

# **Improving Public Health in the Americas by Optimizing Sodium and Iodine Intakes**

WHO/PAHO Regional Expert Group for Cardiovascular Disease  
Prevention through Population-wide Dietary Salt Reduction

Report from the Washington DC Meeting  
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## Table of Contents

Key Messages.....	3
Background .....	4
Presentation Summaries.....	6
The evidence for why salt reduction should be implemented at the population level – Norm Campbell.....	6
Recent advances in the prevention of IDD – Ruben Grajeda .....	7
Plans of the ICCIDD for Latin American Countries and Participation of the IRLI Network – Eduardo Pretell .....	10
Reviewing the key recommendations in “Salt as a vehicle for fortification” – Omar Dary .....	12
Update on the Iodine Task Force – Lucie Bohac.....	13
Population salt reduction strategies: activities and plans at WHO Headquarters – Godfrey Xuereb.....	14
Meeting outcomes.....	16
The Way Forward.....	16
Governments .....	16
Salt and food industries .....	17
Consumers .....	18
Conclusions and next steps.....	18
Education and sensitization within agencies.....	18
Engage the international stakeholders.....	18
Discussion and further research on key technical issues .....	19
Engage the salt and food industries .....	19
Prepare for the pilot studies.....	19
Mobilize resources.....	19
Timeline.....	19
References .....	20
Appendix 1: Position Document to Improve Public Health in the Americas by Optimizing Salt and Iodine Intakes .....	22
Appendix 2: Meeting participants and contributors to the Position Document.....	28

## **Key Messages**

In Latin American countries, iodized salt has the potential to secure the sustained elimination of iodine deficiency at the same time that dietary salt consumption is reduced to prevent cardiovascular diseases. Synchronization of programs for salt iodization and dietary salt reduction to achieve a common goal – the optimal intake of sodium and iodine in the Americas – will be cost effective and of great public health benefit.

Lowering dietary salt intake to < 5 g/day is compatible with salt iodization programs based on flexible iodization levels for salt.

Needed at the outset of program coordination are up-to-date and accurate baselines of actual salt (sodium) and iodine intakes and the main sources of dietary salt and iodine (i.e. household iodized salt added at the table and in cooking or other sources), information that is currently lacking in most countries in the Americas.

## Background

An estimated two billion people worldwide live in areas of iodine deficiency [1]. The International Council for the Control of Iodine Deficiency Disorders (ICCIDD) states that among the methods to prevent iodine deficiency disorder (IDD), using salt as a vehicle to deliver supplementary iodine to the diet is most simple, practical and effective [2]. WHO and UNICEF together with ICCIDD recommended in 1996 iodine concentrations in salt that assume an average per capita salt intake of 10g per day [3].

In 2006, the report from a WHO Forum and Technical Meeting responding to the WHO Global Strategy on Diet, Physical Activity and Health recommended that average population level salt intake from all food sources be < 5g per person per day [4]. Salt added to food is a major factor increasing the blood pressure in normotensive and hypertensive people, whether adults or children [5,6,7]. Increased blood pressure is the leading risk factor for death worldwide and the second leading risk for disability by causing heart disease, stroke and kidney failure [8,9].

In 2007 a WHO Expert Consultation on “Salt as a Vehicle for Fortification”, taking into account both the status of IDD and the evidence of harmful effects of high salt diets, emphasized the need for and benefits of collaboration between salt iodization and dietary salt reduction programs [10]. Among its recommendations –

Policies for salt iodization and reduction of salt to < 5 g/day are compatible, cost effective and of great public health benefit. At the country level, close collaboration between salt iodization and salt reduction programs as a coalition is urgently required so that their aims are congruent.

The level of iodine fortification needs to be adjusted by national authorities responsible for the implementation and monitoring of universal salt iodization in light of their own data regarding dietary salt intake. The average national level of salt consumption must provide key guidance for the concentration of iodine in salt.

Most recently, with dietary salt reduction mobilizing in the Americas, the PAHO/WHO Regional Expert Group guiding the initiative indicated in its 2009 Policy Statement [11] that

Salt intake can be reduced without compromising micronutrient fortification efforts. National governments are to review national salt fortification policies and recommendations to be in concordance with the recommended salt intake [national targets or in their absence, the internationally recommended target of < 5 g/day/person by 2020].

And the Iodine Network, in a resolution dated February 20, 2009 stated

BE IT FURTHER RESOLVED THAT the World Health Organization is urged to share with the Network Board any data, when and if it becomes available, about the achievement of salt reduction in various countries and its projected trends of salt consumption to inform Board discussion and national salt iodization programs to enable ongoing efforts to calibrate iodine fortification levels to ensure appropriate population iodine intakes.

Following up on the 2007 WHO Expert Consultation and the recommendations from 2009 of the PAHO/WHO Group for dietary salt reduction and the Iodine Network, PAHO convened a small group of technical experts and some stakeholders in both IDD prevention and dietary salt reduction programs on 3-4 January 2011 in Washington DC. They agreed that they hold a goal in common – the optimal intake of sodium and iodine in the Americas. The group then drafted objectives, expected results and a background document for a subsequent meeting involving an expanded group of experts and stakeholders in both programs to facilitate a broader collaboration and to define the next steps needed to advance the synchronization of dietary salt reduction and salt iodization programs in the region.

The larger group of stakeholders met in Washington DC on 31 March and 1 April 2011. The background material became the basis for a Position Document and Framework for Collaborative Action. Their meeting objectives and outcomes were as given below.

