

From: Dick Hanneman [dick@saltinstitute.org]
Sent: Saturday, 15 June 2002 06:13
To: dietandhealth@who.int

June 15, 2002

Dr. Chizura Noshida
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World Health Organization
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Dear Dr. Noshida:

These comments are being submitted by the Salt Institute to supplement those we filed April 13 commenting on the earlier draft. The Salt Institute is the international not-for-profit association of salt producers. Our mission is to encourage appropriate use of sodium chloride so that individuals and society can enjoy its enormous benefits at the lowest possible cost. We are entirely funded by dues from our member companies.

We are pleased at the additional opportunity for comment. Our earlier comments on hundreds of pages of documentation were required within two weeks, a clearly inadequate and inappropriately short time frame. Nevertheless, we find ourselves in the position of reiterating the critique offered earlier. While pleased that the April 26 draft's discussion of osteoporosis modified – and downgraded – the claimed evidence of a role for sodium chloride – we feel the entire document is so deeply flawed that we recommend scrapping it entirely and starting afresh. The prefatory verbiage about dietary guidance based on foods and using evidence of health outcomes, as noted in our earlier comments, is encouraging, but the document and the “report of the Expert Consultation” do not embrace the high standards set out to guide the report.

Our earlier review mentioned our disappointment that the earlier draft did not focus more attention on the achievements by WHO, UNICEF and other cooperating agencies and organizations, including the global salt industry, in nearly achieving the “virtual elimination” of iodine deficiency, the top nutritional goal for the 1991 World Summit for Children. The April 26 draft incorporated no improvement in this regard. It deserves a full chapter. Iodizing salt is the most impressive and cost-effective public health nutrition achievement in the history of mankind.

This raises the more general question of why the report avoids the broader question of the contribution of proper nutrition to maintaining good health and avoiding all sorts of other health problems. While not always “chronic diseases,” conditions like diarrhea to say nothing of simple malnutrition and starvation are major – and chronic – public health challenges around the globe. After we succeed in our campaign to improve intake levels of dietary iodine, for example, those of us in the global war against micronutrient malnutrition will be turning our attention to insufficient consumption of iron, Vitamin A, folic acid, etc. For this report to ignore, utterly, the plight of the developing world and their desperate imperative to grow and distribute, safely, sufficient amounts of food to sustain – and improve the health characteristics of – their populations is astounding. It represents yet another good reason to put aside this report and start over.

This same fatal flaw continues to characterize the April 26 draft. As we noted earlier, the link of diet and chronic disease, appears to be just that – diet and disease, not particular nutrients. Thus, in the area of cardiovascular risk, we should be examining the development of cardiovascular disease – and its endpoints of heart attacks and strokes – in terms of the dietary patterns involved. Here, as in the case of iodine, Vitamin A, iron, folic acid, etc., the question of intake levels for dietary sodium must be considered in the context of the diet. Salt is, indisputably, involved in blood pressure regulation, but the unidirectional effect outlined is too simplistic. While 20-30% of individuals lower their blood pressures on low-salt diets, nearly as many actually have increased blood pressures when sodium chloride intake is reduced. Blood pressure, itself, is one of the intermediate variables that the report states should not be used in policy making in preference to an examination of the health outcomes of the dietary pattern. Diets

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with insufficient amounts of nutrients found in fruits, vegetables and dairy products have been conclusively shown to induce “salt sensitive” blood pressure responses. Recommendations to increase dietary intakes of fruits, vegetables and dairy products would improve health – virtually all authorities would accept that as ‘convincingly’ supported by science. Whether diets replete with electrolytes, thus, the diets of individuals whose “salt sensitivity” has been erased by eliminating deficiencies in potassium, calcium and magnesium, still pose an adverse risk has never been demonstrated.

In fact, as stated in our earlier comments, of the studies of the cardiovascular impacts of low-salt diets, none have identified health benefits for the population.

The science behind this report is flawed making the document untenable. It should be scrapped.

When the new effort is begun, the terms of reference should assure that any WHO recommendations will be broadly applicable in the world. They must take into account the need to properly nourish those populations that are starving to death. They must address the issues of “hidden hunger” for micronutrients. They must recognize that diets are composed of foods and consider nutrient intake levels in the context of the full diet.

If this can be done, it will be easy for the scientists to understand that correcting nutrition deficiencies remains the top world priority and that the problems of diet and chronic disease in developed economies are due to excess calories relative to sedentary lifestyles combined with the eroding quality of the diet and the creeping malignancies associated with deficiency-level intakes of key nutrients.

