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Mike Geoffrey Kirby

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**Impact on clinical practice of the Joint British Societies'
cardiovascular risk assessment tools**

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Review Only

1 **Impact on clinical practice of the Joint British Societies' cardiovascular**
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3 **risk assessment tools**
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6 **Michael Kirby,¹ Ina Machen²**
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12 ¹Clinical Trials Co-ordinating Centre, Faculty of Health and Human Sciences, University of
13 Hertfordshire, College Lane, Hatfield, Herts AL10 9AB
14

15
16
17 ²Centre for Research in Primary and Community Care, Faculty of Health and Human Sciences,
18 University of Hertfordshire, College Lane, Hatfield, Herts AL10 9AB
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24
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26
27
28 Michael Kirby, Visiting Professor
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30 Ina Machen, Researcher
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36 Correspondence to:
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39 Professor Michael Kirby – kirbym@globalnet.co.uk
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5 IM has no competing interests. MK is a member of the Joint British Societies group that
6 developed the CVRA tools and has received funding from the pharmaceutical industry for
7 research, advice, conference lectures and travel.
8
9

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12
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41
42 British Heart Foundation, Hertfordshire Primary Care Research Network
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44

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46
47 University of Hertfordshire
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50
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53 Doctor Madge Vickers contributed in a major way to the study design, collection of data, analysis
54 and interpretation of results. She wrote the original report submitted to the British Heart
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1 Foundation (BHF) on which this paper is based. The researchers are independent from the BHF
2
3 and have had access to all the data.
4

5 Other contributors:- Ina Machen conducted and analysed the qualitative research.
6
7

8 Michael Kirby is the guarantor of the paper.
9

10 The study was approved by the Hertfordshire Ethics Committee.
11
12

13 **ABSTRACT**

14
15 **Objectives** To evaluate the Joint British Societies' (JBS 2) Factfile, cardiovascular risk
16
17 assessment paper charts, and electronic risk calculator posted to health professionals in general
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19 practice.
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24 **Design** Phase one: surveys on use of the JBS 2 charts and calculator; views on improving use
25
26 and acceptability. Phase two: six focus groups and two semi-structured interviews on use of the
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28 JBS 2 charts and calculator; views on expression of risk, communication of risk, and risk
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30 management.
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34 **Participants** Phase one: GPs and practice nurses. Phase two: GPs, practice nurses, and nurse
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36 practitioners recruited via the survey; eligible patients invited by GPs.
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39 **Setting** Primary care.
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42 **Results** A high response rate (81.3%, 825/1015) was obtained to a national on-line survey of GPs
43
44 using Pearl Medical Blackberries®. The JBS 2 charts were used by around 1 in 5 GPs and the
45
46 electronic risk calculator by around 1 in 6. Patients and health professionals found the concept of
47
48 risk difficult, preferred relative to absolute risk, and liked the JBS 2 electronic risk thermometer
49
50 and its ability to illustrate how changes in risk factors affect risk levels. Communication of risk in
51
52 visual terms was key to understanding the concept. The most important factor was risk
53
54 management; how to motivate and support patients to maintain healthy lifestyles and
55
56 concordance with medication was as important as communication of risk. Health professionals
57
58 need training in both aspects.
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60

1 **Conclusions** To maximise the use of cardiovascular risk assessment tools, multiple approaches
2
3 are needed; it is not sufficient to distribute them in the post. Communicating and managing
4
5 cardiovascular risk is difficult; to be effective more time is needed than is available in a routine GP
6
7 appointment. Practice nurses may be well suited for this role. Costs of training and continuing
8
9 support need to be built into the overall costs of the national programme for cardiovascular
10
11 screening now known as NHS Health Checks.
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14 What is known about this topic:

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16 **The effect of risk communication in CVD is not well quantified and more research is**
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18 **urgently required.**
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23 **Ways of approaching specific patient groups are needed.**
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28 **Patients prefer to receive information tailored to their individual circumstances and needs**
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33 What this study adds:

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35 **Patients and health professionals consider cardiovascular risk assessment to be valuable**
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40 **The study suggests that more thought and research needs to be given to how risk is**
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42 **assessed and communicated**
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47 **To maximise the use of cardiovascular risk assessment tools, multiple approaches are**
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49 **needed**
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INTRODUCTION

Cardiovascular disease (CVD), including coronary heart disease (CHD), stroke/transient ischaemic attack, peripheral vascular disease, and diabetes, is the main cause of death in the UK, accounting for nearly 198,000 deaths each year.¹ Factors known to increase the risk of CVD, include diabetes, smoking, obesity, high blood pressure, raised cholesterol, older age, male gender, and family history²⁻⁴; the more risk factors, the higher the probability of developing CVD. Many of these risk factors can be modified by treatment or changes to lifestyle, and the realisation that their detection and management could have a major impact on development of CVD led to several screening initiatives.