Objectives:

1. Define the common ground for simultaneous salt iodization and salt reduction initiatives and discuss a draft position document.
2. Agree to a Framework for Collaboration/Coordination
3. Define next steps to operationalize the Framework

Outcomes:

1. A Position Document that reflects areas of collaboration/coordination
2. A Framework for Collaborative Action
3. Discussion on next steps in IDD (salt iodization) and dietary salt reduction for the Americas region

On day one of the meeting, presentations brought the participants up to date on both topics of dietary salt reduction and salt iodization. They included: the evidence for why salt reduction should be implemented at the population level; recent advances in IDD prevention; plans for the ICCIDD for Latin America and participation in the International Resources Laboratories for Iodine Network (IRLI); review of the 2007 recommendations in “Salt as a Vehicle for Fortification”; an update on the activities of the Iodine Task Force; and the WHO (global) activities on salt intake reduction. The day concluded with a guided discussion toward defining the common ground for collaboration between salt iodization and dietary salt reduction programs to be stated in the Position Document expected as a meeting outcome.

On day two, participants were divided into three groups to prepare responses to a draft version of a *Position Document to Improve Public Health by Optimizing Sodium and Iodine Intakes* that included a Framework for Collaborative Action. They also worked out several next steps to operationalize the components of the Framework, oriented at governments, consumers/the public and the salt and food industries.

NB For the purpose of this document, the word **salt** is used to refer to **sodium** and **sodium chloride**.

## **Presentation Summaries**

### ***The evidence for why salt reduction should be implemented at the population level – Norm Campbell***

- In 2009 WHO reported high blood pressure (systolic >115 mmHg) as the leading single risk factor for death [12]. Its impact on vascular diseases is profound, attributed to 60-70% of strokes, 50% of heart failures, 25% of heart attacks, 20% of kidney failures and is associated with dementia due to cerebrovascular damage.
- Blood pressure is well known to rise with age in modern industrialized societies. The US Framingham Heart Study reported in 2002 that men and women 55 to 65 years of age who were non-hypertensive had an estimated lifetime risk of 90% of becoming hypertensive [13]. In societies where people eat unprocessed foods, are physically active and lean, they do not develop hypertension [14].
- A vast and conclusive body of evidence, ranging from animal studies, migration studies, epidemiological studies (cross sectional and cohort, examining hypertension and vascular disease), clinical trials, and meta-analyses points out the relationship between salt intake, hypertension and vascular disease. A Cochrane review in 2006 concluded that even a modest reduction in salt intake for a duration of four or more weeks has a significant effect on blood pressure in individuals who are normotensive as well as in those with elevated blood pressure. The meta-analysis is consistent with other findings where the lower the salt intake, the lower the blood pressure [15].
- If dietary salt were reduced to recommended levels, hypertension prevalence is estimated to decrease by 30%. Even small reductions in blood pressure can lower mortality rates for stroke and coronary heart disease [16]. If dietary salt were reduced by even 15% worldwide over 10 years, an estimated 8.5 millions deaths could be averted. In the US, if salt intake fell to 3g/day/person, in one year between \$10 and \$30 billion could be saved, there could be up to 260,000 fewer cardiovascular disease events and up to 90,000 fewer deaths. In low and middle-income countries, reducing dietary salt is slightly more cost effective than smoking reduction.

- A high salt diet is also a probable cause of gastric cancer, and has possible associations with osteoporosis, calcium containing renal stones and increased severity of asthma. Because salty foods cause thirst they are likely an important contributor to obesity among children and adolescents through association with increased consumption of high-calorie soft drinks [6,17].
- People are generally unaware of their own level of salt consumption. With few exceptions, average consumption is over 5.8g/day after age 5 and for many, intake is over 10g/day. In developed economies about 80% of the salt consumed is added during food processing while in less developed economies, most of the salt consumed is discretionary, added at the table and in cooking. In countries undergoing nutrition transition, there is a shift in the main sources of dietary salt, from discretionary use to the “hidden” salt in processed foods as they become increasingly available to consumers [18].
- Salt intakes around the world are much higher now than the physiologic levels that supported human evolution. The current levels are linked to major causes of death and disability worldwide. Reducing dietary salt is estimated to be one of the most effective and cost effective public health interventions [19].

### ***Recent advances in the prevention of IDD – Ruben Grajeda***

- Iodine is an essential component of the hormones produced by the thyroid gland. Thyroid hormones regulate many key biochemical reactions, especially protein synthesis and enzymatic activity. Major target organs are the developing brain, muscle, heart, pituitary, and kidney.
- Severe iodine deficiency in pregnancy can cause hypothyroidism, poor outcomes of pregnancy (spontaneous abortion and stillbirth), cretinism and in some countries is a major cause of irreversible mental retardation.
- Mild to moderate iodine deficiency in utero and in childhood results in less severe learning disability, poor physical growth and diffuse goiter.
- In adults, mild to moderate iodine deficiency appears to be associated with higher rates of more aggressive sub-types of thyroid cancer and increases the risk for non-toxic and toxic nodular goiter and associated hyperthyroidism.
- Worldwide two billion people have insufficient iodine intake from their usual diet. In the Americas 98 million people are estimated to have insufficient iodine intake. In 2006, the Americas had the lowest global prevalence of insufficient iodine intake at 10%. Between 2003 and 2006, the rate in the Americas was stable while in other WHO regions it fell [20,21].
- Strategies/options to prevent IDD include fortification of salt, bread, water and milk, and iodine supplementation. Salt iodization is the most cost effective intervention to prevent IDD. Recommended intakes are standardized by age and population group [22]

**TABLE 1.** Recommendations for iodine intake ( $\mu\text{g}/\text{d}$ ) by age or population group

Age or population group	IOM		Age or population group	WHO RNI
	EAR	AI or RDA		
Infants 0–12 months		110–130	Children 0–5 yr	90
Children 1–8 yr	65	90	Children 6–12 yr	120
Children 9–13 yr	73	120		
Adults $\geq 14$ yr	95	150	Adults >12 yr	150
Pregnancy	160	220	Pregnancy	250
Lactation	200	290	Lactation	250

IOM, Ref. 8; WHO, Ref. 54.

