This document is a minor revision of the Guidelines for Smoking Cessation published in 2005 as one of the Guidelines for the Diagnosis and Treatment of Cardiovascular Diseases reported by the Japanese Circulation Society (JCS). During the more than five years since the release by chairman: Hisayoshi Fujiwara, there have been many changes among JCS members in terms of smoking rate, consciousness of smoking, non-smoking policies in hospitals, and establishment of smoking cessation clinics. Moreover, the oral smoking-cessation drug, varenicline, was launched and listed in the National Health Insurance (NHI) price list, and has been widely used in smoking cessation clinics. In order to reflect these changes, the guidelines were revised in cooperation with many JCS members and collaborators. We express our gratitude to all individuals who cooperated in revising the guidelines.

Since the release of the previous guidelines, many academic societies and groups adopted declarations on tobacco control. The guidelines of 2005 listed the full texts of anti-smoking declarations published by all academic societies since only a small number of academic societies had adopted it at that time. However, the present guidelines include the anti-smoking declaration only by the JCS, since so many societies now declare similarly.

Recently the tobacco prices and tax in Japan were slightly increased. However, the tobacco prices in Japan is still lower than those in other developed countries, and we must continue to encourage the government to “increase the tobacco tax” further. On February 22, 2010, the Tobacco Control Medical-Dental Research Network (chairman: Hisayoshi Fujiwara, http://tobacco-controlresearch-net.jp/), a group of 17 academic societies in Japan, established the 22th day of each month as “the smoking cessation day” to promote nation-wide smoking cessation campaigns (http://www.kinennohi.jp/). The Network has regularly presented petitions for making all lines completely non-smoking to Japan Railroad (JR) companies on the basis of the international clinical study data that the prevention of passive as well as active smoking decreases the prevalence of cardiovascular diseases. In Japan, Kanagawa Prefecture introduced the non-smoking ordinance in public places. A survey is planned to assess whether the prevalence of cardiovascular diseases changes before and after enforcement of the ordinance.
We strongly hope that the present guidelines will help promote a non-smoking environment in Japan, where the smoking rate is still high.

**Introduction to the First Edition**

The Guidelines for Smoking Cessation were completed as a result of cooperative activities by nine academic societies since 2003. Although the tentative title was the “Guidelines for Smoking Cessation Instruction”, the title was finally decided as the “Guidelines for Smoking Cessation” to include guidance to encourage smokers to stop smoking and prevent individuals from starting smoking. We express our gratitude to all physicians of nine societies participating in the project.

The Guidelines for Smoking Cessation are characterized by the following three features.

The first is that they are Japan’s practice guidelines prepared by nine academic societies directly involved in smoking-related problems, i.e., the Japanese Society for Oral Health, the Japanese Society of Oral and Maxillofacial Surgeons, the Japanese Society of Public Health, the Japanese Respiratory Society, the Society of Obstetrics and Gynecology, the JCS, the Japan Pediatric Society, the Japanese College of Cardiology, and the Japan Lung Cancer Society. The representatives of these societies gathered several times and exchanged e-mails to prepare the present guidelines. The success in preparing the guidelines through complex processes reflects regret and sense of danger concerning the slow progress in producing a non-smoking environment in Japan.

Smoking adversely affects the health of adult as well as adolescent. Smoking also affects the health of surrounding people including infants who are exposed to secondhand smoke and fetus whose mother smoke. Smoking causes cardiovascular diseases, respiratory diseases and oral tissue diseases as well as various troubles in many organs. Accordingly, various academic societies, physicians and dentists should be involved in smoking cessation programs through cross-sectional collaboration, and the expertise of the above nine societies is necessary to prepare unified guidelines. Smoking is actually a systemic disease (nicotine dependence and smoking-related diseases), and the present guidelines are prepared for the treatment of patients requiring intensive smoking cessation treatment.

The second is that smoking cessation methods for otherwise healthy smokers and those with various disorders or characteristics are described separately. Methods for otherwise healthy smokers are described in the first chapter, the Overview, which includes the subsections “Introduction and Methodology”, “Simple Smoking Cessation Treatment (Smoking Cessation Support in the General Practice Setting)”, “Intensive Smoking Cessation Treatment”, “Active Involvement in the Government’s Anti-Smoking Measures” and “Creating Non-Smoking Environment to Promote Smoking Cessation”. In addition to smoking cessation treatment for current smokers, how to ensuring non-smoking environment to prevent people from starting smoking are also described. The second chapter describes in detail smoking cessation methods for patients with cardiovascular diseases, respiratory diseases, women and preg-nant/lactating women, children and adolescents, patients with dental/oral cavity disorders, preoperative patients and patients with surgical diseases.

The third is that immediate problems are described in the third chapter. In Japan, measures to prevent underage smoking, protect non-smokers, and treat smokers are quite insufficient. This chapter describes social systems and political measures to promote a non-smoking environment.

