Appendix 4 (as supplied by the authors). CVDPoRT formulas for risk

Male CVDPoRT risk score:

$$\begin{aligned}
\text{Score}_{\text{male}} = {} & (\beta_{\text{AgeC_rcs1}} * \text{AgeC_rcs1}) + (\beta_{\text{AgeC_rcs2}} * \text{AgeC_rcs2}) + (\beta_{\text{AgeC_rcs3}} * \text{AgeC_rcs3}) + (\beta_{\text{AgeC_rcs4}} \\
& * \text{AgeC_rcs4}) + (\beta_{\text{PackYearsC_rcs1}} * \text{PackYearsC_rcs1}) + (\beta_{\text{PackYearsC_rcs2}} * \text{PackYearsC_rcs2}) \\
& + (\beta_{\text{SmokeFormer5PlusC_cat}} * \text{SmokeFormer5PlusC_cat}) + (\beta_{\text{SmokeFormer0to5C_cat}} \\
& * \text{SmokeFormer0to5C_cat}) + (\beta_{\text{SmokeCurrentC_cat}} * \text{SmokeCurrentC_cat}) + (\beta_{\text{AgeCXPackYearsC_int}} \\
& * \text{AgeCXPackYearsC_int}) + (\beta_{\text{AgeCXSmokeFormer5PlusC_int}} * \text{AgeCXSmokeFormer5PlusC_int}) \\
& + (\beta_{\text{AgeCXSmokeFormer0to5C_int}} * \text{AgeCXSmokeFormer0to5C_int}) + (\beta_{\text{AgeCXSmokeCurrentC_int}} \\
& * \text{AgeCXSmokeCurrentC_int}) + (\beta_{\text{DrinksLastWeekC_rcs1}} * \text{DrinksLastWeekC_rcs1}) \\
& + (\beta_{\text{DrinksLastWeekC_rcs2}} * \text{DrinksLastWeekC_rcs2}) + (\beta_{\text{AgeCXDrinksLastWeekC_int}} \\
& * \text{AgeCXDrinksLastWeekC_int}) + (\beta_{\text{FruitVegC_rcs1}} * \text{FruitVegC_rcs1}) + (\beta_{\text{FruitVegC_rcs2}} \\
& * \text{FruitVegC_rcs2}) + (\beta_{\text{PotatoC_rcs1}} * \text{PotatoC_rcs1}) + (\beta_{\text{PotatoC_rcs2}} * \text{PotatoC_rcs2}) + (\beta_{\text{JuiceC_cont}} \\
& * \text{JuiceC_cont}) + (\beta_{\text{AgeCXFruitVegC_int}} * \text{AgeCXFruitVegC_int}) + (\beta_{\text{AgeCXPotatoC_int}} \\
& * \text{AgeCXPotatoC_int}) + (\beta_{\text{AgeCXJuiceC_int}} * \text{AgeCXJuiceC_int}) + (\beta_{\text{BMIC_rcs1}} * \text{BMIC_rcs1}) \\
& + (\beta_{\text{BMIC_rcs2}} * \text{BMIC_rcs2}) + (\beta_{\text{AgeCXBMIC_int}} * \text{AgeCXBMIC_int}) + (\beta_{\text{EduHSGrad2C_cat}} \\
& * \text{EduHSGrad2C_cat}) + (\beta_{\text{EduSomePS2C_cat}} * \text{EduSomePS2C_cat}) (\beta_{\text{EduPSGrad2C_cat}} \\
& * \text{EduPSGrad2C_cat}) + (\beta_{\text{DiabetesC_cat}} * \text{DiabetesC_cat}) + (\beta_{\text{AgeCXDiabetesC_int}} \\
& * \text{AgeCXDiabetesC_int}) + (\beta_{\text{HypertensionC_cat}} * \text{HypertensionC_cat}) + (\beta_{\text{AgeCXHypertensionC_int}} \\
& * \text{AgeCXHypertensionC_int}) + (\beta_{\text{SurveyCycle2C_cat}} * \text{SurveyCycle2C_cat}) + (\beta_{\text{SurveyCycle3C_cat}} \\
& * \text{SurveyCycle3C_cat}) + (\beta_{\text{SurveyCycle4C_cat}} * \text{SurveyCycle4C_cat})
\end{aligned}$$

