When is low risk not a ‘low risk’?

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Partner Smart Health Solutions
Vice Chair HEART UK Health Care Committee

#thisismichaela
How confident are you in explaining CVD risk?
What is it not.....
QUIZ TIME!!
How do you explain this to patients?

Or

What does your programme do?

< 10%

10-20%

>20%

And Qdiabetes >5.6
Guess the risk...

- QRISK
- Qdiabetes
Alan

- Married
- Vegetarian
- Enjoys sport and alcohol
- 62 yrs
- Ex Smoker 22 yrs

- 136/88 mmHg
- TC 5.27
- HDL 1.20
- TC:HDL 4.39
- BMI 26

- No family history
- Affluent post code
Jane

• 42 yrs
• Lives with partner & 2 kids
• Hates vegetables loves wine
• Smoker 20 a day

• 138/88 mmHg
• TC 4.87
• HDL 1.1
• TC:HDL 4.42
• BMI 32

• No family history
• Deprived post code
Dipak

- 66 yrs
- Married
- Eats whatever his wife cooks
- Doesn’t drink alcohol
- Ex Smoker 7 years

- 155/96 mmHg
- TC 6.27
- HDL 0.98
- TC:HDL 6.39
- BMI 29

- Family history
- Average post code
Claudia

- 71 yrs
- Very healthy diet
- Occasional alcohol
- Non Smoker

- 144/88 mmHg
- TC 6.04
- HDL 1.56
- TC:HDL 3.87
- BMI 23

- No family history
- Average post code
Frances

• 51 yrs
• Loves food and cocktails
• Hates exercise
• Non Smoker

• 157/96 mmHg
• TC 5.27
• HDL 1.34
• TC:HDL 3.93
• BMI 35

• No family history
• Average post code
Emerging evidence on the NHS Health Check: findings and recommendations

A report from the Expert Scientific and Clinical Advisory Panel
What it says

• Most patients are confused by or incorrectly understand their CVD risk score and we need to find ways of communicating this more effectively.

• Crucially, the synthesis found that a large number of participants across many studies could not recall, were confused by or had incorrectly understood their CVD risk score.

• This lack of understanding led to anxiety among people with low CVD risk and false reassurance among some people with a high CVD risk.

• Consistent with NICE guidance on behaviour change (36), in itself, knowing your CVD risk was not reported as being sufficient information to motivate lifestyle change.
Absolute Risk

V

Relative Risk
Risk

Absolute Risk
The expected rate/numerical probability of CHD events for any given combination of age, gender and other risk factors

Relative Risk
The risk of someone developing a CVD event who has risk factors compared to an individual of the same age and sex who does not
What are we trying to prevent?

- Genes
- Inflammation
- Risk Factors
Not to take in tobacco
Gather nuts and berries
Move around following seasons

EXERCISE MORE
Leave the conveniences behind.
STROKE
TRANSIENT ISCHAEMIC ATTACK
HEART ATTACK
ANGINA
CHRONIC KIDNEY DISEASE
DIABETES
Communication of Risk
Competency 7. Communicating Risk

• It is important to understand that sharing information about risk with people may not necessarily motivate them to change.

• Therefore, the use of behaviour change methods, such as motivational interviewing techniques, should engage clients in person-centred conversations about their own reasons for change.

• Risk should be communicated in everyday, jargon free language, so the client understands their level of risk.

• Advice should be tailored to the client’s values and beliefs for better health outcomes, and the impact of the wider social determinates of health should also be considered.
Figure 2. Overview of the vascular risk assessment and management programme

NHS Health Check Programme

Risk Assessment
- Age
- Gender
- Ethnicity
- Family history
- Smoking status
- Alcohol use
- Physical activity
- Body Mass Index (BMI)
- Cholesterol test
- BP Measure
- Validated diabetes risk assessment or diabetes filter
- Dementia awareness and signposting

If at risk
- HbA1c or Fasting Glucose

Risk Management
- NHS stop smoking services referral
- Alcohol brief advice or referral
- Exercise on prescription or other physical activity intervention
- Weight management on referral
- Non-diabetic hyperglycaemia: Intensive lifestyle intervention / NHS Diabetes Prevention Programme
- Lifestyle modifications (see above)
- Consider statin*
- Anti-hypertensives prescription *
- Serum Creatinine*
- CKD assessment

Key:
- BP: Blood Pressure
- CKD: Chronic Kidney Disease
- DM: Diabetes Mellitus
eGFR: Estimated Glomerular Filtration Rate
- FH: Familial Hypercholesterolaemia
- HbA1c: Glycated Haemoglobin
- NDPP: NHS Diabetes Prevention Programme