If our appeal for a fresh start is unpersuasive, we would renew the recommendation of our April 13 letter, attached, that the draft report and annexes incorporating the revisions that will be made by your expert panel be reviewed in detail by an internationally-recognized, “evidence-based” research institute such as the Nordic Cochrane Centre.

Sincerely,

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Dear Dr. Nishida:

Thank you for the invitation extended by Dr. Pekka Puska for the Salt Institute to provide comments on behalf of its global membership of salt producers on the draft World Health Organization report on “Diet, Nutrition and the Prevention of Chronic Diseases.” This is a critically important and most timely undertaking. The recent findings from diabetes intervention trials and the DASH trials concerning cardiovascular disease are just two of a number of recent reports that reiterate the truth that simple nutrition interventions hold enormous potential to prevent and manage chronic diseases. Congratulations on your decision to develop new “guidelines” to encourage dietary and nutrition choices to reduce the risk of chronic diseases.

Overview

Proper nutrition is the foundation of good health. Recent evidence underscores the fact that nutrition interventions can match the effectiveness of some drug therapy. Because the science holds such great promise of real reductions in disease risk, production of a scientifically-rigorous and unbiased report becomes that much more important to validate the recent science and hasten adoption of its insights into health promotion and disease prevention. Questions about the objectivity or analytic quality of the report would slow realization of the new findings.

Thus, it is painfully disappointing that the extremely short notice provided for the April 16 “industry consultation,” and the even shorter opportunity to review the draft report, make it impossible for us to attend the meeting in Geneva.

Even more painfully disappointing, however, is the substance of the draft report. The quality of the scientific presentation in the report and its unsubstantiated recommendations will require major reworking to avoid discrediting the document and embarrassing its sponsor.

The Salt Institute having collaborated closely with WHO scientists in prosecuting the U.N.'s top public health nutrition campaign – virtual elimination of Iodine Deficiency Disorders (IDD) – led us to expect analysis and recommendations in this report like the solid science that underpins the campaign against IDD. We were unprepared for the shoddy science that this draft report proffers in support of recommendations for sodium reduction to less than five grams per day for the alleged purpose of preventing cardiovascular disease, cancer and osteoporosis. The draft is nearly silent on the health benefits of salt steadily confirmed by WHO: the use salt as the most cost-effective carrier for iodine to combat mental deficiencies and retardation from Iodine Deficiency Disorders (IDD) and use of salt as a key ingredient in Oral Rehydration Therapy (ORT). The draft report's discussion of the role of reducing insulin resistance as a step towards prevention of diabetes omits any mention whatsoever of the dramatic adverse impact of the recommended reduced level of salt intake which has been shown to increase insulin resistance.

Strengths of the draft report

These very serious shortcomings aside, the draft can be reworked building on some excellent points in the March 28 draft. These include the following:

- The observation is well made that there has been a substantial body of new scientific knowledge that has been generated within the past decade. This is certainly true in the area of nutrition and cardiovascular disease.
- The statement that nutrition is a major modifiable variable in preventing chronic disease is justified and a great cause for hope in reducing the human and economic costs of chronic disease in the world.
- The draft's advocacy of "evidence-based guidelines... that are simple, pragmatic, realistic and food-based" is helpful and correct.
- Recognition of "strength of evidence" and the need to base population intervention recommendations on "convincing" evidence addresses a serious concern. Methodology provides valuable clues as to the validity of the resultant data and the limitations we should accept in making recommendations for interventions based on these data.
- Recognition of the need for evidence to tie the impacts of diet to "hard end points" and the discussion about the significant limitations of analyses based on "intermediate variables" is of paramount importance. As the draft report notes, even though intermediate variables such as blood pressure are "frequently utilized," they are a poor substitute for "strong studies which related dietary patterns or dietary interventions to hard end points such as total mortality, cardiovascular mortality and combined fatal and non fatal cardiovascular events." Indeed, hard end points are required to determine with any meaningful precision whether the observed changes achieve a net positive health impact or produce unintended side effects that negate the beneficial change observed in the intermediate variable.

- The expressed and appropriate reluctance to accept short-term studies that lack power to uncover “lag time” effects is also of crucial importance. Prevention of chronic disease is a lifetime pursuit. If the benefit dissipates after six months or two or three years, the projected public health outcomes will never be realized.

