

# Project Sodium

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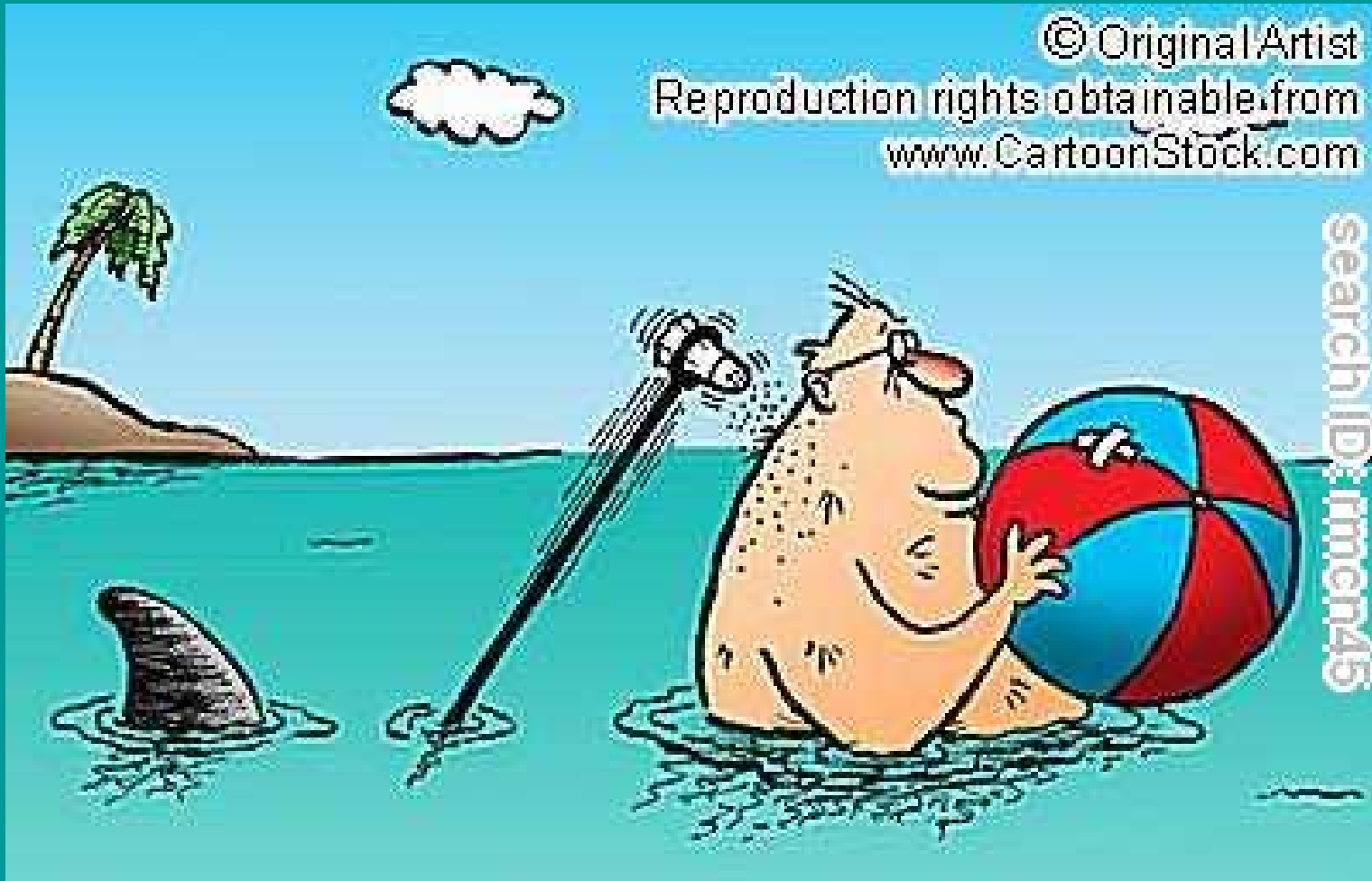


Canadian Foundation for Dietetic Research



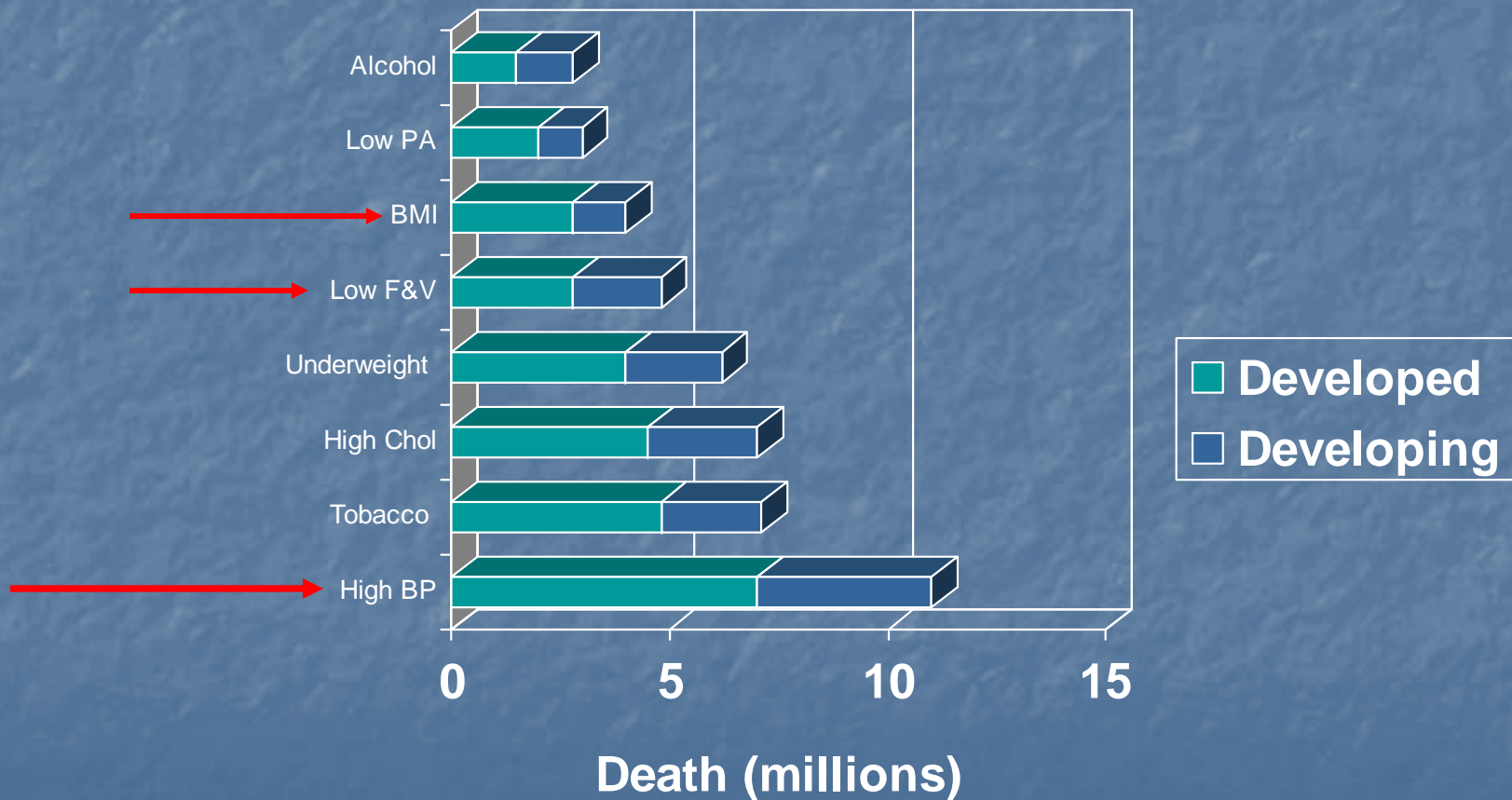
# Overview of Presentation

- Impact of sodium on health
- Canadians' sodium consumption
- Educational programs and interventions
- Ecologic view of sodium reduction
- Data collection and survey tools
- Anticipated findings



<http://www.cartoonstock.com/directory/S/Salt.asp>

# Burden of disease



Source: Ezzati et al. (2002). The Lancet 360: 1347-60.