RECALL
• Age
• Gender
• Smoking
• BP
• TC:HDL
• Ethnicity
• Family history
• Post code

• BMI

• Waist circumference
  • Audit C
  • GPPAQ

• Fruit & veg
• Salt intake
Premature menopause
• Etc etc

QRISK2
Gender
Ethnicity
Ethnicity

• Bangladeshi
• Black African
• Black Caribbean
• Chinese
• Indian
• Pakistani
• Other Asian
• Other including mixed
• White
Family History
Postcode
Welcome to the QDiabetes calculator.

This calculator is only valid if you do not already have a diagnosis of diabetes.

About you:
- Age (25-84): 64
- Sex: Male
- Ethnicity: White or not stated
- UK postcode: leave blank if unknown
  - Postcode: 

Clinical information:
- Smoking status: non-smoker
- Do immediate family (mother, father, brothers or sisters) have diabetes?
- Have you had a heart attack, angina, stroke or TIA?
- Do you have high blood pressure requiring treatment?
- Are you on regular steroid tablets?
  - Leave blank if unknown
    - Body mass index
      - Height (cm):
      - Weight (kg):

Calculate risk over 10 years. Calculate risk
Alan

- 62 yrs
- Ex Smoker 22 yrs
- 136/88 mmHg
- TC 5.27
- HDL 1.20
- TC:HDL 4.39
- BMI 26
- No family history
- Affluent post code
Alan

- 62 yrs
- Ex Smoker 22 yrs
- 136/88 mmHg
- TC 5.27
- HDL 1.20
- TC:HDL 4.39
- BMI 26
- No family history
- Affluent post code

13.8%
Alan

16 risk calculator: https://qrisk.org

Your results

Your risk of having a heart attack or stroke within the next 10 years is: 13.8%

In other words, in a crowd of 100 people with the same risk factors as you, 14 are likely to have a heart attack or stroke within the next 10 years.

Your score has been calculated using the data you entered.

Your body mass index was calculated as 26.3 kg/m².

How does your 10-year score compare?

<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRSK®2 score</td>
<td>13.8%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>11.3%</td>
</tr>
<tr>
<td>Relative risk</td>
<td>1.2</td>
</tr>
<tr>
<td>Your QRSK® Healthy Heart Age®</td>
<td>65</td>
</tr>
</tbody>
</table>
### Your score

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
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</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>11.3%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>1.2</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age***</td>
<td>65</td>
</tr>
</tbody>
</table>
Welcome to the QDiabetes®-2016 risk calculator: http://qdiabetes.org

This calculator is only valid if you do not already have a diagnosis of diabetes.

About you
Age (25-84): 62
Sex: Male  Female
Ethnicity: White or not stated
UK postcode: leave blank if unknown
Postcode: BR4 0AQ

Clinical Information
Smoking status: ex-smoker
Do immediate family (mother, father, brothers or sisters) have diabetes? No
Have you had a heart attack, angina, stroke or TIA? No
Do you have high blood pressure requiring treatment? No
Are you on regular steroid tablets? No

Body mass index
Height (cm): 185
Weight (kg): 73

Calculate risk over 10 years. Calculate risk

Your results
Your risk of having Type 2 Diabetes within the next 10 years is: 6.6%

In other words, in a crowd of 100 people with the same risk factors as you, 7 are likely to have Type 2 Diabetes within the next 10 years.

Your score has been calculated using the data you entered.
Your body mass index was calculated as 26.81 kg/m².

How does your 10-year score compare?

<table>
<thead>
<tr>
<th>Your 10-year QDiabetes® score</th>
<th>6.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>4.2%</td>
</tr>
<tr>
<td>Relative risk“</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*This is the risk of a healthy person of your age, sex and ethnic group.**
### Your score

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QDiabetes® score</td>
<td>6.6%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>4.2%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>1.6</td>
</tr>
</tbody>
</table>
Jane

- 42 yrs
- Smoker 20 a day
- 138/88 mmHg
- TC 4.87
- HDL 1.1
- TC:HDL 4.42
- BMI 32
- No family history
- Deprived post code
Jane

- 42 yrs
- Smoker 20 a day
- 138/88 mmHg
- TC 4.87
- HDL 1.1
- TC:HDL 4.42
- BMI 32
- No family history
- Deprived post code

4.5%
2-2016 risk calculator: https://qrisk.org

Your results

Your risk of having a heart attack or stroke within the next 10 years is:

4.5%

In other words, in a crowd of 100 people with the same risk factors as you, 5 are likely to have a heart attack or stroke within the next 10 years.