There have been no comprehensive guidelines like these on smoking cessation in Japan. Smoking is the most preventable cause of diseases, and smoking cessation is the most reliable method of significantly decreasing the prevalence of a wide variety of serious diseases. Promoting a non-smoking environment is one of the biggest steps to contribute to good health in the society by helping both smokers and non-smokers maintain well-being and by enabling the government to decrease healthcare cost significantly. It is time that individual physicians and dentists as healthcare specialists begin advocating non-smoking environment in cooperation with academic societies. We hope the present guidelines will help encourage successful smoking cessation treatment and protect non-smokers.

Finally, the Smoking Cessation Guideline Committee of the nine academic societies would like to encourage individuals to act to prevent passive smoking. In Japan, rules to prohibit smoking or to limit smoking areas in public spaces such as workplaces, schools, department stores, restaurants, movie theaters, and Shinkansen trains have not been fully implemented compared to other developed countries. Things have improved rapidly in one or two years, but Japan is still underdeveloped in terms of the prevention of passive smoking, and smokers can smoke relatively freely. It is difficult to suggest stop smoking to the elders. However, many academic societies in Japan finally started to advocate quitting smoking, and in May 2003, article 25 of the Health Promotion Law stipulating that “it is the right of non-smokers and the responsibility of the administrators to avoid passive smoking in places where people come” was enforced. On February 27, 2005, the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) was enforced. Tobacco package labeling was changed from “For the good of your health, be careful not to smoke too much”, which was totally useless, to a more direct message “Smoking is a cause of lung cancer” in 2005, but the current message is still problematic and lenient as compared with those in Europe and in the United States.

The Smoking Cessation Guideline Committee of the nine academic societies discussed the social situation in Japan and decided to advocate the prevention of passive smoking in public areas without hesitation. The Committee sent petitions four times for a total smoking ban in Shinkansen trains and other limited express trains to the six JR companies in Japan. Please visit the Tobacco Control Medical-Dental Research Network (consisting of Japanese twelve academic societies) website (http://tobacco-control-research-net.jp/) or the JCS website (http://www.j-circ.or.jp/) for the contents of and JR’s responses to the petitions.

## 1. Introduction and Methodology

Smoking is the most preventable cause of diseases, and smoking cessation is the most reliable method of decreasing the prevalence of diseases. Promoting a non-smoking environment will be the biggest factor to promote the well-being of the society. There is an international movement towards a non-
smoking environment. In May 2003, the WHO FCTC was adopted, and the Health Promotion Law was enforced in Japan. There are also social movements to promote non-smoking environment in public places. Hospitals have separated smoking areas, and banned smoking in particular or all areas of the hospital. This is the time when physicians, dentists and other healthcare professionals must address the problem of smoking seriously. As healthcare specialists, we should promote a non-smoking environment as a social custom rather than restricting smoking areas.

There are three important steps in preventing or stopping smoking.

1. Many smokers started his/her smoking during adolescence and established as smokers before adulthood. Prevention of smoking should mainly be targeted to adolescents.

2. Many smokers want to quit smoking, but a large number of smokers have given up trying to quit smoking. We should develop effective measures to motivate them to try smoking cessation.

3. After successful smoking cessation, many past smokers start smoking again. It is often difficult for past smokers to quit smoking for the rest of their life. Physicians and dentists are encouraged to support past smokers to keep quitting smoking.

Increasing the tobacco tax, restricting tobacco advertisements, and tobacco packaging warning messages are useful in increasing momentum towards a smoke-free society. Removing tobacco vending machines and restricting smoking on the street are also helpful. We also should pay full attention to the media which affect smoking problems significantly. Activities of anti-smoking groups and individuals promoting a non-smoking society through lectures and publications have strong impacts. Smoking cessation support systems using information technology (IT) are producing good results. Physicians and dentists may lead such movements by providing appropriate instructions. Anti-smoking education for school children and students is also important. It is essential to ensure total smoking ban in school buildings and grounds and decrease the smoking rate among teachers.

Recently, several associations of physicians and other healthcare professionals such as the Japan Medical Association and the Japanese Nursing Association have adopted declarations on tobacco control. Further expansion and implementation of such activities are expected. Expected roles of nurses and pharmacists who closely communicate with patients should be also emphasized. Cooperative measures with nurses and pharmacists should be considered. It is also expected that to promote individual or small-group treatment of smoking cessation such as instruction in the general practice setting at medical institutions or smoking cessation clinics, various types of smoking cessation classes.

Since health is one of the most important factors affecting the life of adults, it is beneficial to emphasize the adverse effects of tobacco on health to motivate them to quit smoking. Special measures are required to motivate adolescents, who often have little concern about their health, to quit smoking for example by relating the adverse effects of tobacco to things attracting young people. Healthcare professionals should be aware of the specific risk of smoking among women as it affects pregnancy and child-bearing.

