

**Wound V.A.C. – KCI Protocol**  
**Emergency General Surgery Service**  
**Vanderbilt University Medical Center**  
**10 / 2004**

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**STATEMENT OF PURPOSE:** Define process for implementation, application, and management of negative pressure therapy

**POLICY:** The Wound V.A.C. will be provided to patients based on physician order

**PROCEDURES:**

**I. Indications for V.A.C. Therapy**

- A. For patients who would benefit from sub atmospheric (negative) pressure therapy for promotion of wound healing
- B. For patients who would benefit from drainage and removal of infectious material or other fluids from wounds under the influence of continuous and/or intermittent sub atmospheric pressure
- C. Types of wounds indicated:
  - 1. Chronic Wounds including Diabetic Ulcers/Pressure Ulcers
  - 2. Acute / Traumatic
  - 3. Subacute Wounds (non-healing surgical wounds)
  - 4. Dehisced Wounds
  - 5. Partial-Thickness Burns
  - 6. Flaps
  - 7. Grafts

**II. Contraindications for V.A.C. Therapy**

- A. Patients with:
  - 1. Grossly Contaminated Wounds
  - 2. Malignancy in the Wound
  - 3. Untreated Osteomyelitis
  - 4. Non-enteric and Unexplored Fistula
  - 5. Necrotic Tissue with Eschar Present
- B. Do NOT place V.A.C. GranuFoam (Black sponge) over exposed blood vessels or organs. May use VersaFoam (White) or petroleum-based gauze over exposed blood vessels or organs at base of wound with overlaying GranuFoam.

**III. Obtaining Equipment and Supplies**

- A. Order the Wound V.A.C. from Materials Management

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- B. Order the Wound V.A.C. supplies from materials management
  - 1. Specify type of foam dressing:
    - a. Black (GranuFoam) - open pores, hydrophobic, and considered to be the most effective at stimulating granulation tissue while aiding in wound contraction
    - b. White (VersaFoam) - dense foam, hydrophilic, pre-moistened with sterile water, non-adherent, and requires higher pressures starting at 125 mmHg to provide adequate negative pressure therapy distribution
    - c. See Table 1 for Recommended Foam Guidelines
  - 2. Specify black foam dressing size as small, medium, large, or extra large
  - 3. White foam only comes in one size
  - 4. Specify quantity of foam
  - 5. Order disposable canister for V.A.C. unit
- C. Additional supplies such as scissors or scalpel to cut foam, skin prep, and irrigation solution may be obtained from floor stock

**IV. Applying the Dressing**

- A. The V.A.C dressing should be changed once every 48 hours, or every 12-24 hours in cases of infection
- B. Wash hands and apply personal protective equipment
- C. Gently remove the old V.A.C. dressing if applicable
- D. Debride eschar or hardened slough if present
- E. Irrigate the wound with normal saline, sterile water, or solution per physician order
- F. Clean and dry periwound tissue and apply skin barrier (skin prep)
- G. Assess and measure depth, width, and length of wound cavity
- H. Cut and shape the foam dressing to fill wound cavity completely ensuring that if multiple pieces of foam are required, all edges are in direct contact with each other for even distribution of negative pressure. Ensure that foam dressing is within the edges of the wound cavity and NOT in contact with the periwound tissue.
- I. Size and trim the drape to cover the foam dressing as well as an additional 3-5 cm border of intact periwound tissue; Save extra drape, it may be needed later to patch difficult areas.
- J. Cut a 2 cm hole in the drape; it is not necessary to cut into the sponge
- K. Apply the T.R.A.C. Pad opening directly over the hole in the drape
- L. Attach dressing tubing to the suction canister tubing

**V. Applying the V.A.C. Therapy Unit**

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- A. Remove the canister from the sterile packaging and push it into the V.A.C. unit until it clicks into place
- B. Verify clamps on dressing tubing and canister tubing are open
- C. Turn on the power button on the side of the V.A.C.
- D. Adjust the V.A.C. unit settings per the Recommended Guidelines for Treating Wound Types
- E. Press THERAPY ON/OFF button to activate the negative pressure therapy
- F. Observe wound site for collapse and seal of the dressing
  - 1. If collapse and seal are not apparent, assess dressing for leak which may create a whistling sound
  - 2. Often leaks are fixed by gently pressing around the drape around the and/or edges of the foam to better seal the drape
  - 3. Can also use excess drape to patch over leaks

**VI. Dressing Removal**

- A. Raise the tubing connectors above the level of the therapy unit
- B. Tighten clamps on the dressing tubing and canister tubing and disconnect
- C. Press THERAPY ON/OFF to deactivate the pump
- D. Gently remove drape from the skin
- E. Gently remove foam from wound
  - 1. If foam dressing adheres to wound base, introduce 10-30 ml of normal saline into foam, let stand, and then remove
  - 2. If foam dressing adheres to wound base, may consider applying a single layer of non-adherent, porous material such as Adaptic, Xeroform, or Mepitel to serve as a barrier between the wound base and the foam dressing
- F. Discard disposables in accordance with regulations

