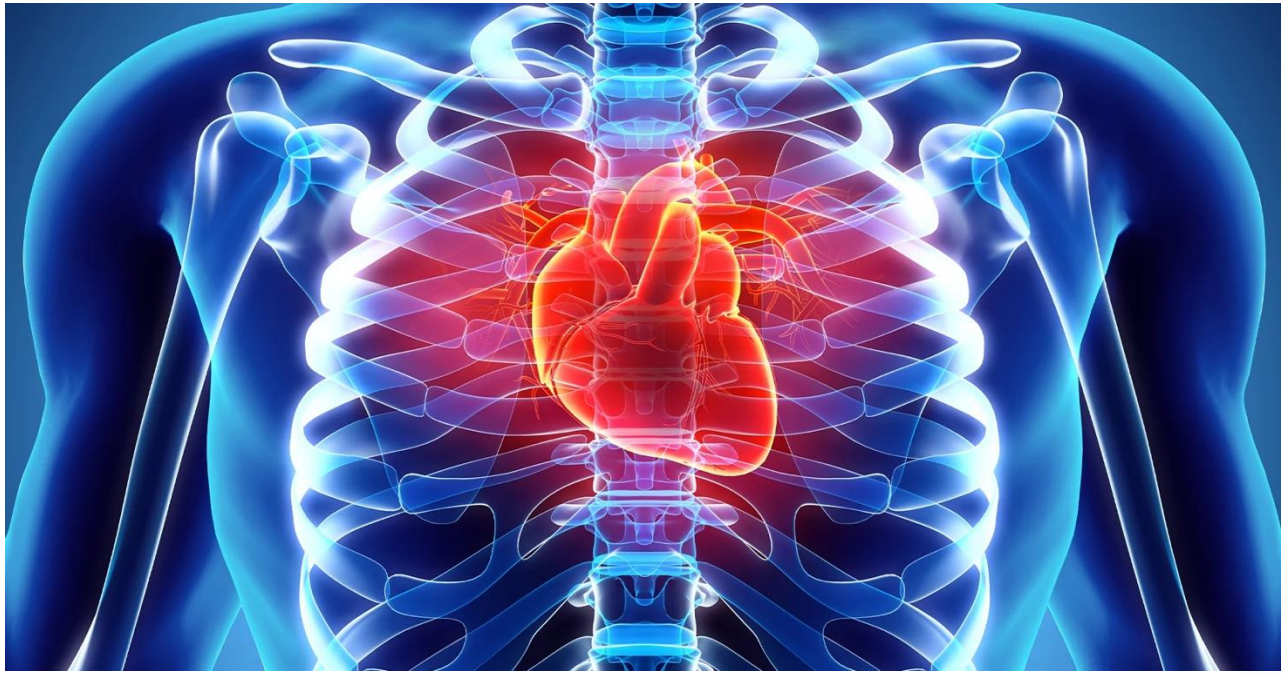

# CVD: Preventing is better than treating

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# Disclosures 2024/5

**Speaker Fees:** AstraZeneca, Bayer, Boehringer Ingelheim, Dexcom, Daiichi Sankyo, Grunenthal, Lilly, Menarini, Idorsia, Thornton & Ross, Boston Scientific

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**Congress Attendance:** Menarini, Daiichi Sankyo, Lilly, Bayer

# Type 2 Diabetes Cardiovascular Renal Metabolic Review Checklist

Medscape UK X Guidelines
Primary Care Hacks

Authors: Dr Eimear Darcy, GP Partner, Grange Family Practice Omagh; Dr Kevin Fernando, GP Partner, North Berwick Health Centre and Content Advisor, Medscape Global and UK (email: kfernando@webmd.net)

**Consider the following during T2D CVRM shared decision making:**

## Lifestyle Considerations

- [ ] Identify people at high risk of T2D
- [ ] Assess weight (e.g. BMI or WHR) and discuss individualised weight loss goals as appropriate. Remember to ethnically adjust these goals where indicated[1]
- [ ] Discuss the importance of 24-hour physical behaviours for T2D:[2] sitting/breaking up prolonged sitting, sweating, strengthening, sleep, stepping
- [ ] Strive for remission of T2D if possible,[3] irrespective of weight.[4] Weight loss of 5–10% confers metabolic improvement; weight loss of 10–15% or more can have a disease-modifying effect and lead to remission of T2D[2]

## Individualised $HbA_{1c}$ Goals

- [ ] Review the person's current $HbA_{1c}$ and trend, and consider other factors when individualising $HbA_{1c}$ goals, e.g., risks potentially associated with hypoglycaemia and other drug adverse effects; life expectancy; comorbidities; established vascular complications; and patient preference, resources, and support systems[5]
- [ ] See the expert consensus statement on diabetes and frailty for individualising management in older adults and/or adults with frailty and T2D

## Kidneys

- [ ] Individualise $HbA_{1c}$ targets in people with diabetic kidney disease. Be aware that all SGLT2is have negligible glucose-lowering effect once eGFR falls below 45 ml/min, so consider adding in an additional glucose-lowering medication such as a GLP-1 RA
- [ ] If eGFR <60 ml/min/1.73 $m^2$ **or** clinically significant proteinuria (ACR ≥3 mg/mmol) **and** on maximally tolerated dose of ACEi/ARB: consider adding SGLT2i with renal protective benefits,[2] irrespective of $HbA_{1c}$
  - see the Primary Care Hack, *Extra-Glycaemic Indications of SGLT2 Inhibitors*
- [ ] In people with T2D and CKD who have persistent albuminuria (ACR >3) despite use of maximally tolerated ACEi/ARB and SGLT2i, consider adding finerenone to reduce the risk of adverse kidney and CV outcomes[6][7][8]
- [ ] If CKD present, offer atorvastatin 20 mg for primary or secondary prevention of CVD[9]
- [ ] Offer aspirin or clopidogrel to adults with CKD for the secondary prevention of CVD,[10] but be aware of the risk of bleeding
- [ ] Consider referral as per NICE criteria, or if 5-year risk of requiring renal replacement therapy is >5% (measured using the Four-Variable Kidney Failure Risk Equation)

## Blood Pressure

There is considerable debate around optimal BP targets for people living with diabetes, with several conflicting guidelines published

- [ ] For grade 1 hypertension (people with a clinic SBP 140–159 mmHg and/or a clinic DBP 90–99 mmHg), effective lifestyle changes may delay or prevent the need for pharmacological treatment
  - for information on effective lifestyle changes, see the Primary Care Hack, *Lifestyle Changes for Managing Hypertension*
- [ ] **First instance:** aim for a HBPM average target of <135/85 mmHg (<140/90 mmHg clinic target) in all people[11]
- [ ] **Provided treatment is well tolerated:** then aim for HBPM average of 125/75 mmHg (130/80 mmHg clinic target) or lower in most people[11]
- [ ] **For adults aged >80 years:** consider a clinic BP target of <150/90 mmHg[12]
- [ ] **For people living with T2D:** start drug treatment with an ACEi/ARB,[12] irrespective of age or ethnic background
- [ ] Measure sitting and standing BP in people with hypertension and T2D.[12] In those with a significant postural drop in BP (i.e., ≥20 mmHg systolic and/or ≥10 mmHg diastolic that occurs on standing[13]), treat to a BP target based on the standing BP

**Note:** SGLT2is have a modest impact on BP, lowering it by around 4/2 mmHg[14]

## Lipids

- [ ] LDL-C targets for people living with T2D:[15]
  - moderate risk: <2.6 mmol/l
  - high risk: ≥50% reduction from baseline **and** <1.8 mmol/l
  - very high risk: ≥50% reduction from baseline **and** <1.4 mmol/l
- [ ] Patient's QRISK3 is ≥10%: offer atorvastatin 20 mg for primary prevention of CVD[9][14]
- [ ] If LDL-C targets are not achieved on maximally tolerated dose statin, consider combination lipid-lowering therapy e.g., add in ezetimibe, bempedoic acid, PCSK9 inhibitor,[15] or inclisiran
- [ ] Consider icosapent ethyl if the individual has established CVD (secondary prevention) and on statins with fasting TG ≥1.7 mmol/l and LDL-C between 1.04 and ≤2.60 mmol/l[16][17]
- [ ] For secondary prevention of CVD, offer atorvastatin 80 mg[15]

*Continued overleaf...*

## MASLD

- [ ] Noninvasive tests for liver fibrosis risk may be advisable due to the strong association of T2D with MASLD[18][19][20]
- [ ] Consider FIB-4 test to assess for underlying fibrosis risk in people aged <65 years
- [ ] If identified as intermediate or high risk, consider referral to secondary care gastroenterology for transient elastography (FibroScan)
- [ ] Strongly encourage and facilitate weight loss where possible: weight loss 3–5% reduces hepatic steatosis, ≥5–7% can lead to resolution of MASH, and ≥10% improves hepatic fibrosis[21]
- [ ] There is emerging evidence for pioglitazone, SGLTis, GLP-1 RAs, and the dual GLP-1 and GIP receptor agonist tirzepatide for MASLD[2]

## Comorbidities and Life Story

- [ ] Consider presence of:
  - CVD or high risk of CVD:[2][22]
    - ASCVD (i.e. IHD/TIA/stroke/PVD): if present, offer early combination therapy with metformin and an SGLT2i, irrespective of $HbA_{1c}$[22]
    - all subtypes of HF: if present, offer early combination therapy with metformin and an SGLT2i, irrespective of $HbA_{1c}$[22]
    - QRISK3 ≥10% and age >40 years, or presence of hypertension, dyslipidaemia, smoking, obesity, or family history (in a first-degree relative) of premature cardiovascular disease: consider early combination therapy with metformin and an SGLT2i, irrespective of $HbA_{1c}$[22]
  - CKD and proteinuria[2][22] (see Kidney section)
  - obesity:[2][22] both SGLT2is and GLP-1 RAs can facilitate weight loss in people living with T2D
  - retinopathy:[22] be aware of the possibility of worsening of pre-existing retinopathy if $HbA_{1c}$ is rapidly lowered
  - OSAHS; these conditions are commonly associated with T2D.[2][23] Consider using the Epworth sleepiness scale and the STOP–BANG questionnaire to exclude underlying OSAHS
- [ ] Educate women of childbearing age that many medications (e.g. ACEis, ARBs, statins, SGLT2is, and GLP-1 RAs) are contraindicated in pregnancy, and counsel them regarding contraception.[24][25] If planning pregnancy, refer to pre-pregnancy services
- [ ] Consider age, functional and frailty status, occupation, literacy level, and other social determinants of health during shared decision making[2][10][22]

## Prescribing Considerations

- [ ] Discuss adherence and if necessary explore barriers/preferences[2][22][25]
- [ ] Review history of hypoglycaemia/hypoglycaemia awareness, DVLA adherence, and CBG monitoring where appropriate, and consider CGM in all people with T2D on insulin[2][22]
- [ ] Sick-day guidance[24][25]
  - for people with T2D on insulin
  - review the SADMANS mnemonic. Consider temporarily pausing these drugs during any significant intercurrent illness, but remind individuals to restart once they are eating and drinking normally and recovered from their illness
- [ ] SGLT2i or GLP-1 RA commenced:
  - consider reduction in SU or insulin dose. If on insulin, consider cautiously reducing insulin dose, increase CBG monitoring, and contact DSN as required[22][26][27]
  - consider adjustment of any dose of diuretic when introducing an SGLT2i[24][28][29]
- [ ] Ensure appropriate/optimal prescribing; consider de-intensifying in the context of functional dependence and frailty[30]

## MDT Referrals

- [ ] DSMES (e.g. DESMOND or X-Pert)
- [ ] Consider any locally available physical activity referral pathway
- [ ] Regular retinopathy screening
- [ ] Regular foot screening
- [ ] Consider secondary care as required, e.g., diagnostic uncertainty or treatment option advice
- [ ] Consider dietician referral, and psychological counselling for diabetes distress

## Coding

- [ ] Code identified conditions as 'priority 1'
- [ ] Do not code 'diabetes resolved'; instead, code 'diabetes in remission'

## Follow Up

- [ ] Goal setting—Diabetes UK information prescriptions can help to facilitate goal setting, information sharing, and care planning
- [ ] Set a defined timescale for follow up and consider regular monitoring as clinically indicated
- [ ] Regular monitoring of weight, BP, $HbA_{1c}$, renal function (both eGFR and urinary ACR), and lipid profile as clinically indicated (at least annually).

**ACEi**=angiotensin-converting enzyme inhibitor; **ACR**=albumin to creatinine ratio; **ARB**=angiotensin receptor blockers; **ASCVD**=atherosclerotic cardiovascular disease; **BP**=blood pressure; **CBG**=capillary blood glucose; **CGM**=continuous glucose monitoring; **CHF**=congestive heart failure; **CKD**=chronic kidney disease; **CVD**=cardiovascular disease; **CVRM**=cardiovascular, renal, and metabolism; **DBP**=diastolic blood pressure; **DESMOND**=diabetes education and self-management for ongoing and newly diagnosed; **DSMES**=diabetes self-management, education, and support; **DSN**=diabetes specialist nurse; **DVLA**=Driver and Vehicle Licensing Agency; **eGFR**=estimated glomerular filtration rate; **FIB-4**=Fibrosis-4; **GLP-1 RA**=glucagon-like peptide-1 receptor agonist; **$HbA_{1c}$**=haemoglobin $A_{1c}$; **HBPM**=home blood pressure monitoring; **HDL-C**=high-density lipoprotein cholesterol; **HF**=heart failure; **HFpEF**=heart failure with preserved ejection fraction; **HFrEF**=heart failure with reduced ejection fraction; **IHD**=ischaemic heart disease; **LDL-C**=low-density lipoprotein cholesterol; **MASH**=metabolic dysfunction-associated steatohepatitis; **MASLD**=metabolic dysfunction-associated steatotic liver disease; **MDT**=multidisciplinary team; **OSAHS**=obstructive sleep apnoea hypopnoea syndrome; **PARS**=Physical Activity Referral Service; **PVD**=peripheral vascular disease; **QRISK3**=Cardiovascular Risk Score 3; **SGLT2i**=sodium–glucose cotransporter-2 inhibitor; **SBP**=systolic blood pressure; **STOP–BANG**=snoring history, tired during the day, observed stop breathing while sleep, high blood pressure, BMI >35 kg/$m^2$, age >50 years, neck circumference >40 cm, and male gender; **SU**=sulfonylurea; **TIA**=transient ischaemic attack; **TG**=triglyceride; **T2D**=type 2 diabetes; **WHR**=waist to hip ratio.

