

# perspectives

NUTRITION NEWS AND VIEWS

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## CVD risk – what is it and how can we communicate it?

by Sue Wells



*It's a challenge to clearly articulate cardiovascular risk to patients. Risk prediction tools like Your Heart Forecast can ease communication of this complex concept.*

### DEFINING CARDIOVASCULAR DISEASE RISK

Most cardiovascular disease (CVD) events such as heart attack or stroke are preceded by risk factors that can be easily assessed, and with the exception of age and gender, able to be modified. Four main risk factors: raised blood pressure, blood cholesterol and blood glucose and cigarette smoking contribute to 75-80% of these events<sup>(1)</sup>. They are, in turn, mediated through other factors including psychosocial situation, overweight, dietary pattern, alcohol intake, physical activity and family history of premature ischaemic CVD.

High levels of single risk factors have been shown to be poorer predictors of CVD risk than moderate levels of these risk factors when combined together<sup>(2)</sup>. Increasingly, multifactor risk prediction scores are being used to inform treatment decisions instead of basing decisions on individual risk factors alone. Most current national and international guidelines on the management of CVD risk include a CVD risk prediction tool<sup>(3-6)</sup> to help practitioners target intensive lifestyle management and drug treatment to high risk patients and general lifestyle advice to low risk patients.

But there is a catch... For most of us, CVD risk, or the probability of having a symptomatic CVD event in the next 5-10 years, is an abstract construct.

While we can visualise fat in our blood clogging our arteries or high blood pressure stretching the arterial walls, it is difficult to understand a measure of uncertainty. So how can practitioners communicate CVD risk so that it has meaning and can be understood?

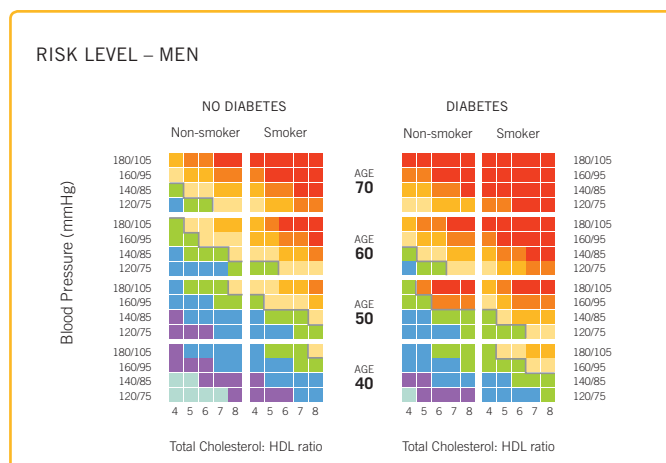
### COMMUNICATING CARDIOVASCULAR DISEASE RISK

To support CVD risk communication, colour charts such as the one shown in Figure 1 from New Zealand guidelines<sup>(6)</sup> have been developed since the early 1990s. These give practitioners and patients not only a numerical risk

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**FIGURE 1: COLOUR CHART FROM NEW ZEALAND GUIDELINES<sup>(6)</sup> TO SUPPORT CVD RISK ASSESSMENT AND COMMUNICATION**



Reproduced with permission from Professor Rod Jackson, University of Auckland. Figure redrawn with minor modifications.

## EDITORIAL

## Heart to heart... by Janelle Gifford



### PASSING THE BATON

Welcome to the first edition of *Perspectives for 2010*. To begin, we say a fond farewell to colleague Michelle Gordon and wish her every success in her endeavours beyond *Perspectives*. It is a privilege to be handed the baton as Editor of such a high quality professional newsletter. This issue follows on from the last, particularly building on research and news on cardiovascular health.

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Bringing nutrition science into a practical setting is the aim and challenge for many of us in our work lives. Quality research in the public arena needs to be brought to the door of health professionals who can, in turn, bring it to life in the real world: in public, private, and corporate settings. Our last issue brought us a round-up of dietary fat, sterols and tea in relation to cardiovascular health, with emphasis on cholesterol lowering. This issue brings us more news on heart health research, updates on the steps beyond research in terms of regulatory affairs and dietary guidelines, plus some conference news.