**TABLE 2.** Epidemiological criteria from the WHO for assessment of iodine nutrition in a population based on median or range of UI (Refs. 4 and 54)

UI ( $\mu\text{g}/\text{liter}$ )	Iodine intake	Iodine nutrition
School-aged children		
<20	Insufficient	Severe iodine deficiency
20–49	Insufficient	Moderate iodine deficiency
50–99	Insufficient	Mild iodine deficiency
100–199	Adequate	Optimum
200–299	More than adequate	Risk of iodine-induced hyperthyroidism in susceptible groups
>300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)
Pregnant women		
<150	Insufficient	
150–249	Adequate	
250–499	More than adequate	
$\geq 500^a$	Excessive	
Lactating women <sup>b</sup>		
<100	Insufficient	
$\geq 100$	Adequate	
Children less than 2 yr of age		
<100	Insufficient	
$\geq 100$	Adequate	

There is no information about iodine nutrition for pregnant and lactating women in the WHO assessment table, and the upper limits of the median UI for lactating women and children less than 2 yr of age were not specified.

<sup>a</sup> The term excessive means in excess of the amount needed to prevent and control iodine deficiency.

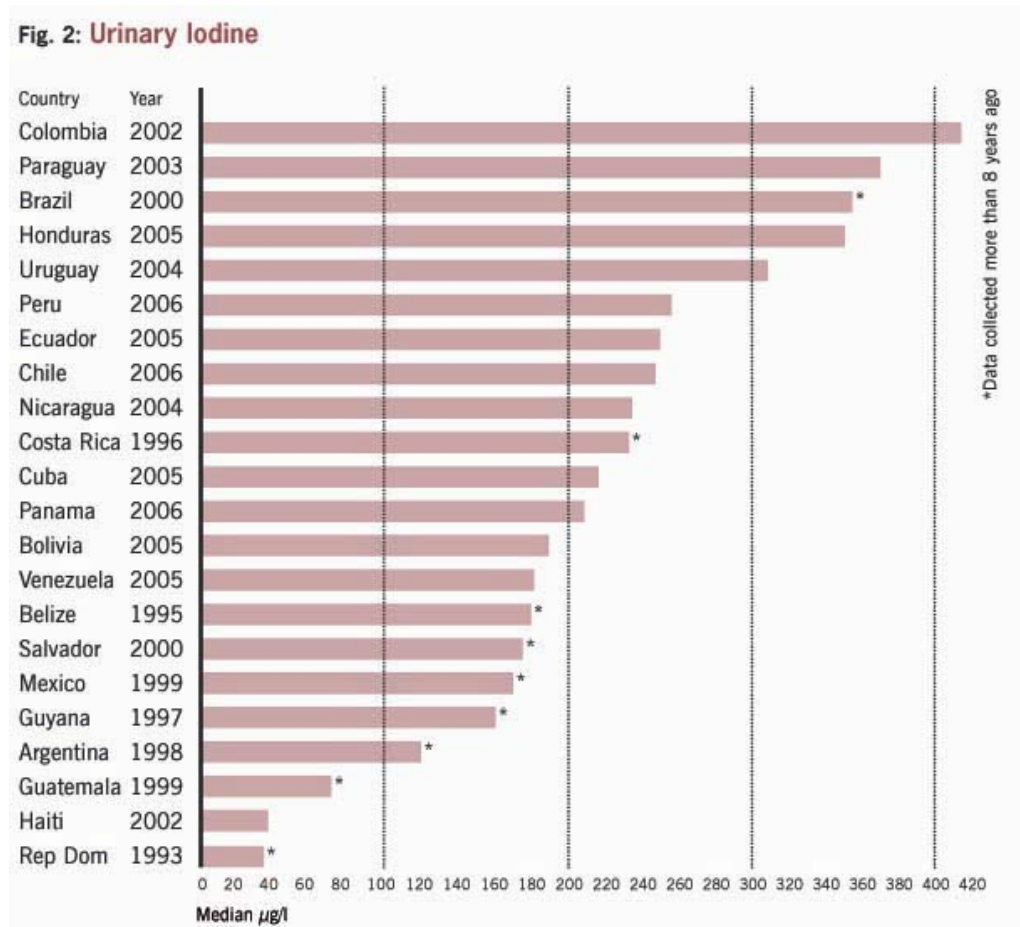
<sup>b</sup> In lactating women, the numbers for median UI are lower than the iodine requirements because of the iodine excreted in breast milk.

- There are several methods to assess iodine status: thyroid size (a population's history of iodine nutrition and its present status); urinary iodine concentration (indicator of recent iodine intake); level of thyroid stimulating hormone (useful



biomarker in neonates, pregnant and lactating women); thyroglobulin (useful marker in children and adolescents); and thyroid hormone concentration.

### Iodine Excretion in School-age Children in Latin American Countries [20]



- Excess iodine intake induces hypothyroidism, autoimmune thyroiditis with chronic hypothyroidism and hyperthyroidism after long-standing iodine deficiency (producing goiters).
- In Latin America countries, universal salt fortification has been shown to be effective in preventing IDD. In some countries, urinary iodine concentration suggests an excess of iodine intake (in school children indicated by urinary iodine greater than  $300\mu\text{g/l}$ ); in some it is so high that iodine fortification concentrations and salt consumption must be reviewed and adjusted appropriately.
- In the US, even though iodine status is adequate, pregnant women are at high risk of iodine deficiency just as are women in other developed economies [23].

- Salt iodization programs should be monitored and evaluated to assure adequate iodine intake.

