



## PREVENTING CARDIOVASCULAR DISEASE

### STATEMENT ON CHILDHOOD NUTRITION

A Resource for Health Professionals

Irish Heart Foundation's Council on Nutrition

in association with the

National Heart Alliance

and

European Heart Health Initiative

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## INTRODUCTION

Coronary heart disease death rates for men and women in Ireland are the highest among European Union countries and while these death rates have been decreasing over the past 30 years, the evidence suggests that Ireland has not enjoyed the same decline in overall death rates as other EU states (Cardiovascular Health Strategy Group, 1999). Over the next 30 years, atherosclerotic cardiovascular diseases (CVD), including heart attack and stroke, will remain the biggest single cause of death in western populations (Murray & Lopez, 1997). While guidelines on CVD prevention have tended to focus on the lifestyle habits of adults (Krauss et al. 2000; Wood et al. 1998), it is now widely appreciated that while the symptoms of heart attack and stroke become obvious in adulthood, the underlying process begins much earlier in childhood (Fischer et al. 1997). Communicating advice on nutrition is essential to the implementation of CVD prevention and because lifelong dietary habits are established in childhood (Kelder et al., 1994; Elbon et al., 1996), it is logical to promote healthful dietary behaviour patterns among children to prevent future CVD.

The nutrition and dietary habits of children are complex and drawing up consensus guidelines may pose difficulties. For instance, an overly zealous interpretation of general guidelines by health-conscious individuals may be harmful (Peterson & Sigman-Grant, 1997). In addition, concerns may arise if the nutrient content of the recommended diet differs from the *traditional* diet, or, in the case of fat intake, if the energy and developmental needs of children are not met (Wardley et al., 1997). These concerns have been considered while drawing up this statement which is intended as a resource for health professionals who are involved in health promotion with young, ostensibly healthy people and does not apply to specific groups with special nutritional needs. Most of the literature reviewed in drawing up this statement refers to non-Irish populations but, wherever possible, Irish research data have been cited. For the purpose of definition, the term “childhood” refers to between age two and eighteen years, however given the relevance to CVD, some recommendations for under two years in relation to breastfeeding are included. Finally, cardiovascular disease is multi-factorial and, as outlined below, for CVD prevention to succeed, advice on childhood nutrition should not be considered in isolation from other lifestyle issues, such as physical activity and tobacco smoking.

## **SERUM CHOLESTEROL CONCENTRATION AND DIETARY FATS**

Energy requirements in young children are relatively high when compared to older children and adults. Half of the developing infant's energy is derived from lipid in human and formula milk. However, the lipid profile of breast-milk is considerably different from that in infant formula milk. Cholesterol levels are also significantly higher in breast-milk. The long-term effects of this are uncertain. However, the presence of high cholesterol in breast-milk may be beneficial in adulthood (Wong et al., 1993; Worthington-Roberts, 1993). Children who have been breastfed have lower serum cholesterol concentrations, a significantly lower prevalence of obesity and lower systolic blood pressure values in childhood than non breast-fed children (Berstrom E et al., 1995; von Kries R et al., 1999; Wilson AC, et al., 1998). In spite of these benefits, breastfeeding rates in Ireland remain unacceptably low (Freeman, 1996).

Classical epidemiological studies have indicated that the serum total cholesterol concentration is directly related to the risk of dying from coronary heart disease (Keys, 1980). Almost half a century ago, evidence for CVD was found in the arteries of young army recruits who underwent autopsy (Enos et al., 1955; McNamara et al., 1971). More recent data on children who underwent autopsy indicate that macroscopic cardiovascular changes are apparent from as early as 2 years (Berenson et al., 1998) and one study has indicated that the earliest changes of atherosclerosis are apparent in utero among the fetuses of hypercholesterolaemic mothers (Napoli et al., 1999). One earlier autopsy study of subjects aged 15 to 34 years provides consistent evidence (PDAY Research Group, 1990), and this and Berenson's study indicate that the strongest predictor of early atherosclerosis is the serum concentration of low density lipoprotein (LDL) cholesterol. The principal determinant of serum LDL cholesterol concentration is dietary saturated fat intake (Mensink & Katan, 1992). For this reason, reducing the dietary intake of saturated fat during childhood is recommended in the primary prevention of CVD.