**For references, view this Primary Care Hack online at bit.ly/Hack-CVRM**



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Last updated: September 2023

# Lipid Management for the Primary and Secondary Prevention of Cardiovascular Disease

Medscape UK X Guidelines
Primary Care Hacks

**Authors:** Niraj Lakhani, Lead Clinical Pharmacist, Willows Health, and Primary Care Development Advisor for the Royal College of General Practitioners; Dr Kevin Fernando, GP Partner, North Berwick Health Centre and Content Advisor, Medscape Global and UK (email: kfernando@webmd.net)

## Key Principles

1. **Review LDL-C and aim for levels as low as possible, as quickly as possible, for as long as possible**
2. **Healthy lifestyle changes can improve overall CV health and aid in achieving LDL-C targets, and should be reinforced at every person contact**
3. **Do not over-rely on QRISK3 and 10-year CV risk; calculating lifetime CV risk may offer a more holistic view of a person's life story**
4. **Consider tighter European LDL-C targets over the current, more lenient UK targets**
5. **Statins are safe and effective and should be utilised when indicated**
6. **Statin intolerance is rare, and should be approached appropriately**
7. **Raised triglycerides are a marker of residual CV risk that may warrant further lifestyle and pharmacological management**
8. **Lp(a) is an independent CV risk factor that, when raised, should act as a prompt to mitigate all other CV risk factors and review lifestyle choices**
9. **Combination LLT should be considered standard practice for high-risk and very high-risk individuals**
10. **Familial hypercholesterolaemia is underdiagnosed in primary care, and should be suspected in individuals with a total cholesterol >7.5 mmol/l.**

**See the flowchart on the final page for a comprehensive lipid management pathway for primary care practitioners**

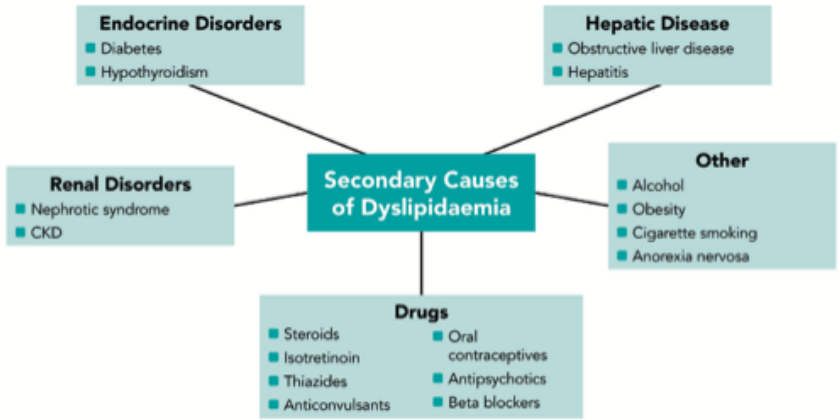
## 1. Overview of Lipid Management and Assessment

- The relationship between LDL-C levels and risk of major CV events is well established: **lower LDL-C translates into a lower risk of ASCVD, regardless of how it is achieved**[1–4]
  - evidence suggests that lowering LDL-C as quickly as possible and maintaining lower levels long-term significantly reduces risk of major CV events[1,3,4]
  - recent evidence also demonstrates that significant non-HDL-C reduction in the 2 months after an MI improves outcomes irrespective of baseline LDL-C, especially when sustained long-term[5]
- When reviewing cholesterol, focus on LDL-C or non-HDL-C rather than total cholesterol[1,4]—**the aim of therapy should be to lower LDL-C, to reduce the risk of ASCVD**
- NICE NG238 recommends a full lipid profile—including total cholesterol, HDL-C, LDL-C, and TGs—for comprehensive CV risk assessment.[6] **A fasting sample is not mandated**[5,6]
  - however, if lab results indicate a TG level >4.5 mmol/l or do not report an LDL-C due to high TGs, a retest should be conducted using a fasting blood sample[6]
- Although HDL-C has traditionally been viewed as protective, its exact role in CV health remains unclear and is still the subject of ongoing research[1,7]
  - Heart UK estimates that the protective effects of HDL-C reach a limit at around 1.4 mmol/l, with levels >2.3 mmol/l potentially increasing risk of ASCVD, especially in perimenopause/menopause[7]
- When reviewing a patient, it is essential to **identify and address secondary causes of dyslipidaemia and modifiable CV risk factors** (see Figure 1 and *2. Lifestyle Interventions*).[4,8,9]

## 2. Lifestyle Interventions

- Lifestyle interventions are fundamental in managing CV risk and cholesterol levels, and in promoting overall CV health over and above cholesterol[1,6]
- Heart UK advises the following as key strategies:
  - maintaining a balanced, heart-healthy diet[11]
  - regular physical activity (adults should aim for ≥150 minutes of moderate-intensity activity or ≥75 minutes of intense activity every week—if they can do more, that's even better)[12]
  - smoking cessation[13]
  - maintaining a healthy weight[14]
- Heart UK has published a helpful guide explaining how to carry out a quick dietary assessment and provide tailored dietary advice based on the person's responses
- Although lifestyle changes can lower LDL-C, the reduction may be modest, typically around 20%[15]
  - therefore, it is important not to delay medical treatment, especially in individuals at higher risk of CVD.

### Figure 1: Secondary Causes of Dyslipidaemia[9,10]




## 3. Risk Estimation

- Although QRISK3[16] is a valuable tool for estimating 10-year CV risk, it should not be solely relied upon,[6] especially in younger people with CV risk factors or those with risk factors that accumulate over time—**early intervention is key to prevention of CVD**
  - **NICE NG238 recommends assessing both short-term CV risk (with QRISK3) and lifetime CV risk** for a more comprehensive assessment that informs discussions of CV risk; this helps to identify people with a high lifetime risk even if their short-term risk appears low[6]
    - risk assessments can be carried out in those as young as 25 years[6,16]
  - lifetime CV risk can be assessed using tools such as QRISK3-lifetime[6,17]
  - do not depend exclusively on QRISK3 to determine whether to start statins[6]
- A more pragmatic approach may be to gauge risk based on the individual's age and the number of LTCs they have, alongside any CV risk calculations—for example, an under-40-year-old living with multiple LTCs or CV risk factors is likely to have a high lifetime risk and therefore benefit from early intervention, independent of any risk calculation
- According to NICE guidance, QRISK3 should **not** be used in certain groups, including people:[6]
  - with FH or another form of genetic dyslipidaemia
  - with pre-existing CVD
  - aged ≥85 years
  - with CKD (stages 3–5)
  - with T1D, for whom specific guidance is applied regardless of QRISK3
- Furthermore, QRISK3 may **underestimate** risk in certain groups, including people:[6]
  - who have recently stopped smoking
  - living with HIV
  - living with severe mental illness
  - already taking medicines to treat CV risk factors
  - taking medicines that can cause dyslipidaemia, such as immunosuppressant drugs
  - living with autoimmune disorders and other systemic inflammatory disorders.

# Lifestyle Changes for Managing Hypertension

Medscape UK X Guidelines
Primary Care Hacks

**Author:** Dr Kevin Fernando, Portfolio GP, East Lothian; Content Advisor, Medscape Global and UK. Email: kfernando@webmd.net

| Lifestyle Change | Recommendations | Approx. Effect on Systolic BP (mmHg) | Approx. Effect on Diastolic BP (mmHg) |
|---|---|---|---|
| **Alcohol Consumption**[1] | Current UK guidance[2] advises limiting alcohol intake to 14 units/week for women and men | –4.0 | –2.5 |
| **Caffeine, Tea, and Energy Drinks**[3] | Coffee intake is not associated with a higher risk of hypertension in the general population; increased coffee consumption may be associated with lower risk of hypertension<br>The association between drinking tea and CVD is unclear; mechanistic trials have suggested benefits for BP lowering<br>Energy drinks containing high concentrations of taurine and caffeine increase BP and may lead to cardiovascular complications in young adults | Unclear | |
| **DASH (Dietary Approaches to Stop Hypertension)**[4] | An evidence-based eating plan (see the *Useful Resources for Patients* section) rich in fruits, vegetables, and low-fat dairy products, with reduced salt and saturated/trans fat content | –11.0 | –5.5 |
| **Maintaining a Healthy Weight**[3,5] | Weight loss of 5 kg in adults living with overweight or obesity | –4.4 (for weight loss of 5 kg) | –3.6 (for weight loss of 5 kg) |
| **Physical Activity**[3,6–9] | In a systematic review and meta-analysis, aerobic exercise was suggested over alternative forms of exercise resistance training as the first-line exercise therapy for reducing BP[3,6]<br>Adults should aim to:[3,7]<br>• engage in strengthening activities that work all the major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms) on ≥2 days per week<br>• engage in ≥150 minutes of moderate-intensity activity per week or 75 minutes of vigorous-intensity activity per week<br>• spread exercise evenly over 4–5 days per week, or every day<br>• reduce time spent sitting or lying down, and break up long periods of inactivity | –7.5<br>A recent network meta-analysis suggested the SBP-lowering effect of exercise among hypertensive populations appears similar to that of commonly used antihypertensive medications[9] | –4.5 |
| **Potassium Intake** | Optimum dietary potassium intake can lower BP and may be linked to reduced CVD risk[3]<br>Increase dietary potassium intake (e.g. tomato juice, bananas, potatoes, spinach, salmon, eggs; see the *Useful Resources for Patients* section) to 3.5–5.0 g daily[10]<br>Be aware of individuals at higher risk of hyperkalaemia, for whom this recommendation should be individualised: those with advanced CKD, CHF, diabetes, and resistant hypertension<br>• guidance on CKD recommends restricting dietary potassium intake to <2.4 g/day in advanced CKD[3] | –3.5 | –2.0 |
| **Salt Intake** | Long-term follow-up salt-reduction trials have illustrated that reducing salt by 2.5 g/day is associated with ≈20% reduction in CVD events[3,11]<br>Adults should eat <6 g of salt, equivalent to 2.4 g sodium per day[12] (see *Useful Resources for Patients*, below); 1 tsp≈5 g salt<br>Salt substitutes such as LoSalt contain potassium instead of sodium, so may not be suitable for all. See the above recommendation regarding potassium intake<br>Soluble, dispersible, and effervescent preparations of analgesics have high sodium content, and studies have found a link between use of these sodium-containing medicines and increased CVD risk;[13] taking eight soluble paracetamol tablets exceeds the recommended sodium intake of 6 g daily<br>Soluble preparations should be avoided unless the person has genuine swallowing difficulties | –5.4 | –2.8 |
| **Smoking Cessation (and E-cigarettes)** | Stopping smoking is one of the most effective interventions to prevent major CVD events[3,14]<br>The BP effect of e-cigarettes is unclear, and data are sparse; growing evidence suggests that e-cigarettes can increase BP[3] | –5.0 | –3.1 |

**BIHS**=British and Irish Hypertension Society; **BJGP**=British Journal of General Practice; **BP**=blood pressure; **CHF**=chronic heart failure; **CKD**=chronic kidney disease; **CVD**=cardiovascular disease; **DASH**=dietary approaches to stop hypertension; **ESC**=European Society of Cardiology; **SBP**=systolic blood pressure.

**Notes**

- The 2024 ESC guideline on hypertension offers practical information and guidance on lifestyle changes for managing elevated BP and hypertension
- The effects of implementing these modifications are of course individual, and combinations of two (or more) lifestyle modifications are synergistic
- For comparison, the average SBP reduction from one antihypertensive drug is **12.5–15.5 mmHg**[15] and around two-thirds of individuals with hypertension cannot be controlled on one drug and will require two or more antihypertensive agents from different drug classes[16]
- Blood Pressure UK and the BIHS provide information for supporting those with—and healthcare professionals managing patients with—hypertension, including home BP monitoring resources from the BIHS
- A useful clinical practice article was published recently in the BJGP, with a focus on measuring BP in primary care.

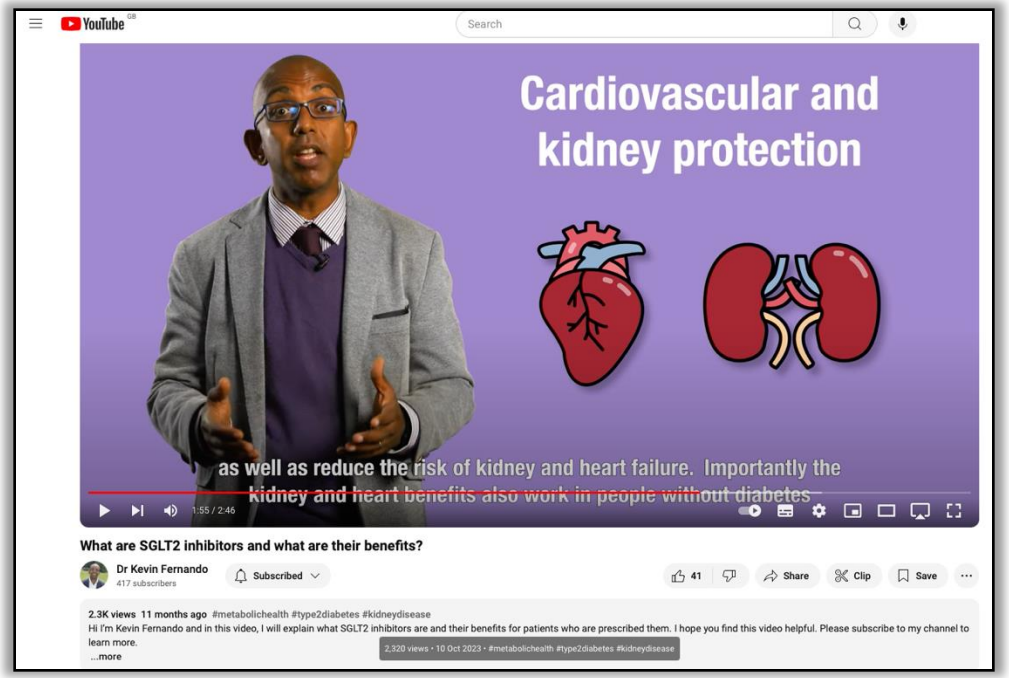
**Useful Resources for Patients**

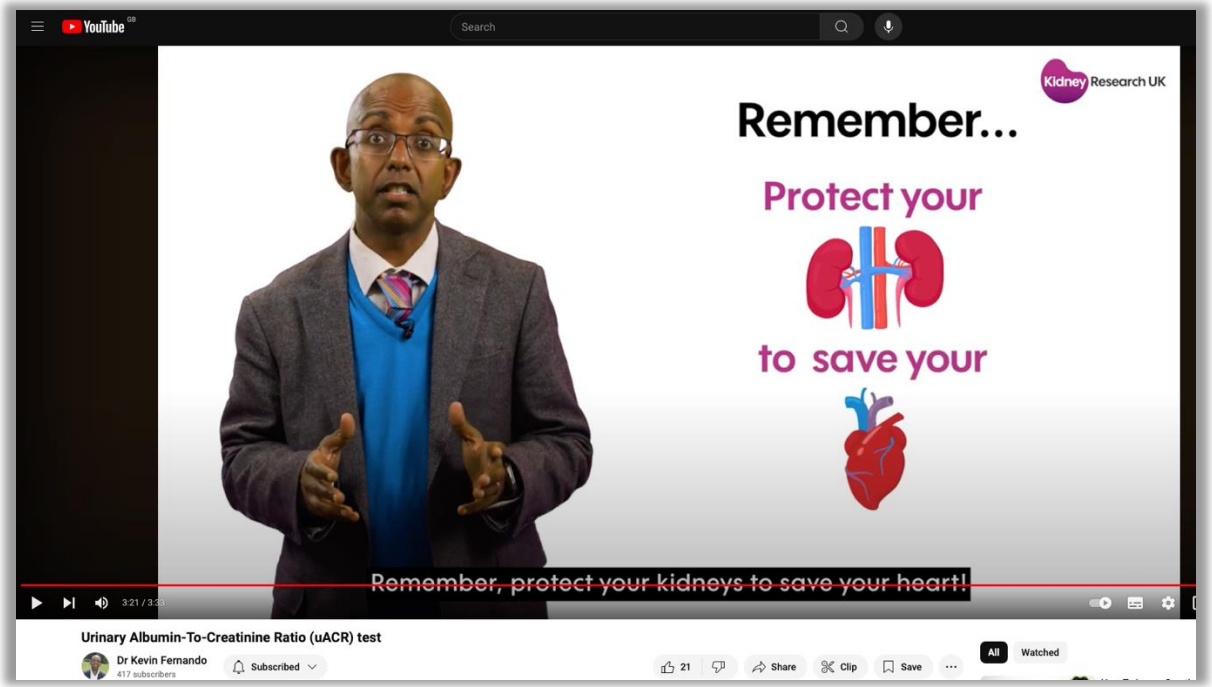
- NHS Live Well: *Alcohol support*
- NHS website: *Hypertension prevention*
- US National Heart, Lung, and Blood Institute: *DASH eating plan*
- NHS Live Well: *Healthy weight*
- NHS Live Well: *Exercise*
- Blood Pressure UK: *Potassium and your blood pressure*
- Blood Pressure UK: *Salt and your blood pressure*.