In late 2005, the UK National Screening Committee recommended that screening certain individuals at high risk of type 2 diabetes was feasible, but it should be undertaken as part of an integrated programme to detect and manage cardiovascular risk factors.⁵ In response, the Department of Health have been examining how such a programme could work, using an integrated approach to assess the risk of vascular disease in the 40–74-year age group. Such assessment, together with a follow-up offer of personalised advice and treatment, as well as individually tailored management to help individuals manage their risk factors more effectively, has been shown to be both clinically and cost effective.⁶ This programme started in England in April 2009. Health professionals are free to use whichever risk tool they wish but little guidance has been given on how to explain risk and who should do it. The estimates of benefit to the NHS have been modelled and the assumptions drawn are only valid if risk reduction advice is adhered to and acted upon.

In addition to this initiative, British societies concerned with CVD (British Cardiac Society, British Hypertension Society, Diabetes UK, Heart UK, Primary Care Cardiovascular Society, and the Stroke Association, known collectively as the Joint British Societies [JBS]) published guidelines on prevention of CVD in clinical practice in 2005 (JBS 2).⁷ Charts predicting absolute risk were derived from the Framingham 1991 10-year risk equation (fig 1).² These charts also formed the basis of a novel electronic cardiovascular risk assessment (CVRA) calculator that allows

1 prediction of both absolute and relative risk. The calculator can be accessed at
2
3 http://www.heartuk.org.uk/HealthProfessionals/index.php/jbs_cv_risk_assessor/.

4
5 For both risk prediction charts and calculator, the total risk of developing CVD over a 10-year
6
7 period is based on six key factors: age; gender; smoking habit; systolic blood pressure; ratio of
8
9 total cholesterol to high-density lipoprotein cholesterol; and diagnosis of diabetes. The calculator
10
11 can also consider other parameters (e.g. adverse family history), and can project risk to 49, 59 or
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13 69 years. Both tools do not calculate risk in groups considered to be at very low or high risk of
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15 CVD.
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19 The calculator is based on the principle of a thermometer (fig 2). Changing the cholesterol levels
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21 or blood pressure to a therapeutic target, or smoking to cessation, displays a new, reduced
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23 relative risk. Relative risk can thus be used to encourage lifestyle changes or to explain the
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25 benefits of medication, and concordance with it.
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29 The calculator was distributed by the British Heart Foundation (BHF) in the form of a compact disc
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31 (CD) accompanied by a BHF Factfile on assessment and management of cardiovascular risk that
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33 included a paper copy of the risk calculation charts. The CD and Factfile were sent to all named
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35 general practitioners and practice nurses on the BHF database. We examined the use, value and
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37 acceptability of the Factfile, risk calculation charts and calculator to health professionals in general
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39 practice, and assessed the acceptability of the charts and calculator to, and their impact on,
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41 patients.
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47 **METHODS**

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49 Ethical approval was received from the Hertfordshire Research Ethics Committee. The study was
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51 performed in two phases: phase one (quantitative) involved a short, easy-to-complete survey,
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53 while phase two (qualitative) consisted of focus groups of either general practitioners (GPs) and
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55 practice nurses/nurse practitioners, or patients. All focus group participants provided written
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57 informed consent.
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1 In phase one, a survey comprising 21 questions was created using SurveyMonkey, a web-based tool
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3 (<http://www.surveymonkey.com/>). Leading questions asked whether GPs and nurses in general
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5 practice recalled receiving the Factfile and CD. If yes, they were asked whether the risk charts and CD
6
7 had been used, and why. Questions were also asked about their patients' understanding of risk, and
8
9 whether they complied with advice received in consultations using the paper risk charts and calculator.
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11 Views were sought on improvements to the calculator to optimise use, and whether the responders
12
13 would like to participate in focus groups and/or invite patients to take part in such an initiative.

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16 The survey was posted as a fax-back form to the 697 GPs in Hertfordshire. In addition, four copies
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18 were sent to the 160 general practices in the county for the attention of the practice nurse/nurse
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20 practitioners. To estimate the response rate of nurses, the number in the practice who discussed CVD
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22 risk with patients was ascertained. As an incentive to complete the survey, respondents were offered
23
24 entry into a draw for £250 towards the expenses of attending a medical conference. Reminders were
25
26 sent after 3 weeks to non-responders. An on-line version of the questionnaire was also sent to 1015
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28 GPs who had subsidised use of a Pearl Medical Blackberry® in return for completing market research
29
30 questionnaires sent via this device. A simple random sample was taken from the responses received
31
32 from GPs in each UK region (Strategic Health Authorities (SHAs) in England, Northern Ireland,
33
34 Scotland and Wales with probability proportional to the size of the population in each region. The
35
36 responses were weighted to give a sample representative of UK regions by population. A response
37
38 rate in excess of 80% was expected, giving high precision for the estimate of the response to the
39
40 leading questions in the survey ($\pm 2-4\%$ at the 95% confidence limit) and acceptable precision ($\pm 6-10\%$
41
42 at the 95% confidence limit), if sub-questions applied to only 100 respondents. Appropriate
43
44 safeguards were included to ensure anonymity of participants.

