



SHAKE

THE SALT HABIT

The SHAKE Technical Package for Salt Reduction

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EXECUTIVE SUMMARY

Raised blood pressure is the leading risk factor for the global disease burden and is estimated to cause 9.4 million deaths every year – more than half the estimated 17 million deaths caused by cardiovascular diseases annually. High consumption of sodium leads to increases in blood pressure among those with normal blood pressure as well as those whose blood pressure is already raised. Sodium consumption (over 2 grams per day, equivalent to 5 grams of salt per day) contributes to high blood pressure and increases the risk of heart disease and stroke.

Sodium is mainly consumed as salt which in the diet can come from processed foods, either because they contain large amounts of salt (such as ready meals, processed meats like bacon, ham and salami, cheese, salty snack foods and instant noodles, among others) or because they are consumed frequently in large amounts (such as bread and processed cereal products). Salt is also added to food during cooking (bouillon and stock cubes) or at the table (soy sauce, chilli sauce, fish sauce and table salt). Dietary patterns are being transformed by the increasing production of more and more processed food, rapid urbanization and changing lifestyles. Highly processed foods are becoming increasingly available and affordable.

In 2013, the World Health Assembly endorsed the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. The Global Action Plan provides WHO Member States, international partners and WHO with a road map and menu of policy options which, when implemented collectively between 2013 and 2020, will contribute to progress on nine global noncommunicable disease (NCD) targets to be attained in 2025. One of the targets agreed by Member States is a 30% relative reduction in mean population intake of salt/sodium by 2025. It is essential that this target is met in order to meet the overall goal of a 25% reduction in premature mortality from NCDs.

The **SHAKE** package has been designed to assist Member States with the development, implementation and monitoring of salt reduction strategies to enable them to achieve a reduction in population salt intake. The package outlines the policies and interventions which have proved to be effective in reducing population salt intake, provides evidence of the efficacy of the recommended interventions, and includes a toolkit containing resources to assist Member States to implement the interventions. WHO looks forward to continuing to work with Member States to reduce population salt intake and combat the burden of NCDs.

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ABBREVIATIONS

CVD	Cardiovascular disease
COMBI	Communication for Behavioural Impact
DHS	Demographic Health Survey
FoP	Front-of-Pack
MoH	Ministry of Health
NCD	Noncommunicable disease
NGO	Nongovernmental organizations
STEPS	STEPwise approach to Surveillance
UN	United Nations
USAID	United States Agency for International Development
WHO	World Health Organization

THE **SHAKE** PACKAGE FOR SALT REDUCTION

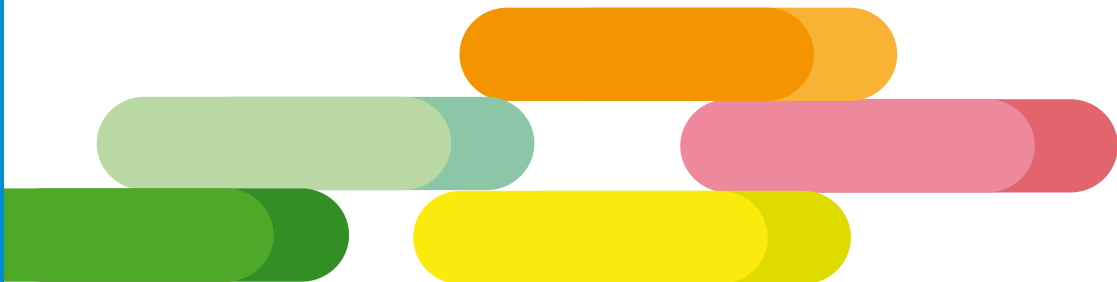
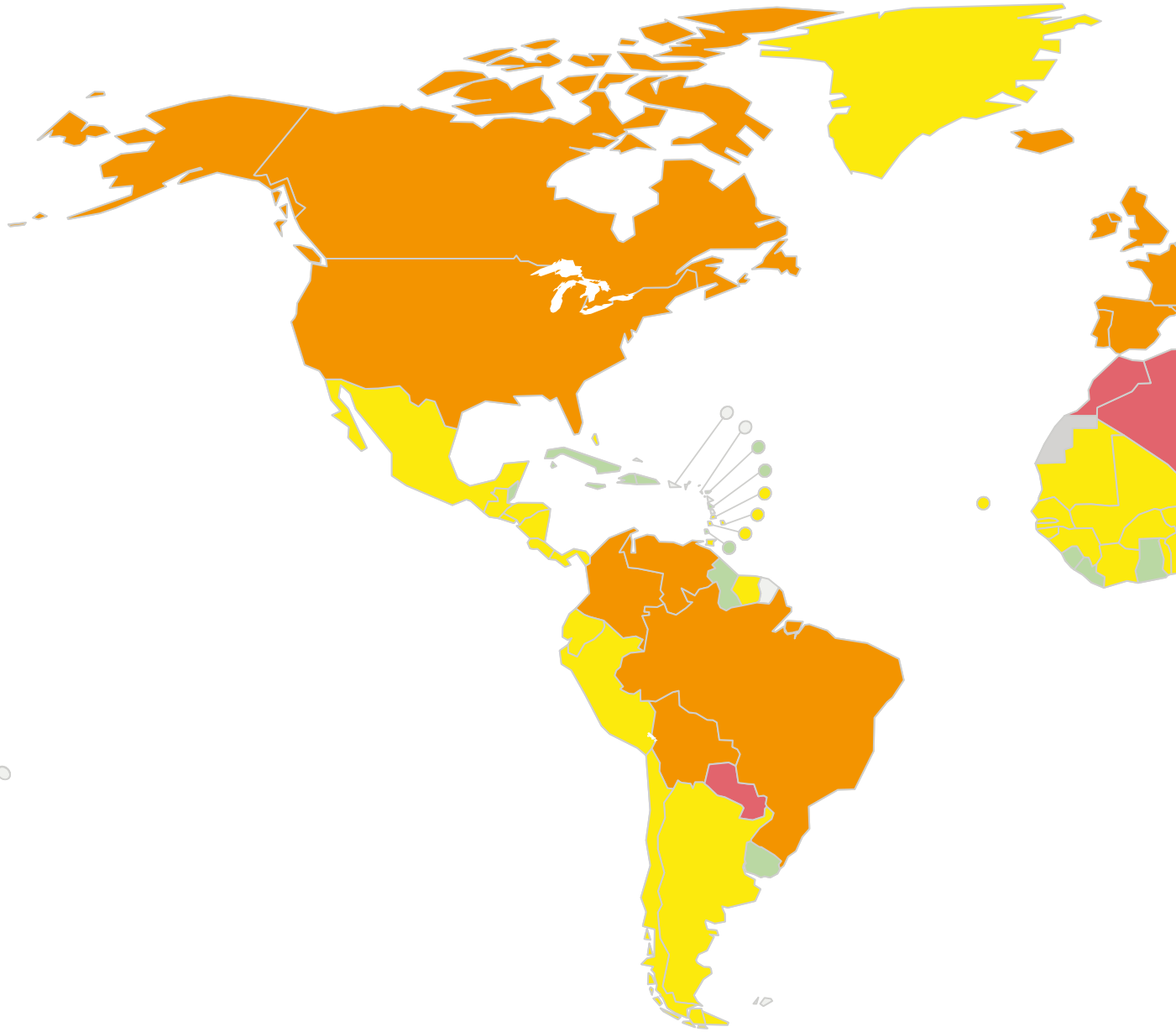
INTRODUCTION