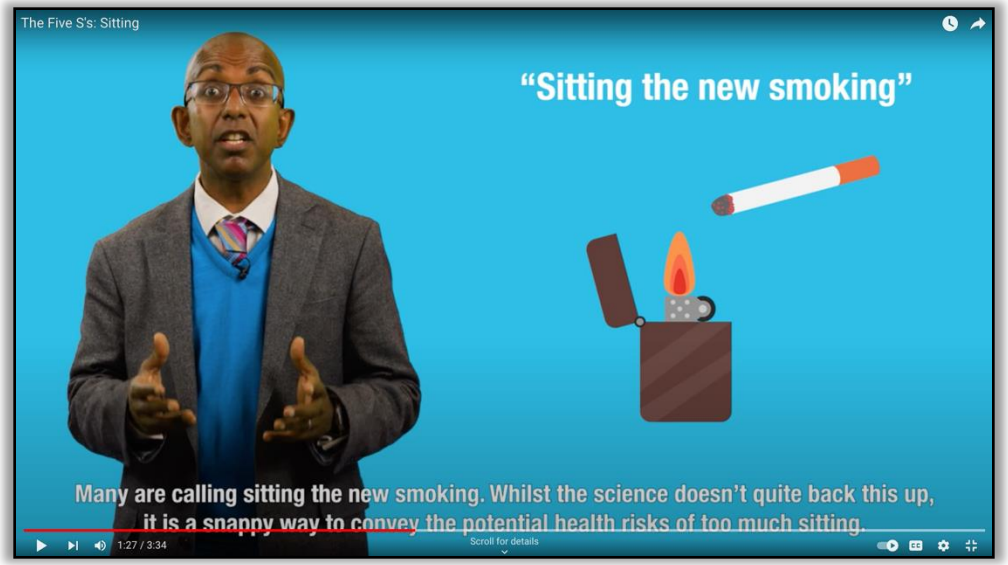




bitly




YouTube @DrKevinFernando

# Cardiovascular disease

- Cardiovascular disease causes around a 25% of all deaths in the UK,[1] placing a considerable financial burden on the NHS and wider society[2]
  - The NHS Long Term Plan acknowledges **cardiovascular disease as a clinical priority** and the single biggest area where the NHS can save lives over the next 10 years[3]

- LDL-C is directly causal to ASCVD, those with T2DM are at higher risk
  - People with T2DM face a significantly higher risk of CVD
  - Common co-morbidities of T2DM, such as hypertension and CKD, further elevate CV risk
  - CVD remains one of the leading causes of death in individuals with T2DM

**7.6 million**
people are living with CVD in the UK[1]

CVD costs the UK economy† an estimated
**£19 billion**
every year[1]

*†including premature death, disability and informal costs*

**460 PEOPLE DIE**
every day from CVD[1]

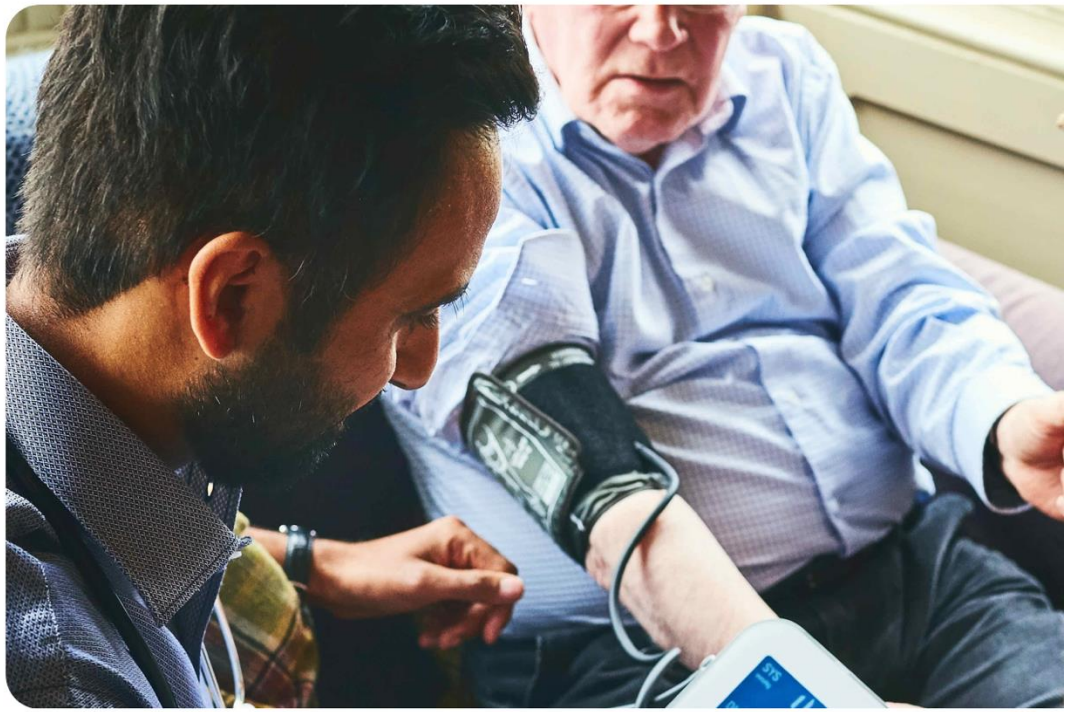
One person dies from CVD
**EVERY 3 MINUTES**
in the UK[1]

# Data & Improvement Tool

The Cardiovascular Disease Prevention Audit (CVDPREVENT) is a national primary care audit that automatically extracts routinely held GP data. The **Data & Improvement Tool** provides open access to the data, with clear, actionable insights for those tasked with improving cardiovascular health in England.

Watch demonstration video

or scroll down to start



E92000001: **England**

Time Period: To December 2024 | Participation Coverage: 98.1% | Population Coverage: 98.9%

Change time period or area

# Regional & ICS Insights BETA

A high-level overview of indicators for regions and Integrated Care Systems.

ABC | CKD | Prevalence | Smoking and BMI

## ABC Indicators

December 2024

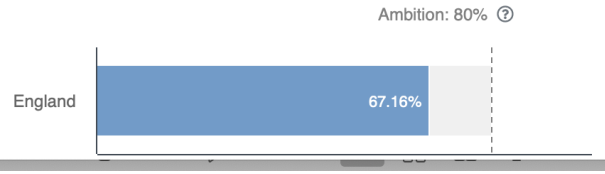
HYPERTENSION MONITORING

**CVDP004HYP: Patients with GP recorded hypertension, with a record of a blood pressure reading in the preceding 12 months.**

+ Expand Patient Pathway | Open Indicator | Metadata


HYPERTENSION MANAGEMENT

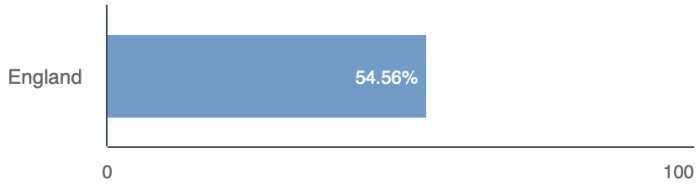
**CVDP007HYP: Patients with GP recorded hypertension, whose last blood pressure reading is to the appropriate treatment threshold, in the preceding 12 months.**



CHOLESTEROL MANAGEMENT

## CVDP006CHOL: Patients with no GP recorded CVD and a GP recorded QRISK score of 10% or more, who are currently treated with lipid lowering therapy

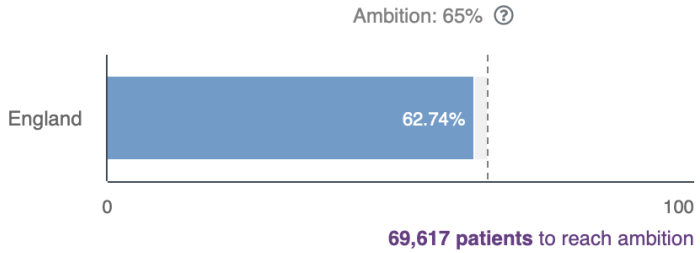
+ Expand Patient Pathway | Open Indicator | Metadata




CHOLESTEROL MANAGEMENT

## CVDP003CHOL: Patients with no GP recorded CVD and a GP recorded QRISK score of 20% or more, who are currently treated with lipid lowering therapy

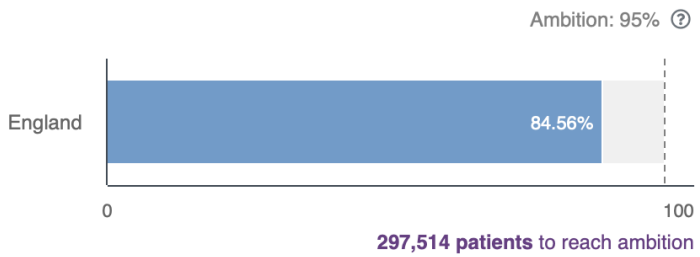
+ Expand Patient Pathway | Open Indicator | Metadata




CHOLESTEROL MANAGEMENT

## CVDP009CHOL: Patients with GP recorded CVD (narrow definition), who are currently treated with lipid lowering therapy.

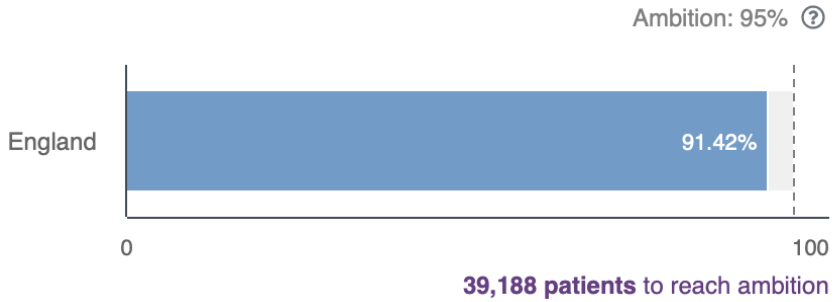
+ Expand Patient Pathway | Open Indicator | Metadata



ATRIAL FIBRILATION MANAGEMENT

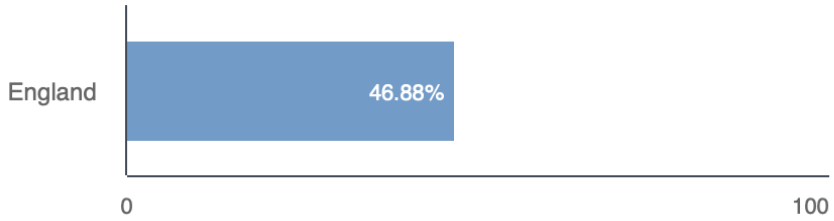
## CVDP002AF: Patients with GP recorded atrial fibrillation and with a CHADS2 or CHA2DS2-VASc score of 2 or more, who are currently treated with any oral anticoagulant.

+ Expand Patient Pathway | Open Indicator | Metadata




## CVDP012CHOL: Patients with GP recorded CVD (narrow definition), whose most recent blood cholesterol level is LDL-cholesterol less than or equal to 2.0 mmol/l or non-HDL cholesterol less than or equal to 2.6 mmol/l, in the preceding 12 months

Open Indicator | Metadata



| ID | Lower threshold (2024/2025) | Upper threshold (2024/2025) | QOF points (2024/2025) | Lower threshold (2025/2026) | Upper threshold (2025/2026) | QOF points (2025/2026) |
|---|---|---|---|---|---|---|
| CHOL003 | 70% | 95% | 14 | 70% | 95% | 38 |
| CHOL004 | 20% | 35% | 16 | 20% | 50% | 44 |
| HYP008 | 40% | 77% | 14 | 40% | 85% | 38 |
| HYP009 | 40% | 80% | 5 | 40% | 85% | 14 |
| STIA014 | 40% | 73% | 3 | 40% | 90% | 8 |
| STIA015 | 46% | 86% | 2 | 46% | 90% | 6 |
| CHD015 | 40% | 77% | 12 | 40% | 90% | 33 |
| CHD016 | 46% | 86% | 5 | 46% | 90% | 14 |
| DM0362 | 38% | 78% | 10 | 38% | 90% | 27 |



NHS England

# Quality and Outcomes Framework guidance for 2025/26

Publication reference: PRN01904

▶ March 2025 newsletter now available - see below.

# About the Scottish CVD Risk Factors Programme

National cardiovascular disease (CVD) prevention and risk factors toolkit

The CVD Risk Factors programme is part of a wider suite of Scottish work that sits with the Preventative and Proactive care (PPC) programme. PPC is working to support transforming our models of care to be more preventative, proactive and focused on early intervention.

Close all

## Mission and aims

**The 5 modifiable risk factors to find>optimise>reduce are:**

1. High blood pressure
2. High lipids
3. High blood sugar
4. Obesity
5. Smoking

Additionally, there are non-modifiable factors which place people at higher CVD Risk –

- Ethnicity (Black and South Asian)
- Taking certain medications e.g. antipsychotics
- Family history - related to early CVD death, familial hypercholesterolaemia, lipoprotein (a).

