

Targets and Timelines for Reducing Salt in Processed Food in the Americas

Norm Campbell, MD;¹ Barbara Legowski, MHSc;² Branka Legetic, MD, MPH, PhD;³ Daniel Ferrante, MD;⁴ Eduardo Nilson, BSc;⁵ Christine Campbell;⁶ Mary L'Abbé, PhD⁷

From the Department of Medicine, Physiology and Pharmacology and Community Health Sciences and Libin Cardiovascular Institute of Alberta, University of Calgary, Calgary, AB, Canada;¹ Ottawa, ON, Canada;² Unit of Noncommunicable Diseases and Disability, Department of Noncommunicable Diseases and Mental Health, Pan American Health Organization-World Health Organization, Washington, DC;³ Ministry of Health, Buenos Aires, Argentina;⁴ Ministry of Health, Brasilia, Brasil;⁵ Faculty of Medicine, University of Calgary, Calgary, AB, Canada;⁶ and Department of Nutritional Sciences, Faculty of Medicine, University of Toronto, Toronto, ON, Canada⁷

Reducing dietary salt is one of the most effective interventions to lessen the burden of premature death and disability. In high-income countries and those in nutrition transition, processed foods are a significant if not the main source of dietary salt. Reformulating these products to reduce their salt content is recommended as a best buy to prevent chronic diseases across populations. In the Americas, there are targets and timelines for reduced salt content of processed foods in 8 countries—Argentina, Brazil, Canada, Chile, Ecuador, Mexico, and the National Salt Reduction Initiative in the United States and Paraguay. While there are common elements across the countries, there are notable differences in their approaches: 4 countries have exclusively voluntary targets, 2 countries have combined voluntary and regulated components, and 1 country has only regulations. The countries have set different types of targets and in some cases combined them: averages, sales-weighted averages,

upper limits, and percentage reductions. The foods to which the targets apply vary from single categories to comprehensive categories accounting for all processed products. The most accessible and transparent targets are upper limits per food category. Most likely to have a substantive and sustained impact on salt intake across whole populations is the combination of sales-weighted averages and upper limits. To assist all countries with policies to improve the overall nutritional value of processed foods, the authors call for food companies to supply food composition data and product sales volume data to transparent and open-access platforms and for global companies to supply the products that meet the strictest targets to all markets. Countries participating in common markets at the subregional level can consider harmonizing targets, nutrition labels, and warning labels. *J Clin Hypertens (Greenwich)*. 2014:1–5. © 2014 Wiley Periodicals, Inc.

High dietary salt* is estimated to cause more than 3 million deaths around the world annually with the majority of deaths related to the adverse cardiovascular outcomes of hypertension.¹ This places high dietary salt as the 11th leading risk worldwide for premature death in terms of disability-adjusted life-years, ranging from 9th to 15th in the Caribbean, North, Central, and South America.² The United Nations and the World Health Organization (WHO) strongly recommend that countries implement programs to reduce dietary salt; the WHO identifies salt reduction as a best buy to prevent chronic disease and improve health.^{3,4}

To guide national governments in their efforts to reduce the overconsumption of salt at the population

level, a variety of governmental and nongovernmental health organizations have provided recommendations.^{5–13,13–17} With processed and pre-prepared foods—the main source of dietary salt in high-income economies and their consumption increasing where people are undergoing nutrition transition¹⁸—lowering salt content is most effectively achieved through policies that incentivize the food-processing sectors to reformulate.⁷

Since 2009, the Pan American Health Organization (PAHO) has supported a Technical Advisory Group (TAG) to mobilize policies and interventions to limit dietary salt intake. A number of countries in the Americas have made progress in this regard and more are coming on board. The new WHO global target of a 30% relative reduction in salt intake by 2025 is adding incentive.¹⁹

Yet, with regards to setting targets and timelines for food industries to reduce the salt in processed foods, health authorities in many countries remain impeded by the requirements of the process—the need for data on food composition and national dietary patterns, independent and objective food technology expertise, and resource commitments for the longer term to set the targets and then monitor and evaluate results.^{6,7,20}

To help countries initiate target-setting, in 2013 PAHO with TAG supported the development of a *Guide to Setting Targets and Timelines to Reduce the*

Address for correspondence: Norm Campbell, MD, Libin Cardiovascular Institute of Alberta, University of Calgary, 3280 Hospital Drive NW, Calgary, AB T2N 4Z6, Canada
E-mail: ncampbel@ucalgary.ca

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*While sodium is the technically and scientifically correct term for the nutrient of public health concern, both of the terms salt and sodium are used in this document depending on context. Whether a country refers to salt or sodium in its discourse on the nutrient is a matter of national discretion.