Healthcare professionals, especially physicians and dentists, are in a position to help patients with smoking-related problems. It is preferable that all physicians and dentists, regardless of their specialty, assess the smoking status of all patients and instruct smoking patients to quit it, regardless of their diseases. Physicians and dentists are expected to be role models in terms of health, and their attitudes toward smoking greatly affect other people. Of course physicians and dentists should be nonsmokers. Medical and dental students should be educated on smoking in detail, and should be encouraged not to smoke as well. Physicians and dentists in educational institutions are expected to instruct students appropriately.

It is useful to establish guidelines for smoking cessation which describe the importance of smoking cessation treatment and details of treatment procedures. Smoking affects adults, adolescents, young children, infants and fetuses through direct or passive exposure as well as maternal exposure to tobacco smoke. Smoking affects direct smokers, passive smokers, and infants of mothers exposed to smoke. Since smoking has a variety of effects on many organs, it is important for medical and dental associations to prepare cross-sectional, unified guidelines for smoking cessation.

The “Strength of Evidence” in the efficacy evaluation in the present guidelines is defined as follows according to the “Treating Tobacco Use and Dependence: 2008 Update” in the United States:

A: Multiple well-designed randomized clinical trials, directly relevant to the recommendation, yielded a consistent pattern of findings.

B: Some evidence from randomized clinical trials supported the recommendation, but the scientific support was not optimal. For instance, few randomized trials existed, the trials that did exist were somewhat inconsistent, or the trials were not directly relevant to the recommendation.

C: Reserved for important clinical situations in which the Committee achieved consensus on the recommendation in the absence of relevant randomized controlled trials.

2. Simple Smoking Cessation Treatment (Smoking Cessation Support in the General Practice Setting)

Since clinicians can make a difference with even minimal (less than 3 minutes) intervention1 (Strength of Evidence: A), the treatment of smoking cessation (smoking cessation support) in the general practice setting is important. If physicians and dentists who talk with smokers during their practice begin intervention, a significant number of patients may be able to quit smoking even if the abstinence rate is not high, since the number of patients encouraged smoking cessation is huge.2

The 5 A’s approach (Ask, Advise, Assess, Assist, and Arrange)3 is used in many countries as a simple smoking cessation treatment available in the general practice setting (Table 1). It is important that physicians perform Step 1 (Ask) routinely, i.e., asking their patients about smoking status: Physicians should interview their patients about current smoking status and willingness to quit smoking (Strength of Evidence: A). With these questions, patients may be categorized into (1) smokers who are not willing to quit, (2) smokers who are willing to quit, (3) past smokers who are not smoking currently, and (4) lifelong non-smokers, and physicians may instruct their patients accordingly.