## **SAFETY AND FEASIBILITY OF MODIFYING DIETARY FAT INTAKES IN CHILDREN**

Surveys among US children older than two years suggest that modest reductions in fat intake at the population level are required to bring about the widespread adoption of a heart healthy diet (NHANES III, 1994). This diet provides 30% of its energy from fat

with approximately 10% each from saturated, polyunsaturated and monounsaturated fat sources. When provided to children over two years of age, this diet is safe in terms of micronutrient content and is associated with normal neurological and other childhood development (NHANES III, 1994). To achieve these levels of intake, gradual reductions in dietary fat between the ages of two and five are recommended in the United States.

Concerns regarding a fat-modified diet for children have been addressed in a number of international studies. In the Woodlands study, no adverse effect on micronutrient intake was noted for those consuming a diet with a 28-30% fat content compared to a higher fat, traditional diet (>35% fat) (McPherson et al., 1990). Six hundred children aged 8-10 years with elevated serum LDL cholesterol concentrations (between 80<sup>th</sup> and 98<sup>th</sup> percentile for age and sex) were included in the Dietary Intervention in Childhood study (DISC) (Collaborative Research Group, 1995). These children were given a diet with either 28% fat (10% saturated) or one with 33/ 34% fat (13% saturated). No difference in height, micronutrient intake, or psychological wellbeing was noted. A small but significant decrease in LDL cholesterol level was found in those given the lower fat diet. The Special Turku Coronary Risk Factor Intervention Project (STRIP) suggested that decreased dietary fat intake (26-30% in the intervention group compared with 33% of energy from fat in controls) introduced from seven months of age did not impair growth during the first three years of life (Ninikoski et al., 1997).

Apart from safety, the issue of whether a fat modified diet is feasible among children was addressed in the Child and Adolescent Trial for Cardiovascular Health (CATCH) (Luepker et al., 1996). The schools of over 5000 initially third grade (mean age, 9 years) children were involved and were assigned to either intervention or control groups. Compared with the control schools where no change in fat intake was evident, the intervention group reduced their fat intake from 33% to 30% over three years. No adverse outcomes were reported.

Leaving aside these intervention studies, there is some evidence that food intake and physical activity are strongly influenced by parents. Children who eat meals with their family consume fewer high calorie drinks and eat more fruit and vegetables and less fat in food, both at home and away from home (Gillman et al., 2000).

## **DIETARY FAT INTAKES OF IRISH SCHOOL-CHILDREN**

In general, there is a marked paucity of data relating to Irish children below primary school age. In particular, there are few data on food consumption in children under five years (Freeman, 1996). Most data relate to schoolchildren and suggest that the diet of this age group has a higher than desirable fat content. In one small study of Dublin inner city children aged 8-11 years from lower socioeconomic groups, two thirds obtained over 35% of energy from fat and one fifth obtained over 44% of energy from dietary fat (Stack, 1997). This exceeds the intake noted in two earlier studies in Ireland and the United Kingdom (Irish Nutrition and Dietetic Institute, 1991; Doyle et al. 1994). In a nationally representative sample of Irish schoolchildren aged 12-15 years, 40% made food choices from foods with high fat content (Cunningham, 1991; Irish Nutrition and Dietetic Institute, 1991). In terms of dietary habits, it was noted in both Irish studies that a significant proportion of Irish children consumed a high level of snack foods. These are widely considered as high fat foods. In a more recent national study, boys aged 9-17 years tended to eat more high fat, energy-dense foods than girls: three or more servings per day of cakes, pastries, some sweets, chocolate or crisps (NicGabhainn et al., 1998.). In addition, a social class gradient was evident with socially disadvantaged children consuming more of these snack foods (NicGabhainn et al., 1998.).

## **TRANS FATTY ACIDS**

Trans fatty acids are found naturally in milk-based products and synthetically, are derived from partial hydrogenation (hardening) of oils to prolong the shelf life of margarines and for use in certain confectionary. At present, trans fats are thought to contribute about 2% of energy intake in typical western diets but because of public health concerns (Willett, 1993; Ascherio et al., 1994; Oomen et al., 2001) and adverse publicity surrounding their presence in margarines and confectionary products, the dietary intake of trans fats has been reduced in some countries over the past ten years, largely through the efforts of the food industry (Aro, 2001). The reduction in trans fat consumption from 4.3% to 1.9% of energy intake in the Netherlands between 1985 and 1995 is thought to have prevented about 23% fewer coronary deaths (Aro, 2001; Oomen, 2001). On this basis, further reductions in the trans fat content of fast food and confectionary are likely to be required.