***Plans of the ICCIDD for Latin American Countries and Participation of the IRLI Network – Eduardo Pretell***

- In Latin American countries, with improvements in the production and monitoring of iodized salt, salt as a vehicle for iodine has the potential to secure the sustained elimination of IDD at the same time that dietary salt consumption is reduced to prevent cardiovascular diseases.
- Most countries in Central and South America and the Caribbean along with Mexico have official IDD control programs with the exception of Belize, Argentina and Guyana (uncertain in Haiti). Where programs exist, coverage with the household use of iodized table salt is 100% except for Guatemala (60%), the Dominican Republic (78%) and Bolivia (94%).
- Rudimentary technology to produce iodized salt remains an obstacle to the provision of good quality iodized salt in many countries in Latin America. In about half of the countries, small/medium scale producers provide all the iodized salt. In Guatemala for example, only 43.5% of the iodized salt at production level contained 30-60 ppm of iodine and at retail, 64% of iodized salt had >15 ppm. In Mexico, where small/medium scale producers account for 17% of iodized salt, only 54% of their products were found to have >15 ppm whereas 96% of the iodized salt supplied by large producers (83% of total iodized salt production) had >15 ppm.
- Across Latin American countries, the presence of salt with  $\geq 15$  ppm iodine at the retail/household level can vary from less than 5% in Haiti (2006) to 100% in Uruguay (2006).
- The resource laboratory for Latin America that is part of the International Resource Laboratories (IRLI) Network is in Lima Peru – the Laboratory of Endocrinology at the High Altitude Research Institute at Cayetano Heredia Peruvian University. The IRLI laboratories' main activities are quality assurance of laboratories for urinary iodine, technical support to improve their capacity for diagnosis and monitoring, and the processing of urine samples (surveys, research) as requested by countries.
- In 2006 the Peru resource laboratory was at that time able to provide technical support to laboratories in Argentina, Bolivia, Brazil, Chile, Costa Rica, Cuba, El Salvador, Mexico, Panama, Paraguay and Uruguay. Six professionals from Argentina, Brazil, Cuba and Mexico were trained and supported to set up laboratories.

- There were 25 registered laboratories in Latin American countries in 2006 but only 15 were operative, listed below. An inter-laboratories assay run from 2003 to 2006 showed 12 out of 21 participating laboratories to have made significant progress.

#### **Laboratories processing iodine in urine**

- Centro Nacional de Investigaciones Nutricionales. Salta, Argentina
  - Instituto Nacional de Laboratorios de Salud. La Paz, Bolivia
  - Centro de Investigación y Desarrollo de Tecnología de Alimentos. Santa Cruz, Bolivia
  - Instituto de Nutrición y Tecnología de los Alimentos, Univ. de Chile. Santiago, Chile
  - Instituto Nacional de Salud. Bogotá, Colombia
  - Inst. Costarricense Nutr & Enseñanza Nutr y Salud. MOH. San José, Costa Rica
  - Instituto de Nutrición e Higiene de los Alimentos, MOH. La Habana, Cuba
  - Laboratorio de Yodurias. MOH. Quito, Ecuador
  - Laboratorio de Bioquímica. INCAP. Guatemala, Guatemala
  - Lab Central de Referencia de Estudios en Salud Pública. Panamá
  - Instituto Nacional de Alimentación y Nutrición. Asunción, Paraguay
  - Laboratorio de Micronutrientes. Fac Ciencias y Filosofía, UPCH. Lima, Perú
  - Centro Nacional de Alimentación y Nutrición, MOH. Lima, Perú
  - Fac. Química. Univ. Rep. Oriental del Uruguay. Montevideo, Uruguay
  - Dep. Bioquímica, Universidad de los Andes. Mérida, Venezuela
- Regular monitoring of iodine nutrition is not carried out in all countries. In half of the countries with data on urinary iodine levels since 2005, the median  $\mu\text{g/l}$  ranges from approximately 190  $\mu\text{g/l}$  to 440  $\mu\text{g/l}$  (Paraguay, Honduras, Peru, Ecuador, Chile, Cuba, Panama, Bolivia, Venezuela). In countries with data before 2005, the urinary iodine levels were found to range from about 40  $\mu\text{g/l}$  (Dominican Republic in 1993) to about 420  $\mu\text{g/l}$  (Columbia in 2002).
  - At this time, ICCIDD is mainly pursuing the improvement of the quality of iodized salt, the implementation of effective monitoring and reporting systems, and sustained communication and education. A regional meeting is planned for 1-2 August 2011 in Lima Peru with the following agenda:
    - discussion of the IDD control programs in each country
    - how to improve the capacity and responsibility of the salt industry
    - importance of optimal iodine nutrition in early life
    - implementation of WHO recommendations
      - securing the elimination of IDD by USI strategy
      - reduction of salt consumption (sodium) to prevent cardiovascular disease
    - current and future role of Agencies and NGOs

- Reaching the above objectives will facilitate the implementation of programs for dietary salt reduction.
- Starting pilot studies to reduce dietary salt without risking optimal iodine intake could be considered in one or two countries where effective IDD programs are implemented. This will require the collaboration/integration/coordination of various stakeholders in both salt iodization and salt reduction programs including ICCIDD given its network of volunteer experts/focal points in almost all Latin American countries.

***Reviewing the key recommendations in “Salt as a vehicle for fortification” – Omar Dary***

- Safe, efficacious and sustainable programs for salt iodization and dietary salt reduction require the involvement of several sectors and many players within each of them in a logical sequence where a clear separation of roles is important as is transparency of what each sector and its players are contributing. This is particularly relevant with regards to the salt and food industries whose participation is essential and at the same time needs to be specifically defined.
- Currently the use of iodized salt in food processing is not consistent across countries in the Americas. A potential approach to make universal the use of iodized salt would have the following sequence. Nutritionists and researchers would first complete the scientific and epidemiological assessments of the appropriate sodium and iodine ratios needed in a country, and governments would then prepare the national policies and strategies with corresponding standards/regulations. The “premix” manufacturers (in the case of salt iodization) could then respond with production of micronutrient premixes that the food industries incorporate into their production processes. The salt and food industries also have a role, working collaboratively with governments, in social marketing and public education on what constitutes healthy intake of sodium and iodine.
- There were 19 recommendations in the 2007 document “Salt as a vehicle for fortification” [9]. The current initiative to realize a collaboration between salt iodization and dietary salt reduction programs provides an opportunity to analyze why the recommendations have not been implemented and at the same time it poses an important challenge – to critically examine what has been achieved with salt iodization programs and the bases on which they have been judged to be safe and successful.
- Analyzing one recommendation – “the iodine concentration in salt should be determined considering both the level of salt consumption and median urinary iodine (UI) of the population” – introduces a number of issues:
  - While UI is found to be sufficient in various regions in a country, the concentration of iodized salt (table salt) and its availability (indicators of IDD program effectiveness) by region do not correspond, in some cases,

suggesting inadequate intake. Conversely, high quality iodized table salt is readily available while UI is found to be insufficient, particularly in vulnerable groups (pregnant and lactating women).