Equivalencies: 5 g salt (NaCl) = 2000 mg sodium (Na) = 87 mmol sodium = 87 mEq sodium.

Salt Content of Food based on the experiences of the most advanced countries in the region.²¹ That same year, responding to requests by countries to know the targets and timelines in place elsewhere, the food sectors participating, and the food technology issues that have already been addressed, PAHO compiled the targets and timelines set in the region and then convened active and ready countries in Mexico City to fully exchange their experiences and concerns.

METHODS

Information about the national programs in this manuscript is based on communications materials from the Mexico City meeting,²² from a detailed technical document on dietary salt-control policies and interventions—*Salt-Smart Americas: A Guide to Country-Level Action*,²³ and from PAHO's regular communication with and surveying of national governments.

The manuscript describes the targets and timelines set in 8 countries in the Americas region—Argentina, Brazil, Canada, Chile, Ecuador, Mexico, the United States National Salt Reduction Initiative (NSRI) and Paraguay—in terms of the approaches applied; the types of targets developed, including their advantages and disadvantages; and the positive and challenging experiences of these countries with target-setting and monitoring of progress. It concludes with a number of recommendations for target-setting and for actions that can assist countries in monitoring and improving the nutritional profile of processed foods, including the role of international public health agencies.

The detailed food categories, target values, and timelines set in Argentina, Brazil, Canada, Chile, and the NSRI are posted on the PAHO Web site at http://www.paho.org/hq/index.php?option=com_content&view=article&id=2015&Itemid=4024&lang=en. One table compiles the target values for food categories in common in the 5 countries; a second table gives the complete food categories and targets for Canada and the NSRI less those in the first table.

A Mix of Voluntary and Regulatory Approaches

Countries in the region have either voluntary or regulated targets or a combination of the two. Brazil, Canada, Mexico, and the NSRI have exclusively voluntary targets.^{24–26} Argentina and Paraguay have regulated limits on the salt content of foods.^{27,28} Chile and Ecuador have both voluntary and regulated components to their approaches: both have voluntary agreements with artisanal bread makers and Ecuador also with sausage producers, and both require warning labels on packaged products that exceed upper limits for critical nutrients including sodium.^{29–31}

Different Target Types

Countries are developing different types of targets: the *average* for sodium content for products in a category, a *sales-weighted average or mean* (SWA or SWM) where an average value for a category is weighted by the sales

volumes for products in the category, and a *maximum or upper limit* considered acceptable for all products in a category.

Different Food Categories

The food categories undergoing reformulation vary across the countries, more so in terms of the products within a category as they reflect national food cultures than the broad categories themselves. The scope of food categories selected for reformulation also varies. In Canada and for NSRI, most dietary salt comes from processed food, and following the UK model, all categories of processed foods are in schedules for reformulation. NSRI also has targets and timelines for restaurant foods.³²

Argentina and Brazil are taking a step-wise approach beginning with priority categories. In Argentina, for example, bread alone was found to account for almost 25% of total salt in the diet, and consultations with food technology experts and taste testing with consumers showed that reducing salt in bread was feasible and acceptable.³³ In 2013, 4 food categories with almost 500 products were mandated for reformulation.