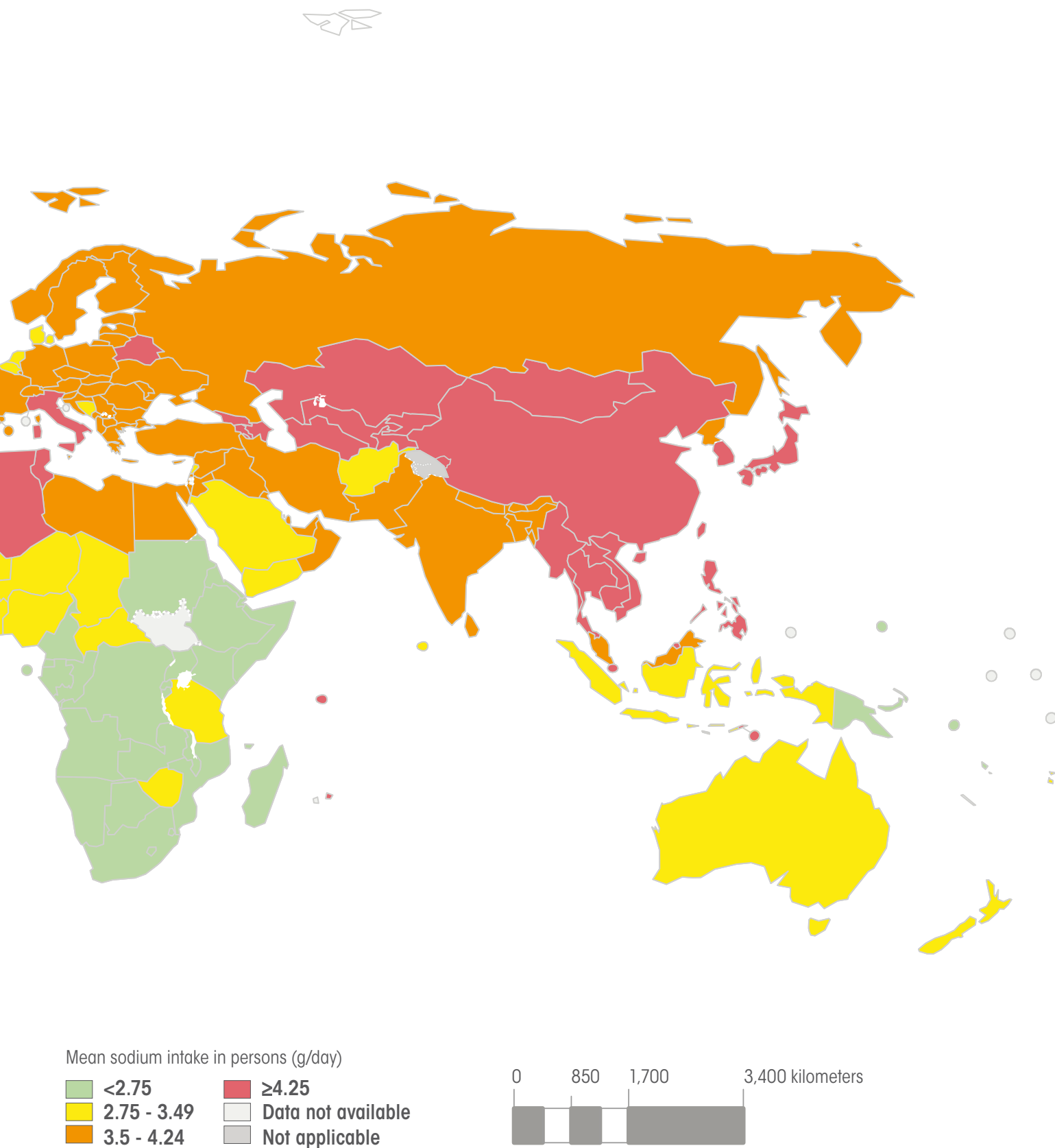
Habitual consumption of excessive salt may seem harmless, but it is linked to a number of health risks which cause millions of premature deaths annually. The most common of these risks is high blood pressure, which alone accounts for an estimated 9.4 million deaths each year (1). People worldwide consume significantly more salt than they should (Figure 1). Controlling the threat that salt poses to public health is a challenge facing developed and developing countries alike.

The easiest and most cost-effective way of addressing this is simple: reduce the amount of salt people eat. Lowering salt consumption is a practical action which can save lives, prevent related diseases and reduce health-care costs for governments and individuals (2-5). The overall goal of the global salt reduction push is a 30% relative reduction in average population salt intake towards the WHO-recommended level which is less than 5g per day for adults. This is the only nutrition-specific target and a core component of the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020, which aims to achieve a 25% reduction in premature mortality from avoidable noncommunicable diseases (NCDs) by 2025.

The number of countries that are taking action on salt reduction is increasing, but further action is critical to reduce the health consequences of eating too much salt, particularly in low- and middle-income countries where the risk of death from high blood pressure is more than double that in high-income countries (6).

Figure 1: Mean sodium intake in persons aged 20 years and over, comparable estimates, 2010





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The role of the World Health Organization is to bridge the gap between evidence and policy action, helping countries to understand not only what works, but also how to do it. As part of its mandate and in response to this need, WHO has created the **SHAKE** package.

The **SHAKE** package is a set of common sense, evidence-informed policy options and interventions which support governments to lower population salt consumption. They have been chosen because there is evidence that they work as a complete package, are inexpensive as a public health investment, and because WHO has experience in helping countries implement them to the highest standards. **SHAKE** also provides tools to help countries integrate salt reduction programmes with iodine deficiency elimination programmes, ensuring that the goals of both initiatives can be achieved.

If the **SHAKE** package was implemented in every country as a comprehensive package, research indicates that it could save millions of lives per year and dramatically reduce the burden of NCDs on health systems (7,8). Few countries are fully embracing all of these policies and many have not acted at all to reduce population salt consumption. It is hoped that with this policy guidance and accompanying practical resources, governments will possess the tools to start reducing the amount of salt consumed by their citizens, and prevent at least some of the millions of premature deaths occurring each year because of excessive salt consumption. Well-implemented tobacco control programmes continue to be one of the most effective and cost-effective ways of reducing the burden of NCDs. However, if salt reduction programmes were to be similarly successful, millions of deaths could be avoided with minimal resources (Figure 2) (9).

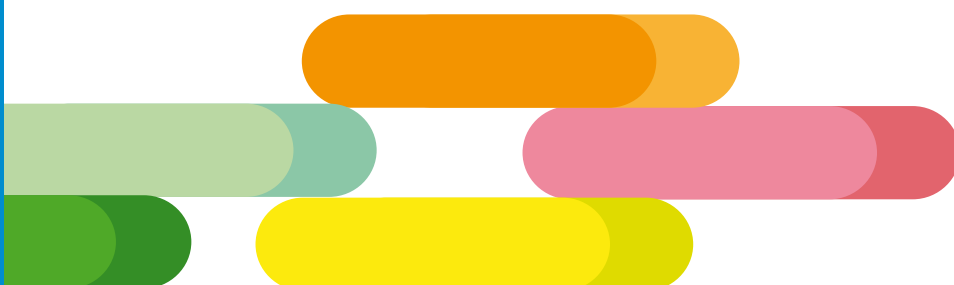
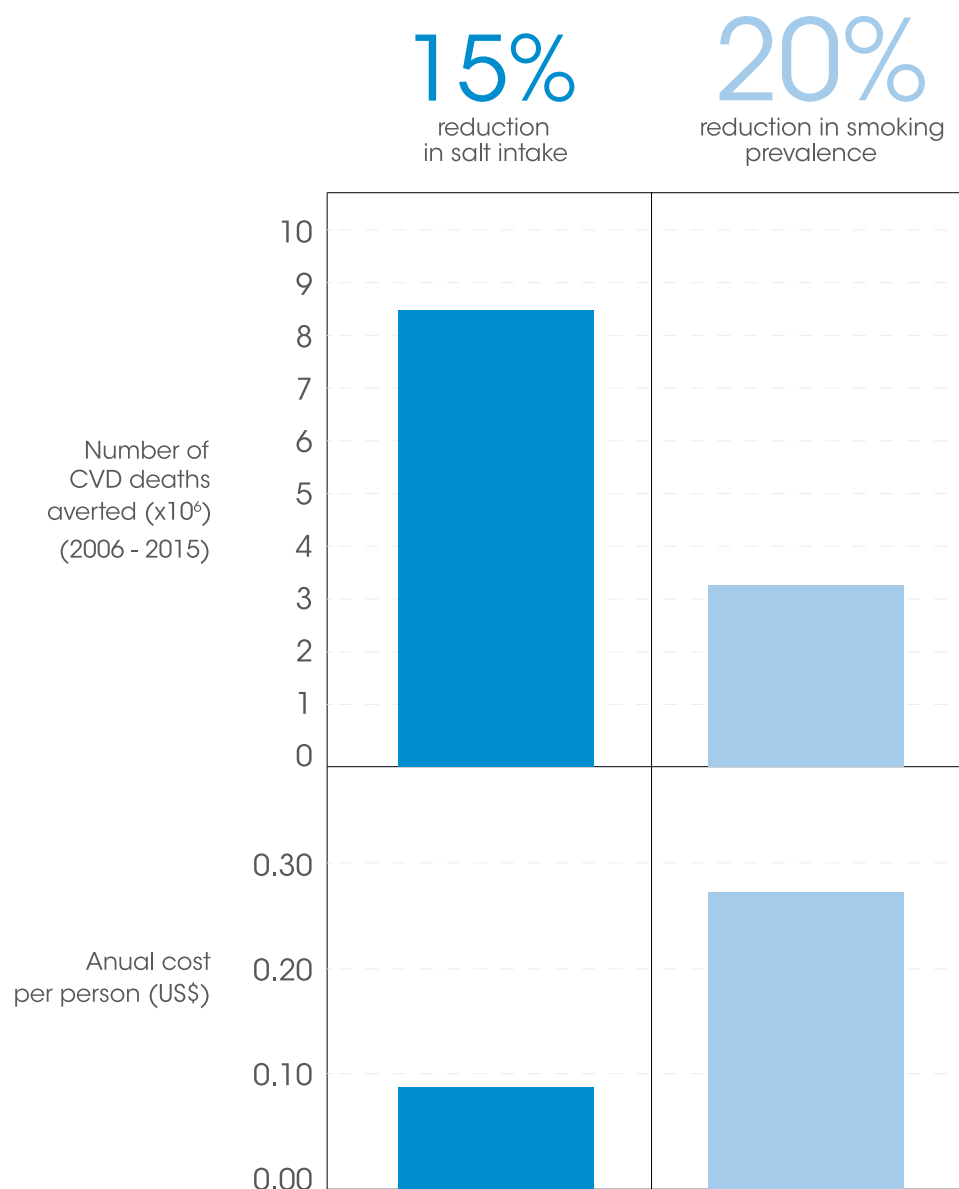


Figure 2

Potential impact on cardiovascular disease & estimated cost associated with implementation in 23 low- and middle-income countries



Source: Adapted from Asaria et al., 2007 (7)

THE **SHAKE** VISION FOR SALT REDUCTION

“ **SHAKE THE SALT HABIT** ”

The **SHAKE** package envisions a world where average salt intake is ultimately reduced to less than 5g per day for adults and less for children. If this is to be achieved, it will result in major benefits to public health and the sustainability of health systems that are struggling to deal with the burden of NCDs.