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47 In phase two, 17 GPs, 4 practice nurses and 1 nurse practitioner were enrolled. Four focus groups
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49 (2-7 participants per group) were conducted. Two groups involved those who had used the tool,
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51 while the other two consisted of individuals who had not. Patients eligible for focus groups were
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53 adults with risk factors for CVD that had been discussed with their GP or practice nurse, and who
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55 were fluent in written and spoken English. Those who had already suffered a CVD event, or had a
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1 condition that a GP considered would make participation unlikely/inappropriate, were excluded.

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3 Two patient focus groups of 6 and 5 participants were conducted, plus two semi-structured
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5 interviews of individual patients.
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8 Focus groups were conducted by two researchers; one took notes whilst the other facilitated the
9
10 discussion, based on set topics. The focus groups and individual interviews were audio-recorded,
11
12 with permission from participants. The JBS 2 paper charts and calculator were demonstrated to all
13
14 participants, and their opinions explored. The focus groups lasted 60–75 minutes, and the two
15
16 individual interviews 55 and 70 minutes.
17

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19 Audio-recordings were transcribed and anonymised. Two researchers coded the data using a thematic
20
21 approach, as described by Braun and Clarke,⁸ and computer package N6[®] (QSR International) to
22
23 manage data analysis. During analysis, connections in the data were sought, and categories and
24
25 themes refined through discussion. An 'audit trail' was created, whereby decisions were documented to
26
27 enable others to follow the analytical process.
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30 **RESULTS**

31 **Survey**

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36 The response to the national on-line survey of GPs via Pearl Medical Blackberries and the paper-
37
38 based postal/fax-back version sent to all Hertfordshire GPs was 81.3% (825/1015) and 16.6%
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40 (116/697), respectively. There are many possible reasons for the poor response to the paper-
41
42 based survey. These include, time pressures, too many unsolicited requests for information,
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44 research not seen as part of the GP role and other priorities taking precedence. Given the low
45
46 response to the Hertfordshire survey, only results for the national questionnaire are reported,
47
48 though the findings from the two surveys of GPs are largely consistent. Furthermore, based on an
49
50 average of three nurses per practice who discuss CVD risk with patients, the response to the
51
52 paper-based survey of nurses in Hertfordshire general practices was low, at 8.5% (41/480), and
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54 so the data from nurses' questionnaires are also not reported.
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7 33.7% (202/600) of GPs using a sample of 600 respondents, (weighted in proportion to the
8 population in each UK region) recalled receiving the Factfile, with all these, except two, trusting
9 the BHF as a source of information. The majority of responders who recalled receiving the Factfile
10 had read it (86.1%, 174/202), and found it useful (83.2%, 168/202). However, not all GPs who
11 found the Factfile useful had gone on to use the risk prediction charts with patients: 61.4%
12 (124/202) had used the charts and, of these, 82.3% (102/124) were still using them (table 1).

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19 Three main reasons were cited for discontinued use of the charts: preference for the calculator or
20 another tool, insufficient time in routine appointment, and the view that patients do not understand
21 absolute risk. About half those who had used the charts thought most patients understood
22 absolute risk from the charts (47.6%, 59/124), with a slightly lower proportion thinking that most
23 patients complied with advice received during consultation with the charts (41.9%, 52/124).

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31 Fewer GPs recalled receiving the electronic calculator than the Factfile (24.5% [147/600] vs
32 33.7%, respectively). 9.5% (57/600) had downloaded the calculator from the Internet. A total of
33 181/600 had accessed the calculator and, of these 97/181 (53.3%) had used the calculator with
34 patients. Of these most found the calculator easy to use (93.8%, 91/97), and agreed that it
35 demonstrated the benefits of CVD risk reduction adequately (91.8%, 89/97). 88.7% (86/97) of
36 GPs reported that patients reacted positively to the risk thermometer. However a higher proportion
37 thought that most patients complied with advice received during a consultation with the electronic
38 calculator than the paper risk charts (57.7% [56/97] vs 41.9% (52/124), respectively).