1. How to Instruct Patients Who Are Not Willing to Quit (Strengthen Motivation to Quit Smoking)

The first goal of intervention to patients who are not willing to quit should be placed to motivate them to quit smoking. This should be done with Step 2 (Advise) (Strength of Evidence: A) and Step 3 (Assess) (Strength of Evidence: C) of the 5 A’s
<table>
<thead>
<tr>
<th>Step</th>
<th>Simple Procedures for Smoking Cessation Treatment Suitable for Outpatient Clinics: 5 A’s Approach</th>
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</thead>
<tbody>
<tr>
<td>Step 1: Ask</td>
<td>Systematically identify all tobacco users at every visit</td>
</tr>
<tr>
<td>Strategies for implementation</td>
<td>• Implement an office-wide system that ensures that, for every patient at every clinic visit, tobacco use status is queried and documented.</td>
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<td></td>
<td>• Expand the vital signs (e.g., blood pressure, pulse, body temperature, body weight) to include tobacco use (current smoker, past smoker, or non-smoker), or put a sticker indicating tobacco use status on all patient charts.</td>
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<tr>
<td>Step 2: Advise</td>
<td>In a clear, strong, and personalized manner, urge every tobacco user to quit</td>
</tr>
<tr>
<td>Advice should be:</td>
<td>• Clear: “It is important that you quit smoking now, and I can help you.” “Cutting down while you are ill is not enough.”</td>
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<td></td>
<td>• Strong: “As your clinician, I need you to know that quitting smoking is the most important thing you can do to protect your health now and in the future. The clinic staff and I will help you.”</td>
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<td></td>
<td>• Personalized: Tie tobacco use to current symptoms and health concerns, and/or its social and economic costs, and/or the impact of tobacco use on children and others in the household.</td>
</tr>
<tr>
<td>Step 3: Assess</td>
<td>Assess every tobacco user’s willingness to make a quit attempt at the time</td>
</tr>
<tr>
<td>• Assess patient’s willingness to quit. If the patient is willing to make a quit attempt at the time, provide assistance. If the patient clearly states that he or she is unwilling to make a quit attempt at the time, provide an intervention shown to increase future quit attempts.</td>
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<tr>
<td>Step 4: Assist</td>
<td>Aid the patient in quitting</td>
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<tr>
<td>• Help the patient with a quit plan</td>
<td>• Set a quit date. Ideally, the quit date should be within 2 weeks.</td>
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<td></td>
<td>• Tell family, friends, and coworkers about quitting, and request understanding and support.</td>
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<td></td>
<td>• Anticipate challenges to the upcoming quit attempt, particularly during the critical first few weeks. These include nicotine withdrawal symptoms.</td>
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<td></td>
<td>• Remove tobacco products from your environment. Prior to quitting, avoid smoking in places where you spend a lot of time (e.g., work, home, car).</td>
</tr>
<tr>
<td>• Recommend the use of approved medication</td>
<td>• Recommend the use of medications found to be effective. Explain how these medications increase quitting success and reduce withdrawal symptoms. The first-line medications include nicotine replacement therapy and varenicline*.</td>
</tr>
<tr>
<td>• Provide practical counseling (problemsolving/skills training)</td>
<td>• Abstinence: Striving for total abstinence is essential. Not even a single puff after the quit date.</td>
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<td></td>
<td>• Past quit experience: Identify what helped and what hurt in previous quit attempts.</td>
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<td></td>
<td>• Alcohol: Because alcohol is associated with relapse, the patient should consider limiting/abstaining from alcohol while quitting.</td>
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<td></td>
<td>• Other smokers in the household: Quitting is more difficult when there is another smoker in the household. Patients should encourage housemates to quit with them or to not smoke in their presence.</td>
</tr>
<tr>
<td>• Provide intratreatment social support</td>
<td>• Provide a supportive clinical environment while encouraging the patient in his or her quit attempt. “My office staff and I are available to assist you.”</td>
</tr>
<tr>
<td>• Provide supplementary materials</td>
<td>• Provide appropriate materials published by the government or nonprofit organizations*.</td>
</tr>
<tr>
<td>Step 5: Arrange</td>
<td>Arrange for follow-up contacts</td>
</tr>
<tr>
<td>• Timing: Follow-up contact should begin soon after the quit date, preferably during the first week. A second follow-up contact is recommended within the first month. Schedule further follow-up contacts as indicated.</td>
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<tr>
<td></td>
<td>• Actions during follow-up contact: For all patients, identify problems already encountered and anticipate challenges in the immediate future. Assess medication use and problems. Remind patients of quitline support.</td>
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<tr>
<td></td>
<td>• For patients who are abstinent, congratulate them on their success. If tobacco use has occurred, review circumstances and elicit recommitment to total abstinence. Consider use of or link to more intensive treatment.</td>
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</table>


*Modified to fit the circumstances in Japan.

2. How to Instruct Patients Who Are Willing to Quit Smoking
Patients who are willing to quit smoking should be instructed as follows using Step 4 (Assist) of the 5 A’s approach.

1. Help the patient to prepare his/her own quitting plan: Set the quit date as a day within 2 weeks whenever possible, explain types of nicotine withdrawal symptoms and how to control the tobacco cravings, and encourage the patient to start smoking cessation with confidence.

2. Provide smoking cessation counseling (Strength of Evidence: A): Emphasize that stopping smoking completely but not decreasing the number of cigarettes smoked is a good way to achieve smoking cessation. Instruct the patient to refrain from alcohol immediately after starting a quit attempt, and to consult with physicians and dentists without hesitation for support regarding smoking cessation.
(3) Use of medications (Varenicline and nicotine replacement therapy) (Strength of Evidence: A) and supplementary materials: Varenicline and nicotine replacement therapy may reduce nicotine withdrawal symptoms and improve patient self-efficacy.

As Step 5 (Arrange), the patient should be followed-up to ensure the progress of his/her quitting plan (Strength of Evidence: C).

3. Instruction During Smoking Cessation Treatment (Relapse Prevention)

In most cases, smoking relapse occurs within 3 months after starting smoking cessation. It is essential to prevent relapse during this period (Strength of Evidence: C). Patients in the early phase of smoking cessation often feel difficulty in coping with nicotine withdrawal symptoms, but physicians/dentists should remind the patients the benefits of smoking cessation and appreciate them for their efforts to quit smoking. Relapse is often triggered by a small incident such as social pressure (e.g., a cigarette offered at a party) and work-related stress. In order to continue smoking cessation, physicians/dentists should encourage patients to be aware of the situations where the risk of relapse is increased and learn about how to keep smoking cessation during clinical visits or telephone interviews.

4. Example of Simple Smoking Cessation Programs

Simple smoking cessation programs include (1) individual instruction (e.g., individual support at clinical visits), (2) group instruction (e.g., smoking cessation class at workplace), and (3) self-help methods (e.g., smoking cessation contests).

(“See the unabbreviated guidelines for examples of programs and contents of commonly used manuals.)

3. Intensive Smoking Cessation Treatment

The following results have been achieved in studies of intensive smoking cessation treatment.