Country experiences have shown us that it is possible to reduce population salt intake. The **SHAKE** package is accompanied by a set of tools, resources and case studies which can be used to guide the design, implementation, monitoring and evaluation of national salt reduction programmes.

The **SHAKE** package also contains a general framework for the overarching elements needed to create a successful salt reduction programme – political commitment, programme leadership, partnerships and advocacy. It looks at the role of each of these within the five main activity areas of **SHAKE**:

A large, stylized letter 'S' in a pink-to-red gradient.

SURVEILLANCE
MEASURE AND MONITOR SALT USE

A large, stylized letter 'H' in an orange-to-yellow gradient.

HARNESS INDUSTRY
PROMOTE THE REFORMULATION OF FOODS
AND MEALS TO CONTAIN LESS SALT

A large, stylized letter 'A' in a yellow-to-green gradient.

**ADOPT STANDARDS FOR LABELLING
AND MARKETING**
IMPLEMENT STANDARDS FOR EFFECTIVE
AND ACCURATE LABELLING AND MARKETING
OF FOOD

A large, stylized letter 'K' in a light green-to-teal gradient.

KNOWLEDGE
EDUCATE AND COMMUNICATE TO EMPOWER
INDIVIDUALS TO EAT LESS SALT

A large, stylized letter 'E' in a dark green gradient.

ENVIRONMENT
SUPPORT SETTINGS TO PROMOTE HEALTHY EATING

SUMMARY

Table 1 presents a summary of the policies and interventions of the **SHAKE** package. The policies are complementary and synergistic. For example, adopting front-of-pack labelling may encourage the industry to reformulate food products to contain less salt. Public education and more awareness of the health risks associated with high salt intake may help consumers to read and understand nutrition labelling. Monitoring is critical to gain support for salt reduction, maintain pressure on the food industry and evaluate the results of interventions.

Table 1: SHAKE Policies and Interventions

SURVEILLANCE MEASURE AND MONITOR SALT USE

- Intervention S1** Measure and monitor population salt consumption patterns
- Intervention S2** Measure and monitor the sodium content of food
- Intervention S3** Monitor and evaluate the impact of the salt reduction programme

HARNESS INDUSTRY PROMOTE REFORMULATION OF FOODS AND MEALS TO CONTAIN LESS SALT

- Intervention H1** Set target levels for the amount of salt in foods and meals and implement strategies to promote reformulation

ADOPT STANDARDS FOR LABELLING AND MARKETING IMPLEMENT STANDARDS FOR EFFECTIVE AND ACCURATE LABELLING AND MARKETING OF FOOD

- Intervention A1** Adopt interpretive front-of-pack nutrition labelling systems
- Intervention A2** Implement strategies to combat the misleading marketing of foods that are high in salt

KNOWLEDGE EDUCATE AND COMMUNICATE TO EMPOWER INDIVIDUALS TO EAT LESS SALT

- Intervention K1** Implement integrated education and communication strategies to raise awareness about the health risks and dietary sources of salt and ultimately change behaviour

ENVIRONMENT SUPPORT SETTINGS TO PROMOTE HEALTHY EATING

- Intervention E1** Implement multicomponent salt reduction strategies in community settings including schools, workplaces and hospitals

A comprehensive salt reduction toolkit has been developed on the basis of country experiences from around the world. The toolkit can be accessed at www.who.int/dietphysicalactivity/reducingsalt/en or www.whoccsaltreduction.org and provides tools, resources and case studies to assist with implementation of the key interventions.

ELEMENTS OF A SUCCESSFUL SALT REDUCTION PROGRAMME

The essential elements of any successful salt reduction programme are political commitment, programme leadership and governance, effective partnerships, advocacy, and integration with iodine deficiency programmes. Before developing the specific policies and interventions that will make up a comprehensive national salt reduction programme in line with the **SHAKE** package, these cross-cutting elements should be addressed. Key steps in programme development are listed in Figure 3.

Political commitment

Political commitment is critical to initiating and sustaining a population-wide salt reduction programme over many years and is also necessary to provide a clear mandate and ensure the availability of adequate resources. Professional groups, nongovernmental organizations (NGOs), academia and consumer groups can lobby government and policy leaders to increase awareness of the importance and feasibility of salt reduction in the public health agenda.

Programme leadership and governance

One of the most important decisions to make when developing a salt reduction programme is the decision as to who will be responsible for ensuring it is implemented effectively. Salt reduction programmes are most likely to be successful if led from a senior level within government. Ideally the programme should be led by a ministerial-level appointee with a specific interest in the issue and with sufficient support staff and budget to manage the day-to-day operations of the programme. This is especially important for promoting industry compliance when setting targets for the salt content of foods. An effective government leadership team should also be able to garner the support of other stakeholder groups within both civil society and industry. If government leadership is not possible, an NGO or civil society group could lead the work with government support.

Advocacy

Advocacy denotes activities designed to place salt reduction high on the political and development agendas, to foster political will and to increase financial and other resources for programme development to ensure that implementation is sustainable. Advocacy groups can hold authorities and industry organizations

accountable for ensuring that pledges are fulfilled and results achieved. While anyone can advocate for salt reduction, collective action is more likely to be effective than isolated efforts. A broad-based coalition of interrelated and complementary stakeholders can generate dialogue, negotiation and consensus, thus raising awareness and strengthening action for salt reduction. The leadership team should seek to engage the support of stakeholders and the advisory group in whatever capacity possible.

Partnerships

A multisectoral and multi-stakeholder approach – coupled with strong networking between policy leaders, other government departments, NGOs, consumer groups, the medical community, academia and the food industry – can provide a strong level of support for the salt reduction agenda. An advisory group can support the programme throughout development, implementation and evaluation. The advisory group provides the opportunity to engage with, and use the expertise and interests of, diverse stakeholders that are not directly involved in the programme leadership. It is important that the members of the advisory group have good knowledge of the food industry and good working relationships with a critical mass of key industry representatives and other stakeholders.

Integration with iodine deficiency elimination programmes

A coordinated approach with those responsible for policies to eliminate iodine deficiency is required to ensure policy coherence and maintain political support for salt reduction. A credible, broad-based advisory group can provide guidance and support for government leaders, bringing together stakeholders from the areas of both salt reduction and iodine deficiency elimination to ensure that a reduction in population salt consumption levels does not adversely affect iodine deficiency elimination programmes and that the promotion of iodized salt does not derail salt reduction efforts. Key areas for integration of the two initiatives include policy development, communication and advocacy, monitoring, and surveillance and research.

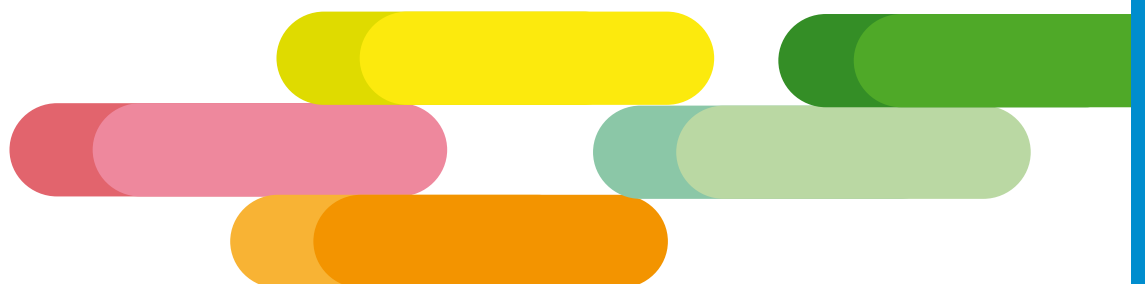


Figure 3
Key steps in programme development

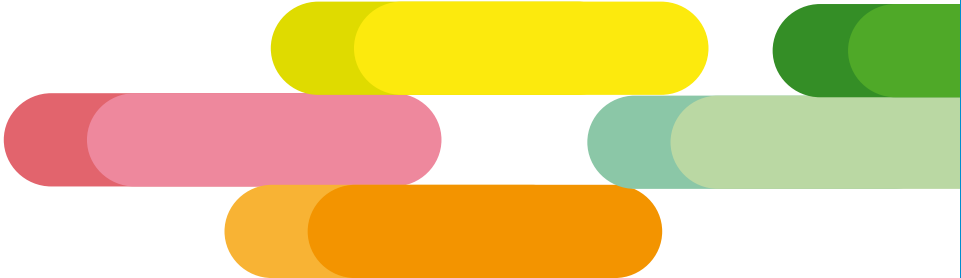


7
**DEVELOP THE
SPECIFIC
ACTIVITIES AND THE
IMPLEMENTATION
PROGRAMME**

8
**DEVELOP A
MONITORING AND
EVALUATION PLAN**

9
**REVIEW OF THE
OVERALL SALT
REDUCTION
PROGRAMME PLAN
BY STAKEHOLDERS
AND ADVISORY
GROUP**

10
**SIGN OFF BY
THE SENIOR
GOVERNMENT
LEADER
RESPONSIBLE FOR
THE PROGRAMME**



THE SHAKE PACKAGE

The following policies and interventions have been demonstrated as important elements of national salt reduction programmes in countries worldwide. They should be implemented as a package as they appear to reduce salt consumption most effectively when used in conjunction with each other.

SURVEILLANCE MEASURE AND MONITOR SALT USE

Objective: Establish an effective surveillance system to measure, monitor and evaluate population salt consumption patterns and the major sources of salt in the diet

Many countries lack data on a number of key areas of salt consumption, such as national salt intake levels, dietary patterns and the amount of salt in local food products (10). These data are essential for planning a programme that will target the area of greatest weakness in a country and which will have the greatest impact in terms of health and investment.

