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## WMA General Assembly in Seoul 2008: A Resounding Success

Yoshihito KARASAWA \*1

In October this year, I was honored to attend the WMA General Assembly held in Seoul, South Korea. This general assembly was a resounding success with the tremendous efforts of the Korean Medical Association (KMA), led by President Emeritus Dr. Tai Joon Moon, together with the WMA secretariat. I was highly impressed not only by the excellent arrangements for the meeting but for the various social events as well.

Something that I sensed through this assembly was the strength of Dr. Moon's leadership capacity within the world of Korean healthcare. The attendance of such South Korean leaders as President LEE, Myung-Bak, Prime Minister HAN, Seung-Soo, and Minister for Health, Welfare, and Family Affairs JEON, Jae-Hee also added a more-than-sufficient finishing touch to the WMA General Assembly and gave one a sense of the prominence of Dr. Moon within South Korea. Moreover, I believe this opportunity not only held significance in terms of the invitation of VIP guests to the WMA general assembly, but also thoroughly conveyed the meaningfulness and role of WMA activities to the general public as well as the world of healthcare in Korea.

I gained a sense of the KMA's deep thoughtfulness and consideration through various aspects of the general assembly. In particular, the adoption of "the Declaration of Seoul" on Professional Autonomy and Clinical Independence, one of the most important WMA policies is worthy of note and the selection of "Health and Human Rights" as the theme for the scientific session — a topic that has never before been taken up as a general assembly scientific session theme — symbolized the depth of the problems faced by the WMA as an organization. This issue of the Japan Medical Association Journal includes the full text of Dr. Moon's speech. I would be delighted if members of all National Medical Associations (NMAs), and other healthcare professionals read this text and hope that it will provide excellent materials for thinking about this issue.

Since the beginning of last year, the JMA Journal has been aiming to provide transparency of editorial policies, and has adopted a policy of transmitting information, centered on the activities of the JMA, to the member countries of the WMA and Confederation of Medical Associations in Asia and Oceania (CMAAO). Moreover, thanks to the cooperation of the WMA, CMAAO, and various NMAs, we have received a range of information about current healthcare problems and other issues in various countries, and in future we intend to enhance the content of the JMA Journal and raise its value as a means of transmitting information as an English-language journal published by a medical association based in Asia.

In future, under its independent editorial policies, the JMA Journal can more than ever be expected to transmit important information that has until now lain dormant in Japan and other Asian countries, further increasing the journal's contribution to global health. Thus in closing, I ask for the continuing cooperation and support of the physician members of each NMA.

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Keynote Speech

## WMA's Past Efforts on Human Rights and Prospects<sup>\*1</sup>

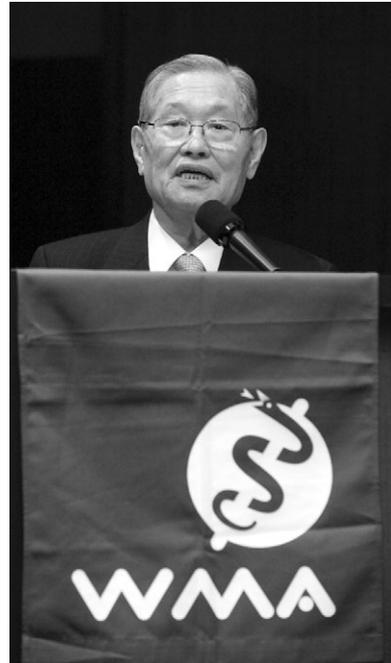
JMAJ 51(5): 296–299, 2008

Tai Joon MOON<sup>\*2</sup>

Across cultures and times, physicians have always shared a keen interest for human rights while fulfilling their basic mission of treating human illness. Today, I have been asked to look back on WMA's contributions to human rights but since we are in Korea, I would like to start my talk by introducing to you a beautiful story about a Canadian missionary physician who came to Korea more than a 100 years ago and shared his great love with Koreans.

It was in 1893 that Doctor Oliver R. Avison came to Korea. Faithful to his religious and professional beliefs, he treated all patients: the poor as well as the rich. He eventually became a royal physician providing medical care to the King. Shortly after this arrival in Seoul, Dr. Avison received a request for a house call by a patient named Sung Choon Park. This was during the late Chosun dynasty, which was a Confucius society with strict class distinctions. This Mr. Park, it happens, was a meat butcher, the lowest of the classes and despised by all. According to records, a meat butcher during the Chosun dynasty was a target of severe social discrimination and couldn't expect even the most basic of medical treatment.

Despite social stigma, Dr. Avison continued his house calls until Mr. Park fully recovered from typhoid fever. The fact that a royal court physician treated an untouchable with equal compassion deeply moved Butcher Park and his fellow untouchables. However, when rumor spread that Dr. Avison was treating meat butchers too, noble class patients suddenly started to shun his clinic. Dr. Avison didn't mind this very much. But Dr.



Dr. Moon speaking at the Scientific Session

Avison's disregard for social segregation triggered high scandal even among the newly converted Christian noble class. They could not tolerate the possibility of sharing church service with untouchables and slandered the missionary church as a butcher's church.

Then came a cholera outbreak, which Koreans thought was caused by spirits of dead mice that sneaked into human bodies. Despite the King's request to stay by his side during these dangerous times, Dr. Avison visited every corner of Seoul to contain the disease. Thanks to his valiant efforts, not a single case of cholera occurred within the royal family. Grateful for his good work, the King granted the doctor an opportunity to submit a petition. Dr. Avison took this rare chance to ask the King to allow the untouchables to "dress as other people and not be discriminated." The King accepted his request. A royal decree was announced in the entire country allowing new

<sup>\*1</sup> This speech is one of 10 keynote speeches made at the Scientific Session on October 16, 2008 during the WMA General Assembly, Seoul 2008, held in Seoul, South Korea.

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rights for the lowest caste. It is simply amazing to see what the compassion of a single physician was able to achieve.

The meat butcher Mr. Park eventually became a banker and in his later years had the honor of serving as an elder at the largest Presbyterian Church in Seoul. He asked Dr. Avison to train his son as a physician. The son named Suh Yang Park was one of the first 7 graduates of medical school in Korea.

Even though from an untouchable family, Suh Yang Park was given the chance to study medicine by a foreign physician. He tried to return his blessing by working in the forefront of the human rights movement in the late 19 century in Korea. Suh Yang Park said that the reason he became a physician was to transcend the barriers of his birth and to live like a human being.

This episode from the late Chosun dynasty is an excellent example of the potential we all possess as physicians. A single physician's dedication abolished class discrimination and another physician's deep concern on human rights made a significant difference in Korea.

Now, let's go on a journey looking back at how WMA has contributed to human rights throughout its history.

From its establishment in 1947 and until the early 1990s, WMA focused most of its energy on medical ethics and related policies. During this period, human rights was addressed within the greater scope of medical ethics and policies. Medicine is about saving human lives and is fundamentally related with human rights. Many of the WMA policies on medical ethics directly or indirectly reflect its concern with human rights. A major theme of WMA's human rights efforts during this period was advocating the protection of medical professionals opposing inhumane acts such as torture.

In particular, WMA strongly voiced its protest against tortured or killed physicians who opposed inhumane torture. WMA's basic principle on torture is embodied in the "WMA Declaration of Tokyo: Guidelines for Physicians Concerning Torture and other Cruel, Inhuman or Degrading Treatment or Punishment in Relation to Detention and Imprisonment" that was adopted at the 29th General Assembly in 1975. The declaration requires physicians to not condone or participate in cruel, inhuman or degrading punishment or torture and not to provide medical knowledge to

facilitate such actions. It also calls on the international society, National Medical Associations and fellow physicians to support physicians and their families that are threatened or oppressed for refusing to cooperate with such cruel and inhuman treatment.

In the 1980s, WMA turned its attention to Steve Biko of South Africa who fought against Apartheid and died in prison in 1977. Even a long time since the death of Biko, physicians fought to uncover the truth around his death and to demand proper medical attention to people in custody in South Africa. This attention later developed into demands for more general issues such as equal medical treatment opportunities to non-white populations and equal education opportunities to non-white medical students.

In 1990, WMA sent letters to the Chilean government calling for the release of Dr. Ramon Rojas Beltran who was imprisoned amidst political confusion. We also send a letter of protest to the Nepal government regarding the detention of many medical professionals there. From 1994 to 1995 when the former President of the Nigerian Medical Association Dr. Beko Ransome-Kuti was imprisoned by the secret military, WMA demanded a thorough explanation, immediate release and formal trial procedures.

In addition to calling for the release of physicians unfairly imprisoned, WMA adopted various policies on the basic human rights of physicians. The 37th General Assembly in Brussels adopted the "Declaration on Human Rights and Individual Freedom of Medical Practitioners" in 1985. It includes Article 4 which clearly states WMA's opposition against denial of membership in national associations to any duly registered physician because of race, color, religion, creed, ethnic affiliation, national origin, sex, age or political affiliation. This was to guarantee the equal rights of all qualified medical professionals.

Human rights gained WMA's full attention as an agenda of its own in 1990 at the 42nd General Assembly held at Rancho Mirage, U.S.A. that adopted the "WMA Resolution on Human Rights." The resolution was revised 3 times from 1993 to 1995 and (rescinded at the 2005 General Assembly). The WMA emphasized that medical professionals are often amongst the first to become aware of human rights violations and that medical associations have an essential role to play in calling attention to such violations in their

countries. It also highlights how protection of human rights is directly linked to the professional mission as physicians. To fulfill this mission, WMA calls on each national medical association to review the situation in their own countries, to request strict observance of civil and human rights when violations are discovered, to call for humane treatment of prisoners and to seek immediate release by those imprisoned without just cause. The resolution also strongly supports individual physicians who raise human rights violations in their own country. In practice, this resolution documents the key action areas within human rights that WMA should focus on.

Following these basic recommendations, the WMA specifically addressed the challenges faced by doctors working in the prison system and indirectly underlined the importance of individual commitment and training programs. By stipulating that adequate health care should be available to all human beings without distinction, the resolution even encompasses the concept of right to health.

In 1996, WMA resolved to form a working group on human rights to follow up on the WMA Human Rights Resolution with specific action strategies. The Working Group succeeded in appointing a UN Special Rapporteur to protect physicians who work on the forefront of human right protection and to prevent human right violations against patients. It strived to protect physicians who were on trial in Turkey and

adopted the Resolution on Violations of Health Related Human Rights in Kosovo against the racial genocide and serious human right abuses during the Kosovo civil war in 1998. The resolution called for monitoring against human rights violations, to respect medical staff and facilities, to facilitate unrestricted access by international humanitarian organizations and to end all discrimination in medical care based on ethnicity.

In the new millennium, WMA's human rights activities started to expand to wider areas by forging partnerships with other organizations. An excellent example is our efforts to implement the "Istanbul Protocol: Manual on Effective Investigation and Documentation of Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment" together with the International Rehabilitation Council for Torture Victims.

WMA has also adopted the "WMA Statement on Health Care for Prisoners and other Detainees" to address a broader scope of human rights issues.

WMA is recognized by many as the organization that upholds the integrity and conscience of all physicians of the world. Our efforts in human rights advocating would be an essential part of that mission and WMA has devoted itself to various tasks addressing health, medicine and physician rights. At the same, we can be proud that the WMA has contributed to human rights issues by providing a fair and level-minded position on issues often complicated by narrow-



Conference hall of the WMA General Assembly

viewed activists groups.

At the same time, we must accept the fact that our scope of interest has been too narrow and that our actions have been too passive. We would not be able to offer solutions to all human rights issues. Nevertheless, by looking around us with eye wide open, we will witness numerous scenes of human right violations. The topics prepared for today's Scientific Session fails to capture all aspects of human rights. In particular, when it comes to issues with political implications, it is often difficult to find common grounds just to start a discussion. However, this does not mean we can turn ourselves away from problems and maintain silence as if we never saw them. I do wish that WMA is able to devote more of its time to discuss more actively and deeply on important matters of human rights.

I would especially like to direct your attention to one particular point. Even though we cur-

rently have more than 90 national associations as members, it seems to be not many are interested in human rights—KMA not being an exception. Loving our patients is the greatest duty we have as physicians and a natural extension to this fundamental duty, for both individual physicians as well as national associations, is to be interested with human rights issues that impose serious suffering to our patients. Even if it is not within our immediate power to solve all problems or make a difference, I wish we would at least voice our objections to the wrongdoings because that voice would help our profession gain a greater level of trust and respect from our patients and the general public.

I would like to end by once again emphasizing how it is high time for physicians to once again assume a greater perspective and assume a greater social responsibility and role.



Performance of kayageum (Korean traditional harp) at the opening ceremony

Keynote Speech

## Multiple Air Pollution and Human Rights<sup>\*1</sup>

JMAJ 51(5): 300–302, 2008

Kazuo TEZUKA<sup>\*2</sup>

### Introduction

The original request made to me was to speak on the topic of “Climate Change and Human Rights.” However, due to the lack of concrete legal disputes or legal analysis regarding “climate change” in Japan, I chose instead, with the kind permission of the people concerned, the title “Multiple Air Pollution and Human Rights.”

### Environmental Pollution Compensation Act

With the rapid economic growth in Japan during the 1960s, air and water pollution problems became quite serious, a situation which lasted until the 1970s.

In 1973, the Environmental Standards for certain pollutants, including sulfur dioxide and nitrogen dioxide, were implemented, and in the same year the Environmental Pollution Compensation Act was enacted to create a system for providing prompt and adequate compensation for specific health injuries.

This compensation system was not quite the same as the civil damages system, but the basic concept of this compensation was similar to civil damages.

Under the system, compensation was granted in the case of designated non-specific diseases such as chronic bronchitis and bronchial asthma if the following three conditions were met.

- (1) Designated disease: the patient contracted a designated non-specific disease;
- (2) Designated area: the area in which the patient lived or worked was within the designated area; and

- (3) Designated exposure: the patient lived or worked in that area for more than the specified period of time.

This mechanism, as you will see, is quite a simple mechanism, and compensation was granted without the need to prove the existence of a causal relationship between a specific pollutant and a specific disease.

These three designations were made based on epidemiological surveys conducted in several parts of the country and in consideration of the Environmental Standards.

Specifically, “Designated area” of Condition (2), was defined by Governmental Order as an area where conspicuous air pollution occurred, and where it was recognized that frequent contraction of non-specific diseases occurred on account of this pollution. In the past, 41 areas were designated. (As mentioned later, these designated areas have been totally abolished and are now non-existent.)

That system as applied to designated non-specific diseases was financed by levies imposed on sulfur dioxide emission facilities and a portion of automobile weight tax revenues.

Although much attention had been paid to this system both in Japan and overseas, as far as non-specific diseases are concerned, the system was abolished in 1987 due to considerable improvements in sulfur dioxide pollution levels, etc.

As an aftermath of the termination of the system, there were arguments that a new system should be considered in light of the fact that the number of non-specific diseases did not decrease in the case of people living near main or trunk roads.

Against this background, the following air pollution cases occurred.

<sup>\*1</sup> This speech is a revised version of one of 10 keynote speeches made at the Scientific Session on October 16, 2008 during the WMA General Assembly, Seoul 2008, held in Seoul, South Korea.

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## Tokyo Air Pollution Cases

Beginning in 1996, a series of litigations were filed with the Tokyo District Court by more than 500 residents of the Tokyo Metropolitan Area who allegedly contracted non-specific diseases due to pollutants emitted from automobiles.

The defendants were the Japanese and Tokyo Metropolitan Governments and other administrative agencies, etc., and 7 leading automakers, including Toyota and Nissan.

### Claims

The claims by plaintiffs were as follows:

- (1) Injunction against all defendants to stop emissions of nitrogen dioxide and suspended particle matter through manufacture and sale of automobiles and their operation, which lead to pollutions exceeding the Environmental Standards for the Tokyo Metropolitan Area;
- (2) Damages against governmental defendants for defective construction and management of the main or trunk roads; and
- (3) Damages against automakers for joint torts, etc.

### District court decision

The District Court decision of 2002 denied Claims (1) and (3), but with regard to Claim (2) for damages against governmental defendants, granted damages for 7 plaintiffs.

The Courts reasoning regarding Claim (1) was the lack of adequate evidence supporting a standard figure for injunction, and as regarding Claim (3) was the lack of negligence of automakers. Regarding the responsibility of automakers, the court (i) admitted the foreseeability of automakers of the possible contraction of designated non-specific diseases at certain pollution levels and under other conditions, but (ii) denied liability on account of the difficulty of automakers to control users' operation after the sale of automobiles.

With regard to Claim (2), the court granted damages to 7 plaintiffs on the grounds that causal relationships between automobile emission gases and bronchial asthmas were recognized in view of traffic and other conditions of the roads in

question, distances of the place of residence or work from the roads (within approximately 50 meters), and exposure, etc.

The main basis of the court decision was an epidemiological survey report on non-specific diseases among residents living along the roads which were similarly situated.

### Settlements

On appeal, settlements were made in 2007 by the Tokyo High Court for all of the above mentioned litigations, which included 505 plaintiffs in total. These settlements were attained through the strong initiative of the High Court and cooperation from the parties concerned.

The main components of the settlements are as follows.

- Creation of a Medical Fee Assistance Mechanism
  - The Tokyo Metropolitan Government created a Medical Fee Assistance Mechanism which is applied to bronchial asthma patients who have lived in Tokyo for a period of one or more consecutive years and satisfy certain specified requirements.
  - Automakers contributed 3.3 billion yen\*<sup>3</sup> (US\$34.7 million) to this Mechanism, and the Japanese Government, through independent administrative organizations, contributed 6 billion yen (US\$63.2 million).
- Implementation of environmental countermeasures by the Japanese and Tokyo Metropolitan Governments
  - Reduction of traffic jams in the metropolitan area,
  - Promotion of the use of public transportation,
  - Reduction of automobile exhaust,
  - Promotion of low emission cars,
  - Improvement of road structure and greening of roads,
  - Investigation of the effects of particle matter on human health, and
  - Various road environmental improvement measures, etc.,
- Payment of settlement fees
  - Automakers pay approximately 212 million yen (US\$2.2 million) to the plaintiffs.