Shortcomings of the draft report – lack of focus on health outcomes

Unfortunately, the draft report does not build on this strong foundation. Indeed, it utterly rejects these standards and, thus, fails to produce scientifically rigorous insights and conclusions. The draft recommendations concerning dietary salt are based entirely on violations of these self-proclaimed standards. Turning its back on the science is what converts the draft report’s valid statement of public health nutrition objectives into unsupportable policy conclusions and recommendations that ignore or misstate the key scientific studies and, if pursued, would frustrate our efforts to promote interventions that science has identified as likely contributors to reducing the risks of developing chronic diseases.

As surprising as it may seem, there have been only eight studies of the impact of reducing dietary sodium on the “hard end points” of reducing the incidence of cardiovascular events and their consequences. Two of these studies are referenced in the draft¹; six are ignored.² Of the two, the draft presents a subgroup analysis from one study,³ showing that the subgroup indeed benefited from reducing sodium – but ignored the same report’s data demonstrating convincingly that the general population derived no benefit. The treatment accorded the other study⁴ was even worse;

¹ Alderman M.H. et al. “Dietary sodium intake and mortality: the National Health and Nutrition Examination Survey (NHANES I).” *Lancet* 1998; 351:781-785 (online at http://pdf.thelancet.com/pdfdownload?uid=llan.351.9105.original_research.7411.1&x=x.pdf). And Tuomilehto J. et al. “Urinary sodium excretion and cardiovascular mortality in Finland: a prospective study.” *Lancet* 2001; 357:848-51 (online at http://pdf.thelancet.com/pdfdownload?uid=llan.357.9259.original_research.15524.1&x=x.pdf -- subscription required).

² Alderman, M.H. et al. “Low urinary sodium associated with greater risk of myocardial infarction among treated hypertensive men. *Hypertension* 1995; 25:1144-1152 (online at <http://hyper.ahajournals.org/cgi/content/abstract/25/6/1144>). Cutler, J.R., Presented May 30, 1997, at American Society of Hypertension annual meeting, San Francisco, CA. (unpublished). Tunstall-Pedoe. “Comparison by prediction of 27 factors of coronary heart disease and health in men and women of the Scottish heart health study cohort study. *British Medical Journal*, 1997; 315:722-729. See Table 6, age-adjusted hazard ratios (online at: <http://bmj.com/cgi/content/full/315/7110/722?view=full&pmid=9314758>). Valkonen, V-P. “Sodium and potassium excretion and the risk of acute myocardial infarction” Presented October 15, 1998 to the American Heart Association Scientific Sessions, Dallas, TX (unpublished). Cohen, J.D. presentation to NHLBI Workshop on Sodium and Blood Pressure, January 28, 1999, Bethesda, MD. And He, J. et al. “Dietary sodium intake and subsequent risk of cardiovascular disease in overweight adults.” *Journal of the American Medical Association*, 1999; 282:2027-2034 (online at: <http://jama.ama-assn.org/issues/v282n21/abs/joc81748.html>).

³ Tuomilehto, *op. cit.*

⁴ Alderman (1998), *op. cit.*

the draft devoted a full paragraph to “exposing” the flaws of a study documenting a 20% greater incidence of heart attacks in the American population characterized as “low sodium.” Misstating the science is a serious problem here, but even worse is the purposeful omission of three-quarters of the studies, implying that there is a lack of evidence on the primary question of “what is the health outcome of changing intake levels of dietary sodium?” In fact, though the number of publications is small, data are substantial and consistent. They report on tens of thousands of subjects followed prospectively. The plain and simple truth is: **not a single study has demonstrated that low-sodium diets reduce the risk of cardiovascular events in the general population.** That is the only relevant question. There is no evidence showing a health benefit, so the low-sodium intervention is entirely lacking in scientific justification.

You may react in utter surprise, incredulity, even shock. You may feel such an unconditional declaration is sure evidence that this “industry group” is engaged in self-interested hyperbole. You would be wrong. Look at the evidence. You must look at the evidence! Look at the standards accepted by the draft report: the need for high quality data, the need for “hard end points” and not just “intermediate variables” and the need for longer-term studies that capture the “lag time” of an individual’s adjustment to a dietary intervention. The evidence establishes the importance of dietary changes to prevent chronic diseases. The data utterly fail to link reductions in dietary sodium intake levels to improved health outcomes in terms of reduced incidence of heart attacks, reduced incidence of stomach cancer or reduced incidence of bone fractures, the three “justifications” for the draft report’s recommendation to lower dietary sodium intake by nearly half, from about 3,500 mg/day to 2,000 mg/day. The draft recommendations have no basis in science. Had time permitted us to mail this letter, we would have included the many relevant, high quality, peer reviewed articles that tell an entirely different story from that in the draft report. Let me consider them in the order of concern: cardiovascular disease, diabetes, cancer and osteoporosis.