(1) Increasing the length or intensity of each session, increasing the number of sessions, and prolonging the duration of program may achieve better results (Strength of Evidence: A).

(2) Multidisciplinary approaches involving various healthcare professionals have been demonstrated effective (Strength of Evidence: A). Clinicians should be involved in smoking cessation treatment. It has been proven effective for clinicians to inform patients of the risks of tobacco use to health and benefits of smoking cessation and prescribe drug therapy while other healthcare professionals provide psychosocial and behavioral therapies.

(3) Varenicline and nicotine replacement therapy are always effective in improving abstinence rates (Strength of Evidence: A), and should be administered to all patients unless they are contraindicated.4 In Japan, varenicline, nicotine gums and nicotine patches are available.

(4) Telephone counseling, and individual or group counseling are effective (Strength of Evidence: A).

(5) Individual counseling and behavioral therapy are especially effective, and it has been proved that supports in hospital or clinic as well as supports in home, workplace and schools also improve abstinence rates (Strength of Evidence: B).

Smoking cessation clinics play a central role in intensive smoking cessation treatment in Japan through several sessions during drug therapy using varenicline, nicotine replacement therapy or other appropriate drugs with behavioral therapy to control psychosocial factors are performed. Intensive smoking cessation treatment for hospitalized smokers is also effective: Instructions to quit smoking by attending physicians and other co-medical staffs are quite important. Since smoking is not feasible in hospital wards, patients may successfully quit smoking when appropriate intensive treatment is made during the period of hospitalization (Strength of Evidence: B).

1. Drug Therapy

Although smoking status differs from person to person, “nicotine dependence” plays a central role in continuing smoking. In ridding patients of their smoking, treatment with varenicline and nicotine replacement therapy are effective (Strength of Evidence: A) and are recommended for smokers who want to quit smoking unless these drugs are not contraindicated. Table 2 lists guidelines for drug therapy for smokers available in Japan that were made according to the recommendations for drug therapy for smokers in the “Treating Tobacco Use and Dependence: 2008 Update”.

1. Oral Non-Nicotine Drugs

Varenicline is Japan’s first oral drug for smoking cessation approved in January 2008. Varenicline does not contain nicotine but it binds to and acts as a partial agonist of α4β2 nicotinic receptors in the brain and thereby subsides nicotine withdrawal symptoms and tobacco cravings. Varenicline also acts as an antagonist of α4β2 nicotinic receptors when the patient restarts smoking during treatment. It prevents nicotine from binding to the receptors to suppress a feeling of satisfaction due to smoking. Treatment with varenicline should be started one week prior to smoking cessation, and continued for 12 weeks. During the first week of the treatment, the dose is gradually increased over time. Since a starter pack for the first 2 weeks of treatment is available, the dose escalation during the first week can easily be made. According to data obtained in Japan, 65.4% of patients receiving varenicline could abstain from tobacco for 4 consecutive weeks at the end of a 12-week treatment. According to the “Treating Tobacco Use and Dependence: 2008 Update”,4 varenicline increases the likelihood of abstinence from tobacco use by 3.1 fold as compared to placebo treatment. Careful administration should be exercised for patients with psychiatric disorders such as schizophrenia, bipolar disorders and depression, patients with severe renal dysfunction, and patients on hemodialysis.

Healthcare professionals and patients should be aware of the possible effects of varenicline on driving. Caution should be exercised for patients not to involve in driving or operating machinery as there has been the report that dizziness, somnolence or disturbances in consciousness occurred and it resulted in a traffic accident.

2. Nicotine Replacement Therapy

In Europe and in the United States, nicotine replacement therapy has been performed using several pharmaceutical forms of nicotine such as gums, patches, sublingual tablets, inhalers, and nasal sprays. Meta-analyses have demonstrated that these nicotine replacement products improve abstinence rates significantly4 (Strength of Evidence A), and these products have been recommended to use during smoking cessation. The products available in Japan are nicotine gums (NICORETTE® and Nicotinell® Mint [OTC drug]), nicotine patches (Nicotinell® TTS [prescription legend drug], Nicotinell® Patch, NICORETTE® Patch, and Ciganon® CO [OTC drug]). Although tobacco smoke includes more than 200 different toxic substances, nicotine replacement products contain only nicotine which is ab-
sorbed gradually by the body through the oral mucosa and skin to alleviate nicotine withdrawal symptoms and help patients quit smoking. Nicotine replacement products may be used safely because they do not cause an abrupt increase in blood nicotine concentration and the amount of nicotine absorbed from nicotine replacement products are generally smaller than those achieved during smoking.\(^5\)\(^6\) In the nicotine replacement therapy, nicotine intake via tobacco smoke is completely replaced by that via nicotine gums or patches, and then nicotine intake is decreased gradually.

Table 3 lists the benefits, drawbacks, and common adverse drug reactions and countermeasures to prevent or treat such events for varenicline, nicotine gums and nicotine patches.