### *Recommendations*

- *For the infant, milk is the first food and one half of the total energy requirement is met by the fat or lipid fraction of milk. Wherever possible, breastfeeding is to be recommended because of demonstrable health gain over formula milk. A positive approach to improving the rate should be adopted to promote heart health in later life.*
- *As the infant is weaned and other foods (cereals, meat and other protein sources, vegetables and fruit) are introduced, the amount of energy derived from milk fat decreases. However, milk should remain the primary nutrient source for the first two years.*
- *Saturated or “animal” fat is found among many food groups. Current dietary recommendations for adults are to reduce fat intake to below 35% of energy intake with one third coming from saturated fat and a further one third each coming from monounsaturated and polyunsaturated sources. For children between two and five years, a gradual reduction in fat intake to approximately 35% of energy requirements is to be recommended. This reduction can best be achieved by choosing mainly foods rich in unsaturated fats, as illustrated in the food pyramid.*
- *Children older than five years require a moderate intake of fat (no more than 35% of energy from fat) with an emphasis on those high in monounsaturated and polyunsaturated fats. In the United States, the upper limit of fat intake has been set at 30% as in the case of adults. However, because of fears that children may not receive sufficient energy from non-fat sources, the upper limit has been set at 35% in the UK (Wardley et al., 1997).*
- *Food labeling provides a means for an individual to monitor nutrient consumption but rather than proposing that individuals measure the precise amounts of saturated fats consumed, it is more realistic to suggest that the Food Pyramid be used as a guide and that food groups rich in saturated fats be avoided or consumed rarely. Such foods are therefore at the top of the pyramid.*

- *Reduce the consumption of foods such as confectionary, convenience or savoury snack foods at the top of the pyramid to reduce saturated and trans fat consumption.*
- *Encourage regular family-oriented meals to educate children with regard to food choice.*
- *Opportunistic screening and provision of advice by family doctors and other health workers on the dietary habits of families with a history of premature CVD should be undertaken.*
- *Health education materials should include information on avoidance of saturated and trans fatty acids, especially through the new Social and Personal Health Education (SPHE) module in schools.*
- *The food industry should be encouraged to reduce trans fat content of food products in line with other EU countries such as the Netherlands.*

## **OBESITY**

Although LDL cholesterol is a principal factor in the aetiology of CVD, many other aspects of nutrition are implicated. Recent data indicate an increase in the prevalence of obesity in children of school-going age (Reilly et al., 1999; Chinn & Rona, 2001; Bundred et al., 2001). Among children, body mass index has been found to relate directly to the presence of atherosclerosis (Berenson et al., 1998) and obesity is independently related to CVD risk and mortality (Calle et al., 1999). Obesity is also directly related to another major CVD risk factor, type 2 diabetes. Traditionally, this type of diabetes has been considered rare in childhood but it now accounts for one in three of all new cases of diabetes among children (Fagot-Campanga et al., 2000). Finally, almost two in three overweight children have at least one other cardiovascular risk factor (Freedman et al., 1999).

The rise in the incidence of obesity is due to an increase in total energy intake, a reduction in physical activity, or both (Reilly et al., 1999; Bundred et al., 2001). Trends in dietary intake patterns among US children indicate that while fat as a proportion of total energy intake decreased between 1987 (36%) and 1995 (33%), the absolute amount of dietary fat did not decrease and, in boys aged 12-17 years, dietary fat intake actually increased (Johnson, 2000). The increase in total energy is seen as primarily due to increased consumption of carbohydrate as soft drinks (Morton &

Guthrie, 1998). Many factors are likely to influence children's behaviour in terms of food consumption. Among these are television viewing and advertising. In one study, reduced television viewing with a commensurate reduction in exposure to food advertising may explain the reduced rates of weight gain observed (Robinson, 1999).

As indicated above, the overall trend in food group consumption and in the incidence of obesity and diabetes among children are of major public health concern and suggest that the CVD epidemic is set to continue. However, early intervention to reduce high fat and high calorie dietary intake and to encourage increased physical activity is seen as essential (Bundred et al., 2001) and has been found to be successful (Barlow & Dietz, 1998).