# Does sodium reduction matter to health?



# High Blood Pressure and CVD

- 49% of strokes and 62% of heart attacks attributable to high blood pressure in the United States\*
- High blood pressure is risk factor for cardiovascular disease

WHO. World Health Organization Report 2002: Reducing Risks, Promoting Healthy Life.\*



# Health Impact of Sodium

- Increases in dietary sodium increase blood pressure
- About 1 million Canadians have hypertension caused by excess dietary sodium
- A reduction of 1840 mg/day of dietary sodium estimated to prevent 11 500 CVD events per day in Canada
- More than half of Canadians have sodium intakes derived mainly from commercially prepared foods

Source: Penz, Joffres and Campbell. The Canadian Journal of Cardiology (2008), 24(8): 647.



# Reducing Sodium Intake Matters

50% reduction in salt (sodium) may:

- Reduce mean systolic BP by 5 mm Hg
- Reduce hypertension prevalence by 20%
- Reduce from coronary heart disease by 9%
- Reduce mortality from all causes by 7%
- Save 150 000 lives annually

Source: Havas et al. Am J Public Health (2004) 94:19-22.



# Sodium Imperative

The lower your blood pressure, the lower your risk of heart and disease and stroke...

**“EVEN IF YOU DO NOT HAVE HYPERTENSION”**

- Dr. Lawrence Appel, Harvard University



# Forms of Sodium



- 90% of sodium is consumed as sodium chloride (salt)
- Other forms:
  - Sodium bicarbonate
  - Sodium in processed foods (e.g., sodium benzoate, sodium phosphate)

# Sodium Reduction Recommendations

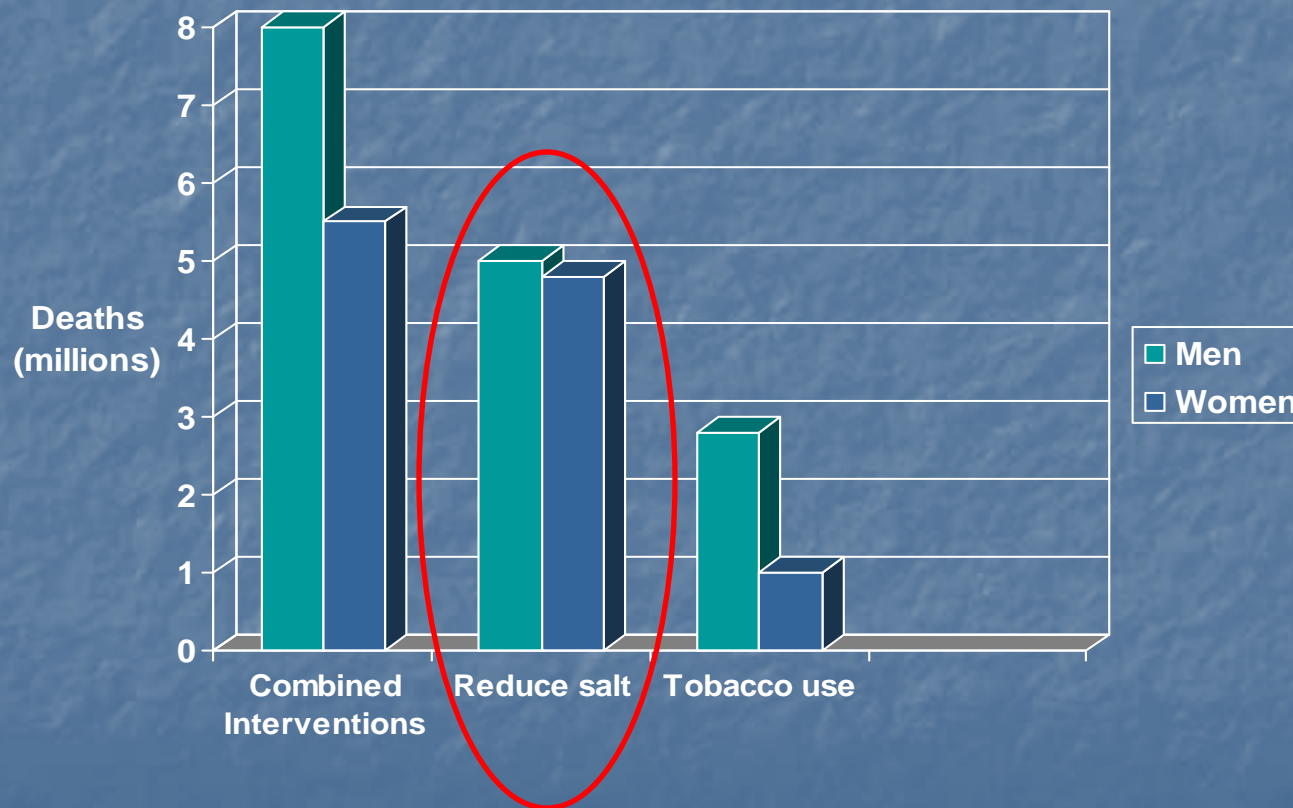


Blood Pressure Canada recommends reducing adult Canadians' sodium intake to between 1200 and 2300 mg (1/2 tsp to 1 tsp) per day by 2020

Blood Pressure Canada Policy Statement. (2008).



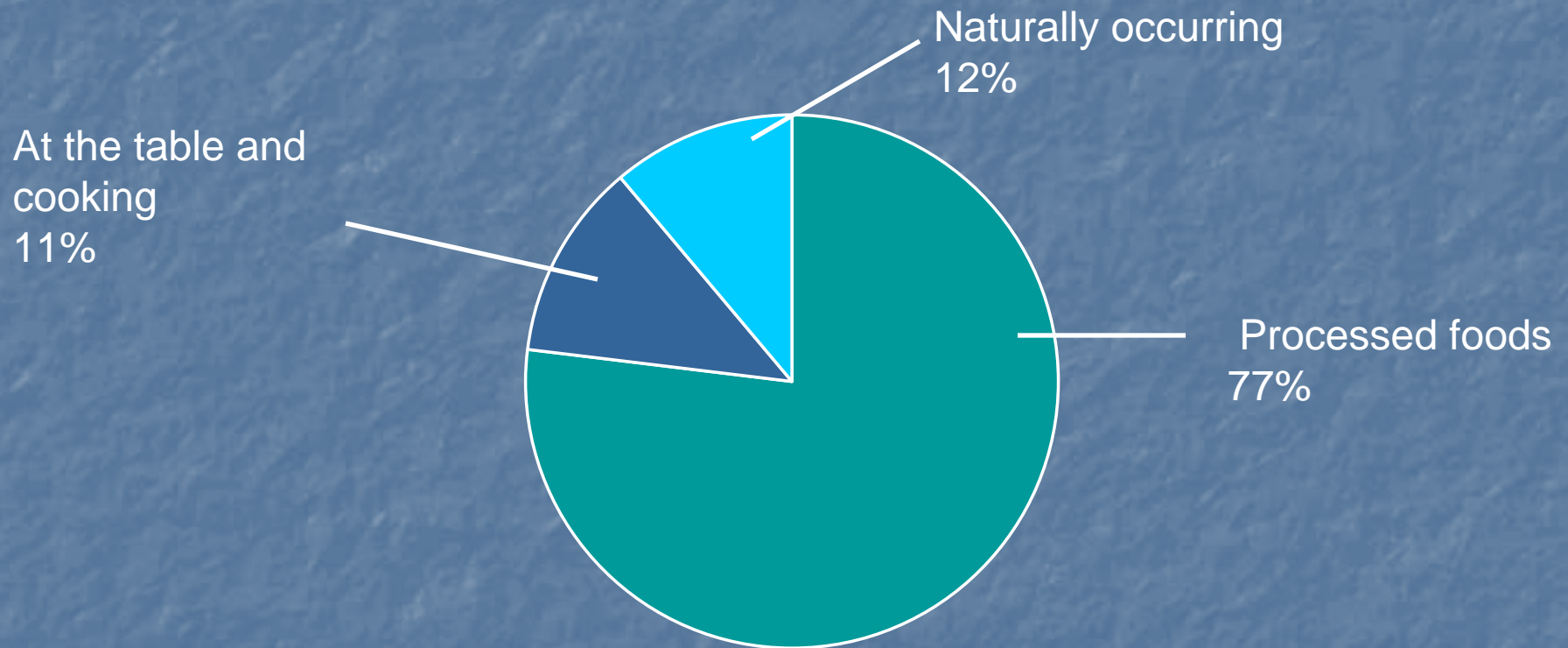
# Estimated impact of salt interventions to reduce mortality