Sue Wells' article will especially interest those of us who consult with individuals on a daily basis. She acknowledges the difficulty in translating cardiovascular risk – a concept that is multifactorial – into everyday language. She reports on a new evidence-based tool that can be used to turn complex information into something that captures all our attention: 'AGE'! In this case, Heart Age. This tool uses data often collected in a practice setting to provide a live pictorial representing the age of our arteries. It will be a welcome addition to the resource kitbag of many practitioners to assist in motivating behaviour change.

Our feature on the impact of dietary sodium loading on vascular function and blood pressure adds to the literature on the negative impact of high levels of dietary sodium on vascular health. Alwyn Todd and her colleagues have shown us that dietary changes down from the 'norm' sodium intake may have similar impact to antihypertensive medication in a hypertensive population. Importantly, we see that their intervention strategy is one that may be applied in practice with the assistance of a dietitian. We are pointed to known challenges in translating and applying information about sodium in foods in our current environment.

Product labelling can be a powerful tool in communicating nutrient information (like sodium) to consumers. So powerful that tight regulations are required to ensure that claims on labels are sufficiently substantiated. Health claim regulations are in fact relatively young. Peter Williams reports on the 20 year history of the international development of health claims regulations and updates us on news from the European Food Standards Authority and our own Food Standards Australia and New Zealand.

This issue also provides practitioners with an understanding of progress and process of another everyday item from the nutrition communication kitbag: the Dietary Guidelines. Nutrition professionals from Australia and New Zealand have spent much energy, sweat and tears in updating one of our most important public health documents. A combined update with Alison Bradshaw from New Zealand's Ministry of Health brings news on where we are up to.

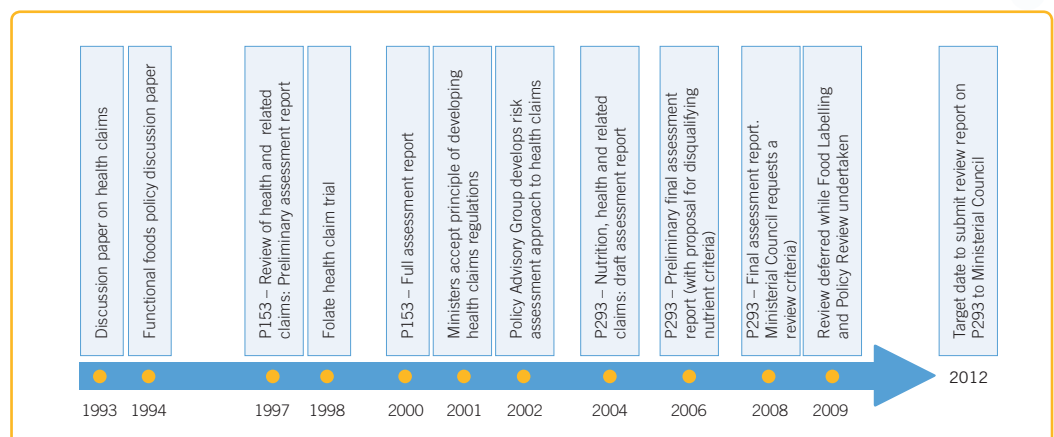
Finally, we hear from Kati Laitinen and Jane Rycroft, reporting on the recent International Congress of Nutrition and Annual Tea Science Symposium. The double burden of under- and over-nutrition is highlighted and some strategies put forward to tackle these significant challenges, and we hear more news on the benefits of our 'cuppa'.

I recently heard that when faced with challenging tasks, we should first look to see what we already have in our hands to use. I trust that this issue provides nutrition science for your mind as well as something for your practice kitbag.

### Enjoy the new Perspective.

Janelle Gifford, PhD, Accredited Practising Dietitian

FIGURE 3: TIMETABLE OF THE DEVELOPMENT OF HEALTH CLAIMS IN AUSTRALIA



# Update on health claims for foods

by Peter Williams



*The first regulations permitting scientifically substantiated health claims for foods emerged in the US with the Nutrition Labelling and Education Act in 1990. In that country there are now over 20 health claims with significant scientific agreement approved for use on foods and 17 qualified health claims. The former includes claims for soy, soluble fibres and plant stanols related to coronary heart disease, whilst the latter includes claims for tomatoes, green tea and antioxidant vitamins and cancer risk. Legislation has progressed at a slower pace in many countries, including Australia.*

## EUROPEAN FOOD STANDARDS AUTHORITY EVALUATION OF CLAIMS

New European regulations on health claims came into force in early 2007. These set out the conditions on the use of claims and created a system for scientific substantiation through the European Food Standards Authority (EFSA), one of whose roles is to evaluate potential claims submitted by member countries<sup>(1)</sup>. Of 4,637 health claims received by EFSA, 937 have been evaluated and published in respective opinions<sup>(2)</sup>. By March 2010, 297 claims had been registered as withdrawn, leaving 3,403 claims still to be evaluated<sup>(2)</sup>.

