sterile Technique involves strategies used in patient care to reduce and maintain objects and areas as free from microorganisms as possible. Sterile technique involves meticulous handwashing, use of a sterile field, sterile gloves for application of a sterile dressing and sterile instruments. "Sterile to sterile" involves the use of only sterile instruments and materials in dressing change procedures; contact between sterile instruments or materials and any nonsterile surface or product must be avoided.

Clean Technique involves strategies used in patient care to reduce the overall number of microorganisms or to prevent or reduce the risk of transmission of microorganisms from one person to another or from one place to another. Clean technique involves meticulous handwashing, maintaining a clean environment by preparing a clean field, using clean gloves, sterile instruments, and prevention of direct contamination of materials and supplies. No "sterile to sterile" rules apply. This technique may also be termed "non-sterile."

Aseptic Technique is the purposeful prevention of the transfer of organisms from one person to another by keeping the microbe count to an irreducible minimum. Some authors have made a distinction between surgical asepsis or "sterile technique" and medical asepsis or "clean technique."

No Touch Technique is a method of changing surface dressings without directly touching the wound or any surface that might come in contact with the wound.

Colonization is the presence of microorganisms without signs and/or symptoms of infection. All chronic wounds are colonized to varying degrees.

Infection is the presence of microorganisms with signs and symptoms of disease. Signs and symptoms which may be indicative of infection include erythema, edema, changes in character/increase in drainage, and increased odor, fever, altered mental status, and/or increased white blood cell count.

Wound is a “disruption of normal anatomic structure and function.”

Acute Wound is a wound that either heals by regeneration or in a timely and orderly process.

Chronic Wound is a wound that has “failed to proceed through an orderly and timely process to produce anatomic and functional integrity.”

Surgical Wound is a wound in which primary healing occurs when the wound edges have been drawn together to achieve closure. A surgical wound may be considered an acute wound.

Discussion

A survey developed by the Nursing Consortium for Research Practice concluded that a great variation exists "with regard to sterile technique in wound care practices..." In the survey, technique choices among staff nurses were based on the education level of the caregiver, "how I was taught in school" and perception of infection risk to the patient. Again, the element of a scientific foundation for wound care practice was not evident.

In 1993, Stotts et al. employed a descriptive, exploratory research survey to obtain information regarding wound care practices in the United States. Two hundred and forty-two (242) members of WOCN responded to the survey. Of the respondents, 51.4% reported use of sterile technique and 43% reported use of non-sterile technique. The percentages varied when the type of wound and care settings were taken into consideration. It was also shown that, in preparation for discharge from the hospital, 90% of patients with open wounds were taught to perform nonsterile technique at home regardless of whether clean or sterile technique was used during hospitalization.

A review of the literature revealed no specific scientific research studies to support the use of either “clean” or “sterile” technique in any given patient care setting. However, there is a study comparing the use of sterile saline or tap water for cleaning acute traumatic soft tissue wounds. Analyses of strike-through contamination associated with saturated sterile dressings have also been published. Clinical Practice Guidelines published by the Agency for Health Care Policy and Research, recommends the “use of clean dressings, rather than sterile ones” be used in the treatment of pressure ulcers “as long as dressing procedures comply with institutional infection-control guidelines.” However, these recommendations are based on expert opinion and not on evidence-based research. It must be reiterated: there is no consensus of expert opinion on the controversy of “clean vs sterile” in the management of chronic wounds. Expert opinions are based on current practice and anecdotal notes, not on evidence-based practice. Additionally, it should be noted that current prac-
practices have not been shown to be either beneficial or harmful.

Wound care is now occurring in a variety of patient care settings including acute care, subacute care, long-term care, outpatient clinics, and in the home. The question arises: Should a different technique be utilized in the delivery of wound care based on the health care setting? Decisions made on the type of technique to be used may be more reasonably based on what will be done to the wound, rather than where or to whom it is to be delivered. Other factors that may influence the technique are the status/acuteity of the patient, healthcare setting itself, and/or encounters with and type of caregiver. For instance a frail, elderly patient who is on immunosuppressant drugs with a large, full thickness skin loss sternal wound and who is to receive daily dressing changes to the wound might benefit from “sterile” technique. A middle-aged patient in an automobile accident, subsequently developing a non-infected Stage III pressure ulcer and who is to receive hydrocolloid dressing changes to the wound every 3–4 days, might be adequately managed using “clean” technique. However, there is no scientific evidence or consensus that any one of these conditions is more or less important in selecting the appropriate method of care for the wound.