Source: Asaria et al. The Lancet (2007). 370;2044-53.

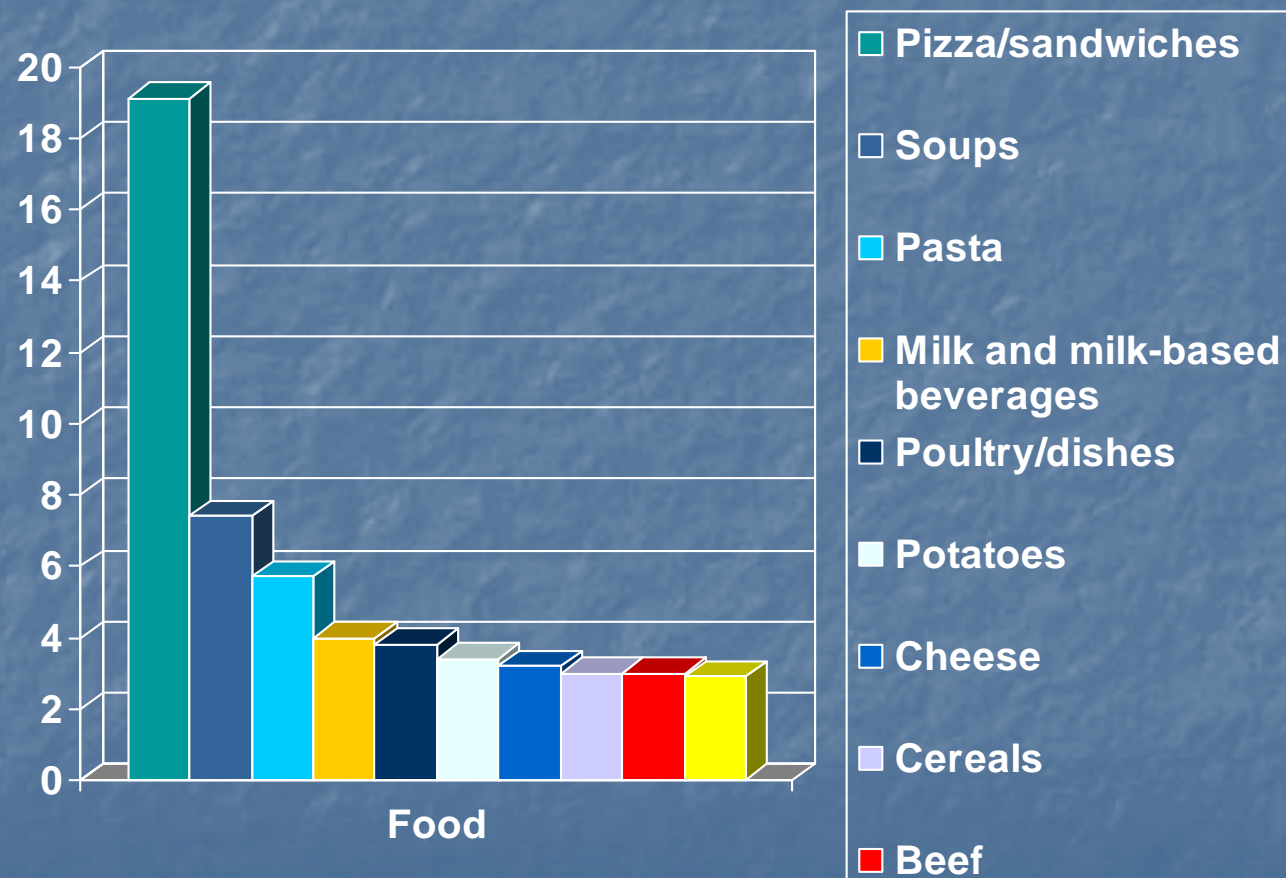


# Sources of Sodium in North American Diet



Source: Mattes and Donnelly, 1991

# Top 10 Sources of Sodium in Canadian Diet



Source: Statistics Canada, 2007

# Sodium Requirements

Age (years)	AI (mg/d)/ <b>Canadians' intake</b>	UL (mg/d)
1 - 3	1000 <b>(1903)</b>	1500
4 - 8	1200 <b>(2677)</b>	1900
9 - 13	1500 <b>(2962-3555)</b>	2200
14 - 18	1500 <b>(2743-4083)</b>	2300
19 - 50	1500 <b>(2778-3634)</b>	2300
51 - 70	1300 <b>(2587-3345)</b>	2300
Over 70	1200 <b>(2294-2874)</b>	2300

# Canadians consume far more salt than is necessary

- Sodium content of diet surpassed upper limits
- Men aged 14-30 consumed ( $>4100$  mg/d) more than women (2900 mg/d)
- Higher sodium consumers more likely to add salt to food very often