### 3. Drug Therapy Other Than Nicotine Replacement Therapy

In addition to varenicline and nicotine replacement therapy, bupropion hydrochloride SR is listed as a first-line medication

<table>
<thead>
<tr>
<th>Table 2. Clinical Guidelines for Prescribing Medication for Treating Tobacco Use and Dependence</th>
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<tbody>
<tr>
<td><strong>Who should receive medication for tobacco use?</strong></td>
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<tr>
<td><strong>What are the first-line medications recommended in this guideline?</strong></td>
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<tr>
<td><strong>What should be considered when selecting smoking cessation medications?</strong></td>
</tr>
<tr>
<td><strong>Are cessation medications appropriate for light smokers (e.g., &lt;10 cigarettes/day)?</strong></td>
</tr>
<tr>
<td><strong>Which medications should be considered with patients particularly concerned about weight gain?</strong></td>
</tr>
<tr>
<td><strong>Should nicotine replacement therapies be avoided in patients with a history of cardiovascular disease?</strong></td>
</tr>
<tr>
<td><strong>May tobacco dependence medications be used long-term (e.g., up to 6 months)?</strong></td>
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<tr>
<td><strong>May medications ever be combined?</strong></td>
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<thead>
<tr>
<th>Table 3. A Comparison of Varenicline, Nicotine Gums and Nicotine Patches</th>
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<tbody>
<tr>
<td><strong>Varenicline</strong></td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
</tr>
<tr>
<td>2. Nicotine-free drug</td>
</tr>
<tr>
<td>3. Alleviates withdrawal symptoms and inhibits satisfaction after smoking</td>
</tr>
<tr>
<td>4. Useful for patients with cardiovascular diseases</td>
</tr>
<tr>
<td>5. Covered by the NHI</td>
</tr>
<tr>
<td><strong>Drawbacks, common ADRs and countermeasures</strong></td>
</tr>
<tr>
<td>1. Nausea, throat irritation</td>
</tr>
<tr>
<td>• Avoid swallowing the nicotine-rich saliva</td>
</tr>
<tr>
<td>• Cut the gum in half</td>
</tr>
<tr>
<td>2. Some techniques such as chewing are required, and efficacy varies depending on the usage</td>
</tr>
<tr>
<td>• Use nicotine patch</td>
</tr>
<tr>
<td>3. Some patients cannot chew the gum</td>
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<tr>
<td>• Effective when licking gum in the mouth</td>
</tr>
<tr>
<td>4. Poorly absorbed in the acidic condition</td>
</tr>
<tr>
<td>• Need not be put something in the mouth</td>
</tr>
<tr>
<td>5. Covered by the NHI</td>
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</table>

ADR, adverse drug reaction; NHI, National Health Insurance.
apy are known to improve abstinence rates, drug therapy since employment of multiple strategies for behavioral therapy proves abstinence rate compared with those in patients with drug therapy, though this drug is currently not available in Japan.

2. Behavioral Therapy
Since employment of multiple strategies for behavioral therapy are known to improve abstinence rates, drug therapy should be combined with behavioral therapy. Healthcare professionals should assess patients for factors, environments and behaviors that are known to be associated with lower abstinence rates (e.g., stress and sleep deprivation), discuss with the patients how to cope with such problems, and encourage them to perform appropriate measures. Table 4 lists effective behavioral therapies. Patients should understand that even a single cigarette can ruin efforts taken toward cessation and cause them to restart smoking, and that they must overcome nicotine dependence. Since changes in physical condition associated with smoking cessation such as weight gain and depressed feeling may hinder successful smoking cessation, patients receiving intensive smoking cessation treatment should be explained in detail and be encouraged to perform appropriate measures to cope with them.

4. Active Involvement in the Government’s Anti-Smoking Measures
On February 27, 2005, the WHO FCTC was enforced. The Member States including Japan must formulate and implement comprehensive tobacco control regulations that are required under the WHO FCTC.

This chapter describes major tobacco control measures listed in the WHO FCTC, current situation and problems in terms of implementation of such measures in Japan, and perspectives and methods necessary for physicians, dentists and academic societies to be actively involved to support the government to change its policy and implement controls on tobacco use.

1. Price Policy
Increasing tobacco price is the most effective measure to reduce tobacco use especially by adolescents, juveniles and economically challenged people (who do not have enough opportunities to control of their health) and thereby contributes to the prevention of diseases and decreases health care cost in the future.

The price of tobacco products available in Japan is among the lowest in developed countries (Figure 1). Appropriate price policy is a good public-interest policy in terms of both public health and economy since it contributes to maintenance or increase of tax revenue while decreasing consumption of tobacco by the public.

In Japan, the tax rate for tobacco products should be increased gradually (however the initial rise should be more than 100 yen per package) to the level in developed countries where successful tobacco control has been made.