Of the individual opinions delivered by EFSA so far, about 80% have been negative. EFSA has generally rejected claims that are not backed by product-specific clinical trials or where the claim wording does not closely match the available science. Among the approved claims include the well established benefits of plant sterols and stanols for cholesterol-lowering, bone-related vitamin D and calcium claims and the newer claim that DHA intake can contribute to the visual development of the infant. However many other omega-3 claims have not been approved so far, nor have any of the proposed probiotic claims.

According to EFSA panel member, Professor Jean-Louis Bresson, some dossiers were strong scientifically but had fallen down on technicalities because substances were insufficiently characterised or claims had not matched the science presented. 'With a little more attention to detail and more careful wording of claims, it is possible the science is there for some of these claims to be approved.' But he added many claims were weak scientifically and stood little chance of gaining a positive opinion if re-submitted<sup>(3)</sup>.

**The proposed standard encompasses two types of claims – nutrition content and health claims. There will be two levels of health claims: general and high level.**

## FOOD STANDARDS AUSTRALIA NEW ZEALAND EVALUATION OF CLAIMS

In Australia and New Zealand, there has been work towards a similar system since 1993 but this will not be finalised before 2011 (see Figure 3 on page 2). Food Standards Australia New Zealand (FSANZ) is currently developing a new standard to permit scientifically substantiated claims for foods that meet certain nutrient profiling criteria. The proposed standard encompasses two types of claims – nutrition content and health claims. There will be two levels of health claims: general and high level.

General level health claims refer to the presence of a nutrient or substance in a food and its effect on normal health function. High-level health claims are those making reference to a serious disease or biomarker and these will need pre-approval by FSANZ. Five high-level claims have already been included in the draft new standard. In the future, manufacturers will be able to make applications for other claims, but these would need to be scientifically substantiated using a defined substantiation framework.

## WHAT IS HAPPENING NOW?

In 2008 the Australia and New Zealand Food Regulation Ministerial Council asked FSANZ to conduct further consumer research, undertake consultation about disqualifying nutrients, and give further consideration to the problems of enforcement identified

by the State authorities. A final decision on the new standard now will not be made until after the Blewett review on food labelling which is due to report at the end of 2010. Among the current considerations are options for more pre-approved claims and the possible use of third party approval of general level claims; that is having an external organisation like a University review the dossier of substantiation evidence that a food company had prepared<sup>(4)</sup>.

Although food regulators do consider decisions from other countries, overseas health claim

approvals will not automatically be adopted in Australia and New Zealand. Local food companies will need to meet the substantiation requirements developed by FSANZ. The recent experience of reviews by EFSA suggests that applications will require careful and expert scientific preparation to be successful.

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# Thou shalt not offer salt: sodium loading, blood pressure and vascular function

by Alwyn Todd



*High dietary sodium intake is known to be associated with hypertension, commonly known as high blood pressure. The prevalence of high blood pressure in Australia and New Zealand is 28.6%<sup>(3)</sup> and 21%<sup>(2)</sup> respectively, and is the most common cardiovascular condition in Australia<sup>(3)</sup>. The knock-on health impact of increased blood pressure through related cardiovascular disease is also substantial, including its association with coronary heart disease and stroke<sup>(4)</sup>.*

Numerous studies have demonstrated that lowering sodium intake reduces blood pressure (see reference 5 for review). Sodium is typically consumed as the salt, sodium chloride. Our nutrient reference values for sodium intake in Australia and New Zealand set an upper limit of 100mmol (2300mg) which is the amount found in about 6g salt<sup>(6)</sup>. However, the Suggested Dietary Target for chronic disease prevention is 70mmol (1600mg, or around 4g salt)<sup>(6)</sup>.