### Comments

Below are some comments regarding our experi-

\*3 Yen/dollar exchange rate: 1 US dollar = 95 yen.

ences in relation to the implementation of the Environmental Pollution Compensation Act and its underlying system during the 1960s and 1970s and the settlements reached in recent Tokyo air pollution cases.

- In cases involving multiple air pollution sources and non-specific diseases, the difficulty of legally proving causal relationships is enormous. What seems to have been decisive in recognizing the claims of a limited number of patients in a Tokyo air pollution case was the existence of an epidemiological survey report.
- Tokyo air pollution cases were novel in Japan in that they claimed that automakers were liable for the pollution caused by automobiles after their sales through their operation by users. This “indirect emission” claim was not accepted by the court.
- Governmental planning and resolution systems based on the Environmental Pollution Com-

pensation Act played a very important role in dealing with these complex problems, especially in the stages of rampant pollution in the 1960s and 1970s.

The system, although simple and somewhat audacious, was nonetheless founded on various epidemiological surveys.

- In retrospect, as the above-mentioned experiences indicate, courts or administrative agencies seem likely to rely on epidemiological survey reports, in addition to relevant medical views when required to make a decision on complex problems like the relationship between multiple air pollution causes and non-specific diseases. In this respect, physicians’ role is considered to be pivotal.

I hope that my presentation will provide you with some ideas for dealing with these quite difficult but very important problems.

# Dietary Habits that Protect Children from Lifestyle-related Diseases: From the perspective of dietary education

JMAJ 51(5): 303–309, 2008

Hiroko KODAMA\*<sup>1</sup>

## Abstract

In Japan, 10–12% of children are obese, with 10–20% of obese children affected by metabolic syndrome, approximately 25% affected by liver function abnormalities due to fatty liver, 4–7% affected by Type 2 diabetes, 15–18% affected by high blood cholesterol levels, and 7–8% affected by high blood pressure. The causes of obesity are unhealthy dietary and lifestyle habits, habits which are formed in childhood and continue into adulthood. Accordingly, in order to prevent lifestyle-related diseases in not only children but also adults, “helping people acquire knowledge about food and the capacity to select appropriate foods so that they can implement healthy dietary habits”—in other words, dietary education—is necessary. With the establishment of the Basic Law on Nutritional Education in 2005, diet and nutrition teachers began to be assigned to schools.

Physicians are being required to provide children’s parents/guardians and school teachers with medical knowledge concerning “health/disease and nutrition.” It is desirable that when primary care doctors examine a child, they pay attention to the child’s physique and if the child is obese or thin, identify problematic dietary habits and provide appropriate guidance. Here I provide household dietary habit check points for this purpose.

**Key words** Dietary education, Lifestyle diseases in children, Metabolic syndrome in children, Childhood obesity

## Introduction

As the name suggests, a major factor in the onset of “lifestyle-related diseases” is long-term lifestyle habits. In many cases, obese children do not eat breakfast, have an unbalanced diet, eat high-energy/high-fat foods, eat irregular snacks, or otherwise have unhealthy dietary habits. The number of obese children who are already affected by lifestyle-related diseases is increasing. As the proverb “What is learned in the cradle is carried to the grave” suggests, dietary and lifestyle habits are also cultivated during childhood. Accordingly, in order to prevent lifestyle-related diseases, it is extremely important to establish “desirable lifestyle habits” from childhood. The

Basic Law on Nutritional Education defines “dietary education” as “helping people acquire knowledge about food and the capacity to select appropriate foods so that they can implement healthy dietary habits.” In order to prevent obesity and lifestyle-related diseases, it is essential that dietary education is provided from as early an age as possible.

## Occurrence Rate for Childhood Obesity/Lifestyle-related Diseases and Long-Term Prognosis

The results of the “2005 National Health and Nutrition Survey” are startling. If “rather overweight” and “obese” are added together, 18.5% of boys in years 1–3 of elementary school, 28.5%

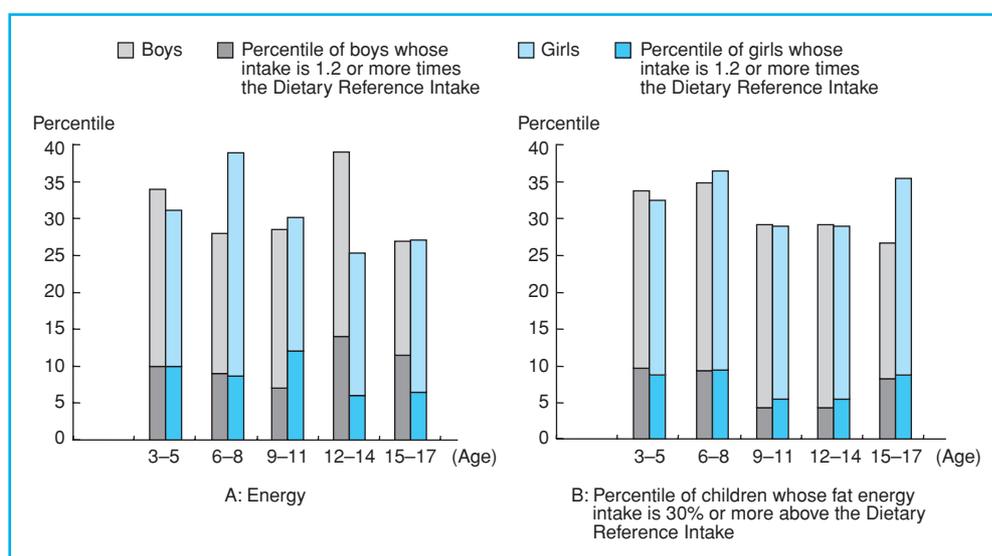
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This article is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Vol.136, No.12, 2008, pages 2361–2365).

**Table 1 Diagnostic criteria for metabolic syndrome in childhood (Ages 6–15)**

Required items: abdominal fat deposition
Abdominal circumference $\geq 80$ cm
Note: Criterion is met if abdominal circumference $\div$ height is 0.5 or more. For primary school children, the criterion is met if abdominal circumference is 75 cm or more.
In addition to the above, the criteria are met if 2 or more of the following items are present.
High TG blood levels: TG $\geq 120$ mg/dl and/or low HDL-C blood levels: HDL-C $< 40$ mg/dl
Systolic blood pressure $\geq 125$ mmHg and/or diastolic blood pressure $\geq 70$ mmHg
Fasting blood glucose $\geq 100$ mg/dl

(Excerpt from Hara M. The Japanese Journal of Clinical Nutrition. 2007;110:823–826.)



(Compiled from "Dietary Reference Intake for Japanese (2005 Edition)"/"2004 National Health and Nutrition Survey".)

**Fig. 1 Percentile of children consuming more than the dietary reference intake**

of boys in years 4–6 of primary school, and 18.6% of boys in junior high school are overweight. Amongst girls, 25.9% of girls in years 1–3 of elementary school, 22.8% of girls in years 4–6 of primary school, and 28.2% of girls in junior high school are overweight. Recently, diagnostic criteria for childhood metabolic syndrome were published (Table 1).<sup>1</sup> Some 10–20% of obese children are already affected by metabolic syndrome, with approximately 25% affected by liver function abnormalities due to fatty liver and many more affected by hyperuricemia and other complications.<sup>2,3</sup> It has been reported that 4–7% of obese children are affected by Type 2 diabetes,

15–18% affected by high blood LDL-cholesterol levels, and 7–8% affected by high blood pressure, indicating the high rate of complications for severe obesity.<sup>4</sup>

Moreover, the rate of obesity in childhood continuing into adulthood is extremely high, with 70% of obese adolescents remaining obese in adulthood. Vanhala et al. have reported that of 146 obese adults, 28 (19%) had metabolic syndrome, of the 71 patients who had not been obese at age 7, 7 (10%) had metabolic syndrome, but of the 75 patients who had been obese at age 7, 21 (28%) had metabolic syndrome, indicating a high risk for metabolic syndrome in the group that

**Table 2 Main points of the basic plan for the promotion of dietary education**

<b>No. 1: Basic policies concerning measures for promoting dietary education</b>
1. Improvement of the people's physical and mental health and enriched character-building
2. Sense of appreciation for and understanding of food
3. Expansion of activities promoting dietary education
4. The roles of parents/guardians and educators in children's dietary education
5. Implementation of hands-on food-related activities and activities promoting dietary education
6. Consideration of production in harmony with traditional food culture and the environment, and contribution to the improvement of food self-sufficiency and the invigoration of agricultural and fishing villages
7. The role of dietary education in assuring food product safety
<b>No. 2: Items concerning the goals of dietary education promotion</b>
1. Percentage of Japanese who are interested in dietary education (70%→90%)
2. Percentage of Japanese who skip breakfast (children 4%→0%; men in their 20s 30%→15%; other)
3. Percentage of locally grown foods in school lunches (21%→30%)
4. Percentage of Japanese who consult the "Meal Balance Guide," etc. regarding dietary habits (60%)
5. Percentage of Japanese who are aware of metabolic syndrome (80%)
6. Number of volunteers involved in the promotion of dietary education (20% increase)
7. Percentage of municipalities undertaking educational farm activities (42%→60%)
8. Percentage of Japanese with basic knowledge concerning food safety (60%)
9. Percentage of local governments preparing and implementing promotional plans (prefectures 100%; municipalities 50%)
<b>No. 3: Items concerning the comprehensive promotion of dietary education</b>
1. Promotion of dietary education within the home
2. Promotion of dietary education within schools and nursery schools
3. Promotion of efforts to improve dietary habits within communities
4. Expansion of activities promoting dietary education; Dietary Education Month (June each year); Dietary Education Day (19th of each month)
5. Promotion of interaction between producers and consumers; invigoration of agriculture, forestry and fishery in harmony with the environment, etc.
6. Support of activities aimed as passing on food culture, etc.
7. Promotion of food safety, nutrition, and other dietary habit-related surveys, research, provision of information, and international exchange
<b>No. 4: Items required for comprehensively and strategically advancing measures for promoting dietary education</b>
Formulation and implementation of promotional plans and revision of basic plans by prefectural governments, etc.

The plan covers the 5-year period from Fiscal 2006 to Fiscal 2010.

(Excerpt from Tanaka H. The Journal of Public Health Practice. 2006;70:532-534.)

had been obese since childhood.<sup>5</sup> Because of the strong correlation between physique and lifestyle habits in children aged from 3 years through elementary school, it is believed that lifestyle habits are formed during childhood. Accordingly, it is imperative that people acquire healthy lifestyle habits from childhood.<sup>6</sup>

### Current Status of Dietary Habits amongst Children

Problematic dietary habits that are factors in childhood obesity/lifestyle-related diseases include overeating, excess intake of fats, unbalanced diet,

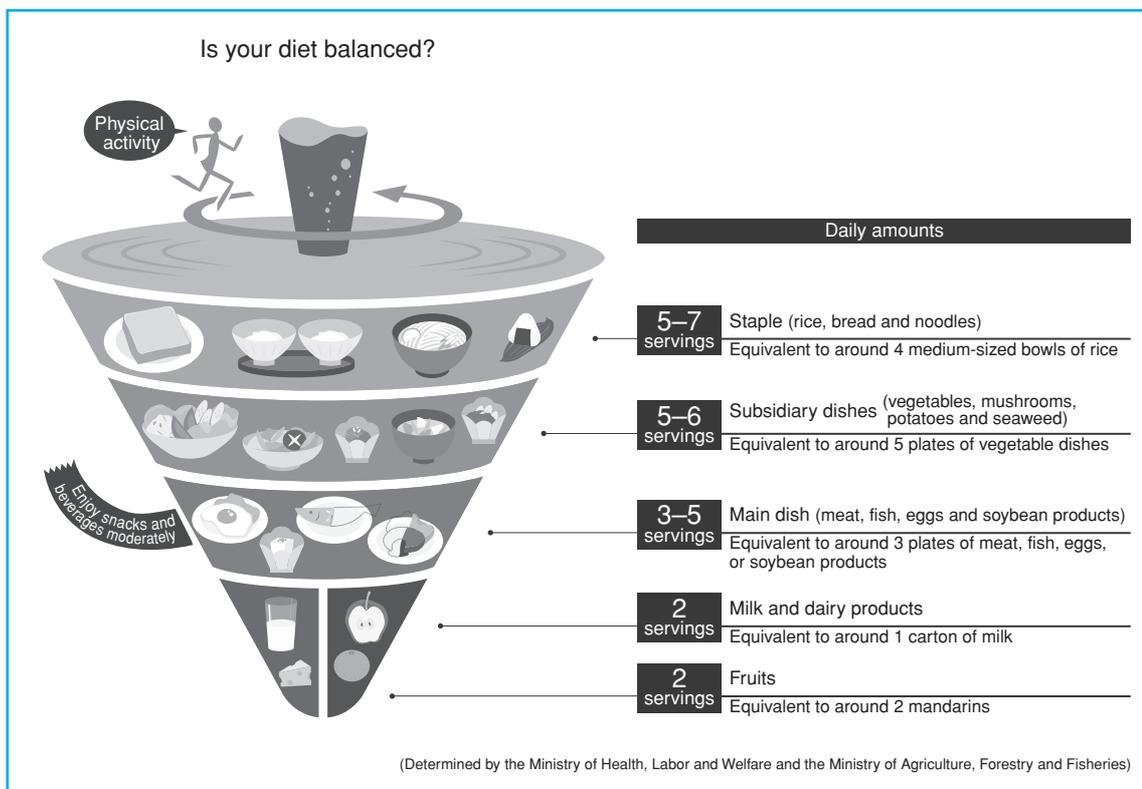


Fig. 2 Meal balance guide (The Information and Service Center for Food and Foodways)

skipping breakfast, late-evening snacks, irregular snacking, and eating alone. Most of these factors can already be observed in childhood, and when we consider that these are also factors for adult obesity/lifestyle-related diseases, it is clear how very important acquiring desirable dietary habits from childhood is.

### Diet composition

Obese children eat foods that are high in energy and fat. Dietary reference intake levels for each age have been published in the “Dietary Reference Intake for Japanese (2005 Edition)”; the results of the “2005 National Health and Nutrition Survey” show actual intake levels. Comparing the average dietary reference intake and average actual intake levels, actual energy intake is in fact lower than the dietary reference intake level. However, 16–40% of children have excessive energy intakes, with 6–15% having energy intakes 1.2 or more times the dietary reference intake level (Fig. 1A). Even with strenuous exercise, the amount of energy required is around 1.1 times the dietary reference intake level, and so

individuals with intakes of 1.2 times or more are steadily gaining weight. Moreover, the dietary intake of 30–35% of children has a fat-energy ratio of 30% or more (ratio of total energy intake to fat energy intake; in children the desirable ratio is 25–30%) (Fig. 1B). That is to say, a large number of children are consuming high-energy/high-fat foods, and children such as these are thought to become obese.

### Dietary behavior

Skipping breakfast is related to obesity. Abe et al. have reported that the percentage of non-obese who skipped breakfast was 8.7%, but the same percentage for obese children was 29.2%. Not only did obese children skip breakfast, they also ate irregular and/or late-evening snacks, lacked exercise, watched television for long periods, and otherwise had unhealthy lifestyles overall.<sup>7</sup> “Early to bed, early to rise, breakfast” educational activities are being carried out, but the rate of children skipping breakfast is rising. In the results of the “2005 National Health and Nutrition Survey,” the rate of skipping breakfast was

**Table 3 Dietary education in the home and roles of school and primary care physicians**

<b>Dietary education in the home (10 checkpoints)</b>
1. Does the family eat together (conversation around the dinner table)?
2. Does the child help with food preparation and/or tidying up after meals?
3. Is the child grateful for the food he/she receives (receiving "life")?
4. Does the child eat breakfast every morning?
5. Does the child eat a variety of foods? Five basic food groups: staple; subsidiary dishes; main dish; dairy products, fruits (See Fig. 2)
6. Does the child eat vegetables every day?
7. Does the child consume too much fat?
8. Does the child consume too many sweets?
9. Does the child eat foods he/she dislikes?
10. Does the child chew his/her food thoroughly?
<b>The roles of school and nursery school physicians</b>
1. Coordination between nursing and class teachers: early diagnosis of obesity and thinness through health examinations; early diagnosis of diabetes through urinalysis; checking and providing guidance regarding the dietary habits of children with unidentified complaints.
2. Coordination with nutrition teachers: providing advice and cooperating with nutritional education activities
3. Lectures concerning nutritional/medical knowledge for teachers, parents/guardians and students: "Disease and Nutrition," "Lifestyle-related Diseases," "Why Being Too Thin is Bad," "Why is an Imbalanced Diet Bad?," "Metabolic syndrome," etc.
<b>The roles of primary care physicians</b>
1. Pay careful attention to the dietary and lifestyle habits of children coming to the hospital for treatment of unidentified complaints and provide appropriate guidance.
2. In clinical practice also, always pay careful attention to children's physiques. If a child patient is obese or too thin, provide dietary education.
3. Participate actively in efforts to promote community dietary education and provide specialist knowledge.

(Excerpt from Kodama H. The Journal of the Japan Medical Association. 2007;136 (Special Edition 1):S268.)

3.2% for 7–14 year-olds but grows to 14.7% for 15–19 year-olds, showing a sharp rise in children skipping breakfast from high school onwards.

### **Why is Dietary Education Important?**

As stated above, dietary education is defined as "helping people acquire knowledge about food and the capacity to select appropriate foods through various experiences so that they can implement healthy dietary habits." Moreover, in order to promote dietary education as a national grass-roots movement, items that should be achieved by 2010 (Table 2) and a "Meal Balance Guide" (Fig. 2) for enabling this have been published.

The results of the "2005 National Health and Nutrition Survey" show that not only the number

of obese children, but also the number of thin children is increasing. With 25.4% of children (aged 6–14) either "obese" or "obesity trend" and 18.1% "thin" or "thinnish," only 56.6% of children have normal physiques. Considering that physiques are becoming polarized at these two extremes, dietary education to teach children healthy eating habits is essential. From early childhood to adolescence, continuous age-appropriate education is required, and reports have also been published on specific ways to nurture "eating capability" in accordance with each growth/development stage.<sup>8</sup>

### **Dietary education in the home**

Sense of taste and dietary habits are formed in childhood, and children's dietary habits reflect

those of their parents. Accordingly, the basis of dietary education is the home. Amongst the parents of obese children, the rate of obesity is extremely high. When their parents are obese, the family is less conscious of obesity-related problems. However, the social environment of children today is far more inductive to the development of lifestyle-related diseases than that of their parents' generation. Accordingly, children are in danger of developing lifestyle-related diseases at an earlier age than their parents, and so not only children but also parents must receive dietary education. Table 3 shows 10 checkpoints for dietary education in the home<sup>9</sup> that reflect problems related to the dietary habits of children in recent years.