INTERVENTION S1: MEASURE AND MONITOR POPULATION SALT CONSUMPTION PATTERNS

An important step in the development and implementation of a salt reduction programme is to collect information on population salt consumption patterns, namely: population salt intake; community knowledge, attitudes and behaviours related to salt use; and the sources of salt in the diet. All this information can be gathered in the same population survey. A new stand-alone survey can be set up for this purpose or these components can be integrated into a planned survey such as the WHO NCD STEPwise approach to surveillance (11) or the USAID Demographic and Health Survey (DHS) (12). Some countries may already have data from previous surveys that can be used to advocate for salt reduction.

Population salt intake

It is important to know the average baseline population salt intake in comparison with the recommended WHO intake of less than 5g per person per day. This information is useful for convincing stakeholders why salt reduction is important and allows for evaluation of the overall salt reduction strategy by repeating the population survey using exactly the same methods.

While data on population salt intake are important, it should be emphasized that almost all countries are consuming well over the recommended limit. Therefore countries should not wait for these data to be available before taking action to reduce population salt intake.

"SALT AND SODIUM ARE OFTEN USED INTERCHANGEABLY BUT THEY ARE NOT EXACTLY THE SAME THING. SODIUM IS A MINERAL THAT OCCURS NATURALLY IN FOODS OR IS ADDED DURING MANUFACTURING - OR BOTH. SALT IS A COMBINATION OF TWO MINERALS: SODIUM (NA) AND CHLORIDE (CL). ABOUT 90% OF THE SODIUM WE EAT IS IN THE FORM OF SALT. ONE TEASPOON OF SALT CONTAINS ABOUT 2,300MG OF SODIUM - ABOVE THE WHO RECOMMENDED LIMIT FOR ADULTS."

Mean population salt intake can be estimated through urinary excretion of sodium. The 24-hour urinary measurement is currently the most accurate method for analysis of population salt intake, and is recommended if countries have the resources and capacity to do the collection well. Where this is not the case, spot urine measurements may be used as there is some evidence to suggest they provide a reasonable estimate of mean population salt intake greater than 5 grams.

Knowledge, attitudes and behaviours related to salt

Information on the population's knowledge, attitudes and behaviours related to salt can help establish the extent to which consumers believe salt is a problem. It can also reveal the probable sources of salt in their diet, how they make decisions to purchase particular food items, and how they use salt as a condiment when cooking or eating. This information is gathered mainly through a questionnaire or focus group discussion as part of the population survey.

Sources of salt in the diet

A number of dietary methods can be used to identify the main sources of salt in the diet. Of these methods, multiple 24-hour dietary recalls are preferred since there is evidence that they can accurately assess food consumption patterns. Assessing these patterns early is important as it will identify key focus areas and stakeholders whose involvement will be critical to ensuring a programme's success. For instance, if the salt being consumed comes mostly from bread, engagement with that industry and reformulation are essential. On the other hand, if the main source of sodium is from salt added during cooking and/or at the table, then population behaviour change should be the main priority.

Differences between the salt consumption patterns of different population groups will help inform the design of the salt reduction programme to target the areas of greatest potential impact.

KEY ACTIONS IN MEASURING POPULATION SALT CONSUMPTION

IDENTIFY
EXISTING
NATIONAL
DATA ON SALT
CONSUMPTION

DESIGN AND
PLAN SURVEY
IMPLEMENTATION

COLLECT
DATA USING
QUESTIONNAIRES,
URINE
MEASUREMENTS
AND FOCUS
GROUPS

USE DATA TO
INFORM AND
EVALUATE THE
SALT REDUCTION
PROGRAMME

INTERVENTION S2: MEASURE AND MONITOR THE SODIUM CONTENT OF FOOD

Reducing the sodium levels in foods will be a core component of any salt reduction programme in most countries. It is therefore essential to periodically collect information on the sodium content of foods to track the changes.

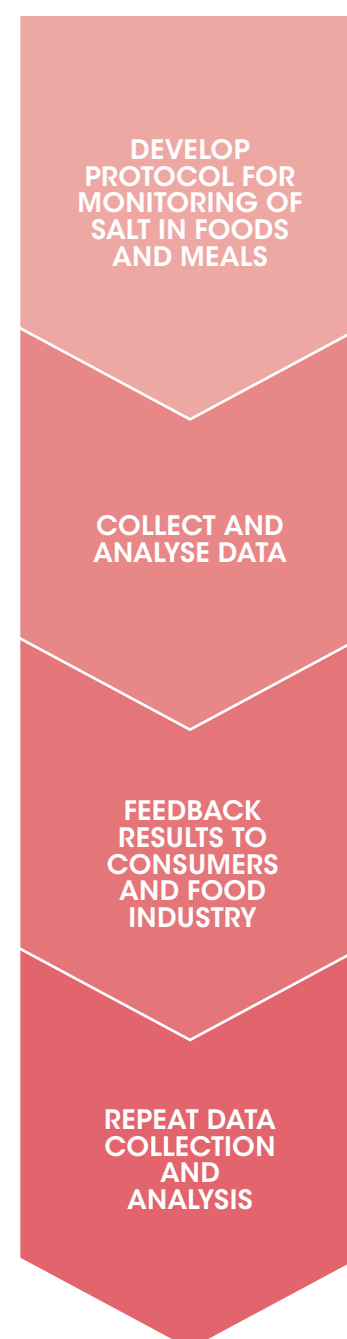
There are two main methods countries can use to monitor the sodium content of the food supply. These are:

- Shop and restaurant surveys of declared salt levels in products;
- Direct chemical analysis of foods.

The shop and restaurants surveys are usually carried out by health agencies through inspection of food product labels. Direct chemical analysis of foods can be done by health agencies, but it can also be carried out by the food industry who will then supply results as required by voluntary commitments or regulations. The average levels of salt in the food supply should be measured on a yearly basis and also when new products come on to the market.

Publication and dissemination of the data is important. By publishing baseline levels of sodium in foods and providing regular updates, any changes to the sodium content of foods can be tracked and this information used to encourage the food industry to reformulate and add less salt to foods by publicising successful industry efforts. This strategy was successfully used in the UK and, as part of a broader program, led to a 55% reduction in the sodium content of some food products (13). Information on the sodium content of foods can also be used to provide consumers with advice about which products to choose when purchasing food in stores and restaurants.

KEY ACTIONS IN MONITORING THE SODIUM CONTENT OF FOOD



Case study: Using data from a baseline survey of population salt consumption patterns to develop a national salt reduction strategy, Mongolia (14)

In 2011 Mongolia's Ministry of Health started a new initiative to develop a national salt reduction strategy. The first steps were to establish an intersectoral working party and organize a series of bilateral meetings and visits to factories as part of a two-week consultation and training programme on salt reduction. An action plan was developed to establish a national baseline on salt consumption patterns and implement a series of pilot initiatives to reduce salt intake. The results of these initiatives were used to inform the national strategy.

Baseline data on salt intake were obtained through a cross-sectional, nationally representative survey of a random sample of 1040 residents (25–64 years). Data were collected using a questionnaire on demographics and health status and on knowledge, attitudes and behaviours related to salt. Participants were asked to recall their dietary intake over the previous 24 hours and to provide a single 24-hour urine sample. The dietary recall data were analysed using *FoodWorks* adapted with Mongolian food composition data from existing tables and product surveys. This information was then used to assess the contribution of different foods to salt in the diet.

Salt intake: Average salt intake was estimated at 11.06g per day – more than double the WHO recommendations. The majority (89.2%) of the population consumed over 5g per day.

Knowledge, attitudes and behaviours: Most people (87.5%) understood the adverse effects of salt on health but almost half reported regularly consuming salty tea and high-salt meals. About one third of the persons surveyed were making no efforts to reduce their consumption of salt, with one fifth unable to name food products high in salt correctly.

Main sources of salt in the diet: The dietary survey identified salted tea, sausage, smoked meat products, pickled vegetables, bread and chips as some of the main sources of salt in the diet.

Pilot initiatives: The pilot initiatives included a Pinch Salt factory intervention (to reduce salt consumption of factory workers) and salt reduction in bread. The factory intervention involved reducing salt in factory meals alongside education of factory workers about how to reduce salt consumption. Pre- and post-intervention monitoring was undertaken to determine salt intake using 24-hour urine samples and a questionnaire. Changes in the sodium content of food and meals were measured through laboratory analysis. Both interventions were successful: the salt intake of factory workers was reduced by 2.8g with parallel improvements in consumer awareness, and the salt content of bread in 10 bakeries declined by an average of 1.6%.

The effective monitoring of these pilot salt reduction activities demonstrated the potential for salt reduction action in Mongolia and the need to scale up activities to the national level. Data on the interventions were used alongside the results of the baseline surveys and the stakeholder consultation to inform the National Salt Reduction Strategy 2015–2025 which was endorsed by the government in November 2015.

