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EXECUTIVE SUMMARY-CARDIAC

Name of Expert Review Group:

Medicine RD Network

Rationale:

Cardiovascular disease (i.e. Heart Failure, Acute Coronary Syndrome, Acute Myocardial Infarction etc.) diet recommendations were reviewed to determine current best practice guidelines. The goals of the Medicine RD Network were as follows:

1. To review the literature regarding the nutritional management of cardiac disease in relation to total fats, sodium, dietary cholesterol, fibre, omega-3 fatty acids, soy protein, plant sterols, added sugars and fluids.
2. To make recommendations on the composition of this diet based on current research/literature and taking into consideration the evidence released from the Canadian Malnutrition Task Force that 45% of hospitalized patients are malnourished[1].

Guidelines:

Taking into account the increased prevalence of malnutrition in hospital (Canadian Malnutrition Task Force) and the current literature regarding the nutritional management of cardiovascular disease (CVD), a standard diet is recommended for patients with CVD in hospital. Fluid and sodium restrictions can be added at RD or MD discretion. It is recommended that composition of the diet be as follows (which falls within the standard diet Criteria):

Recommendations	**Provision in Diet Compendium**
Total Fat: 20 – 35% of total daily energy intake	20-35% of total kcal per day SFA's – strive to lower saturated fat by following a healthy dietary pattern. TFA's -should be kept as low as possible, especialy by limiting foods that contain synthetic source of TFA, partially hydrogenated oils. For all vegetable oils and soft spreadable margarines purchased TFA's should be limited to 2% of total fat content. For all other foods the TFA's content should be limited to 5% of total fat content. This limit does not apply to food products for which the fat originates exclusively from ruminant meat or dairy products. Cholesterol will not be limited.
Sodium: 90 – 130 mmol/day	2300-3000 mg /day (100-130 mmol/day) excluding salt package.
Fibre: 25-40g/day (7-13g soluble fibre)	19-25 grams per day based on 1800 kcal/d and weekly average At least 3 whole grain servings per day (2 from meals and 1 available at nourishments). *Note: The expert review group recommendation is to serve 19-25g of dietary fibre per day to reduce unwanted side effects. Fruit, vegetables, whole grain products and legumes will be the primary sources of carbohydrates and fibre in the diet. Fibre rich foods are available to meet additional needs/requests for increased fibre.

Omega-3 Fatty Acids: Increase available sources by providing: • 2 fish servings/week (preferable fatty fish) • 20 – 50 g(2 – 5 Tbsp) ground or whole flaxseed daily	PUFA's – recommend fish twice per week - fatty fish preferred. The standard diet will not meet the 2-5 Tbsp of ground or whole flaxseed daily. Recommendation is to include additional alpha-linolenic acid from food sources (e.g. canola oil, margarine, seeds, and nuts) in addition to fish twice a week.
Soy Protein: 25g/day	upon request/as available
Plant Sterols: 2g/day	upon request/as available
Added Sugars: <10% of total daily energy intake	Fruit, vegetables, whole grain products and legumes will be the primary sources of carbohydrates and fibre in the diet. Recommendation is to limit/remove fruit juice.
Fluids: <2 L/day with Heart Failure (Heart Failure)	Current Standard diet provides minimum 1000 ml per day.

Evidence Review:

The Position Statement on Saturated Fat and Heart Disease and Stroke issued by the Heart and Stroke Foundation in 2015, states "up to 80% of early heart disease and stroke can be prevented by adopting healthy behaviors including eating a healthy diet". This includes, limiting highly processed foods (foods that contain high levels of saturated fatty acids and trans fatty acids and sodium), including plenty of fruit and vegetables and other plant based foods such as legumes, whole grains and non-tropical plant oils, and including lean meats, poultry and fish. The Heart and Stroke Foundation emphasizes that the "overall quality of one's diet, combined with the types, qualities and quantities of foods, have more impact on health than any single nutrient such as saturated fat" [2].

1. Total Fat

The American and Canadian recommendations for the management of dyslipidemia support reducing trans fatty acids to <1% and combined with saturated fats to ≤ 7-10% of total calories for those at a high risk of CVD[3-7]. The effect of trans fatty acids on the serum lipoprotein profile is at least as unfavorable as that of the cholesterol raising saturated fatty acids, because they not only raise LDL cholesterol levels but also lower HDL cholesterol levels[3-6] (Grade A). Based on the above recommendations for poly, mono, saturated and trans fats, total fat intake for those at higher risk for cardiovascular disease should be ≤30% of total energy intake.

2. Sodium

Current guidelines for CVD and HF recommend limiting sodium (Na) intake to 90-130mmol/day[8-10] Less than and/or equal to 90mmol Na/day is not ideal for hospitalized patients as dietary intake is often inadequate; therefore, a liberalized diet is suggested (100-130 mmol Na/day). Diets can be individualized based on dietitian assessment to adjust the sodium content based on the patient's need (i.e. monitor intake, adjust preferences, adjust Na restriction).

3. Dietary Cholesterol

Current guidelines support a reduced dietary cholesterol intake for people at a higher level of CVD risk[3,5-7,11](Grade B). Previously, the Dietary Guidelines for Americans recommended that cholesterol intake be limited to no more than 300 mg/day. The 2015 DGAC will not bring forward this recommendation because available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum cholesterol, consistent with the conclusions of the AHA/ACC report that dietary cholesterol is not a nutrient of concern for overconsumption [12].