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49 Of those who had accessed the calculator (97/600, 16.2%), 81/600 13.5% were still using it,
50 multiple responses were given, but the two reasons given most frequently for discontinuation were
51 insufficient time in a routine appointment and use of another risk calculator already on their PC
52 (43.0% and 40.0%, respectively). 21.0% cited the lack of a computer prompt on the screen as a
53 reason for non-use. This was also cited as a factor that would influence whether GPs used the
54 calculator (47.2%, 75/159), as were evidence that it encouraged lifestyle changes (35.8%, 57/159)

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6 or improved concordance with medication (28.9%, 46/159). 19.5% (31/159) wanted the electronic
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8 calculator incorporated into GP clinical systems.
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11 Table 4 shows the responses
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13 14 15 16 17 **Health professionals' focus groups** 18

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20 Four main themes were identified (Table 2). Theme one showed that use of the JBS 2 risk charts
21 and calculator is limited, with more health professionals using the charts than the calculator. A
22 minority of GPs and none of the nurses remembered receiving the tool through the post, and only
23 two GPs were using the calculator on a regular basis. Some GPs did not use the calculator
24 because they already had a risk calculator embedded in their surgery computers, while others
25 used the charts in the back of the British National Formulary.
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33 Many health professionals lack knowledge about the risk charts and calculator, including
34 uncertainty or unawareness of the concepts of absolute and relative risk, and how to explain the
35 difference to patients. Views on the charts were mixed: they were thought quick and easy to use,
36 and had a visual impact, but had several disadvantages. These were: their small size; age limit;
37 difficult to understand; and the de-motivating effect for men. In contrast, the calculator was
38 perceived very positively. The beneficial features included: inclusion of family history and South
39 Asian ethnicity; good visual impact; provision of personalised data; and ability to manipulate
40 modifiable risk factors to demonstrate how risk can be lowered. Few disadvantages were
41 identified, although the two most frequently cited, lack of time and manual data entry, were
42 significant barriers to use. Additionally, the explanation about the queue to have a cardiovascular
43 event was thought difficult to grasp. Several suggestions were made on how to improve the
44 calculator; the most critical was to incorporate the calculator into GPs' computer systems.
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1 According to theme two, most health professionals agreed that patients do not find the concepts
2 of absolute and relative risk meaningful, and that explaining risk, particularly the difference
3 between absolute and relative risk, was a challenge. No consensus was reached on the most
4 effective way to help people understand this concept. Any explanation should be as simple and
5 straightforward as possible, with visual aids helpful. Reinforcing verbal information with written
6 materials was considered valuable by nurses, but they were concerned not to overload patients
7 with information. However, health professionals were aware that patients have different needs and
8 levels of understanding, and therefore having more than one format for displaying CV risk was
9 thought to be beneficial.

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21 Several GPs made the point that the important message to convey to patients was to reduce their
22 risk factors and the accuracy of the figures was less important than this central message. GPs
23 were concerned that patients tended to focus solely on their total cholesterol levels, and showed
24 less interest in other risk factors, identifying a need for patient education in this area.

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Insufficient time was a significant issue with regard to communicating cardiovascular risk. The 10-
minute consultation was considered too short to perform the risk assessment, give patient-centred
lifestyle advice, and fully explain any prescribed medication. There was a general consensus
amongst the GPs and nurses that the nurses' role in this area was important, and could and
should be developed further. It was felt that nurses generally have more time, and also that risk
assessment should be a part of the management of long-term conditions such as hypertension
and obesity. However, the issue of training and specialisation in practice nursing was raised by
one GP.

Promoting behaviour change to reduce cardiovascular risk factors was seen as a challenge, as
explored in theme three. Overall, health professionals thought that patients were more likely to
take medication rather than make lifestyle changes to reduce risk, as this was easier. However, a
minority preferred to make behaviour changes, so it was important to work in partnership with, and
listen to, patients. Health professionals agreed that the calculator could help motivate patients to
implement/adhere to risk factor modification. Additionally, having a relative or friend who had