In Brazil, both processed foods and discretionary salt added in home cooking and at the table accounts for high dietary salt in many regions. Brazil has targets for 22 food categories and most recently is preparing to address meat and dairy products.^{22,24}

Chile, like Argentina, selected artisanal bread as the initial food category for reformulation. Packaged foods are subject to the warning label regulation that covers sodium and other nutrients. Mexico and Paraguay have also begun their food reformulation initiatives with a bread category: In Mexico, sliced bread and a product similar to baguette is affected, and Paraguay's law applies to the salt content of wheat flour for bread and bakery products.²⁸

Table I summarizes the approaches taken by the 8 countries with targets.

DISCUSSION

Considerations for Selecting Targets

The most accessible and transparent approach to target development and monitoring is setting upper limits per food category. The authors suggest that upper limits be based on the 70th percentile of products in a food category and gradually reset to a new lower 70th percentile until the level of sodium in the diet reaches the national goal. This can be paired with a requirement for warning labels on foods with sodium content exceeding a maximum.

The approach most likely to have substantive and sustained impact on salt intake across whole populations is the combination of averages or SWA and maximum limits per food category. Using SWA in particular directs the reduction efforts to the products with the highest sales while the maxima ensure that there are no products with excessively high salt levels in

TABLE I. Country-Specific Approaches

Country	Food Categories and Target Types		
	Single Category (Bread)	Several Categories	Comprehensive Categories
Argentina		Regulated upper limits	
Brazil		Voluntary upper limits	
Canada			Voluntary sales-weighted averages and upper limits
Chile	Voluntary average for artisanal and private label-brand breads		Regulated warning labels
Ecuador	Voluntary percentage reduction for artisanal bread and sausage		Regulated warning labels
Mexico	Voluntary percentage reduction		
National Salt Reduction Initiative			Voluntary sales-weighted means
Paraguay	Regulated average salt content and upper limit		

the category. This way the range of products within a category is affected and the benefits of reduced salt products are distributed equitably across all people consuming them.

The advantages and disadvantages of the different targets are described in Table II.

Improving the Overall Nutritional Quality of Processed Foods

For low- and middle-income countries and indeed for all countries with policies to improve the overall nutritional value of processed foods, transparent and open-access food composition data supplied by the food industry would significantly reduce the efforts of countries to determine baseline content of all nutrients and monitor changes. The WHO Platform 2 on monitoring and evaluating salt consumption made this recommendation.¹⁵ Furthermore, we suggest that product sales data be more accessible to aid development of SWA targets; these data are currently proprietary and available only at high cost.

With global food producers, there is an important role for international public health entities. There is already an international database of salt content of several global brand food products. It shows the range of salt levels in similar food products or “identical” global brands across a number of countries—evidence of the salt reductions that are currently technically feasible.³⁴ What the research also demonstrates is that countries, especially low- and middle-income countries, would benefit if multinational companies reformulating to meet the strictest targets would supply those products across global markets.

International public health agencies can also work with global producers to develop international food categories with consistent targets and timelines, in effect to begin harmonization.⁷ Common market platforms are a potential locus for international agreements on various initiatives that contribute to improved nutrition, eg, warning labels, nutrition labels, advertising, and

marketing to children. Already, the Food and Nutrition Security working group of MERCOSUR (in the southern cone of South America) has agreed to include population-level sodium intake reduction and combined sodium and iodine intake monitoring in its work plan.

Maintaining Momentum

Because the objective with dietary salt reduction is social change on a scale similar to the de-normalization of tobacco use, health authorities are finding that the broader the base of public awareness and support, the better. Strong public consensus for salt reduction, in some cases promoted and supported by media, is anchoring government commitments for the longer term needed to reach meaningful results.

Critical to maintaining public consensus is holding industry accountable for commitments to reformulate, especially with voluntary targets, through transparent and public reporting of progress. Argentina, for example, reports both process and outcome monitoring at 3 levels: population, food industry, and specifically with bakers. Taking lessons from tobacco control, conducting public opinion surveys, while a part of monitoring and evaluation, is contributing to maintaining the profile of and pressure on government and industry for salt reduction. In Brazil, all agreements with sectors of the food industry are publicized and the food industry and government have agreed to label analysis and laboratory testing to determine sodium additives in products.²²

