



BANDAGES

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No single type of bandage provides the optimum environment for all wounds nor for total healing of a particular wound.

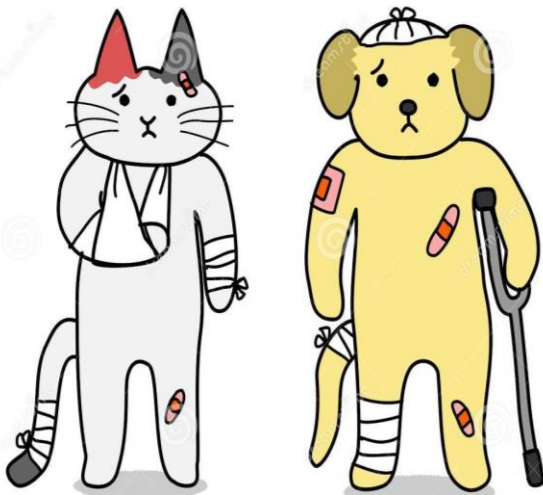
Bandages provide:

1. wound cleanliness,
2. control the wound environment,
3. reduce edema and hemorrhage,
4. eliminate dead space,
5. immobilize injured tissue
6. minimize scar tissue.
7. provide comfort,
8. absorb and allow characterization of wound secretions
9. give an aesthetic appearance.



Bandages keep wounds warm, which improves wound healing and facilitates oxygen dissociation;

Covering wounds with a bandage promotes an acid environment at the wound surface by preventing carbon dioxide loss and absorbing ammonia produced by bacteria. An acid environment increases oxygen dissociation from hemoglobin and subsequently increases oxygen availability in wounds.



Bandages should be comfortable and clean. Uncomfortable bandages annoy patients, who may then mutilate the bandage or wound or both.

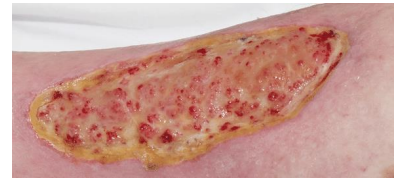
Pressure should be applied over and distal to wounds rather than proximal to them to minimize venous or lymphatic compromise.

When the outer layer of bandages becomes wet, bacteria readily pass from the outer surface and colonize wounds. Most wounds are unbandaged, inspected, and treated daily;

however, wounds with excessive tissue damage, exudate, or established infection may require bandage changes twice or three times daily. Adherent bandages should be changed more frequently if the gauze is saturated with exudate and slides on the wound at bandage changes.



Bandages applied over wounds with healthy granulation tissue and support bandages used to immobilize fractures may need changing only once every 2 to 4 days.



Analgesia or anesthesia may be required for initial bandage changes.

WOUND BANDAGING MATERIALS

Bandages have three basic layers:

1. the contact dressing, or primary layer;
2. the intermediate, or secondary, layer;
3. the outer, or tertiary, layer.



1. Contact (Primary) Layer

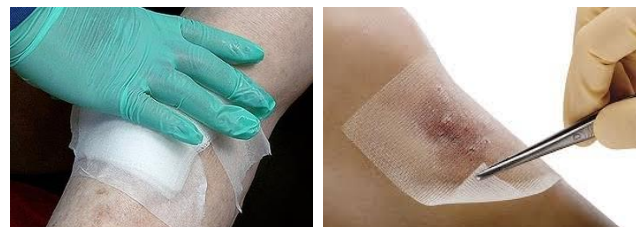
The contact layer touches the wound surface and should remain in contact with it during movement.

It is used to

- a. debride tissue,
- b. deliver medication,
- c. transmit wound exudate, or form an occlusive seal over the wound.
- d. The contact layer should minimize pain and prevent excess loss of body fluids

It may be

- a.adherent or b.nonadherent and
- a.occlusive or b.semioclusive



- a. **An adherent contact layer** is used when wound debridement is required,
 - b. a nonadherent contact layer is selected when granulation tissue has formed.
- a. **Semiocclusive bandages** allow air to penetrate and exudate to escape from the wound surface. They are the most commonly used bandages in veterinary medicine.
 - b. **Occlusive bandages** are impermeable to air and fluid. They are used on less exudative wounds to keep tissues moist

a. Dry adherent.