### Roles of physicians in dietary education<sup>9</sup>

Roles of school and nursery school physicians in the promotion of dietary education in schools and nursery schools are extremely important. School teachers are making various efforts to promote dietary education and are demanding scientifically based information about "health/disease and nutrition/food." The people to give such advice are school physicians.

School lunches provide an effective opportunity for dietary education, but in reality many children have strong likes and dislikes and much food is left uneaten. Even if lunch menus are devised with consideration given to nutritional balance, the merits of school lunches disappear if children eat only what the foods they like and leave the ones they dislike. Providing children and their parents/guardians with information about "health/disease and nutrition/food" is also a role of school physicians. Since 2007, the Japan Pediatric Society has been holding a "Forum to Consider Dietary Education for Children" and physicians have posted materials that can be used in dietary education activities on the forum website ([http://www.jpeds.or.jp/pdf/071031\\_syokuiku.pdf](http://www.jpeds.or.jp/pdf/071031_syokuiku.pdf)) (in Japanese). Furthermore, medical journals such as the Japanese Journal of Pediatric Medicine, The Journal of Pediatric Practice, and the Japanese Journal of Pediatrics plan to publish special features on dietary education in 2008. Schools and communities can use these materials in their dietary education activities.

### Personalized dietary education

Children with unhealthy dietary habits and obese

children require intervention as early as possible. It is possible to screen for obese children at elementary and junior high school using body measurements. Furthermore, children who come to hospitals for treatment of unidentified complaints often have a background of unhealthy dietary habits. When primary care physicians examine a child with an unidentified complaint, I would like them also to pay close attention to the child's dietary and lifestyle habits. In clinical practice, when children come to the hospital for treatment of colds, etc., their physiques should also be checked carefully for obesity.<sup>9</sup> The factors behind unhealthy dietary habits vary from family to family. Physicians must learn the background of each child and provide individualized dietary education accordingly. Continuing such guidance over the long-term is extremely difficult, but dietary education and lifestyle guidance can only be effective if provided continuously. Thus mechanisms to enable long-term continuous guidance are also necessary.<sup>10</sup>

### Message to Society

Being able to put healthy dietary habits into practice for oneself, regardless of the environment, is naturally of the utmost importance. However, in reality there are many people who are susceptible to temptation. Stress is also prevalent, and eating has been observed to be a simple way of relieving stress. Children in particular are still developing both mentally and physically, and society as a whole should cooperate to ensure that children have healthy dietary habits. However, our senses are flooded with information and foods that lead to overeating. Moreover, cakes and sweets sold in big sizes are now also being sold in even bigger mega sizes. Such calorie-dense foods are extremely bad for the health. I would like to see food manufacturers provide food products for the general public with a sense of pride that they are protecting people's health.

As an anti-smoking measure, cigarette packets are required to carry "Smoking can cause lung cancer" warning labels. In the same way, I recommend that regulations be introduced that require calorie-dense foods to carry "Overeating poisons the body" or "Overeating causes lifestyle-related diseases" on their labels. Moreover, I would like to see similar messages shown as subtitles on television commercials or programs that promote

overeating and movements to deter consumers from buying foods that are bad for the body. In recent times, the number of companies refusing to hire smokers has been increasing. Similarly, I believe there could to a certain degree be social

restraints placed on people who are extremely obese. In order to protect children from lifestyle-related diseases, I believe it is also the responsibility of adults as a society to ensure that children have healthy dietary habits.

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# What We Know About Associations between Diet and Cancer

JMAJ 51(5): 310–316, 2008

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## Abstract

The associations between diet-related factors, including obesity and physical activity, and cancer have been scrutinized in systematic causality assessment based on the presently available evidence conducted by the WHO, FAO, and other international organizations, and these efforts have produced recommendations for preventing cancer highlighting highly probable factors. The results of epidemiological studies in Japanese populations, including the data from recent large-scale cohort studies, have also been published. My colleagues and I have been conducting a systematic compilation and evaluation of evidence in Japanese populations, performing quantitative evaluation through meta-analysis as necessary, and proposing recommendations for preventing cancer among Japanese, taking into consideration internationally accepted evaluations. This article first outlines the present progress of these evaluations and recommendations, and then specifically discusses the association between cancer and various factors including alcohol, fruits and vegetables, salt and salted foods, preserved meat and red meat, obesity, and physical activity, focusing on the present progress of evaluation and the evidence in Japanese populations.

**Key words** Epidemiological studies, Risk assessment, Diet, Cancer prevention

## Introduction

British epidemiologists Doll and Peto re-examined the data from epidemiological studies, in a word ‘evidence,’ on mainly human subjects, and estimated that the contribution of dietary factors to cancer deaths in the U.S., i.e., the percentage of cancer deaths that could have been prevented through improvement of diet, was 35% in their report in 1981.<sup>1</sup> Later, the Harvard Center for Cancer Prevention in the U.S. attempted similar estimation, and concluded in 1996 that 35% of cancer cases could have been prevented through improvement of diet, obesity, and lack of physical activity in adulthood.<sup>2</sup> Although we need to pay attention to the fact that both are estimations based on the epidemiological studies primarily in Western populations, where the lung, colorectum,

breast, and prostate are the predominant sites of cancer, diet may also be deeply involved in the development of cancer in the Japanese.

This article reviews the present state of evidence-based causality assessment regarding the association between diet-related factors, including obesity and physical activity, and cancer.

## Relationship between Diet and Cancer —Present international assessment

The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations published a report entitled “Diet, Nutrition, and the Prevention of Chronic Diseases” in 2003 as a result of consultation with experts around the world.<sup>3</sup> In discussing dietary recommendations for preventing cancer, this document tabulated the causality of various factors

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This article is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Vol.136, No.12, 2008, pages 2366–2371).

**Table 1 Associations between diet-related factors and cancer (WHO/FAO, 2003)**

Strength of evidence	Decreased risk	Increased risk
Convincing	Physical activity (colon)	Overweight and obesity [esophagus (adenocarcinoma), colorectum, breast in postmenopausal women, endometrium, kidney] Alcohol (oral cavity, pharynx, larynx, esophagus, liver, breast) Aflatoxin (liver) Chinese-style salted fish (nasopharynx)
Probable	Fruits and vegetables (oral cavity, esophagus, stomach, colorectum) Physical activity (breast)	Preserved meat (colorectum) Salt-preserved foods and salt (stomach) Very hot (thermally) drinks and food (oral cavity, pharynx, esophagus)
Possible/ insufficient	Fiber Soya Fish N-3 fatty acids Carotenoids Vitamins B <sub>2</sub> , B <sub>6</sub> , folate, B <sub>12</sub> , C, D, E Calcium, zinc and selenium Non-nutrient plant constituents (e.g. allium compounds, flavonoids, isoflavones, lignans)	Animal fats Heterocyclic amines Polycyclic aromatic hydrocarbons Nitrosamines

according to the strength of available evidence classified into the 4 ranks of “convincing,” “probable,” “possible,” and “insufficient” evidence.

Convincing evidence is “evidence based on epidemiological studies showing consistent associations between exposure and disease, with little or no evidence to the contrary. The available evidence is based on a substantial number of studies including prospective observational studies and where relevant, randomized controlled trials of sufficient size, duration and quality showing consistent effects. The association should be biologically plausible.” Probable evidence is “evidence based on epidemiological studies showing fairly consistent associations between exposure and disease, but where there are perceived shortcomings in the available evidence or some evidence to the contrary, which precludes a more definite judgment. Shortcomings in the evidence may be any of the following: insufficient duration of trials (or studies); insufficient trials (or studies) available; inadequate sample sizes; incomplete follow-up. Laboratory evidence is usually supportive. Again, the association should be biologically plausible.” In other words, strong evidence is considered to exist when there are consistent results of epidemiological studies, including cohort studies and

more preferably randomized controlled trials, indicating that consuming more of a particular food is associated with lower or higher probability of developing cancer.

The WHO/FAO expert report evaluated the evidence on diet-related factors and the risk of developing cancer as shown in Table 1. Based on this evaluation, it provided the following dietary recommendations for preventing cancer: (1) Maintain weight among adults. (2) Maintain regular physical activity. (3) Consumption of alcoholic beverages is not recommended. (4) Chinese-style fermented salted fish, salt-preserved foods should be consumed in moderation. (5) Minimize exposure to aflatoxin in foods. (6) Have a diet which includes at least 400 g per day of total fruits and vegetables. (7) Moderate consumption of preserved meat (e.g. sausages, salami, bacon, ham). (8) Do not consume foods or drinks when they are at a very hot temperature.

More recently, the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR) published the revised edition of the expert report entitled “Food, Nutrition, Physical Activity, and the Prevention of Cancer”<sup>4</sup> in November 2007 after an interval of 10 years. The associations identified in this report as

**Table 2 Associations between diet-related factors and cancer (WCRF/AICR, 2007)**

Strength of evidence	Decreased risk	Increased risk
Convincing	Physical activity (colon) Lactation (breast)	Body fatness [esophagus, pancreas, colorectum, breast (menopause), endometrium, kidney] Abdominal fatness (colorectum) Adult attained height [colorectum, breast (postmenopause)] Red meat and processed meat (colorectum) Alcohol [mouth, pharynx, larynx, esophagus, colorectum (male), breast] Aflatoxins (liver) Arsenic in drinking water (lung) Beta-carotene supplement (lung)
Probable	Body fatness [breast (premenopause)] Physical activity [breast (postmenopause), endometrium] Fruits (mouth, pharynx, larynx, esophagus, lung, stomach) Non-starchy vegetables (mouth, pharynx, larynx, esophagus, stomach) Allium vegetables (stomach) Garlic (colorectum) Foods containing fiber (colorectum) Cow milk (colorectum) Foods containing folate (pancreas) Foods containing carotenoids (mouth, pharynx, larynx, lung) Foods containing beta-carotene (esophagus) Foods containing vitamin C (esophagus) Foods containing lycopene (prostate) Foods containing selenium (prostate) Calcium supplement (colorectum) Selenium supplement (prostate)	Body fatness (gallbladder) Abdominal fatness [pancreas, breast (postmenopause), endometrium] Adult weight gain [breast (postmenopause)] Greater birth weight [breast (premenopause)] Adult attained height [pancreas, breast (premenopause), ovary] Alcohol [liver, colorectum (female)] Salted foods and salt (stomach) Chinese-style salted fish (nasopharynx) Arsenic in drinking water (skin) Maté (esophagus) Diets high in calcium (prostate)

having “convincing” or “probable” evidence are listed in Table 2. These included more items that proposed the following dietary recommendations: (1) **BODY FATNESS**: Be as lean as possible within the normal range of body weight. (2) **PHYSICAL ACTIVITY**: Be physically active as part of everyday life. (3) **FOODS AND DRINKS THAT PROMOTE WEIGHT GAIN**: Limit consumption of energy-dense foods and sugary drinks. (4) **PLANT FOODS**: Eat mostly foods of plant origin. (5) **ANIMAL FOODS**: Limit intake of red meat and avoid processed meat (e.g. sausages, salami, bacon, ham). (6) **ALCOHOLIC DRINKS**: Limit alcoholic drinks. (7) **PRESERVATION, PROCESSING, PREPARATION**: Limit consumption of salt. Avoid moldy cereals (grains) or pulses (legumes). (8) **DIETARY SUPPLEMENTS**: Aim to meet nutritional needs through diet alone. (9) **BREASTFEEDING**:

Mothers to breastfeed; children to be breastfed. (10) **CANCER SURVIVORS**: Follow the recommendations for cancer prevention.

These 2 expert reports share many common features in the evaluation of evidence and the recommendations based on it. These are the dietary recommendations for preventing cancer based on the best scientific evidence available at the present. However, the evidence is derived mostly from epidemiological studies in Western countries. Cancer prevention guidelines for Japanese should be based on the evidence in Japanese populations, which have a dietary culture different from that of Western countries. For example, Japanese are not much exposed to aflatoxin, Chinese-style salted fish, and preserved meat. On the other hand, Japanese consume much more soybeans and fish than Western people. There is also a difference in the degree of obesity between

Japan and Western countries.

## **Evidence in Japanese Populations**

Starting from the years around 1990, several cohort studies involving around 100,000 individuals have been conducted in Japan, and recently produced many reports of evidence in Japanese. Representative studies include the Japan Public Health Center-based Prospective Study (JPHC Study),<sup>5</sup> which was supported by grant-in-aid for cancer research from the Ministry of Health, Labor and Welfare (MHLW) and led by myself serving as principal investigator; the Japan Collaborative Cohort Study (JACC Study) by the Ministry of Education, Culture, Sports, Science and Technology (MEXT); the Miyagi Cohort Study by Tohoku University; and the Takayama Cohort Study by Gifu University.

Following the progress of these studies, we have been working to compile and organize the evidence from epidemiological studies in Japanese populations, to determine the presence or absence of associations between lifestyle-related factors and cancer, taking into consideration the extensive body of scientific knowledge including animal data, mechanisms, and internationally accepted evaluations; and to estimate the magnitude and dose-response relationships of identified associations through meta-analysis and other methods. These efforts have been the duties of the Research Group for the Development and Evaluation of Cancer Prevention strategies in Japan (the 3rd term 10-year comprehensive strategy for cancer control from the MHLW Scientific Grants), in which I have been serving as the principal investigator.<sup>6</sup>

As of November 2007, we have concluded the evaluation and systematic review of smoking, alcohol consumption, obesity, consumption of fruits and vegetables, salt and salted foods, green tea, coffee, soybean products, and fish regarding their association with cancer in all sites and cancer in 5 leading sites (stomach, colorectum, lung, liver, and breast) (Japanese only). The results are available on the website of the study team ([http://epi.ncc.go.jp/can\\_prev/](http://epi.ncc.go.jp/can_prev/)) (Japanese only). In addition, quantitative evaluation has also been conducted as necessary, using the pool of data from the above-mentioned 4 cohort studies in Japan covering approximately 300,000 individuals in total.

## **Associations between Different Diet-related Factors and Cancer: Internationally accepted evaluation and evidence in Japanese**

### **Alcohol consumption**

Alcohol consumption is considered to affect cancer development through mechanisms such as the solvent effect promoting the uptake of carcinogens, the influence of acetaldehyde, the effect on drug-metabolizing enzymes, the effect on estrogen metabolism, immuno-suppression, and malnutrition.

The evaluation by WHO/FAO<sup>3</sup> assigned “convincing” evidence to the increased risk of cancer in the upper digestive tract (oral cavity, pharynx, larynx, and esophagus), which is exposed to ingested alcohol; cancer in the liver, where degradation of alcohol takes place; and cancer in the breast, which is closely related to hormonal conditions. Recent evaluations by the International Agency for Research on Cancer (IARC)<sup>7</sup> and WCRF/AICR<sup>4</sup> also listed colorectal cancer as associated with alcohol consumption.

The evaluation by our research group on cancer prevention concluded that the association of alcohol consumption with all cancer<sup>8</sup> and liver cancer had “convincing” evidence, and that with colorectal cancer (in particular, colon cancer) had “probable” evidence<sup>9</sup> (recently upgraded to “convincing” based on pooled analysis of four cohort studies<sup>10</sup> in July 2008).

In addition, the JPHC Study confirmed that alcohol consumption increased the risk of all cancer<sup>11</sup> and colorectal cancer.<sup>12</sup> As converted to the equivalent amount of Japanese Sake, the amount of alcohol consumption shown to cause a statistically significant risk increase was about 360 mL/day for all cancer and about 180 mL/day for colorectal cancer.

Therefore, alcohol consumption is undoubtedly a cause of cancer in Japanese. Moderation in alcohol consumption is important for preventing cancer.

### **Fruits and vegetables**

Fruits and vegetables are considered to work through mechanisms such as the actions of various ingredient compounds including carotenes, folate, vitamins, and isothiocyanate in stimulating the activity of enzymes detoxifying carcinogens

and in quenching active oxygen species generated in the body

The WHO/FAO<sup>3</sup> evaluation recognized “probable” evidence that the consumption of fruits and vegetables lowers the risk of cancer in the digestive tract (esophagus, stomach, and colorectum). The WCRF/AICR<sup>4</sup> evaluation regarding fruits and vegetables was generally similar, but it lists “probable” evidence for single foods and nutrients such as allium vegetables (stomach), dietary fiber (colorectum), garlic (colorectum), folate (pancreas), carotenoids (mouth, pharynx, larynx, lung), beta-carotene (esophagus), vitamin C (esophagus), and lycopene (prostate).

The evaluation by our research group on cancer prevention<sup>6</sup> showed that the effect of fruits on preventing gastric cancer was “probable (recently downgraded to “possible” based on additional evidence in July 2008),” while the effect of vegetables on preventing gastric cancer and the effect of fruits on preventing lung cancer were “possible.”

The JPHC Study showed that deficiency of fruits and vegetables increased the risk of gastric cancer, although it did not demonstrate a dose-response relationship between increase in consumption and increase in preventive effect.<sup>13</sup> This study disproved the associations with colorectal cancer<sup>14</sup> and lung cancer.<sup>15</sup> Neither fruits nor vegetables were associated with the prevention of all cancer, while the consumption of fruits was found to have dose-dependent effectiveness in preventing cardiovascular diseases.<sup>16</sup>

The cancer preventive effect of fruits and vegetables seems to be limited according to the present data, but these are expected to prevent cancer in the upper digestive tract and cardiovascular diseases, and therefore consumption of fruits and vegetables to avoid deficiency is recommended.

### Salt and salted foods

Salt at high concentrations is considered to increase the risk of gastric cancer through the mechanism in which it destroys the mucus protecting the gastric mucosa, leading to acid-induced inflammation of the gastric mucosa and persistent infection with *Helicobacter pylori*. In addition, salted foods may contain nitroso compounds and other carcinogens generated during the process of storage.