Challenges

Critical challenges remain, particularly in Central and South American countries. One is street food vendors and small food establishments not part of national restaurant associations that, combined, serve large proportions of the population. Another is wholesale food suppliers. A number of countries are reflecting on whether regulations would be more effective than voluntary approaches if the full spectrum of processed

TABLE II. Advantages and Disadvantages of Target Types

Advantages	Disadvantages
<p>Sales-weighted averages/means</p> <ul style="list-style-type: none"> The gold standard, accounting for product market share, or, in other words, people's buying patterns, facilitates companies to prioritize for reformulation of those products within a category that contributes more to salt intake. Reformulations reduce the salt within the whole food category and by extension offer the benefits of lower salt intake equitably across all people who consume the products in the category. Monitoring sales-weighted averages of different food categories combined with food intake survey data allows the most accurate estimates of population intake of salt. <p>Maximum or upper limits</p> <ul style="list-style-type: none"> Set a clear ceiling for all products in a category. Can be set at around the average for a food category at a point in time and reduced as the average moves downward. Requires a formal publically announced plan to gradually lower the upper limits. Directly applicable to regulatory approaches such as warning labels. Relatively easy to utilize in monitoring whether food products achieve the target. Easiest for industry, policy makers, and consumers to understand. Easy for consumers and food companies to compare. Reduces the salt content of products above the maximum or highest salt products are eliminated altogether. <p>Simple averages</p> <ul style="list-style-type: none"> Easier and less expensive to implement and monitor than sales-weighted averages; accessible in low-resource settings. 	<ul style="list-style-type: none"> The sales volume data required for weighting of averages are proprietary and expensive to obtain so most likely out of reach in low-income settings. Sales-weighted averages can be brought down with a focus on a few high market volume products without addressing products associated with vulnerable groups, eg, children. Difficult to use in developing regulations, eg, for warning labels; are impractical for consumer education as they are not easily understood by consumers and consumers groups; and for an independent organization willing to monitor progress of salt reduction, most likely impossible without significant resource inputs. <ul style="list-style-type: none"> Likely to result in reformulation efforts aimed predominantly at food items above the target rather than all foods in a category, with food companies aiming reformulation to be at or just below the maximum and no lower. Companies whose products have salt levels initially below the maxima have no incentive to reduce salt content. Undermines adoption of best in class/best in world that are based on sales-weighted averages. If high-salt content products are not high volume regarding consumption, may have little or no impact on actual salt intake levels. Companies whose products are below the maximum do not participate. <ul style="list-style-type: none"> No incentive for industry to focus on high-volume high-salt products. Industry may reduce the salt in low-selling products in a category, thereby reducing the simple average of the category but having no significant impact on actual salt intake.

and prepared foods and the populations who consume them are to be covered.²²

Countries are also recognizing the need to balance longstanding programs to prevent iodine deficiency that rely on iodized table salt with initiatives to reduce salt intake. The WHO and PAHO have prepared technical documents that can be consulted for guidance in this regard.^{5,8,35-38}

CONCLUSIONS

Reducing the overconsumption of salt across populations is recognized as a best buy to avoid deaths and disability caused by chronic noncommunicable diseases. Within the package of interventions advocated to achieve lower dietary salt intake, setting targets and timelines to reduce the salt content of processed foods is an important component. For countries that have not yet undertaken negotiations with the food industries to lower the use of salt, the food categories and the ranges of targets already set contribute to the evidence of what is feasible. Going forward, the more uniform the food categories, the more similar the approaches to target development and taking example from existing targets could facilitate negotiations with the food industry and make cross-country comparisons easier and

contribute to a consistent messaging in support of global efforts to reduce salt levels in processed foods.

All 8 countries featured here have been able to set targets despite having very different levels of resources available for their initiatives. Our recommendations can benefit all countries regardless of income status. Countries that fail to introduce meaningful targets and timelines for reduced salt content in foods and furthermore fail to monitor progress place their populations at unnecessary risk of illness and needlessly burden their health systems.

