

# Quality Control of Nutrient Data for a Longterm, Multi-Centre Dietary Intervention Trial

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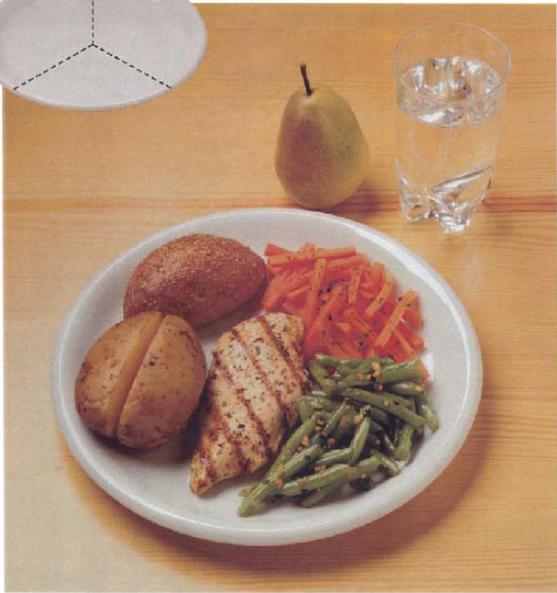
# Diet and Breast Cancer Prevention Study

- Canadian
- multi-centre
- in operation from 1988 – 2005
- randomized, intervention trial

# Study Goal

**Sizing It Up**

This is a photograph of a sample meal. A little less than 1/4 of the plate is protein. The rest of the plate is divided into two parts. One part consists of grains such as rice, pasta, potatoes, bread or beans. The other consists of vegetables and fruit. The black lines which divide the empty plate show you how much of each type of food to eat.



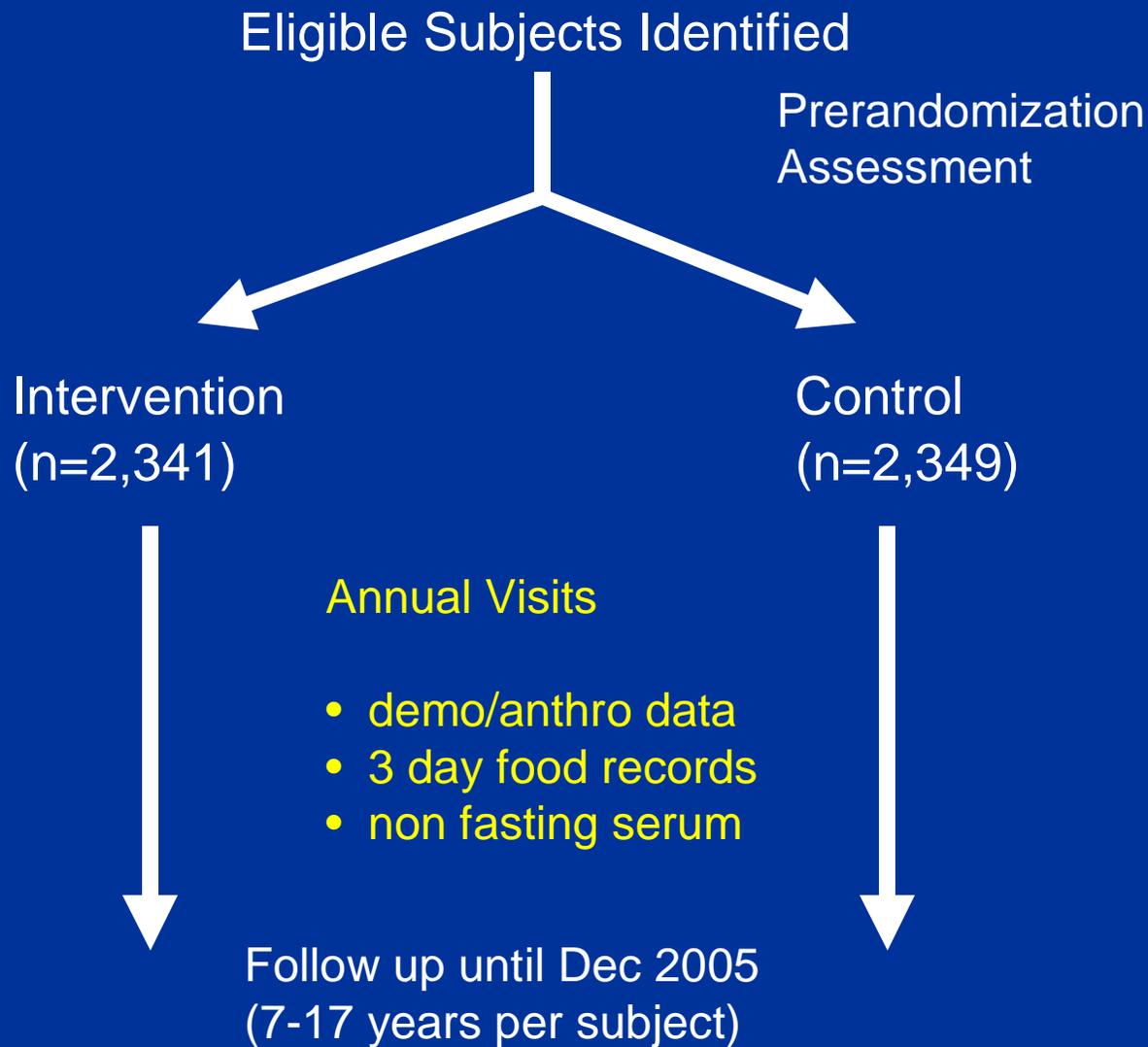
*Baked Lemon Chicken, baked potato, dillza roll, Gingered Green Beans, carrots, fruit*