The WHO/FAO<sup>3</sup> and WCRF/AICR<sup>4</sup> evalua-

tions recognized “probable” evidence that salt and salted foods were associated with gastric cancer. Our research group on cancer prevention<sup>6</sup> also reached a similar conclusion.

The JPHC Study showed that the groups of men consuming larger amounts of salt had higher risk of gastric cancer. The frequency of consumption of foods containing very high concentrations of salt (about 10%), such as salted fish roe, shiokara (salted and fermented fish), and salted sea urchin gonads, was strongly associated with the risk of gastric cancer both for men and for women.<sup>17</sup>

Therefore, reduction of salt consumption is important for the prevention of gastric cancer, which is particularly prevalent among Japanese, as well as the prevention of hypertension.

### Preserved meat and red meat

Meat and meat products are considered to act through the mechanisms involving carcinogens such as nitroso compounds, heterocyclic amines, and polycyclic aromatic hydrocarbons generated during storage, processing, and heating, as well as the alteration of intestinal flora due to the influence of meat and fat.

The WCRF/AICR<sup>4</sup> evaluation recognized “convincing” evidence that preserved meat such as ham, salami, and bacon and red meat such as beef, mutton, and pork are associated with colorectal cancer risk. It recommended that the consumption of red meat should be limited to less than 500 g per week and preserved meat should be avoided as much as possible. Because the consumption of preserved meat and red meat is not high among Japanese, the evidence in Japanese populations is limited.

Although reference to preserved meat and red meat may not be needed for the majority of Japanese, moderation in the consumption of these items is recommendable.

### Obesity

Obesity is considered to increase the risk of cancer through various mechanisms involving the female hormone estrogen released from fatty tissues (endometrial cancer, postmenopausal breast cancer), insulin resistance causing hyperinsulinemia and persistent elevation of free insulin-like growth factor (colon cancer), and gastroesophageal reflux of gastric acid (esophageal adenocarcinoma).

The WHO/FAO<sup>3</sup> evaluation recognized

**Table 3 “Currently recommended” precautions for cancer prevention applicable to Japanese**

Don't smoke. Avoid secondhand smoke as much as possible.
Drink alcohol in moderation, and in any case no more than 23g ethanol/day. Don't force yourself to drink if you do not usually or cannot drink.
Make sure you follow a nutritionally balanced diet: <ul style="list-style-type: none"> <li>• Restrict your intake of salt and salt-cured products—keep salt intake at less than 10g/day and consume foods with a salt content above 10% no more than once a week.</li> <li>• Ensure sufficient intake of fruit and vegetables. Have vegetables at each meal and fruit every day, for a total of at least 400g/day.</li> <li>• Don't eat very hot food or preserved/processed meat.</li> </ul>
Follow an exercise program matched to your individual condition. (ex. 60 min/day of walking, etc., 1/week of athletic activities with sweating)
Maintain a steady weight (don't gain and loose too much weight). Middle-aged men should keep their BMI (body mass index) between 21 and 27, and women between 19 and 25.
Check your hepatitis virus infection status and, if infected, receive treatment. Take measures to prevent infection with this virus, which causes cancer.

[Excerpt from “Cancer Prevention Based on Scientific Evidence,” National Cancer Center Information Services ([http://ganjoho.ncc.go.jp/public/pre\\_scr/prevention/science.html](http://ganjoho.ncc.go.jp/public/pre_scr/prevention/science.html))]

“convincing” evidence that being overweight and obesity increased the risk of esophageal adenocarcinoma, colon cancer, kidney cancer, endometrial cancer, and postmenopausal breast cancer. In addition to the above, the WCRF/AICR<sup>4</sup> evaluation identified the increased risk of pancreatic cancer. The evaluation by our research group on cancer prevention<sup>6</sup> showed that the association between obesity and postmenopausal breast cancer was “convincing” and the association with colorectal cancer was “probable.”

The JPHC Study demonstrated that obesity increased the risk of colorectal cancer in men<sup>18</sup> and postmenopausal breast cancer in women.<sup>19</sup> However, the analysis of the association with all cancer in men showed that the individuals in the range of BMI 23–26.9 had the lowest risk of incidence and mortality, and those with a BMI less than 21 had a statistically higher risk.<sup>20</sup> Although the group with a BMI above 30 showed a 20–30% increase in risk, the number of men in this group was as small as about 2% of all subjects, and this result was not statistically significant. Among women, BMI had almost no influence on risk, except that the group with a BMI below 19 had a statistically significant increase in the risk of cancer death.

The cohort studies in Japanese and Asian populations indicated that being overweight was associated with the increase in the risk of devel-

oping certain types of cancer. However, such association was not clearly shown for all cancer, and the association between being underweight and increased risk was examined. It is presumed that this result reflects the insufficiency of the immune system and the deficiency of antioxidants due to malnutrition.

Therefore, Japanese may need to take care to avoid both conditions of being underweight and overweight.

### Physical activity

Physical activity is considered to act through various mechanisms such as the improvement of obesity, improvement of insulin resistance (lowered working of insulin), enhancement of immune function, shortening of intestinal transit time, and the influence on bile acid metabolism.

The WHO/FAO<sup>3</sup> evaluation recognized “convincing” evidence for the prevention of colon cancer (as part of colorectal cancer) and “probable” evidence for the prevention of breast cancer. In addition to the above, the WCRF/AICR<sup>4</sup> evaluation listed “probable” evidence for the prevention of endometrial cancer.

The JPHC Study demonstrates negative association between physical activity and colon cancer in men.<sup>21</sup> When subjects were classified according to the MET coefficient, the group in the highest quartile had a relative risk of 0.58 (95% confi-

dence interval: 0.39–0.87) as compared with the group in the lowest quartile. No association was found regarding rectal cancer in women and men.

Therefore, Japanese people are advised to be more active through increase in physical activity in daily living and leisure time for the sake of various benefits including cancer prevention.

## Conclusion

The recommendation is supported by large amounts of scientific data (evidence) from epidemiological studies. However, there is only very limited accumulation of the data from Asia, including Japan. To be able to propose the dietary recommendations for preventing cancer that are suitable for Japanese, we need further evidence

from epidemiological studies in Japanese populations, in particular a number of cohort studies and randomized controlled trials.

Finally, Table 3 presents the “Currently Recommended” Precautions for Cancer Prevention Applicable to Japanese developed by the Research Group for the Development and Evaluation of Cancer Prevention Strategies in Japan.<sup>6</sup> More detailed explanation is found in “Cancer Prevention Based on Scientific Evidence” at the National Cancer Center Information Services ([http://ganjoho.ncc.go.jp/public/pre\\_scr/prevention/science.html](http://ganjoho.ncc.go.jp/public/pre_scr/prevention/science.html)) (Japanese only). The content of this document may be subject to changes, addition, and deletion reflecting future progress of the study.

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# Preventive Medicine Efforts in Japan Focusing on Metabolic Syndrome

JMAJ 51(5): 317–321, 2008

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## Abstract

Japan's aging population and rapid advances in medical technology have caused an increase in the nation's health expenditures, resulting in a rapid increase in the share of medical care costs borne by insured patients, a critical social issue that requires some sort of countermeasure. In this regard, the Ministry of Health, Labor and Welfare has recently extended its disease control measures toward the promotion of preventive medicine aimed at reduced health costs. More specifically, the ministry is taking action to control diabetes mellitus, hypertension, and lipid metabolism disorder, mainly through the modification of people's lifestyle habits, and thereby to prevent cardio- and cerebrovascular disorders that severely impair vital prognosis and quality of life. With metabolic syndrome used as a key target, a new approach to health promotion has been enacted: insurers are obliged to carry out specific health checkups of insured persons aged 40 years or older to detect signs of lifestyle-related diseases as early as possible. They should also provide specific health guidance, if appropriate, to prevent the clinical manifestation of lifestyle-related diseases. To this end, an innovative preventive measure has been taken, focusing on metabolic syndrome, with the use of waist circumference as an indicator, a method that is simple to employ and easy for anyone to understand.

**Key words** Metabolic syndrome, Lifestyle-related diseases, Preventive medicine, Healthy Japan 21, Health promotion measures

## Introduction

This communication describes the status of metabolic syndrome in preventive medicine in Japan, where currently there is lively ongoing discussion as to health system reform. According to statistical data reported by the mass media (Ed. Nikkei Inc.: Revitalization of medical care services: a document of crisis in the field of clinical practice. 2003), about 85% of Japanese people are concerned about health system reform, with 50.4% fairly interested and 34.1% somewhat interested in the disputed issue of health system reform.

Japan assures its citizens free access to health services under its universal health insurance coverage. Health care is available to Japanese people at the lowest cost among developed

nations. Japan's universal health care system is one of the world's preeminent health care systems. A large segment of the public, however, is not necessarily content with the current system and is seeking reform.

## Why Is Health System Reform Needed?

Japan has seen declining birthrates with an increasing proportion of elderly people as well as extreme advances in medical technology. A technique of microsurgery with minute manipulations using robot technology is now being applied to various conventional surgical operations. Along with such advances in medical technology, health care has become more complex, in need of more physicians and nurses and huge investments in equipment, resulting in increased health care

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This is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Separate Vol.136, No.12, 2008, pages 12–16). The article is based on a presentation made at the 51st training seminar for social insurance consultants "General Discussion: Metabolic Syndrome—Medical care and Prevention" held at the JMA hall on August 23, 2007.

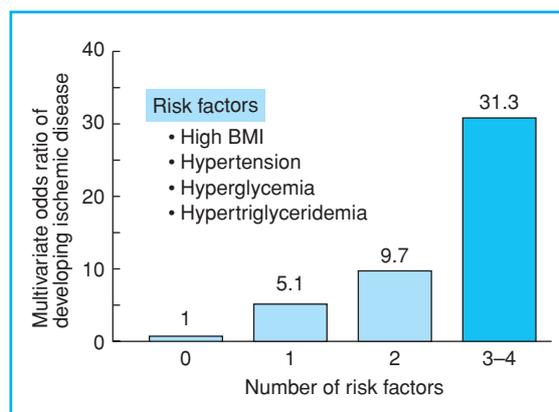
costs. However, when there was high economic growth, the increase in health care costs, even if striking, was absorbed by the country's economic growth and hardly reflected in a burden on the population. The share of the cost to insured persons increased from zero to 10%, with health care for the elderly continuing to be free, representing the provision of health care as a humanitarian service. In this climate, patients were not unhappy with the paternalistic one-way provision of health care, assuming that there would be no problems if patients followed physicians' advice.

However, when economic growth slowed, causing limits to be placed on the proportion of the national budget allocated to health expenses, the share of costs borne by the insured increased from 10% to 20% and eventually to 30%, and elderly patients were required to contribute some portion of the cost of health care they received. Prior to that change, people had felt that health care should be supported by insurance fees and taxes. As a result, the comparatively low financial burden, as compared with other countries, gave the impression of a heavy burden, and caused changes in people's view of health care. Japanese people's awareness of human rights has been growing, leading to requests for a change from conventional physician-dictated health care to patient-centered care and for containment of increasing health expenses.

However, given the fact that medical care costs were actually increasing to the point where the nation's capacity was limited, the government began to recognize that efforts should be focused on actions that could be taken before a problem developed, i.e., disease prevention rather than simply treating patients who were already ill. This point of view is the one we have long advocated, and the government finally has recognized its benefits.

### The Political Shift from Treatment to Prevention

In the background of the political shift to prevention, lies Japan's aging society and decreasing number of children. This situation has caused a rapid increase in health expenses for the elderly, resulting in an increased burden on the people. Lifestyle-related diseases for which aging is a risk factor are now responsible for two-thirds of deaths and account for more than one-third of



(Cited from the Ministry of Labor Study Group for Comprehensive Countermeasures against Work-Related Diseases. *Jpn Circ J.* 2001; 65:11-17.)

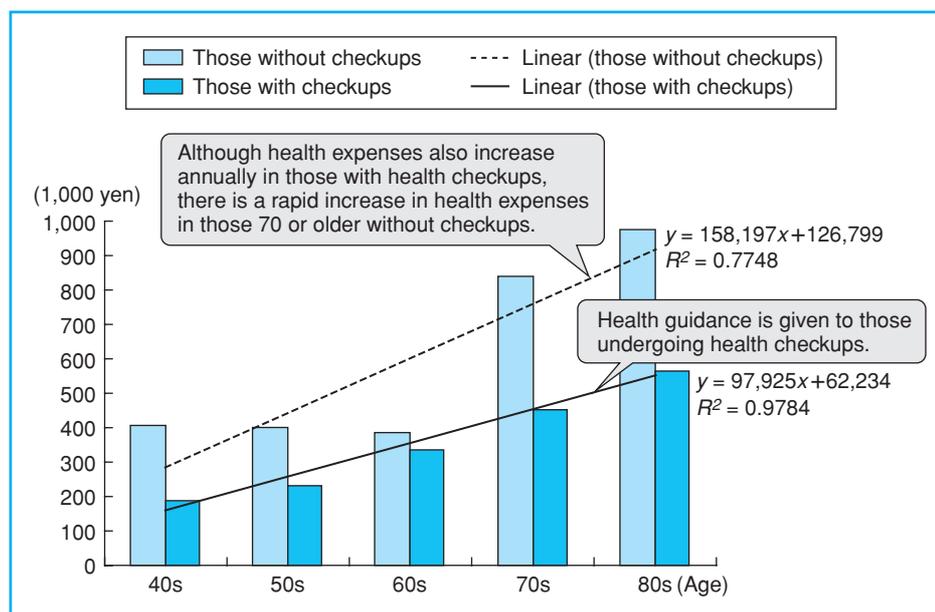
**Fig. 1** Number of risk factors and odds ratio of developing ischemic disease (multivariate odds ratio)

national health expenses.

Recent years have seen increases in deaths from cancer, cerebrovascular disorders, ischemic heart disease due to atherosclerosis, and, more recently, pneumonia. Since atherosclerosis is a lifestyle-related disease, there is a possibility that its onset may be delayed by improving lifestyle habits. It has been said that current cases of death from pneumonia correspond to former cases of death from senility, and may be possible to formulate a disease structure in which pneumonia ranks as a major cause of death in the elderly. In fact, society has come to feel that health and longevity are indispensable in establishing a healthy, vigorous, aging society.

Atherosclerosis-derived diseases are related to several risk factors. If obesity, hypertension, diabetes mellitus, hyperlipidemia (dyslipidemia), etc., are combined, the risk of such diseases is multiplied. A person who has 3-4 risk factors has a risk 31.3-fold higher than those with no risk factor (Fig. 1). Therefore, controlling these risk factors may make it possible to prevent the development of atherosclerosis.

According to yearly changes in individuals who have concurrent risk factors for metabolic syndrome, the incidence of stroke (cerebral hemorrhage) decreased gradually with decreasing salt intake after 1961, a time when smoking and alcohol consumption were also decreasing. However, in contrast, obesity, hypercholesterolemia, and impaired glucose tolerance increased rapidly,



(Cited from material of President Emeritus Koyama W, Japanese Red Cross Kumamoto Health Care Center)

**Fig. 2** Changes in health expenses for persons who underwent and those who did not undergo health checkups (annual health expenses by age and type of health care services for national health insurance subscribers at A town, Kumamoto Prefecture)

calling for measures against lifestyle-related diseases that would help eliminate obesity and control metabolic disorders. According to data on annual health expenses for individuals who underwent and who did not undergo regular medical checkups in Kumamoto Prefecture (Fig. 2), medical expenses for those who underwent health checkups were nearly half the health expenses for those who did not undergo health checkups. It is therefore considered that regular health checkups followed by recommendations for improving diet and exercise if necessary may be able to rein in overall health care costs.

In countries outside Japan, measures against lifestyle-related diseases have been taken since the 1960s. According to the Centers for Disease Control and Prevention (CDC) in the US, the number of deaths from coronary artery disease was cut in half: from 542.9 to 266.8 in men and from 263.3 to 134.4 in women per 100,000 population during the two decades from 1980 to 2000. The decrease was particularly prominent in men and women of younger generations. Since the preventive benefit of measures against lifestyle-related diseases is not easily achieved in the elderly, controlling the development of such

diseases in the younger generation is important. The US has been successful in such efforts.

One of the factors contributing to the decrease in deaths has been advances in treatment. For example, mortality from acute myocardial infarction was 25–50% in the past, but is currently less than 10% owing to intensive treatment in CCU. Another contributory factor is the control of risk factors, with the control of lifestyle habits contributing as much as half of the success. The success rates have been documented with scientific evidence, e.g., with a 7% contribution from smoking cessation and 12% contribution from exercise.

### Japan's Policies of Disease Prevention and Health Promotion

Following the efforts of the US and UK, the Ministry of Health, Labor and Welfare (MHLW) of Japan set up the health promotion project "Healthy Japan 21" in 2000. In this project targeting lifestyle-related diseases and causative lifestyle habits, numeric goals were set for 120 items in 9 areas (nutrition/eating habits, physical activity/exercise, rest/mental health, tobacco use, alcohol consumption, dental health, diabetes

mellitus, cardiovascular disease, and cancer). The Japanese government began a health promotion campaign as a national movement to achieve its goal in 10 years. In 2002, the government enacted the Health Promotion Law to construct a framework for further aggressive facilitation of health promotion and disease prevention for its people.

However, in terms of the goals specified for the major items in “Healthy Japan 21” by 2005, the percentage of obese males aged 20–60 years, which was 24.3% at the time the goal was set (in 2000) was scheduled to be 15% or less by 2010. However, in actuality, the interim assessment in 2005 revealed no decrease, but rather an increase to 29.0% instead. Both walking steps per day and number of persons undergoing breast cancer screening were below the baseline. However, daily salt intake was decreased by the spread of a low-salt diet, in parallel with a slight decrease in the prevalence of hypertension. Dental care was also improved, resulting in an increase in the proportion of people who maintained their own teeth at an age-appropriate level.

Thus, as a whole, the interim assessment of “Healthy Japan 21” showed a decrease from the baseline rather than improvement in most of the 120 items. This is a serious problem. In contrast to the success of controlling lifestyle-related diseases in western countries, no comparable success has been achieved in Japan. Therefore, the Japanese government considered that support from the private sector would be necessary as well as the involvement of public administration, and the “Act for Assurance of the Medical Care for the Elderly” was established in 2006. Under this act, the implementation of specific health checkups and specific health guidance targeting insured persons and their non-working dependents aged 40–74 years has been mandatory since April 2008. Attention is now focused on the question as to whether these efforts are truly effective.