## OUR SODIUM CONSUMPTION

Dietary Guidelines direct us to 'choose food low in salt'<sup>(7)</sup> and to 'prepare foods or choose pre-prepared foods, drinks and snacks that are low in salt'<sup>(8)</sup>, to moderate sodium intake, however most recent consumption figures from Australia and New Zealand indicate we consume around 150mmol sodium per day<sup>(9,10)</sup>.

A high proportion of dietary sodium comes from processed foods like bread, hard cheese, meats/meat products, soups, and sauces etc<sup>(11,12)</sup>. Whilst consumers may understand that salt is related to blood pressure, identifying sources of sodium in the diet and understanding food labels still remains a challenge for many consumers<sup>(13)</sup>. Additionally, reduction of sodium in processed and packaged foods will lower population sodium intake. Initiatives by the National Heart Foundation and food industry such as the reformulation of commonly consumed food products have already removed a large amount of sodium from the food supply<sup>(14)</sup>.

***If we are to advocate for sodium reduction and compliance with recommended levels it is important not only to demonstrate that reduction of salt is beneficial, but that consumption of excess dietary salt is detrimental.***

## ADDITION OF SODIUM TO A LOW SODIUM DIET

### *The diets...*

We recently trialled a baseline low sodium diet (60mmol sodium per day) with the addition of unsalted tomato juice (Treatment A), tomato juice containing 90mmol sodium (Treatment B), and tomato juice containing 140mmol sodium (Treatment C) with 34 hypertensive patients (mean blood pressure 134/84) receiving each treatment in randomised order for 4 weeks each with a 2 week run-in and wash out in between treatments<sup>(15)</sup>.

For the low sodium diet, participants were asked to cut out most pre-packaged and convenience foods, avoid sodium-rich foods, and only use limited quantities of sodium-reduced bread, cheese, margarine or butter. Changes in dietary sodium intake

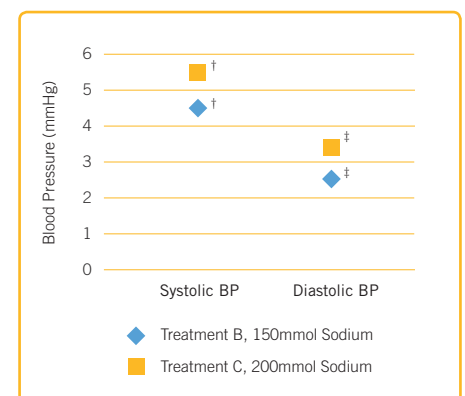
were measured by diet record. Changes in UNa:C between treatments were significant ( $P \leq 0.01$  between treatments A and B,  $P \leq 0.05$  between treatments B and C,  $P \leq 0.001$  between treatments A and C).

***If reducing dietary sodium can reduce systolic blood pressure by 5.6mmHg, this is comparable to the impact of a single anti-hypertensive agent.***

### *Dietary sodium and arterial compliance*

We found that both systolic and diastolic blood pressure were significantly higher for Treatment B (+4.4mmHg,  $P \leq 0.01$ ; and +2.4mmHg,  $P \leq 0.001$  respectively) and Treatments C (+5.6mmHg,  $P \leq 0.01$ ; and +3.3mmHg,  $P \leq 0.001$  respectively; Figure 4 below) compared to Treatment A after adjustment for baseline, order and time. Pulse wave velocity (PWV), which measures compliance of the arteries (stiffness of the blood vessels) rapidly and significantly increased with the higher sodium diets.

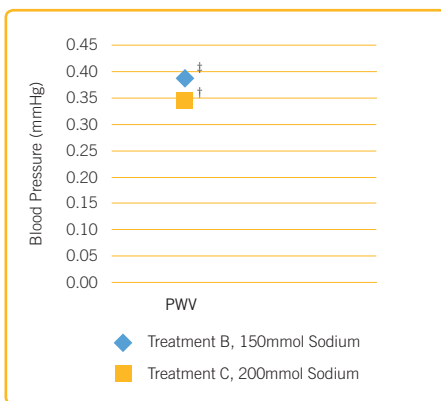
**FIGURE 4: INCREASE IN SYSTOLIC AND DIASTOLIC BLOOD PRESSURE (mmHg) IN TREATMENTS B AND C COMPARED WITH TREATMENT A\***



\*Treatment A = 60mmol sodium, values are adjusted for baseline, order and time. †Significantly different compared to Treatment A ( $P \leq 0.01$ ); ‡Significantly different compared to Treatment A ( $P \leq 0.001$ )

Compared with Treatment A, pulse wave velocity was increased in Treatment B by 0.39m/s and Treatment C by 0.35m/s (Figure 5 below). The average sodium intake in Australia and New Zealand is comparable to Treatment B, so a typical salt intake could be leading to short term decreases in arterial compliance in people with high blood pressure.