Cardiovascular Disease

The goal is to reduce the incidents of cardiovascular events and associated morbidity and mortality. Many pharmacologic and non-pharmacologic interventions have been hypothesized and tested. Research over the past decade makes four conclusions inescapable.

First, not only are there well-understood countervailing responses in individuals who reduce dietary sodium (particularly by half as is the recommended goal of the draft report), but these countervailing responses have been shown to outweigh the benefits of reducing blood pressure.

Second, dietary risks are associated with “salt sensitivity” and not with salt intake levels.

Third, “salt sensitivity,” once thought a fixed and immutable condition, is actually modulated by dietary factors and is, in fact, a surrogate for a poor quality diet.

And, fourth, as mentioned above, while lower untreated blood pressures are an excellent population predictor of risk of cardiovascular events, it matters very much how blood pressure is reduced – all interventions differ in health outcomes even if they produce identical falls in blood pressure.

Blood pressure does matter, even if it is an “intermediate variable.” It is a sign. When it goes up (or down) it indicates an underlying health concern. Changes result from many variables, often still poorly-understood. High blood pressure is treated with pharmaceuticals and with lifestyle interventions such as diet and exercise. The anti-hypertensive drugs are all approved by regulatory authorities. To be approved, these drugs must prove they work to lower blood pressure. Whether they also work to lower the incidence of heart attacks and strokes has not been the test to gain approval (it would take too long to develop new drugs), but the National Heart, Lung and Blood Institute (NHLBI) has invested heavily in such “health outcomes” studies.

The ALLHAT study⁵ was funded by NHLBI to compare the health outcomes of four classes of anti-hypertensive drugs, all of which had demonstrated their ability to reduce blood pressure in relative safety. The draft report would consider the blood pressure reductions an “intermediate variable.” NHLBI sought the “hard end points” to determine if any or all of the pharmacologic interventions produced a net health benefit. NHLBI’s Dr. Jeffrey R. Cutler supervised the study and explained its importance in terms consistent with the objectives of the WHO draft report: “Trials are based on the notion that different antihypertensive regimes, despite similar efficacy in lowering blood pressure, have other beneficial or harmful effects that modify their net effect on cardiovascular or all-cause morbidity and mortality.” The study will be concluded this year, but two years ago, NHLBI stopped part of the study because it determined that an approved intervention, effective in lowering blood pressure, was significantly inferior to other interventions being tested in terms of producing net positive health benefits.⁶ Although the drugs were similarly effective in preventing heart attacks and in reducing the risk of death from all causes, NHLBI explained, users of the alpha-adrenergic blocker doxazosin had 25 percent more cardiovascular events and were twice as likely to be hospitalized for congestive heart failure as users of the diuretic chlorthalidone.

Non-pharmacologic interventions should be evaluated the same way – we want interventions that improve health and extend life expectancy, not just move “intermediate variables” like blood pressure. As the ALLHAT trial has shown with power and significant impact with regard to choice among pharmacologic interventions, the choice of intervention matters more than the “intermediate variable” blood pressure effect in terms of whether an intervention provides a net

⁵ <http://www.sph.uth.tmc.edu/ccct/ALLHAT/default.htm>

⁶ “NHLBI Stops Part of Study — High Blood Pressure Drug Performs No Better Than Standard Treatment,” NHLBI news release, March 8, 2000. Online at <http://www.nhlbi.nih.gov/new/press/mar08-00.htm>.

health benefit after factoring in its negative side-effects. We should not be recommending that everyone change his or her diet without evidence of some overall health benefit.

Public health nutrition policy-makers badly need long-term, high-quality studies of hard end points regarding dietary sodium. Eight studies might be enough to warrant a population intervention if they all demonstrated a benefit. However when the eight studies can identify no net health benefit for the one variable they studied, sodium reduction, it is impossible to envision an organization such as the WHO recommending a reduction in dietary sodium for the prevention of cardiovascular disease.