### *Recommendations*

- *For the individual, the imbalance between energy intake and output should be addressed.*
- *A multi-factorial approach to CVD prevention includes advising on physical activity, reducing television viewing and healthful food consumption based on the food pyramid.*
- *The wider public health agenda includes supporting moves to provide play, activity and sporting facilities for children, especially in disadvantaged areas of the community.*
- *A public health campaign should be undertaken to raise awareness of the relationships between television viewing, food advertising, obesity and CVD.*

### **DIETARY SODIUM AND POTASSIUM**

Sodium, consumed as salt or sodium chloride, is directly related to the risk of developing essential hypertension, a major cardiovascular risk factor (Intersalt Cooperative Research Group, 1988; Elliot et al., 1993; Perry, 2000). Conversely, a substantial body of evidence suggests that increased consumption of potassium rich foods has a significant blood pressure lowering effect (Appel et al., 1997; Sacks et al., 2001) and, in some studies, reduces the risk of stroke (Khaw & Barrett-Connor, 1987), the third leading cause of death in Irish adults.

Some of the best evidence on these relationships comes from randomized controlled trials. Infants randomized to receive formula milk and solids with reduced

salt content had significantly lower blood pressure than infants randomized to receive standard diet (Hofman et al., 1983). Furthermore, when these children were followed up, these differences were found to persist into adolescence (Geleijnse et al., 1997). Data from the Dietary Approaches to Stop Hypertension (DASH) trial suggests that increased intake of fruit, vegetables, low fat products and reduced intake of sugar and red meats has significant blood pressure lowering effects (Appel, 1997).

Current guidelines in the United States recommend a maximum intake of 6g of sodium chloride (or 2.4 g sodium) per day for adults (Krauss et al., 2000). However, little research has been published on desirable salt intake for children and most advice is extrapolated from that pertaining to adults. The major dietary sources of sodium are manufactured foods such as bread, bacon, ham, snack foods and breakfast cereals. Recently, because of the epidemiological evidence linking salt intake with essential hypertension, the salt content of certain breakfast cereals has been examined (Perry, 1999) and the food industry has been prompted to reduce the salt concentration of certain cereals from 1.1 g per 100g (above sea water concentration) to 0.65 g per 100 g (Perry, personal communication). From a practical point of view, it is likely to be difficult for an individual to estimate and monitor daily salt intake and most guidelines concentrate on recommending food groups that are low in salt content (Krauss et al., 2000).

#### *Recommendation*

- *Food labeling is essential to enable informed consumers to choose healthful foods. However, legislation at national and international level may be required to ensure adequate adherence by the food industry to scientifically- based guidelines.*
- *As in the case of saturated and trans fats, health education curricula at school should include advice to children on reducing salt intake and increasing fruit and vegetable consumption.*
- *Using the food pyramid as a guide ensures the consumption of small quantities of salt-rich foods such as confectionary and snack foods.*

## **HOMOCYSTEINE**

Elevated plasma total homocysteine (tHcy) concentrations in adults may confer excess risk of CVD (Graham, 1997). In children, limited data suggest a similar relationship (van Beynum, 1999; Greenlund, 1999) and, in addition, that plasma tHcy concentration may predict risk of premature CVD in their male relatives (Tonstad et al., 1996).

Although the plasma tHcy concentration is strongly influenced by genetic factors, the principal determinants are plasma folate, pyridoxal 5'-phosphate (vitamin B6) and vitamin B12. Therefore, elevated plasma tHcy concentration may be a marker of folate deficiency rather than a determinant of CVD risk (Meleady & Graham, 1998).

However, it remains unclear at present whether supplements of folate, vitamin B6 and B12 should be taken by the entire population to reduce plasma tHcy concentration and thus CVD risk. This issue will be clarified by a number of randomised control trials (Clarke, 1998).

### *Recommendations*

- *At present there are no data to support the introduction of folate, vitamin B6 or B12 supplements for adults or children in the prevention of CVD. However, while their bioavailability may be limited because of food preparation techniques, folate and vitamin B6 are to be found in some of the food-groups emphasised in the food pyramid, namely fruit and vegetables, and vitamin B12 may be obtained from those nearer the top of the Food Pyramid, namely red meat and eggs.*

## **ANTIOXIDANTS**

LDL cholesterol is a principal determinant of CVD risk. It has been hypothesised that the oxidation of LDL enhances this process and, conversely, preventing the oxidation of LDL would prevent atherogenesis at an early stage. In vitro, many antioxidants such as vitamin E or alpha-tocopherol reduce LDL oxidation and many observational data indicate support for taking vitamin E supplements to prevent CVD (Rimm et al., 1993; Stamfer et al., 1993). However, significant doubt remains, since, except for one trial (Stephens et al., 1996), vitamin E supplements (consumed as alpha-tocopherol) did not reduce risk of coronary vascular disease in most randomised control trials (Gissi-Prevenzione Investigators, 1999; Yusuf et al., 2000). Taking all of

these data together, there is no basis at present to recommend taking supplements of vitamin E to prevent CVD.