Source: <http://www.statcan.gc.ca/daily-quotidien/070410/dq070410a-eng.htm>

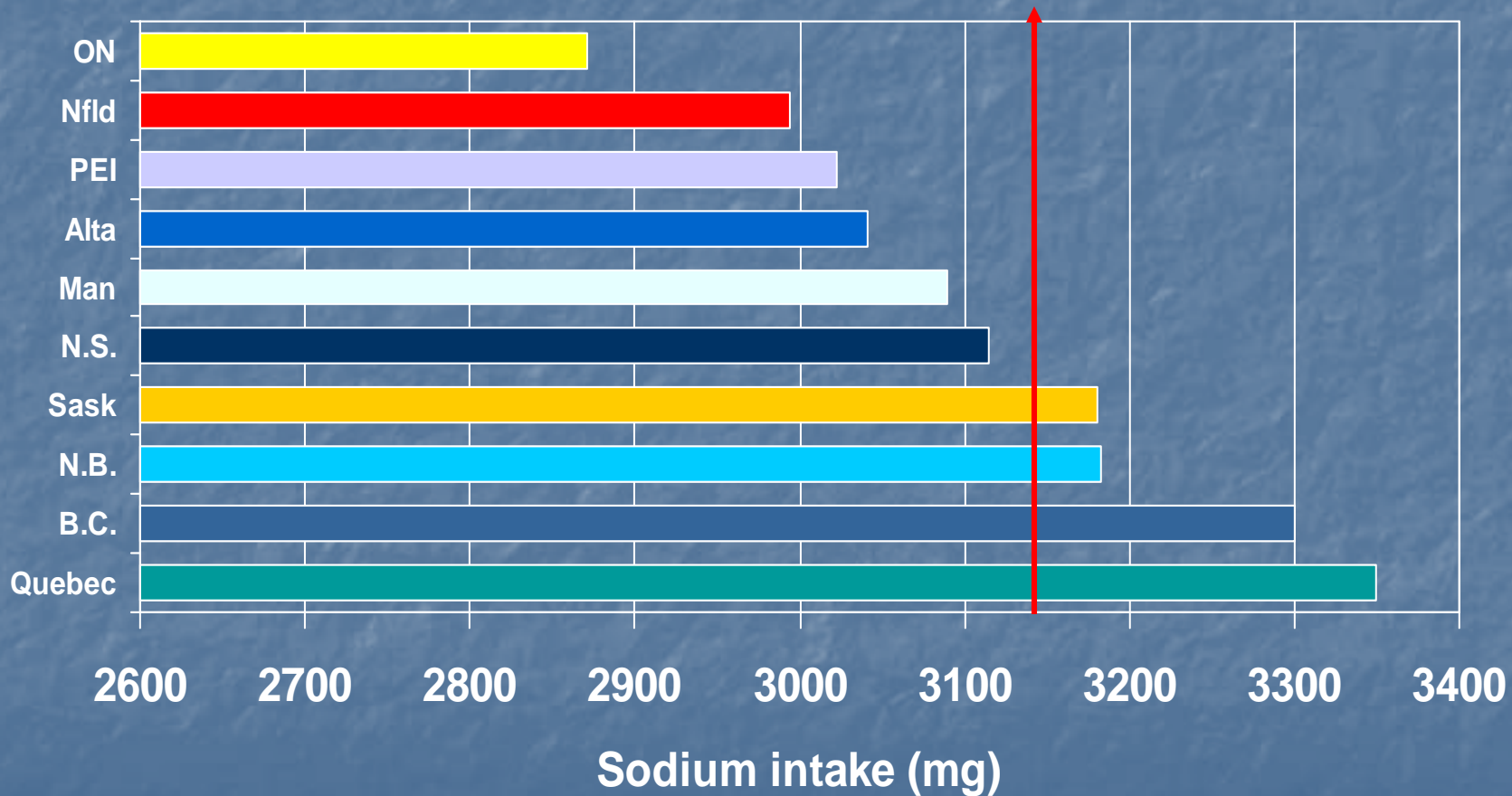




# Sodium Intake of Canadians

- Average sodium consumption is ~3100 mg
- 7.9 grams of salt
- Does not include salt added during cooking (accounts for + 10-15% of sodium)
- Over 90% of men and 66% of women (19-70) sodium intake >UL (CCHS 2.2)

# Average Sodium Consumption by Province



Does awareness of blood pressure influence sodium intake?



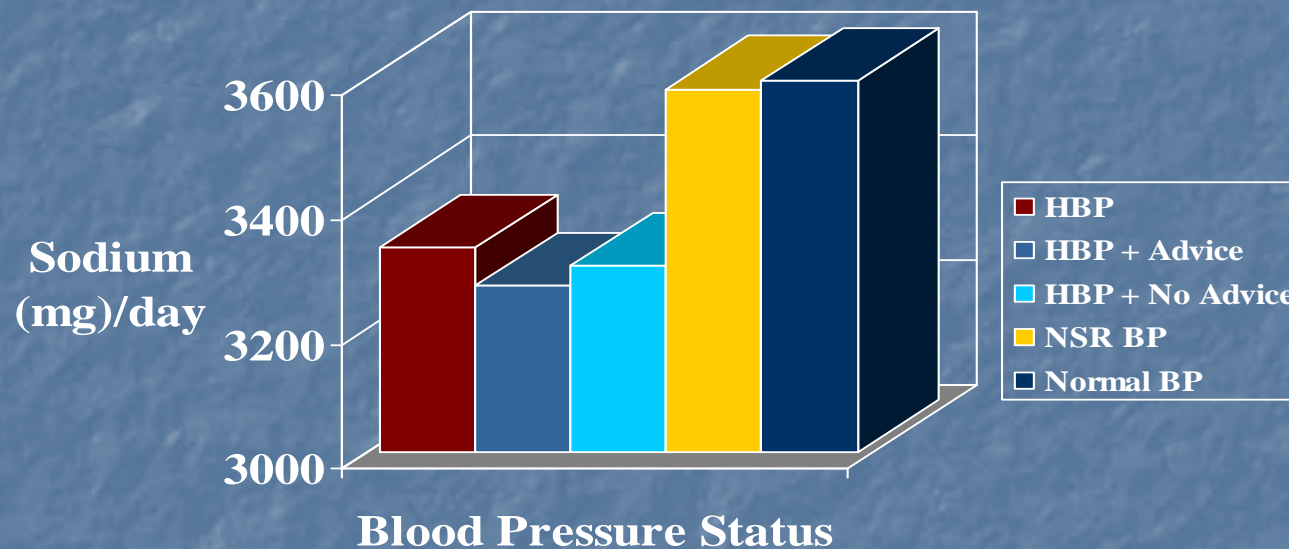
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" I TAKE EVERYTHING HE SAYS  
WITH A PINCH OF SALT. "

search ID: gth0411

# Sodium Intake (mg) among participants with Normal and High Blood Pressure, NHANES 1999-2000



Source: Ajani et al. Sodium intake among people with normal and high blood pressure. Am J Prev Med 2005;29 (5S1)

# Main Findings

- High % received advice from healthcare providers to reduce sodium intake
- Ineffective clinician advice not associated with lower sodium intake
- Effectiveness of counselling varies according to approach, intensity, use of guidelines, and tools and referrals

# Challenges for sodium reduction

- Nutrition labelling
  - Format and message
  - Front and back of the package labelling
  - Health claims
- Mandatory or optional sodium reduction policy
- Taste and functionality of sodium
  - Recalibrate the palate to lower sodium
  - Product reformulation
  - Public perceptions

# Expectations of the Nutrition Label

<b>Nutrition Facts / Valeur nutritive</b>				
	Per 1 tbsp. (15 mL) par 1 c. à soupe (15 mL)		Per 1/2 cup (125 mL) par 1/2 tasse (125 mL)	
	Amount Teneur	% DV* % VQ*	Amount Teneur	% DV* % VQ*
<b>Calories / Calories</b>	15		120	
<b>Fat / Lipides</b>	0 g	0 %	2.5 g	4 %
Saturated / saturés	0 g	0 %	1.5 g	8 %
+ Trans / trans	0 g		1.5 g	
<b>Cholesterol / Cholestérol</b>	0 mg		10 mg	
<b>Sodium / Sodium</b>	20 mg	11 %	150 mg	6 %
<b>Carbohydrate / Glucides</b>	2 g	1 %	15 g	5 %
Fibre / Fibres	0 g	0 %	0 g	0 %
Sugars / Sucres	2 g		15 g	
<b>Protein / Protéines</b>	1 g		10 g	
Vitamin A / Vitamine A		2 %		10 %
Vitamin C / Vitamine C		4 %		35 %
Calcium / Calcium		4 %		35 %
Iron / Fer		0 %		2 %

\* DV = Daily Value / VQ = valeur quotidienne

- Provide consumer credible nutrition information
- Distinctive, easy to read format
- Expected to help consumer choose more nutritious, healthier option.



