

## 2. Screening for Cardiovascular Risk in SCI

**ACTIONABLE NUGGET:**  
**Screen for cardiovascular risk factors at least annually.**

### The Problem



Cardiovascular disease (CVD) is a leading cause of death among people with SCI. Risk for CVD is higher than for the general population, and key risk factors for CVD are exacerbated by SCI; specifically, dyslipidemia, blood pressure irregularities, abnormal glycemic control, chronic inflammation, autonomic nervous system dysfunction, obesity, and physical inactivity. Early onset CVD is part of a pattern of premature aging among people with SCI. In many instances, CVD is asymptomatic because of impaired sensation and lack of strenuous activity. Lifetime prevalence is estimated at 30-50%, but may actually be as high as 60-70%, given asymptomatic cases.

### Evidence-based Best Practice

Aggressive screening is required in order that under-diagnosis and conservative treatment do not add to the burden of disability.

- Waist circumference > 37" (94 cm) in supine lying is a better indication of obesity than BMI, although at risk BMI has been calibrated at 22/21 for males/females with quadriplegia, and 26/28 with paraplegia.
- Blood pressure should be measured at every encounter. Resting BP should be <140/90 mmHg. Also be aware of fluctuations and potential for autonomic dysreflexia (See Nugget #4).
- The Framingham Risk Score may underestimate CVD risk in the SCI population. The National Cholesterol Education Program's Adult Treatment Protocol III is recommended as a more accurate classification of lipid levels for the SCI population (see below).
- HDL levels should be <40 mg/dL for men or <50 for women; LDL should be <159.
- Hemoglobin A1C profiles should be assessed annually > 40 years of age for men, or >50 for women.
- Plasma glucose should be >100 mg/dL; 2-hour glucose tolerance should be >200.

	Desirable	Borderline high risk	High risk	Very high risk
Total cholesterol	< 5.2	5.2 – 6.2	> 6.2	
Low-density lipoprotein (LDL)	< 3.3	3.4 – 4.1	4.1 – 4.9	> 4.9
High-density lipoprotein (HDL)	> 1.5	1.0 – 1.3 (men) 1.3 – 1.5 (women)	<1.0 (men) <1.3 (women)	
Triglycerides	< 1.7	1.7 – 2.2	2.3 – 5.6	> 5.6

### Key Reference

**Yarar-Fisher, C., Heyn, P., Zanca, J. M., Charlifue, S., Hsieh, J. & Brienza, D. M.** (2016). Early identification of cardiovascular diseases in people with spinal cord injury: Key information for primary care providers. *Archives of Physical Medicine and Rehabilitation*, 98(6), 1277-1279. doi:10.1016/j.apmr.2016.10.001

Actionable Nuggets (4th ed., 2019)

### Additional References (since 2016)

**Adriaansen, J. J. E., Douma-Haan, Y., van Asbeck, Floris W. A, van Kopenhagen, C. F., de Groot, S., Smit, C. A., . . . ALLRISC.** (2017). Prevalence of hypertension and associated risk factors in people with long-term spinal cord injury living in the netherlands. *Disability and Rehabilitation*, 39(9), 919-927. doi:10.3109/09638288.2016.1172349

**Aidinoff, E., Bluvshstein, V., Bierman, U., Gelernter, I., Front, L., & Catz, A.** (2017). Coronary artery disease and hypertension in a non-selected spinal cord injury patient population. *Spinal Cord*, 55(3), 321-326. doi:10.1038/sc.2016.109

**Köseoğlu, B. F., Safer, V. B., Öken, Ö., & Akselim, S.** (2017). Cardiovascular disease risk in people with spinal cord injury: Is there a possible association between reduced lung function and increased risk of diabetes and hypertension? *Spinal Cord*, 55(1), 87-93. doi:10.1038/sc.2016.101

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### Actionable Nuggets (4th ed.)

1. Epidemiology of Spinal Cord Injury
2. Screening for Cardiovascular Risk in SCI
3. Management of Cardiovascular Risk in Patients with SCI
4. Autonomic Dysreflexia
5. Assessment of Pain in SCI Patients
6. Pharmacological Management of Neuropathic Pain
7. Management of Musculoskeletal Pain
8. Annual Assessment of Neurogenic Bowel
9. Periodic Re-evaluation of Bowel Management Program
10. Diet and Fluid Management in Neurogenic Bowel
11. Screening for Colorectal Cancer in SCI Patients
12. Monitoring of Neurogenic Bladder
13. Recognizing Urinary Tract Infections in SCI
14. Pharmacological Management of UTI in SCI
15. Screening for Bladder Cancer in SCI Patients
16. Prevention of Skin Breakdown
17. Treatment of Skin Breakdown
18. Depression and SCI
19. Sexuality in SCI
20. Wheelchair Accessibility of Your Practice