**Basic considerations for technique selection**

The following factors should be considered when planning chronic wound care. Also see Table 1.

What is clean, what is sterile, what is contaminated—Keep items apart by using “no touch technique.” The healthcare provider must have a thorough understanding of these entities to accomplish the goal of separation.

Type and extent of wound care procedure—How invasive is the procedure? Is debridement to be performed? Does the procedure involve simply changing a transparent film dressing or hydrocolloid or extensive packing of the wound? Consideration should also be given to the location and depth of the wound.

**Type of supplies/instruments to be used**

Solutions for cleansing/treatment—Use and maintenance may be based on likelihood of exposure to organisms in the care setting. Initially, solutions such as commercially prepared wound cleansers and normal saline are sterile. The life of these solutions is based on manufacturer’s recommendations and the policy of the healthcare institution providing the care. Unfortunately, no scientific evidence exists to guide the policies of the healthcare institution.

Care setting—Who will be doing the wound care? What is the environment in which the care will be delivered?

**Conclusions**

There is no agreement on the definitions of “clean” or “sterile” technique.

The definitions of “clean” and “sterile” are not as important as choosing the appropriate intervention for the procedure when managing chronic wounds.

Evidence-based research is needed to support either “clean” or “sterile” management of chronic wounds. This would best be accomplished by formal scientific studies in multi-site locations that would include all healthcare settings.

Critical examination of evidence-based research could well lead to increased cost effectiveness and improved patient outcomes.

Such research could also impact reimbursement regulations resulting in considerable savings in healthcare dollars without compromising patient safety.

**References**


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**TABLE 1. Suggested Technique for the Management of Chronic Wounds**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Handwashing</th>
<th>Gloves</th>
<th>Supplies (Includes solutions and dressing supplies)</th>
<th>Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound cleansing</td>
<td>Yes</td>
<td>Clean*</td>
<td>Normal saline or commercially prepared wound cleanser—sterile; maintain as clean per care setting policy**</td>
<td>Irrigation with sterile device; maintain as clean per care setting policy</td>
</tr>
<tr>
<td>Routine dressing change without debridement</td>
<td>Yes</td>
<td>Clean*</td>
<td>Sterile; maintain as clean per care setting policy**</td>
<td>Sterile; maintain as clean per care setting policy</td>
</tr>
<tr>
<td>Dressing change with mechanical, chemical, or enzymatic debridement</td>
<td>Yes</td>
<td>Clean*</td>
<td>Sterile; maintain as clean per care setting policy**</td>
<td>Sterile; maintain as clean per care setting policy</td>
</tr>
<tr>
<td>Dressing change with sharp, conservative bedside debridement</td>
<td>Yes</td>
<td>Sterile*</td>
<td>Sterile</td>
<td>Sterile</td>
</tr>
</tbody>
</table>

*It must be remembered that reimbursement of wound care delivered in the outpatient and home care setting is governed by regulations mandated by the Healthcare Financing Administration (HCFA). HCFA requires use of sterile supplies and equipment, including gloves. Deviations from HCFA regulations in the delivery of wound care could result in the submission of fraudulent claims for reimbursement.

**“Maintain clean as per care setting policy” means each care setting must address the parameters for maintenance, such as expiration dates for supplies, consideration of cost, and correct interpretation of the manufacturer’s recommendations.
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**Suggested Reading**

APIC Text of Infection Control and Epidemiology; Vol. 1. Chapter 89, Skin and Soft Tissue.
Sterile vs Nonsterile Wound Care, An Interactive Monograph for Healthcare Professionals; 1998 Dumex Medical Surgical Products, Ltd. in Contemporary Concepts in Wound Health, No. 1 in a series.

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