# Common tasks when using nutrition labelling

- Identify amount of a specific nutrient
- Assess what counts as a low or high amount of the nutrient
- Decide the overall healthiness of a product
- Compare a specific nutrient content (or the overall nutrient content)
- Calculate the amount of a nutrient in a serving
- Assess the product in the context of a meal choice or daily intake

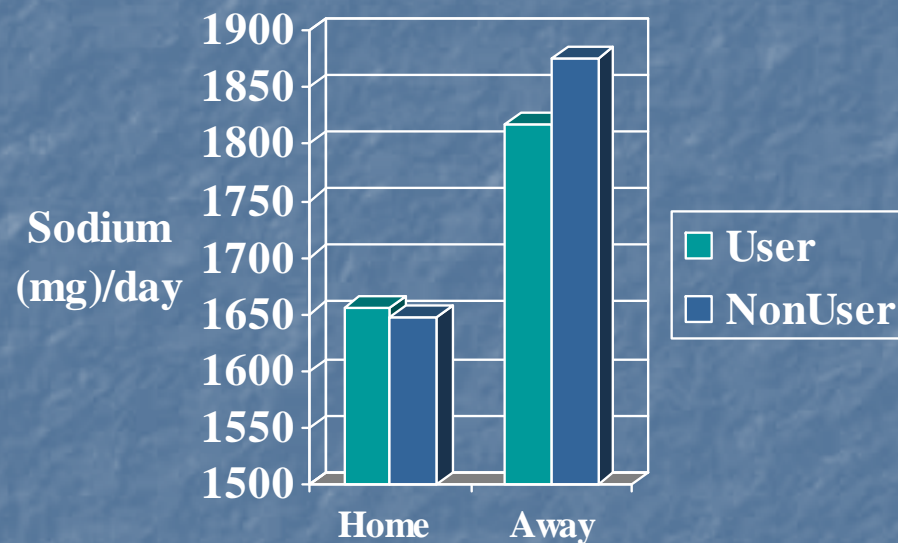
# Nutrition labelling and salt/sodium

- Nutrition labelling confusing, especially some technical terms and information
- Understood terms 'fat', 'calories/kilocalories', 'sugar', 'vitamins' and 'salt'
- Least well understood were relationship between sodium and salt; calories and energy; sugar and carbohydrate; and terms cholesterol and fatty acids.
- Difficulty understanding the role of different nutrients
- Difficulty converting from g per 100 g to g per serving and serving size information
- Percentage of energy was not well understood

# Does reading nutrition labels affect dietary sodium intake?



# Sodium Intakes of Label Users vs. Non Label Users



Continuing Survey of Food Intakes (CSFII) and Diet and Health Knowledge Survey (DHKS)

Source: Variyam J. Do nutrition labels improve dietary outcomes. Health Economics, 2008; 17: 695-708.

# Nutrition Information About Sodium

- Study examined whether adults (n=226) able to interpret nutritional information regarding salt on packaging
- Estimated salt content of food product



Source: Gibney A, Fifield S. Nutritional information about sodium: Is it worth the salt?  
The New Zealand Medical Journal 2006; 119:1232.

# Interpretation of nutrition information



- 67% cared about amount of salt in their diet
- Only 10% aware of recommended daily maximum consumption of salt
- 58% believed salt and sodium are interchangeable terms
- Over 98% unable to identify amount of salt present

# Policy on sodium reduction

# UK Government

- FSA Strategic Plan
  - Reduce salt intake to 6g/day
  - Set targets for levels of salt in food
- Government commitment
  - Reduce levels of salt in processed foods

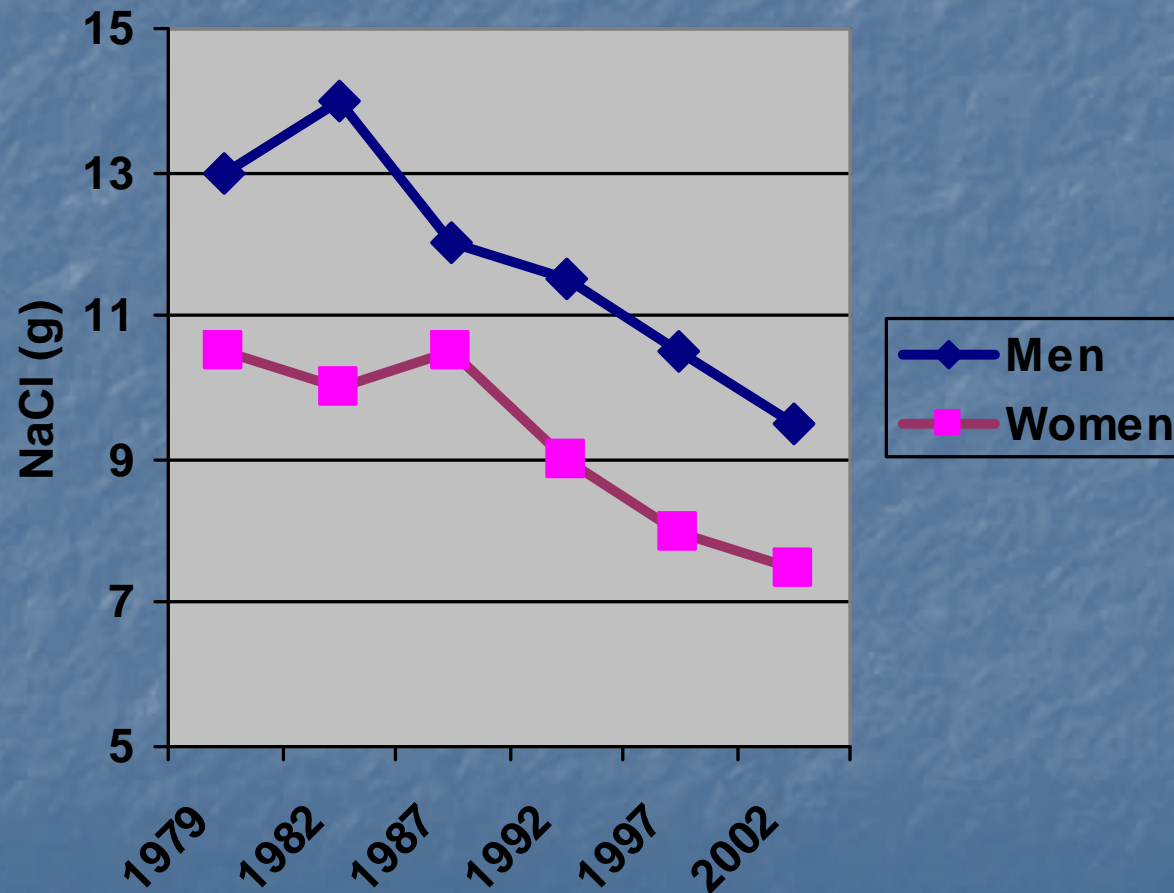
[www.food.gov.uk](http://www.food.gov.uk)



# Hypertension Management and Awareness

- Since 1994, mean SBP decrease by 1.6 and 4.3 mmHg in males and females
- Rates of awareness and treatment increased and control rates (<140 mmHg SBP and <90 mmHg) among hypertensive's doubled to 21.5 and 22.8%

# Decrease in salt intake of Finnish men and women



Source: Laatikainen et al. European J Clinical Nutrition 2006; 60:965-970.

