

# HEART HEALTH CONSIDERATIONS

# OUTLINE

- An introduction to modifiable and non-modifiable factors
- Understanding cholesterol
- Understanding blood pressure
- Weight and shape
- Smoking
- Alcohol
- Physical activity
- Healthy diet
- Stress.



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# Healthy heart considerations

## Modifiable factors to consider

- Abnormal blood lipid levels
  - high total cholesterol
  - high LDL-cholesterol
  - low HDL-cholesterol
  - high triglycerides
- Blood pressure
- Lifestyle factors: smoking, physical inactivity, obesity, unhealthy diet, stress.

## Non-modifiable factors to consider

- Increased age
- Gender
- Family history
- Ethnicity or race.



# 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
- High levels of cholesterol in the blood lead to the build up of fatty deposits in the arteries which gradually 'furry up' and narrow, reducing blood flow.



cholesterol build-up in the artery



# 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)



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# Cholesterol targets

Recommendations	Total cholesterol	LDL-Cholesterol	HDL-Cholesterol
National Service Framework*	< <b>5.0</b> mmol/L	< <b>3.0</b> mmol/L	-
JBS2 Guidelines**	< <b>4.0</b> mmol/L	< <b>2.0</b> mmol/L or 25% reduction in cholesterol <b>and</b> 30% reduction in LDL-C whichever gets to the lowest cholesterol level	> 1.0mmol/L in men > 1.2mmol/L in women
NICE Guidelines*** (for secondary prevention only)	< <b>4.0</b> mmol/L (< <b>5.0</b> mmol/L – audit standard)	< <b>2.0</b> mmol/L (< <b>3.0</b> mmol/L – audit standard)	-
National averages****	Men: <b>5.3</b> mmol/L Women: <b>5.4</b> mmol/L	-	Men: <b>1.3</b> mmol/L Women: <b>1.6</b> mmol/L

\*CHD National Service Framework. DOH. 2003

\*\*JBS2. Heart. 2005. NB. Recommendations for high-risk groups

\*\*\* NICE guidelines on lipid modification. 2008

\*\*\*\*BHF CHD Statistics. 2008



# Average cholesterol levels in England



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- Six out of ten men and women over 16 have total cholesterol (TC)  $>5.0$  mmol/L
  - **Men - average TC 5.3 mmol/L**
  - **Women - average TC 5.4 mmol/L\***
- 80% of the population do not know their cholesterol level.\*\*

\*Health Survey for England, 2006.

\*\*BHF Statistics, 2005.



# Where does cholesterol come from?

- A small amount comes from **animal foods in the diet** e.g. dairy foods, egg yolks, offal (liver and kidneys) and some shell fish (prawns)
- **Most is made by the liver** from saturated fat from dairy foods (butter, cream, full-fat milk, cheese), fatty and processed meats, cakes, biscuits, fatty snack foods, deep fried foods, chocolate
- To reduce cholesterol in the blood it is **more important to reduce saturated fat (bad fat) in the diet rather than foods which are high in cholesterol** e.g. shellfish, eggs.



# Blood lipids and cholesterol

- One of the most common causes of high cholesterol is eating too much saturated fat
  - Recommended daily intake of saturated fat = 10% of daily energy intake
  - Current intake of saturated fat = 13% of daily energy intake

## Other causes of increased cholesterol (Non-modifiable)

- Age
- Being overweight
- Family History
- Under-active thyroid gland
- Long term kidney disease

## Other factors affecting lipid profile (Modifiable)

- Smoking cessation increases level of HDL-cholesterol
- Physical inactivity decreases HDL-cholesterol
- Central obesity (fat distributed around the middle of the body) increases LDL-cholesterol and decreases HDL-cholesterol
- Higher unsaturated fat intake decreases LDL-cholesterol and increases HDL-cholesterol
- Higher fish omega-3 intake decreases triglyceride levels.