#### *Recommendation*

- *The Food Pyramid emphasises food groups such as fruit and vegetables that are naturally rich in antioxidants. Rather than advise taking supplements of antioxidants such as alpha-tocopherol for which there seems little evidence of benefit, a diet based on the food pyramid seems more appropriate. In this regard, it may be useful to recall that the traditional Mediterranean diet, associated with protection against CVD, is rich in antioxidants such as polyphenols but is low in some forms of vitamin E such as alpha-tocopherol.*

### **PLANT STEROLS**

Plant sterol consumption of up to 3g per day has been recommended for use in certain adult populations to reduce serum cholesterol concentrations (Krauss et al., 2000). Plant sterols act by competing with cholesterol for absorption in the intestine. However, their place in a population approach to CVD prevention seems inappropriate at present and currently, no recommendations can be made with regard to their use in children.

### **DIETARY FIBRE**

No data exist to allow specific recommendations to be made on dietary fibre consumption in children. However, if food consumption in children is based on the Food Pyramid where a significant contribution from fruit, vegetables, cereals, breads and potatoes is recommended, this suggests that dietary childhood fibre intake is likely to be high.

### **COMMUNICATING THE MESSAGE**

Communicating a public health message can take place on a number of levels including school curricula, print and broadcast media and also, opportunistically, when health workers such as family physicians, practice nurses or cardiac rehabilitation co-ordinators engage with their patients or patients' relatives. A number of barriers already exist to limit the value of this interaction including limited time available during the consultation and limited knowledge on the part of many physicians and other health professionals but such barriers are not insurmountable (Truswell, 2000).

The issue of providing adequate education on nutrition in medical and nursing school curricula should be addressed. The message incorporated in this statement should also be communicated to the food industry whose behavior is ultimately driven by market forces but is also amenable to modification when provided with the necessary stimulus as evidenced by the issue of salt content of breakfast cereals (Perry, 1999). The industry has already shown itself capable of responding to the public's altered food consumption patterns as evidenced by the growth in low fat and low-trans products.

## **CONCLUSION**

For primary prevention of cardiovascular disease among adults, current guidelines recommend reducing fat intake to no more than 35% of total energy requirements in the case of the nutrition policy of the Irish Heart Foundation (Graham et al., 1990; Nutrition Advisory Group, 1995), or, in the case of the guidelines of the American Heart Association, to 30% or less (Fisher et al., 1997). This intake of fat should be obtained from one third each of saturated, polyunsaturated and monounsaturated sources. However, the higher energy needs of children suggest a less restrictive threshold for fat intake (no more than 35%). Furthermore, as the child grows, energy requirements change making it illogical to prescribe uniformly for all children's age - groups. Broad age-bands have been used in some recommendations (Fisher et al., 1997) with suggested micronutrient and macronutrient intakes for each age group. In the present statement, we have chosen three broad age-bands, namely, under two years, 2-5 years and over five years. This approach is in recognition of the changing metabolic requirements of the growing child.

## HEART HEALTHY EATING GUIDELINES FOR CHILDREN

### ❑ EAT A WIDE VARIETY OF FOODS

The Food Pyramid should be used as a guide to ensure an adequate energy and protein intake to meet growth requirements. This will also ensure adequate intake of vitamins and minerals. The Food Pyramid suggests serving sizes from 5 years onwards. For younger children, start with smaller and fewer servings and increase up to the recommended guideline, according to the child's growth and appetite.

### ❑ HAVE A MODERATE INTAKE OF FAT

Reduce intake of foods high in saturated fat (top shelf of children's food pyramid) and replace them where necessary with foods rich in polyunsaturated and monounsaturated fat. Foods rich in polyunsaturated fat are found in pure vegetable oils such as sunflower oil, corn oil, and soya bean oil and spreads made from these. Oily fish and nuts such as walnuts, hazel nuts and brazil nuts are also rich in polyunsaturated fats. Foods rich in monounsaturated fat include oils such as olive and rapeseed and spreads made from these. Seeds and nuts such as cashew, almond and peanut are also rich sources. *Young children should not consume whole nuts.*

### ❑ HAVE ENOUGH MILK, CHEESE AND YOGURT

Reducing fat does not mean cutting out on milk, cheese or yogurt, which are valuable sources of calcium. If family are having lower fat choices these are suitable for children over 2 years. Skimmed milk is not suitable for children under 5 years.