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References

- Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2013;380:2224-2260.
- Global Burden of Disease Study. Institute for Health Metrics and Evaluation. <http://www.healthdata.org/gbd/data-visualizations>. Accessed May 21, 2010.
- United Nations General Assembly. Political declaration of the high-level meeting of the general assembly on the prevention and control of

- non-communicable diseases-draft resolution submitted by the President of the General Assembly. Report, 1–13. New York, NY: United Nations; 2011.
4. World Health Organization. WHO Global status report on noncommunicable diseases 2010. Report, iii-161. Geneva, Switzerland: WHO Press, World Health Organization; 2011.
 5. Campbell N, Legowski B, Legetic B, Wilks R. PAHO/WHO Regional Expert Group Policy Statement – preventing cardiovascular disease in the Americas by reducing dietary salt intake population-wide. *CVD Prevention and Control*. 2010;189–191.
 6. Legetic B, Campbell N. Reducing salt intake in the Americas: Pan American Health Organization actions. *J Health Commun*. 2011;16 (suppl 2):37–48.
 7. World Health Organization. Creating an enabling environment for population-based salt reduction strategies. Report of a joint technical meeting held by WHO and the Food Standards Agency, United Kingdom, July 2010. 2011;1:3–42.
 8. World Health Organization. Reducing salt intake in populations: report of a WHO forum and technical meeting 5–7 October, 2006 Paris, France. WHO; 2007:1–65.
 9. Panel on Dietary Reference Intakes for Electrolytes and Water, Standing Committee on the Scientific Evaluation of Dietary Reference Intakes. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate. Scientific Evaluation of Dietary Reference; 2004:1–640.
 10. Scientific Advisory Committee on Nutrition. Salt and Health. Scientific Advisory Committee on Nutrition 2003, 1–134. 2003. Norwich, UK: The Stationery Office.
 11. Appel LJ, Frohlich ED, Hall JE, et al. The importance of population-wide sodium reduction as a means to prevent cardiovascular disease and stroke: a call to action from the American Heart Association. *Circulation*. 2011;123:1138–1143.
 12. Henny JE, Taylor CL, Boon CS. *Strategies to Reduce Sodium Intake in the United States*. Washington, DC: The National Academies Press; 2010.
 13. American Public Health Association. Reducing sodium content in the American diet. American Public Health Association – Association News 2002 Policy Statements, 5–6. Fort Worth, TX: American Public Health Association; 2002.
 14. Sodium Working Group. Sodium reduction strategy for Canada. Sodium Reduction. Ottawa, Canada: Health Canada; 2010:1–61.
 15. World Health Organization. Strategies to monitor and evaluate population sodium consumption and sources of sodium in the diet: report of a joint technical meeting convened by WHO and the Government of Canada. Canada October 2010. Report. Geneva, Switzerland: WHO Press, World Health Organization; 2011:3–40.
 16. Campbell NR, Neal BC, MacGregor GA. Interested in developing a national programme to reduce dietary salt? *J Hum Hypertens*. 2011;25:705–710.
 17. Institute of Medicine of the National Academies. Sodium intake in populations: assessment of evidence. In: Strom BL, Yaktine AL, Oria M, eds. Report, V-F-44. Washington, DC: The Academies Press; 2013.
 18. Thow AM, Hawkes C. The implications of trade liberalization for diet and health: a case study from Central America. *Global Health*. 2009;5:5.
 19. World Health Organization. *Global Action Plan for the Prevention and Control of Non-Communicable Diseases 2013–2020*. Geneva, Switzerland: WHO Press, World Health Organization; 2013. http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf. Accessed May 20, 2014.
 20. Blanco-Metzler A, Montero-Campos ML, Nunez-Rivas H, et al. Advances in reducing salt and sodium intake in Costa Rica. *Rev Panam Salud Publica*. 2012;32:316–320.