**FIGURE 5; INCREASE IN PULSE WAVE VELOCITY IN TREATMENTS B AND C COMPARED WITH TREATMENT A\***



\*Treatment A = 60mmol sodium, values are adjusted for baseline, order and time. †Significantly different compared to Treatment A ( $P \leq 0.01$ ); \*Significantly different compared to Treatment A ( $P \leq 0.001$ )

It is also important to note that these changes were observed despite the study population already having relatively well controlled blood pressure (Baseline blood pressure 134/84mmHg) and the majority (74%) of participants were already receiving antihypertensive therapy. Impressively, over a quarter of study participants (28%) who were medicated for high blood pressure required a reduction in antihypertensive therapy during the study, showing that sodium reduction can be an effective way to lower blood pressure and reduce the requirement for antihypertensive therapy.

## CONCLUSIONS

Previous studies have found benefit in sodium reduction for lowering blood pressure. This investigation clearly demonstrates that consuming excess sodium results in deterioration of arterial function (increased stiffness of the arteries).

When consuming a low sodium diet, arterial function was improved (arteries were more compliant). This adds weight to the body of evidence for reducing dietary sodium. The challenge remains for us as practitioners to assist those with high blood pressure towards a low sodium diet and for the food industry to support consumers in reformulating higher sodium content foods.

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Alwyn Todd is from the University of Otago, New Zealand. Her research was partially supported by a Unilever-NZDA Post-Graduate Research Scholarship.

## Conference reports

by Kati Laitinen & Jane Rycroft



Kati Laitinen



Jane Rycroft

### 19<sup>TH</sup> INTERNATIONAL CONGRESS OF NUTRITION 2009

The 19<sup>th</sup> International Congress of Nutrition (ICN) was held from 4-9 October 2009 in Bangkok under the auspices of the International Union of Nutritional Sciences (IUNS). It was attended by 4,000 nutrition scientists, practitioners and researchers from almost 100 countries. The main theme was 'Nutrition Security for All'; chosen to highlight the vast numbers of people globally who are either undernourished or overweight, and the impact this has for public health. The aim of the congress was to identify and agree on ways to secure a healthy food supply for all.

*The clear message was that public-private partnerships are now generally seen as the only way forward to address both under- as well as over-nutrition.*

A number of sessions on the double burden of malnutrition, stressed the impact the obesity epidemic has in countries in transition where overweight and under-nutrition (micronutrient deficiencies) exist, sometimes within a family, sometimes even in the same individual. The importance of partnerships between the public and private sector was highlighted by several speakers and was debated in the panel discussion 'Harnessing the strengths of public and private sectors to address the double burden of malnutrition'.

Professor Barry Popkin (Department of Nutrition, University of Carolina) gave an inspiring lecture titled: 'The world is fat:

New dynamic shifts in patterns of nutrition transition'. Today over 1.6 billion people globally are overweight and 700 million suffer from under-nutrition. According to Popkin, this transition is the result of the impact of changes in technology, globalisation, government policies, and food industry practises on human biology. Popkin particularly highlighted the shift in caloric fluid intake, and suggested that the problem could be tackled via tax and education campaigns.

Childhood obesity and its prevention was addressed in several presentations. Today, 155 million school-aged children worldwide are overweight<sup>(1)</sup>. Associated metabolic diseases like fatty liver and type 2 diabetes are currently invisible, but will eventually become life threatening. The good news is that it appears that the increase in childhood obesity is easing off now in several countries. To be successful in prevention, at a society level, schools, whole communities, regional strategies, and national regulation need to be included in the strategy.

Link to the ICN website including presentations: [http://icn2009.com/congress\\_information.html](http://icn2009.com/congress_information.html)

### 3<sup>RD</sup> ANNUAL TEA SCIENCE SYMPOSIUM

The 3<sup>rd</sup> Annual Tea Science Symposium was held on 21 October 2009 in Bangkok, Thailand. The latest developments in the science supporting the health benefits of tea were presented.