4. Fibre

Current dietary fibre recommendations are 25 – 40 grams per day[4] including up to 7 – 13 g/day of soluble fibre, such as psyllium, to assist with lowering cholesterol levels[3,4,11]. Current Healthy Eating Guidelines encourage individuals to consume whole grains, oats, fruits and vegetables, barley, beans, peas or lentils as they have been associated with lower risk factors for CVD[3,7,13-17] (Grade A). With increased fibre intake, adequate fluid intake is also required. Rapidly increasing fibre without equivalent fluid intake may result in adverse gastro-intestinal effects. The Standard diet expert review group recommendation is to serve 19-25g of dietary fibre per day to reduce unwanted side effects. Fibre rich foods are available to meet additional needs/requests for increased fibre.

5. Omega-3 Fatty Acids

Current research supports the recommendation to consume at least two servings/week of oily fish (300-500 mg of EPA and DHA), for secondary prevention of CVD[3-6]. Studies continue to support the intake of 6 – 7 servings/week of oily fish (1 gram of EPA and DHA) for the prevention of Dyslipidemia[3-6,18-19]. Dietary intake of omega-3 fatty acids may

reduce a number of cardio metabolic risk factors (i.e anti-atherosclerotic, antithrombotic, and anti-inflammatory actions)[20]. Flax consumption (20 – 50 g or 2 – 5 Tbsp/day) can modestly reduce total and LDL cholesterol[11]. Some guidelines also recommend consumption of 2 g/day alpha-linolenic acid from food sources (e.g. canola and soybean oils, margarines, seeds, and nuts) in addition to omega-3 fatty acid food sources for the secondary prevention of CVD[3,21] (Grade B).

Recent meta-analyses have not demonstrated a consistent benefit of omega-3 fatty acid oral supplements for secondary CVD prevention[3].

6. Soy Protein

A recent meta-analysis found that 15–50 g of soy protein/day can modestly reduce LDL cholesterol up to 5.5%[22]. It has not been advised to include the recommended 25 g of soy protein/day[23] in a hospital setting due to limited patient acceptance, allergies, possible GI intolerances[24] and cost (Grade B).

7. **Plant Sterols**

Plant sterols do occur naturally in small amounts in some foods, such as vegetable oils, nuts, whole grains, fruit and vegetables. In Canada, up to 1g per serving of plant sterols can be added to food items. Plant sterols are currently being added to mayonnaise, margarine, salad dressing, yogurt, yogurt drinks, vegetable and fruit juices. Plant sterols can reduce LDL cholesterol levels up to approximately 10%, but have no impact on HDL cholesterol or triglycerides. A consistent intake of 2-2.5g of plant sterols/day is recommended to maintain a health benefit[23]. Due to the short term nature of this diet, this may not be attainable or sustainable in an institutional setting (Grade B).

8. Sugar

Sugar can occur naturally in dairy, fruit, vegetables, starches, and grains. Sugars can also be added to foods and drinks (as monosaccharides and disaccharides). Excess sugar consumption is associated with adverse health effects including heart disease[26, 27]. Individuals who consume greater than or equal to 10% but less than 25% of total energy from added sugar have a 30% higher risk of death from heart disease or stroke when compared to those who consume less than 10%[26, 27]. Recommendation is to reduce consumption of added sugars during the cooking process, purchasing fresh or frozen fruit or fruit canned in water, limiting ready-to-eat products, and avoiding consumption of sugar-loaded beverages such as fruit drinks and juices[26] (Grade B).

9. Fluids

Total fluid intake of <2 L/day is recommended in hospitalized patients with acute decompensated HF and hyponatremia (serum sodium <130 mmol/L), renal dysfunction and refractory HF and to assist in achieving a euvolemic state[9, 28] (Grade C). Unstable HF patients may ingest less fluids/day under physician advisement[28]. The current standard diet provides ≤2 L fluid/day which is appropriate, unless otherwise indicated.

Anticipated Impact:

- The cardiac diet will now consist of a standard diet as it meets the recommendations and rationale stated above. Individualized changes may be required based on dietitian assessment and intervention, including the need for a fluid restriction, fibre supplementation and/or further sodium restriction.
- Na 90mmol diet: it is recommended that this diet be discontinued from a cardiovascular perspective.
- Modified Fat diet: it is recommended that this diet be discontinued from a cardiovascular perspective.
- Na 100mmol: it is recommended that this diet be renamed to “low sodium diet” with criteria to not exceed 100mmol Na/day. It is recommended that the criteria for this diet be reviewed to better reflect Na 100mmol/day.

Practice Change:

- Standard diet meets requirements for cardiac disease.
- The Diet Clerk Clarification Guide will need to be adjusted to reflect the change.
- MI Care Map will need to be updated with diet recommendations.

Diets Included in the Review:

Modified Fat	Na90 (2g Na)
Fluid 1000-1750	Na100 (3g Na)

Summary:

- The 2015 Position Statement recently issued by the Heart and Stroke Foundation recommend a balanced eating pattern, limiting highly processed foods that play a role in risk factors for heart disease. Dietary patterns that support health include consumption of less highly processed foods, plenty of fruit and vegetables, and inclusion of other plant-based foods such as legumes, whole grains, nuts and non-tropical plant oils. Many healthy dietary patterns also include fish, poultry, lean meats and dairy products[2].

- Individualized changes may be added based on RD assessment
- The standard diet meets the criteria for most cardiac patients; therefore, it is recommended that the cardiac diet now consist of a standard diet.

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Members:	**Site:**
Chelsa Marcell, RD Co-Chair	Concordia General Hospital
Aimee Bowcott,RD, Co-Chair	Victoria General Hospital
Kendra Pauls, RD	St. Boniface General Hospital
Nikki Klos, RD	Health Sciences Centre
Holly Milton, RD	Grace General Hospital
Linda Scerbo, RD	Seven Oaks General Hospital

These recommendations have been reviewed by:

Acute Care Practice Council	Jennifer Mayor, RD
Jennifer Godkin, RD	Nancy Doern-White, RD
Joyce Loftson, RD	