 21. Pan American Health Organization. *A Guide for Setting Targets and Timelines to Reduce the Salt Content of Food*. Washington, DC: Pan American Health Organization; 2013. http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=21493&Itemid=999999&lang=en. Accessed May 20, 2014.
 22. Pan American Health Organization. Salt reduction. Communications Materials. http://www.paho.org/hq/index.php?option=com_content&view=article&id=2015&Itemid=4024&lang=en. Accessed May 21, 2014.
 23. Pan American Health Organization. *Salt-Smart Americas – A Guide to Country-level Action*. Washington, DC: Pan American Health Organization; 2013. http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=21554&Itemid=999999&lang=en. Accessed May 20, 2014.
 24. Nilson EA, Jaime PC, Resende DO. Initiatives developed in Brazil to reduce sodium content of processed foods. *Rev Panam Salud Publica*. 2012;32:287–292.
 25. He FJ, MacGregor GA. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *J Hum Hypertens*. 2009;23:363–384.
 26. Secretaria de Gobernacion [Mexico]. Agreement that decreased use of common salt or sodium chloride in the preparation of bread as a measure of prevention of cardiovascular disease is recommended, and other chronic degenerative diseases. http://dof.gob.mx/nota_detalle.php?codigo=5256201&fecha=22/06/2012. Accessed May 20, 2014.
 27. Misiones Online. Se aprobó una ley para reducir la sal en los alimentos. July 3, 2013. <http://www.votocataratas.com/noticias/03/07/2013/se-aprob-una-ley-para-reducir-la-sal-en-los-alimentos>. Accessed May 20, 2014.
 28. World Cancer Research Fund International. WCRF International Food Policy Framework for Healthy Diets: NOURISHING. http://www.wcrf.org/policy_public_affairs/nourishing_framework/food_supply_composition_reformulation. Accessed May 20, 2014.
 29. Corvalan C, Reyes M, Garmendia ML, Uauy R. Structural responses to the obesity and non-communicable diseases epidemic: the Chilean law on food labelling and advertising. *Obes Rev*. 2013; (suppl 2):79–87. <http://www.foodpolitics.com/wp-content/uploads/Corvalan-Chile-Bellagio-Ob-Reviews-2013.pdf>. Accessed May 20, 2014.
 30. Orozco M. El Comercio, Quito, Miercoles 20 de noviembre del 2013. El exceso de grasa, azucar y sal causa 15 enfermedades. <http://www.foodpolitics.com/wp-content/uploads/Ecuador-etiquetado22112013.pdf>. Accessed May 20, 2014.
 31. Carina Vance Mafla. Editorial. Productos alimenticios tendran etiquetas con informacion valiosa cuidar nuestra salud. 2013. http://www.foodpolitics.com/wp-content/uploads/Ecuador-traffic-lights-Articulo_2013112909091500.pdf. Accessed May 18, 2014.
 32. Levings J, Cogswell M, Curtis CJ, et al. Progress toward sodium reduction in the United States. *Rev Panam Salud Publica*. 2012;32:301–306.
 33. Ferrante D, Apro N, Ferreira V, et al. Feasibility of salt reduction in processed foods in Argentina. *Rev Panam Salud Publica*. 2011;29:69–75.
 34. Food Monitoring Group. Progress with a global branded food composition database. *Food Chem*. 2013;140:451–457.
 35. World Health Organization. Salt as a vehicle for fortification: report of a WHO expert consultation. WHO 2008; 1:1–27.
 36. Campbell NRC, Dary O, Cappuccio FP, et al. Need for coordinated programs to improve global health by optimizing salt and iodine intake. Special Report. *Rev Panam Salud Publica*. 2012;32:281–286.
 37. Campbell N, Dary O, Cappuccio FP, et al. Collaboration to optimize dietary intakes of salt and iodine: a critical but overlooked public health issue. *Bull World Health Organ*. 2012;90:73–74.
 38. WHO/PAHO Regional Expert Group for Cardiovascular Disease Prevention through Population-wide Dietary Salt Reduction. Improving Public Health in the Americas by Optimizing Sodium and Iodine Intakes. Report from the Washington DC Meeting, April 2011. http://webcache.googleusercontent.com/search?q=cache:8oQeYDnCux4J:www.paho.org/hq/index.php%3Foption%3Dcom_docman%26task%3Ddoc_download%26gid%3D13499%26Itemid%3D+&cd=1&chl=en&ct=clnk&gl=ca&client=safari. Accessed September 2013.