**VII. Maintaining the V.A.C. Device**

- A. The V.A.C. canister should be changed when full (unit will alarm) or weekly
- B. Patient may be disconnected from unit for specific activities, but no more than 2 hours per 24 hour period
- C. To disconnect from the unit:
  - 1. Close clamps on the tubing
  - 2. Turn the unit OFF
  - 3. Disconnect the dressing tubing from canister tubing
  - 4. Cover the ends of the tubing with gauze or tubing cap and secure
- D. To re-connect to the unit:
  - 1. Remove the gauze from the ends of the tubing

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2. Connect the tubing
3. Unclamp the clamps
4. Turn therapy ON and previous therapy settings will resume

**VIII. Troubleshooting the V.A.C.**

- A. Visually check the dressing every 2 hours to make sure that the foam is firm and collapsed in the wound bed. If not:
  1. Make sure the display screen reads THERAPY ON
  2. Make sure all clamps are open and tubing is not kinked
  3. Identify air leaks and seal with drape
- B. Adjusting V.A.C. system pressure settings
  1. May be titrated up by 25 mmHg increments when where there is:
    - a. excessive drainage
    - b. large wound volume
    - c. VersaFoam dressing in the wound or in tunneled areas
    - d. a tenuous seal
  2. May be titrated down by 25 mmHg increments when there is:
    - a. Pain unrelieved by aggressive analgesia
    - b. Bruising in the wound bed
    - c. Elderly and nutritionally compromised patient
    - d. Compromised circulation
    - e. Excessive granulation tissue growth
- C. Refer to KCI clinical guidelines manual for additional recommendations

**IX. Documentation**

- A. The following information will be included in the initial assessment and set-up
  1. Wound location and size
  2. Wound appearance (color, odor, presence of granulation tissue, necrosis)
  3. Exudates including color, amount, and odor
  4. Type and number of foam sponges placed in wound
  5. Wound V.A.C. unit settings: amount of pressure and continuous vs. intermittent therapy
  6. Patient pain score
- B. Assess and document at each dressing change the above info.
- C. Nursing should assess and document wound site, exudate, and unit settings every 8 hours for:
  1. Presence of negative pressure
  2. Color, amount, and odor of exudate
  3. Unit settings

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4. Patient pain score

**X. Discharge Planning**

- A. NP/MD will contact Case Management for notification of a patient needing a wound V.A.C. for home
- B. NP/MD will complete the KCI “Medical Necessity Document” and return to Case Management who will fax the completed form to KCI and home health agency
- C. Case Management will get approval and set up home health
- D. Case Management will contact KCI to deliver wound V.A.C. for patient discharge
- E. NP/RN will provide patient education prior to patient discharge

Table 1  
 Recommended Guidelines for Foam Use

	V.A.C. GranuFoam (Black)	V.A.C. VersaFoam (White)	Either
Deep, acute wounds with Moderate granulation tissue	<b>X</b>		
Deep pressure ulcers	<b>X</b>		
Flaps	<b>X</b>		
Exquisitely painful wounds		<b>X</b>	
Superficial wounds		<b>X</b>	
Tunneling/sinus tracts/undermining		<b>X</b>	

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Deep trauma wounds			<b>X</b>
Wounds which require controlled growth of granulation tissue		<b>X</b>	
Diabetic ulcers			<b>X</b>
Dry wounds			<b>X</b>
Post graft placement (including bioengineered tissues)			<b>X</b>
Shallow chronic ulcers			<b>X</b>

**Table 2**  
**Recommended Guidelines for Treating Wound Types**

Wound Type	Initial Cycle	Subsequent Cycle	Target Pressure V.A.C. GranuFoam	Target Pressure V.A.C. VersaFoam	Dressing Change Interval
Acute/ Traumatic Wounds/ Partial-Thickness Burns	Continuous first 48 hours	Intermittent (5 min ON/ 2 min. OFF) for rest of therapy	125 mmHg	125-175 mmHg: Titrate up for more drainage	Every 48 hours or every 12 hours with infection
Surgical Wound Dehiscences	Continuous for duration of therapy	Continuous for duration of therapy	125 mmHg	125-175 mmHg: Titrate up for more drainage	Every 48 hours or every 12 hours with infection

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Meshed Grafts and Bioengineered Tissues	Continuous for duration of therapy	Continuous for duration of therapy	75-125 mmHg	125 mmHg; Titrate up for more drainage	Remove dressing after 4-5 days when using either foam
Pressure Ulcers	Continuous first 48 hours	Intermittent (5 min ON/ 2 min. OFF) for rest of therapy	125 mmHg	125-175 mmHg; Titrate up for more drainage	Every 48 hours or every 12 hours with infection
Chronic Ulcers	Continuous first 48 hours	Intermittent (5 min ON/ 2 min. OFF) for rest of therapy	50-125 mmHg	125-175 mmHg; Titrate up for more drainage	Every 48 hours or every 12 hours with infection
Flaps	Continuous for duration of therapy	Continuous for duration of therapy	125-150 mmHg	125-175 mmHg; Titrate up for more drainage	Fresh = every 72 hrs Complicated = every 48 hrs (every 12 hrs with infection)