INTERVENTION S3: MONITOR AND EVALUATE THE IMPACT OF THE SALT REDUCTION PROGRAMME

Early in the process of developing a salt reduction programme it is important to draw up a monitoring and evaluation plan which includes a series of objectives to be achieved with defined indicators and agreed time frames. In addition to the outcome data collected from interventions S1 and S2, each of the components of **SHAKE** should include a series of measures that not only assess the final outcome but also enable interim monitoring of progress towards that outcome. The reason for this is that the final outcome of an intervention such as food reformulation (i.e. lower salt foods) may have a time frame of three or four years for completion. To ensure that this target is on track for completion, a series of process indicators – such as the number of companies participating, the number of meetings held and the commitments made – should be recorded regularly and reported publicly. This will enable early detection of problems and will allow timely solutions to be found. Process indicators should be assessed every 6–12 months and might include:

- Governance indicators: membership of leadership groups and numbers of meetings held;
- Engagement measures: number of food industry members engaged and numbers of reformulation targets set;
- Community outreach: numbers and reach of media interventions, public meetings and community education interventions.

Monitoring should be done against a set of prespecified milestones that are clearly defined and are in the public domain so that a transparent and objective evaluation can be made at each prespecified time point. Likewise, commitment to complete and public reporting of the monitoring outcomes is useful so that stakeholders have a clear understanding of what is expected of them and how this compares to what is being achieved. Third parties can then examine the programme. It is anticipated that objectivity and transparency in reporting will encourage stakeholders to deliver on their commitments and will enable problems to be rectified early in the implementation process.

Once a programme has begun, it is possible to collect data about areas other than health impact, such as cost-effectiveness. Cost-effectiveness data allow the salt reduction programme to be compared directly with other interventions. Thus, over time it will become possible to demonstrate empirically the investment case for a salt reduction programme compared with other national initiatives.

Monitoring must also take account of the common goal of salt reduction and iodine deficiency programmes – i.e. to reduce salt intake while achieving optimal population intake of iodine. Iodine deficiency programmes rely on salt fortification as a carrier of iodine, so steps must be taken to synergize programmes and ensure that reduced salt levels do not adversely affect iodine intake. One means of addressing this is to increase the amount of iodine added to the salt so that iodine intake remains the same even as salt intake decreases.

KEY ACTIONS IN MONITORING THE IMPACT OF THE SALT REDUCTION PROGRAMME

SET
MILESTONES

ESTABLISH
PROCESS
INDICATORS

DEVELOP
AND IMPLEMENT
EVALUATION
FRAMEWORK

PUBLICIZE
RESULTS

Case study: Monitoring and evaluating the impact and results of the United Kingdom's salt reduction programme (15)

A major component of the successful salt reduction programme in the United Kingdom involved working with industry to promote reformulation of food products to contain less salt. This meant working with all sectors of the food industry, including manufacturers, retailers, trade associations, caterers and suppliers to the catering industry. The following actions were taken:

- All stakeholders and industry representatives were engaged in a meeting to demonstrate how the reductions in salt levels of foods could help achieve a reduction in population salt intake.
- Industry was called on to provide action plans outlining how the salt content of foods would be reduced.
- Targets for salt levels were proposed for some 80 categories of food products and released for public consultation. The targets were revised and reset every 2 years. The targets were challenging for the food industry to achieve but they also offered good progress towards meeting population salt intake goals.
- Regular follow-up meetings were held with a range of key organizations in each sector of the food industry.
- Effective one-to-one working relationships were established with food industry representatives. Strategies and targets were tailored to the needs of different sectors by negotiating measurable commitments to salt reduction.

Levels of salt have been reduced in some food products by up to 55%, with significant reductions in the food categories contributing most salt to the diet. Since 2004, average population salt intake has decreased from 9.5g per day to around 8.1g per day, which is estimated to prevent more than 9000 premature deaths and save £1.5 billion every year in health-care and other costs. This is around 300 times more than the cost of running the salt reduction programme.

HARNESS INDUSTRY PROMOTE REFORMULATION OF FOODS AND MEALS TO CONTAIN LESS SALT

Objective: Reduce salt content across the food supply

In most developed countries and in an increasing number of developing ones, the bulk (70–80%) of dietary salt consumed by the population comes from processed or restaurant foods (16). Promoting reformulation of foods to contain less salt is therefore essential in order to reduce population salt intake and should be one of the first actions considered.

The food industry should be encouraged to reduce salt in foods as much as possible while at the same time ensuring that, where appropriate, salt added to foods is iodized. All Member States of the United Nations, through the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases, have recognized the importance of reformulating food products so that they are consistent with a healthy diet (Figure 4) (17).

Salt is added to processed foods and meals for a variety of reasons but primarily because it is a cheap way of adding flavour to otherwise bland foods. When high-salt foods are consistently consumed, the salt taste receptors are suppressed, creating the habit of eating highly salted foods and leading to greater consumer demand (8).

Figure 4
United Nations. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases



“(b) Consider producing and promoting more food products consistent with a healthy diet, including by reformulating products to provide healthier options that are affordable and accessible and that follow relevant nutrition facts and labelling standards, including information on sugars, salt and fats and, where appropriate, trans-fat content”



While the food industry may argue that the high salt content of foods is due to consumer taste preferences, evidence suggests that it is possible to make significant reductions (40–50%) in the salt content of a range of products without consumers noticing (18). As salt intake falls, the specific salt taste receptors in the mouth become much more sensitive to lower concentrations of salt and this adjustment takes only 1–2 months (8). This means that less salty food will taste as salty as highly salted food did prior to the adjustment. Research has shown that, contrary to what is sometimes suggested, consumers do not simply add more salt themselves if salt is reduced in processed foods. It is therefore unlikely that lowering salt concentrations of food will lead to the foods being rejected; evidence suggests that, once salt intake has been reduced, individuals prefer foods with less salt (19).

INTERVENTION H1: SET TARGET LEVELS FOR THE AMOUNT OF SALT IN FOODS AND MEALS AND IMPLEMENT STRATEGIES TO PROMOTE REFORMULATION

A priority component of a successful reformulation plan is the use of target salt levels in foods. Setting clear and progressively lower targets for salt levels in foods and meals is a straightforward goal for the food industry to achieve within a specified time frame. Targets should be reasonable but should be significant enough to reduce population salt intake (20).

The easiest way to set targets is to use maximum levels – i.e. the maximum sodium content for each food category is set and the sodium content of all food products within that category must be below the maximum level. This is generally straightforward and transparent, and easy to administer and monitor. However, maximum levels do not indicate whether the average sodium content across the food supply is changing, thus making it difficult to predict the impact of targets on average salt intake. It has also been suggested that maximum targets imply that no reductions are needed in any food that meets the target. Similarly, the setting of benchmarks involves agreeing on the targeted percentage reduction in different food categories to be achieved within a specific time period.

An alternative method is to have weighted average targets for each food category. By this method the target sodium content level that is set for a food category can be met by reducing sodium levels across that category. This gives the food industry flexibility to reduce salt content more in some products and less in others. Sales-weighted average targets, rather than simple crude averages, are the optimum approach but the sales data required are unavailable in most countries and expensive to obtain in others.

As some salt is needed in some foods for functional reasons, engagement with the food industry is an essential first step to understanding the feasibility of reductions in specific foods as well as to encourage reformulation efforts. In many countries a stepwise approach will be taken by initially setting targets for foods that contribute a large proportion of salt to the diet. The programme can then be expanded to include other foods. Foods that contribute the most dietary salt can be highly salted foods such as cured meats, but they can also be moderately salted foods that are consumed in large quantities such as bread. In Argentina, where 25% of the salt consumed by the population is from bread, it is estimated that a planned 1g reduction per loaf will alone save 2000 lives per year (21).

Countries that plan to set targets should consider approaches taken by countries that already have active food reformulation programmes since many targets will be directly transferable from one setting to another. Regional targets have been developed for the European Union (22), the Americas (23) and Pacific island countries (24). These regional targets can be adapted for use as national targets. By comparing global brands across countries one can identify different salt levels in the same products. This can be a powerful lever to encourage multinational companies to transfer product improvements from one country to another.

Once the targets are agreed, they need to be enforced or implemented, preferably by a mandatory approach using legislation or regulation with defined maximum targets. It has been shown that a mandatory approach is more effective than a voluntary one as a way of ensuring food industry cooperation, and all modelling suggests that mandated approaches to implementation would be more cost-effective (25). Argentina, Belgium, Bulgaria, Greece, Hungary, Mauritius, Netherlands, Paraguay, Portugal, Slovak Republic and South Africa have all developed legislative approaches for the control of maximum levels of sodium in selected food categories (mostly breads) (26). A mandatory approach means that targets apply across all food manufacturing sectors, which in itself appears to be an important factor in making reformulation commercially viable. So far only two countries – Argentina and South Africa – have adopted comprehensive legislation to enforce salt targets across a range of foods (27-28).

Case study: Legislation to enforce maximum salt targets in foods, South Africa (27)

In 2013, the South African National Department of Health passed new mandatory regulations on sodium limits in processed foods with implementation deadlines of 30 June 2016 and 30 June 2019. The process for introducing the legislation required extensive collaboration between government, academia and industry, and was guided by international experts to ensure that the experience from implementation of similar programmes, particularly in the United Kingdom, was taken into account.