1 experienced a cardiovascular event was considered an important motivating factor for lifestyle
2 changes. Some patients, often those who were younger and felt well, were described by health
3 professionals as being 'not ready to be ill', and were less likely to accept lifestyle advice.
4
5 Furthermore, practical considerations impacted on compliance with lifestyle advice (e.g. diet
6 modification may be dependent on who is responsible for meal preparation). Patients taking
7 responsibility for their own health was seen as having a positive impact on motivation. The
8 Internet was regarded as a valuable tool to enable patient self-help, with patients being directed to
9 patient-friendly information. Another suggestion was to give patients wider access to the JBS risk
10 thermometer. Public health measures (e.g. the smoking ban in public places) were believed by
11 some clinicians to have more impact than individual health promotion advice.
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14 The fourth theme showed that professional judgement is an important aspect of cardiovascular
15 risk assessment (e.g. reconciling differences between official guidance and current up-to date
16 knowledge). Teamwork between GPs and practice nurses was apparent, but in some instances
17 appeared limited. Health professionals' concerns about cardiovascular risk management related
18 to cost, the validity of the data that underpin cardiovascular risk tools (especially with regard to
19 ethnicity), and the tension between national guideline treatment thresholds and treating individual
20 patients. Generally, training for health professionals in use of the calculator, including how to help
21 people to change behaviour, was regarded as desirable, especially for nurses, but cost was a
22 constraint. A minority of GPs did not think that they needed training in this area.
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43 **Patients' focus groups and interviews**

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45 Three themes emerged from the patients' focus groups and interviews (Table 3). As indicated by
46 theme one, 11 of 13 patients were unaware of having received a cardiovascular risk assessment,
47 even though this was an entry criterion for the study. Participants who had been given a risk score
48 were unsure of what it meant, and participants had generally received limited information about
49 risk reduction. None of the patients had seen a risk assessment tool, including the JBS 2 charts
50 and calculator. However, following demonstration of the JBS 2 tools, most patients were
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1 enthusiastic about cardiovascular risk assessment, and expressed a desire to have their risk
2 assessed in this way.
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5 Theme two showed that the JBS 2 tools were well received by participants. In relation to the
6 charts, although some patients thought that they could increase confidence in risk assessment,
7 aid patient understanding and motivate particular groups to make lifestyle changes, numerous
8 disadvantages were identified. These included: the time required to explain the score; lack of
9 personalisation; difficulty in understanding; potential to provoke anxiety; insensitivity to changes in
10 risk factors; and de-motivational potential for certain individuals. All patients preferred the
11 calculator to the paper charts, with a number of benefits of the thermometer highlighted, in
12 particular: the visual impact, which could be motivational; it was easier to understand than the
13 charts; and the ability to individualise the assessment. However, it could cause anxiety particularly
14 among those whose risk level was demonstrably high. Overall, patients expressed confidence in
15 the validity of the JBS 2 tools and trusted the health professionals using it, though one patient
16 asked about the robustness of the underpinning research.
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32 Participants agreed that risk was difficult to understand and, overall, there was no consensus
33 about the best way to convey this concept. Adequate time and clear explanations were
34 considered important, and there was most support for use of the relative risk thermometer. Giving
35 both absolute and relative risk calculations was generally thought unnecessary, and could be
36 confusing. There were strong objections to the word 'absolute', which was seen as ambiguous.
37 For many participants it conveyed that the risk score was 'conclusive', or in some way 'definite'
38 that a person would suffer a cardiovascular event rather than a probability.
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48 General agreement was reached that nurses should have a greater role in communicating
49 cardiovascular risk and providing follow-up support because they have more time to spend with
50 patients than GPs. Many participants thought that a separate clinic for patients with cardiovascular
51 risk factors would be beneficial.
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57 Participants were not uncritical consumers of health advice and information. Advice changing with
58 the publication of research evidence was one of the main causes of anxiety. Some participants
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1 warned that people could lose confidence in the risk assessment process if information is not
2 standardised. To ensure accurate assessment and management of cardiovascular risk,
3 participants were concerned that GPs and nurses received adequate training, especially if nurses
4 were to undertake a more substantial role in this area. The issue of informed consent was also
5 raised: people should be fully informed about benefits and risks associated with cardiovascular
6 risk assessment, and given the choice about whether to have the assessment.
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13 There was consensus that cardiovascular risk assessment was valuable for patients, but one
14 major concern was the resources required, mainly in terms of time, to provide the screening and
15 on-going support. At least 20 minutes was thought necessary to provide sufficient time for
16 explanation and discussion. Participants were aware that the NHS had a finite budget on which
17 many demands were made, and it was acknowledged that a comprehensive cardiovascular risk
18 assessment programme would put further strain on NHS resources.
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28 Theme three showed that motivation to initiate lifestyle changes was regarded as important, but
29 the real challenge was maintenance of the healthy lifestyle, and the continued adherence to
30 medications. One participant argued that how the message is conveyed was most crucial, rather
31 than the mechanics of the risk assessment. Positive motivational factors for behaviour change
32 included: clear explanations about why lifestyle modifications are important; written back-up
33 information; patient access to information, including the JBS 2 electronic calculator on the Internet
34 and other media to promote self-help; follow-up support either from the GP or nurse, or in groups;
35 trust in the health professional's judgement; health professionals who are skilled in health
36 education; and witnessing the effects of a cardiovascular event on a family member or a friend.
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48 Conflicting or changing advice and information exerted a negative influence, with trust in
49 clinicians' professional judgement key to patients' acceptance of health promotion advice.
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52 **DISCUSSION**