# Summary

- Multifaceted comprehensive intervention approach appears most effective
- Increase awareness of blood pressure status is associated with lower sodium intake
- Few consumers use and understand nutrition labels related to salt and sodium
- More research is needed to elucidate consumer understanding and use of nutrition labelling, particularly regarding sodium

# Ecologic view of perceptions and motivations to sodium reduction: State of the knowledge



# Investigators and Collaborators

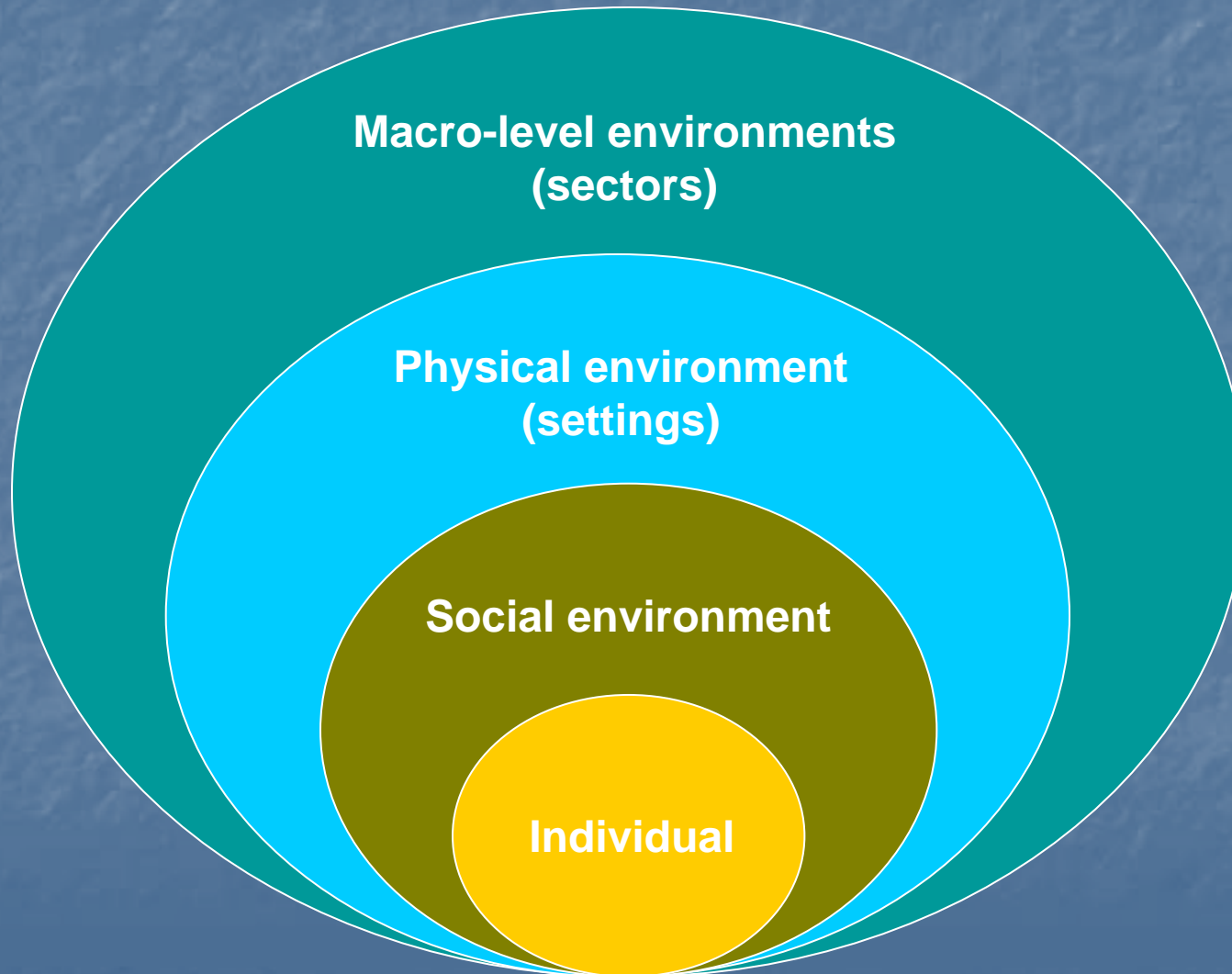
- Anna Farmer, PhD, MPH, RD
- Diana Mager, PhD, RD
- Francy Pilo-Blocka, CEO, CCFN
- Alberta Health Services (Edmonton and Calgary)



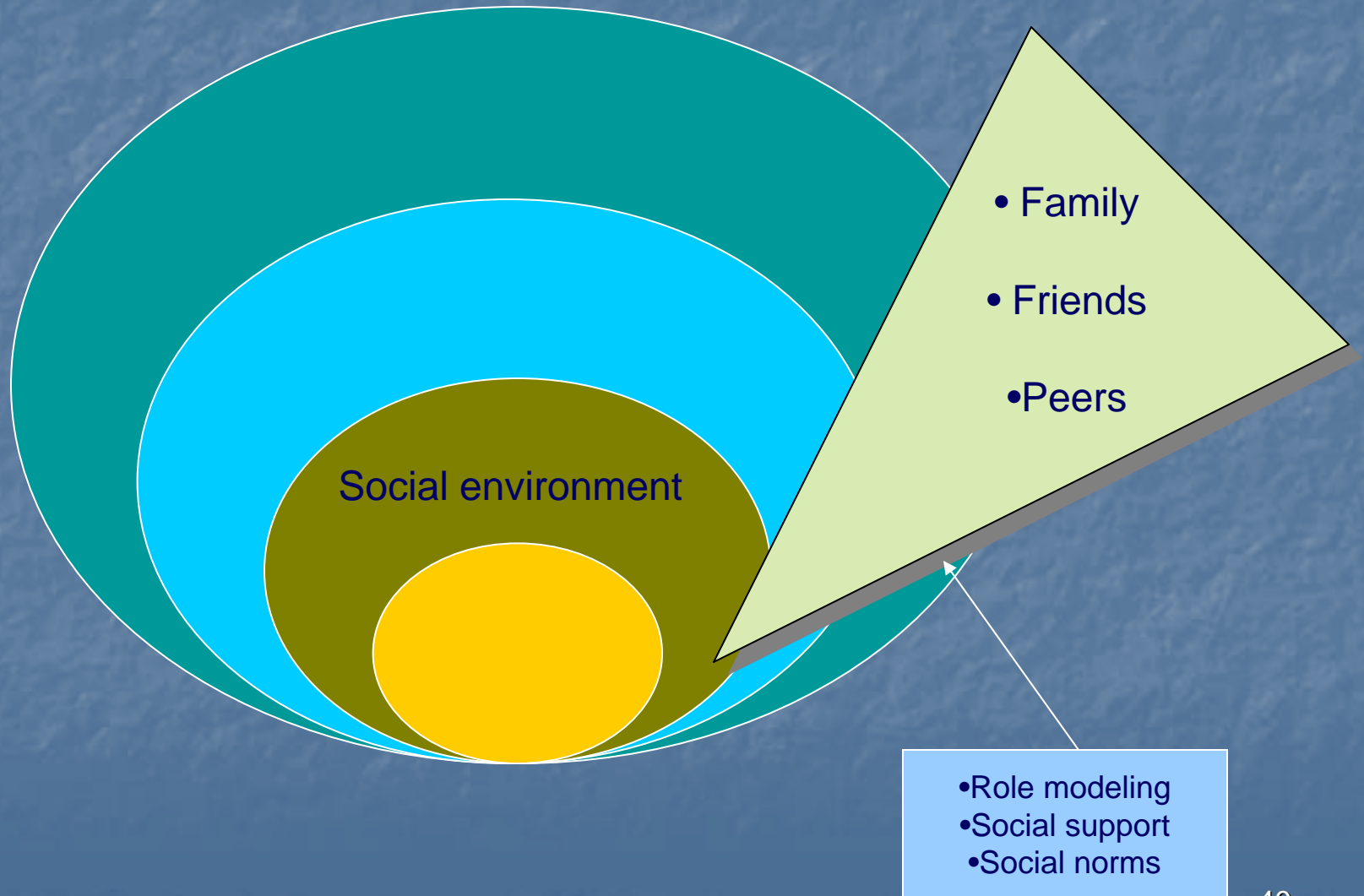
# Purpose

To provide an understanding of perceptions and motivations to reduce dietary sodium across different contexts through an ecological lens