**Improving & Quality Assuring Care**

CVD Risk Care to People We Already Know Have at least 1 Risk Factor (or at higher risk of having risk factors); or who have a pre-existing CVD diagnosis

**Increased Finding of new RFs in people**

**Citizens:** Increased knowledge and self-assessment and care

**IN NHS:** Increased opportunistic care + new offers of health checks

**Closing The Gap in Reach:**

Reaching and Reducing RFs with people who have highest inequalities – through increased outreach, longer and/or more flexible approaches of care +

Closing the Gap in Knowledge and Citizen Led Health

CVD

Avoidable Deaths

Life Expectancy & Healthy Life Expectancy

Sustainable Quality Healthcare

# Primary Prevention of CVD in Primary Care

Consider life story and optimise lifestyle choices

Systematic risk assessment and stratification using a CVRM approach

Simplify and individualise lipid management in primary care

Multidisciplinary team-based care

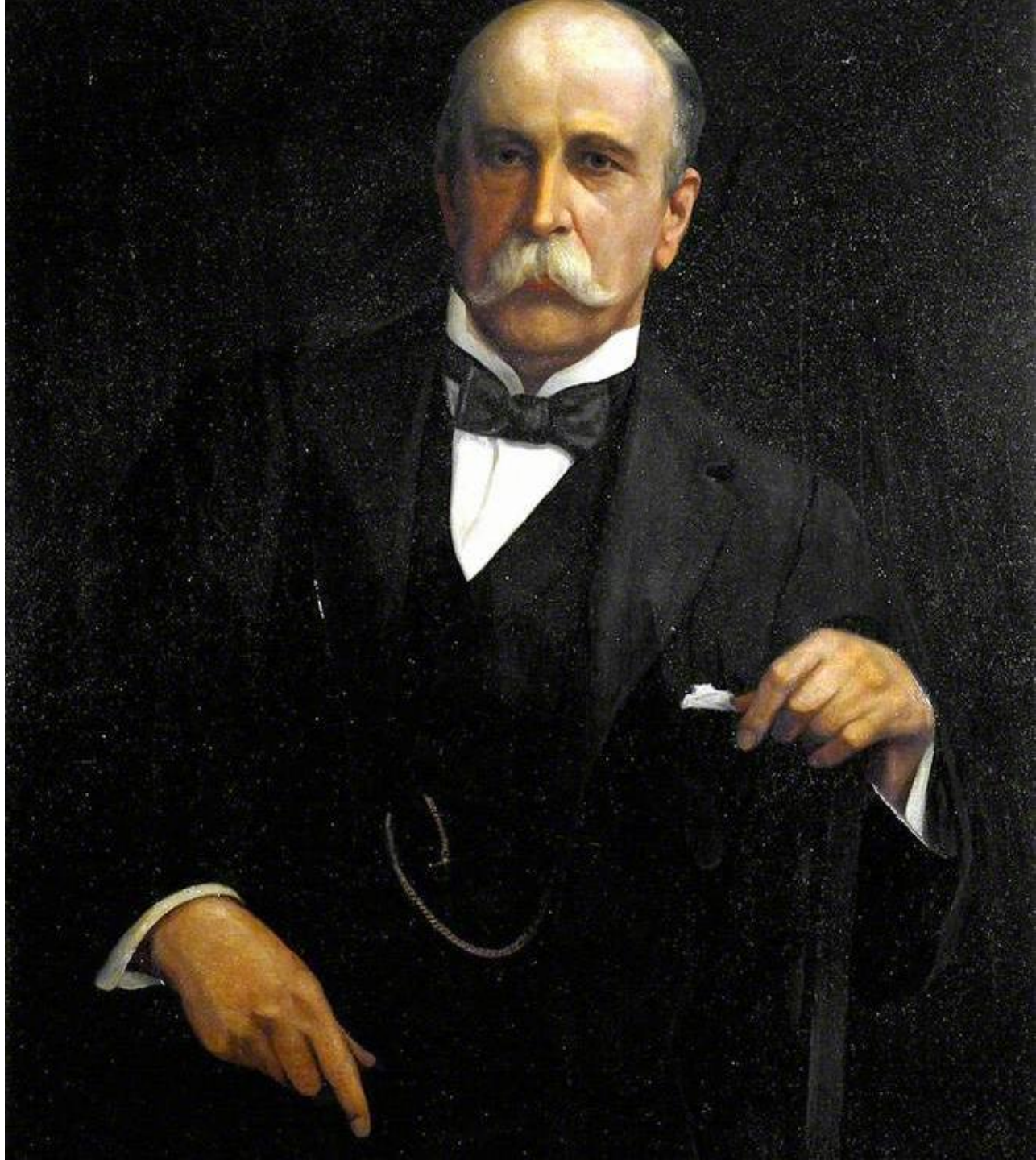
Address social determinants and health inequalities

Ongoing monitoring and follow-up

“

‘The good physician treats the disease; the great physician treats the patient who has the disease’

**Sir William Osler 1849–1919**



# Unified long-term condition reviews in primary care

Consistent communication, improved co-ordination of care & reduced fragmentation in a single integrated approach

Individualised, holistic care with improved person experience and outcomes

Promotes prevention and early intervention

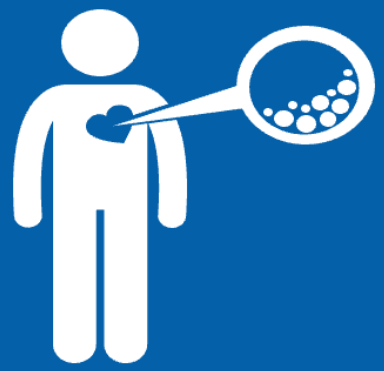
Improved health system efficiency and reduced healthcare costs

Optimisation of workflow allowing better use of staff time and resources

Greater satisfaction, supports reimbursement of LTC care and strengthens financial sustainability

# WHY IS LIPID MANAGEMENT SO IMPORTANT IN CVD PREVENTION?

In the UK, **~25% to 28%** of CVD death is due to **elevated cholesterol**[1]



**High cholesterol** is the second most significant medical risk factor after blood pressure[1]

For every 1 mmol/L reduction in LDL-C there is a

**23%**

REDUCTION IN MAJOR VASCULAR EVENTS[2]

Interventions that lower LDL-C can **significantly reduce** the incidence of coronary heart disease and other major vascular events in a wide range of individuals[2]

CVD, cardiovascular disease; LDL-C low-density lipoprotein cholesterol.

1. Wilkins E. et al. European Cardiovascular Disease Statistics 2017. European Heart Network, Brussels.
2. Silverman MG et al. JAMA 2016;316(12):1289-97.

# Lifestyle Interventions


Home › Health professionals › Content centre › Nutrition Academy › Professional resources › HCP step by step diet guide

## HEART UK's Step-by-Step Guide

This health professional guide has been designed to help you carry out a quick dietary assessment of your patient's diet, and provide tailored dietary advice based on their responses. The accompanying patient sheet allows your patient to record their goals during the consultation an then take it home to track their progress. By following the guide, you'll have everything you need to confidently introduce effective dietary strategies for cholesterol management, regardless of your prior nutrition expertise.

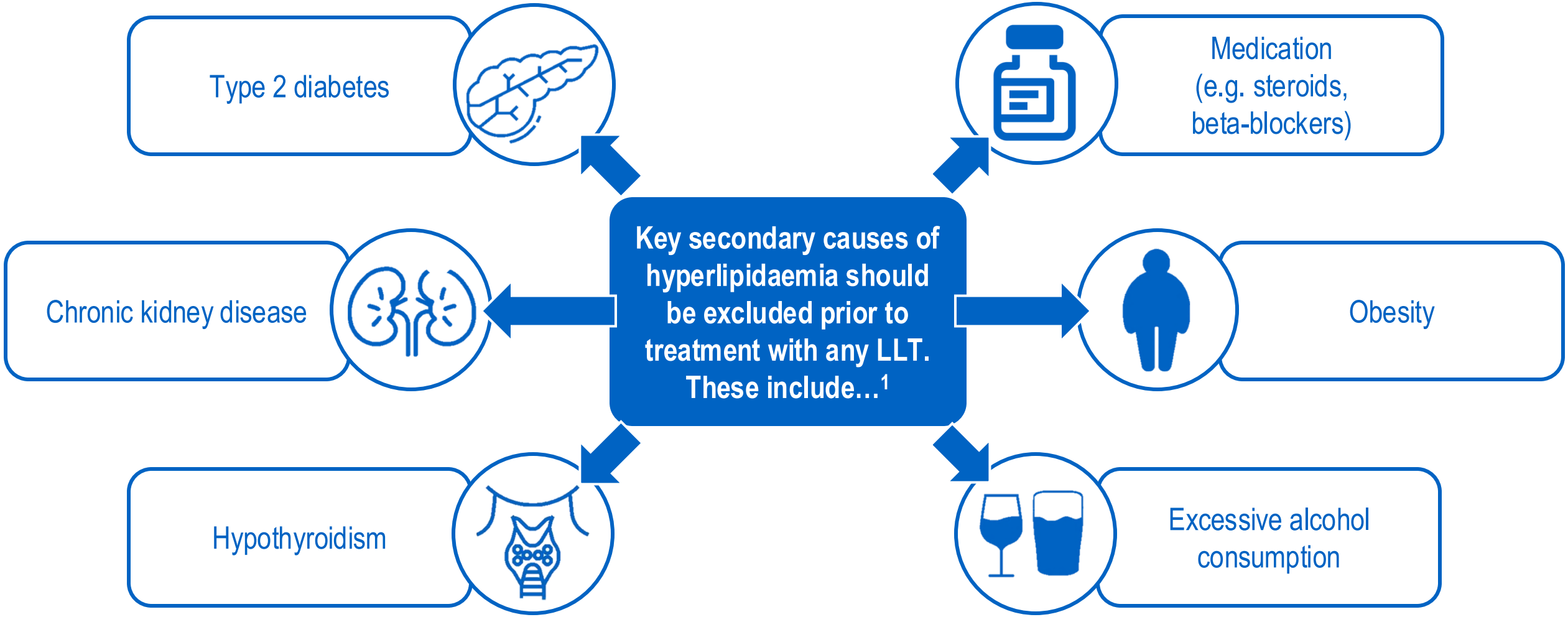
## Your Quick, Patient-Centred Process in 5 Simple Steps

This guide offers a quick, step-by-step approach that keeps consultations focused, clear, and effective. With a patient-centred design and

- Lifestyle interventions are fundamental in managing CV risk and cholesterol levels, and in promoting overall CV health over and above cholesterol

- Heart UK resources

- Although lifestyle changes can lower LDL-C, the reduction may be modest, typically around 20% therefore, it is important not to delay medical treatment, especially in individuals at higher risk of CVD




LLT, lipid-lowering therapy.

1. Stone NJ. *Med Clin North Am* 1994;78:117–141.

# Sustained LDL-C lowering is even more important in patient with other comorbidities

- In a post-hoc analysis of patients with ASCVD receiving lipid-lowering therapy, the **absolute risk reduction in major adverse cardiovascular events from LDL-C reduction was greater in patients with elevated LDL-C with the comorbidities** listed below than in those without.*[1]

Diabetes

Chronic kidney disease

Polyvascular disease

# NICE Guidelines: Key points

- Adults with T2DM are at high risk of CVD if:
  - QRISK > 10%, or an elevated lifetime risk of cardiovascular disease (defined as the presence of 1 or more cardiovascular risk factors in someone under 40 - hypertension, dyslipidaemia, smoking, obesity, and family history (in a first-degree relative) of premature cardiovascular disease).
  - SGLT2 inhibitors should be **considered** if at high risk of CVD and should be **offered** if established CVD

- Use the QRISK3 tool for people with type 2 diabetes aged between 25 and 84
  - Consider using a lifetime risk tool such as QRISK3-lifetime particularly for people with a 10-year QRISK3 score less than 10%, and people under 40 who have CVD risk factors

- Obtain a full lipid profile (doesn't need to be fasted)

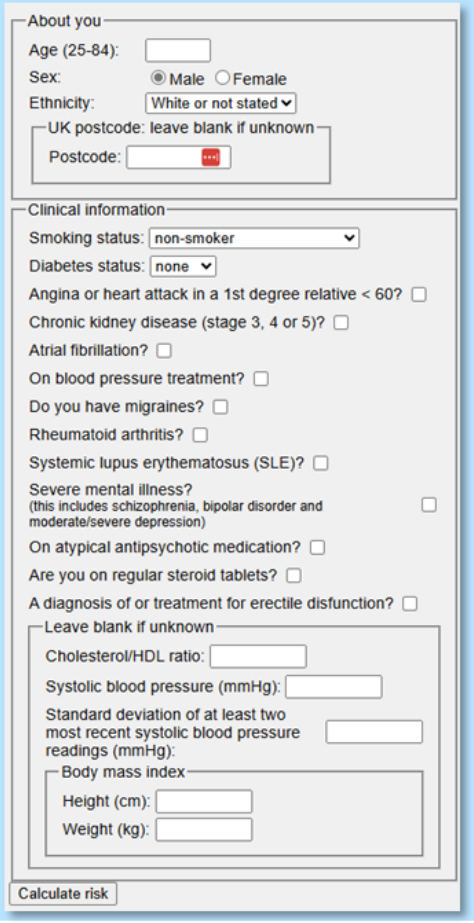
- Do not stop statins because of an increase in blood glucose level or HbA1c

- Any statin at any dose reduces CVD risk

# Tools to calculate risk

## QRISK3*1

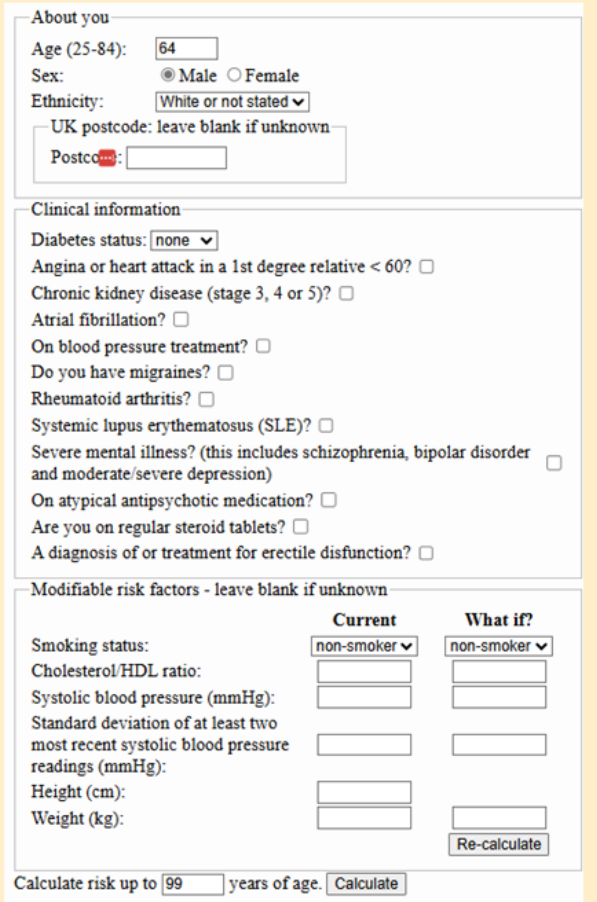
estimates the probability of an individual developing CVD over a 10-year time frame




## QRISK-lifetime*2

Estimates an individual's risk of getting CVD over their lifetime and compares it with their risk with good control of the following risk factors:

- smoking
- body mass index
- cholesterol/HDL ratio
- systolic blood pressure



# NICE Guidelines: Targets

- **Primary prevention**: Atorvastatin 20mg if QRISK >10% (aged 84 years and younger) and aim for a **>40% reduction in non-HDL cholesterol**.
  - Do not rule out treatment just because 10-year QRISK3 score is <10%
  - Consider increasing the statin intensity/dose if not currently taking a high-intensity statin at the maximum tolerated dose

- **Secondary prevention**: Atorvastatin 80mg and aim for **LDL-C levels of <2.0mmol/l** or non-HDL cholesterol levels of <2.6mmol/l
  - Consider ezetimibe in addition to the maximum tolerated intensity and dose of statin to reduce CVD risk further, even if the lipid target for secondary prevention of CVD is met
  - If LDL-C target is not met consider additional lipid-lowering treatments (as per NICE's technology appraisal guidance on alirocumab, evolocumab, ezetimibe and inclisiran)