Your score has been calculated using the data you entered.

Your body mass index was calculated as 32.16 kg/m².

How does your 10-year score compare?

Your score

Your 10-year QRISK®2 score 4.5%
The score of a healthy person with the same age, sex, and ethnicity 1%
Relative risk 4.7
Your QRISK® Healthy Heart Age 58
<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td>4.5%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>1%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>4.7</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age***</td>
<td>58</td>
</tr>
</tbody>
</table>
Welcome to the QDiabetes®-2016 risk calculator: http://qdiabetes.org

This calculator is only valid if you do not already have a diagnosis of diabetes.

**About you**
- Age (25-84): 42
- Sex: Female
- Ethnicity: White or not stated
- UK postcode: SE23 2AH

**Clinical information**
- Smoking status: Heavy smoker (20 or over)
- Do immediate family (mother, father, brothers or sisters) have diabetes?
- Have you had a heart attack, angina, stroke or TIA?
- Do you have high blood pressure requiring treatment?
- Are you on regular steroid tablets?
- Leave blank if unknown
  - Body mass index
    - Height (cm): 165
    - Weight (kg): 88

Calculate risk over 10 years. Calculate risk

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**Your results**
Your risk of having Type 2 Diabetes within the next 10 years is: **7%**

In other words, in a crowd of 100 people with the same risk factors as you, 7 are likely to have Type 2 Diabetes within 10 years.

Your score has been calculated using the data you entered.
Your body mass index was calculated as 32.32 kg/m².

**How does your 10-year score compare?**

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QDiabetes® score</td>
<td>7%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>0.9%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>7.8</td>
</tr>
</tbody>
</table>

*This is the risk of a healthy person of your age, sex and ethnic group.*
Jane

| Your score                                      |  
|------------------------------------------------|------------------------------------------------|
| Your 10-year QDiabetes® score                   | 7%                                              |
| The score of a healthy person with the same age, sex, and ethnicity* | 0.9%                                            |
| Relative risk**                                 | 7.8                                             |
Dipak

- 66 yrs
- Ex Smoker 7 years
- 155/96 mmHg
- TC 6.27
- HDL 0.98
- TC:HDL 6.39
- BMI 29
- Family history
- Average post code
Dipak

- 66 yrs
- Ex Smoker 7 years
- 155/96 mmHg
- TC 6.27
- HDL 0.98
- TC:HDL 6.39
- BMI 29
- Family history
- Average post code

39.1%
Dipak

Your results

Your risk of having a heart attack or stroke within the next 10 years is:

39.1%

In other words, in a crowd of 100 people with the same risk factors as you, 39 are likely to have a heart attack or stroke within the next 10 years.

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 29.41 kg/m².

How does your 10-year score compare?

<table>
<thead>
<tr>
<th>Your score</th>
<th>39.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td></td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>20.1%</td>
</tr>
<tr>
<td>Relative risk</td>
<td>1.9</td>
</tr>
</tbody>
</table>
Dipak

<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td>39.1%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>20.1%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>1.9</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age***</td>
<td>78</td>
</tr>
</tbody>
</table>
Welcome to the QDiabetes®-2016 risk calculator: http://qdiabetes.org

This calculator is only valid if you do not already have a diagnosis of diabetes.

About you
- Age (25-84): 56
- Sex: Male
- Ethnicity: Indian
- UK postcode: leave blank if unknown

Clinical information
- Smoking status: ex-smoker
- Do immediate family (mother, father, brothers or sisters) have diabetes?: No
- Have you had a heart attack, angina, stroke or TIA?: No
- Do you have high blood pressure requiring treatment?: No
- Are you on regular steroid tablets?: No
- Leave blank if unknown

Body mass index
- Height (cm): 165
- Weight (kg): 80

Calculate risk over 10 years: Calculate risk

Your results
Your risk of having Type 2 Diabetes within the next 10 years is: 34.9%

In other words, in a crowd of 100 people with the same risk factors as you, 35 are likely to have Type 2 Diabetes within the next 10 years.

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 29.38 kg/m².

How does your 10-year score compare?