# CASE STUDY 1a

- M. Pascal, 55 years old
- French
- Total cholesterol: 7.1mmol/L, HDL 2.1mmol/L, LDL 4.2mmol/L with a family history of high cholesterol, liver disease, osteoporosis
- BMI 30kg/m<sup>2</sup>
- MD of large corporate firm
- Smoker
- Enjoys a bottle of red wine with dinner
- Primarily eats processed food (Won't eat fish)
- Drives to work and rarely exercises

**Discuss the factors which could be causing M. Pascal's high cholesterol and which of these are modifiable and which are not**



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# To improve cholesterol by lifestyle

- Watch your weight and shape
- Eat less 'bad fats' (saturated and trans) and replace with 'good fats' (poly and monounsaturated) e.g. use vegetable oils and spreads, seeds, nuts, oily fish
- Eat plenty of fruit and vegetables
- Use cholesterol-lowering foods enriched with plant sterols or stanols
- Eat regular meals based on starchy foods. Choose wholegrain varieties where possible
- Include foods rich in soluble fibre e.g. porridge, beans, pulses, nuts, fruit and vegetables
- Engage in plenty of physical activity.



# What is Blood Pressure?

- Blood pressure is a measure of the force that the blood exerts on the arteries as it is pumped around the body
- Blood pressure changes throughout the day:
  - Physical activity, stress and excitement can all cause a temporary increase in your blood pressure – this is normal and very different from high blood pressure.

**Systolic blood pressure:** when your heart beats or contracts and forces blood through your arteries, pushing the pressure of the blood to its highest point.

**Diastolic blood pressure:** when your heart relaxes between beats and your blood pressure drops to its lowest point.



# EXERCISE

- Complete the table:

British Hypertension Society (BHS) definition and classification of blood pressure

Blood pressure	Systolic	Diastolic
Optimal	< 120 mmHg	< 80 mmHg
Normal	< 130 mmHg	< 85 mmHg
High Normal	130-139 mmHg	85-89 mmHg
Mild Hypertension	140-159 mmHg	90-99 mmHg
Moderate Hypertension	160-179 mmHg	100-109 mmHg
Severe Hypertension	$\geq 180$ mmHg	$\geq 110$ mmHg



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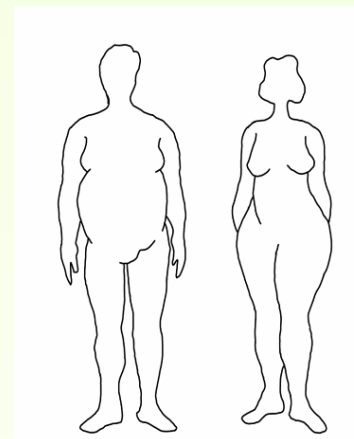
# Factors Affecting Blood Pressure

- High Blood Pressure (BP) affects over 16 million people in the UK
- 31% of men and 28% of women have BP over 140/90mm/Hg
- Some factors that play a part in high blood pressure include:
  - Age
  - Genetic differences
  - Physical inactivity
  - If you are overweight, have diabetes or severe kidney disease
  - Dietary factors such as a high salt intake, low fruit and vegetable intake and drinking too much alcohol.



# Effects of Obesity on Heart Health

- Fat is concentrated around the stomach increases the effects of excess weight
- **‘Apple-shaped’**, carrying too much weight around the middle (central obesity), is **worse for heart health compared to** carrying excess weight on your hips, also referred to as **‘pear-shaped’**
- During the menopause, there is a shift in fat distribution and storage from the lower body (pear shape) to the upper body (apple shape).



