

Using the PUSH Tool for Wound Assessment

Presenter:

Rita A. Frantz, PhD, RN, FAAN, CWCN
College of Nursing
The University of Iowa

Objectives:

By the end of this presentation, the participant will be able to:

1. Describe the purpose of using the PUSH Tool for wound assessment.
2. List the wound assessment elements in the PUSH Tool.
3. Define the four characteristics used in the PUSH Tool to describe the surface of the wound.

Content Outline:

I. Purpose of wound assessment

To monitor the changing status of the wound as it progresses through the healing process

II. Wound healing process

A. Phases of healing process

1. Inflammation

- a. Defensive reaction to tissue injury
- b. Characterized by increased blood flow & capillary permeability
- c. Platelet aggregation and activation of clotting factors produces fibrin clot formation
- d. Platelets release growth factors that attract cells required for repair process
- e. Neutrophils and monocytes attracted to wound bed to engulf bacteria and debris
- f. Necrosis (dead tissue) or infection will prolong inflammatory phase

2. Angiogenesis
 - a. New capillary networks established
 - b. Perfusion to wound bed is re-established

 3. Deposition of extracellular collagen matrix
 - a. Fibroblasts migrate to wound bed in response to growth factors
 - b. Fibroblasts synthesize collagen and other connective tissue substances
 - c. Collagen synthesis and angiogenesis occur simultaneously in codependent fashion to create granulation tissue
 - d. Ultimately, granulation tissue matures into a relatively avascular scar

 4. Contraction
 - a. Smooth muscle fibers contract around wound pulling opposing edges together
 - b. Occurs in areas of body where surrounding tissue is mobile (e.g., sacral and abdominal wounds)

 5. Epithelization
 - a. Migration, proliferation, & differentiation of epithelial cells from wound edges
 - b. Resurfaces (covers) the wound
 - c. Occurs concurrently with collagen synthesis in superficial wounds (e.g., Stage II pressure ulcers)
 - d. Delayed until bed of granulation tissue established in full thickness wounds (e.g., Stage III and IV pressure ulcers)
- B. Predominant phases of healing process vary across level of injury
1. Partial thickness – loss of epidermis and portion of dermis (e.g., Stage II pressure ulcer)
 - a. Heals primarily by regeneration of epithelial cells
 - b. Collagen synthesis occurs concurrently

2. Full thickness – extends through dermis; involves subcutaneous & deeper tissue layers (e.g., Stage III & IV pressure ulcers)
 - a. Heals primarily by repair & scar formation (angiogenesis, deposition of extracellular matrix, and contraction).
 - b. Epithelial migration follows and makes smaller contribution to healing process

C. Not all phases amendable to macroscopic level measurement

1. Extracellular collagen maxtrix formation visible as granulation tissue
2. Contraction and epithelization visible as decreasing size of wound surface

III. Wound Assessment Using the PUSH Tool

A. Purpose of PUSH Tool

1. Monitor healing over time
2. Differentiates healing from non healing wound
3. Accurate, easy to use, sensitive change over time
4. NOT a comprehensive wound assessment guide
5. Elements in tool are characteristics MOST indicative of healing

B. Elements in PUSH Tool

1. Surface area
2. Exudate amount
3. Tissue type (surface appearance)

IV. Definition of PUSH Tool Elements

A. Wound size—surface area (length x width)

1. Use centimeter ruler
2. Measure greatest length – head to toe
3. Measure greatest width – side to side

4. Multiple length times width
 - a. Provides estimate of surface area size in square centimeters (cm^2)

B. Wound bed tissue – type of tissue present on surface of wound

1. Necrotic tissue – black, brown, or tan devitalized tissue that adheres firmly to the wound bed or edges and may be either firmer or softer than surrounding skin
2. Slough – yellow or white devitalized tissue that adheres to the wound bed in strings or thick clumps, or is mucinous
3. Granulation – pink or beefy red tissue with a shiny, moist, granular appearance
4. Epithelial – new pink or shiny tissue (skin) that grows in from the edges or as islands on the wound surface
5. Closed/resurfaced – wound is completely covered with epithelium (new skin)

C. Exudate/Drainage

1. Heavy – wound tissues bathed in fluid; distribution on wound bed may be variable
2. Moderate – wound tissues saturated; distribution on wound bed may be variable
3. Light – wound tissues wet; moisture evenly distributed on wound bed
4. None – No moisture on wound; wound bed is dry

V. Scoring the PUSH Tool

A. Score each element

1. Length x width \rightarrow 0 (0cm^2) to 10 ($> 24\text{cm}^2$)
 - a. Measure wound edge to wound edge
 - b. Length – greatest head to toe distance
 - c. Width – greatest side to side distance
 - d. Multiple length x width to obtain square centimeters (cm^2)

2. Exudate amount → 0 (none) to 3 (heavy)
 - a. Heavy – wound tissues bathed in fluid; distribution on wound bed may be variable
 - b. Moderate – wound tissues saturated; distribution on wound bed may be variable
 - c. Light – wound tissues wet; moisture evenly distributed on wound bed
 - d. None – no moisture on wound; wound bed is dry

3. Tissue type → 0 (closed) to 4 (necrotic tissue)
 - a. Score ‘4’ if ANY necrotic tissue present
 - b. Score ‘3’ if ANY slough present
 - c. Score ‘2’ if wound clean & granulation tissue present
 - d. Score ‘1’ if wound is superficial & reepithelializing
 - e. Score ‘0’ if wound is closed

VI. Practice applying the PUSH Tool to examples of pressure ulcers

References:

Gardner, S.E., Frantz, R.A., Bergquist, S., Shin, C.D. (In press). A prospective study of the Pressure Ulcer Scale for Healing (PUSH). Journal of Gerontology.

Stotts, N., Rodeheaver, G.T., Bartolucci, A.A., Thomas, D.R., Frantz, R.A., Sussman, C., Ferrell, B.A., Cuddigan, J., Maklebust, J. (2001) Testing the pressure ulcer scale for healing (PUSH). The Journal of Gerontology: Medical Sciences, 56A (12), M795-M799.

Thomas, D.R., Rodeheaver, G., Bartolucci, A., Frantz, R., Sussman C., Ferrell, B., Cuddigan, J., Stotts, N., Maklebust, J. (1997). Pressure ulcer scale for healing: Derivation and validation of the PUSH tool. Advances in Wound Care: The Journal for Prevention and Healing, 10(5), 96-101.