# Ecological View of Influences

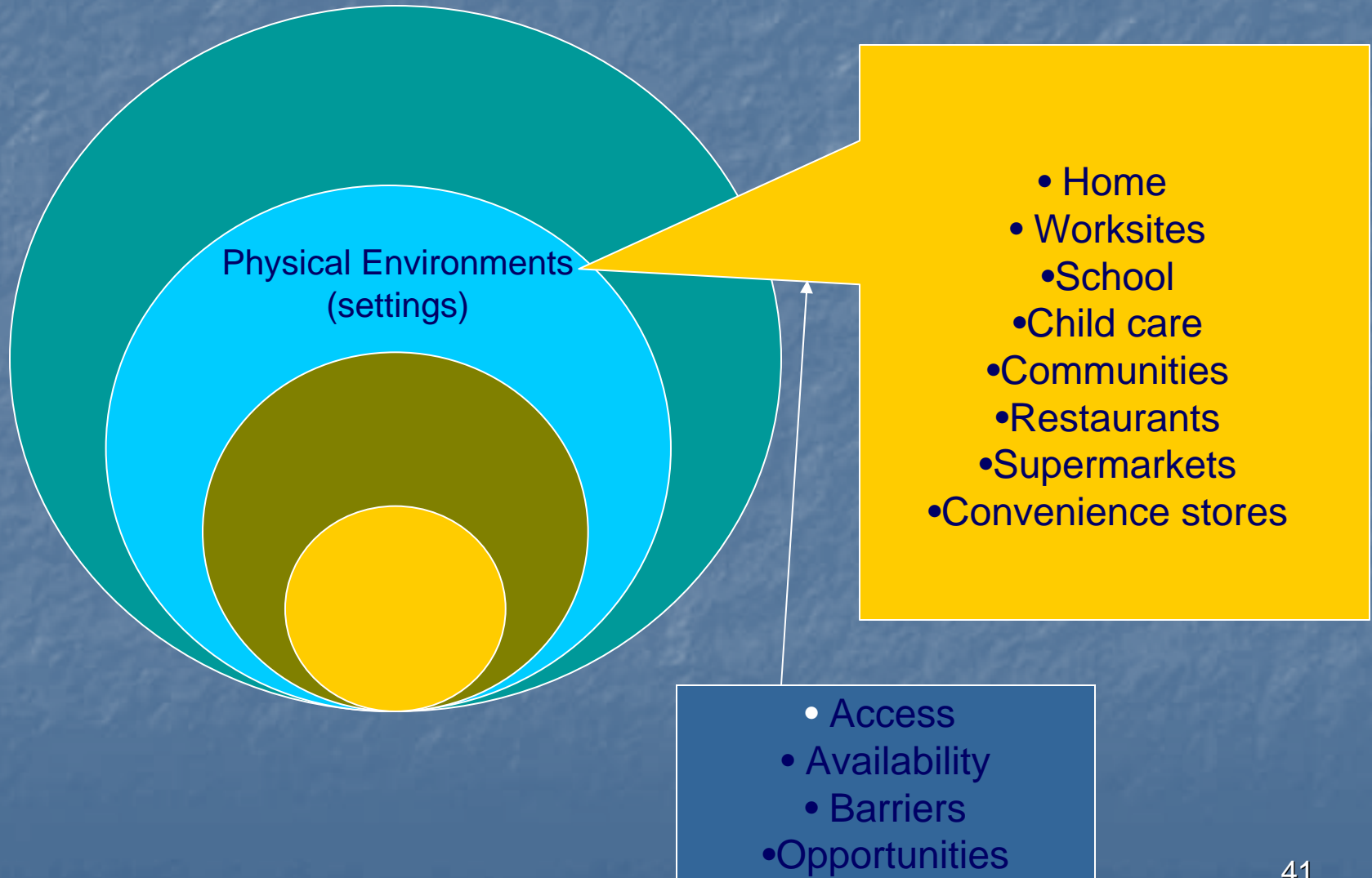


# Influences on Social Environment

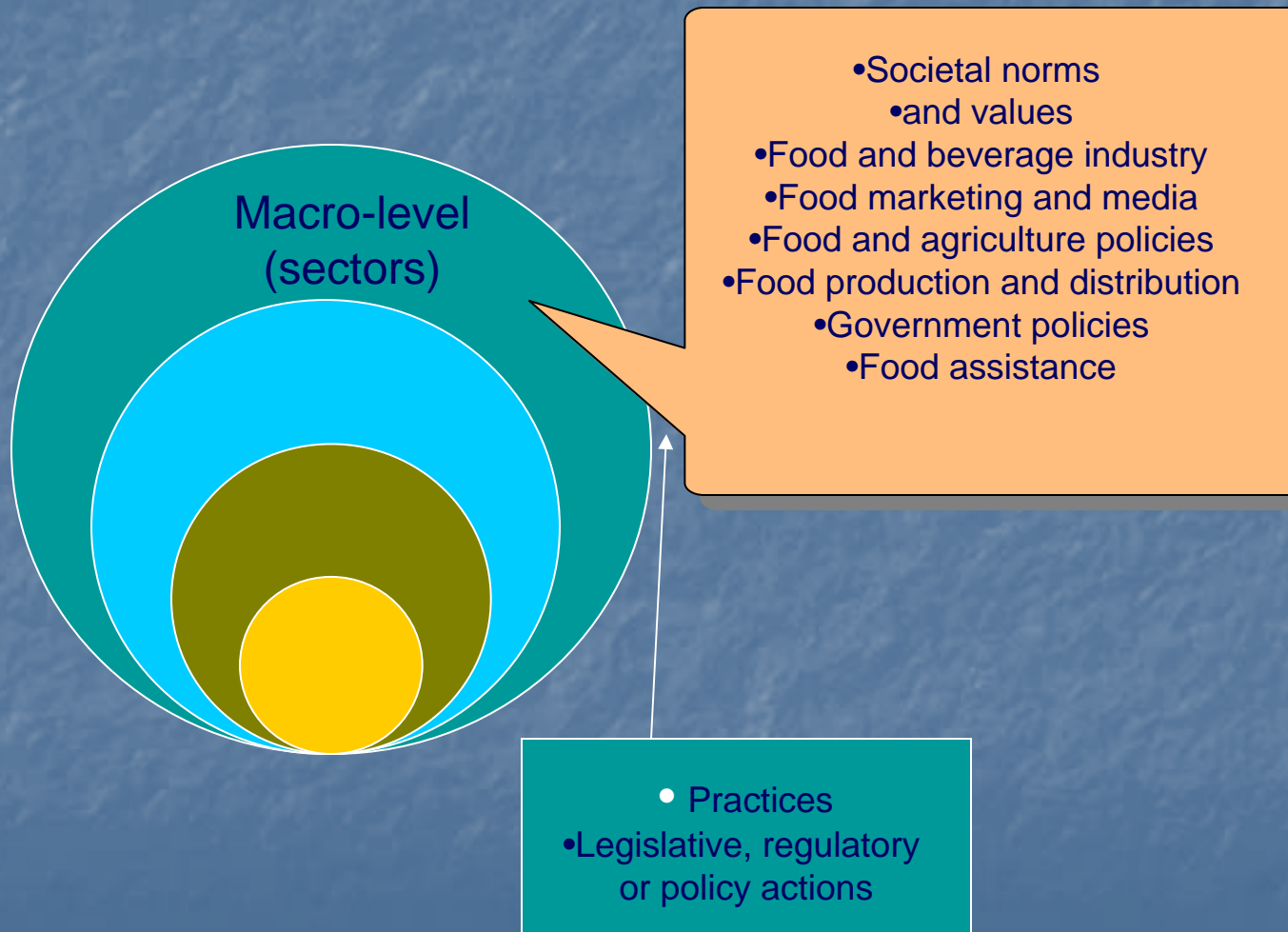




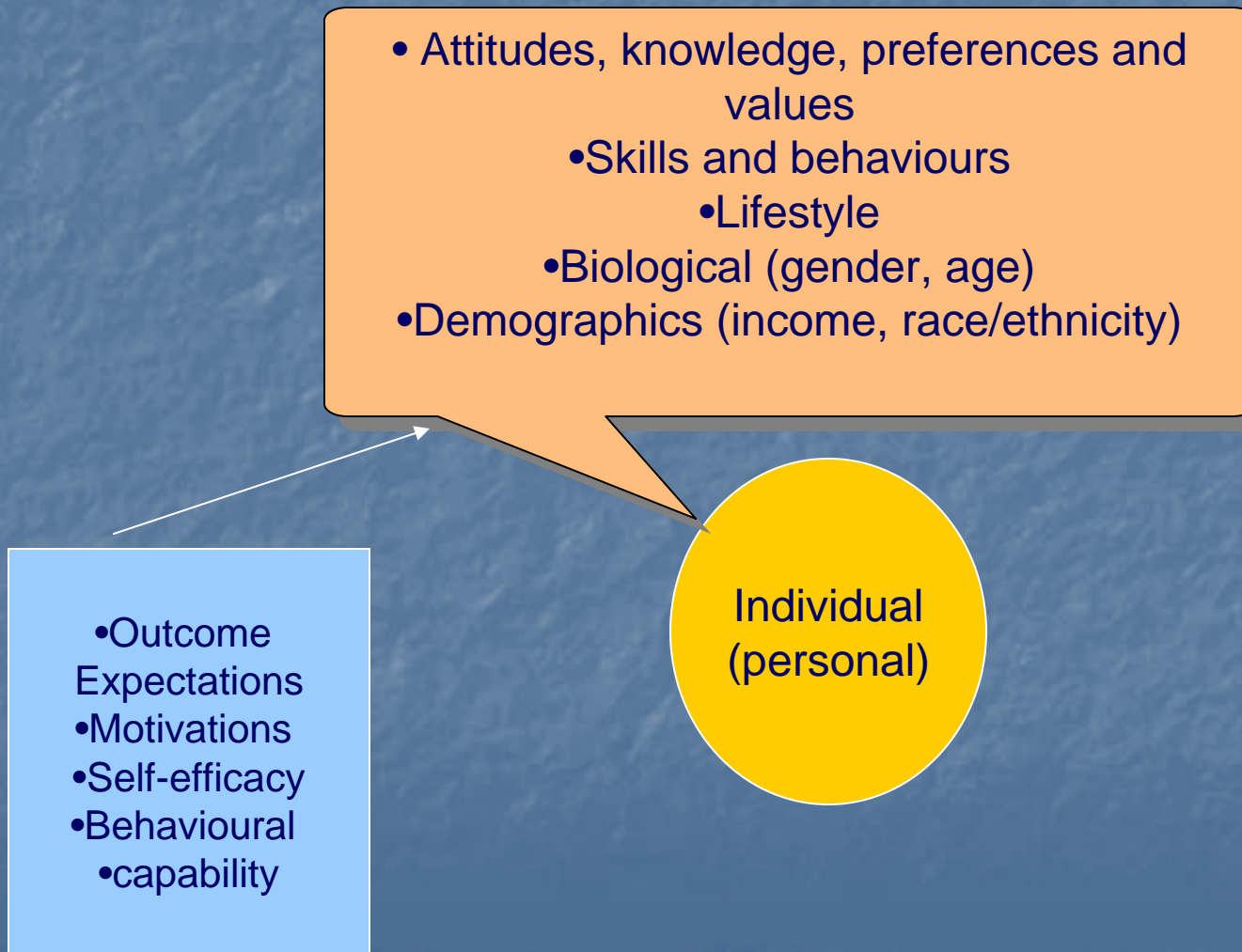
# Physical Environments



# Macro-Level Influence



# Influences on Individual Behaviour



# Study Design

- Comprehensive literature review
- Quantitative
  - TNS Canadian Facts
  - Link with Tracking Nutrition Trends at the Canadian Council on Food and Nutrition
- Qualitative
  - Key informant interviews
  - Focus groups

# Participants

- Consumers – focus on families
- Health care practitioners
  - Community Dietitians
  - Nurses
  - Physicians
- Food producers and researchers
- Policy makers

# Recruitment

- Families through Alberta Health Services –  
Edmonton and Calgary
  - Community Health Centres
  - Primary Care Division
  - Nutrition Services
- Stakeholders in Alberta Food Industry
  - Alberta Agriculture
  - Health and Food Program

# Web-based Survey

- Cross-country survey
- Expand on TNT survey
- Attitudes, knowledge, beliefs and behaviour related to sodium
- 10 minutes to complete
  - 1500 participants in TNT 2008
  - Survey launched April 30<sup>th</sup>
    - 642 responded by May 4<sup>th</sup>
    - Hoping for ~900 by May 7<sup>th</sup>

# Qualitative Data

- Focus groups with families
- 10 focus groups (Calgary and Edmonton)
  - 6 – 8 per group
  - Semi-structured interviews
  - Attitudes, knowledge and beliefs
  - Themes: perceptions of health, nutrition facts panel, familiarity with EWCFG, food choice, barriers and facilitators to reducing sodium