### **Strategic Study on the Prevention of Diabetes Mellitus (J-DOIT)**

In addition to “Healthy Japan 21,” the MHLW newly launched a strategic study to prevent diabetes mellitus, J-DOIT (Japan Diabetes Outcome Intervention Trial). J-DOIT began in 2005, and was scheduled to continue for 5 years, with funding of 860 million yen. J-DOIT consists of three different studies: an intervention study to reduce

by half the transition from borderline impaired glucose tolerance to diabetes (J-DOIT1), an intervention study to reduce by half the percentage of patients withdrawing from treatment (J-DOIT2), and an intervention study to suppress by 30% the progression of diabetic complications (J-DOIT3); these studies are underway in cooperation with local medical associations.

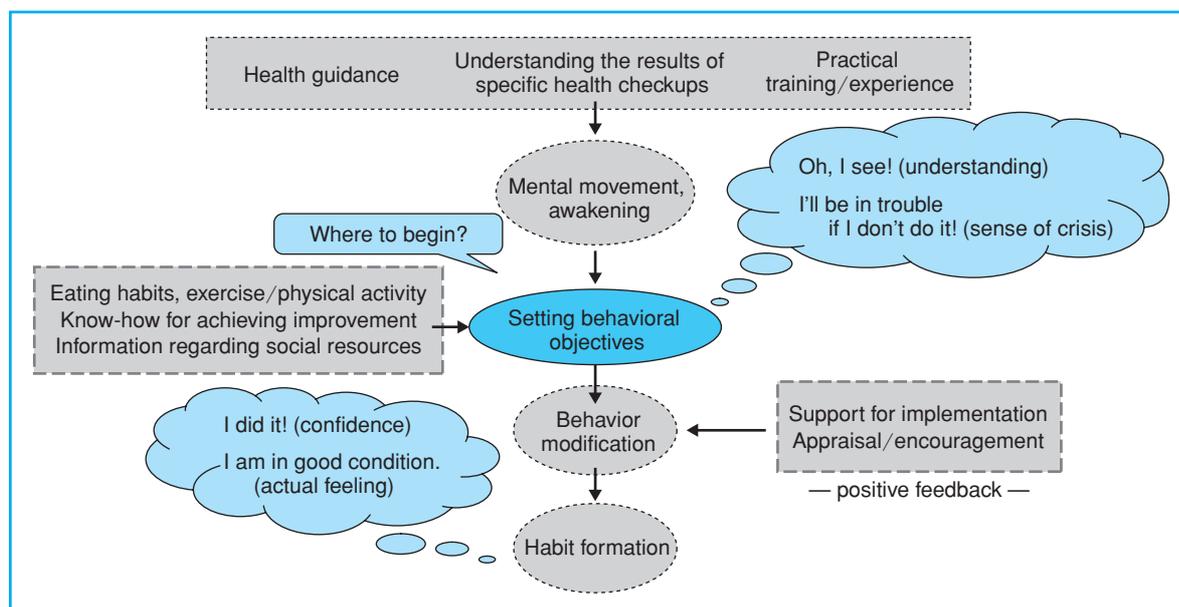
The purpose of J-DOIT2, a study that examines percent withdrawal from treatment, is targeted to obtain evidence as to how effectively the progression of diabetes is suppressed by preventing patients’ withdrawal and their continuation of treatment, in diabetic patients who have hardly any subjective symptoms and tend to stop receiving treatment halfway.

On the other hand, in J-DOIT3, intensive treatment to strictly control blood glucose, blood pressure, and lipids is carried out in patients with type-2 diabetes to investigate effective treatments for the prevention of diabetic complications. More specifically, although there has been a conventional preventive medical approach to the modification of lifestyle habits, this study is designed to accumulate scientific evidence as to what actually is effective and how effective it is, and to further promote preventive medicine. Dr. Yasuhiko Iwamoto is taking an active part in the steering committee guiding this study.

When impaired glucose tolerance is found in health checkups, the subject’s data are kept in the data center. An accelerometer, which records the amount of exercise, is lent to the person, who then measures the amount of exercise and body weight every day. These measurement data are collected and sent to the data center to quantitatively evaluate how to achieve actual benefits. This evaluation is ongoing in 2,000 subjects. When the results are obtained, we think that certain scientific evidence can be provided against extreme arguments that there is no basis for the idea that preventive medicine lowers medical care costs.

### **Changes in Health Awareness**

In recent years, people’s awareness of health has changed greatly. Although Japan ratified the WHO Framework Convention on Tobacco Control in 2004, there has been a steady increase in smoking rates, including those of minors. Japan Tobacco, Inc. (JT) has advocated that smoking is



[Adapted from Tsushita K: Specific health guidance after specific health checkups: To encourage willingness to improve lifestyle habits. Journal of the Japan Medical Association. 2007;136(special issue 1):S247]

**Fig. 3 Process of specific health guidance after specific health checkups**

a Japanese tradition, and views tobacco as a luxury item for adults. However, an understanding that tobacco is a noxious agent that carries health risks has recently spread to the general public.

In light of this trend, metabolic syndrome has become a key word and has played a very important role. Although there may be continuing controversy about the pathogenic and patho-physiologic mechanisms of metabolic syndrome, waist circumference is easy to measure, unlike blood tests, and is used as a simple index of obesity or accumulation of visceral fat. More people are now concerned with bulging waistlines, suspecting that they may have “Metabo (metabolic syndrome).” Formerly, being plump conveyed the image of wealth and high living, whereas now introduction of the concept of metabolic syndrome has led to the idea that being plump carries the risk of disease.

Although it may be difficult for the general public to accept the warning when they are informed of the possibility that hypertension, diabetes, and dyslipidemia induce various diseases, in this regard, metabolic syndrome is a key word that is straightforward and has contributed largely to raising health awareness. Although Japanese people’s awareness of health is less

advanced than in many other countries, it is hoped that lifestyle-related diseases and related deaths will decrease within 10–20 years, as has been the case in western countries.

## Conclusion

Beginning next year, insurers will be obliged to carry out specific health checkups of insured persons, focusing on lifestyle-related diseases, and to provide specific health guidance if appropriate. In health guidance, it is important to have the person at risk recognize his or her own medical risk factors and feel a sense of crisis that motivates lifestyle modification (Fig. 3). The concept of metabolic syndrome has contributed greatly to raising this awareness. As a next step, behavioral objectives should be tailored to each individual in the process from behavior modification based on a sense of crisis to the establishment of habit modification.

It is expected that finely-tuned responses to insured persons and others will be taken in the future to protect the health of each person living in this country, and that effective preventive medical projects or health promotion projects will be established as in western countries.

# Metabolic Syndrome: Future prospects

JMAJ 51(5): 322–326, 2008

Nobuhiro YAMADA\*<sup>1</sup>

## Abstract

In modern times, disease structures have changed greatly along with changes in the social environment. The incidence of atherosclerotic diseases, such as myocardial infarction and stroke, and diabetes mellitus has been increasing rapidly, and these diseases account for major impairments to health. Since the Framingham study, attention has been focused on overlapping risk factors that are likely to contribute to cardiovascular events. The initially proposed multiple risk factor syndrome has now become metabolic syndrome. In multiple risk factor syndrome, emphasis was placed on the significance of a wide range of overlapping risk factors including smoking, aging, and gender. In contrast, metabolic syndrome is regarded as a condition in which related risk factors that have a common pathologic basis overlap, and therefore a clear distinction should be made from conditions that include the overlapping of incidental and independent risk factors.

**Key words** Metabolic syndrome, Obesity, Diabetes mellitus, Insulin resistance, Atherosclerosis

## Introduction: Circulation of “seeds” and “needs”

Scientific development steadily progresses when seeds and needs are well balanced. For example, if people determine that they want cars that obtain good gas mileage, this represents needs. To meet these needs, automakers develop automobiles that provide better gas mileage, leading to new growth in science and technology, representing seeds. As seeds and needs circulate, society benefits from increased convenience.

In the field of medicine, the circulation of seeds (elucidation of pathologic conditions and establishment of concepts) and needs (formulation of diagnostic criteria) is rather difficult and complicated, because the subject is human beings. It takes time to apply the seeds to human subjects, as it requires the accumulation of evidence and verification of safety and efficacy.

In the area of metabolic syndrome, we are now seeing the growth of seeds. Taking advantage of the increasing knowledge of pathology,

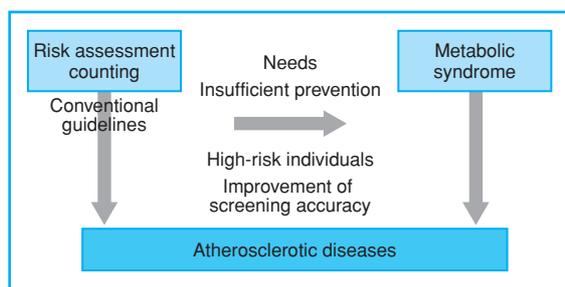
concept, and mechanism of occurrence as the basis, explicit criteria for the diagnosis of metabolic syndrome have been developed to meet the needs of the population. However, since the concept of metabolic syndrome has only a brief history, it is necessary to improve the criteria through further discussion to promote the circulation of seeds and needs. It is also necessary to fully understand that needs alone do not lead to knowledge in all aspects of the pathology and characterization of this syndrome.

## “Needs” in the Field of Metabolic Syndrome

The needs in regard to metabolic syndrome require reversing the increase in myocardial infarction, stroke, and diabetes mellitus resulting from poor lifestyle choices (particularly, overeating, excessive fat consumption, physical inactivity) and to somehow prevent these conditions. The Ministry of Health, Labor and Welfare is now formulating strategies against cardiovascular disease (myocardial infarction), stroke,

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This is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Separate Vol.136, No.12, 2008, pages 17–20). The article is based on a presentation made at the 51st training seminar for Social Insurance Consultants held at the JMA Hall on August 23, 2007.



**Fig. 1 Identification of high-risk individuals with metabolic syndrome**

Attention is focused on risk accumulation in borderline areas that have not been covered by conventional guidelines.

diabetes mellitus, and cancer. The great deals are expected from the prevention of metabolic syndrome because it can suppress three of the four major diseases (excluding cancer). Although it appears that the circulation of seeds and needs in this field began just recently, E. Joslin, known as the true founder of diabetology, said the following as long ago as 80 years, i.e., only several years after the discovery of insulin (1921): “I believe that the major factor for the early progression of atherosclerosis in diabetes mellitus, except for aging, is ‘excessive fat ingestion,’ i.e., excessive fat in the body (obesity), excessive dietary intake of fat, and excessive fat in the blood (hyperlipidemia). Beginning with high fat intake, it has been common recently that people die from atherosclerosis resulting from excessive fat accumulation in the vascular wall.”

The above description corresponds exactly to metabolic syndrome. We should identify individuals at high risk of developing atherosclerotic diseases, with the above statement borne in mind. In identifying high-risk individuals, we can assess risk accurately by examining relevant risk factors including low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, smoking, age, gender, diabetes mellitus, and hypertension, according to relevant guidelines. As a result of our efforts, we now have target values of lipid control for each risk level as prescribed in the 2007 Japan Atherosclerosis Society (JAS) Guidelines for Prevention of Atherosclerotic Cardiovascular Diseases.

Guidelines, however, have limitations. Guidelines become effective only after a diagnosis of hypertension, lipid abnormality, or diabetes mel-

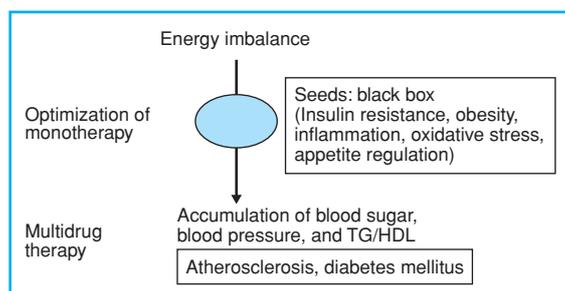
litus is made, and, unfortunately, cannot currently capture high-risk individuals in borderline areas. Conventional guidelines based on tabulating risk assessment cannot fully respond to the need for prevention. This leaves room for the role of metabolic syndrome (Fig. 1). Improvement in the accuracy of screening of high-risk individuals has been attempted by introducing the concept of metabolic syndrome, arousing the “anti-metabo campaign” that assumes the idea of effectively preventing atherosclerotic diseases and diabetes mellitus.

To improve the accuracy of the screening of high-risk individuals, it is necessary to detect overlapping risks (blood sugar, blood pressure, lipid levels) related to common pathologic conditions including obesity and insulin resistance. Since these risks are interrelated, the elimination of obesity and improvements in insulin resistance may eventually result in a comprehensive improvement of health. The concept of metabolic syndrome is important in this respect. More specifically, it is expected that, with the idea of metabolic syndrome, the overall modification of risk, rather than the specific modification of individual risk factors, may achieve enhanced control of atherosclerosis and diabetes mellitus.

### “Seeds” in the Field of Metabolic Syndrome

By understanding the process through which risks accumulate with poor lifestyle, thereby leading to the worsening of common pathologic conditions with aging, and if this process can be better understood, it may make it possible to obtain an optimal medication with minimal necessary doses. We believe that watering the seeds of development will lead to more accurate diagnostic criteria.

Major factors underlying the development of metabolic syndrome in the Japanese population include aging and hereditary predisposition in addition to the westernization of eating habits, overeating, excessive fat intake, and physical inactivity.<sup>1,2</sup> If a person with these predisposing factors has a poor lifestyle, an imbalance in energy metabolism that nutrient storage can occur within the body arises. To correct this, gene expression may be changed, and there may be adjustments among organs including the liver, muscle, heart, and brain structures involving



**Fig. 2 Pathologic condition of metabolic syndrome: search for comprehensive treatment**

appetite. However, when such adjustments fail to occur, abnormalities in blood sugar, blood pressure and lipid levels in the body take place, resulting in obesity, and eventually causing metabolic syndrome.

Therefore, to prevent metabolic syndrome, lifestyle needs to be improved to prevent an imbalance in energy metabolism. Thus, preventive medicine plays an important role. When patients fail to improve their lifestyle, blood sugar, blood pressure, and lipid levels need to be treated in an individualized manner.

To deal with metabolic syndrome, there are a number of pathologic conditions such as insulin resistance, obesity, inflammation, oxidant stress, and appetite regulation that occur in the process from energy imbalance to atherosclerosis and diabetes mellitus through an accumulation of risk factors, namely, blood sugar, blood pressure, and lipid levels (Fig. 2). Currently, treatment targeting each risk factor (multidrug regimen) is employed. However, if elucidation of the various pathologic conditions progresses, monotherapy specific to each pathologic condition will likely be developed in the future.

### Treatment of Lifestyle-related Diseases

**Control of risk factors:** Data obtained from the Steno-2 Study indicate the difficulty of controlling risk factors for cardiovascular diseases in patients with type 2 diabetes mellitus. Blood sugar control has achieved its target level only in 15% of patients, even with aggressive drug treatment. The corresponding rates for lipid levels and blood pressure have been better, but have remained at about 70%.

In the Japan Diabetes Complication Study

(JDCCS) covering patients with type 2 diabetes mellitus treated in 60 facilities nationwide, more than half the subjects developed lipid abnormality, and 40% developed hypertension, despite rigid control. This reflects the difficulty of sufficiently controlling risk factors.<sup>3</sup>

**Current status of treatment of lifestyle-related diseases:** There has been substantial progress in the treatment of lipid abnormality and hypertension. However, utmost effort is still needed to enhance treatment. The treatment of hyperglycemia and control of obesity and smoking strongly depends on self-control by the patient, and thus represents the most intractable clinical area. Physicians are now facing the question of how to solve these problems.

As a result of these circumstances, the issue of metabolic syndrome has been highlighted. The treatment of metabolic syndrome is aimed at resolving the issue of obesity and subsequent hyperglycemia. Cessation or reduction of smoking is a major target for prolonging the life expectancy of the Japanese population. To achieve these targets, a new system has been initiated, by which people between the ages of 40 and 75 years are checked for metabolic syndrome (visceral fat-type obesity) and those with distinct or borderline metabolic syndrome receive specific health counseling. The item “metabolic syndrome” has been added to “Healthy Japan 21,” an ongoing large-scale project aimed at decreasing diabetes and other lifestyle-related diseases. Despite these measures, lifestyle-related diseases are increasing. On the other hand, cases of successes such as the following have occurred.

**Successful treatment of lifestyle-related diseases:** In regard to hypertension, efforts have been focused on the improvement of lifestyle habits and reduced salt intake, since death from stroke is common among Japanese people. As a result, the incidence of stroke has decreased markedly. The increasing life expectancy of the Japanese population is partly attributable to progress in the treatment of hypertension. Properly addressing this issue should produce good results. It is said that lifestyle-related diseases, particularly diabetes mellitus, can shorten average life expectancy by 10 years. If the environment is adjusted to combat these diseases, in the same way as in the fight against cancer, it will certainly contribute to increased longevity.

Another success story can be found in the US.

Behind the recent decline in cardiovascular diseases in the US is the national Healthy People initiative that has been in effect since the 1960s. Prior to this effort, cholesterol levels were high, and deaths from myocardial infarction were common among the American public. The Healthy People initiative, a campaign that focused on smoking cessation, diet, and exercise was expanded and succeeded in lowering people's cholesterol levels. Since the lipid-lowering agent statins became commercially available shortly before 1990, the US succeeded in lowering cholesterol levels, and thus decreasing cardiovascular diseases, by improving lifestyle habits even before the advent of statins.

On the other hand, as the population of obese people continues to increase, diabetes and diabetes-related death has been on the upswing in the US. Therefore, programs to counter diabetes mellitus have been implemented, and the United Nations has been carrying out a worldwide campaign, "Unite for Diabetes," to hold back the increase of diabetes mellitus.