That is why the Canadian Hypertension Society, the Canadian Coalition for High Blood Pressure Prevention and Control, the Health Canada Laboratory Centre for Disease Control and the Heart and Stroke Foundation of Canada⁷ and the U.S. Preventive Services Task Force⁸ have all rejected universal sodium restriction (again, an inconvenient fact that the draft report simply omitted rather than try to explain away).

As the foregoing indicates, virtually all the discussion in the “cardiovascular health” section of the draft report deals with “intermediate variables” when the discussion should have been limited to an examination of the health outcomes of dietary factors. That said, in addition to the omission of the health outcomes studies, the draft report’s discussion also betrays a strong bias, a consistent pattern of misinterpretations of the data and disturbing selectivity in its citations. Take, for example, the treatment of the meta-analyses. The draft report quotes the conclusions of the Law⁹ and Cutler¹⁰ meta-analyses repeatedly while the Swales,¹¹ Midgley,¹² and Graudal¹³

⁷ Fodor, JG, Whitmore, B, Leenen, F, Larochelle, P. “Recommendations on dietary salt.” *Canadian Medical Association Journal*, 1999; 160:S29-S34.

⁸ “Counseling to promote a healthy diet.” in Guide to Clinical Preventive Services, Second Edition published by the Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services. Online at: <http://158.72.20.10/pubs/guidecps/text/CH56.txt>.

⁹ Law, MR, Frost, CD, Wald, NJ. “By how much does dietary salt reduction lower blood pressure? III. Analysis of data from trials of salt reduction.” *British Medical Journal*. 1991; 302:819-824.

¹⁰ Cutler, JA, Follmann, D, Allender, PS. “Randomized trials of sodium reduction: an overview.” *American Journal of Clinical Nutrition*. 1997; 65(suppl):643s-651s.

¹¹ Swales, JD. “Dietary sodium restriction in hypertension,” in Hypertension Pathophysiology, Diagnosis and Management. Ed. JH Laragh and BM Brenner. Raven Press, New York, 1995. P. 283-298.

¹² Midgley, JP, Matthew, AG, Greenwood, CMT, Logan, AG. “Effect of reduced dietary sodium on blood pressure: A meta-analysis of randomized controlled trials.” *Journal of the American Medical Association*. 1996; 275:1590-1597.

¹³ Graudal, NA, Galloe, AM, Garred, P. “Effects of sodium restriction on blood pressure, renin, aldosterone, catecholamines, cholesterol and triglyceride.” *Journal of the American Medical Association*. 1998; 279:1383-1391.

meta-analyses are never mentioned. The data from the quality meta-analyses¹⁴ are consistent, though Cutler characterized his findings as supportive of sodium restriction while, with similar findings, Midgley and Graudal reached just the opposite conclusion.

Another prime example of selective use of data is the discussion of the DASH-Sodium study. This is a study with tremendous insight and policy value, but its insights and, consequently, its policy value is sacrificed by the biased and incomplete citation of its reported findings. The report, in two separate places, carries a graphic of the DASH-Sodium data. Lost in the presentation are these salient facts about DASH-Sodium:

- In every subgroup, the “DASH effect” outweighed the “Sodium effect” on blood pressure.
- For normotensives, the DASH diet eliminated “salt sensitivity” entirely.
- For hypertensives, the DASH diet greatly reduced “salt sensitivity.”
- For males, the DASH diet eliminated “salt sensitivity” no matter what the blood pressure.
- For females, the DASH diet greatly reduced “salt sensitivity.”
- For subjects 45 years of age and younger, the DASH diet eliminated “salt sensitivity.”
- For subjects over 45, the DASH diet greatly reduced “salt sensitivity.”
- For Caucasians, the DASH diet virtually eliminated “salt sensitivity” no matter what the blood pressure, gender and age).
- For African-Americans, the DASH diet substantially reduced “salt sensitivity.”

In summary, DASH-Sodium actually found that reducing dietary sodium more than half produced a significant blood pressure benefit only in hypertensive African-American women – hardly the tenor of the discussion in the draft report. Conversely, the DASH-Sodium Study confirmed the exciting findings of the original DASH Study that overall dietary improvements can eliminate salt’s effects on blood pressure. We are impressed that the DASH Diet may have far broader benefits, but even this hopeful study should be tested further to assure that the intervention produces a net health benefit in addition to reducing blood pressure.