Recipe from *The Fat Factor*

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to determine if a low fat, high carbohydrate diet will reduce the incidence of breast cancer in healthy women with extensive mammographic density.

# Diet and Breast Cancer Prevention Study Design

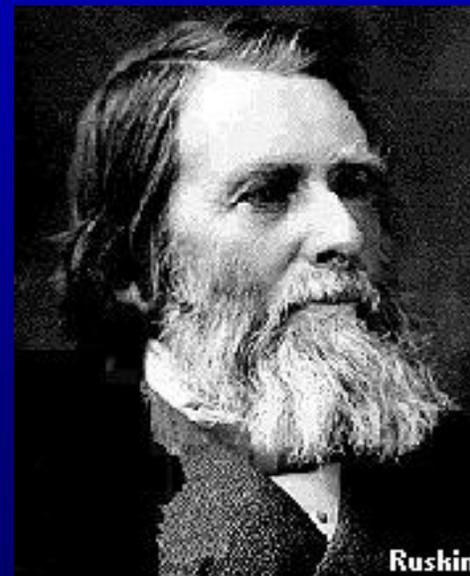


# Selected Baseline Characteristics

	Intervention	Control
<b>No of Subjects</b>	<b>2341</b>	<b>2349</b>
<b>Age (years)</b>	<b>47.1</b>	<b>47.2</b>
<b>Weight (kg)</b>	<b>62.2</b>	<b>62.3</b>
<b>BMI (kg/m<sup>2</sup>)</b>	<b>23.3</b>	<b>23.3</b>
<b>Parity (% parous)</b>	<b>73.8</b>	<b>74.5</b>
<b>First degree relative with BC(%)</b>	<b>17.7</b>	<b>18.3</b>
<b>Premenopausal (%)</b>	<b>73.2</b>	<b>73.9</b>



**“Quality is never an accident, it is the result of intelligent effort.”**



# Quality Control Program *for accuracy and consistency*

- Food Knowledge Test
- Extensive Training
- “Missing Food Book”
- Review Out of Range food records
- Double entry

# Food Knowledge Test

## 1. Measurements

tsp in a tbsp =    tbsp in a cup=    oz in a lb=    FO in a cup=

## 2. Commercial and Ethnic Foods

What is Orangina, Jamaican Patty, Challah, Marmite, Boursin, Mesculin Mix

## 3. Math Skills

Calculate the volume of a wedge using this formula -

width of rounded edge x radius x height

2

rounded edge = 3"    radius = 4"    height = 2.5"

## 4. Nutrition Composition

Approximately how many calories in 4 oz of cooked, lean beef?

# NDS Training and Certification

- Close supervision for about 3 months.
- First 100 food records checked by Nutrient Data Manager.
- Results reviewed with staff and feedback given for all errors.