A dry adherent contact layer should be selected **when** the wound surface has loose necrotic tissue and foreign material or a large amount of low-viscosity exudate that does not aggregate.

An absorbent, wide-mesh gauze is used without cotton filler. Dry gauze absorbs exudate and adheres to necrotic tissue and debris.

The bandages should be removed after the primary layer has absorbed fluid and debris and dried.

The disadvantages of a dry adherent contact layer are that it is painful to remove; viable cells may be removed with necrotic debris; and the wound may desiccate.



b. Wet adherent:

A wet adherent contact layer should be used **when** the wound surface has necrotic tissue, foreign matter, or a viscous exudate.

Sterile, wide-mesh gauze soaked with saline is applied to the wound.

A 0.05% solution of chlorhexidine diacetate (Nolvasan solution) may also be used as a wetting solution.

The fluid dilutes the exudate so that it can be absorbed by the intermediate layer of the bandage.

Necrotic tissue and foreign material adhere to the gauze as it dries and are removed with the bandage.

Wet bandages absorb faster than dry bandages and are more comfortable.

Potential disadvantages of a wet adherent contact layer are

- a. pain
- b. tissue damage during bandage change,
- c. bacterial proliferation,
- d. tissue maceration,
- e. strike-through (see p. 148).

Rewetting the dried dressing with warm saline facilitates removal and reduces pain during bandage changes.

Adherent film:

Transparent liquids that are spread in a thin layer over the wound dry, creating a film or bandage that acts as a barrier between the skin or granulating wound and the external environment. These films are generally permeable to water vapor and occlusive to bacteria and water. They prevent skin irritation from urine or feces contamination. They may be used alone over wounds or with a bandage. Reapplication is necessary every 3 to 4 days.



b.Nonadherent contact layers:

Nonadherent contact layers do not stick to the wound surface, and most are semioclusive. They may be used **when** wounds are in the repair phase of healing or if necrotic debris is absent.

Nonadherent contact layers retain moisture to promote epithelialization and prevent wound dehydration. They allow excess fluid to drain, preventing tissue maceration.

2. Intermediate (Secondary) layer

The intermediate layer of a bandage is an absorbent layer that removes and stores deleterious agents (e.g., blood, serum, exudate, debris, bacteria, enzymes) away from the wound surface.

Bacterial growth is retarded if the bandage allows fluid evaporation and exudate becomes concentrated.



The intermediate layer function

- a. The intermediate layer should have capillarity for absorption and should be thick enough to collect the fluid.
- b. The intermediate layer also serves to pad the wound from trauma, splint the wound to prevent movement, and
- c. hold the contact layer against the wound.



Absorbent cotton, combine roll, or cast padding (Specialist cast padding or Kerlix rolls) may be used.

Enough pressure must be applied during application of this layer to eliminate spaces between the wound and the contact layer and between the contact layer and intermediate layer. Such spaces allow fluid to accumulate, which promotes tissue maceration; however, excessive compression impairs absorption and interferes with blood supply and wound contraction.



The outer layers of the intermediate layer can be made nonabsorptive by applying petrolatum, which inhibits environmental fluid from reaching the wound.

3. Outer (Tertiary) Layer

The tertiary layer holds the other bandage layers in place and protects them from external contamination.

- a. Roll gauze (Conform Stretch Bandages or Kling),
- b. stockinette (Specialist tubular stockinette), or surgical adhesive tape is used for the outer bandage layer (surgical adhesive tape is most commonly used).

Porous tape allows fluid evaporation and promotes dryness but allows surface bacteria to contaminate the wound when it becomes wet. Conversely, wound bacteria can migrate through bandages and contaminate the environment.

Waterproof tape protects the wound from environmental fluids but creates an occlusive bandage that may lead to tissue maceration. It should be used only in areas predisposed to getting wet (e.g., the feet), and it often is used in combination with porous tape.

Elastic adhesive tapes (Elastikon porous adhesive tape or Vetrap) apply pressure, conform to the area, and immobilize it. Support rods or splints may be incorporated into the outer layer of the bandage if additional immobilization is required.

Custom-made or modified garments such as children's T-shirts can be used to protect or replace the tertiary layer of bandages applied to the body or head.

Elizabethan collars, side or body bars, and tape hobbles frequently are used to protect bandages from the patient.