Waist circumference is an important indicator of obesity and heart health

	Male	Female
<b>Alerting Zone</b> Indicates increased risk to health	> 94 cm (37") Asian men > 90 cm (36")	> 80 cm (31.5")
<b>Action Zone</b> Indicates substantial risk to health	> 102 cm (40")	> 88 cm (34.5")



# Body Mass Index (BMI)

- Healthy weight is most commonly assessed using Body Mass Index (BMI)
- Calculated by dividing weight in kilograms by height in m<sup>2</sup>
- Overweight is generally defined as a BMI greater than 25kg/m<sup>2</sup>

Classification of body Mass Index and risk of co-morbidities

Classification	BMI (kg/m <sup>2</sup> )	Risk of co-morbidities
Underweight	> 18.5	Low but risk of other clinical problems increased)
Normal range	18.5 - 24.9	Average
Overweight	25.0 - 29.9	Mildly increased
Obese	> 30.0	Mildly increased
Class I	30.0 – 34.9	Moderate
Class II	35.0 – 39.9	Severe
Severe or morbid obesity	> 40	Very severe



# Factors Affecting Obesity

The following factors contribute to weight gain:

- A high-calorie diet – particularly due to ‘fast food’
- Greater availability of energy rich foods and snacks
- More sedentary activities and pastimes
- More reliance on personal and public transport
- Genetic influences
- Certain medical disorders and/or medications.

Losing as little as 5 – 10% of body weight offers health benefits:

- such as reductions in blood pressure and cholesterol, as well as helping patients to feel fitter, more confident and energetic.

Don't 'crash diet' but make long-term lifestyle changes.



# Smoking

- Stopping smoking leads to many positive benefits
- Patients should be encouraged to quit smoking. The following may improve their chances:
  - Making a quit date and sticking to it
  - Keeping busy and avoiding situations that tempt them to smoke
  - Choosing healthy snacks to eat when appetite improves
  - Realising that their finances will improve (save well over £1000 per year if smoked 20 a day)



The Government has set up a comprehensive NHS Stop Smoking Service (group or 1 to 1), which is available across the NHS in England and provides counselling and support to smokers wanting to quit.

For further information visit [www.gosmokefree.nhs.uk](http://www.gosmokefree.nhs.uk)



# Alcohol

The NHS and the Food Standards Agency recommends:

- **Men should not regularly drink more than three to four units of alcohol per day**
- **Women should not regularly drink more than two to three units of alcohol per day**
- Spread drinking throughout the week and **avoid binge drinking**
- Take a **break for 48 hours after a heavy session** to let your body recover
- **Pregnant women** or women trying to conceive should avoid drinking alcohol. If they do choose to drink, they should not drink more than 1-2 units of alcohol once or twice a week and should not get drunk
- Drinking alcohol in moderation (about 1-2 units per day) may provide some **heart health benefit** in men aged over 40 and women who have gone through the menopause
- All alcoholic drinks are **high in calories** and can result in weight gain particularly around the middle section of the body (central obesity)
- Excessive alcohol increases **blood pressure** and is detrimental to heart health



# Alcohol - Units

<b>'Low Alcohol' Beer, Lager &amp; cider</b>	<b>Bottle (330ml)</b>	<b>Can (440ml)</b>	<b>Pint (568ml)</b>	<b>Litre</b>
2%	0.7 units	0.9 units	1.1 units	2 units
<b>Beer, Lager and cider</b>	<b>Bottle (330ml)</b>	<b>Can (440ml)</b>	<b>Pint (568ml)</b>	<b>Litre</b>
4%	1.3 units	1.8 units	2.3 units	4 units
5%	1.7 units	2.2 units	2.8 units	5 units
5.2%	1.7 units	2.3 units	3 units	5.2 units
6%	2 units	2.6 units	3.4 units	6 units
<b>'Super strength' Beer, Lager &amp; cider</b>	<b>Bottle (330ml)</b>	<b>Can (440ml)</b>	<b>Pint (568ml)</b>	<b>Litre</b>
9%	3 units	4 units	5 units	9 units
<b>Alcopops</b>	<b>Bottle (330ml)</b>			
5%	1.4 units			
<b>Wine &amp; Champagne (red, white, rose or sparkling)</b>	<b>Small glass (125ml)</b>	<b>Standard glass (175ml)</b>	<b>Large glass (250ml)</b>	<b>Bottle (750ml)</b>
10%	1.25 units	1.75 units	2.5 units	7.5 units
11%	1.4 units	1.9 units	2.8 units	8.3 units
12%	1.5 units	2.1 units	3 units	9 units
12.5%	1.6 units	2.2 units	3.1 units	9.4 units
13%	1.6 units	2.3 units	3.3 units	9.8 units
13.5%	1.7 units	2.4 units	3.4 units	10.1 units
14%	1.75 units	2.5 units	3.5 units	10.5 units
<b>'Fortified wine (Sherry &amp; Port)</b>	<b>Standard measure (50ml)</b>			
17.5 - 20%	0.9 - 1 units			
<b>'Spirits (Gin, Rum, Vodka &amp; Whiskey)</b>	<b>Single (25ml)</b>	<b>'Large single' (35ml)</b>	<b>Double (50ml)</b>	<b>'Large double' (70ml)</b>
38 - 40%	1 units	1.4 units	1.9 - 2 units	2.7 - 2.8 units
<b>Shots (Tequila &amp; Sambuca)</b>	<b>Single measure (25ml)</b>		<b>'Large single' measure (35ml)</b>	
38 - 40%	1 units		1.3 units	