A third and final example of data abuse is the entire omission of the results of the 3-year Trials of Hypertension Prevention, phase II study.¹⁵ Often, proponents cite the six-month results of this long-term sodium restriction and note a significant blood pressure fall with a 50 mmol sodium reduction. The three-year results, however, show that the subjects maintained 40 mmol reduction for that period, but their starting systolic pressure of 127.7 mmHg was reduced only to

¹⁴ Swales, Cutler, Midgley and Graudal. The Law study included non-randomized trials and was the only meta-analysis not to report consistent findings: a small positive association of blood pressure fall with reduction of dietary sodium between half and two-thirds. Swales, Cutler, Midgley and Graudal found systolic blood pressure reductions ranging from 1.0 to 1.9 mmHg and diastolic, from 0.1 to 1.1 mmHg; Law reported systolic BP falling 10 mmHg and diastolic 5 mmHg.

¹⁵ Trials of Hypertension Prevention Collaborative Research Group. “Effects of weight loss and sodium reduction intervention on blood pressure and hypertension incidence in overweight people with high-normal blood pressure: the Trials of Hypertension Prevention, phase II.” *Archives of Internal Medicine*. 1997; 157:657-667.

127.1 mmHg. We are pleased that the anti-salt advocates did not attempt to misuse these findings, but find it curious that there is no reference at all; we presume it is because this “prevention” study did not show salt reduction effective in the longer term. Short term studies have been demonstrated consistently to report much greater blood pressure falls than longer trials.¹⁶

Diabetes

The draft report appropriately examines dietary contributions to risk for diabetes, an exploding public health concern. It includes a section discussing “Metabolic changes during development of type 2 diabetes: insulin resistance and impaired glucose homeostasis” which states: “The development or worsening of insulin resistance is a stage in the development of type 2 diabetes (Figure 2). Fasting insulin concentration in subjects with normal glucose tolerance represent a surrogate marker of insulin resistance and numerous longitudinal studies have shown that higher fasting insulin levels (or other indices of insulin resistance, e.g. HOMA) predict the development of type 2 diabetes.” The draft report continues: “Impaired glucose tolerance is associated not only with an increase risk of diabetes, but also with increased risks of cardiovascular disease (heart disease and stroke), possibly cancer, and increased total mortality.”¹⁷ Selective citation again characterizes the draft report. After identifying the importance of glucose tolerance and the risks of increasing insulin resistance, the draft hurries to its recommendations, which for prevention of other chronic diseases propose a drastic reduction in dietary sodium, without citing or taking into consideration the study last year by Richard Ames demonstrating that “...an abundant sodium intake may improve glucose tolerance and insulin resistance, especially in diabetic, salt-sensitive, and or medicated essential hypertensive subjects.”¹⁸ If “abundant sodium intake” improves the risk of avoiding diabetes, the draft report should evaluate that, along with salt’s role in combating IDD and in ORT, before making its recommendations to reduce dietary sodium.

Cancer

Incidence of gastric cancer has fallen in Western countries over the last 50 years due to improved food hygiene standards and the use of refrigeration and despite population-trending increases in dietary food salt sales. Yet a succession of studies has alleged a causal relationship between stomach cancer and dietary salt. A review article published in April 1997 in *Food and Chemical*

¹⁶ Midgley, *op. cit.*

¹⁷ The draft report cites Eschwege E, Charles MA, Simon d, et al. “From policemen to policies: what is the future for 2-h glucose?: The Kelly West lecture, 2000. *Diabetes Care*. 2001; 24:1945-1950.

¹⁸ Ames, RP, “The effect of sodium supplementation on glucose tolerance and insulin concentrations in patients with hypertension and diabetes mellitus.” *American Journal of Hypertension*. 2001; 14 (7):653-659. (online at <http://www.cardiosource.com/journal/journal/article?acronym=AJH&format=fulltext&uid=PIIS0895706101013103> -- subscription required)

Toxicology,¹⁹ has set the record straight; it concluded “that the current average dietary intake of salt in the Western diet does not present a risk of gastric, oesophageal or nasopharyngeal cancer, or of cancer at any other site. Thus, there are no grounds for believing that a reduction in dietary salt intake would have any effect on the incidence of gastric or other forms of cancer.”

This is the position of the American Cancer Society as well: salt is not mentioned at all in the “American Cancer Society guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity.”²⁰ We commend the American Cancer Society recommendation over that of the WCRF/AICR policy advocacy position adopted uncritically by the authors of the draft report.