- The dietary sources of salt vary. While household salt is iodized, salt used in food manufacturing may not be; the use of iodized salt in processed foods is not currently measured or monitored. Where processed foods made with un-iodized salt are the main source of salt in the diet (while household table salt intake is relatively low), there is risk of iodine deficiency. Hence salt reduction and salt iodization policies must vary from country to country based on food consumption patterns.
- The extent to which natural sources of iodine are present in the diet and the use of iodine supplements (or not) need to be considered.
- There is still much to learn about UI levels e.g. how to adjust for urine volumes. Collaboration between salt iodization and salt reduction programs has potential to accelerate a better understanding of UI as an indicator of the effectiveness of salt iodization programs.

### ***Update on the Iodine Task Force – Lucie Bohac***

- The Iodine Task Force (ITF) operates under the IDD Network umbrella. A Steering Group with WHO, UNICEF and ICCIDD helps to assure that the work is aligned with and feeds into the systematic review on salt iodization and also feeds into a revision of field-appropriate program guidelines.
- A Management Group (A. Timmer, J. Gorstein, F. van der Haar, L. Bohac) is responsible for day-to-day management, defines structures and processes, coordinates background research, supports five technical working groups, and is responsible for communication and logistic support.
- The five working groups comprise experts in the various areas from within and outside the Network member organizations. Their responsibilities are:
  - WG 1 – establishment of salt iodization standards to achieve optimal iodine intake
  - WG 2 – collection and interpretation of data on iodine status
  - WG 3 – collection and interpretation of iodine content in household and food industry salt
  - WG 4 – other iodine interventions
  - WG 5 – goal and program indicators
- The Task Force was conceived in April 2010 and was underway by September 2010. Each WG is led by a nominated focal point and consists of five to seven subject matter specialists. Each has set its expected outputs on a time trajectory. The groups will converge on a joint draft final report due at the end of May 2011.
- Linkages to salt intake reduction initiatives depend on the elements of national strategies, whether there are:
  - standards and norms affecting the supply of household salt

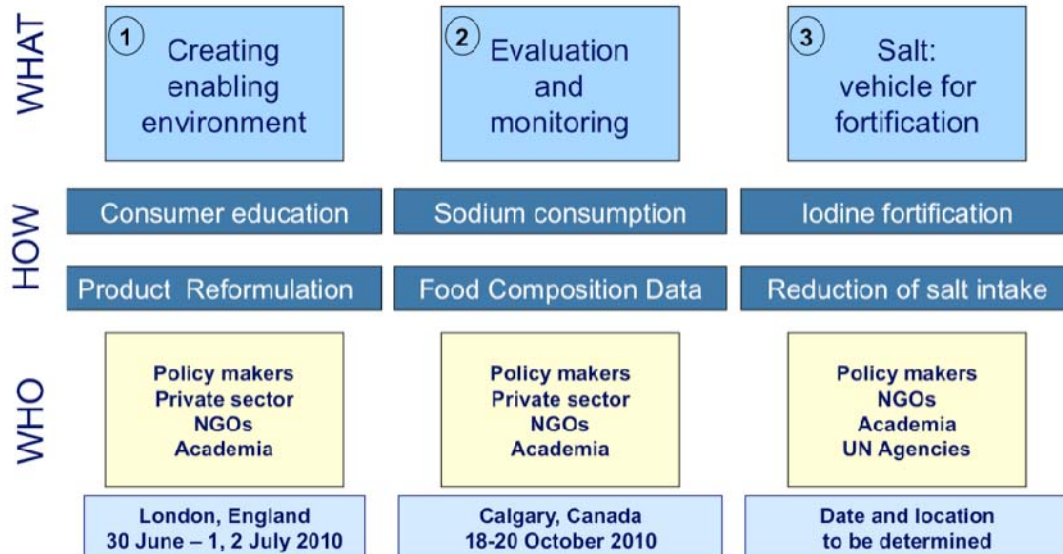
- legislation concerning the salt supply to food manufacturing industry
- legislation affecting the combination of the salt supply channels (households, food industry & livestock)
- programs based on diverse and/or multiple food supply channels:
  - USI (whole population) and/or iodine supplements (target groups) in combination with
  - specialized foods containing iodine e.g. for different age groups (6-24/59 months, pregnant and lactating women, women of child bearing age, adolescent girls), for different contexts (humanitarian response, food insecure areas, development areas) and with different objectives (reduce stunting, prevent micronutrient deficiencies, address moderate acute malnutrition, improve nutrient intake and complementary feeding) and/or
  - spontaneous fluctuations in salt or iodine intake e.g. special events/circumstances requiring adjustment such as high iodine intake from natural sources and natural sodium intake fluctuations.
- There are several opportunities for collaboration between the salt iodization and salt reduction programs, e.g. using each other's expertise and outcomes. Going forward, it is essential to preserve the benefits of collaboration by using realistic projections of national achievements from each policy. USI strategies (standards) have to adjust according to achievements made from national salt intake reduction policies. Programs need to work collaboratively in the monitoring of progress.