In her keynote address Professor Lenore Arab (University of California, USA) presented exciting data showing that the consumption of three cups of black or green tea per day was associated with a 21% reduced risk of ischaemic stroke<sup>(2)</sup>. New results from a meta-analysis on vascular function presented by Dr Sheila Wiseman (Unilever Research & Development, The Netherlands) add weight to this evidence. This research demonstrated that moderate tea consumption (approximately three cups per day) improved markers of endothelial function in blood vessels.

Following lively discussions, participants agreed that there is now a sizeable body of evidence for the cardiovascular benefits from tea. Further research is required to increase our understanding of the active components and mechanisms involved as well as mood and cognitive effects.

*Following lively discussions, participants agreed that there is now a sizeable body of evidence for the cardiovascular benefits from tea.*

Dr Georgie Russell and Dr Eveline De-Bruin (Unilever Research & Development) reported on research on the benefits of tea on positive mood with one cup of milk tea and brain activation/focus tasks with much higher doses of theanine and caffeine (single dose equivalent to eight cups of black tea). The latter builds on science presented in previous years showing the effects of tea on mental performance particularly showing the relationship between theanine and caffeine<sup>(2,3)</sup>.

The many benefits of tea are likely due to the action of flavonoids<sup>(4)</sup>, which may act in a number of ways. The most promising mechanism appears to be the effect of flavonoids on nitric oxide action influencing vascular tone and reactivity<sup>(5)</sup>.

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*Kati Laitinen and Dr Jane Rycroft are from Unilever Research & Development, The Netherlands and United Kingdom respectively. The 3<sup>rd</sup> Annual Tea Science Symposium was sponsored by Lipton.*

# Update on Dietary Guidelines development: perspectives from Australia and New Zealand

by Janelle Gifford & Alison Bradshaw



Janelle Gifford



Alison Bradshaw

*The Australian and New Zealand dietary guidelines assist food choices to promote health and disease prevention. Although the Nutrient Reference Values (NRVs) released by the National Health and Medical Research Council (NHMRC) in 2006<sup>(1)</sup> are common to Australia and New Zealand, dietary guidelines are developed separately. Here we provide an update on the dietary guidelines process across the two countries.*

## THE AUSTRALIAN STORY

In Australia the revision of the NRVs necessitate the update of key public nutrition documents since they precede Core Food Group<sup>(2)</sup> (now called Foundation and Total Diets; FTD) analysis, and development of our public educational tools including the Australian Dietary Guidelines<sup>(3)</sup> (ADG) and the Australian Guide to Healthy Eating<sup>(4)</sup> (AGTHE). This means there is a time where these latter documents do not reflect current recommendations for nutrient intakes, and some urgency for their development.

The Dietary Guidelines Work Program is a joint project between the NHMRC and the Department of Health and Aging (see presentation available at: [http://www.nhmrc.gov.au/your\\_health/healthy/nutrition/review.htm](http://www.nhmrc.gov.au/your_health/healthy/nutrition/review.htm)). It encompasses the revision of the FTD, all ADGs, AGTHE, and development of a new guideline for pregnant and breastfeeding women. The Dietary Guidelines Working Committee, established in April 2008, oversees and provides expert advice during the process. It includes leading Australian dietitians and academics and members of the NHMRC.

The Dietitians Association of Australia was successful in tendering for the revision of both the FTD and the systematic literature reviews updating evidence about food and health relationships to underpin the ADG during 2008-2009. The systematic literature review has been a mammoth undertaking and has been completed by teams of dedicated academic dietitians across the country.

are currently underway. Similar to the Australian experience, the review process takes 2-3 years and involves a literature review by an external provider to underpin the revision of the Dietary Guidelines, revision of the guidelines, public consultation, final modifications and approval by the Ministry of Health prior to release, then review of the health education resource for the general public.

***Whilst development of dietary guidelines seems to be a long and dynamic process, it is wise for health practitioners to be aware of and understand the process in order to support appropriate information to consumers.***

The contract for this work was managed by the NHMRC. The writing of the ADG, including revision of the AGTHE, has been contracted to a group from the University of South Australia.

The FTD is expected to be released in late 2010 following public consultation which is currently underway. Australian Dietary Guidelines are due for public consultation in December 2010 prior to their proposed launch in 2011. News on the Australian process and timeline can be found on the NHMRC website.

