Appendix I: Pressure Injury Assessment Tools

According to expert panel consensus and current wound care guidelines, the most common, valid, and reliable wound assessment tools for use in adults are the following (in no particular order of importance):

- **the Pressure Ulcer Scale for Healing (PUSH)** (NPUAP, EPUAP, & PPPIA, 2014; WOCN, 2010);
- **the Photographic Wound Assessment Tool (PWAT)** (Houghton et al., 2013; Thompson, Gordey, Bowles, Parslow, & Houghton, 2013); and
- **the Bates-Jensen Wound Assessment Tool (BWAT)** (NPUAP, EPUAP, & PPPIA, 2014; WOCN, 2010).

The following is not an exhaustive list of pressure injury assessment tools. The tools below have been suggested as examples of information identified within the systematic review, AGREE II appraised guidelines, by the expert panel or external stakeholder feedback.

TOOL	SOURCE/WEB ACCESS	DESCRIPTION
Pressure Ulcer Scale for Healing (PUSH)	National Pressure Ulcer Advisory Panel (1998): http://www.npuap.org/resources/educational-and-clinical-resources/push-tool/	■ Developed by the Task Force of the National Pressure Ulcer Advisory Panel (NPUAP) to help clinicians determine whether a wound was healing or improving over time (Thomas et al., 1997). ■ Created in response to misuse of NPUAP staging system, which was being used inappropriately to describe wound progress or healing. ■ Original version of the PUSH had several different domains; however, a statistical technique was used to determine that three items (surface area, exudate amount, and wound base) defined the best model of healing (Gardner, Frantz, Bergquist, & Shin, 2005). Each of the three subscales are weighted; the size domain determined after measuring the wound length and width using a ruler counts for 10 of the 17 total score (Thomas et al., 1997). ■ The content validity of the PUSH has been established, and a good correlation between total PUSH scores and acetate tracings illustrates good concurrent validity (Thomas et al., 1997). ■ Reliability between raters has not been reported, and considering the wide variation known to occur when different raters measure wound extent using a ruler, poor inter-rater reliability is to be expected. However, several studies have shown that repeated measures of the PUSH in wounds over time are able to detect differences between healing and non-healing wounds (Gardner et al., 2005; Stotts et al., 2001). This has been shown not only for pressure injuries, but also for other types of wounds (Hon, Lagden, McLaren, Orr, & O'Sullivan., 2010). ■ The PUSH tool has been used in randomized controlled trials to show statistically significant differences in healing between groups and over time (Lee et al., 2006). ■ Given that it takes less than 2 minutes to complete the tool, this assessment tool is recommended for repeated use on people with pressure injuries to determine whether the wound is getting better or worse.

TOOL	SOURCE/WEB ACCESS	DESCRIPTION
Photographic Wound Assessment Tool (PWAT)	Hodgkinson, Bowles, Gordy, Parslow, & Houghton (2010): http://www.southwesthealthline.ca/healthlibrary_docs/B.9.3b.PWATInstruc.pdf	• Developed as an instrument that could be used to determine ulcer status from a photograph rather than at the bedside (Houghton, Kincaid, Campbell, Keast, & Woodbury, 2000). • Originally, the PWAT was based on components of the Pressure Sore Status Tool (PSST) that could be determined from a visual image, including wound size, the composition of the wound base, and the peri-ulcer skin (Houghton et al., 2000). A revision to the tool was produced and validated in 2012, so that it now contains eight items, each scored on a five-point scale from 0 to 4, yielding a total score out of 32, with zero representing a completely healed wound (Thompson et al., 2013). Content validity was not assessed with this tool. • An evaluation of 300 photographs taken of 139 wounds of different etiology showed excellent reliability and 89 percent agreement between total PWAT scores attained when wounds were evaluated at the bedside compared to using a digital image (Thompson et al., 2013). • The PWAT was able to detect differences between healing and non-healing wounds (Houghton et al., 2000), and it has been used to detect differences between treatment groups in three randomized controlled trials (Houghton et al., 2010; Houghton et al., 2003; Thompson et al., 2013). • This instrument may be useful to clinicians and researchers who wish to photograph wounds and who find that the PWAT contains the items that are relevant to their needs. • Standardized equipment and a consistent technique should be used with serial wound photography. It must be emphasized, however, that photographs should not replace bedside clinical wound assessment (NPUAP, EPUAP, & PPPIA, 2014).

TOOL	SOURCE/WEB ACCESS	DESCRIPTION
Bates-Jensen Wound Assessment Tool (BWAT)	Bates-Jensen (2001): http://geronet.med.ucla.edu/centers/borun/modules/Pressure_ulcer_prevention/puBWAT.pdf Pictorial guide: Harris, C., Bates-Jensen, B., Parslow, N., Raizman, R., Singh, M., & Ketchen, R. (2010). Bates-Jenson Wound Assessment Tool: Pictorial Guide Validation Project. *Journal of Wound, Ostomy and Continence Nursing, 37*(3), 254–259.	■ One of the most widely adopted assessment tools used in wound-care practice in Canada. ■ The PSST, which was developed by Barbara-Bates-Jensen, is a comprehensive discriminative tool that consists of 13 items, including wound extent (size and depth), the quality and amount of tissue in the wound base, the edges, and peri-ulcer skin. Each item is scored on five-point scale and summed to give a scale range of 13–65, where a score of 13 represents a completely healed wound. ■ The PSST has previously been shown to have very high content validity, meaning that the tool contains all of the appropriate domains to fully describe the wound (Bates-Jensen, Vredevoe, & Brecht, 1992). ■ Further validation showed the PSST had excellent concurrent validity when compared with the NPUAP staging system and good intra-rater and inter-rater reliability (Bates-Jensen and McNees, 1995). ■ In 2001, the PSST was revised and renamed the BWAT to signify that it could be used to evaluate more than just pressure injuries (RNAO, 2007). The revisions were considered minor, and further validation of the BWAT has been limited (Karahan et al., 2014). ■ The BWAT has been used to detect differences in wound status over time and to determine whether new treatment interventions accelerated wound healing over control or standard wound treatments. ■ Results have been mixed where significant differences between groups and over time have or have not been detected (Gardner et al., 2005; Gupta et al., 2009; Houghton et al., 2003; McCallon & Frilot, 2015). ■ Since there are no published reports that demonstrate the responsiveness of either the PSST or BWAT, it is not possible to determine whether conflicting results are due to an ineffective treatment or because the assessment tool is not sensitive to changes. ■ Given that results derived from the PSST were found to be more accurate and reliable when used by experienced rather than novice clinicians (Bates-Jensen et al., 1992) and that it takes an average of 3.4 (experienced) and 15 minutes (novice) to complete the assessment (RNAO, 2007), the PSST/BWAT may be more appropriate for use by experienced wound-care clinicians as a discriminative assessment tool to fully describe the wound during the initial assessment. ■ Using the tool repeatedly to detect changes in wound status over time is not recommended at this time, since responsiveness of the PSST/BWAT has not yet been demonstrated.