

Author Year Country Research Design Score Sample Size	Method	Conclusions
Systematic Reviews		
Marin et al. 2013 United Kingdom Review of published articles between 1980-2011 AMSTAR=8 N=5	Method: A systematic review including prospective cohort, retrospective record reviews and clinical trials that identified risk factors associated with pressure injury development and recurrence in SCI populations using multivariate analytical techniques. Databases: MEDLINE, Embase and Cochrane. Level of evidence: Level 2 (prospective cohort study); level 4 (retrospective cohort study and retrospective record review); level 5 (observational study and longitudinal panel cohort) Questions/measures/hypothesis: To identify risk factors predictive of pressure injury development in adults with SCI.	18 risk factors were identified and classified into six themes: sociodemographic, neurological, functional clinical, biological and medical care management. - Risk factors for both the general and SCI-specific populations were similar but functional and hospital management emerged as specific risk factor domains for the SCI population. - Findings were based on a small number of studies highlighting the need for further confirmatory work to reduce pressure injury development and recurrence and to provide a foundation for SCI risk assessment development.
Gelis 2009 France Review of published articles between 1966 and 2008 AMSTAR=8 N=6 Studies	Method: Systematic Review of Literature. Databases: Medline (1966), Embase (1980), Pascal (1990), Reedoc (1977). Level of evidence: Moderate Level of Evidence Questions/measures/hypothesis: Determine pressure injury risk factors correlated to the patients with SCI, medical care management during the acute as well as in the rehabilitation and chronic stages. This first part focuses on identifying the risk factors during the acute and rehabilitation stages.	- Risk factors during the acute stage of an SCI are essentially linked to care management and treatment modalities. - There is insufficient evidence to make a recommendation on medical risk factors, however, low blood pressure on admission to the Emergency Room, with a moderate level of evidence.
Interventional Studies		
Jan et al. 2011 USA Prospective Controlled Trial N=23	Population: Mean age= 31.3 yr; Gender: males=11, females=12; Level of injury: paraplegia=4, tetraplegia=7, healthy controls=12. Intervention: Patients underwent thermally induced maximal sacral skin blood flow oscillations (BFO), which were measured by laser Doppler flowmetry. Outcome measures: Multifractal detrended fluctuation analysis (MDFA) was used to characterize nonlinear complexity of metabolic (0.0095 to 0.02 Hz), neurogenic (0.02 to 0.05 Hz), and myogenic (0.05 to 0.15 Hz) BFO.	- Maximal vasodilation was significantly smaller in people with SCI than in nondisabled controls. - Metabolic BFO exhibited less complexity in people with SCI. - Neurogenic BFO exhibited less complexity in people with complete SCI. - Myogenic BFO did not show significant differences between people with SCI and nondisabled controls.
Li et al. 2011 China Prospective Controlled Trial N=20	Population: Mean age=36.5 yr; Gender: males=14, females=6; Level of injury: patients with SCI=10, health subjects=10. Intervention: External pressure of 26.6 kPa (200 mmHg) was applied to the sacrum via a specifically designed indenter. The subjects were examined lying face-down. Ultrasound equipment was used to analyze the structure and depth of the tissue on the sacrum area. Outcome measures: Tissue oxygenation signal was monitored for 20 min prior to and after the	[HbO₂] and [Hb] component significantly lower during rest conditions in SCI vs. healthy subjects. - During the post-loading period, the response of [HbO₂] and [Hb] oscillatory activities were significantly lower in the tissue over the sacrum for persons with SCI than that for normal subjects.

	loading period from the tissue over the sacrum area using near-infrared spectroscopy (NIRS). With spectral analysis based on wavelet transform, five frequency intervals were identified (I, 0.005-0.02 Hz, II, 0.02-0.06 Hz, III, 0.06-0.15 Hz, IV, 0.15-0.40 Hz and V, 0.40-2.0 Hz) corresponding to endothelial related metabolic, neurogenic, myogenic, respiratory and cardiac activities, respectively. Waterlow Scale was used for the pressure injury risk assessment.	3. Significant negative correlation between oscillatory activities and Waterlow scale in persons with SCI.
Wilczweski et al. 2012 USA Case Series N=94	Population: Median age range: 51-65 yr; Gender: males=72, females=21; Level of injury: C1-C4 incomplete injuries=32, unknown=62. Intervention: Retrospective chart review of patients included in study, to identify potential risk factors for pressure injury development. Outcome measures: Primary outcome was the development of a pressure injury. If pressure injury was present, the documented stage was recorded (i.e., stage I, II, III, and IV).	1. Risk factors significantly correlated with development of new pressure injuries: • Fecal management system • Incontinent of urine • Acidosis • Type of bed surface • Use of steroids • Additional equipment • Prolonged hypotension 2. Prolonged periods of hypotension were the greatest predictor of pressure injuries.
Rabadi et al. 2011 USA Case Series N=87	Population: Mean age: 60 yr; Gender: males=85; females=2; Level of injury: cervical=44, thoracic=44, lumbosacral=10; Severity of injury: AISA A=32, B=12, C=21, D=19 and E=3. Intervention: Retrospective chart review of patients included in study, to identify potential risk factors for pressure injury development. Outcome Measures: Basic demographics, presence of modifiable risk factors including: Hypertension, diabetes mellitus, hyperlipidemia, current smoking; presence of depression, incontinence and results from blood drawn from hemoglobin level, blood urea nitrogen, creatinine and albumin levels and lipid profile on initial enrolment.	1. Comparisons between those with and without pressure injuries found no significant differences for the demographic variables of age, gender, age of SCI onset, or SCI duration, but there was a trend for the groups to differ in ethnicity (p=0.05). 2. The presence of modifiable vascular risk factors including hypertension, diabetes mellitus, hyperlipidemia, and current smoking did not differ between those with and without pressure injury.