# “Missing Food Book”

*supplementary electronic database with  
information and guidelines for  
nutrient data entry*

1. Product Information ~ 12,000 new foods
2. Data Entry Rules
3. Guides for Entry – variance guide, sushi, ribs, calculating volumes of soup

Date  Day  Month  Year  Parcel #  Record #

**Product Name** (complete description, brand & variety name, claims, etc.)

**Meat/Fish/Poultry—required information:** product a.c. is  (pre-cooked)  raw includes  sauce;  breading

**Information Source(s)—Please attach label if available.**

email or fax (attach printout)  telephone  other \_\_\_\_\_  
 website (attach printout)  local grocery store  product information sheet on file

\*Please enter below any new / corrected information for Mary's book (if not attached to this form).

**Package** (enter all that apply)

**Container**

box  
 pouch  
 soup cup  
 other \_\_\_\_\_

tub  
 can  
 jar

**Storage**

refrigerated  
 frozen  
 shelf-stable

**Contents**

weight \_\_\_\_\_  
 volume \_\_\_\_\_  
 dimensions \_\_\_\_\_

count \_\_\_\_\_  
 yield \_\_\_\_\_  
 other \_\_\_\_\_

**Preparation**

To  1 package... or...  
 other amount \_\_\_\_\_

**add:**

eggs  oil \_\_\_\_\_  
 water  \_\_\_\_\_  
 milk \_\_\_\_\_%  
 butter / marg \_\_\_\_\_

**Yield**

**Main Ingredients**

**Nutrients**

Enter nutrients per serving  
 avg =  (1)

If necessary convert to more user-friendly amount.  
 (2)

**A**  
 Match nutrients of (1) or (2) w/  
 NDS calculation<sup>a</sup> per

**B**  
 Revision  
 B. Solely only

Ca \_\_\_\_\_  
 Pro \_\_\_\_\_ g  
 Fat \_\_\_\_\_ g  
 Carb \_\_\_\_\_ g  
 Fibre \_\_\_\_\_ g

Ca \_\_\_\_\_  
 Pro \_\_\_\_\_ g  
 Fat \_\_\_\_\_ g  
 Carb \_\_\_\_\_ g  
 Fibre \_\_\_\_\_ g

Cal \_\_\_\_\_  
 Pro \_\_\_\_\_ g  
 Fat \_\_\_\_\_ g  
 Carb \_\_\_\_\_ g  
 Fibre \_\_\_\_\_ g

Cal \_\_\_\_\_  
 Pro \_\_\_\_\_ g  
 Fat \_\_\_\_\_ g  
 Carb \_\_\_\_\_ g  
 Fibre \_\_\_\_\_ g

<sup>a</sup>Wt/wt or each count/wt.

<sup>a</sup>Please attach copy if entry has more than one ingredient.

**NDS Entry**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Criteria for “Out of Range” Records

Energy             $\leq$  800 calories  
                      $\geq$  2800 calories

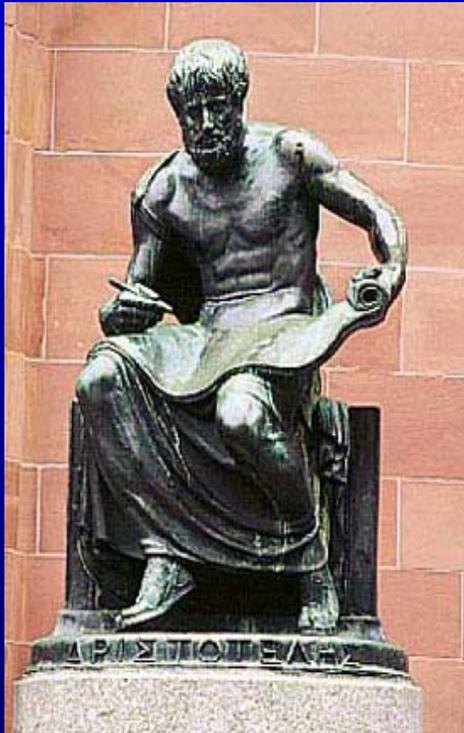
Fat                 $\geq$  110 grams

Tillotson, JL, Gorder DD, Duchene AG, Grambsch PV and Wenz J. 1986.  
Quality control in the Multiple Risk Factor Intervention Trial Nutrition Modality.  
Controlled Clin Trials. 7:66S – 90S.