***Population salt reduction strategies: activities and plans at WHO Headquarters – Godfrey Xuereb***

- Of the six objectives in the 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases, directly relevant to dietary salt reduction is “reducing and preventing risk factors”. Under each objective are sets of actions for Member States, a WHO Secretariat and international partners.
- The WHO population salt reduction strategy has three platforms. Platform 1 – Create enabling environments – was organized jointly with the UK FSA in the summer of 2010. There was an information exchange forum with the private sector and NGOs on population-based salt reduction strategies followed by a technical meeting.
- Platform 2 was organized jointly with the Government of Canada (Health Canada) in the fall of 2010. It was also an information exchange forum with the private sector and NGOs followed by a technical meeting, both on strategies to monitor and evaluate population sodium consumption and sources of sodium in the diet.

- Platform 3 intends to bring together dietary salt reduction and salt fortification with iodine, to facilitate the coordination of the two strategies.

### WHO Population Salt Reduction Strategy



- In the meantime, a Nutrition Guidance Expert Advisory Group (NUGAG) is considering evidence that suggests lower sodium intake (1.2g/day) may confer additional health benefits (compared to the current guideline of <2g sodium or <5g salt/day), and is undertaking systematic reviews of literature to answer two priority questions:
  - What is the effect of reducing sodium intake to 1.2 g/day versus 2 g/day on blood pressure and incidence of stroke, coronary heart disease, and cardiovascular disease in hypertensive and non-hypertensive adults?
  - What is the effect of reducing sodium intake to the equivalent of 2g/day (based on caloric intake) versus > 2g/day on blood pressure in children?
- Also under consideration, at the request of CODEX, is potassium consumption for the general population, suggested by evidence to have health benefits, for which WHO does not have a current guideline/optimal level. Systematic reviews of literature currently underway are seeking to answer the question:
  - What is the effect of consuming  $\geq 90$  mmol/day of potassium versus < 90 mmol/day on blood pressure and incidence of stroke, coronary heart disease and cardiovascular disease in hypertensive and non-hypertensive adults?
- NUGAG is also updating a Cochrane systematic review from 2002 to answer – is salt iodization safe and effective for reducing IDD? Subgroups to be examined are: by age (<59 months, 5-12 years, women of reproductive age, pregnant women); population salt consumption (<5, 5-9.9, 10-14.9,  $\geq 15$ g/day); iodine

consumption based on urinary iodine excretion; concentration of iodine in salt (<20, 20-40, >40ppm); and availability of iodized salt (household only, processed foods only, USI, unknown).

- NUGAG will have draft recommendations based on the findings from all reviews at a November 2011 meeting.

## **Meeting outcomes**

### ***The Way Forward***

- Meeting participants responded to the background document prepared by the group that met in January 2011. It became the Position Document, see Appendix 1.
- Meeting participants prepared responses to five questions to inform the way forward with governments, the salt and food industries and consumers:
  - What arguments should be used to promote a common view as well as national ownership (for dietary salt reduction and improving iodine status)?
  - What information is needed to be convincing, and how to get it and present it?
  - What messages and attitudes should be avoided because they may hinder plans and intentions? What is still needed to overcome internal discrepancies?
  - Who should make contact with the sector, when and how?
  - What is the sequence of activities, where and at what level (regional, sub-regional, national)?

### **Governments**

- The essential starting point to influence governments is evidence-based reviews developed through international collaborations of researchers mobilized and supported by WHO, PAHO, ICCIDD and UNICEF. With the lead agencies committed to collaboration and scientific reports ready, clear and simple messages, oriented for regional collaboration and avoiding directive approaches, can be distilled from the science such that if change is expected, solutions are obvious and allow for tailoring to suit national contexts to minimize political and public anxieties about re-balancing sodium and iodine intakes. Then on a country level, researchers and academics can be mobilized to prepare local evidence to build the case for a national initiative. They, together with representatives of the international agencies and local partners in various sectors in the country e.g. associations of health professionals, civil society leaders, NGOs, consumer associations, can as a coalition present the case for coordinated salt reduction and salt iodization (or alternatives for the latter) to national policy and decision makers.



- Essential for a coordinated response by the salt and food industries to achieve the optimal intakes of sodium and iodine is a sequence of actions to level the playing field for both the salt producers and food manufacturers. It begins with an enhancement of existing national regulatory frameworks that currently govern the prevention of IDD through salt iodization, that being regulation to require universal salt iodization (USI) and the universal requirement for food manufacturers to use it where not currently in effect. This would be followed by an examination of food import and export policies to ensure their congruence with the mandatory requirement for iodized salt in food products.
- As salt and iodine intakes are rebalanced, governments need to monitor both the intake levels of sodium and iodine along with the concentrations of iodine in salt and of salt in food products. Evaluations of progress need to be transparent and apply methods and indicators that are valid and reliable.
- Important to knowledge transfer is documentation of pilot projects and case studies to feature lessons learned and demonstrate the successful recalibrations of iodine to salt ratios and harmonization of salt reduction and salt iodization programs.

### **Salt and food industries**

- With the fundamental requirement for USI made mandatory, where the iodine to salt density ratio is based on total average salt intake of less than 5g/day/person, the opportunity arises for food manufacturers to adopt a standardized salt/sodium content target for their food products, e.g. mg Na/kcal value of the food, to deliver optimal iodine and sodium levels together. Where voluntary reformulations to reduce salt content by the food industry are protracted, and given the critical public health importance of recalibrating the iodine to salt ratio to reach the optimal intakes of both, governments can consider regulating a salt/sodium density to advance the progress of both programs.
- Essential to constructive engagement of the salt and food industries (the latter comprising food manufacturers and food service establishments) is an emphasis on positive outcomes – the reassurance that public agencies (governments, NGOs, civil society) are prepared to increase public awareness, in particular among vulnerable groups, of the benefits of combined optimal intakes of sodium and iodine and increase consumer demand for products that are in line with intake targets. Healthier foods should not have a negative impact on sales (if marketing and pricing policies are supportive) and the scientific evidence confirms that a range of iodine concentrations in salt makes no taste difference to consumers and people can adapt to lower salt content in relatively short time periods.
- Corporate leadership among the salt and food industries, especially with champions or umbrella associations, to coordinate the reduction of salt content of food products while retaining appropriate iodine fortification levels can accrue

efficiencies to both industries. Governments need to be ready to congratulate the successes and where necessary provide technical and economic support to e.g. small salt producers to improve their supply of a consistent quality of iodized salt.