The American Cancer Society attributes one-third of U.S. cancer deaths to diet and makes four science-based recommendations to reduce these risks: 1) Choose most of the foods you eat from plant sources, 2) Limit your intake of high-fat foods, particularly from animal sources, 3) Be physically active: achieve and maintain a healthy weight, and 4) Limit consumption of alcoholic beverages, if you drink at all. In the discussion of these four guidelines there is no mention of salt.

There are other factors related to prevention of stomach cancer. These, according to the American Cancer Society include: 1) helicobacter pylori infection, 2) dietary causes, 3) nitrates and nitrites, 4) tobacco and alcohol abuse, 5) having had previous stomach surgery, 6) pernicious anemia, 7) Menetrier’s disease, 7) being male, 8) aging, 9) having blood group A, 10) having cancer family syndromes, 11) a family history of stomach cancer or 12) stomach polyps. No highlight for salt. Under “Dietary Causes” is this explanation:

“An increased risk of stomach cancer is associated with diets containing large amounts of smoked foods, salted fish and meat, certain foods high in starch that are also low in fiber, and pickled vegetables and foods high in starch. On the other hand, eating whole grain products, fresh fruits and vegetables that contain vitamins A and C appears to lower the risk of stomach cancer.”²¹

¹⁹ Cohen, A.J. and Roe, F.J.C., “Evaluation of the Aetiological Role of Dietary Salt Exposure in Gastric and Other Cancers in Humans,” *Food and Chemical Toxicology*, 1997; 35:271-293.

²⁰ Byers T, Nestle M, McTiernan A, Doyle C, Currie-Williams A, Gansler T, Thun M; American Cancer Society 2001 Nutrition and Physical Activity Guidelines Advisory Committee. “American Cancer Society guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity.” *CA Cancer J Clin* 2002 Mar-Apr;52(2):92-119. (Online at http://www.cancer.org/eprise/main/docroot/PED/content/PED_3_2X_Diet_and_Activity_Factors_That_Affect_Risks?sitearea=PED).

²¹ Ibid.

In a separate Q&A, the American Cancer Society rhetorically poses the question “*Do high levels of salt in the diet increase cancer risk?*” The American Cancer Society has a very different answer than that of the draft WHO report, stating:

“There is some evidence that diets containing large amounts of food preserved by salting and pickling are related to increased risk of cancers of the stomach, nose, and throat. Little evidence suggests that moderate amounts of salt or salt-preserved foods in the diet affect cancer risk.”²²

The American Cancer Society finds the science supportive of discouraging “diets containing large amounts of food preserved by salting and pickling” and “little evidence” that the intake levels of most Americans affect cancer risk. Those intake levels are nearly twice the level recommended in the draft report.

Surely there are outliers – people who consume enormous amounts of salt-cured and pickled foods – but they are just that, outliers, far out of the customary dietary pattern of most populations. While it is appropriate to direct a message to that sub-group, it is totally inappropriate to highlight that message and suggest that intakes in the “safety hygienic range”²³ of 1,200 – 4,600 or even 5,750 mg/day sodium represents a concern for the general public or that cancer prevention demands reducing dietary sodium to 2,000 mg/day or less.

Osteoporosis

While few would dispute the positive relationship between dietary sodium intake and calcium excretion, the relative amounts of dietary sodium that would need to be eliminated for a paltry reduction in urinary calcium excretion has convinced most experts that the better dietary strategy is to promote increased intakes of dairy products, not reduce dietary sodium. The draft report includes sodium among the “essential nutrients” with “plausible hypotheses for involvement” and continues to list the allegations, but then, properly notes the lack of scientific evidence to sustain them. Thus, the draft report states: “There has been considerable interest in the possible role of the electrolytes sodium and potassium in the development and prevention of osteoporosis ... a high sodium intake is considered deleterious to bone health...the evidence that sodium is important in the aetology of osteoporosis or that sodium restriction may be a beneficial strategy

²² This document is available online at the American Cancer Society’s website:
http://www.cancer.org/eprise/main/docroot/PED/content/PED_3_2X_Common_Questions_About_Diet_and_Cancer?sitearea=PED

²³ The quoted phrase is that of prominent researcher Dr. Björn Folkow in “Salt and Hypertension.” *News in Physiological Sciences*. 1990;5:220-224. On page 223, Folkow explains:

“Thus intakes between ~50 and 200, perhaps even 250 mM Na/day, may for most normotensive subjects represent a ‘hygienic safety range.’ In fact, average habitual intakes in most industrialized societies seem to fall well within these limits and they may indeed be truly ‘physiological’ and reflect basic salt appetite mechanisms.”

for fracture prevention, however, is inconclusive.” Yes, “inconclusive,” we’d agree; “inconclusive,” not “probable” as the draft later states as the basis for the recommendation to the general public “to decrease sodium intake....”.