# ESC Guidelines

**2019 - Guidelines on Dyslipidaemias**

**2021 - Guidelines on cardiovascular disease prevention in clinical practice**

**2023 - Guidelines for the management of cardiovascular disease in patients with diabetes**

# ESC/EAS risk-based targets

| | 2016 LDL-C goals[1] | 2019 LDL-C goals[2] |
|---|---|---|
| **Low risk** | <3.0 mmol/L (<116 mg/dL) | |
| **Moderate risk** | <3.0 mmol/L (<116 mg/dL) | <2.6 mmol/L (<100 mg/dL) |
| **High risk** | <2.6 mmol/L (<100 mg/dL) OR ≥50% reduction* | <1.8 mmol/L (<70 mg/dL) AND ≥50% reduction from baseline |
| **Very high risk** | <1.8 mmol/L (<70 mg/dL) OR ≥50% reduction† | <1.4 mmol/L (<55 mg/dL) AND ≥50% reduction from baseline |
| **Second CV event within 2 years while on a maximally tolerated statin** | NA‡ | <1.0 mmol/L (<40 mg/dL) AND ≥50% reduction from baseline |

# ESC Guidelines – Key Points: LDL

- Prolonged lower LDL-C is associated with lower risk of ASCVD. No lower limit for LDL-C values, or ‘J’-curve effect
- Lowering LDL-C safely reduces CVD risk even at low LDL-C levels
- Get LDL-C down, by any means necessary - relative reduction in CVD risk is proportional to the absolute size of the change in LDL-C.
- Benefit of lowering LDL-C depends on ASCVD risk and absolute reduction in LDL-C. A small reduction in LDL-C is beneficial in high/very high risk
- Statins are recommended first line agents, with a view to **combination therapy** if needed

DAILY EXPRESS

8 INCHES OF RAIN TO FALL BY WEEKEND

Gerry Anderson, creator of the Thunderbirds, dies aged 83

WIN £1,500 WORTH OF M&S VOUCHERS

# PROOF STATINS SAVE MILLIONS

Wonder pill halves heart attack deaths

Boxing Day shoppers break sales records

BACKLASH OVER DOWNTON TRAGEDY

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BEAT THE BUDGET 20 TIPS ON HOW TO BOOST YOUR SPENDING POWER

# STATINS IN NEW HEALTH ALERT

Daily pill can cause kidney damage

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THE WOMAN WHO SIGNED CONTRACT TO BE ONE MAN'S MISTRESS FOR LIFE

# STATINS REALLY DO SAVE YOUR LIFE

New study ends pill safety fears

THINK IT'S HOT NOW... YOU AIN'T SEEN NOTHING YET

FREE FATHER BROWN BOOK FOR EVERY READER

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# HEALTH CHIEF SLAMS STATINS

Millions face terrible side effects as drug is planned for 1 in 4

Puppy horror exposed

Kate & Wills' gift to threatened school

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DEATH OF DAVID FROST, THE GREAT TV INQUISITOR

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# HIGH DOSE OF STATINS CAN BEAT DEMENTIA

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GAS SCANDAL BILLS STAY HIGH AS COSTS DROP BY UP TO 50%

# DOCTORS BAN ON STATINS

Medics at war over drug advice

Hello sailor! Kate's nautical and nice

ALL INCLUDED ALL UNLIMITED ALL THE TIME

Sandals MORE QUALITY INCLUSIONS THAN ANY OTHER RESORTS ON THE PLANET

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# TAKE STATINS TO SAVE YOUR LIFE

Millions more need the wonder drug say health experts

TIMOTHY WEST MY WIFE PRUNELLA SCALES IS BATTLING ALZHEIMER'S

SPORT: GUIDE TO THE FINAL HOURS OF THE TRANSFER WINDOW

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# NEW STATINS BOMBSHELL

Medical experts angry that doctors will be paid to prescribe the controversial drugs

Miss Marple actress Geraldine McEwan dies at 82

Falklands alert: Britain sends 300 more troops

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# OFFICIAL: STATINS ARE SAFE

News will be huge relief for millions

Baywatch MP who took to the beach to learn about life

SPORT: PRESSURES ON TOP FOOTBALL MANAGERS

SUNDAY EXPRESS

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# STATINS: NEW SAFETY CHECKS

Oxford professor who championed controversial drug to reassess evidence of side effects

Sherlock and the wedding villain!

Terrorist kills man and shoots policemen

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KATE SCOTCHES BABY RUMOURS WITH A LARGE GLASS OF RED

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# PROOF STATINS BEAT DEMENTIA

Heart drug slashes risk by a quarter

Cameron holiday starts with look of love

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BUDDY HOLLY NEW PROBE INTO TRAGIC PLANE CRASH

THERESA MAY HER WILD AND WACKY WAY OF DRESSING

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# HOW STATINS CAN CAUSE DIABETES

Pills raise the risk of getting disease by 46% say experts

DAVID WALLIAMS DISTRAUGHT OVER SPLIT FROM HIS MODEL WIFE LARA STONE

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# STATINS FIGHT CANCER

Prince George flies into a tantrum over aircraft noise

Sandals SUMMER SALE

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SIMON COWELL MOMENT SUSAN BOYLE TAUGHT ME A LESSON AND CHANGED MY LIFE

HOW EXPATS FIDDLE £81M IN BENEFITS EVERY YEAR

# STATINS SLASH RISK OF STROKE BY 30%

QUEEN LOOKS BLOOMING LOVELY AT FLOWER SHOW

DAILY EXPRESS

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ARMED TO THE TEETH OUR POLICE READY TO PROTECT US FROM TERROR

# STATINS INCREASE RISK OF DIABETES

New fears as cost of treating disease doubles in a decade

I cheated death last week...now we've won £61m

SUNDAY EXPRESS

INSIDE ALL THE LATEST SPORTS ACTION SOPHIE WESSEX INTERVIEW & £1,000 CROSSWORD

FREE WILD BIRD SEED

# STATINS ADD A MERE 3 DAYS TO LIFE

Benefits of heart drugs 'exaggerated and patients misled'

Beckhams set to buy a village!

Pupils warned of evil clown gang

SUNDAY EXPRESS

FREE MALTEASTER BUNNY

TWO FREE WOODEN CHOPPING BOARDS

# STATINS DOUBLE RISK OF DIABETES

'Alarming' conclusion of 10-year research into controversial heart drug

David Bowie's last gesture of love

BEHIND THE SCENES AT DOWNTON ABBEY REVIEW

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FREE ICE CREAM SUNDAE AT BEEFEATER, BREWERS FAYRE & TABLE TABLE

FREE DOG FOOD TWO TINS OF BUTCHER'S TENDER CUTS TODAY AT POUNDSTRETCHER

# STATINS AGE YOU FASTER

Long-term use stops body repairing itself, new research warns

Sorry Harry, second again

IS zealots crucify Christians in Syria

SUNDAY EXPRESS

HOLIDAYS FROM JUST £10 INCLUDING SCHOOL HOLS! WITH PONTINS

SUITCASE SET FOR JUST £49.99 WAS £50

# NEW STATINS SAFETY ALERT

Government to fund fresh trial into controversial heart drug amid fears doctors are over-prescribing

Queen 'will not be silenced'

Britain's bid to win £40billion space race

SUNDAY EXPRESS

WIN £2,000 IN OUR BUMPER PUZZLE SPECIAL

FREE ICE CREAM TODAY AT LONDIS

Exclusive: Fresh calls for review into safety of heart drug as 20,000 suffer side effects

# STATINS LINKED TO 227 DEATHS

Crown Jewel for baby Charlotte

Terror chiefs fear UK attack could come any day

DAILY EXPRESS

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HOUSES OF PARLIAMENT TO CLOSE FOR 6 YEARS (OR FACE CATASTROPHE)

# PROOF AT LAST STATINS ARE SAFE

Best way to prevent strokes or heart attacks, say experts

Amanda Holden's ru night as dog show he

# IF 40% REDUCTION OF NON-HDL-C NOT ACHIEVED, OFFER HIGH INTENSITY STATINS

## EXTENT OF LIPID LOWERING WITH AVAILABLE THERAPIES

| Approximate reduction in LDL-C | | | | | |
|---|---|---|---|---|---|
| Statin dose mg/day | 5 | 10 | 20 | **40** | **80** |
| Fluvastatin | | | 21% | 27% | 33% |
| Pravastatin | | 20% | 24% | 29% | |
| Simvastatin | | 27% | 32% | 37% | 42% |
| Atorvastatin | | 37% | 43% | 49% | 55% |
| Rosuvastatin | 38% | 43% | 48% | 53% | |
| Atorvastatin + Ezetimibe 10mg | | 52% | 54% | 57% | 61% |

**Low intensity statins** will produce an LDL-C reduction of 20-30%

**Medium intensity statins** will produce an LDL-C reduction of 31-40%

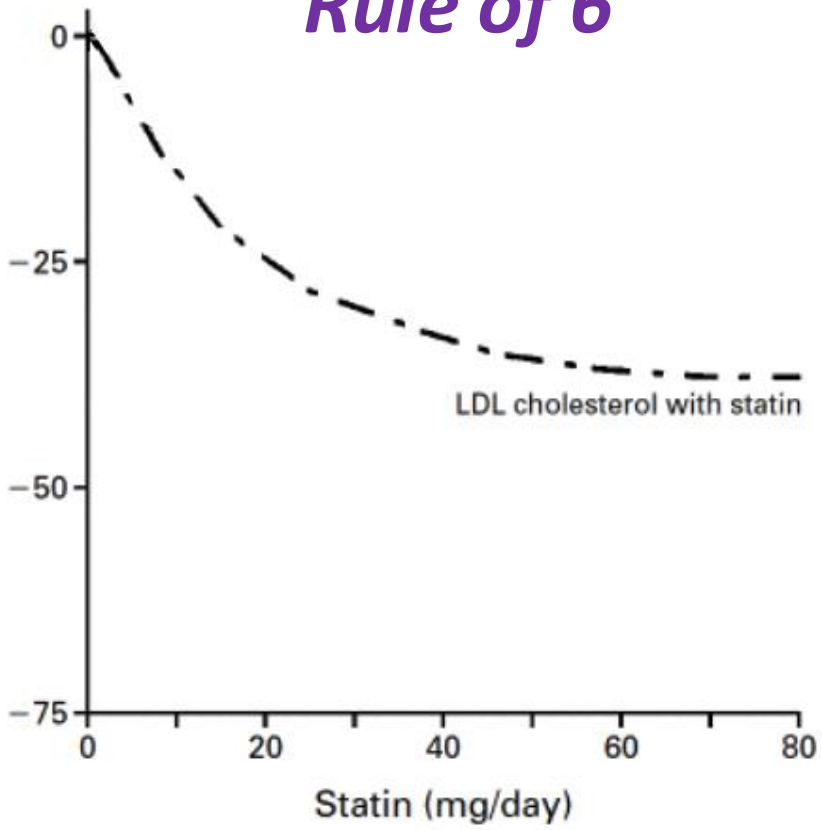
**High intensity statins** will produce an LDL-C reduction above 40%

**Simvastatin** 80mg is not recommended due to risk of muscle toxicity

# DOUBLING THE DOSE WITH STATINS DOES NOT DOUBLE THE EFFECT ON LDL-C REDUCTION[1]

- Dose required to reduce serum LDL-C concentrations to a similar degree varies substantially among statins
- Response to dose increases is not proportional
- **In general, doubling the dose above the minimal effective dose, decreases serum LDL-C concentrations by an additional 6%**
- Maximal reduction in serum LDL-C concentrations induced by statin treatment ranges from 24–60%

***"Rule of 6"***




Adapted from Knopp R. 1999.

1. Knopp RH. New Engl J Med 1999;341:498–511.

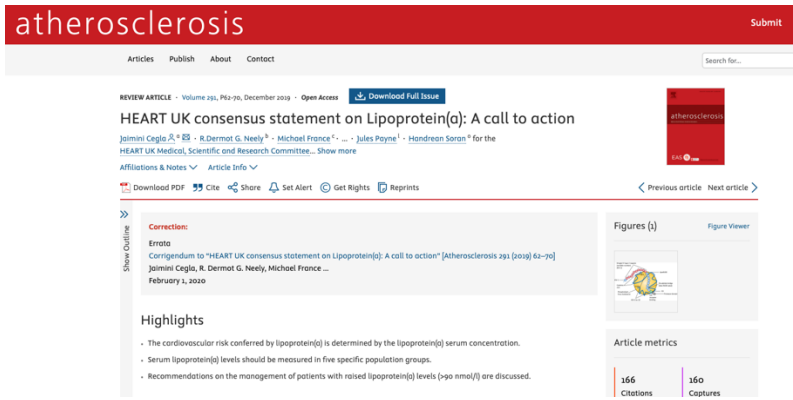
# Increased Risk of new Onset Diabetes

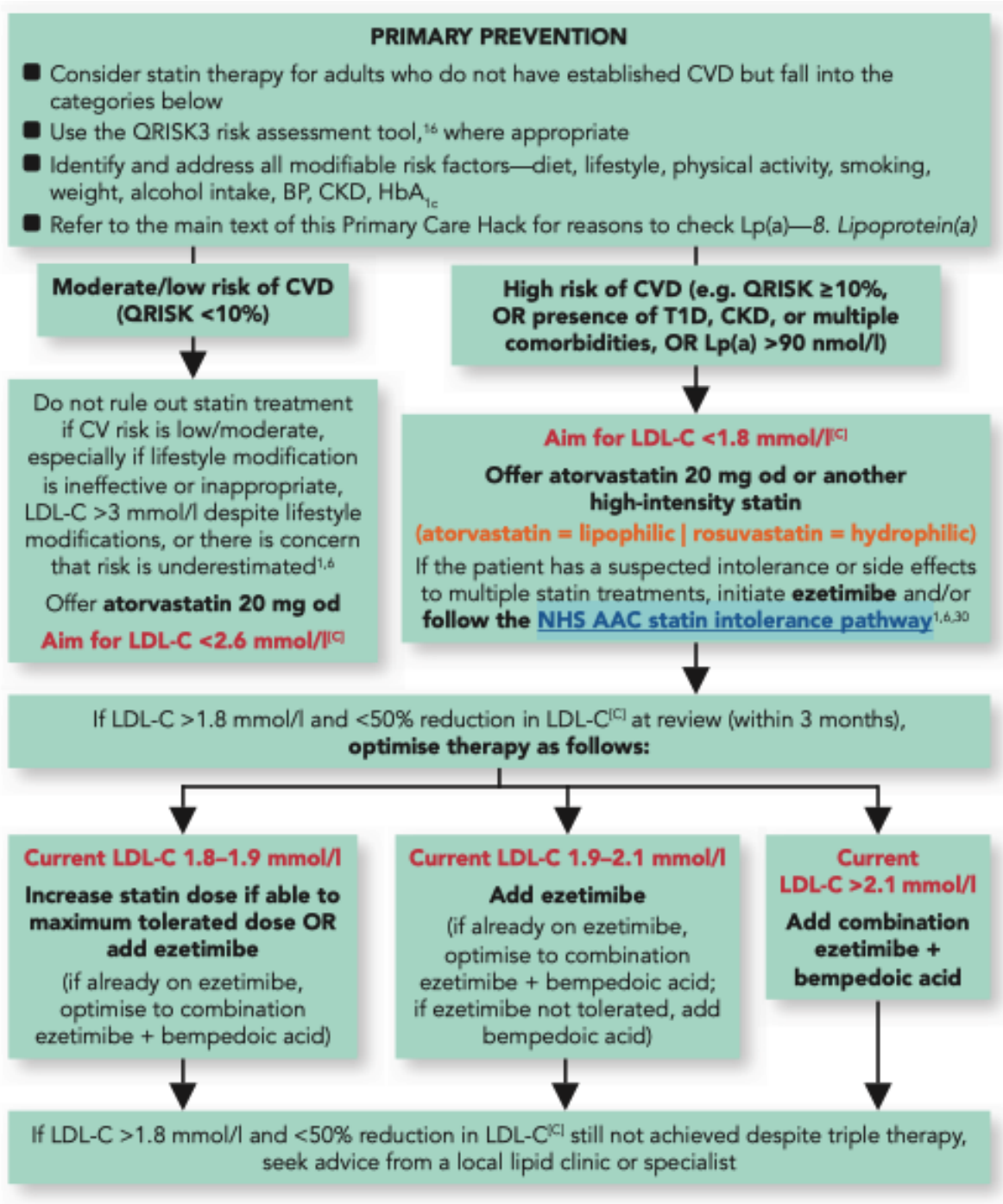
- Patients on statin treatment have been shown to exhibit an increased risk of dysglycaemia and development of T2D
- Several studies have shown that this is a consistent, dose-related effect.
- A minor, not clinically relevant elevation of HbA1c has also been observed.
- The NNH has been estimated as 255 over 4 years of statin treatment