**Future problems:** Most patients with lifestyle-related disease (known as the silent killer) do not have subjective symptoms, but are at high risk of future development of myocardial infarction or stroke. Therefore, improved quality of medical care is extremely important. However, although the need is high, the seeds development is insufficiency, because the concept of lifestyle-related diseases is relatively new. Therefore, it is necessary to accumulate more scientific evidence to respond to the need. A steady effort is needed in guiding patients to efficiently manage their lifestyle diseases for a long time. Lifestyle habits vary substantially among patients. Some patients cannot abstain from alcohol, and others have to work until the late hours of the night. Customized medicine for the adverse lifestyle habits of each patient will be necessary to modify whatever aspects can be modified.

If pathologies are elucidated in the future, drug therapies will also be developed. For example, agents that improve insulin resistance include thiazolidine derivatives for diabetes mellitus, PPAR- $\gamma$  (peroxisome proliferator-activated receptor  $\gamma$ ) agonists for disorders of lipid metabolism, ACE (angiotensin-converting enzyme) inhibitors and ARB (angiotensin II receptor blockers) for hypertension. In the future it may be possible to optimize drug treatment by accu-

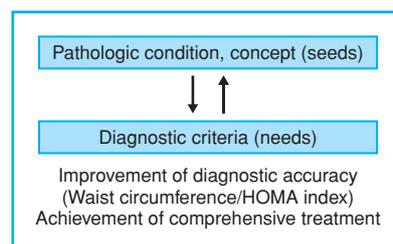


Fig. 3 Metabolic syndrome

mutating evidence about combinations of these drugs to achieve best-fit improvement in insulin resistance without causing obesity or diabetes mellitus.

Elucidation of the pathologic condition of metabolic syndrome will lead to breakthroughs in the prevention and comprehensive treatment of diabetes mellitus, a hard-to-control disease, as well as atherosclerotic diseases such as myocardial infarction and stroke that continue to increase in developed countries. For instance, the transcription factor TFE3, as identified previously, regulates the expression of a nutrient metabolism-related gene. This transcription factor activates insulin signals to decrease blood sugar levels not only in animal models of obesity but also in animal models of type 1 diabetes mellitus.<sup>4</sup> Thus, research into metabolic syndrome suggests the possibility of another seed, i.e., a new treatment for type 1 diabetes mellitus (or insulin-dependent diabetes mellitus) for which insulin injection is currently unavoidable.

## Conclusion

Metabolic syndrome is a disease that results from caloric accumulation based on current lifestyle habits. The basic treatment of this disease consists of improvement of lifestyle habits, and the priority in prophylaxis should be given to increase the accuracy of screening for individuals at borderline high risk. Efforts to search for the optimal comprehensive treatment should allow us to obtain drug treatments that involve lower and safer dosing than the multidrug treatments currently in use.

To this end, progress in research based on a good balance of the elucidation of the pathologic conditions (seeds) and establishment of the disease concept (seeds) and the formulation

of diagnostic criteria (needs) is indispensable (Fig. 3). At present, visceral obesity is assessed by waist circumference and insulin resistance by the HOMA index. It should not be long before

the advent of new solutions leads to better diagnostic accuracy, better quality of medical care, and effective, comprehensive treatment.

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# Policy of the Japanese Urological Association on PSA-based Screening for Prostate Cancer

JMAJ 51(5): 327–329, 2008

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## Background

The exposure rate for prostate cancer screening using prostate-specific antigen (PSA) is still very low compared with that in the USA or Western Europe. Consequently, in Japan about 30% of newly detected prostate cancer cases have bone metastases and many clinically significant cancer cases may go undetected or be missed until the disease is clinically advanced. Moreover, incidence rates for prostate cancer have continued to increase and are expected to increase in the future, with the number of newly diagnosed prostate cancer cases expected to reach 78,468 in 2020, making prostate cancer the second most prevalent cancer amongst men after lung cancer. The mortality rate for prostate cancer will also increase in the future and by 2020 is expected to be 2.8 times higher than that in 2000. Urgent implementation of the best available measures for effectively decreasing deaths from prostate cancer is therefore imperative. The Cancer Countermeasure Fundamental Law, an important national policy published in Japan in 2007, aims for a 20% decrease in the mortality rates for cancer in Japan within 10 years. The Japanese Urological Association has a policy of facilitating and promoting PSA-based screening for prostate cancer based on a well-balanced fact sheet including updated reviews on screening, diagnostic procedures and treatment for prostate cancer in human dry dock, as well as population-based screening for prostate cancer, following the successful decrease of mortality achieved in the USA since 1992.

## Literature Review

The exposure rate for PSA screening in the USA is very high at approx. 75% in the 50 years and above age group. According to research on trends in prostate cancer mortality rates based on the cancer registry in the USA, the mortality rates for prostate cancer have continued to decrease since 1992, showing a 34% decrease between 1990 and 2004.<sup>1</sup> Because there is no effective first prophylaxis to prevent the development of prostate cancer, that drastic decrease in the mortality rate for prostate cancer may be due to PSA screening and appropriate treatment strategies. According to the most recent ecological study carried out in the USA, there is a positive relationship between the incidence rate for distant metastases and the mortality rate of prostate cancer; and a negative relationship between PSA utilization and the incidence of distant metastases.<sup>2</sup> In the other words, PSA screening can decrease the incidence of distant diseases, which may lead to a decrease in deaths from prostate cancer. Two large prospective randomized controlled trials investigating the impact of PSA screening on mortality for prostate cancer are now ongoing in the USA and Europe. The most recent publications from the European Randomized Study of Screening for Prostate Cancer (ERSPC) demonstrate that the incidence of advanced prostate cancer cases, defined as metastatic prostate cancer and cancer with pretreatment PSA levels above 100 ng/ml, significantly decreased (49%) in the screening arm compared with the control arm.<sup>3</sup> The prognosis for advanced prostate cancer is worse than

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that for cancer detected at an earlier stage. Therefore, the results of this research, conducted by ERSPC Sweden, must be recognized as a high priority study in the field of prostate cancer screening. According to the latest Tyrol study results, the exposure rate for screening was extremely high at 86.6% in 2005, and the incidence rate for metastatic prostate cancer has decreased by 70%.<sup>4</sup> Moreover, the mortality rate for prostate cancer has decreased dramatically to 54% compared with the expected mortality rate. Because all analyses were performed by an independent institution, the International Agency for Research on Cancer (IARC), the reliability of the results is assumed to be high.

Furthermore, all time series research and ecological studies that have denied or not shown a positive relationship between PSA screening and a decrease in the mortality rate of prostate cancer were found to have had serious flaws in their research protocols in terms of insufficient duration of follow-up and small differences in the exposure rates of PSA screening among comparable regions,<sup>5-13</sup> calling their reliability into question.

### **Informed Consent for Prostate Cancer Screening**

Controversy may still remain over the effectiveness of screening for prostate cancer using PSA testing for asymptomatic men. However, all reliable studies have revealed a positive correlation between PSA screening and a decrease in the incidence of metastatic prostate cancer as well as the mortality rate for prostate cancer. Therefore, the debate has shifted from the controversy over whether PSA testing decreases mortality rates to the issue of overdiagnosis, overdiagnosis and the effect on QOL following various treatments for screening-detected prostate cancer. Advances in non-invasive treatments maintaining QOL for patients and the development of active surveillance protocols may resolve the uncertainties and controversies concerning the negative impact of PSA screening. The present baseline recommendation for PSA screening is to conduct PSA-screening after shared-informed decision making based on a fact sheet providing updated information on epidemiological features, the merits and demerits of screening and treatment. The Japanese Urological Association will

provide fact sheets explaining important issues concerning prostate cancer to men who want to be screened in the near future.<sup>14</sup> Fact sheets are divided into two stages, one is for men who have yet to undergo PSA screening, and the other is for men who have undergone PSA screening. The guidelines on screening for prostate cancer edited by the Japanese Urological Association clearly explain expected outcomes, including both positive and negative impacts, for men undergoing PSA screening and not undergoing PSA screening.

### **Policy of the Japanese Urological Association on Screening for Prostate Cancer**

The Japanese Urological Association recommends that 50 years or older undergo PSA screening based on the fact sheets explaining the present status and future outlook for prostate cancer and treatment in Japan as well as the merits and demerits of undergoing screening for prostate cancer, and provides the best available screening system for men who want to be screened.<sup>14</sup>

### **Ongoing Study on Screening for Prostate Cancer in Japan**

Two large prospective randomized controlled trials—the Prostate, Lung, Colorectal and Ovarian (PLCO) cancer screening trial in the USA and ERSPC in Europe—are now ongoing. However, contamination in control groups may be a serious problem. In contrast, low exposure rates for screening in Japan may be a merit for screening studies in terms of lowering contamination in the control cohort. Therefore, the cluster prospective cohort study, the Japanese Prospective Cohort Study of Screening for Prostate Cancer (JPSPC), was begun in 2001 in order to evaluate the effectiveness of screening for prostate cancer and has been ongoing since 2002. The primary endpoint of JPSPC is comparing changes in the mortality rate for prostate cancer between screening and control cohorts. The JPSPC is prospective cluster cohort study. The screening cohort is municipalities in Hokkaido, Gunma, Hiroshima and Nagasaki prefectures, which have populations of approx. 100,000 in the 50–79 age group. Within the screening cohort, prostate cancer screening campaigns have been

conducted, and a high exposure rate for screening of 60% or higher over 5 years is expected. Control cohorts are municipalities in the same prefectures with approx. the same sized populations. Aggressive advertising on prostate cancer screening has not been carried out in the control cohorts. In a screening cohort (Isesaki city), the compliance of PSA screening is high at approx. 75% over 5 years and the number of prostate

cancer cases increased rapidly after JPSPS was carried out. In contrast, contamination of prostate cancer screening in a control cohort (Kiryu city) remained low at 8% between 1992 and 2006. In the near future, the changes in the number of metastatic prostate cancer cases in the screening and control cohorts will be announced. Changes in the mortality rate for prostate cancer are to be assessed in 2012.

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## Education in Tropical Medicine at Nagasaki University

JMAJ 51(5): 330–331, 2008

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Medical education at Nagasaki University stretches back to a Dutch naval surgeon J.L.C Pompe van Meerdervoort in 1857, and the university itself is the birthplace of Western medicine in Japan. The Asian Endemic Diseases Research Center founded during the Second World War developed later into the present-day Institute of Tropical Medicine, the only one in Japan that specializes in tropical medicine. Not only has the Institute been designated an inter-university research institute, it also serves as a WHO reference center for tropical diseases and emerging infectious diseases. To translate this outstanding performance in tropical infectious diseases research into education by nurturing the next generation of specialists in tropical diseases, Nagasaki University launched the country's first master's degree program in tropical medicine in April 2006. Completing a 1-year course of study in March 2007, 11 students (including 2 Japanese students) earned their master's degree in tropical medicine, followed by 12 students (including 4 Japanese students) completing the course in March 2008. The international graduates are applying the educations they received in Nagasaki in public health services and other medical careers in their home countries. The Japanese graduates are likewise applying their graduate school experience, some as Foreign Ministry medical attachés and others with *Medécins du Monde* or in PhD programs specializing in emerging infectious diseases and tropical infectious diseases. This paper will outline the concept behind Nagasaki University's establishment of the master's program in tropical medicine and what sort of personnel it seeks to train in what sort of educational program.

Our species is exposed to the threat of emerging infectious diseases. Many of these emerging infectious diseases have their origins in the tropics. AIDS and West Nile fever are endemic diseases of African origin. Many strains of multi-drug-resistant tuberculosis have also spread from developing countries located largely in the tropics. SARS is obviously no exception. Such emerging infectious diseases propagate globally in short periods of time, causing much human and economic damage. In our contemporary society in which economic activity takes place on a global scale, no country is able to contain these diseases at the country border. It is the duty of the state to protect its citizens from such threats. The Ministry of Education's program to form centers of research into emerging and re-emerging infectious diseases constitutes a direct response to such threats, and the Nagasaki University Institute of Tropical Medicine is playing a key role in this effort. Nagasaki University has incorporated into its medium term goals developing the function of training physicians specializing in tropical medicine to counter the national threat posed by tropical infectious diseases, drawing on its long record of achievement and history of work overseas.

The United Kingdom has a tradition of education in tropical medicine tracing back over 100 years, a consequence of its extensive colonial empire. Over the past years not a few Japanese physicians have studied at the school of tropical medicine at the University of Liverpool and University of London to obtain Diploma of Tropical Medicine and Hygiene (DTM&H) and master's degrees in Tropical Medicine.

Nagasaki University has established as its

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mission a master's degree program in tropical medicine, in order to meet the demands by Japanese physicians wanting to work in the fields of tropical medicine and international health, and in order for the university to function within a greater framework of nation's crisis management against infectious diseases.

What sort of personnel is the university seeking to train? First of all, the university will train specialists capable of providing medical care grounded in a comprehensive outlook encompassing the epidemiology, diagnosis, treatment and prevention of tropical infectious diseases. Second, the university will endow these specialists with the capabilities to identify new challenges, and gather and analyze requisite information in the practice of tropical medicine and international health.

What sort of educational program has the university established in order to achieve these goals? The program divides the educational period into two semesters, the first from April to August and the second from the third week of September to February, and seeks to achieve the first goal in the first semester and the second goal in the second semester. In addition to integrated coursework, exercises and case studies in tropical medicine with a focus on infectious diseases, the first-semester instruction consists primarily of basic practical training in the underlying clinical microbiology and molecular epidemiology. The first-semester students also receive instruction in international health and tropical public health, including basic epidemiology and statistics. This coursework is covered in the 4 months from April through July. The university seeks to round out the curriculum by supplementing its in-house teaching staff with external lecturers in Japan as well as specialists from the University of Liverpool and London School of Tropical Medicine and Hygiene. As a master's degree in tropical medicine should be internationally accepted, the final exam for completing the course is modeled on the DTM&H that serves

as the clinical accreditation in tropical medicine in the United Kingdom.

In August the students move on to engage in 2 to 4 weeks of overseas clinical training in tropical medicine at the Thai Ministry of Health and its affiliated hospitals. For the Japanese students this will be their first experience of clinical tropical medicine in the field, and while international students from developing countries may be practitioners of tropical medicine with clinical experience, differences in diagnosis and management from their home countries will nevertheless provide them considerable stimulus, as will such areas as the differences in disorders and in differential diagnosis. Over these 5 months, the students will attain 30 credits, which in Japan generally require 2 years of training in a master's degree program.

While only knowledge can make things visible, knowledge alone does not equip one to identify new problems and respond to unforeseen contingencies. It is therefore essential for students to master, by practicing the methods of research, how to define a problem, review the literature, select appropriate methodology and analyze and interpret their results. To this end the students are assigned to different laboratories and study groups within the Institute of Tropical Medicine to work on their master's theses for 6 months. Students present their master's theses to a review committee comprised of their fellow students and teaching staff, where they are required to respond adequately to rigorous questioning and comments.

All first-semester coursework and all second-semester preparation and presentation of the master's thesis are conducted in the English language. This is because English is the *de facto lingua franca* in the practice of tropical medicine in the field. The teaching staff of this master's program consists of 11 professors at Institute of Tropical Medicine and 1 professor at School of Medicine, each of whom is acknowledged as a specialist in the field of tropical medicine.

# Activities of the Hokkaido Medical Association

JMAJ 51(5): 332–334, 2008

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The activities of the Hokkaido Medical Association (HMA) are affected by geographical conditions specific to the island-prefecture of Hokkaido. Outside central Hokkaido with its nucleus of Sapporo, these activities are greatly limited. Given the unfavorable conditions of vast spaces and long, cold, snowy winters, efficient operation is required.

Of the three main islands of Japan, Hokkaido is 78,000 square kilometers and has 12,201 physicians (of which 8,310 are HMA members and 6,276 JMA members) for a population of 5.64 million compared to Kyushu with 42,000 square kilometers and 33,452 physicians (of which 22,111 are JMA members) for a population of 13.421 million and Shikoku with 18,000 square kilometers and 10,479 physicians (of which 7,313 are JMA members) for a population of 4.111 million (population and physician numbers as of December 2004).

In 2006, hospital fraud involving “phantom” physicians and nurses resulted in revocation of the insured healthcare institution status of a number of Hokkaido hospitals, and thus had a severe impact on healthcare in the region. This was an unfortunate incident, particularly as before its emergence the HMA had devoted its efforts to promoting medical ethics and self-rectification, including efforts on behalf of legal compliance and patient safety on the part of HMA members. The shortage of physicians in remote areas has grown markedly since the introduction of the new advanced clinical training program in 2004. Defining a standard number of physician postings in line with actual circumstances will require study.

## Organization of the HMA

There are eight prefectural blocks and three



medical association affiliated to medical colleges in Hokkaido. The eight blocks are comprised of 47 city-level medical associations. As of the end of March 2007, the membership of the HMA amounted to 8,342. Many of the local medical associations are small with only 10-odd members, and these small medical associations are very limited in their activities. Current municipal mergers in local areas also require us to plan the future activities of the medical associations taking into account total restructuring of the medical associations in Hokkaido.

The board of the HMA consists of 3 vice-presidents, 11 board members, 14 executive board members and 3 auditors. There are 14 special committees to be served by the executive board members; each member acts as chairman or vice chairman of 1 committee and member of 2 or 3 committees. An executive board meeting is held on the second and fourth Tuesdays, and a board meeting is held once every 2 months.

## Activities of the HMA

### Medical ethics (General affairs, patient safety and health insurance committees)

The HMA felt strong urgent need to improve the

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awareness of its members regarding medial ethics in the wake of the case of corruption involving physicians. A committee on bio-ethics and medical ethics has been created, which submitted a report to the president of the HMA in February 2006. The HMA has been studying the revision of the regulations related to this important area.

#### **Healthcare issues in Hokkaido (Health policy committee)**

Discussions between the governor of Hokkaido and the president of the HMA in August 1977 produced an advisory body to the governor which is named the Hokkaido General Medical Council (now the Hokkaido General Healthcare Council). This council aims at promoting healthcare by comprehensive measures from a long-term perspective and seeking ways to assure community healthcare and improve the wellbeing of citizens in Hokkaido. Currently, four specialist committees are set up to address emergency medical care, community medicine, community healthcare and project planning for solutions to immediate issues. It is also assigned to develop community healthcare plans.