# Impact of “Out of Range” Records

- 10 – 12 % food records are out of range
- 35% records changed after review
- 65% false positive

# Double Entry Project



*“Quality is not an act,  
it is a habit.”*

Aristotle

# Double Entry Project

## Goal:

To determine the reliability of data entry between dietitians and different versions of NDS.

## Objective:

To compare the nutrient data obtained from records collected before 1996 and entered in early and later versions (2.91) of NDS.

# Method

- Randomly select 50 sets from each study group (total 100 3-day record sets)
- Used Y2 records previously entered for hormone sub-study
- Distributed blinded records to all available dietitians

# Results

N=79	Initial Entry Mean	Repeat Entry Mean	Correlation Coefficient
Energy (kcal)	1618	1617	0.96
Total Fat (g)	49.0	48.8	0.96
Protein (g)	66.5	65.0	0.93
Carbohydrate (g)	227.7	230.4	0.98







# Nutrient Analysis Results

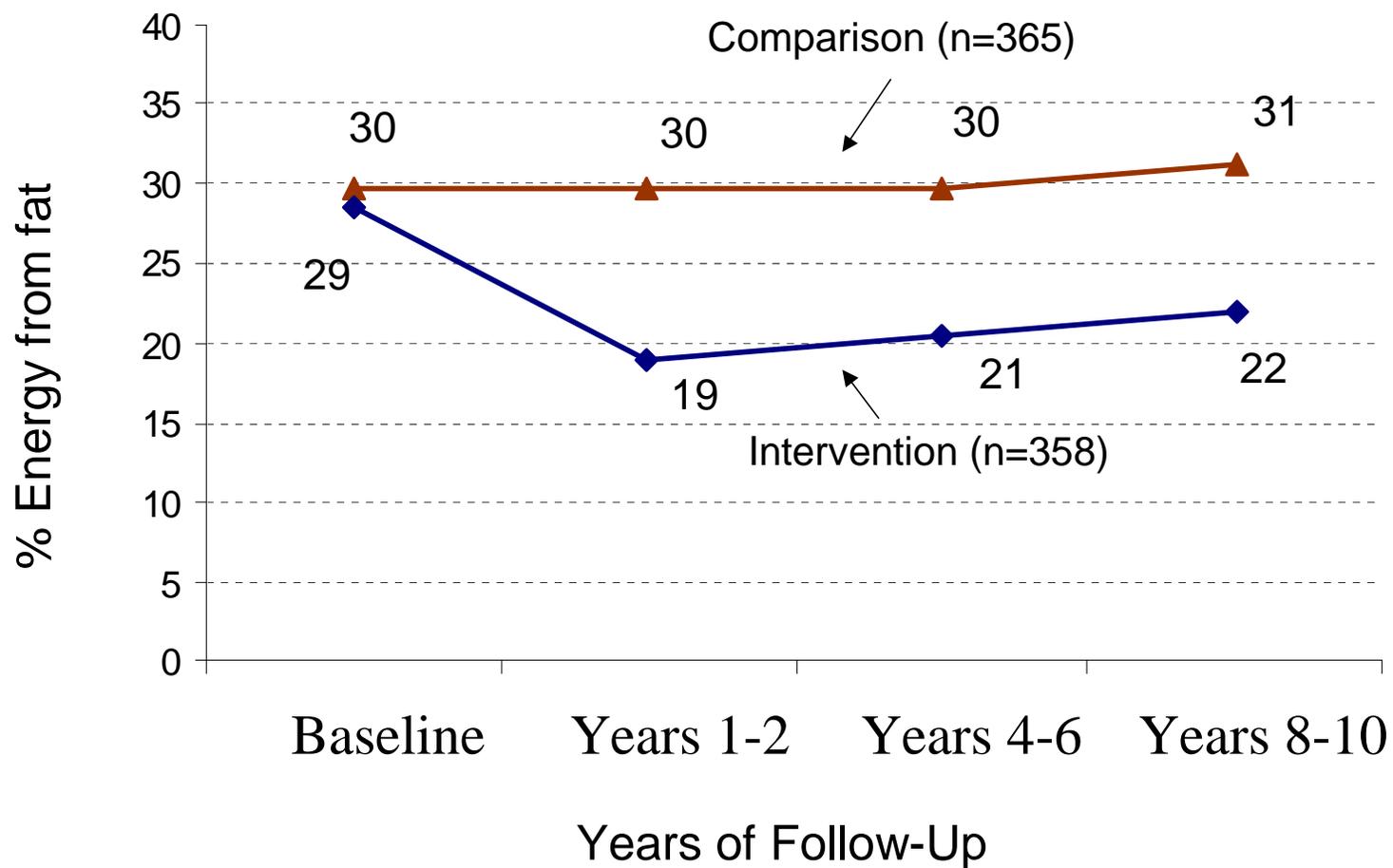
## Intake of selected nutrients by group and time

