

Evaluation of the Cardiovascular Assessment Screening Program (CASP) with Nurse Practitioners and Patients aged 40–74 years in Newfoundland and Labrador-A Randomized Controlled Trial

Objective

To evaluate a newly developed cardiovascular screening intervention, Cardiovascular Assessment Screening Program (CASP), with nurse practitioners and patients aged 40–74 years without established cardiovascular disease (CVD) in Newfoundland and Labrador (NL).

Practice Points

1. Screening for CVD risk factors in clinical practice often involves identifying single risk factors or conditions rather than using a comprehensive approach to identify multiple risk factors simultaneously in a systematic manner.
2. There are current guidelines available in the Canadian Cardiovascular Harmonized and National Guidelines Endeavour (C-CHANGE) for effective CVD screening and management of asymptomatic adults without established CVD.
3. Screening for CVD is complex and implementation of current guidelines such as the C-CHANGE is difficult to do in daily practice, so we developed CASP to simplify the screening and management process for clinicians and patients in NL.
4. There are many people in NL with multiple risk factors for CVD such as hypertension, obesity, and diabetes that could benefit from comprehensive CVD screening using CASP to identify CV risk factors early, to determine level of CVD risk, and to intervene using current evidence.
5. Engaging people to set personalized goals for heart health using tools provided in CASP can decrease the risk of a CV event and promote healthy aging.

Methods (PI: Dr. J. Bruneau)

1. Researchers recruited 8 NPs and randomly allocated them to groups. In turn, NPs recruited 167 patients aged 40-74 years from their community practices across NL. There were 68 patients in the intervention group and 99 patients in the control group.
2. Intervention group NPs screened patients for 10 risk components for CVD and documented these

in the study CVD database. The research team reviewed the patients' charts in the control group receiving usual care.

3. Comprehensive CVD screening was based on the NPs obtaining information from the patients on 9 or 10 of the following components: age, family history of premature coronary artery disease, Framingham Risk Score, smoking status, body mass index, waist circumference, blood pressure, lipid profile, A1C, and stress.
4. Screening was categorized as moderate if 6–8 components were evaluated, as limited if 3–5 components were evaluated and minimal if 1–2 components were evaluated.

Results

- Comprehensive CVD screening and management by NPs using CASP.
- Comprehensiveness of screening (i.e. screened for 9 to 10 risk components) was significantly higher in the NP intervention group using CASP (96%) versus the NP control group (7%) providing usual care after controlling for the effect of the NP. The adjusted RR was 43.9, 95% CI [13.3, 144.2], p<0.0001.

Table 1. Degree of Comprehensive Screening Comparison Between Groups

Degree of Comprehensive CVD Screening	Intervention (N=68)	Control (N=99)
Comprehensive CVD screening (9–10 components)	90% (61)	2% (2)
Moderate CVD screening (6–8 components)	10% (7)	1% (1)
Limited CVD screening (3–5 components)	0% (0)	54% (54)
Minimal CVD screening (1–2 components)	0% (0)	42% (42)

- CASP was effective in the identification of multiple risk factors for CVD.

The majority (71%) of patients in the intervention group had more than four CVD risk factors documented. Only 5% of the patients in the control group had more than four risk factors recorded, with the majority (46%) of the patients having two or three risk factors documented in their charts.

Table 2. CVD Risk Factors in the Intervention and Control Group Patients by Sex

Number of Risk Factors	Intervention Patients	Sex		Control Patients	Sex	
		Female	Male		Female	Male
7-10	18% (12)	Female	14% (7)	0% (0)	Female	0% (0)
		Male	27% (5)		Male	0% (0)
4-6	53%	Female	56% (28)	5% (5)	Female	4% (3)
		Male	44% (8)		Male	8% (2)
2-3	23% (16)	Female	28% (14)	46% (46)	Female	46% (35)
		Male	11% (2)		Male	48% (11)
0-1	3% (2)	Female	2% (1)	22% (22)	Female	21% (16)
		Male	5% (1)		Male	26% (6)
Unknown	3% (2)	Female	0% (0)	26% (26)	Female	29% (22)
		Male	11% (2)		Male	17% (4)

There were 50 females and 18 males in the intervention group, and 76 females and 23 males in the control group.

- CASP was effective in determining the patient's level of CVD risk.

Ninety-one percent (91%) or 62 patients seen by the NPs in the intervention group had their risk of having a CV event in the next 10 years assessed using the Framingham Risk Score (FRS) available on the CASP website. The risk for having a CV event was largely unknown for 96% (92 patients) in the control group because the FRS was documented on only seven (7) patients (4%).

Table 3. Recalculated FRS in 68 Intervention Group Patients at High, Moderate, or Low CVD Risk By Sex

Framingham Risk Score (FRS)	Intervention	Male (N=18)	Female (N=50)
High Risk (>20%)	28% (19)	55% (10)	18% (9)
Moderate Risk (10-20%)	37% (25)	22% (4)	43% (21)
Low Risk (<10%)	27% (18)	5% (1)	34% (17)
Unknown Risk	9% (6)	16.6% (3)	6% (3)

- CASP was effective for identifying NP and patient priorities for heart health.

All NPs in the intervention group identified two to three patient priorities for at least 75% of the patients. Over three quarters (80%) of the patients identified two or more priorities for improving heart health. Personalized goals were developed in collaboration with patients.

Conclusions

1. Integration of CASP as a useful clinical tool into daily practice can assist clinicians to identify CVD risk factors early and provide guidance for patient management.
2. Engagement of patients in making decisions and setting priorities for heart health can promote patient-centred care and healthy aging.
3. Future research will endeavour to follow-up with patients who participated in this RCT to determine the effect of participating in CASP on health outcomes.