Hokkaido was the first in Japan to establish, in May 2004, a healthcare council, before the Medical System Reform Related Act enacted in June 2006 required establishment of such a council in all prefectures. Formed from medical colleges, municipalities, health organizations including medical associations and public administration, the council reviews issues concerning physician dispatch service program, physician training program to support local communities, and administrative arrangements of municipal hospitals.

#### **Develop a TV-conferencing system (Information and public relations committee)**

Most of the meetings, training courses and lectures are held in Sapporo, the prefectural capital. The geographical features of Hokkaido such as wide-area and traffic disturbances during its long winter season make it difficult for many of the HMA members to visit Sapporo to attend these events. The HMA studied the use of a TV-conferencing system in each block. A training course started in 2004 when a network linking the blocks centering Sapporo was set up. It is time to evaluate the results of this new trial.

#### **Public relations activities (Information and Public Relations Committee)**

Since the formation of the Koizumi cabinet, stringent fiscal restrictive policies have been adopted on healthcare and welfare. The HMA has campaigned on these issues by running frequent spot radio announcements in time slots with a large numbers of listeners. We also employ experts in advertising and other PR specialists in producing posters, leaflets and other materials to educate the general public.

#### **Efforts to promote sports physicians (Occupational Health Committee)**

JMA has certified a large number of sports physicians in the Sports Physician Certification Program which it previously established. However, there are very few opportunities for them to demonstrate their qualifications. Even if there are, they are not covered by any guarantee of individual status, monetary compensation or compensation for damages. The HMA has worked with the Japan Sports Association, Japan Orthopaedic Association and JMA to establish a tri-council to create places for them to demonstrate their abilities as sports physicians. Efforts for this purpose are also made at occasions such as health check-ups and health guidance services for specified diseases.

#### **New advanced clinical training program (Academic Committee)**

The HMA swiftly began to tackle the launch of the new advanced clinical training program in April 2004. However, small and medium-size hospitals and clinics are not fully prepared to accept a clinical training program in the local community. A questionnaire survey on members immediately prior to the launch of advanced clinical training, revealed more medical institutions were ready to join the program. It is necessary to provide these medical institutions with the opportunity to join workshops for preceptors and with introductions to postgraduate educational hospitals.

#### **Other**

The following is a list of the topics and the committee in charge.

- Consider issuing the membership list in view of the enactment of the Information Privacy Law

- General Affairs Committee
- Cope with frequent medical disputes—Patient Safety Committee
- Consider measures in support of the deteriorating financial circumstances of members—Medical Management and Welfare Committee
- School health program and low birth-rate problem—Community Healthcare Committee
- Issues related to long-term care insurance—Community Welfare Committee
- Activities in support of industrial physicians—Occupational Health Committee
- Emergency and disaster medicine—Emergency Medical Care Committee
- Construct a system to cooperate and exchange of information with other health related groups—Medical Affairs Committee
- Improve knowledge and technical skills of members—Academic Affairs Committee
- Encouraging the citizens' health education programs—Educational Health Programs Committee
- Sound management of medical association's finances—Financial Affairs Committee

# Recent Activities of the Shimane Medical Association

JMAJ 51(5): 335–336, 2008

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Shimane is a slender prefecture running east and west. On land it is comprised of Izumo and Iwami, and also includes the remote Oki islands in the Sea of Japan.

### Salient Features of the Shimane Medical Association

As of 1 August 2007, the Shimane Medical Association (SMA) has a membership of 1,189 and a fixed delegation of 54. With the municipal mergers of recent decades, count of city-level medical associations has fallen from 18 to 15.

Despite these administrative mergers, in certain places the medical association remains as it was due to various factors and circumstances. SMA President Nakashima has taken the policy on future medical association mergers of watching for momentum to build among the medical associations themselves.

From Matsue city where the SMA building is located together with the seat of prefectural government to the most distant local medical association in Kanoashi county takes 3 and a half hours by express train and well over 4 hours by car on National Highway 9, the only road available. When committee meetings and other conferences are held at the prefectural medical association building, attendees from the Oki islands visit overnight. Such transport-related handicaps are the most salient feature of community healthcare in Shimane.

### Videoconferencing System Deployment

A requirement of providing safe and reliable



medical care to the residents of Shimane is consistently to communicate the latest information on healthcare, medical care and welfare (including nursing care) promptly, accurately and without delay to member physicians, no matter how remote. In 2001 the Gifu Medical Association was kind enough to demonstrate for us their videoconferencing system. Learning how cost-effective it was, we promptly deployed one ourselves in 2002.

Currently in use in continuing medical education (CME) courses and study groups at four locations, first the prefectural medical association and Hamada city medical association and then the Masuda and Izumo local medical associations, the videoconferencing system has enabled prompt communication to members in remote locations of information on the spread of measles and on specified checkup and health guidance. We now plan to deploy it with the Dozen and Dogo local medical associations in the Oki islands.

Where local medical associations are located, as in Shimane, on remote islands or deep in

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This article is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Vol.136, No.6, 2007, pages 1126–1127).

the mountains, this videoconferencing system is becoming indispensable for communication.

At the conference of prefectural medical association president, Shimane president Nakashima sought “the approval of Industrial Health workshop for the use of a videoconferencing system in the JMA program to certify industrial health physicians.” This was recognized as an extremely sound proposal by JMA Executive Board Member Satoshi Imamura, and a reply was secured that it would be limited to renewed courses under certain conditions in the CME program.

As conditions relax further in future, we will ardently seek eligibility for the videoconferencing system in taking all courses of JMA authorization.

### **General Meeting of the National Medical Association Shared Facilities**

A major event for the SMA recently was the 21st General Meeting of the National Medical Association Shared Facilities on 18 September 2004, which was held in Matsue as its primary venue.

The first national conference held under President Nakashima had as its main theme “Medical association shared facilities and local medical association activities” and all officers and staff contributed to the preparations as a team.

On the following day we offered a selection of three tours of local facilities: one of the then-Yasuginogi Medical Association Hospital, the Cosmos Nursing Home for the Aged in Hakutacho, the Hakuju no Sato Special Nursing Home for the Aged, and the Adachi Museum of Art; one of the Masuda Regional Medical Center Medical Association Hospital and the Masuda Municipal Kunisaki Nursing Home for the Aged; and one more of the Masuda Regional Medical Center Medical Association Hospital, the Masuda Municipal Kunisaki Nursing Home for the Aged, a sightseeing tour of Masuda city, and two local temples.

### **Recent Work of the School Physician Section**

The SMA includes a school physicians section, an industrial health section, a sports health section, a workers’ compensation and automobile liability insurance section, a hospital-based physician’s sec-

tion and a law enforcement cooperation section.

The second big event for the SMA was held on 11 November 2006 under President Nakashima the 37th National School Health Services and School Physicians Conference, with the main theme of “School physicians, stand up! The future is that our children’s and their health are in your hands.”

To prepare for the conference, an executive committee, chaired by Nobuhiro Kuzuo, vice chairman of the school physicians section, started work 1 year in advance, and the committee members strengthened in solidarity over the course of frequent and thorough discussion meetings. In this sense as well, we consider hosting this conference to have been of great significance.

It so happens that the school physicians section vice chairmen Kuzuo and Hata from the SMA played key roles in the “Model program for developing and consolidating an musculoskeletal organs check up system in schools,” one of the programs launched by the Bone and Joint Decade Japan Committee in 2005. They conducted continuous survey research in the city of Unnan and reported on “School physician activities and musculoskeletal organs check up systems in Shimane prefecture” to the National School Health Services and School Physicians Conference.

It has been decided that the program will continue in 2007, and they have already extended their survey research to Matsue, Izumo and Hamada cities.

The foregoing covers the recent work of the school physicians division of the SMA, with a focus on the National School Health Services and School Physicians Conference.

Dr. Yoshiteru Muto, who leads the “Model program for developing and consolidating an musculoskeletal organs check up system in schools” project for the steering committee of the Bone and Joint Decade Japan Committee, states in his 2006 program report that “we can contribute to nurturing the physical and mental well-being of children through the prevention of musculoskeletal disorders and disabilities among children and students, holding musculoskeletal organs and exercise in high regard and practicing appropriate exercise and sports activities,” and the SMA school physicians division likewise intends to continue its efforts in the future.

# Construction of a New Office Building and Its Computerization at Hyogo Prefectural Medical Association

JMAJ 51(5): 337–339, 2008

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## Current Circumstances of Hyogo Prefecture and Hyogo Prefectural Medical Association (HMA)

In terms of area, Hyogo prefecture is the nation's 12th largest and features a wide range of weather and topography from the Seto Inland Sea and Awaji island in the south to Kinosaki and the Sea of Japan in the north. Its population of 5.6 million, half of which is located in Kobe city and the Hanshin area, is the eighth largest in the country. While the total population has overcome the aftermath of the Great Hanshin-Awaji Earthquake and is increasing, it continues to fall in the city of Awaji and in the north of the prefecture. Hyogo prefecture reports average values in a variety of indices and is referred to as a "microcosm of Japan." Persons aged 65 and over make up some 20% of the population, and the advance of our declining birthrate and greying population is most severe in the depopulated north. If the trend persists, the district's healthcare will be faced with issues of reconfiguration and concentration, and at the moment local discussions are ongoing.

In these circumstances, the HMA is at work around the clock standing up for universal health insurance coverage and regional healthcare, and maintaining resistance to the rash policies of fiscal priorities advanced by the national government and the Ministry of Health, Labor and Welfare (MHLW), while engaged in repeated discussions with Hyogo prefecture in the spirit of local autonomy.



As of 31 December 2006, the medical association has a total membership of 8,568, making it the fourth largest membership among the country's medical associations, but Hyogo is no exception to the outcry over the shortage of physicians. The HMA Doctor Bank was formally launched on 1 March 2007 after obtaining MHLW authorization in January, and with questionnaire responses from over 4,000 physicians started work on its go-between services at a level unseen in the private sector.

## Construction Work on New Office Building

There is no end of talking points among regional medical associations, but it seems to be information on the construction of a new office building of our medical association and our experience with computerization that would be most useful to other medical associations, and so I will report below on our own modest record in these regards.

The site of our former office is a plot in the

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This article is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Vol.136, No.4, 2007, pages 722–723).

Yamate area of Kobe near the prefectural government offices that was leased from the prefecture. The large conference room below ground was cramped, maintenance charges had accumulated due to earthquake damage, and the building was structurally unsuited to facilitating the implementation of such projects as computerization. Meanwhile, the medical association had accumulated assets to a certain degree, and given the payoff movement the association decided to invest these assets in the construction of a new office as a way of returning the benefits to the membership without destroying the assets.

To start, in 2002 we acquired a prime location within 10 minutes' walk of the Sannomiya railway station. We then formed the new office construction project committee including representatives from each of the district blocks, which met eight times between February and October 2003 incorporating feedback from a survey of membership opinions conducted through the city-level medical associations, from hearings conducted with secretariat staff and from sub-committee preference findings. The committee also visited the Fukuoka Medical Association office, which was under construction at the time, and conducted numerous detailed studies on computerization, including comparative demos in the medical information studies committee, to work out a basic vision.

This led to the selection of a design firm, as the outcome of a competition, by the board of trustees in July 2003 and then a basic construction policy presented to the house of delegates on October 26 based on a preliminary design proposal. A critical debate over budgeting and content produced a decision to proceed with construction.

This shifted the process into the detailed design stage. At around 1,000 square meters the site did not offer a great deal of room to build, and the need to include a minimum number of parking spaces, a roomy conference room and floor space with high flexibility led us to a design for a seven-story building with an additional floor below ground and some 5,300 square meters of floor space overall. The price of steel beams was soaring at the time due to Chinese demand so that we had to revise some of our plans, including our borrowing, but an extraordinary house of delegates held on 11 February 2004 focusing on the construction project returned a decision to

approve the revisions as well.

The bidding process led to the selection of a consortium assembled around one of the major construction firms, and we managed to start work within fiscal 2003, in March of calendar 2004. In fiscal 2004 construction proceeded steadily together with the launch of our new executive, and meetings to address matters requiring in-depth discussion began in September, with the notable inclusion of some female members, and opinions expressed there on color schemes and interior were also incorporated.

### **Basic Computerization Policy and Deployment**

Computerization, which forms the core of our new office project, is being phased in as follows in accordance with policy deriving from the reports of the medical information studies committee, in terms of both deployment and operation.

- (1) Integration and linkage of existing servers, with some outsourcing introduced.
- (2) House LAN based on optic fiber and wired to conference rooms on each floor.
- (3) Document digitization and deployment of a document system permitting access on an as-required basis.
- (4) Deployment of groupware with capabilities for managing officer schedules and conference rooms.
- (5) Availability of mailing lists and deployment of videoconferencing system.
- (6) Solid security, including firewalls.
- (7) Engagement of system administration staff to implement the above.

### **Completion of the New Office and Availability for Public Use**

And so we laid the cornerstone on 11 July 2005 and, after taking delivery, in the swelter of August we moved out of the old office and into the new, and with a ceremony to mark completion of the construction we finished up more or less on schedule on September 11.

The new office has since surpassed expectations in acting as a "redoubt of community health" open to the public. Looking just at utilization during fiscal 2006, the office was teeming with reservations day after day—67 events in the large conference room, 339 in small conference

rooms and 37 using the small conference rooms in combination. This dramatic rise in the rate of participation by the general public and interested parties is a blessing, to some degree assisted by the convenience of access. Nor have we received any complaints about the office from these users, and the various study groups have expressed gratitude for its pleasant environment.

Document digitization has permitted the paperless operation of the boards of trustees and the executive board of trustees, and videoconferenc-

ing with the JMA, within the prefectural medical association and among committee members is moving from testing towards practical application. This example of the construction of a new medical association office based on a clear basic policy, agreement buy-in in each phase of the project, and studies and checking kept in-house rather than outsourced to contractors all conducted openly and unambiguously as we progress towards becoming a public-interest corporation is one that I hope you will find informative.

# Challenges in Health Care Unite the Medical Associations

JMAJ 51(5): 340–342, 2008

Heikki PÄLVE\*<sup>1</sup>

Finland faces the same challenges to its health care system that many other developed nations do. In Finland, like Japan, the number of elderly people is increasing faster than in most other countries. Because of the advanced treatment possibilities offered by modern medicine and increasing health demand of the citizens, health care providers are faced with budgetary problems. There are several different ways how the authorities have tried to diminish these problems.

The health care systems in nearly every developed economy are on the move away from current organisational models in a quest for cost-effectiveness. As a result the autonomy of doctors is often restricted and task shifting is considered as one possible solution to the lack of resources. Gate keeping roles for doctors are often also proposed to cut down the demand of hospital care. Doctors and their organisations all over the world have to work in a very stormy environment facing constant system changes. The case is no different in Finland and the situation requires increasing involvement and action from the Finnish Medical Association.

## **The Finnish Medical Association (FMA)**

There are 5.2 million inhabitants in Finland and the FMA has 21,500 members. Even though membership of the association is voluntary, 95% of the doctors working in Finland have chosen to be members. About 80% of all Finnish doctors are employed in the public sector and the FMA negotiates their salaries with the local authorities and the central government. Some 25% of the public sector doctors work also part time on the private sector. There is one working age doctor for every 300 inhabitants. That is a high figure in

an international comparison, but still we have a shortage of doctors. Fraction of female doctors is currently as high as 52% and increasing.

## **The Finnish Health Care System**

In Finland, the health care system is financed mainly through taxation and run by the municipalities, which are responsible for providing the services. The treatment results of many diseases are globally on top level and all the citizens have equal access to health care regardless of their wealth.

The satisfaction of the population with the system is very high and the total health care spending represents only 8% of the GDP, which can be considered to be cheap. Even though it is difficult to measure the total effectiveness of health care, the international comparisons that have been made have proven that the Finnish system is cost-effective. In spite of this the representatives of local and central government judge Finnish health care as expensive. Therefore many major changes to the system are either ongoing or being prepared.

## **New Legislation**

Primary care, which in Finland is organised in the municipal health centres, has increasing difficulties to attract doctors. The situation is especially difficult in rural areas, but problems occur even in major cities that have their own medical faculties. The current law separates primary and specialist care into two different organisations.

This total division of primary and specialist care and lack of coordination between them is one reason to increased spending in health care.

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Therefore the Finnish government is preparing new legislation that would cover both specialist and primary care and increase their joint organisation as well. The bill would increase the freedom of the patient to choose between different doctors and hospitals, which is not a right that the patients in Finland enjoy at the moment. Another aim is to increase competition and cost control to achieve savings. There is an increasing tendency to encourage private entrepreneurship on the health market. Currently municipalities spend only 3% of their health care resources to buy services from the private sector. The public sector is thus managed practically in a monopolistic manner. However, people use the private sector in an increasing frequency since it can offer care without undue delay and the patient can choose the doctor freely and see a specialist directly without turning to a general practitioner first.

Until now it has been politically impossible to liberate the services, which has led towards different methods of rationing the care. Because the local officials hold the purse strings of service production in a monopolistic manner, the central government has already earlier taken legislative action to increase pressure on the local level. In 2005 a treatment guarantee law was introduced. It requires the local authorities to see to it that necessary treatment in hospitals has to be given within six months from the moment the need has been diagnosed. The FMA has as one of its basic values the enhancement the best of the patient. Therefore the FMA has advocated strongly both for the treatment guarantee and the free choice of the doctor as well as the possibility of patients to travel abroad for their treatment when and if necessary. The latter choice is included in a new framework law proposal that is under preparation in the European Union to unify the patient care within the borders of EU. It is expected to raise some opposition from the governments of EU member states, who want to keep the grip on their citizens' rights and possibilities to choose between different caregivers in order to safeguard their own health care budgets.

## Management

Finnish doctors have traditionally finished their professional careers as leading administrators in hospitals and health centres. Their experience of the health care system as a whole together with

accumulated managerial experience and education has made them highly capable to fill these positions. Even though the international comparisons have shown that the Finnish system is run very cost-effectively, doctors are now being charged for being responsible to the cost increases during the last decade and therefore judged to be bad managers.