	Group <sup>a</sup>	Mean (SD)			
		Baseline	Year 1 - 2	Year 4 - 6	Year 8 - 10
Energy (Kcal)	I	1690 (361)	1642 (349)	1612 (356)	1533 (341)
	C	1739 (377)	1753 (386)	1757 (390)	1738 (403)
Total fat (%)	I	28.6 (6.4)	18.8 (5.7)	20.5 (6.4)	22.0 (6.2)
	C	29.7 (6.7)	29.7 (6.9)	29.8 (6.4)	31.2 (7.3)
Total CHO (%)	I	54.7 (7.5)	64.7 (7.1)	62.4 (8.1)	59.9 (8.0)
	C	53.2 (7.6)	53. (8.0)	52.8 (8.1)	50.8 (9.0)
Total Protein (%)	I	16.3 (3.1)	17.0 (2.7)	17.3 (3.0)	18.5 (3.9)
	C	16.0 (2.8)	16.2 (3.2)	16.6 (3.1)	17.2 (3.3)

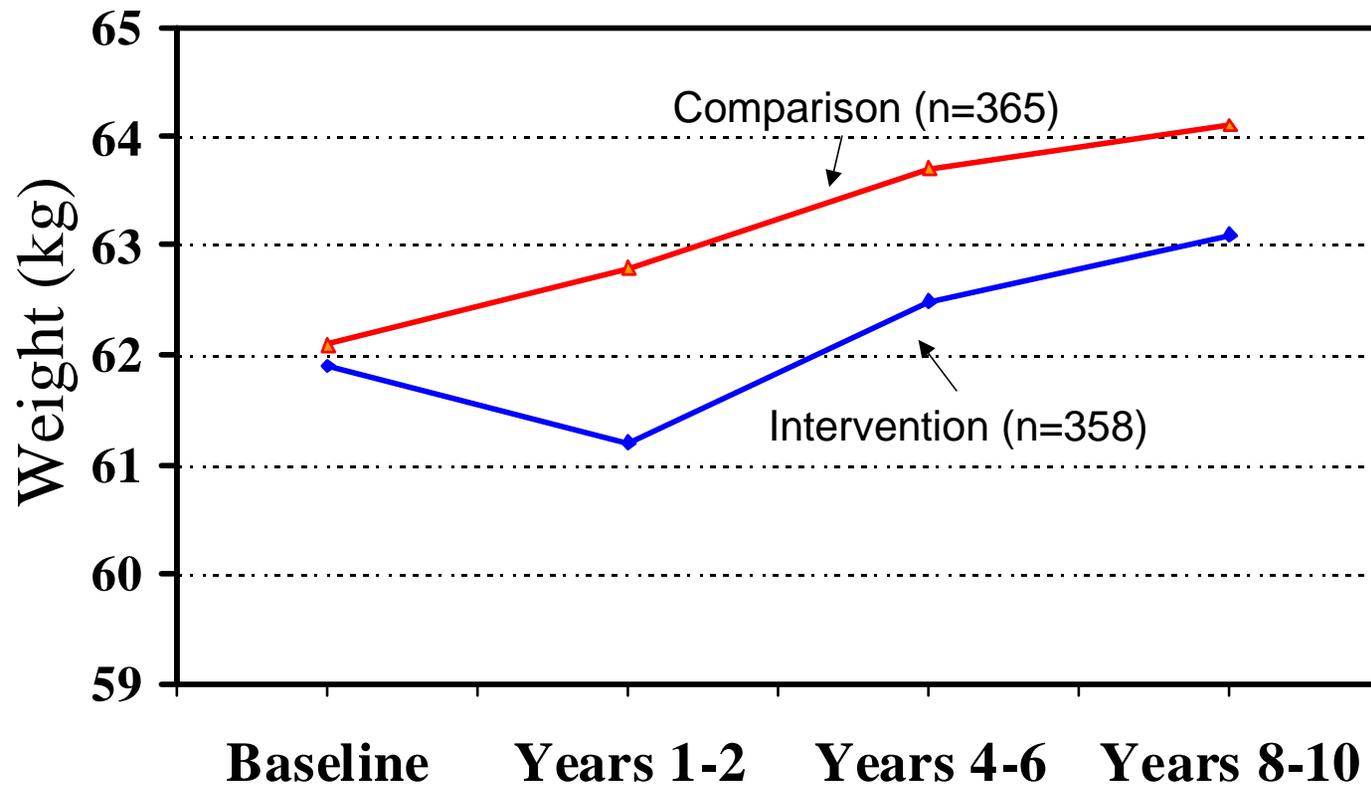
I = intervention (n=358)