Female CVDPoRT risk score:

$$\begin{aligned}
\text{Score}_{\text{female}} = {} & (\beta_{\text{AgeC_rcs1}} * \text{AgeC_rcs1}) + (\beta_{\text{AgeC_rcs2}} * \text{AgeC_rcs2}) + (\beta_{\text{AgeC_rcs3}} * \text{AgeC_rcs3}) + (\beta_{\text{AgeC_rcs4}} \\
& * \text{AgeC_rcs4}) + (\beta_{\text{PackYearsC_rcs1}} * \text{PackYearsC_rcs1}) + (\beta_{\text{PackYearsC_rcs2}} * \text{PackYearsC_rcs2}) \\
& + (\beta_{\text{SmokeFormer5PlusC_cat}} * \text{SmokeFormer5PlusC_cat}) + (\beta_{\text{SmokeFormer0to5C_cat}} \\
& * \text{SmokeFormer0to5C_cat}) + (\beta_{\text{SmokeCurrentC_cat}} * \text{SmokeCurrentC_cat}) + (\beta_{\text{AgeCXPackyearsC_int}} \\
& * \text{AgeCXPackyearsC_int}) + (\beta_{\text{AgeCXSmokeFormer5PlusC_int}} * \text{AgeCXSmokeFormer5PlusC_int})
\end{aligned}$$

Appendix to: Manuel DG, Tuna M, Bennett C, et al. Development and validation of a cardiovascular disease risk-prediction model using population health surveys: the Cardiovascular Disease Population Risk Tool (CVDPoRT). *CMAJ* 2018. doi: 10.1503/cmaj.170914.

+ ($\beta_{AgeCXSmokeFormer0to5C\_int}$ * AgeCXSmokeFormer0to5C_int) + ($\beta_{AgeCXSmokeCurrentC\_int}$ * AgeCXSmokeCurrentC_int) + ($\beta_{DrinksLastWeekC\_cont}$ * DrinksLastWeekC_cont) + ($\beta_{FormerDrinkerC\_cat}$* FormerDrinkerC_cat) + ($\beta_{AgeCXFormerDrinkerC\_int}$ * AgeCXFormerDrinkerC_int) + ($\beta_{AgeXDrinksLastWeek\_int}$ * AgeCXDrinksLastWeekC_int) + ($\beta_{FruitVegC\_rcs1}$ * FruitVegC_rcs1) + ($\beta_{FruitVegC\_rcs2}$ * FruitVegC_rcs2) + ($\beta_{AgeCXFruitVegC\_int}$ * AgeCXFruitVegC_int) + ($\beta_{PhysicalActivityC\_rcs1}$ * PhysicalActivityC_rcs1) + ($\beta_{PhysicalActivityC\_rcs2}$ * PhysicalActivityC_rcs2) + ($\beta_{AgeCXPhysicalActivityC\_int}$ * AgeCXPhysicalActivityC_int) + (β_{BMIC_rcs1} * BMIC_rcs1) + (β_{BMIC_rcs2} * BMIC_rcs2) + ($\beta_{AgeCXBMIC\_int}$ * AgeCXBMIC_int) + ($\beta_{EduHSGrad2C\_cat}$ * EduHSGrad2C_cat) + ($\beta_{EduSomePS2C\_cat}$ * EduSomePS2C_cat) + ($\beta_{EduPSGrad2C\_cat}$ * EduPSGrad2C_cat) + ($\beta_{DiabetesC\_cat}$ * DiabetesC_cat) + ($\beta_{AgeCXDiabetesC\_int}$ * AgeCXDiabetesC_int) + ($\beta_{HypertensionC\_cat}$ * HypertensionC_cat) + ($\beta_{AgeCXHypertensionC\_int}$ * AgeCXHypertensionC_int) + ($\beta_{SurveyCycle2C\_cat}$ * SurveyCycle2C_cat) + ($\beta_{SurveyCycle3C\_cat}$ * SurveyCycle3C_cat) + ($\beta_{SurveyCycle4C\_cat}$ * SurveyCycle4C_cat)

CVDPoRT formula for risk of developing CVD event in 5 years:

Risk of CVD in 5 years = 1-exp(- H_t) = 1- h_0(5 years)*exp[Score]

Baseline hazard for 5 years:

$h_0(5\ years)_{male} = 0.05692189$

$h_0(5\ years)_{female} = 0.00732219$

Components of restricted cubic spline with j = 1,…,k knots:

X_rcs1 = X

$$X\_rcs_{j+1} = \left(\frac{(X-knot_j)}{(knot_k-knot_1)^{2/3}}\right)_+^3 + \left(knot_{k-1} - knot_j\right)\left(\frac{(X-knot_k)}{(knot_k-knot_1)^{2/3}}\right)_+^3 - \left(knot_k - knot_j\right)\left(\frac{X-knot_{k-1}}{(knot_k-knot_1)^{2/3}}\right)_+^3 / (knot_k - knot_{k-1})$$

Where:

$$(X - knot)_+ = \begin{cases} X - knot, & X - knot > 0 \\ 0, & X - knot \le 0 \end{cases}$$

(ref: http://biostat.mc.vanderbilt.edu/wiki/pub/Main/SasMacros/survrisk.txt)