2. Advertising Regulation
Tobacco advertising not only increases the demands for tobacco products and smoking rate but also tends indirectly to keep mass media receiving advertising fees from reporting the effects of tobacco on human health. Tobacco advertising should be banned without exception since partial regulation of tobacco advertising will allow the tobacco industry to exert its indirect effect on the mass media.

The WHO FCTC requests that Member States to prohibit any tobacco advertising, marketing activities and supports of tobacco products. However, the Japanese government granted special exemptions considering the freedom of expression ensured in the Constitution, and has continued asking the tobacco industry to make voluntary control on tobacco advertising even after enforcement of the WHO FCTC. The effects of voluntary

control are questionable, and we should continuously request the national and local governments to ban all tobacco advertising including image advertising on good smoking manners and events named after tobacco brands.

3. Prevention of Passive Smoking
Article 25 of the Health Promotion Law enacted in 2002 indicates that it is the responsibility of “the administrators of places where many people come such as schools, gyms, hospitals, stations, ...... and restaurants” to endeavor to prevent passive smoking in such places. After enforcement of the law began in May 2003, an increasing number of public and private entities have “prohibited smoking” rather providing “separate smoking areas in public places”.

Physicians and dentists should take initiative to achieve smoke-free environment in hospitals and clinics as well as public places and workplaces to prevent passive smoking based on the Health Promotion Law.

4. Warnings
The Ministry of Finance revised the “Regulations for Enforcement of the Tobacco Industries Act” in November 2003, and decided to print “warnings” on tobacco packages to replace the vague “precautions” used in the past (the new warnings were fully enforced on July 1, 2005).

However, Japan uses text-only health warnings that are not “large, clear, visible and legible” as described by the WHO FCTC. The warnings in Japan are not impressive compared to those in many other countries, and use only 30% (minimum required percentage) of the principal display area. We should propose more effective warnings by referring to those used in Canada and Brazil (texts and highly impressive pictures using 100% of the principal display area) and other developed countries including Australia.

5. Prevention of Underage Smoking: Including Access Control
Although Japan is the first nation to enforce the “Underage Smoking Prevention Act” in 1900, many adolescents are still smoking. Tobacco vending machines are the most common and worst route to buy tobacco products by adolescents.

In order to make tobacco products less available to adolescents, tobacco vending machines should be totally removed, and tobacco products should be sold behind the counter after confirming the age of customers.

It is also essential to educate adolescents about health (and

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**Figure 1.** Average price of 20 cigarettes in major developed countries. Source: Non-Smokers’ Rights Association, Canada (as of June 17, 2002) for the prices in foreign countries. The price of the most popular product in each nation/area was converted to yen based on the exchange rates as of May 31, 2002. [Note] As of October 2010, the tobacco price in Japan is higher than that in the graph.
education of smoking prevention) both in the community and school. However, education of adolescents is not sufficient as a single measure and should be combined with other national measures such as price control, advertising regulation, access control, education of adult smokers (especially smoking cessation treatment) and encouraging a smoke-free environment (e.g., tobacco ban in public spaces and prevention of passive smoking). In Japan, tobacco vending machines that require so called “taspo” cards to buy tobacco products were introduced in July 2008 to limit the use of tobacco vending machines to adults only, but this measure has not been effective in reducing underage smoking since they often buy tobacco from shops such as convenience stores by telling a lie about their age.

6. Dissemination and Institutionalization of Smoking Cessation Treatment

An increasing number of countries are providing smoking cessation treatment for free or at low cost as national programs. In 1999, the UK became the first country in the world to introduce smoking cessation treatment as a program covered by the National Health Service (NHS). The institutionalization of smoking cessation program in the UK was promoted significantly by a review of the clinical efficacy and cost-effectiveness of smoking cessation treatment (e.g., Table 5) on the basis of published evidence and the smoking cessation guidelines for healthcare professionals prepared according to the review. Japan also must institutionalize smoking cessation treatment. Before achieving this goal, the clinical efficacy and cost-effectiveness of smoking cessation treatment should be evaluated on the basis of the results of interventional studies in Japan, and appropriate guidelines considering the health insurance system and other situations in Japan should be prepared. Healthcare professionals and academic societies should actively be involved in such efforts.

5. Creating Non-Smoking Environment to Promote Smoking Cessation

In order to quit smoking, smokers must acquire knowledge and attitudes that motivate smoking cessation, be supported by favorable conditions promoting the initiation and continuation of their efforts, and be encouraged in an appropriate condition to achieve continuous smoking cessation. This section describes the importance of total abstinence from smoking by physicians, dentists and other healthcare professionals who should become a role model in the community and of promoting to a smoke-free (non-smoking) environment by medical institutions.