Your 10-year QDiabetes® score: 34.9%

The score of a healthy person with the same age, sex, and ethnicity (14.7%)
Relative risk: 2.4

* This is the risk of a healthy person of your age, sex and ethnic group.
Dipak

<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QDiabetes® score</td>
<td>34.9%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>14.7%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Claudia

• 71 yrs
• Non Smoker
• 144/88 mmHg
• TC 6.04
• HDL 1.56
• TC:HDL 3.87
• BMI 23
• No family history
• Average post code
Claudia

• 71 yrs
• Non Smoker
• 144/88 mmHg
• TC 6.04
• HDL 1.56
• TC:HDL 3.87
• BMI 23
• No family history
• Average post code

15.6%
16 risk calculator: https://qrisk.org

Your results

Your risk of having a heart attack or stroke within the next 10 years is:

15.6%

In other words, in a crowd of 100 people with the same risk factors as you, 16 are likely to have a heart attack or stroke within the next 10 years.

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 23.18 kg/m².

How does your 10-year score compare?

<table>
<thead>
<tr>
<th>Your score</th>
<th>15.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td></td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>14.5%</td>
</tr>
<tr>
<td>Relative risk</td>
<td>1.1</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age</td>
<td>72</td>
</tr>
</tbody>
</table>
Claudia

<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td>15.6%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>14.5%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>1.1</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age***</td>
<td>72</td>
</tr>
</tbody>
</table>
Welcome to the QDiabetes®-2016 risk calculator: http://qdiabetes.org

This calculator is only valid if you do not already have a diagnosis of diabetes.

About you
Age (25-84): 71
Sex: ☐ Male ☐ Female
Ethnicity: White or not stated
UK postcode: leave blank if unknown
Postcode: 

Clinical information
Smoking status: non-smoker
Do immediate family (mother, father, brothers or sisters) have diabetes? ☐
Have you had a heart attack, angina, stroke or TIA? ☐
Do you have high blood pressure requiring treatment? ☐
Are you on regular steroid tablets? ☐
Leave blank if unknown

Body mass index
Height (cm): 165
Weight (kg): 64

Calculate risk over 10 years. Calculate risk

Your results
Your risk of having Type 2 Diabetes within the next 10 years is: 3.1%

In other words, in a crowd of 100 people with the same risk factors as you, 3 are likely to have Type 2 Diabetes within the next 10 years.

Risk of Type 2 Diabetes

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 23.51 kg/m².

How does your 10-year score compare?

Your score
Your 10-year QDiabetes® score: 3.1%
The score of a healthy person with the same age, sex, and ethnicity: 3.9%
Relative risk: 0.8

* This is the risk of a healthy person of your age, sex and ethnic group.
<table>
<thead>
<tr>
<th>Your score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QDiabetes® score</td>
<td>3.1%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>3.9%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Frances

- 51 yrs
- Non Smoker
- 157/96 mmHg
- TC 5.27
- HDL 1.34
- TC:HDL 3.93
- BMI 35
- No family history
- Average post code
Frances

- 51 yrs
- Non Smoker
- 157/96 mmHg
- TC 5.27
- HDL 1.34
- TC:HDL 3.93
- BMI 35
- No family history
- Average post code

3.2%
Frances

16 risk calculator: https://qrisk.org

Your results

Your risk of having a heart attack or stroke within the next 10 years is: 3.2%

In other words, in a crowd of 100 people with the same risk factors as you, 3 are likely to have a heart attack or stroke within the next 10 years.

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 35.29 kg/m².

How does your 10-year score compare?

<table>
<thead>
<tr>
<th>Your score</th>
<th>3.2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td></td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity</td>
<td>2%</td>
</tr>
<tr>
<td>Relative risk</td>
<td>1.6</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age</td>
<td>56</td>
</tr>
<tr>
<td>Metric</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Your 10-year QRISK®2 score</td>
<td>3.2%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>2%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>1.6</td>
</tr>
<tr>
<td>Your QRISK® Healthy Heart Age***</td>
<td>56</td>
</tr>
</tbody>
</table>
Welcome to the QDiabetes®-2016 risk calculator: http://qdiabetes.org

This calculator is only valid if you do not already have a diagnosis of diabetes.

About you
Age (25-84): 51
Sex: ☐ Male ☑ Female
Ethnicity: ☐ Black Caribbean
☐ UK postcode: leave blank if unknown
Postcode: ________

Clinical information
Smoking status: ☐ non-smoker
☐ Do immediate family (mother, father, brothers or sisters) have diabetes?
☐ Have you had a heart attack, angina, stroke or TIA?
☐ Do you have high blood pressure requiring treatment?
☐ Are you on regular steroid tablets?
☐ Leave blank if unknown

Body mass index
Height (cm): 165
Weight (kg): 96

Calculate risk over 10 years.