Following extensive consultation on the proposals, mandatory maximum salt levels were set for specific foods with high consumption rates, including bread, margarine, spreads, salty snacks, processed meats (including cured

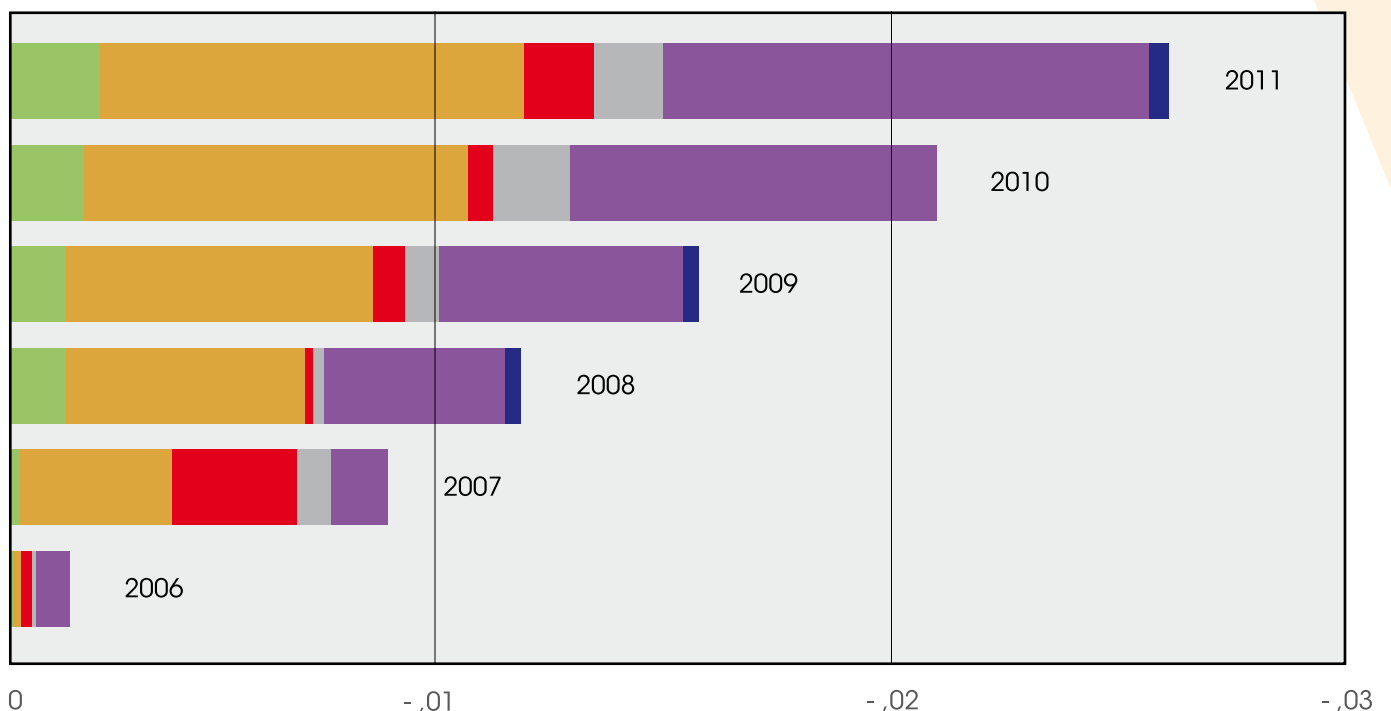
meats and sausages), stock cubes, gravy and soup mixes. The mandatory maximum levels were announced in March 2013 and companies were allowed three years to make changes before the legislation took effect. The second phase, which will be introduced by 2019, will aim to further reduce the salt content of foods. The legislation includes methods to ensure compliance, such as chemical analysis of foods, and penalties for companies that are noncompliant.

Voluntary approaches can be used through industry commitment and pledges. Kuwait and the United Kingdom used a voluntary approach successfully, but this required strong government leadership, close collaboration with industry, good monitoring data on the salt content of target foods and, importantly, publication of results to hold the food industry to account. Argentina is using a two-tiered approach that has legislated targets for processed foods and voluntary targets for local producers. It is recommended that the food industry be given two years to meet targets regardless of the approach used.

Encouraging the food industry to reformulate its products can be challenging. A number of arguments may be employed by industry figures to justify the difficulty of reducing salt content in certain foods. However, experience from around the world has shown that it is technically possible to reduce the amount of salt significantly without affecting the product. In the United Kingdom, for example, the salt content of processed foods sold in supermarkets was initially reduced by 20–30% over three years without affecting consumer preference or sales (32).

Technical limitations are rarely a reason to omit a food category from a salt reduction programme. Within almost every food category, there is already a broad range of salt levels across similar products which demonstrate the technical feasibility of producing lower salt options. In 2012, following the reductions they had already achieved (Figure 5) (33) the food industry in the United Kingdom commissioned a report that detailed the emerging technologies and ingredients that could be utilized to further reduce salt across eight key food categories (34).

Figure 5
United Kingdom product reformulation effect by food group:
change in salt content (g per 100g)



Cumulative change in salt content due to reformulation relative to 2005.

■ Fruit and veg ■ Grains ■ Meat ■ Dairy products ■ Processed food ■ Drinks

Besides setting targets for industry, other policy options can be considered to support reformulation. These include the introduction of taxes on high-salt foods and the implementation of effective labelling and communication strategies, similar to the approaches used in tobacco control (38). Hungary introduced a public health product tax on salty snacks with a sodium content exceeding 1g per 100g and on condiments (soup and other powder, artificial seasonings) with a sodium content above 5g per 100g. Portugal has also introduced a value added tax on salty products (39). While there is good evidence of impact for similar initiatives in tobacco control, evidence of the impact of these interventions on salt is not yet well established and models of the probable effects of taxation vary in their predictions of revenue (40).

KEY ACTIONS TO REFORMULATE FOODS



ADOPT STANDARDS FOR LABELLING AND MARKETING IMPLEMENT STANDARDS FOR EFFECTIVE AND ACCURATE LABELLING AND MARKETING OF FOOD

Objective: The introduction of effective and accurate nutrition labelling systems and non-misleading marketing of foods so that consumers can easily identify foods that are low or high in salt

Nutrition labelling refers to the disclosure of the main nutrients such as salt, fat, sugar and energy content on the food product label. It is a policy tool that governments, the food industry and nongovernmental health and consumer organisations can use to guide consumer food selection.

In salt reduction, the purpose of labelling is to guide food selection towards healthier choices that contain less salt. Nutrition labelling, particularly front-of-pack labelling, may also encourage reformulation of food products by compelling manufacturers to declare publicly the amount of salt used in a product, which may mean that the product compares unfavourably with that of a competitor and thus loses consumer interest.

There are a variety of both voluntary and mandatory nutrition labelling systems in use around the world, most commonly applied to pre-packaged food and beverage products. Labelling systems vary in the type and number of nutrients labelled, the reference values used, whether the information appears on 'front-of-pack' or 'back-of-pack' and whether the label gives any interpretive guidance to the consumer.

Nutrient declarations, which usually take the form of a 'back-of-pack' listing of the nutrient content of foods (Figure 6), should be displayed on all pre-packaged foods as mandated by the Codex Alimentarius (food code). 'Front-of-pack' labelling can be used as an additional tool governments can use to guide consumer food selection by prominently displaying easily understood information about the nutrient quality of food products.

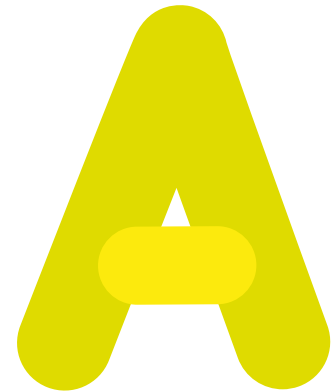


Figure 6
Example of a common 'back-of-pack' nutrient declaration

Nutrition Facts / Valeur nutritive		
Per 1 packet (28 g) pour 1 paquet (28 g)		
Amount Teneur	Cereal	cereal and milk
Calories / Calories	100	150
% Daily Value / % valeur quotidienne		
Fat / Lipides 0 g*	0 %	12 %
Saturated / saturés 0 g		
+ Trans / trans 0 g	0 %	23 %
Cholesterol / Cholestérol 0 mg		
Sodium / Sodium 200 mg	8 %	4 %
Carbohydrate / Glucides 24 g	8 %	4 %
Fibre / Fibres 1 g	5 %	0 %
Sugars / Sucres 2 g		
Protein / Protéines 2 g		
Vitamin A / Vitamine A	8 %	8 %
Vitamin C / Vitamine C	0 %	0 %
Calcium / Calcium	0 %	25 %
Iron / Fer	40 %	0 %

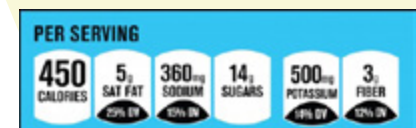
** Mix milk with cereal

Labelling should allow consumers to make fast evaluations of products and help people to understand the quantitative information. Evidence indicates that, when making food choices, attention to nutrition labels lasts between 25 and 100 milliseconds, making it critical for a message to be understood almost immediately (41).

The ideal front-of-pack labelling system is one that is interpretive, meaning that it can provide an "at-a-glance" indication of whether a food has high or low levels of a nutrient or set of nutrients. Labelling schemes such as the "colour code" system enable consumers to work out the relative nutritional value of the food quickly. There is consistent evidence that consumers support the introduction of front-of-pack labelling and that they prefer schemes which are simple and easy to use. These schemes have also been proven to help consumers make healthier choices (42-44).

Figure 7 shows the difference between non-interpretive and interpretive front-of-pack labelling.

Figure 7
Comparison of non-interpretive (up) and interpretive (down) 'front-of-pack' labelling



INTERVENTION A1: ADOPT INTERPRETIVE FRONT-OF-PACK NUTRITION LABELLING SYSTEMS

Countries should introduce clear, interpretive and accurate front-of-pack labelling schemes that enable consumers to understand the salt content of foods quickly and easily. This will empower consumers to make healthy choices when purchasing foods.