C = comparison (n=365)

## Dietary Compliance: % Energy from Fat

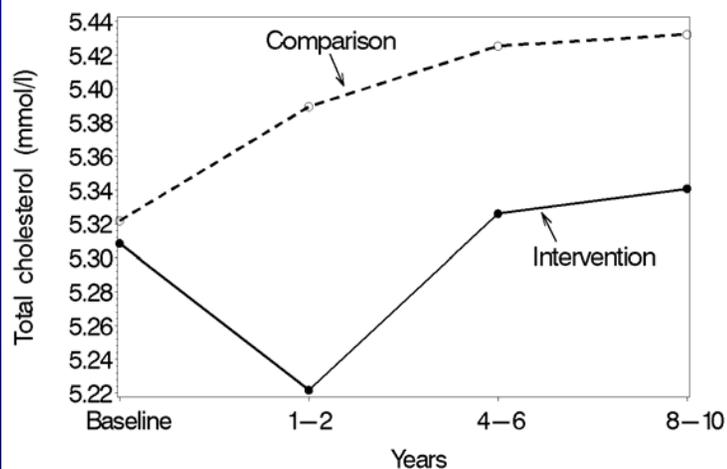


## Body weight by group and time of follow-up

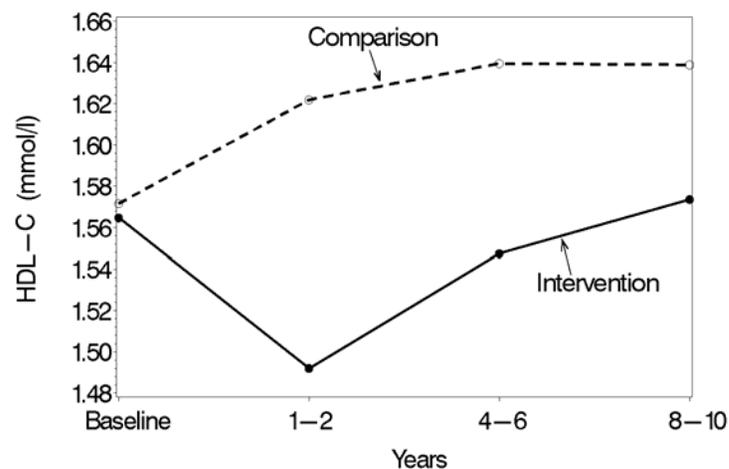


## Blood cholesterol levels by group and time of follow-up (adjusted for age and weight)

### Total Cholesterol (mmol/l)



### HDL (mmol/l)



**“I am easily satisfied with the best.”**

**Winston Churchill**



# Canadian Diet and Breast Cancer Prevention Study Group

Principal Investigator – Dr. Norman Boyd

Co- Principal Investigator – Dr. Lisa Martin

Data Manager – Valentina Kriukov

Nutrient Data Coordinator – Lorraine Gougeon

“Missing Food Book” Coordinator – Barbara Selley

## Study Dietitians/Nutritionists:

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Deborah Cohen

Amy Micallef

Susan Ho

Carol Petryschuk

Patti Hoddinott

Andrea Holmes

Alison Lenny

Cathy Williams

Nancy Lusher

Evelyn Wu

Cathie Martin