## THE NEW ZEALAND STORY

The Ministry of Health publishes a series of Food and Nutrition Guidelines for healthy New Zealanders across the life course (<http://www.moh.govt.nz/nutrition>). Currently, guidelines are available for six population groups. Each set of guidelines includes a technical background paper providing up to date, evidence-based policy advice for health practitioners, and an accompanying health education pamphlet for the general public.

The Ministry is committed to regular review of the background papers on food and nutrition, and has recently revised the guidelines for infants and toddlers (2008). Revisions to the guidelines for both older people, and children and young people

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continued from page 1

score based on a percentage (eg, 5%, 10%, 20%) but also a verbal description of risk (eg, low, moderate, high) and a visual measure of risk (eg, blue, green, yellow). Clinicians can say to a patient that 10 out of 100 people like themselves are predicted to have a CVD event such as a heart attack or stroke in the next 5 years. Or, conversely using positive framing, 90 out of 100 people like themselves will be event free over the next five years. Furthermore they can show patients the benefits that they will achieve by modifying a risk factor. For example, if you stop smoking you can shift from yellow to blue.

A further problem with CVD risk is that it is largely driven by something we cannot modify: our age. While age may be a risk factor in its own right, it also serves as a proxy for how long our arteries have been exposed to the multiple risk factors that damage them over time. In the short term, a younger adult with a very unfavourable risk profile (eg, they smoke, have diabetes, high blood pressure and cholesterol levels) will almost always have a low CVD risk score. In the longer term they are likely to have accelerated damage to their arteries.

## NEW AGE COMMUNICATION

### Heart Age

A new metric has arisen that can help address this issue – a patient's 'cardiovascular age',

'heart age' or 'arterial age'<sup>(7-9)</sup>.

This has sparked the development of several electronic tools that are either direct-to-consumer tools: <http://www.heartagecalculator.com.au> and <http://www.knowyournumbers.co.nz> or designed to help the practitioner-patient understanding and decision making: <http://www.yourheartforecast.org.nz>.

The method to derive a Heart Age differs slightly for all but the principles are the same. The Heart Age is a proxy for the age of your arteries worked out by taking the chronological age of the average (age- and gender-specific) person's risk and life expectancy<sup>(8)</sup> or the chronological age of a person with the same CVD risk score but with ideal risk factors<sup>(7,9)</sup>. With the latter, almost everyone will be told that their arteries (or heart age) are older than they are. How we look and feel compared to how old we are is easily understood and extrapolation to our heart or arteries is not a huge leap.

### Your Heart Forecast

Lastly Your Age Forecast Tool (see Figure 2 below), shows this all visually and dynamically – starting with your current risk, how far away you are from the ideal risk, how old your arteries are (Heart Age), what will happen to your risk as you age if you change nothing in your lifestyle, and then what you can achieve by making a few changes (eg, lowering your blood pressure, your cholesterol or stopping smoking).

It is available as a free stand-alone or downloadable tool for clinicians provided by the University of Auckland and the New Zealand National Heart Foundation (<http://www.yourheartforecast.org.nz>).

## CONCLUSION

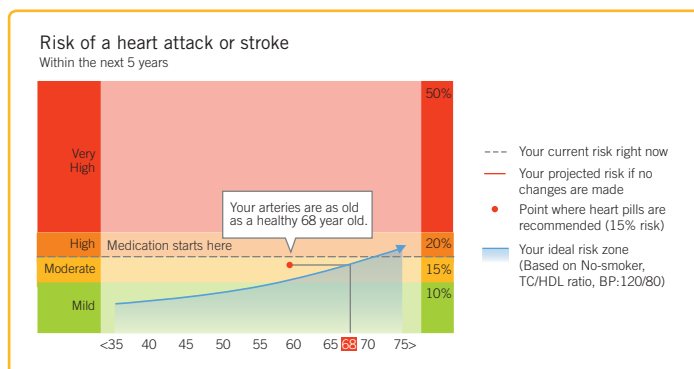
CVD risk communication will always be a challenge as it deals with uncertainty and applies population based probabilities to an individual who may have other co-morbidities and complicating factors. However, risk prediction tools are miles more accurate than if a clinician guesses or if they base their decisions on individual risk factors. Having a new range of tools and strategies to transform data into accessible information will help support choices and health care decision making.

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FIGURE 2: YOUR HEART FORECAST TOOL



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