The United Kingdom has been promoting the use of a front-of-pack colour-coded labelling scheme since 2006. While uptake was voluntary, the front-of-pack labels are now on more than three quarters of supermarket foods and are preferred by consumers as they can see immediately whether a product has a little or a lot of salt (45-46).

Different countries have used different labelling strategies depending on existing practices, cultural norms and consumer preferences. As labelling systems are very easily transferred from one context to another, countries are advised to adopt labelling schemes from other countries rather than invent new ones. Mandatory systems, where all products in a food category are incorporated (all breads for example), are ideal from both consumer and health perspectives as they enable consumers to make properly informed choices by comparing all options. The introduction of multiple labelling schemes into the marketplace is likely to cause consumer confusion and frustration rather than support effective food choices.

Clear labelling has the greatest impact when implemented alongside a comprehensive education, communication and marketing campaign that informs and educates consumers about labelling information and health implications. Nutrition labelling can also facilitate and reinforce other actions that form part of a comprehensive salt reduction programme. For instance, labelling strategies in Finland have prompted the food industry to reformulate the salt content of products in order to avoid a “high salt” label. As a result, there has been a 20–25% reduction in the salt levels of bread, meat products, cheeses and ready meals (47), and a variety of reduced-salt products have emerged on the market (48).

Countries that import a lot of their foods may not directly be able to influence the labelling schemes that are in use. For these countries, it is recommended that the *Codex Alimentarius* standards be enforced and only foods with nutrition declarations in appropriate languages be permitted for import.

KEY ACTIONS IN ADOPTING AN INTERPRETIVE FRONT- OF-PACK NUTRITION LABELLING SYSTEM



Case study: “High salt” warning labels, Finland

Finland has legislated to make it compulsory for salt warning labels to be displayed on processed foods that were identified as significant contributors to salt intake in the Finnish diet. The labelling strategy has three components: the percentage of salt must be displayed on the package, foods with salt content above a maximum level must display a high-salt content warning label (Figure 8), and foods with salt content below a specified level are permitted to display a low-salt label (48). Average salt intake

in Finland reduced by about 15% between 1979 and 2007 as a result of systematic action on salt, including the labelling regulations which help consumers identify products with reduced salt content (49).

INTERVENTION A2: IMPLEMENT STRATEGIES TO COMBAT THE MISLEADING MARKETING OF FOODS THAT ARE HIGH IN SALT

Standards must be implemented to prevent labelling and packaging which misrepresents salt or salty foods as healthy simply because they contain beneficial amounts of other minerals or nutrients. The widespread promotion of expensive speciality salts such as “sea salts” or “rock salts” as better for health is misleading because such salts contain similar amounts of sodium to other salts and equally impact health negatively. Recent research suggests that the use of buzzwords such as “wholegrain” and “antioxidants” make consumers think a food product is healthy when it may actually contain very high levels of salt (50). Combined with inadequate nutrition labelling systems, which many consumers find difficult to understand, misleading marketing can prevent consumers from making accurately informed choices.

Food companies should be allowed to make health claims only for genuinely healthy food products, and regulations may be considered and enforced to stop misleading marketing practices. Comprehensive strategies have been proposed to overhaul regulations on misleading marketing of food products in the USA because the current regulations have not been effective (51). This could be achieved by limiting the amount of sugar, salt and fat that a food product may contain in order for it to be marketed with any claims of nutritional or health benefit.

Figure 8
Finnish ‘high salt
content’ warning label:
“VOIMAKASSUOLAINEN”
to be stated on foods
with high salt content



Additional measures can be taken at the point of purchase to reduce the impact of misleading marketing. In food stores and supermarkets, emphatic “shelf labelling” which displays warning labels or the nutrient content of foods at the point of purchase may also help consumers to identify foods high in salt regardless of the marketing strategies used. This strategy is currently being piloted in supermarkets in the Marshall Islands (52). Another option is the use of mobile telephone applications which enable consumers to scan a food product bar code to obtain information on the nutrient content and relative healthiness compared with other products. A good example is Australia’s *FoodSwitch* app, which can be used to support consumers to make healthier choices while shopping (53).

As meals are increasingly eaten out of the home in restaurants and at food stands, or purchased from street vendors, action in these settings can help consumers to identify options that are low or high in salt. For instance, regulations can enforce menu nutrition labelling, which involves placing information about the nutrient content of foods on the table menu or on a visible menu board, as has been done in New York City.

Case study: “High salt” warning on menus in restaurants, New York City

New York City has introduced regulations so that large restaurant chains with 15 or more locations must display high-salt warning labels on menu items or combination meals that contain more than the recommended daily limit of sodium (Figure 9). Evidence suggests that health warnings can increase knowledge and decrease purchase and consumption of certain products (54). Warning labels enable consumers to make informed choices in this setting.

Finally, evidence from systematic reviews shows that marketing targeted at children widely promotes foods with high content of fat, sugar or salt (55). Marketing of foods high in salt to children should be restricted and governments should play a leading role. WHO’s recommendations on marketing of foods and non-alcoholic beverages to children, adopted by the Sixty-third World Health Assembly, detail the actions that governments should take to restrict the marketing of unhealthy foods to children.

Figure 9
Warning labels used on high salt foods in New York City



KEY ACTIONS IN COMBATTING THE MISLEADING MARKETING OF FOODS THAT ARE HIGH IN SALT

REVIEW ANY
CURRENT
MISLEADING
MARKETING
PRACTICES

IDENTIFY
LEGISLATIVE
AND LABELLING
STRATEGIES

ENGAGE
WITH FOOD
INDUSTRY

IMPLEMENT,
MONITOR
AND EVALUATE

KNOWLEDGE EDUCATE AND COMMUNICATE TO EMPOWER INDIVIDUALS TO EAT LESS SALT

Objective: High levels of knowledge and awareness of the health risks of salt and changes in behaviour

Consumer knowledge and awareness are essential to achieving sustainable changes in consumer behaviour. Many people are not fully aware of the risks of salt consumption and the link with high blood pressure and stroke. Consumers are also often not aware of the amount of salt consumed and the major sources of salt in their diet because the high salt levels in processed foods and meals are hidden. Raising awareness of the health impact of salt consumption and the major sources of salt in diets will help to influence consumer behaviour. Strategies that are targeted at behaviour change can then be used to empower people to improve their diets and increase demand for lower-salt food products.

INTERVENTION K1: IMPLEMENT INTEGRATED EDUCATION AND COMMUNICATION STRATEGIES TO RAISE AWARENESS ABOUT THE HEALTH RISKS AND DIETARY SOURCES OF SALT AND ULTIMATELY CHANGE BEHAVIOUR

In all countries, the public should be informed of, or educated about, the health risks of excessive salt consumption. In countries where the major source of salt intake is through salt added at the table or while cooking (e.g. through table salt or condiments such as soy sauce), education and communication strategies are particularly important to influence the behaviour of consumers, cooks and caterers to reduce salt use. In countries where processed foods are the major source of salt, the target audience would be the food industry and government policy-makers. The increased consumer engagement gained through education and communication can create pressure on the food industry to follow through with commitments to reduce salt.



Strategic health education and communication on diet have been identified as a “best buy” due to their demonstrated cost-effectiveness (5). Successful education and communication strategies can lead to changes in social norms relating to salt consumption, increased demand for healthier and lower-salt products, and improvements in overall health for individuals and communities.

Education and communication work best as part of a comprehensive package rather than in isolation. Additional actions aimed at fostering an environment conducive to healthy eating are necessary and are likely to have a complementary and synergistic effect on the other key interventions of the salt reduction strategy.

Different approaches can be applied in health education and communication campaigns – including social marketing, social mobilization, behaviour change communication, and communication for development. Social marketing strategies are designed on the basis of commercial marketing principles but with the goal of encouraging a positive behaviour. The “communication for behavioural impact” (COMBI) approach uses multiple communication channels in order to encourage schools, communities, health-service providers, and local authorities and agencies to take action towards the goal of reducing population salt consumption. While contextual differences are important in customizing an effective salt awareness campaign, the key principles remain consistent and can be used to design, deliver and evaluate communication for behaviour change strategies that use promotional and educational approaches.

Case study: Implementation of a multicomponent communication and public education strategy, Viet Nam (56)

Some 70–80% of the sodium consumed in the Vietnamese diet comes from salt, fish sauce and other salty condiments added during cooking or eating, so education to change this behaviour is critical. A COMBI method was applied in one province over a year in order to reduce population salt intake.

The communication strategy included five components of integrated actions to help achieve the behavioural objectives. These five areas were: administrative mobilization and public advocacy; community mobilization; advertising; face-to-face engagement; and point-of-service promotion using tools to support interactions. Within each area a number of actions were applied to achieve the behavioural objectives.

The strategy was evaluated by conducting a baseline assessment and then repeating the assessment following the intervention. Measures assessed included: salt intake levels; consumer knowledge, attitudes and practice; blood pressure; and anthropometric measurements.

The evaluation found that average salt intake was reduced from 15.5g per day to 13.3g per day. After the intervention, the local population also knew more about the health risks related to high salt intake and 86.5% of the population applied practices to reduce salt intake. Mean blood pressure also reduced following the intervention.

Any communication and education campaign should always begin with clear and specific behavioural objectives that are well informed by knowledge of the issue. Once behavioural objectives are identified, audience research can determine attitudes and perceptions, including the environment in which behaviours are to be adopted, what can be addressed by education and communication, and what can be addressed only by other methods. The research should inform strategies designed to undo misperceptions, reinforce benefits, remove barriers and ultimately influence behaviour.