Shots may be either spirits or liqueurs, and are generally drunk very quickly. Different liqueurs can vary considerably in strength – they can be stronger or weaker than this example



# Physical activity

- Less than half of the UK population (48%) exercise enough to meet government regulations
- Physical activity can improve blood pressure, HDL-cholesterol levels, mood, weight and fat distribution
- Current government guidelines recommend 30 minutes of moderate intensity activity on five or more days of the week
- A pedometer is a cost effective and highly motivational tool for some patients, who should be encouraged to aim for 10,000 steps each day.

## Practical tips for your patients

- Walk rather than drive for a short journey
- Take the stairs rather than the lift
- Get off the bus a stop early and walk the rest of the way.



# Unhealthy diet

## Eating a balanced, healthy diet is essential for maintaining heart health

- Modifying dietary fat intake is vital in reducing cholesterol levels. Research trials have shown that replacing saturated and trans fatty acids (bad fats) with unsaturated fatty acids either as monounsaturated or polyunsaturated fatty acids (good fats) can favourably influence lipid profiles
- It is important to replace foods high in 'bad fats' (found in fatty meats and meat products, full fat dairy foods such as milk, cheese, butter, cream and biscuits, cakes, pastries, savoury snacks and chocolate) with 'good fats' (found in vegetable oils and spreads made with them, nuts, seeds and oily fish).



# Stress

- Stress itself can have effects on the body including increasing blood pressure
- The way we cope with stress such as smoking, eating unhealthily and not finding time to be physically active can also have a negative effect on health, and heart health in particular.

## Practical tips for your patients

- Make time to socialise. Talk with your friends
- Take time out to unwind – even if it's just for 10 minutes. Try to read, take a bath or do something else you enjoy. If you work, make sure you take a break for lunch
- Try yoga or relaxation classes
- Try simple breathing or stretching exercises – you can do them any time
- Take time to eat and drink healthily.



# CASE STUDY 1b

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- MD of large corporate firm
- Smoker
- Enjoys a bottle of red wine with dinner
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## Interactive exercise

**M. Pascal has numerous risk factors and should consult his GP as he may need cholesterol-lowering medication. There are many other diet and lifestyle measures he can also take - break into groups and discuss a new diet and lifestyle plan to help M. Pascal to lower his cholesterol**



# Summary of heart health considerations

- There are various key considerations of heart health including cholesterol, blood pressure, diet and lifestyle
- To help maintain heart health you can adapt a number of diet and lifestyle factors
  - Stop smoking
  - Reduce alcohol intake
  - Eat a healthy balanced diet low in salt and saturated fats and high in (poly and mono) unsaturated fats
  - Reduce stress levels
  - Be physically active
  - Keep to a healthy weight.

