

# Appendix N: Wound infection assessment tools

NERDS and STONEES are methods to systematically assess for superficial critical colonization (localized infection) and deeper and surrounding infection (systemic infection), respectively, in people with pressure injuries. The methods described below are suggestions that were identified through the systematic review and by feedback from the expert panel or external reviewers. Both kinds of infections must be treated in order to avoid delays in wound healing.

**Table 24: Overview of NERDS© and STONEES© infection assessment tools**

INFECTION ASSESSMENT TOOL	
<b>NERDS®</b>	
<b>N- non-healing wound</b>	This refers to wounds that have not healed, despite the implementation of appropriate wound care interventions (e.g., the cause of the wound was treated and person/caregiver concerns were addressed).
<b>E- exudate</b>	Increased exudate from a pressure injury indicates bacterial imbalance (in the absence of an autolytic debridement process), which in turn can cause peri-wound maceration.
<b>R- red and bleeding</b>	A red and bleeding wound surface and granulation tissue is indicative of bacterial imbalance.
<b>D- debris</b>	Yellow or black necrotic tissue and debris on the wound surface stimulates infection by acting as a food source for bacteria.
<b>S- smell</b>	The unpleasant smell from a pressure injury generally results from bacterial imbalance, tissue inflammation, and the release of bacterial by-products from tissue necrosis. Different bacteria produce different smells – for example, pseudomonas diffuses a sweet scent, while anaerobes produce a putrid smell.
<b>Interpretation</b>	A person must meet at least three of the above criteria to be considered for superficial wound infection treatment

## INFECTION ASSESSMENT TOOL

### STONEES®

<b>S- size</b>	An increased wound size may be due to (1) deeper and surrounding tissue damage caused by bacteria, (2) the cause of the wound not having been treated or (3) a local or systemic cause that is impairing wound healing.
<b>T- temperature</b>	Infection should be highly suspected if there is greater than a 3-degree temperature difference between the two mirror-image sites (e.g., the left heel and the right heel).
<b>O- os (probe to or exposed bone)</b>	Osteomyelitis should be highly suspected if a health-care professional can probe to bone or if the bone is exposed.
<b>N- new or satellite areas of breakdown</b>	Satellite breakdown refers to areas of skin breakdown that are separate from the main pressure injury. This may occur when (1) the cause of the wound has not been treated, (2) local damage is present or (3) there is an infection.
<b>E- exudate</b>	Increased exudate is indicative of increased bacterial burden and damage.
<b>E- erythema and/or edema (cellulitis)</b>	Erythema and/or edema is indicative of increased bacterial burden and bacterial damage. The bacterial burden and damage in turn causes inflammation, vasodilation (i.e., erythema), and leakage of fluid into the tissue (i.e., edema).
<b>S- smell</b>	Bacteria that invade tissue cause wounds to have a “foul” smell.
<b>Interpretation</b>	A person must meet at least three of the above criteria to be considered for deep and surrounding wound infection intervention.
<b>Validation studies</b>	Woo KY, Sibbald RG. A cross-sectional validation study of using NERDS and STONEES to assess bacterial burden. <i>Ostomy Wound Manage.</i> 2009 Aug 1;55(8):40–8.