A mix of strategies should be applied on the basis of five broad components of public advocacy, community mobilization, advertising, interpersonal communication and point-of-service promotion. Consumer messages can then be developed, tested and refined. Messages will generally focus on the link between salt and poor health, the interpretation of low-salt labelling, instruction on choosing low-salt alternatives and information on preparing low-salt meals.

Campaigns should be properly planned and preferably be multi-year programmes rather than one-off initiatives. Innovative platforms such as mobile telephones should be utilized to deliver messages as appropriate.

Case study: Implementation of a strategic and targeted communication for behaviour change strategy, Australia

A study conducted in Lithgow, New South Wales, Australia, aimed to reduce the daily adult salt consumption by approximately one gram over an 18-month study period from 2011 to 2014 using the COMBI framework (57). Baseline assessment identified intakes of approximately 8.8g per day in the study sample – far in excess of the recommended maximum daily salt consumption (58). Furthermore, while all participants recognized that a diet high in salt can cause serious health problems, few knew the recommended upper limit of salt intake or identified salt reduction as a priority (59).

Through a comprehensive consultation process and the involvement of a community advisory committee (including local councillors, dietitians, physicians and teachers), two tools were chosen to assist the community with salt reduction. The first, *FoodSwitch*, is a smartphone application that allows users to scan the barcodes of packaged foods, and then provides directional instruction on the amount of salt present and gives a list of similar, healthier foods that are lower in salt. The second tool was a salt substitute, comprising a formula with 70% less sodium than regular salt. These tools were combined with strategies to influence behaviour change using the COMBI framework which utilizes an integrated communication model to enact community advocacy and impact. There are five broad components in this approach, namely:

1) Administrative mobilization and public advocacy: Salt reduction was put on the agenda of health workers and local government staff via engagement in a series of meetings. The outcome was that these professionals advocated for salt reduction within the community.

2) Community mobilization: Businesses, workplaces and school settings were engaged through meetings, presentations and the provision of the tools to bring about salt reduction.

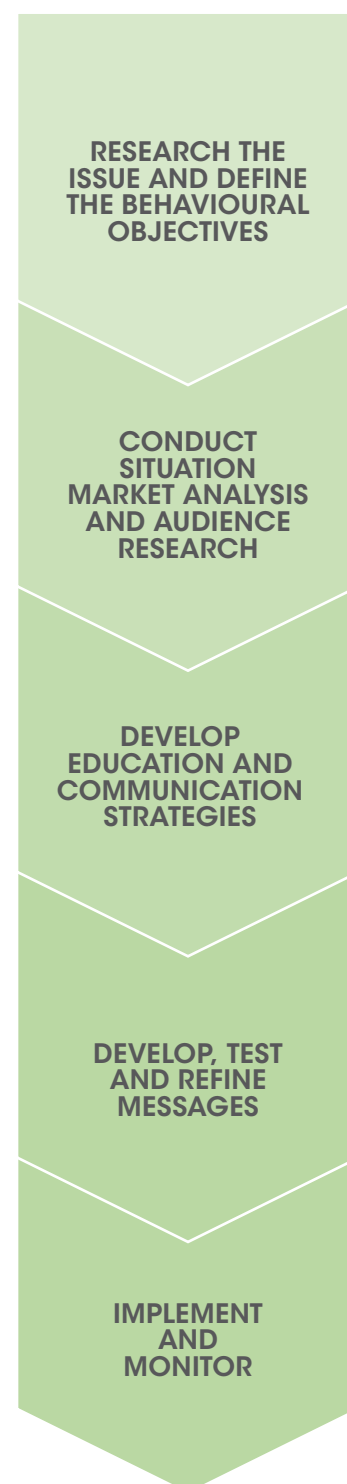
3) Advertising: Local channels of communication – including newspapers, social media and radio – were targeted with stories about the strategy.

4) Interpersonal communication: Information booths were established in the two main shopping areas, and information was also delivered door-to-door. Tools were supplied to support interpersonal communication and engagement throughout the community.

5) Point of service/sale: The salt substitute was made available at local cafes and restaurants for use by consumers, as well as at local bakeries, government buildings, medical centres and pharmacies.

After follow-up, the estimated mean urinary salt excretion of the Lithgow population was 8.0g per day, representing a 0.8g per day decline from baseline ($p < 0.001$), with significant increases in knowledge of the recommended upper limit of salt ($p < 0.001$) and the importance of lowering salt intake ($p < 0.001$) (58).

KEY ACTIONS IN DEVELOPING A COMMUNICATION CAMPAIGN



ENVIRONMENT SUPPORT SETTINGS TO PROMOTE HEALTHY EATING

Objective: Salt reduction initiatives implemented through community settings

Settings are defined as places where people live, work and play. There is good potential for reducing salt in the food supply in settings such as schools, workplaces and hospitals as the management often has full control over the food served (60).

Community settings are a platform for local implementation of both national salt reduction policies and specific salt reduction interventions. The other components of the **SHAKE** package can be applied in both specific institutional contexts and broader community settings. These components may include, for instance, labelling strategies in food outlets, education and communication strategies in schools and workplaces and the development of standards for prepared institutional meals.

INTERVENTION E1: IMPLEMENT MULTICOMPONENT SALT REDUCTION STRATEGIES IN SETTINGS INCLUDING SCHOOLS, WORKPLACES AND HOSPITALS

A number of approaches have been successful in reducing the levels of salt in food served in schools, workplaces and other institutional settings. The establishment of healthy food and drink guidelines for institutions, including salt criteria, is one such approach. Several countries have developed standards for mass caterers, defining the maximum levels of salt in foods that may be sold in schools and hospitals (61-64). In some countries these standards have been incorporated into the licensing process for food outlets as an incentive to reduce salt use.



Case study: Legislation and education through school canteens, England (61)

School food has been provided to school pupils in England for decades. From the mid-1970s the number and quality of the meals declined. Legislation and regulation of school canteens in England have proven successful in reducing salt content by setting out what caterers can provide for children in schools. At the same time, the Children's Food Trust worked with caterers, schools, pupils, parents, manufacturers, food distributors, and institutions providing further education for catering staff, among others, in a coordinated programme of change. There is clear evidence of improvements in the provision, choice and consumption of food in schools following the introduction of legislation and of a

national programme of work to change catering practices and the attitudes of pupils, parents and others towards healthier food provision in schools. A primary school food survey showed a 30% reduction in the salt content of school lunches since food standards were set in 2006. Similar initiatives have been implemented successfully in Australia (62), Canada (63) and the USA (64).

As with children in schools, most adults now spend the vast majority of their time in the workplace; thus, protecting and promoting health in this setting, including through salt reduction, is critical (65). The public sector in the United Kingdom – which includes, for instance, schools, hospitals, aged care facilities and prisons – serves upwards of one billion meals each year. Modelling by the Food Standards Agency has demonstrated how developing healthy menus for caterers of major institutions has positively influenced nutrient composition, ultimately affecting the consumption of salt and other nutrients of public health concern.

In addition to setting standards for foods served in institutions, behaviour change programmes can be implemented in community settings. It is often possible to implement behaviour change programmes in these settings more intensely than in wider society. For example, school-based education programs can provide health lessons related to salt and it is possible for these interventions to reduce the salt intake of both students and their families (66).

Case study: The Shandong Ministry of Health Action on Salt Reduction and Hypertension (SMASH): Shandong, China

In China, the primary source of dietary salt is added during cooking. In Shandong Province, the third most populous province, hypertension rates and salt intake in adults are higher than the national average (67).

The SMASH Initiative works across broad provincial and local government agencies and health sector teams to target interventions at households and educational settings along with strategies targeting business and restaurants to reduce salt intake. SMASH works through restaurants to develop sodium standards for Shandong cuisine, develops and conducts chef training, produces lower salt menus and develops complementary communication activities to increase consumer knowledge and awareness. Mid-term evaluation of SMASH reported that salt intake in Shandong decreased from 12.5g per day in 2011 to 11.58g per day in 2013 among adults aged 18-69 years (68).

The SMASH Initiative presents a good example of a comprehensive salt reduction programme where a range of interventions and strategies have been implemented through settings including households, schools, medical institutions, supermarkets and restaurants.

KEY ACTIONS IN IMPLEMENTING SALT REDUCTION STRATEGIES IN SETTINGS

IDENTIFY KEY SETTINGS

ADVOCATE AND MOBILIZE KEY STAKEHOLDERS

DEVELOP STRATEGIES

SUPPORT IMPLEMENTATION, MONITOR AND EVALUATE

CONCLUSION

People currently have difficulty limiting their intake of salt to the recommended amount since, in many countries, most salt is added to processed foods and meals before purchase. A meaningful strategy to reduce salt consumption across populations must contain all elements of the **SHAKE** salt reduction package. Regular surveillance will make sure that the strategy can be appropriately targeted and change can be measured over time. The cooperation of food manufacturers, processors, importers and the restaurant sector in lowering the amount of salt in the food supply will enable consumers to access a reduced salt diet. A successful salt reduction programme will require action at all levels – individuals, civil society, health-care providers and their professional societies, academia, public health agencies and governments – to generate knowledge, change the food environment and influence social norms so that people demand and gain greater control over the amount of salt they consume.

By bringing all of these factors together, the **SHAKE** package provides a full set of policy tools based on existing practices from around the world. When used in conjunction with strong political commitment, good programme management, a network of partnerships and effective advocacy, **SHAKE** can help any country create a robust strategy to reduce salt consumption – helping the global population shake its salt habit.

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