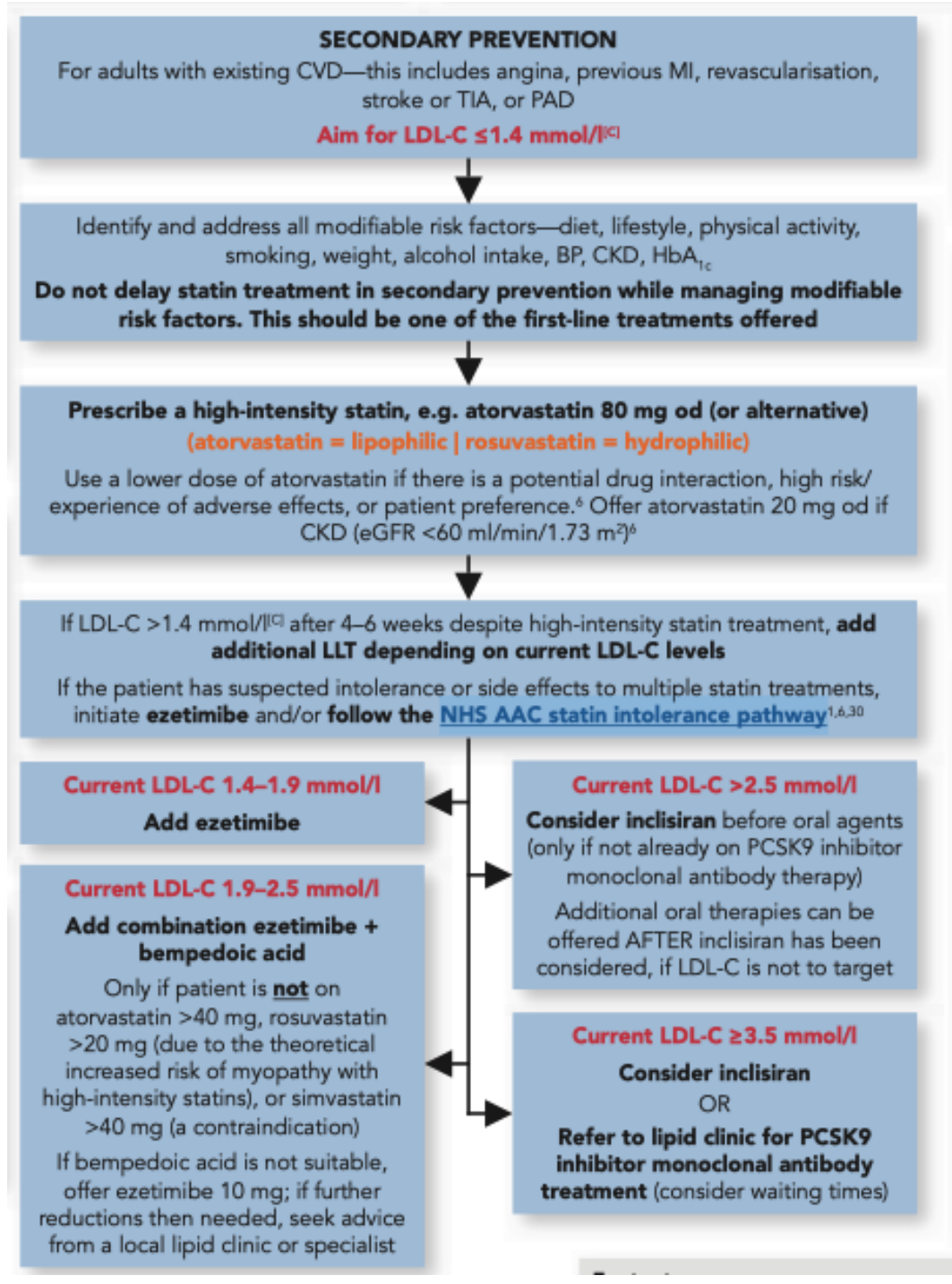

Law M, Rudnicka AR. Statin safety: a systematic review. Am J Cardiol 2006;97:52C60C.
Sattar N, Preiss D, Murray HM et al. 2010. Statins and risk of incident diabetes: a collaborative meta-analysis of randomised statin trials. Lancet 375:735742.
Swerdlow DI, Preiss D, Kuchenbaecker KB, Holmes MV et al. HMGcoenzyme A reductase inhibition, type 2 diabetes, and bodyweight: evidence from genetic analysis and randomised trials. Lancet 2015;385:351361.

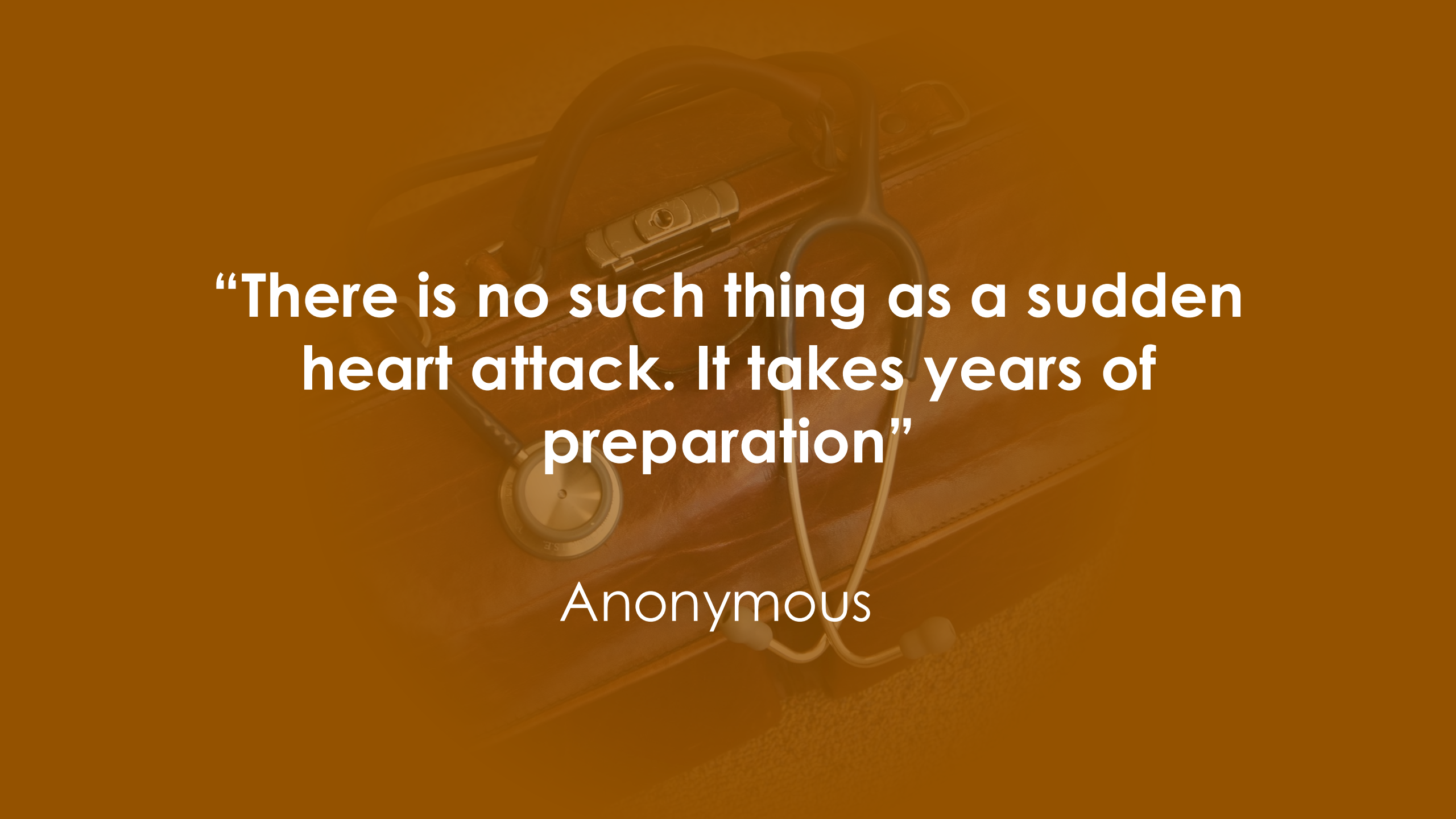
# Lipoprotein(a)

- Lp(a) is an independent risk factor for both CVD and calcific aortic valve stenosis, as elevated Lp(a) levels contribute to atherogenesis, thrombosis, and inflammation
- Elevated Lp(a) levels are largely genetically determined, with an autosomal codominant inheritance, unlike LDL-C, Lp(a) levels are not significantly affected by lifestyle choices or statins
- Heart UK consensus statement
- Consider checking Lp(a) levels:
  - a personal or family history of premature ASCVD (<60 years)
  - FH, or another genetic dyslipidaemia
  - calcific aortic valve stenosis




PRIMARY PREVENTION
Consider statin therapy for adults who do not have established CVD but fall into the categories below
Use the QRISK3 risk assessment tool,[16] where appropriate
Identify and address all modifiable risk factors—diet, lifestyle, physical activity, smoking, weight, alcohol intake, BP, CKD, HbA1c
Refer to the main text of this Primary Care Hack for reasons to check Lp(a)—8. Lipoprotein(a)
Moderate/low risk of CVD (QRISK <10%)
High risk of CVD (e.g. QRISK ≥10%, OR presence of T1D, CKD, or multiple comorbidities, OR Lp(a) >90 nmol/l)
Do not rule out statin treatment if CV risk is low/moderate, especially if lifestyle modification is ineffective or inappropriate, LDL-C >3 mmol/l despite lifestyle modifications, or there is concern that risk is underestimated[1,6]
Offer atorvastatin 20 mg od
Aim for LDL-C <2.6 mmol/l[C]
Aim for LDL-C <1.8 mmol/l[C]
Offer atorvastatin 20 mg od or another high-intensity statin
(atorvastatin = lipophilic | rosuvastatin = hydrophilic)
If the patient has a suspected intolerance or side effects to multiple statin treatments, initiate ezetimibe and/or follow the NHS AAC statin intolerance pathway[1,6,30]
If LDL-C >1.8 mmol/l and <50% reduction in LDL-C[C] at review (within 3 months), optimise therapy as follows:
Current LDL-C 1.8–1.9 mmol/l
Increase statin dose if able to maximum tolerated dose OR add ezetimibe
(if already on ezetimibe, optimise to combination ezetimibe + bempedoic acid)
Current LDL-C 1.9–2.1 mmol/l
Add ezetimibe
(if already on ezetimibe, optimise to combination ezetimibe + bempedoic acid; if ezetimibe not tolerated, add bempedoic acid)
Current LDL-C >2.1 mmol/l
Add combination ezetimibe + bempedoic acid
If LDL-C >1.8 mmol/l and <50% reduction in LDL-C[C] still not achieved despite triple therapy, seek advice from a local lipid clinic or specialist


SECONDARY PREVENTION
For adults with existing CVD—this includes angina, previous MI, revascularisation, stroke or TIA, or PAD
Aim for LDL-C ≤1.4 mmol/l[C]
Identify and address all modifiable risk factors—diet, lifestyle, physical activity, smoking, weight, alcohol intake, BP, CKD, HbA1c
Do not delay statin treatment in secondary prevention while managing modifiable risk factors. This should be one of the first-line treatments offered
Prescribe a high-intensity statin, e.g. atorvastatin 80 mg od (or alternative)
(atorvastatin = lipophilic | rosuvastatin = hydrophilic)
Use a lower dose of atorvastatin if there is a potential drug interaction, high risk/ experience of adverse effects, or patient preference.6 Offer atorvastatin 20 mg od if CKD (eGFR <60 ml/min/1.73 m2)6
If LDL-C >1.4 mmol/l[C] after 4–6 weeks despite high-intensity statin treatment, add additional LLT depending on current LDL-C levels
If the patient has suspected intolerance or side effects to multiple statin treatments, initiate ezetimibe and/or follow the NHS AAC statin intolerance pathway1,6,30
Current LDL-C 1.4–1.9 mmol/l
Add ezetimibe
Current LDL-C 1.9–2.5 mmol/l
Add combination ezetimibe + bempedoic acid
Only if patient is not on atorvastatin >40 mg, rosuvastatin >20 mg (due to the theoretical increased risk of myopathy with high-intensity statins), or simvastatin >40 mg (a contraindication)
If bempedoic acid is not suitable, offer ezetimibe 10 mg; if further reductions then needed, seek advice from a local lipid clinic or specialist
Current LDL-C >2.5 mmol/l
Consider inclisiran before oral agents (only if not already on PCSK9 inhibitor monoclonal antibody therapy)
Additional oral therapies can be offered AFTER inclisiran has been considered, if LDL-C is not to target
Current LDL-C ≥3.5 mmol/l
Consider inclisiran
OR
Refer to lipid clinic for PCSK9 inhibitor monoclonal antibody treatment (consider waiting times)



**“There is no such thing as a sudden heart attack. It takes years of preparation”**

Anonymous

Diabetologia
https://doi.org/10.1007/s00125-022-05787-2

CONSENSUS REPORT

# Management of hyperglycaemia in type 2 diabetes, 2022. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Melanie J. Davies[1,2] · Vanita R. Aroda[3] · Billy S. Collins[4] · Robert A. Gabbay[5] · Jennifer Green[6] · Nisa M. Maruthur[7] · Sylvia E. Rosas[8] · Stefano Del Prato[9] · Chantal Mathieu[10] · Geltrude Mingrone[11,12,13] · Peter Rossing[14,15] · Tsvetalina Tankova[16] · Apostolos Tsapas[17,18] · John B. Buse[19]

Received: 2 August 2022 / Accepted: 18 August 2022


**Abstract**

The American Diabetes Association and the European Association for the Study of Diabetes convened a panel to update the previous consensus statements on the management of hyperglycaemia in type 2 diabetes in adults, published since 2006 and last updated in 2019. The target audience is the full spectrum of the professional healthcare team providing diabetes care in the USA and Europe. A systematic examination of publications since 2018 informed new recommendations. These include additional focus on social determinants of health, the healthcare system and physical activity behaviours including sleep. There is a greater emphasis on weight management as part of the holistic approach to diabetes management. The results of cardiovascular and kidney outcomes trials involving sodium–glucose cotransporter-2 inhibitors and glucagon-like peptide-1 receptor agonists, including assessment of subgroups, inform broader recommendations for cardiorenal protection in people with diabetes at high risk of cardiorenal disease. After a summary listing of consensus recommendations, practical tips for implementation are provided.