### ❑ HAVE ENOUGH MEAT CHICKEN, FISH AND ALTERNATIVES

These foods are important for growth and development. Red meat is important for iron intake. Choose lean meat and low fat cooking methods.

### ❑ CHOOSE LOW-FAT COOKING METHODS

Choosing low fat cooking methods will help reduce fat intake e.g. grilling, oven-baking.

### ❑ EAT MORE BREAD, CEREALS POTATOES, PASTA AND RICE.

Starting at two years, offer small portions and variety and gradually increase.

### ❑ EAT MORE FRUIT AND VEGETABLES.

Increase the size and number of the daily portions.

### ❑ EAT LESS SALT AND SALTY FOODS.

Children should avoid salt and highly salted foods. Most dietary salt comes from processed foods, in particular, snack or convenience foods.

### ❑ REDUCE FOODS FROM THE TOP SHELF OF THE FOOD PYRAMID THAT ARE HIGH IN FAT, ESPECIALLY SATURATED FAT AND SUGAR.

Children should consume a moderate intake of fat. This should be achieved by limiting intakes of the foods found on the top shelf of the food pyramid e.g. crisps, and savoury snacks, chocolate bars and sweets, biscuits, cakes, chips and other fried foods.

# CHILDREN'S FOOD PYRAMID



## **SUMMARY OF RECOMMENDATIONS**

1. Where possible, encourage breastfeeding.
2. Recognise the need for a relatively high fat diet in children under 2 years of age. Because milk is the primary nutrient source for children under two years, it should not be considered as a high fat food to be excluded.
3. From 2-5 years, introduce a gradual reduction in total fat intake towards the goal of no more than 35% of energy from fat.
4. In meeting fat and energy requirements in children from 2 years onwards, concentrate on foods that contain monounsaturated and polyunsaturated fats and that are low in saturated fats.
5. In meeting calcium requirements, consider milk as a primary calcium source but consider using low-fat milk from between ages 2-5 years.
6. Do not add salt to food.
7. Choose from a wide variety of foodstuffs. To this end, use the food pyramid to communicate this message to the public.
8. Snack foods tend to be high in saturated and trans fats, sodium and sugar. They should be used as an occasional treat and not as part of the staple diet.
9. Encourage regular, family-centred meals.
10. Encourage the development of a public health campaign to improve childhood nutrition to prevent CVD, especially among at-risk groups such as disadvantaged sectors of society and families with a history of premature CVD.
11. Limit television viewing and thereby exposure to food advertising.
12. Encourage play and physical activity.
13. Further research is needed including:
  - i. On-going surveillance on nutrient intake among Irish children
  - ii. Research into the specific nutrient requirements of selected groups of children such as diabetic children.
  - iii. Studies of the long-term effects of the recommended changes made during childhood.
  - iv. Further studies of genetic influences on CVD and gene-nutrition interaction.

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**National Heart Alliance**  
**Chairman: Prof David Kennedy**

**Participant organisations**

	Irish Nutrition and Dietetic Institute
ASH Ireland	
Dental Health Foundation	Irish Pharmaceutical Healthcare Association
Dublin Healthy Cities	Irish Practice Nurse Association
East Coast Area Health Board	Irish Sports Council
Eastern Regional Health Authority	Joint Managerial Body Secondary Schools
Environmental Health Officers Association	Midland Health Board
European Society of Cardiology/EAS/ESH Task Force on Coronary Prevention European Foundation for the Improvement of Living and Working Conditions	National Sudden Infant Death Register
European Institute of Women's Health	National Youth Council
Food Safety Authority	North Eastern Health Board
Food Safety Promotion Board	North Western Health Board
Institute of Community Health Nursing	NUI Galway - Dept of Public Health
Institute of European Food Studies	Occupational Health Nurses Association
Irish Cancer Society	Royal College of Physicians
Irish Cardiac Society	South Eastern Health Board
Irish Congress of Trade Unions	Social Personal & Health Education – National Co-ordination
Irish Heart Foundation	St Vincent's University Hospital - Dept of Preventive Medicine & Health Promotion,
Irish National Health Promoting Hospitals Network	The Institute of Public Health in Ireland
Irish Nurses Organisation	Western Health Board

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