

Reviewer ID: Emily Procter, Jeremy Mak, John Zhu, Risa Fox			
Type of Outcome Measure: The Spinal Cord Injury Pressure Ulcer Scale			Total articles: 4
Author ID Year	Study Design	Setting	Population (sample size, age) and Group
Salzberg et al. 1996	Retrospective, development of a new scale	Department of Veterans Affairs Medical Centre (Castle Point) database.	N=219 (217 M, 2F) Patients recruited between Aug. 4, 1987 and Dec. 14, 1993. Traumatic SCI Age at onset of injury: range= 18-88yrs (mean 35.6±15yrs). Interval from onset to last follow-up: range = 0.2-51.3yrs (mean 17.2±12.1yrs). 176 patients developed ulcers at some point and 43 did not.
Salzberg et al. 1999	Retrospective medical record review	Five trauma centres in the New York area.	N=226 (188M, 38F) Mean age 33.2±15.2yrs (range 1-83yrs) Acute, traumatic SCI patients admitted between June 1986 and October 1994 to one of five trauma centres in the New York area. Levels C4-S1.
Delparte et al. 2015	Prospective Cohort	Tertiary rehabilitation centres in Ontario	N= 759 (250F, 509M) Age: 53.9 ±18.5 Time since SCI (days): 84.9 ± 379.7 Complete: 16% Incomplete: 84% 53% paraplegia, 47% quadriplegia
Higgins et al. 2019*	Secondary analysis of retrospective data	Two rehabilitation centers in Canada (Toronto, Montreal)	N=886 (59% male) Median age (interquartile range): 56 (28) Etiology: 56% non-traumatic, 44% traumatic ASIA level: 14% A, 8% B, 14% C, 37%D (26% missing)
1. RELIABILITY – no data available			
Author ID	Internal Consistency	Test-retest, Inter-rater, Intra-rater	
Delparte et al. 2015	No data available	Inter-rater ICC: 0.91	
Higgins et al. 2019	The person separation index (PSI) for the remaining 14 items (out of 15) of the SCIPUS was 0.44, which is considered low. Item 13 (individual in a Nursing Home or Hospital) was automatically excluded from the analysis since all study participants obtained the same score; as they were admitted to a rehabilitation center. PSI=0.44 (PSI is interpreted as an alpha) Modified the SCIPUS further by deleting item 7 (smoking) and 6 (age); the remaining 12 items of the SCIPUS was PSI=0.48.	No data available	
2. VALIDITY			
Author ID	Validity		
Salzberg et al. 1996	Items for measure identified by ensuring they met 4 criteria: 1) statistical association with pressure ulcer, 2) biologically plausible, 3) literature supported & 4) improved prediction. Statistical association determined based		

	<p>on their sample. 15 items were identified including level of activity, mobility, complete SCI, urine incontinence or constantly moist, autonomic dysreflexia, age, tobacco use, pulmonary disease, cardiac disease, diabetes, renal disease, impaired cognition, in a nursing home or hospital, serum albumin and hematocrit levels. Weighting values not explained.</p> <p>The optimal balance of sensitivity (75.6%) to specificity (74.4%) was found at a cut-off point of ≥ 6. The positive predictive value was 92.4% and the negative predictive value was 42.7%.</p>
<p>Salzberg et al. 1999</p>	<p>Items for measure identified by ensuring they met 4 criteria: 1) statistical association with pressure ulcer, 2) biologically plausible, 3) literature supported & 4) improved prediction. Statistical association determined based on their sample. Weights (Coded values) used in the scale were based on the relative value coefficients in the logistic regression model.” 8 Items were identified: Extent of paralysis, moisture, serum creatinine, incontinence, albumin, mobility, pulmonary disease and level of activity.</p> <p>The stage of the first pressure ulcer and SCIPUS ($\rho = 0.343$) ($P \leq .001$)</p> <p>The number of ulcers developed and SCIPUS ($\rho = 0.339$) ($P \leq .001$)</p> <p>**This study focused on pressure ulcers that developed within the first 30 days post-admission. Pressure ulcers developing after this timeframe were not included.</p> <p>Total Score within 24 hours of admission: <u>SCIPUS:</u> Sensitivity: 36.8% Specificity: 84.2% Accuracy: 65.9% ($p < 0.00005$) R = 0.246</p>
<p>Delparte et al. 2015</p>	<p>Poor accuracy (AUC < 0.7) for cutoff scores of ≥ 6, ≥ 7, ≥ 8 for “high risk” categorization</p>
<p>3. RESPONSIVENESS – no data available</p>	
<p>4. FLOOR/CEILING EFFECT – no data available</p>	
<p>5. INTERPRETABILITY – no data available</p>	

* note: The paper by Higgins et al, 2019 uses Rasch, which is a modern measurement methods. There are many comments on the scale, such as suggestions to remove items, based on Rasch analysis.