**Keywords** Cardiovascular disease · Chronic kidney disease · Glucose-lowering therapy · Guidelines · Heart failure · Holistic care · Person-centred care · Social determinants of health · Type 2 diabetes mellitus · Weight management

This article is being simultaneously published in *Diabetologia* (https://doi.org/10.1007/s00125-022-05787-2) and *Diabetes Care* (https://doi.org/10.2337/dci22-0034) by the European Association for the Study of Diabetes and American Diabetes Association.

A consensus report of a particular topic contains a comprehensive examination and is authored by an expert panel and represents the panel's collective analysis, evaluation and opinion. MJD and JBB were co-chairs for the Consensus Report Writing Group. VRA, BSC, RAG, JG, NMM and SER were the writing group members for ADA. SDP, CM, GM, PR, TT and AT were the writing group members for EASD. The article was reviewed for EASD by its Committee on Clinical Affairs and approved by its Executive Board. The article was reviewed for ADA by its Professional Practice Committee.

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Extended author information available on the last page of the article

**Abbreviations**

| | |
|---|---|
| BGM | Blood glucose monitoring |
| CGM | Continuous glucose monitoring |
| CSII | Continuous subcutaneous insulin infusion |
| CVOT | Cardiovascular outcomes trial |
| DKA | Diabetic ketoacidosis |
| DPP-4i | Dipeptidyl peptidase-4 inhibitors |
| DSMES | Diabetes self-management education and support |
| ETD | Estimated treatment difference |
| GIP | Glucose-dependent insulinotropic polypeptide |
| GLP-1 RA | Glucagon-like peptide-1 receptor agonist(s) |
| HF | Heart failure |
| HHF | Hospitalisation for heart failure |
| MACE | Major adverse cardiovascular events |
| MNT | Medical nutrition therapy |
| NAFLD | Non-alcoholic fatty liver disease |
| NASH | Non-alcoholic steatohepatitis |
| SGLT1i | Sodium–glucose cotransporter-1 inhibitor |



Davies MJ, et al. *Diabetes Care*. 2022;45(11):2753-2786.

# IMPORTANCE OF 24-HOUR PHYSICAL BEHAVIOURS FOR TYPE 2 DIABETES

## SITTING/BREAKING UP PROLONGED SITTING

Limit sitting. Breaking up prolonged sitting (every 30 min) with short regular bouts of slow walking/simple resistance exercises can improve glucose metabolism.

## STEPPING

- An increase of only 500 steps/day is associated with 2-9% decreased risk of cardiovascular morbidity and all-cause mortality.
- A 5 to 6 min brisk intensity walk per day equates to ~4 years' greater life expectancy.

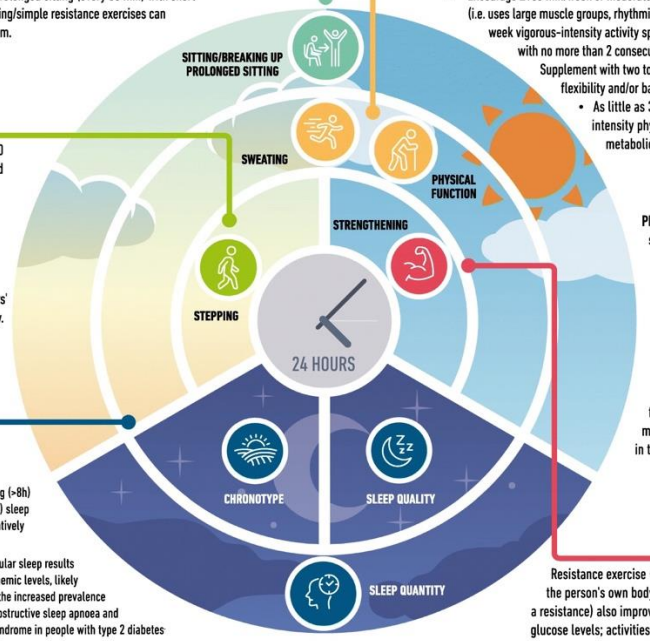
## SLEEP

Aim for consistent, uninterrupted sleep, even on weekends.

**Quantity** – Long (>8h) and short (<6h) sleep durations negatively impact $HbA_{1c}$.

**Quality** – Irregular sleep results in poorer glycaemic levels, likely influenced by the increased prevalence of insomnia, obstructive sleep apnoea and restless leg syndrome in people with type 2 diabetes

**Chronotype** – Evening chronotypes (i.e. night owl: go to bed late and get up late) may be more susceptible to inactivity and poorer glycaemic levels vs morning chronotypes (i.e. early bird: go to bed early and get up early).




## SWEATING (MODERATE-TO-VIGOROUS ACTIVITY)

- Encourage ≥150 min/week of moderate-intensity physical activity (i.e. uses large muscle groups, rhythmic in nature) OR ≥75 min/week vigorous-intensity activity spread over ≥3 days/week, with no more than 2 consecutive days of inactivity. Supplement with two to three resistance, flexibility and/or balance sessions.
- As little as 30 min/week of moderate-intensity physical activity improves metabolic profiles.

**Physical function/frailty/sarcopenia**

- The frailty phenotype in type 2 diabetes is unique, often encompassing obesity alongside physical frailty, at an earlier age. The ability of people with type 2 diabetes to undertake simple functional exercises in middle-age is similar to that in those over a decade older.

## STRENGTHENING

Resistance exercise (i.e. any activity that uses the person's own body weight or works against a resistance) also improves insulin sensitivity and glucose levels; activities like tai chi and yoga also encompass elements of flexibility and balance.

| | Glucose/insulin | Blood pressure | $HbA_{1c}$ | Lipids | Physical function | Depression | Quality of life |
|---|---|---|---|---|---|---|---|
| SITTING/BREAKING UP PROLONGED SITTING | ↓ | ↓ | ↓ | ↓ | ↑ | ↓ | ↑ |
| STEPPING | ↓ | ↓ | ↓ | ↓ | ↑ | ↓ | ↑ |
| SWEATING (MODERATE-TO-VIGOROUS ACTIVITY) | ↓ | ↓ | ↓ | ↓ | ↑ | ↓ | ↑ |
| STRENGTHENING | ↓ | ↓ | ↓ | ↓ | ↑ | ↓ | ↑ |
| ADEQUATE SLEEP DURATION | ↓ | ↓ | ↓ | ↓ | ? | ↓ | ↑ |
| GOOD SLEEP QUALITY | ↓ | ↓ | ↓ | ↓ | ? | ↓ | ↑ |
| CHRONOTYPE/CONSISTENT TIMING | ↓ | ? | ↓ | ? | ? | ↓ | ? |

## IMPACT OF PHYSICAL BEHAVIOURS ON CARDIOMETABOLIC HEALTH IN PEOPLE WITH TYPE 2 DIABETES

↑ **Higher levels/improvement** (physical function, quality of life); ↓ **Lower levels/improvement** (glucose/insulin, blood pressure, $HbA_{1c}$, lipids, depression); ? no data available;
↑ Green arrows = **strong evidence;** ↑ Yellow arrows = **medium strength evidence;** ↑ Red arrows = **limited evidence.**

| | Glucose/insulin | Blood pressure | $HbA_{1c}$ | Lipids | Physical fun |
|---|---|---|---|---|---|
| SITTING/BREAKING UP PROLONGED SITTING | ↓ | ↓ | ↓ | ↓ | ↑ |
| STEPPING | ↓ | ↓ | ↓ | ↓ | ↑ |
| SWEATING (MODERATE-TO-VIGOROUS ACTIVITY) | ↓ | ↓ | ↓ | ↓ | ↑ |
| STRENGTHENING | ↓ | ↓ | ↓ | ↓ | ↑ |
| ADEQUATE SLEEP DURATION | ↓ | ↓ | ↓ | ↓ | ? |
| GOOD SLEEP QUALITY | ↓ | ↓ | ↓ | ↓ | ? |
| CHRONOTYPE/CONSISTENT TIMING | ↓ | ? | ↓ | ? | ? |

## IMPACT OF PHYSICAL BEHAVIOURS ON CARDIOMETABOLIC HEALTH IN PEOPLE WITH TYPE 2 DIABETES

↑ Higher levels/improvement (physical function, quality of life); ↓ Lower levels/improvement (glucose/insulin, blood pressure, $HbA_{1c}$, lipids, depression); ?

↑ Green arrows = strong evidence; ↑ Yellow arrows = medium strength evidence; ↑ Red arrows = limited evidence.

THE LANCET
Neurology

IN CONTEXT | BOOKS | VOLUME 10, ISSUE 7, P606-607, JULY 01, 2011

# Hypertension: the most important preventable risk factor for cerebrovascular disease

Naeem Dean • Ashfaq Shuaib

Published: July, 2011 • DOI: https://doi.org/10.1016/S1474-4422(11)70138-7

# NICE NG136 2019

- Diagnosis of hypertension: clinic BP **≥140/90mmHg** or HBPM average **≥135/85mmHg**
  - Check for end-organ damage (fundoscopy, urinalysis, renal function & ECG), calculate 10y and/or lifetime CV risk (e.g. QRISK3) & assess co-morbidities

- NICE recommends considering antihypertensive therapy in addition to **lifestyle advice** for all **<80 years** with persistent stage 1 hypertension and a **10-year CVD risk of ≥10%**
  - Stage 1 hypertension clinic BP **140/90-159/99mmHg** & HBPM daytime average **135/85-149/94mmHg**

- It is possible to **blunt or stop** the progression of stage 1 hypertension through lifestyle modifications alone

# Hypertension: Lifestyle Advice

- Weight loss 5kg in those living with overweight or obesity
  - **↓BP by 4.4/3.6 mmHg**
  - Each kg of weight loss **↓SBP 1–2.4 mmHg**

- Alcohol consumption within recommended limits (14 units for men & women)
  - **↓BP by 4/2.5 mmHg**

- Physical activity: strengthening exercises, moderate & vigorous intensity activity
  - **↓BP by 7.5/4.5 mmHg**
  - SBP-lowering effect of exercise among hypertensive populations similar to some antihypertensive meds

- Weight loss 5
  - ↓**BP by 4.4/3.**
  - Each kg of we
- Alcohol consu … nen & women)
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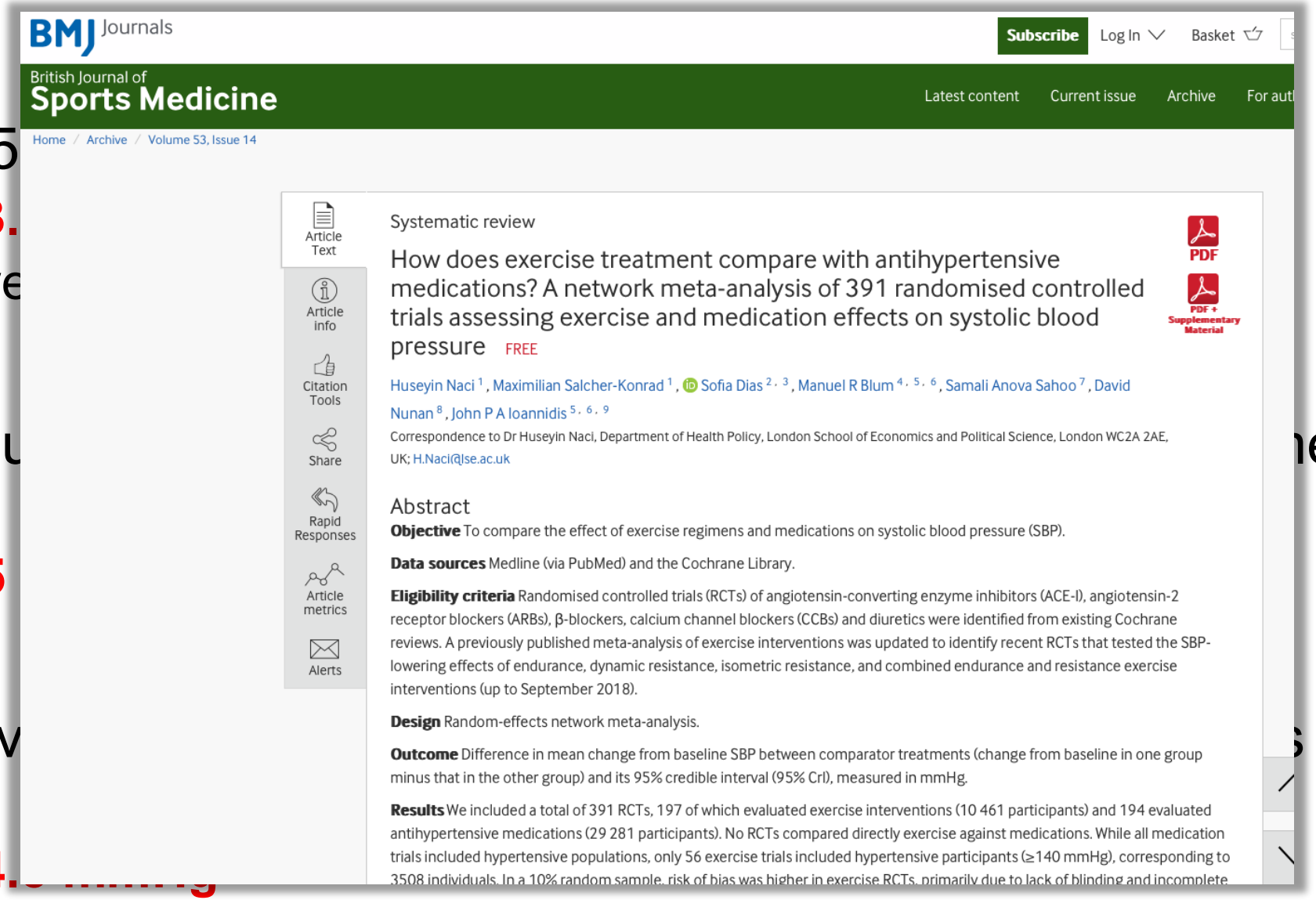

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Systematic review

How does exercise treatment compare with antihypertensive medications? A network meta-analysis of 391 randomised controlled trials assessing exercise and medication effects on systolic blood pressure FREE

PDF
PDF + Supplementary Material

Huseyin Naci [1], Maximilian Salcher-Konrad [1], Sofia Dias [2, 3], Manuel R Blum [4, 5, 6], Samali Anova Sahoo [7], David Nunan [8], John P A Ioannidis [5, 6, 9]

Correspondence to Dr Huseyin Naci, Department of Health Policy, London School of Economics and Political Science, London WC2A 2AE, UK; H.Naci@lse.ac.uk

Abstract

**Objective** To compare the effect of exercise regimens and medications on systolic blood pressure (SBP).

**Data sources** Medline (via PubMed) and the Cochrane Library.

**Eligibility criteria** Randomised controlled trials (RCTs) of angiotensin-converting enzyme inhibitors (ACE-I), angiotensin-2 receptor blockers (ARBs), β-blockers, calcium channel blockers (CCBs) and diuretics were identified from existing Cochrane reviews. A previously published meta-analysis of exercise interventions was updated to identify recent RCTs that tested the SBP-lowering effects of endurance, dynamic resistance, isometric resistance, and combined endurance and resistance exercise interventions (up to September 2018).

