

# Cardiovascular risk prediction in subjects at high-risk of type 2 diabetes mellitus: Do different risk predictors give the same result?

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## Introduction

- Identifying cardiovascular (CV) risk is essential in the management of patients at high risk of developing type 2 diabetes.
- Methods routinely used in primary care to estimate 10-year CV risks include:- Framingham,

## Aims

- To examine for differences in these methods in a sample primary care practice known to be at high risk of type 2 diabetes.

## Methods

- An electronic search was conducted in a primary care practice database for subjects with type 2 diabetes.
- Demographic and routine clinical data and 10-year CV risk calculated using the 4 above methods.
- 148 subjects were identified.
  - Age 61 ± 9.7 years
  - BMI 29 ± 6.1 Kg/m<sup>2</sup>
  - HbA1C 40 ± 3.6 mmol/mol
  - QDiabetes score 11 ± 8.9
- Of these, further analysis was conducted on subjects without manifest CVD.

## Results

- The baseline characteristics of the 125 subjects without manifest CVD are shown in Table 1.
- The median and interquartile ranges for 10-year CV risk were as follows:
  - Framingham 11 [7-18]
  - QRISK 9 [4-16]
  - JBS3 9 [4-14]
  - ASSING 10 [6-16].
- Subjects were further grouped into:
  - Low (≤10%)
  - Intermediate (10-20%)
  - High (≥20%) CV risk groups.
- Significant differences were observed with respect to the proportion of subjects in each risk group, Table 2.
- The percentage of subjects within each group who scored high-risk (≥20%) were as follows:
  - Framingham 16.7%
  - QRISK 17.2%
  - JBS3 11%
  - ASSING 9.6% (p<0.0001).

## Results continued

Table 1: Baseline characteristics of 125 subjects without manifest CVD

Characteristic	Mean	SD	Minimum	Maximum	Percentiles		
					25th	Median	75th
Age (Years)	60	9.6	40	79	52	60	68
Weight (kg)	78.9	17.8	47	148	65.8	77.0	90.2
BMI (Kg/m <sup>2</sup> )	29.1	6.4	17.5	47.8	25.2	28.1	32.4
Systolic BP (mmHg)	130	14.7	100	184	120	130	140
Diastolic BP (mmHg)	79	8.8	60	100	72	80	84
HbA1C (mmol/mol)	39.6	3.6	28	47	37	40	42
Cholesterol (mmol/L)	5.3	1.0	2.8	7.9	4.5	5.3	6
LDL (mmol/L)	3.1	0.9	1.0	6.0	2.4	3.1	3.7
Triglycerides (mmol/L)	1.5	0.9	0.5	5.2	0.9	1.2	2.0
Glucose (mmol/L)	5.4	0.9	3.5	10.4	4.9	5.2	5.8
HDL (mmol/L)	1.5	0.4	0.7	2.8	1.3	1.5	1.8
Framingham (%)	12.7	7.6	1	41	7	11	18
QRISK CVD (%)	11.4	9.4	0.5	52	4	9	16
Q Diabetes (%)	9.6	8.3	0.7	41	4	7	14
JBS3 CV Risk (%)	10.7	8.6	0.7	47	4	9	14
ASSING (%)	11.3	6.7	2	33	6	10	16

Methods	Low CV risk group (≤10%)	Intermediate CV risk group (10-20%)	High CV risk group (≥20%)
Framingham	47.7% (54/114)	36.0% (41/114)	16.7% (19/114)
QRISK	52.5% (64/122)	30.3% (37/122)	17.2% (21/122)
JBS3	58.6% (58/99)	30.3% (30/99)	11.0% (11/99)
ASSING	53.0% (61/115)	37.4% (43/115)	9.6% (11/115)

Chi-squared analysis performed.  
P<0.0001 for Framingham compared to QRISK, JBS3 and ASSING when individually analysed.

— Long-term CV outcome.

### References

1. Prediabetes preventing the type 2 diabetes epidemic – A diabetes UK report 2009
2. Preventing type 2 diabetes: risk identification and interventions for individuals at high risk NICE guidelines [PH38] Published date: July 2012