## **Consumers**

- Avoiding mixed messages is crucial. Public education to raise awareness and where necessary change behavior is essential, to disseminate the information on the positive health effects of optimal intakes of both sodium and iodine, why dietary salt needs to be reduced while iodine intake needs scrutiny especially among specific populations such as pregnant and lactating women and school age children, and where salt is added at the table and in cooking, that it should be iodized.
- Where processed foods are or are becoming the main sources of salt in the diet, consumers need to become aware that they can demand control of their salt intake to keep it optimal for their health. Most currently available processed and pre-prepared foods have excessive amounts of salt/sodium that is added before the product is sold.
- The engagement of experts in consumer behavior, to design and evaluate information campaigns, is important to ensure as much as possible that messages are clear and understood, are context specific i.e. take into account whether the main sources of salt in the diet are discretionary salt use or processed and pre-prepared foods, and that vulnerable populations are being reached effectively.
- It is important for healthcare professionals to be well informed to reinforce the public education campaigns with consistent messages and advice.

## **Conclusions and next steps**

### ***Education and sensitization within agencies***

- Agencies involved in salt iodization and dietary salt reduction programs should ensure that staff is educated on the intersection of the programs and sensitized to the potential for unintended conflicting advocacy and education messages.

### ***Engage the international stakeholders***

- Once the currently involved stakeholders (ICCIDD, MI, ITF, CDC) endorse the Position Document, PAHO will approach UNICEF for its endorsement. Other stakeholders to be approached are e.g. the Inter American Heart Foundation and Latin American Societies for Nephrology and Hypertension.
- WHO Headquarters Platform III meeting on iodine fortification will likely be attached to the upcoming NUGAG meeting in Korea on 28 November – 2 December 2011.

### ***Discussion and further research on key technical issues***

- A number of key technical issues require further thought and discussion and possibly research, involving technical sub-groups of experts, one example being the selection of target groups in the case of concurrent sodium and iodine intake surveillance.

### ***Engage the salt and food industries***

- As soon as all key stakeholders endorse the Position Document, the salt and food industries can be engaged as broadly as possible, including small and medium enterprises, to elaborate their roles in implementation.

### ***Prepare for the pilot studies***

- PAHO and the main stakeholders and governments in the region will establish the criteria on which to base the selection of countries in Central and South America eg the indicators of active and functional programs for dietary salt reduction and salt iodization, where the collaboration and harmonization of the programs can be piloted.
- PAHO and the main stakeholders will approach their respective focal points in the selected countries plus local academics to assemble teams of researchers and technical experts to initiate grant proposal preparation.

### ***Mobilize resources***

- PAHO will explore the receptivity of (NIH) NHLBI and the Child Health and Endocrinology Institute as well as the Swiss Federal Institute of Technology.

### ***Timeline***

- The Position Document will be completed by mid/end April.
- All key stakeholder endorsements to be completed by mid May 2011.
- The full meeting report to be ready by the end of June 2011 (in time to inform the Iodine Task Force (ITF) at its next meeting).
- A technical group in mid summer convened by PAHO and ITF possibly in Paraguay (using the outcomes of the five ITF working groups and the PAHO 24-hour urine sampling protocol to measure sodium and iodine intake) to identify the elements of a joint iodine and sodium surveillance protocol that are ready now (guidance and tools) and what still needs to be researched, to ultimately draft a comprehensive protocol for joint surveillance for the pilot studies.
- PAHO and MI will prepare a joint intervention for the upcoming June 2011 annual meeting of the Institute of Food Technologists.
- The criteria for selecting countries for the pilot studies to be ready for the August 2011 ICCIDD Latin America workshop in Peru.
- The research framework for the pilot studies to be presented to the Dietary Salt Reduction Expert Group in September 2011.
- The pilot study project to be presented at the WHO Platform III meeting in November/December 2011.

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## Appendix 1

### Position Document to Improve Public Health in the Americas by Optimizing Salt\* and Iodine Intakes

Pan American Health Organization, Washington DC – April 2011

#### Background

An estimated two billion people worldwide live in areas of iodine deficiency. The International Council for the Control of Iodine Deficiency Disorders (ICCIDD) states that among the methods to prevent iodine deficiency disorder (IDD), the iodization of salt is most simple and practical and has been proven effective [1]. Together with WHO and UNICEF, it recommended in 1996 iodine concentrations in salt that assume an average per capita salt intake of 10g per day [2].

In 2006, the report from a WHO Forum and Technical Meeting responding to the WHO Global Strategy on Diet, Physical Activity and Health recommended that average population level salt intake from all food sources be < 5g per person per day [3]. There is strong evidence that salt added to food is a major factor increasing the blood pressure in normotensive and hypertensive people, in both adults and children [4,5,6]. High blood pressure is the leading risk factor for death worldwide and the second leading risk for disability by causing heart disease, stroke and kidney failure [7,8].

In 2007 a WHO Expert Consultation on “Salt as a Vehicle for Fortification”, taking into account both the status of IDD and the evidence of harmful effects of high salt diets, emphasized the need for and benefits of coordination between salt iodization and dietary salt reduction programs [9]. It concluded that

Policies for salt iodization and reduction of salt to < 5 g/day are compatible, cost effective and of great public health benefit. At the country level, close collaboration between salt iodization and salt reduction programs as a coalition is urgently required so that their aims are congruent.

Most recently, with dietary salt reduction mobilizing in the Americas, the PAHO/WHO Regional Expert Group guiding the initiative indicated in its 2009 Policy Statement [10] that

Salt intake can be reduced without compromising micronutrient fortification efforts. National governments are to review national salt fortification policies and recommendations to be in concordance with the internationally recommended target of < 5 g salt /day/person by 2020 or national targets if lower.