If doctors are considered unfit leaders, it serves as a good excuse to actively diminish the role of the medical profession in running the system. Process management is preferred instead of professional management, and being a doctor is turning to be a disadvantage instead of being a virtue. Key indicators used to measure the success in health care—such as time spent and number of patients met—are secondary to its real goals and effects. This mechanistic view of measuring the “health industry” rarely takes into account real health benefits to the patients and their level of satisfaction with the system or their treatment results. It also totally ignores the central tasks of our profession: always comfort, often alleviate and when possible heal.

In Finland there was a special educational program for doctors on health care management but it has been abolished recently. No new program has been introduced even though it was promised. This has led into mistrust between the profession and the government and increasing numbers of doctors are moving from the public sector to private sector and occupational health, thus leaving the health centres and hospitals in resource crises. It is important that educational programs for doctors in health care management exist. Doctors should be encouraged to participate in these courses and make use of the qualifications accordingly when seeking positions. There is evidently need for some international cooperation in this area as well and the FMA welcomes the efforts of the World Medical Association with its INSEAD training program which will take place for the second time in France in December 2008.

When we lose medical professionalism in the management of health care we also lose valuable insight how to develop patient care and how to advance medicine in the best possible way. Undoubtedly this trend will first worsen the working conditions of doctors and as a result of that also patient care.

Forcing the doctors to step aside from their

administrative role has already led into serious problems in Finland, especially in the health centres. Doctors feel their voice is not heard when primary care work is reorganised. In many cases they have sought new positions elsewhere and even whole municipalities have lost their all doctors in a very short time. The FMA tries actively to lobby the local politicians and administrators to understand the importance of professional experience and leadership when meddling with the structures in order to contain costs.

Other current topics related to the organisation of medical services in Finland are the questions of working time and on-call work. The European Union is at the moment trying to renew the framework legislation that regulates the maximum daily and weekly working hours of most employees, including doctors. The FMA understands well the risks for patient safety that are caused by excessively long working hours. At the same time it is clear that emergency care requires doctors to be on call when needed and they also must be properly remunerated for the inconvenience caused by these abnormal hours of work. The proposed ceilings to the maximum weekly working hours are not a major problem in Finland. However the attempt to limit the active daily working hours will affect the on-call work in hospitals substantially and require a much higher number of doctors.

### **Task Shifting**

The Finnish government has promised to propose a bill on task shifting later this year. The aim is to give restricted right to some 200 nurses to prescribe. It is justified by claiming that this way the patients can get their medication easier. The FMA feels that prescriptions are a part of the treatment decisions that should be restricted to medical profession only and sees any attempt

to change this as a substantial violation of the autonomy of the medical profession. The responsibility of the pharmacotherapy must always lie on the profession and individual professionals that are responsible of the patient's treatment as a whole. It is certain that the debate in the parliament about this issue will be vivid, but the political pressure is unfortunately towards the medically unacceptable result.

In a country with one working-aged doctor for every 300 inhabitants it is not plausible that nurses are needed for prescribing. Even if there was a problem it could not be solved by training some 200 nurses trained to prescribe, as has been suggested. It is evident that the real reasons for these changes differ from the ones that have been expressed in public. Factors like cost-containment certainly play a role. Unfortunately it is probable that this policy will increase the medication costs even though the salary of prescribers would be lower. Savings are not easily attained since the more there are prescribers the more there will be prescriptions—but not necessarily more health. Especially antimicrobial resistance may easily increase and lead into more dangerous and costly infections.

The FMA is working actively together with its members, organizers of health care in Finland and the Ministry of Social Affairs and Health in order to find solutions to the universal problems of good quality health care that all nations today face together. In this work we need international co-operation and can benefit a lot from it. Therefore we have been very active in our work with other Scandinavian countries, the doctors' organisations in Europe as well as the World Medical Association. We have also for a number of years had a very good bilateral relationship with the colleagues in the Japan Medical Association and wish to maintain it also in the future.

# Healthcare in Singapore: Challenges and management

JMAJ 51(5): 343–346, 2008

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## Singapore Healthcare System

Singapore, a city-state with a land area of 707.1 square kilometres,<sup>1</sup> is located 137 kilometres north of the equator at the southern tip of the Malay Peninsula. The Republic has a total population size of 4.59 million,<sup>1</sup> and a population density of 6,489 persons per square kilometre.<sup>1</sup> As at 31 December 2007, there were a total of 7,348 registered medical practitioners, out of which 2,781 (37.6%) were trained specialists in 35 recognised specialties.<sup>2</sup> The doctor-to-population ratio is 1:620,<sup>2</sup> and there are about 2.6 hospital beds per 1,000 total population.<sup>3</sup>

Primary healthcare is easily accessible through an extensive network of 2,000 private medical practitioners' clinics, which provide 80% of primary healthcare services, as well as 18 government polyclinics, which provide the remaining 20%.<sup>3</sup> In contrast, the public sector accounts for 80% of tertiary hospital care via 7 public hospitals and 6 national specialty centres, with 16 private hospitals accounting for the remaining 20%.<sup>3</sup> Patients are free to choose their healthcare providers within this dual healthcare delivery model. The average length of stay in acute care hospitals is 4.7 days,<sup>3</sup> and the average waiting time for elective surgery is 1 week.<sup>4</sup>

In 2007, our Life Expectancy at Birth was 80.6 years (78.2 years for males; 82.9 years for females).<sup>1</sup> Total Fertility Rate was 1.29 per female, while Infant Mortality Rate was 2.1 per 1,000 live-births.<sup>1</sup> The Crude Birth Rate was 10.3 per 1,000 population, and Crude Death Rate was 4.5 per 1,000 population.<sup>1</sup>

## Challenges Facing Singapore Healthcare

The major challenges facing healthcare in Singapore are:

- a) Healthcare Financing
- b) An Ageing Population and Management of Chronic Diseases
- c) Healthcare Manpower Issues
- d) Hospital Infrastructure
- e) Communicable Disease Control

### Healthcare financing

The overall healthcare financing philosophy of Singapore includes the following:

- a) Everyone assumes key responsibility for his own health
- b) Healthcare is an example of market failure
- c) Savings play a predominant role while insurance plays a secondary role
- d) The government will only provide subsidies for basic medical care
- e) There should be no inter-generational transfer of liabilities. In other words, every generation pays for itself and each generation cannot expect the next generation to shoulder the burden of paying for healthcare

Singapore's healthcare financing framework is formed by the "3M" system—Medisave, Medishield and Medifund.

### Medisave

Medisave is a state-run compulsory medical savings scheme introduced in 1984, under which every working employee contributes 6.5% to 9.0%<sup>3</sup> of his monthly income to a personal Medisave account. The savings can be withdrawn either to pay his own hospital bills, or those of

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his immediate family members.

#### **Medishield**

Medishield is a medical insurance scheme introduced in 1990 to help members cover medical expenses and protect against financial ruin from major illnesses. Premiums for Medishield can be paid for by savings under the Medisave account. Medishield covers approximately 80% of the Singaporean population today.<sup>3</sup>

#### **Medifund**

Medifund is an endowment fund set up in 1993 for needy patients who have exhausted all other means and cannot afford their medical expenses. Starting with an initial capital of S\$200 million<sup>\*3</sup> in 1993,<sup>3</sup> additional capital injections are made during budget surpluses. Only the interest income from the capital sum, which currently stands at S\$1.66 billion,<sup>3</sup> is utilised. Medifund ensures that no Singaporean is denied access to the healthcare system due to an inability to pay.

In 2005, Singapore spent a total of S\$7.6 billion, the equivalent of 3.8% Gross Domestic Product (GDP), on healthcare.<sup>3</sup> The amount of government healthcare expenditure made up S\$1.8 billion (0.9% of GDP).<sup>3</sup>

#### **Means testing**

Healthcare is ultimately a balance between affordability, accessibility and quality. Universal access to healthcare needs two conditions: compunction and subsidisation. That is, subsidies are allocated to those who truly cannot afford healthcare; and those who can be compelled to pay what they can afford and thus not use public funds unnecessarily. At least 65% of hospital beds in Singapore public hospitals are heavily subsidised. As a measure to ensure that there is universal access to quality healthcare for Singaporeans without excessive compromise on quality, means testing will be introduced with effect from 2009 for inpatients.

#### **An ageing population and management of chronic diseases**

Singapore has one of the lowest fertility rates in the world (TFR for 2007: 1.27) and one of the fastest ageing populations. In 2007, 8.5% of the population was aged 65 years and older. By 2030, this figure will rise to 18.7%.<sup>5</sup> This situation is similar to other East Asian countries such as Japan and South Korea. With longer life expect-

ancies and an ageing population, chronic diseases become more common and thus receive more focus. The prevalence rates for hypertension, diabetes mellitus and dyslipidemia are 24.9%, 8.2% and 18.7% respectively.<sup>6</sup> In 2007, the three most common causes of deaths were cancer, cardiovascular events and pneumonia.<sup>1</sup>

The challenges posed by the demographic and epidemiological shifts have been studied in many countries and are well known. As such, the shift from episodic care to long-term care, community-based disease prevention, and treatment of chronic diseases are necessary.

Some of these initiatives include:

#### **Family medicine and chronic disease management**

General practice and long-term care are gaining or regaining prominence. The government is actively engaging family physicians and long-term care givers to play a more important role. For example, Medisave use has been liberalised such that Medisave withdrawals can now be made for outpatient treatment of 4 chronic diseases (hypertension, stroke, diabetes mellitus and dyslipidaemia) under the Chronic Disease Management Programme (CMDP) framework.

#### **Primary Care Partnership Scheme (Chronic)**

Recently, the government has announced that it will also subsidise treatment of chronic diseases of needy means-tested patients, under the Primary Care Partnership Scheme (PCPS) Chronic.

#### **Eldershield**

Eldershield is an insurance scheme that was instituted by the government for the coverage of patients with long-term significant disabilities.

#### **Healthcare manpower issues**

Singapore currently suffers from a manpower shortage for specialist medical manpower (specialist-to-population ratio 1:1740) and nurses (nurse-to-population ratio 1:2307). To address nursing shortages, the country actively recruits nurses and nursing trainees from several overseas countries, including Philippines and China.

The country also suffers from insufficient specialist manpower. It currently has 2,781 specialists, with 58% working in the public sector. To make it easier to attract foreign specialists or specialty trainees, the Singapore Medical Council (SMC), the statutory body that registers doctors

\*3 Singapore dollar/US dollar exchange rate: 1 US dollar = 1.5 S dollar.

in Singapore, has steadily increased the number of medical schools it recognises. At the end of 2007, 159 medical schools were recognised by the SMC—an increase of 39 from the previous year.<sup>2</sup>

### Hospital infrastructure

Singapore's acute hospital beds-to-population ratio is 2.6 per 1,000 total population.<sup>3</sup> As the population ages, there is more demand for hospital beds. To address this issue, the government is actively building more public hospitals and has released more land for private hospital development. Two public hospitals are slated to be completed in the next few years yielding 1,000 beds while the private hospital sector will increase by another 500 beds.

### Communicable disease control

#### SARS

The SARS outbreak in 2003 in Singapore imparted many painfully important lessons. Infection control measures have heightened since then. Epidemiologic capabilities have also been strengthened in hospitals.

#### Chikungunya

Chikungunya fever, a mosquito-borne disease first recognised in Eastern Africa in the 1950s is endemic in many parts of the tropics and Southeast Asia. In 2007, 10 cases of Chikungunya fever had been reported in Singapore, all of which were imported. This year, a total of 200 cases were reported as at 11 September 2008. Of these, 97 were imported cases while the remaining 103 were locally acquired infections. By virtue of our geographical location, Singapore remains vulnerable to the introduction of Chikungunya outbreaks. Precautionary measures against mosquitoes and measures to eliminate their breeding sites have been put in place.

#### Flu pandemic

Singapore anticipates that a flu pandemic will soon occur. The Singapore Medical Association (SMA) is actively involved in the efforts of the

Ministry of Health to prepare for the next flu pandemic. Contingency plans have been drawn up to address the pandemic should it happen. These include running courses for community doctors as well as mock drills and exercises.

#### Dengue

Dengue fever is endemic in Singapore. In 2007, 188 local cases of dengue fever per 100,000 population<sup>8</sup> were reported. Similar to Chikungunya fever, the focus of control is aimed at the vector. The community is educated on simple principles of vector control. The National Environment Agency also tackles dengue outbreaks by epidemiologic investigations, vector breeding searches and fogging.<sup>9</sup>

### Singapore Medical Association

The SMA is the national body for the medical profession. It is a voluntary non-governmental organisation (NGO) with 4,917 members, or about 64% of all registered medical practitioners in Singapore (as at 31 August 2008). The membership make-up reflects the medical profession in Singapore, with about 30% who are general practitioners, 31% who are specialists, and the remainder being doctors-in-training. This makes the SMA the largest voluntary organisation for doctors in both the private and public sectors in Singapore.

The SMA was formed in 1959 when the Malayan Branch of the British Medical Association split to form the Malaysian Medical Association and the SMA. Some of the core activities of the SMA include promoting ethics and professionalism, publishing the monthly Singapore Medical Journal and SMA Newsletter, dealing with professional practice issues, and organising medical talks/workshops for doctors. The SMA is also the secretariat for Medical Associations in South East Asian Nations (MASEAN), as well as a member of the World Medical Association (WMA) and Confederation of Medical Associations in Asia and Oceania (CMAAO).

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## Nutrition and Health— from a medical student organization



JMAJ 51(5): 347–348, 2008

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On behalf of the International Federation of Medical Students' Associations Japan (IFMSA-Japan), it is an honor for me to write a few words for inclusion in the JMAJ.

I participated in the IFMSA 57th August General Assembly in Ocho Rios, Jamaica, from the 7th to 13th August this summer. The IFMSA is an independent, non-governmental and non-political federation of medical students' associations throughout the world. In 2007 IFMSA had 102 national member organizations from 100 countries on six continents and represented more than 1 million medical students worldwide.

The IFMSA was founded in May 1951 and is run for and by medical students on a non-profit basis. It is officially recognized as an NGO by the United Nations and recognized by the WHO as the international forum for medical students. It exists to serve medical students all over the world. Two IFMSA General Assembly meetings are held every year, one in March and the other in August. The theme of the 2008 August Meeting was "Nutrition and Health."

The world faces a major public health challenge related to diet, nutrition and lifestyle. Malnutrition is estimated to contribute to more than one third of all child deaths, although it is rarely listed as the direct cause. Moreover, rates of overweight and obesity in adults have increased across the world in the last 20 years. Not long ago, obesity was a disease of developed countries, while malnutrition was a concern of developing countries. Now, malnutrition and obesity are concerns of both.

Obesity has reached epidemic proportions globally. Of the more than 1 billion adults worldwide who are obese, at least 300 million are

clinically obese, making obesity itself a major contributor to the global burden of chronic disease and disability. Obesity surprisingly coexists with under-nutrition in many countries; it is a complex condition, affecting virtually all ages and socioeconomic groups.

The rate of childhood obesity has increased sharply. The increased consumption of more energy-dense, nutrition-poor foods with high levels of sugar and saturated fats combined with reduced physical activity have led to obesity rates rising three-fold or more in the last decade, exposing children to a major risk for serious diet-related chronic disease, type 2 diabetes, cardiovascular disease, hypertension and stroke, and certain forms of cancer. The health consequences of childhood obesity range from increased risk of premature death to serious chronic conditions that reduce the overall quality of life. The obesity epidemic is not restricted to one community; it impacts both developed and developing countries.

If obesity is not the major concern in some countries, then malnutrition due to inadequate access to nutritious foods, especially in the present context of rising food prices, is. Increasing food prices and the lack of access to healthy food leave millions of people undernourished. In some countries, 30% of all babies born at full term are underweight.

Malnutrition occurs not only in under-developed countries. Poor feeding practices, such as inadequate breastfeeding, offering the wrong foods, and not ensuring the child gets enough nutritious food, contribute to malnutrition all over the world. Infection—particularly frequent or persistent diarrhea, pneumonia, measles and

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malaria—also undermines a child’s nutritional status.

Governments throughout the world must unite in their efforts to ensure food safety and access to food at a global level in order to combat this problem. Increasing food prices are making the world less secure, and there are many key players in this complex picture. Public agencies at national and international levels have an important role to play, as do industry, consumers, retailers, and the scientific community, if we are to successfully address this difficult and important public health

challenge.

The IFMSA dedicated its efforts to addressing this challenge this summer. As future health physicians, we believe that we have a key part to play in resolving this important issue. Health professionals need to promote interdepartmental cooperation and action by governments to eradicate poverty, improve food industries, and monitor food prices and quality. We hope that our goals will be achieved and our efforts successful in resolving the transnational inequalities that shape the health of our planet.



### Memorable Meeting and Culture in an Impressive City: the Seoul General Assembly

The WMA General Assembly was held in Seoul, South Korea, from the 15th to 18th of October, 2008. Some 370 participants from 41 NMAs and 21 affiliated bodies attended the general assembly, which was held at the Shilla Hotel. The revised "Declaration of Helsinki" was adopted at the general assembly and is to be distributed world wide, after several processes extending over more than a year in which the JMA took part as a member of the working group.

In the revision process of the "Declaration of Madrid," the document was divided into two parts: basic and practical texts. The basic part of the document had already been agreed upon at the midterm council meeting at Divonne, France this spring. Accordingly, the general assembly adopted the WMA Declaration on Professional Autonomy and Clinical Independence as a separate declaration to be entitled the "Declaration of Seoul," whereas the other part, regarding professional-led regulation, was resubmitted for a final fine-tuning by the working group, including the JMA.

Ample exchanges and discussions were held between NMA members during our stay in Seoul,

including meetings with CMAAO members, which were especially important because of the growing activities and contribution to global health of this region. In addition, as the deep bell of recession tolled for the global economy, the general assembly adopted an emergency resolution against economical cutting of medical fees.

The WMA General Assembly in Seoul was extremely impressive, with a special theme of Health and Human Rights. During our stay in Seoul, we were able to observe various aspects of Korea ranging from a traditional Asian way of living to modernizing activities in many fields developed along global lines.

The simple and highly spiritual attitude of Korean traditions seems to have had a considerable influence on Japanese tea ceremony, while looking at the monumental palaces with their lifestyles, architecture and ceramic wares I felt that they reflect ceremonial dignity possibly influenced by European culture. I would like to express my deep gratitude for the tremendous efforts made by the KMA and its staff.

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Council members of the WMA