CARDIOVASCULAR RISK FACTOR MANAGEMENT TOOL

The table below demonstrates the effects of dietary changes on cholesterol profile and cardiovascular (CV) and type two diabetes (T2D) risk. Components of the cholesterol profile and overall risk are shown in the columns while dietary changes are allocated to rows. Arrows indicate whether the serum lipids or risk were increased, decreased or unchanged by the dietary change. Red indicates a harmful change, green a beneficial change and yellow is neutral (or no information found).
Rows 1-3 show the effects of different fats, while rows 4 – 5 show effects of carbohydrates and row 6 shows other lifestyle changes.

Effects of diet and lifestyle on cardiovascular and type two diabetes risk

FOOD TYPE	HDL GOOD	LDL BAD	TRIG	CVD* T2D** Risk***	COMMENTS
1) Saturated fat (SFA)	↑	↑	↔	↔	Mainly in processed and red meat, dairy and tropical oils. Reduce intake of processed meats especially. Replace with MUFA & PUFA
2) Trans-unsaturated fatty acids (TFA)	↓	↑	↑	↑	Some margarines, vegetable shortening, fried & baked foods, e.g. biscuits & takeaways. Aim for <1% TFA in processed foods.
3) Mono (MUFA) & Poly (PUFA) unsaturated fatty acids	↑	↓	↓	↓	MUFA – best from plant, rather than animal sources: olive, rice bran & canola oils, mixed nuts. Use for frying. PUFA – Flaxseed, grapeseed, sunflower, soybean oils. Not for deep frying. Nuts, esp. walnuts. Oily fish twice weekly.
4) Refined carbohydrate	↓	↔	↑	↑	Potatoes, white bread, refined cereals & sugar-sweetened beverages. Avoid if overweight due to increased risk of metabolic syndrome #
5) Unrefined/ high fibre carbohydrate	↔	↓	↓	↓	Whole grains, oat bran, barley, legumes, fruit & vegetables. More weight loss for same calorie intake. Beneficial to diabetes, CVD & cancer.
6) Regular exercise and weight loss	↑	↓	↓	↓	2.5 – 10 hours per week of moderate exercise is recommended. Benefits increase up to 10 hours/week. ≥ 5% of body weight loss improves CVD outcomes.

* CVD - cardiovascular disease i.e. coronary artery disease, ischaemic stroke and peripheral vascular disease
** T2D - Type 2 Diabetes
*** CVD and T2D RISK – Overall morbidity and mortality, associated with food related effects on serum lipids and other vascular mechanisms such as coagulation, inflammation, blood pressure and endothelial functioning.
# METABOLIC SYNDROME – raised BP, fasting glucose, waist circumference and triglycerides, low HDL - predisposes to heart disease and diabetes

Nuts, fruit and vegetables and pulses improve cholesterol ratios and reduce the risk of heart disease, diabetes and obesity.

Effects will vary depending on what food is being replaced in the diet change, whether there is an associated weight loss and on individual differences.

	CARDIOPROTECTIVE CHANGE
	HARMFUL CHANGE
	CARDIAC NEUTRAL (or no information found)

See overleaf for further instructions on how to use the tool when working with people with heart disease and diabetes risk factors.
New Zealand Ministry of Health (2018) recommends tailoring a client's individual cholesterol goals to their risk profile, estimating their percentage of risk of experiencing a CVD event in the next 5 years (MOH, 2018).

CARDIOVASCULAR RISK FACTOR MANAGEMENT TOOL

Use this table/tool to give targeted dietary and lifestyle education based on the client's serum cholesterol results. We should be distinguishing between healthy and unhealthy fats and carbohydrates and encouraging increased intake of fruit and vegetables, nuts, whole grains, legumes and regular exercise.

HOW TO USE THE TOOL

In **one-to-one education** use the client's fasting lipid results to identify necessary changes. Follow the appropriate column/s of the tool to identify foods to increase (green squares) and reduce (red squares).

In **group education** the rows, indicating how certain foods affect CVD risk, may be most helpful.

FOLLOWING A COLUMN

If a client has a low HDL, following the first column indicates this could be increased by weight loss, exercise, an increased intake of mono and polyunsaturated fatty acids, and a reduction in trans unsaturated fatty acids and refined carbohydrates. Although saturated fatty acids increase HDL, they also increase LDL, so, increased intake is not recommended. This highlights the importance of checking along the relevant row for possible harmful effects before recommending a dietary change.

FOLLOWING A ROW

Row (1) Saturated fat raises HDL (beneficial), but also raises LDL (harmful), thus leaving the risk ratio unchanged. Although this implies a neutral effect, it is preferrable to take poly and mono-unsaturated fats instead.

Row (2) Trans-unsaturated fatty acids adversely affect all components of CVD risk and should be avoided. Replace with poly and mono-unsaturated fats instead.

Row (3) Shows the effects of a higher intake of mono and poly unsaturated fats. Not only do they improve all lipid components, but they also offer additional protection from cardiac events – they are the "healthy fats", increased intake should be encouraged. Note though the MUFA should be of plant rather than animal origin.

We should be recommending 'modified' rather than 'low' fat, i.e. replacing saturated and trans unsaturated fats with mono and poly-unsaturates. But 'healthy' fats contain as many calories as 'unhealthy' ones, so weight control is also important.

Rows (4) & (5) show the effects of refined and unrefined carbohydrates/high fibre on CVD risk, especially for obese people and those predisposed to metabolic syndrome. Avoid refined carbohydrates and replace with high fibre alternatives.

Row (6) The benefits of weight loss and regular exercise are clearly demonstrated and should be emphasised to clients.

The following sources were used in the creation of this educational resource:
Abdelhamid et al, 2020; Arnett et al., 2019; Cao et al., 2022; Catapano et al., 2016; Hooper et al. 2018 & 2020; Jovanovski, 2018; Lee et al., 2022; Mozaffarian et al., 2016; Reynolds et al., 2019
FOR MORE DETAILED INFORMATION AND REFERENCES SEE: Janssen, J. (2024). Demystifying the cardio-protective diet – A tool for nurses. Kaitiaki Nursing New Zealand.