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55 The approach of posting information failed to bring the JBS 2 tools, particularly the electronic risk
56 calculator to the attention of the majority of GPs. The JBS 2 charts were used by only around 1 in
57 5 GPs, and the calculator by around 1 in 6.
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1 The views expressed in the survey were largely confirmed and amplified in the focus groups, with
2 a high degree of agreement between health professionals and patients. In the focus groups, few
3 patients were aware of having had a CVD risk assessment, though all had risk factors recorded in
4 their notes. Accordingly, explaining risk and promoting behaviour change were seen as
5 challenging areas of practice. Patients and clinicians thought that the concepts of absolute and
6 relative risk were difficult to understand, and felt strongly that risk scores should be conveyed in a
7 format that could be easily understood and showed the positive benefits of risk reduction.
8 Although the charts were more likely to be have been used, once demonstrated, both health
9 professionals and patients found the calculator, particularly the risk thermometer with the ability to
10 illustrate changes, more impressive, meaningful and likely to motivate patients to reduce risk
11 factors. Overall, patients were enthusiastic about cardiovascular risk assessment, but there was
12 apprehension that risk assessment could cause anxiety for some people.

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27 Two barriers to the use of the calculator were that it was not embedded in practice computer
28 systems, and there was inadequate time in a 10-minute appointment to fully explain risk scores,
29 and give lifestyle and medication advice. As practice nurses usually have longer consultation
30 times, it was felt that their role in cardiovascular risk assessment could be developed further. Both
31 health professionals and patients were concerned that the cost of primary prevention of CVD, if
32 done properly, would be a major burden on the NHS.

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41 The NHS Health Checks will require a high level of understanding of how to calculate risk and
42 how to explain risk to the people who attend.