Your results
Your risk of having Type 2 Diabetes within the next 10 years is: 14%

In other words, in a crowd of 100 people with the same risk factors as you, 14 are likely to have Type 2 Diabetes.

Risk of Type 2 Diabetes

Your score has been calculated using estimated data, as some information was left blank.
Your body mass index was calculated as 36.26 kg/m².

How does your 10-year score compare?

Your 10-year QDiabetes® score 14%
The score of a healthy person with the same age, sex, and ethnicity 2.9%
Relative risk* 4.8

* This is the risk of a healthy person of your age, sex and ethnic group.
Frances

<table>
<thead>
<tr>
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</thead>
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<tr>
<td>Your 10-year QDiabetes® score</td>
<td>14%</td>
</tr>
<tr>
<td>The score of a healthy person with the same age, sex, and ethnicity*</td>
<td>2.9%</td>
</tr>
<tr>
<td>Relative risk**</td>
<td>4.8</td>
</tr>
<tr>
<td>Name</td>
<td>Age</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
</tr>
<tr>
<td>Alan</td>
<td>62</td>
</tr>
<tr>
<td>Jane</td>
<td>41</td>
</tr>
<tr>
<td>Dipak</td>
<td>66</td>
</tr>
<tr>
<td>Claudia</td>
<td>71</td>
</tr>
<tr>
<td>Francis</td>
<td>51</td>
</tr>
<tr>
<td>Name</td>
<td>Age</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
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<td>41</td>
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<td>Claudia</td>
<td>71</td>
</tr>
<tr>
<td>Francis</td>
<td>51</td>
</tr>
</tbody>
</table>
Using risk to promote behaviour change
Perception of Risk
There are many different diseases called Cardiovascular Disease but they all usually have atheroma at their core!

- Angina
- Heart attacks
- Heart failure
- Strokes
- Transient Ischemic Attacks
- Peripheral vascular disease
- Chronic Kidney Disease
- Erectile dysfunction
Atheroma Formation

- Endothelial damage
- LDL cholesterol and Macrophage migration
- Oxidation
- Foam Cells formed
- Cells die
- Lipid core developed
- Smooth muscle proliferate
- Plaque formed
Progression of the Atherosclerotic Plaque

**Unstable:**
- Fibrous Cap
- Lipid Core
- Platelets
- Thrombus
- Rupture and haematoma

**Stable:**
- Smooth Muscle Cells
- Lumen
- Lipid Core
- Fibrous Cap

**Lumen**
I can remember before cholesterol
Give lifestyle a chance
What is cholesterol?

• Cholesterol is a waxy white substance which is mainly produced by the body itself

• Cholesterol is necessary for hormones, vitamin D, bile and cell wall structure
Where does it come from?
Isolated risk factors
Cholesterol

NHS Health Check
• TC
• HDL
• TC: HDL ratio

At some point Non HDL

Also
• LDL
• Trigs
• And other bits n bobs
Good and bad cholesterol

As cholesterol can’t dissolve in the blood it has to be carried in the blood stream by special transporters, lipoproteins, which include: low density lipoprotein (LDL) and high density lipoprotein (HDL).

- LDL takes cholesterol to the cells
  (the Lower - the better)

- HDL takes cholesterol away from the cells and out of the body
  (the Higher – the better)
Butter unlikely to harm health, but margarine could be deadly

Saturated fat does not increase the risk of stroke, heart disease, diabetes or early death, a study has shown.

"Butter unlikely to harm health, but margarine could be deadly," The Daily Telegraph reports. A major analysis of data found no link between saturated fats and heart disease, stroke or diabetes, but there was a link with trans fats.

Saturated fats are found in dairy products such as butter and cheese, as well as in meat and some fish, such as salmon. Some trans fats may come from natural animal sources, but most are from changes made to plant oils during the industrial manufacturing process.

This latest research, which pools the results of around 70 previous studies, found no evidence that eating higher amounts of saturated fat (compared to low amounts) raised the risk of death, heart disease,
What about coconut oil?
Myth: It's good for heart health

Fact:

Coconut oil is solid at room temperature so there should be no surprise that it is really high in saturated fat - largely lauric and myristic acids. Both these fats increase your LDL cholesterol. Some have suggested that because lauric acid also raises HDL cholesterol it might have health benefits. However the small increase in HDL-cholesterol is far outweighed by the negative increase in LDL cholesterol.