And the Iodine Network, in a resolution dated February 20, 2009 stated

BE IT FURTHER RESOLVED THAT the World Health Organization is urged to share with the Network Board any data, when and if it becomes available, about the achievement of salt reduction in various countries and its projected trends of salt consumption to inform Board discussion and national salt iodization programs to enable ongoing efforts to calibrate iodine fortification levels to ensure appropriate population iodine intakes.

Currently underway on the advice of the WHO Nutrition Guidance Expert Advisory Group (NUGAG) is a review of the evidence on how varying levels of population salt intake can impact the effectiveness of salt iodization programs, intending that salt reduction and universal salt iodization strategies work efficiently and effectively together. The results will feed into future revised WHO/UNICEF/ICCIDD salt iodization program guidelines, to become the starting point for newly coordinated efforts between iodine nutrition and dietary salt reduction. Needed as interventions are readied for implementation are current accurate baselines of actual iodine and salt intakes (assessed as sodium in the urine) and of the main sources of dietary salt and iodine (i.e. table salt and processed and pre-prepared food sources), information that is lacking in most countries. This would be followed by rigorous simultaneous measurement of urinary iodine and sodium and food consumption patterns to monitor the progress of and feed critical information back to both programs.

Synchronization of salt iodization and dietary salt reduction programs brings together several stakeholders at international and national levels: the agencies working to optimize iodine supplementation and those focused on cardiovascular disease prevention; national governments; and various sectors of the salt and food industries. When the knowledge and experience of the stakeholders involved in the two programs are coordinated, with the stakeholders playing their respective roles within a framework for action directed at a common goal of mutual benefit, cost savings can be realized for healthcare systems.

### **The Common Goal**

Optimal intakes of sodium and iodine

### **A Framework for Collaborative Action**

- 1. Common and coordinated messaging** at global, regional and national levels to
  - a. policy and decision makers
  - b. the salt and food industries
  - c. stakeholders among the health professions
  - d. the public and consumers
  
- 2. Common advocacy platforms** directed at national governments to
  - a. implement effective and regular quality assurance and monitoring programs for iodized salt and iodine nutrition

- b. coordinate the development/adjustment of iodine fortification of salt and dietary salt reduction policies and programs
  - i. at national or sub-national levels taking into account localized food supplies and dietary practices
  - ii. noting the need for collaboration among the diverse sectors and groups within the sectors involved in both initiatives
- c. emphasize the importance of optimal iodine intake
  - i. require the universal iodization of salt (iodization of all salt for human and animal consumption including salt used in food processing) such that populations do not rely solely on the discretionary use of iodized table salt
- d. synchronize national efforts to monitor iodine and salt intake in order to adjust standards for salt iodization based on optimal salt consumption
- e. indicate the importance to health and the cost savings to health care systems of reduced dietary salt intake
- f. examine the rationale for the current concentration of iodine in salt, whether it is based on current evidence of iodine intake levels

**3. Concurrent surveillance** of salt and iodine intake where feasible to inform salt iodization and dietary salt reduction programs including but not limited to

- a. methods that optimally assess and monitor salt and iodine intake including potassium where a public health concern
- b. comprehensive food surveys to distinguish the main sources of salt and iodine in the diet (including potassium where a public health concern)
  - i. assessing the discretionary use of iodized salt at the table and in household cooking
  - ii. the consumption of processed foods, restaurant meals and street food and
  - iii. the proportion of iodized salt in the diet contributed by each source
- c. methods that account for vulnerable and diverse populations
- d. establishing, promoting and supporting laboratory proficiency for iodine, salt analysis, (and potassium where a public health concern)
- e. knowledge, attitudes and behavior surveys on salt consumption
- f. monitoring the plans and patterns of the processed food industry with regards to
  - i. provision of sodium data on food labels
  - ii. the feasibility of including iodine on labels
  - iii. the markets where new salt-containing products are being or will be supplied/imported, especially in countries undergoing nutrition transition, to anticipate changes in salt intake levels and whether the products use iodized salt or are otherwise a source of iodine



- i. **Coordinated evaluation** of national salt iodization and dietary salt reduction programs
  - a. applying a common set of principles
  - b. committed to information sharing
  - c. independent of food and salt industries
  - d. demonstrating the link between action and disease outcomes

**4.Strategic joint research** to fill knowledge gaps relevant to both salt iodization and reduction of dietary salt that emphasizes but is not limited to pilot and case studies in countries of differing economic and cultural make-up

- i. how to most effectively optimize salt and iodine intake
- ii. the most effective and feasible collaborative surveillance of salt and iodine intake and of the sources of salt and iodine in the diet

**5. Shared forums with relevant sectors of the food industry** to deal with iodine and sodium additives and promote

- a. universal salt iodization
- b. Improve capacity and technology of the salt industry to ensure consistent and high standards of iodization of salt of small and medium sized salt producers
- c. calibration of iodization levels in salt based on the different salt intake levels with
  - i. the food processing industry and the restaurant and catering sectors consistently using iodized salt in processed and pre-prepared foods while at the same time reducing their salt content
  - ii. joint technical assistance and knowledge sharing between sectors
  - iii. compatible positions on issues held in common e.g. international trade agreements and regulatory or voluntary frameworks governing the sectors such that both salt iodization and dietary salt reduction programs can achieve their goals in the established timeframes

- j. **Coordinated mapping of existing and needed resources and mobilization of resources** towards but not limited to
  - a. Concurrent surveillance, policy development, advocacy and consumer education.

#### Next Steps

- PAHO approaches the main stakeholders (ICCIDD, UNICEF, Iodine Network, GAIN, MI, Inter American Heart Foundation, Latin American Societies for Nephrology and Hypertension) to endorse the Position Document.
- PAHO and the main stakeholders approach countries in Central and South America with active and successful IDD control programs and active dietary salt reduction initiatives to pilot the coordination of the two.

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\* For the purpose of this document, the word **salt is** used to refer to **sodium** and **sodium chloride**.

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