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46 The strength of the survey is the high response rate to the on-line version, with the main
47 weakness being the low response rates to the local fax-back survey. It is possible that Pearl
48 Medical Blackberry users are not representative of GPs overall, as they have chosen to use a
49 relatively new technology, and are thus more likely to use an electronic calculator. If this is the
50 case, then the survey could have overestimated use of the calculator. A minor weakness was that
51 we did not ask whether those who did not recall receiving the Factfile used the charts, so it was
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1 not possible to determine the degree of awareness of the charts directly from their reproduction in
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3 the British National Formulary.
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5 The strengths of the focus groups were the consistency of findings with the surveys, and between
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7 patients and health professionals. The weaknesses stem from the difficulties experienced in
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9 recruiting patients, which prevented the usual process of continuing to conduct groups until no
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11 new themes emerged, and raising the possibility that the views expressed are not representative.
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14 Although this study suggests that cardiovascular risk management could have positive benefits,
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16 other studies have questioned the approach. A systematic review by Brindle and colleagues⁹ to
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18 determine the accuracy of assessing CVD risk in the primary prevention of CVD and its impact on
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20 clinical outcomes they found little evidence to support the use of cardiovascular risk scores for
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22 primary prevention. In cancer risk communication, a review by Vernon indicates that while risk
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24 perceptions do predict behaviour, and risk perceptions are modifiable, there is limited and mixed
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26 evidence that changes in risk perceptions lead to changes in behaviour.¹⁰ Additionally, risk
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28 communication appears to have more influence when a choice between treatments is required
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30 than when a change from a risky behaviour is needed.¹¹ The effect of risk communication in CVD
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32 is not well quantified and more research is urgently required.¹²
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37 Clearly, ways of approaching specific patient groups are needed. It will be critical in the national
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39 programme to standardise the methods and tools of assessing risk and bring innovative ways to
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41 the attention of the health professionals who use them is necessary. Merely sending information
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43 through the post is not sufficient, with multiple methods of communication needed.¹³ Furthermore,
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45 the national programme should not assume that all eligible participants want their risk assessed or
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47 would agree to an assessment if the risks and benefits of assessment were explained. The patient
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49 focus groups raised the importance of informed consent. Ethical issues associated with screening
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51 are central to health promotion,^{14,15} and this has implications for training of health professionals.
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55 To be able to deliver effective cardiovascular risk assessment and management, health
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57 professionals need to be trained. The costs of this training and of adequate follow up in terms of
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1 time, investigations and medication need to be acknowledged in estimating the overall costs and
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3 benefits of the national CVD screening programme.
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5 This study demonstrates that both patients and health professionals consider cardiovascular risk
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7 assessment to be valuable, which bodes well for the roll-out and uptake of the national CVD
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9 screening programme. Despite their proven benefits, too few patients currently have access to
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11 disease risk reduction programmes.¹⁶ The limited uptake of risk reduction programmes is partly
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13 attributable to the design of conventional health education, which often results in lengthy,
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15 complex, and sometimes irrelevant materials. Patients prefer to receive information tailored to
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17 their individual circumstances and needs,¹⁷ and evidence has shown that personalised, relevant
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19 information is more likely to be read and remembered and has a greater impact on motivating
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21 patients to make desired behaviour changes.¹⁸ The present study confirms this finding, and
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23 suggests that more thought and research needs to be given to how risk is assessed and
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25 communicated.^{19,20}
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30 In this study, no consensus was reached on the best way to express risk, though the concept of
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32 relative risk was preferred to absolute risk, and visual displays, illustrating changing risk by
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34 altering risk factors, were valued. GPs' perception of patients' compliance with advice received
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36 during a consultation was higher when relative risk was demonstrated by the calculator compared
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38 with use of the charts (i.e. absolute risk). Whether this suggests that patients respond to the visual
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40 display of the relative risk thermometer or understand and act on relative, as opposed to absolute,
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42 risk assessment requires further work.
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46 The treatment thresholds in the General Medical Services (GMS) contract²¹ and National Institute
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48 for Health and Clinical Excellence (NICE) guidelines²² are expressed in terms of absolute risk, and
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50 more consideration should be given to whether this is the best approach. It may be that both
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52 absolute and relative risk are needed, the latter to present to the patient and the former linked to
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54 medication thresholds.
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57 Clearly, presenting risk is difficult, we need new ways to motivate patients to take, and continue
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59 with measures to reduce their risks. Health professionals involved with CVD risk assessment and
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1 management need education, with both risk estimation and communication of this risk to the
2 patient. The national programme will need tailored approaches to motivate patients, with clear
3 information about lifestyle change and appropriate medication to reduce their risk. Patient-centred
4 care²³ is the way forward, incorporating three main elements: communication with patients;
5 partnerships; and a focus on health promotion and healthy lifestyles.²⁴ Preventative measures
6 should take into account that motivation for health promotion may depend more on psychosocial
7 factors than on risk factors, and there are significant obstacles to be overcome.²⁵ Therefore it is
8 essential that we engage with patients to allow them to take charge of their cardiovascular risk
9 change²⁶ while providing continuing support and follow up. Lifestyle messages need to emphasise
10 the benefits of a healthy diet, smoking cessation and exercise rather than focusing on negative
11 aspects.
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Moving forward, there is a need to investigate the time required to perform a comprehensive patient-centred risk assessment, together with the role of the practice nurse in this aspect of health promotion. Such analysis will also inform evaluations of the cost effectiveness of cardiovascular clinics.

CONCLUSIONS

To maximise the use of cardiovascular risk assessment tools, multiple approaches are needed; it is not sufficient to distribute them in the post. Communicating and managing cardiovascular risk is difficult; to be effective more time is needed than is available in a routine GP appointment. Practice nurses may be well suited for this role. Costs of training and continuing support need to be built into the overall costs of the proposed national programme for cardiovascular screening.

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Table 1 Use of Joint British Societies 2 paper risk charts and electronic cardiovascular risk assessment calculator according to a national on-line survey

| | Respondents recalling receipt | | All respondents | |
|-----------------------------------|-------------------------------|------|-----------------|------|
| | n/N | % | n/N | % |
| Had used charts | 124/202 | 61.4 | 124/600 | 20.7 |
| Still using charts | 102/202 | 50.5 | 102/600 | 17.0 |
| Had used electronic calculator | 97/181 | 53.6 | 97/600 | 16.2 |
| Still using electronic calculator | 81/181 | 44.8 | 81/600 | 13.5 |

Tables 2 & 3 online only.

Table 4.**Reasons for discontinuing use of the electronic calculator and factors that would have facilitated the use of it.****Reason:**

Insufficient time in routine appointments

Use another risk calculator on the PC

No prompt on computer to remind me

Difficult to access tool on-line

Concept of absolute and relative risk too difficult

No evidence that informing patients of their CVD risk is effective in producing change in behaviour

No time, other priorities

Other (9 different reasons)

Total respondents 100 (multiple responses allowed)

What would facilitate use?

Computer prompt to remind me

Evidence that using the tool encourages lifestyle change and improves concordance

Incorporated into GP clinical systems

Easier to install

Clearer instructions

Not happy with current version

Other (14 different reasons)

Total respondents 159 (multiple responses allowed)

Figure legends

Fig 1 Joint British Societies' 2 cardiovascular disease (CVD) risk prediction chart for non-diabetic men showing absolute risk (a corresponding set of charts exist for non-diabetic women) Copyright University of Manchester. There is a proposal to adapt the charts in the future to include data up to the age of 74yrs to facilitate use in the NHS Health Checks.