**References**

Anastasi, G., Bergman, S., Hamori, C., Joseph, E., Roaf, E., and Swann, N. (2000). A Prospective Randomized Trial of Vacuum-Assisted Closure Versus Standard Therapy of Chronic Nonhealing Wounds. Wounds: A Compendium of Clinical Research and Practice, 12 (3), 60-67.

Argenta, L., McGuirt, W., Morykwas, M., and Shelton-Brown, L. (1997). Vacuum-Assisted Closure: A New Method for Wound Control and Treatment: Animal Studies and Basic Foundation. Annals of Plastic Surgery, 38 (6), 553-562.

Briones, R., Millsap, M., Philbeck, T., Schroeder, W., Whittington, K., and Wight, D. (1999). The Clinical and Cost Effectiveness of Externally Applied Negative Pressure Wound Therapy in the Treatment of Wounds in Home Healthcare Medicare Patients. Ostomy/Wound Management, 45 (11), 41-50.

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Kindred Hospital Wound V.A.C. protocol

V.A.C. Therapy Clinical Guidelines, KCI, July 2004

KCI Contact Info: 1-800-275-4524 or [www.woundvac.com](http://www.woundvac.com)



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**Attachment A**

**Recommended Guidelines for V.A.C. Therapy with Enteric Fistula**

- I. Two primary goals of therapy currently exist:**
  - A. Acute: Obtaining complete pressure-directed closure of the fistula
  - B. Chronic: Segregate the fistula from the abdominal wound in order to obtain sufficient healing and stabilization of the patients overall health to allow for subsequent surgical repair
  
- II. Acute Patient Selection**
  - A. Enteric fistula with acute formation
  - B. Minimal to moderate effluent that is thin to slightly viscous
  - C. NPO/TPN
  - D. Fistula opening must be easily visualized and accessed
  - E. No evidence of epithelial cells on opening of fistula
  
- III. Chronic Patient Selection**
  - A. Enteric fistula with chronic formation, non-surgical candidate
  - B. Fistula opening must be easily visualized and accessed
  - C. NPO/TPN
  
- IV. Application for Acute Enteric Fistula, Simple**
  - A. Cover the mouth of the fistula with several layers of petroleum-based gauze
  - B. Aggressively irrigate and clean the abdominal wound as directed by MD
  - C. Remove the layers of petroleum-based gauze from the fistula
  - D. Cut and gently place V.A.C. GranuFoam dressing into the wound
  - E. Apply drape over the entire dressing and T.R.A.C. Pad directly over the fistula
  - F. Initiate pressure at 125 mmHg using continuous therapy throughout treatment

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**V. Application for Acute Enteric Fistula, Complex**

- A. Cover the mouth of the fistula with several layers of petroleum-based gauze
- B. Aggressively irrigate and clean the abdominal wound as directed by MD
- C. Remove the layers of petroleum-based gauze from the fistula
- D. Cover the mouth of the fistula with a single layer of wide meshed non-adherent dressing
- E. Cover all areas of exposed bowel or other organs with a petroleum-based fine meshed non-adherent dressing
- F. Cut and apply a strip of V.A.C. VersaFoam directly over the wide meshed non-adherent dressing on the mouth of the fistula with the foam extending 1-2 cm beyond the mouth of the fistula
- G. Gently place V.A.C. GranuFoam over the VersaFoam and into the remaining wound
- H. Apply the drape over the entire dressing and T.R.A.C. Pad directly over the fistula
- I. Initiate pressure at 150-175 mmHg using continuous therapy throughout treatment

**VI. Application for Chronic Enteric Fistula**

- A. Cover the mouth of the fistula with several layers of petroleum-based gauze
- B. Aggressively irrigate and clean the abdominal wound as directed by MD
- C. Remove the layers of petroleum-based gauze from the fistula
- D. Place a drainage device such as a soft, red rubber catheter or foley catheter into the fistula
- E. Wrap a petroleum-based gauze around the base of the drainage device at the mouth of the fistula
- F. Cover all areas of exposed bowel or other organs with a petroleum-based fine-meshed non-adherent dressing
- G. Cut and gently place V.A.C. GranuFoam into the wound with a hole made for the drainage device tubing to come through
- H. Apply the drape over the entire dressing, creating a mesentery around the tubing to prevent leakage
- I. Apply the T.R.A.C. Pad
- J. Connect the drainage device to a collection unit such as foley bag or suction system
- K. Initiate pressure at 125 mmHg using continuous therapy throughout treatment

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