# Health Care Practitioners

- Focus groups with RDs, PHNs, MDs
- Attitudes, skills, knowledge, and self-efficacy
- Themes: perceptions and motivation in delivery nutrition interventions to sodium reduction, barriers to adoption and adherence to reduced sodium in delivery of care

# Stakeholders in Agriculture and Food and Health Sectors

- Semi-structured interviews to determine issues facing different sectors
- Themes: impact of mandatory and optional sodium policy, supply and demand of lower sodium foods, interest and feasibility of producing lower sodium foods, readiness to change, capacity to regulatory mandates



# Timeline

- Three phases: 18 – 22 months
  - Phase I: comprehensive review and development of tools
  - Phase II: Recruitment and interviews
  - Phase III: Data analysis and report writing

# PR Activities

- Radio interviews
- Globe and Mail
- News releases
- Chancellor's Cup – Sodium Shocker Casino

# Value Added

- Add to gaps in the literature for understanding the linkages, the relationships among different factors that may influence perceptions and motivations regarding sodium intake.
- Aid to inform and shape various strategies aimed at reducing sodium intakes of Canadians, dietary guidance messages and product communications

# Linkages

- Sodium Working Group – Health Canada
- Research Group at Blood Pressure Canada
- Co-investigator Champlain Group – Mass Media Campaign to examine knowledge pre- and post-media campaign

# Thank You

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