Fig 2 Example outputs from the electronic cardiovascular risk assessment calculator. The thermometer is based on a queue principle, with the first person the least likely to have a cardiovascular event and the 100th the most likely. A relative risk of 75 means that in a queue of 100 people of the same age and gender, an individual would be 75th in line. The output of the thermometer is colour coded: red if the patient is in the highest 10% of people of similar age and gender for risk (90–100 on the thermometer), and green if he or she is in the lowest 50% (0–50); between these two, the colour is orange. Copyright University of Manchester

Fig 1

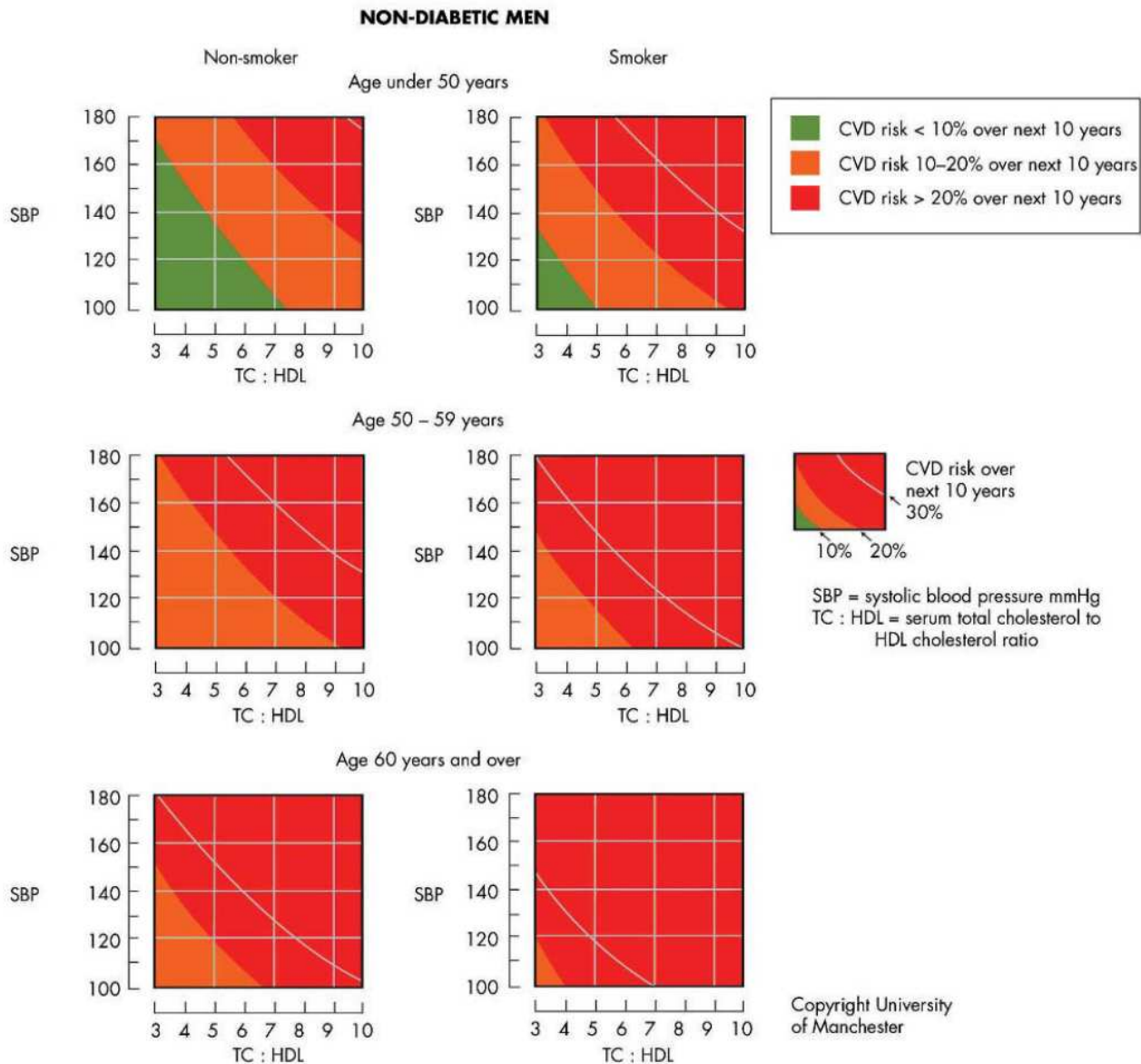


Fig 2