**Design** Random-effects network meta-analysis.

**Outcome** Difference in mean change from baseline SBP between comparator treatments (change from baseline in one group minus that in the other group) and its 95% credible interval (95% CrI), measured in mmHg.

**Results** We included a total of 391 RCTs, 197 of which evaluated exercise interventions (10 461 participants) and 194 evaluated antihypertensive medications (29 281 participants). No RCTs compared directly exercise against medications. While all medication trials included hypertensive populations, only 56 exercise trials included hypertensive participants (≥140 mmHg), corresponding to 3508 individuals. In a 10% random sample, risk of bias was higher in exercise RCTs, primarily due to lack of blinding and incomplete

ESC European Society of Cardiology

European Journal of Preventive Cardiology (2023) **30**, 1975–1985
https://doi.org/10.1093/eurjpc/zwad229

**FULL RESEARCH PAPER**
*Prevention in practice*

# The association between daily step count and all-cause and cardiovascular mortality: a meta-analysis

**Maciej Banach [1,2,3,4]*, Joanna Lewek[1,2], Stanisław Surma [5], Peter E. Penson [6,7,8], Amirhossein Sahebkar [9,10,11], Seth S. Martin[4], Gani Bajraktari[12,13], Michael Y. Henein[13], Željko Reiner[14], Agata Bielecka-Dąbrowa[1,2], and Ibadete Bytyçi[12,13]; on behalf of the Lipid and Blood Pressure Meta-analysis Collaboration (LBPMC) Group and the International Lipid Expert Panel (ILEP)**

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*Received 26 March 2023; revised 3 July 2023; accepted 7 July 2023; online publish-ahead-of-print 9 August 2023*

**Aims** There is good evidence showing that inactivity and walking minimal steps/day increase the risk of cardiovascular (CV) disease and general ill-health. The optimal number of steps and their role in health is, however, still unclear. Therefore, in this meta-analysis, we aimed to evaluate the relationship between step count and all-cause mortality and CV mortality.

**Methods and results** We systematically searched relevant electronic databases from inception until 12 June 2022. The main endpoints were all-cause mortality and CV mortality. An inverse-variance weighted random-effects model was used to calculate the number of steps/day and mortality. Seventeen cohort studies with a total of 226 889 participants (generally healthy or patients at CV risk) with a median follow-up 7.1 years were included in the meta-analysis. A 1000-step increment was associated with a 15% decreased risk of all-cause mortality [hazard ratio (HR) 0.85; 95% confidence interval (CI) 0.81–0.91; $P < 0.001$], while a 500-step increment was associated with a 7% decrease in CV mortality (HR 0.93; 95% CI 0.91–0.95; $P < 0.001$). Compared with the reference quartile with median steps/day 3867 (2500–6675), the Quartile 1 (Q1, median steps: 5537), Quartile 2 (Q2, median steps 7370), and Quartile 3 (Q3, median steps 11 529) were associated with lower risk for all-cause mortality (48, 55, and 67%, respectively; $P < 0.05$, for all). Similarly, compared with the lowest quartile of steps/day used as reference [median steps 2337, interquartile range 1596–4000), higher quartiles of steps/day (Q1 = 3982, Q2 = 6661, and Q3 = 10 413) were linearly associated with a reduced risk of CV mortality (16, 49, and 77%; $P < 0.05$, for all). Using a restricted cubic splines model, we observed a nonlinear dose–response association between step count and all-cause and CV mortality ($P_{nonlinearly} < 0.001$, for both) with a progressively lower risk of mortality with an increased step count.

**Conclusion** This meta-analysis demonstrates a significant inverse association between daily step count and all-cause mortality and CV mortality with more the better over the cut-off point of 3867 steps/day for all-cause mortality and only 2337 steps for CV mortality.

* Corresponding author. Tel/Fax: +48 422711124 , Email: maciej.banach@umed.lodz.pl, ibadetebytyci@gmail.com




- The more steps the better!
- Benefits noted up to 20,000 steps daily
- Each 1000-step increment = ↓ 15% all-cause mortality
- Each 500-step increment = ↓ 7% CV mortality
- 3867 steps daily required to ↓ all-cause mortality
- 2337 steps daily required to ↓ CV mortality

# Hypertension: Lifestyle Advice

- Lower salt
  - <6g a day **↓BP by 5.4/2.8 mmHg**. NB 5g salt = 2.4g sodium = 1 tsp
  - Avoid soluble/effervescent/dispersible meds NB aspirin 75mg disp ok

- Also consider DASH diet NEJM 2001
  - **↓BP by 11/5.5 mmHg** (comparable to antihypertensives!)

- Increase potassium in diet to 3.5-5g. **↓BP by 3.5/2 mmHg**
  - Tomato juice, bananas, potatoes, avocado, spinach, salmon, eggs

- Lower salt
  - <6g a day
  - Avoid solu

- Also consic
  - ↓BP by 1

- Increase po
  - Tomato ju

1 tsp

disp ok

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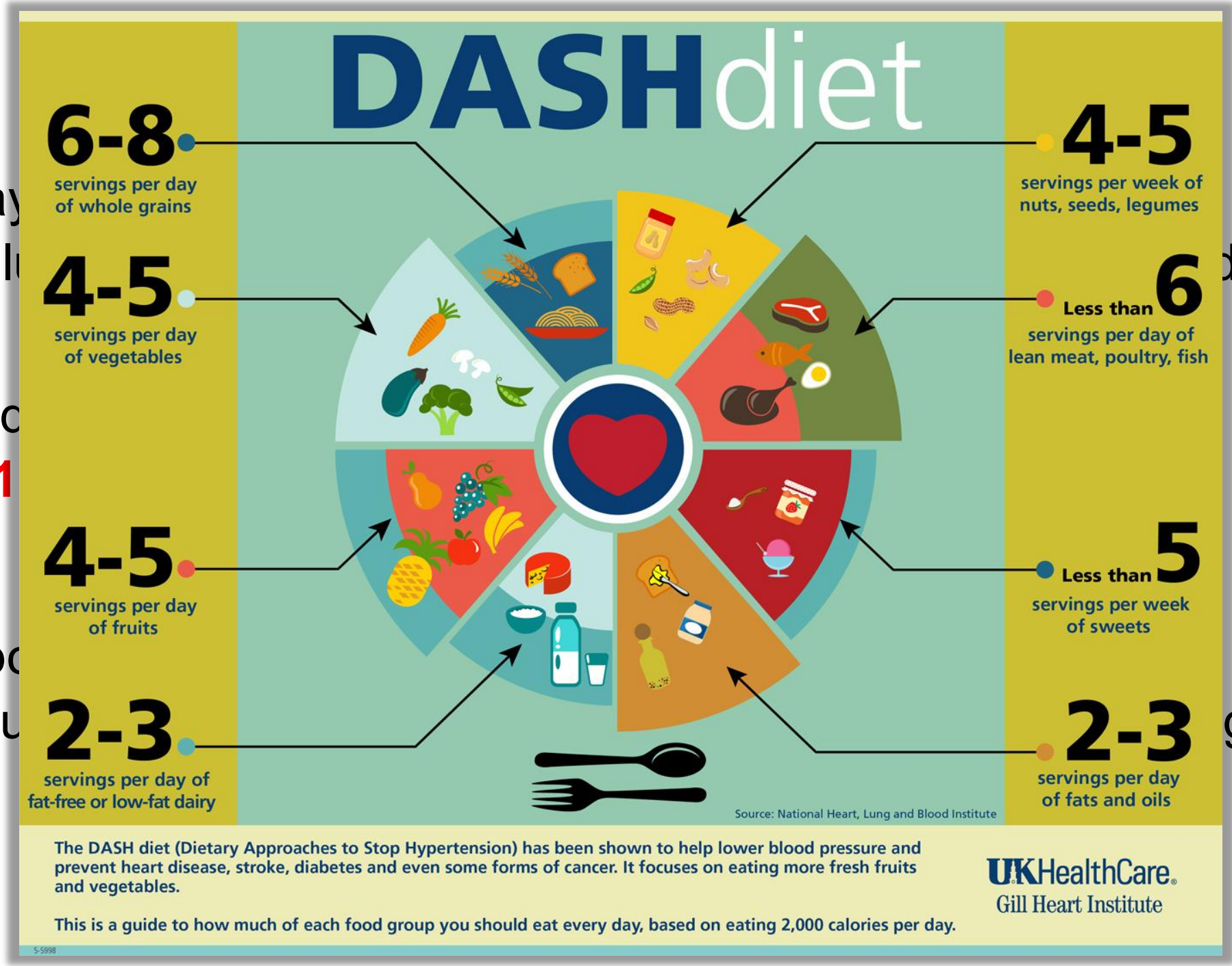

# Salt and your blood pressure

# Lifestyle Changes for Managing Hypertension

Medscape UK X Guidelines
Primary Care Hacks

**Author:** Dr Kevin Fernando, GP Partner, North Berwick Health Centre; Content Advisor, Medscape Global and UK. Email: kfernando@webmd.net

| Lifestyle Change | Recommendations | Approx. Effect on Systolic BP (mmHg) | Approx. Effect on Diastolic BP (mmHg) |
|---|---|---|---|
| **Alcohol Consumption**[1] | Current UK guidance[2] advises limiting alcohol intake to 14 units/week for women and men | –4.0 | –2.5 |
| **Caffeine, Tea, and Energy Drinks**[3] | Coffee intake is not associated with a higher risk of hypertension in the general population; increased coffee consumption may be associated with lower risk of hypertension<br>The association between drinking tea and CVD is unclear; mechanistic trials have suggested benefits for BP lowering<br>Energy drinks containing high concentrations of taurine and caffeine increase BP and may lead to cardiovascular complications in young adults | Unclear | |
| **DASH (Dietary Approaches to Stop Hypertension)**[4] | An evidence-based eating plan (see the Useful Resources for Patients section) rich in fruits, vegetables, and low-fat dairy products, with reduced salt and saturated/trans fat content | –11.0 | –5.5 |
| **Maintaining a Healthy Weight**[3,5] | Weight loss of 5 kg in adults living with overweight or obesity | –4.4 (for weight loss of 5 kg) | –3.6 (for weight loss of 5 kg) |
| **Physical Activity**[3,6–9] | In a systematic review and meta-analysis, aerobic exercise was suggested over alternative forms of exercise resistance training as the first-line exercise therapy for reducing BP[3,6]<br>Adults should aim to:[3,7]<br>• engage in strengthening activities that work all the major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms) on ≥2 days per week<br>• engage in ≥150 minutes of moderate-intensity activity per week or 75 minutes of vigorous-intensity activity per week<br>• spread exercise evenly over 4–5 days per week, or every day<br>• reduce time spent sitting or lying down, and break up long periods of inactivity | –7.5<br>A recent network meta-analysis suggested the SBP-lowering effect of exercise among hypertensive populations appears similar to that of commonly used antihypertensive medications[9] | –4.5 |
| **Potassium Intake** | Optimum dietary potassium intake can lower BP and may be linked to reduced CVD risk[3]<br>Increase dietary potassium intake (e.g. tomato juice, bananas, potatoes, spinach, salmon, eggs; see the Useful Resources for Patients section) to 3.5–5.0 g daily[10]<br>Be aware of individuals at higher risk of hyperkalaemia, for whom this recommendation should be individualised: those with advanced CKD, CHF, diabetes, and resistant hypertension<br>• guidance on CKD recommends restricting dietary potassium intake to <2.4 g/day in advanced CKD[3] | –3.5 | –2.0 |
| **Salt Intake** | Long-term follow-up salt-reduction trials have illustrated that reducing salt by 2.5 g/day is associated with ≈20% reduction in CVD events[3,11]<br>Adults should eat <6 g of salt, equivalent to 2.4 g sodium per day[3,12] (see *Useful Resources for Patients*, below); 1 tsp=5 g salt<br>Salt substitutes such as LoSalt contain potassium instead of sodium, so may not be suitable for all. See the above recommendation regarding potassium intake<br>Soluble, dispersible, and effervescent preparations of analgesics have high sodium content, and studies have found a link between use of these sodium-containing medicines and increased CVD risk;[13] taking eight soluble paracetamol tablets exceeds the recommended sodium intake of 6 g daily<br>Soluble preparations should be avoided unless the person has genuine swallowing difficulties | –5.4 | –2.8 |
| **Smoking Cessation (and E-cigarettes)** | Stopping smoking is one of the most effective interventions to prevent major CVD events[3,14]<br>The BP effect of e-cigarettes is unclear, and data are sparse; growing evidence suggests that e-cigarettes can increase BP[3] | –5.0 | –3.1 |

**BIHS**=British and Irish Hypertension Society; **BJGP**=British Journal of General Practice; **BP**=blood pressure; **CHF**=chronic heart failure; **CKD**=chronic kidney disease; **CVD**=cardiovascular disease; **DASH**=dietary approaches to stop hypertension; **ESC**=European Society of Cardiology; **SBP**=systolic blood pressure.

**Notes**

- The 2024 ESC guideline on hypertension offers practical information and guidance on lifestyle changes for managing elevated BP and hypertension
- The effects of implementing these modifications are of course individual, and combinations of two (or more) lifestyle modifications are synergistic
- For comparison, the average SBP reduction from one antihypertensive drug is **12.5–15.5 mmHg**[15] and around two-thirds of individuals with hypertension cannot be controlled on two drug and will require two or more antihypertensive agents from different drug classes[16]
- Blood Pressure UK and the BIHS provide information for supporting those with—and healthcare professionals managing patients with—hypertension, including home BP monitoring resources from the BIHS
- A useful clinical practice article was published recently in the BJGP, with a focus on measuring BP in primary care.

**Useful Resources for Patients**

- NHS Live Well: *Alcohol support*
- NHS website: *Hypertension prevention*
- US National Heart, Lung, and Blood Institute: *DASH eating plan*
- NHS Live Well: *Healthy weight*
- NHS Live Well: *Exercise*
- Blood Pressure UK: *Potassium and your blood pressure*
- Blood Pressure UK: *Salt and your blood pressure*.

# Thank you for listening & please get in touch if you have any questions



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Kevin Fernando