This recommendation is at odds with the evidence and authorities in the field.

The Food and Nutrition Board of the National Academies’ Institute of Medicine recently reviewed the evidence on the calcium-sodium interaction and concluded: “... the effect of a change in sodium intake on bone loss and fracture rates has not been reported.”²⁴ The National Osteoporosis Foundation does not consider reduction of dietary sodium relevant to preventing osteoporosis.²⁵ Its statement is a model for WHO, stating as follows:

“Building strong bones, especially before the age of 30, can be the best defense against developing osteoporosis, and a healthy lifestyle can be critically important for keeping bones strong. There are several steps you can take to prevent osteoporosis:

Osteoporosis is largely preventable for most people. Prevention of this disease is very important because, while there are treatments for osteoporosis, there is currently no cure. There are four steps to prevent osteoporosis. No one step alone is enough to prevent osteoporosis but all four may. They are:

- A balanced diet rich in calcium and vitamin D
- Weight-bearing exercise
- A healthy lifestyle with no smoking or excessive alcohol use
- And bone density testing and medications when appropriate”

Conclusion

We are anxious to work with the World Health Organization in producing a report and set of recommendations of which WHO can be unequivocally certain are supported by the science. These recommendations, we agree, should be rigorously evidence-based and appropriately emphasize dietary patterns and not simple single nutrients. We believe such recommendations can produce a measurable reduction in chronic diseases.

²⁴ Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D and Fluoride, The National Academy Press, 2000. Page 75. Online at http://books.nap.edu/books/0309063507/html/75.html#page_middle

²⁵ <http://www.nof.org/prevention/index.htm>.

Although the original of the following statement was made solely in relation to blood pressure, we would offer as a concluding thought that the draft report not only wants to protect the public from salt, but also from the data.²⁶

Just a few years ago, an American investigative reporter won a national award from the National Association of Science Writers for his reporting, in the prestigious journal *Science*, of the games-playing on issues of dietary sodium.²⁷ His comments would have been reflected in the draft report had it been fairly and objectively developed. He noted then:

“After interviews with some 80 researchers, clinicians, and administrators around the world, it is safe to say that if ever there were a controversy over the interpretation of scientific data, this is it.... After decades of intensive research, the apparent benefits of avoiding salt have only diminished. This suggests either that the true benefit has now been revealed and is indeed small or that it is non-existent and researchers believing they have detected such benefits have been deluded by the confounding of other variables.”²⁸

We are pleased that WHO apparently recognizes the potential for expert panels to attempt to hijack the good name of the World Health Organization in an attempt to validate their personal views of the science. The skewed and incomplete references offered in support of the draft report are an inadequate basis for any intervention concerning dietary sodium. We believe that strong science must support the final report, strong science that is focused on health outcomes. For that reason, **we strongly recommend that WHO assure the independence and ultimate credibility of this important document by requesting a detailed review by an internationally-recognized “evidence-based” medical research institute such as the Nordic Cochrane Centre.**²⁹

²⁶ Freedman, DA, Petitti DB. “Salt and blood pressure: conventional wisdom reconsidered.” *Evaluation Review*. 2001; 25:267–87 (online <http://www.stat.berkeley.edu/~census/573.pdf>) also see the same authors’ “Salt, blood pressure, and public policy.” *International Journal of Epidemiology* (in press; text online at <http://www.stat.berkeley.edu/~census/alderman.txt>).

²⁷ Taubes, G. “The (political) science of salt.” *Science*. August 14, 1998. (Online at <http://www.sciencemag.org/cgi/content/full/281/5379/898?ijkey=ATm56Jl8nBVYU>).

²⁸ Ibid.

²⁹ Nordic Cochrane Centre
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Dr. Chizura Nishida

April 13, 2002

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We thank you for your consideration of our views and would be pleased to work with your staff to assure that the quality of the science included in this study are compelling and a credit to the World Health Organization.

Sincerely,

A handwritten signature in black ink that reads "Richard L. Hanneman". The signature is written in a cursive style with a large initial 'R'.

Richard L. Hanneman

President

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