1. Smoking Cessation in Healthcare Professionals

1. Smoking Status of Healthcare Professionals in Japan

The smoking rate among male and female physicians in Japan (data evaluated by the Japan Medical Association in 2004) is lower than that of in the general population of Japan. But considerably higher than those in physicians in countries where

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### Table 5. Cost-Effectiveness of Smoking Cessation Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Costs per life year saved (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief advice</td>
<td>212</td>
</tr>
<tr>
<td>Brief advice + self-help programs</td>
<td>259</td>
</tr>
<tr>
<td>Brief advice + self-help programs + NRT</td>
<td>696</td>
</tr>
<tr>
<td>Brief advice + self-help programs + NRT + specialist cessation service</td>
<td>873</td>
</tr>
</tbody>
</table>

NRT, nicotine replacement therapy.

[Note]
- The cost per life year saved ranges from 4,000 to 13,000 £ for treatment of hyperlipidemia with statins.
- A cost per life year saved of ≤800 £ is considered cost-effective.

Adapted from Thorax 1998; 53(Suppl 5 Pt 2): S1–S38, with permission from BMJ Publishing Group Ltd.
tobacco control is more strict (Figure 2). According to data on the smoking rate in female nursing staffs evaluated by the Japanese Nursing Association in 2001, the smoking rate is low in health nurses, while those in midwives, nurses and assistant nurses are higher than that in the general female population.

2. Smoking-Related Problems and Promotion of Smoking Cessation in Physicians and Dentists

Smoking in healthcare professionals, especially smoking in physicians and dentists, are quite problematic in terms of the following points:21

(1) Smoking in physicians is the biggest promoter of smoking.

(2) Physicians who smoke tend to deny or underestimate the risk of smoking in order to justify their behavior due to the adjustment mechanism that smokers use to ignore the consequences of smoking, and become the biggest resistance force in hospitals against smoke-free policy.

In order to establish an environment that supports patient attempts at smoking cessation treatment, medical institutions should promote smoking cessation in their staff members as a first step. Smoking cessation treatment (support) for physicians should be prioritized.

2. Tobacco Ban and Restrictions on Sale of Tobacco Products in Medical Institutions

1. Complete Tobacco Ban in Medical Institutions (Non-Smoking)

A complete tobacco ban rather than limitation to smoking areas should be aimed at all medical institutions including hospitals and clinics, for the following reasons.22

(1) Medical institutions play an important role in preventing and treating diseases and protect the health of the community residents.

(2) Medical institutions are places visited by many patients, and passive smoking must be completely avoided.

(3) Medical institutions are workplaces for healthcare professionals who are aware of the adverse effects of tobacco on the health. When healthcare professionals act as role models for smoke-free lifestyles, smoke-free environments in other public institutions, schools and workplaces will be promoted further.

In the current hospital evaluation system (Version 6.0; used for hospitals evaluated in February 2009 and thereafter created by the Japan Council for Quality Health Care to perform third-party evaluation and support improvement of the quality of healthcare), the presence/absence of measures to prevent passive smoking in the hospital is a key evaluation item in the “health promotion and environment” domain. This item is rated on the basis of “(1) whether complete smoking ban is introduced in the hospital” and “(2) whether patients and healthcare staff members are actively encouraged to abstain from smoking”. Hospitals where smoking is prohibited in all buildings and spaces are highly acknowledged. This hospital evaluation system is expected to promote smoke-free environments in hospitals.

2. Restrictions on Sale of Tobacco Products in Medical Institutions

In Japan, there are tobacco vending machines in public facilities and hospitals and even outside the front entrance of pharmacies and drug stores. The current law (Tobacco Industries Act) encourages the sale of tobacco products in order to “ensure sound development of tobacco industries and steady income”, and does not restrict the sale of tobacco products in hospitals and other public facilities. However, medical institutions should take initiative of restricting the sale of tobacco products in order to protect the health of the community residents. Tobacco ban policy in a hospital, including the removal of tobacco vending machines and face-to-face selling in shops in the hospital, will not only promote the smoke-free environment in the hospital but also affect nearby public facilities to introduce non-smoking policy.

3. On-Site Inspection and Support by Public Health Institutes

According to article 25 of the Medical Service Act, each prefectural governors send staffs of public health institutes to hospitals in the prefecture for on-site inspection at least once a year. We expect that the public health institutes will inspect hospitals for smoking cessation status and sale of tobacco products (hopefully report the results) in addition to the conventional items of inspection such as measures to avoid medical accidents and prevent nosocomial infections in order to promote nonsmoking policy in hospitals.

II Smoking Cessation Treatment for Various Subgroups

1. Cardiovascular Diseases

1. Special Considerations Regarding Patients With Cardiovascular Diseases During Smoking Cessation Treatment

Special considerations should be made for smokers with cardiovascular diseases because (1) they should be strongly recommended to quit smoking as an evidence-based medicine; (2) they should discontinue smoking during the acute phase of cardiovascular disease and continue abstinence thereafter; and (3) they are contraindicated for nicotine replacement therapy during the acute phase of cardiovascular disease.

Epidemiological studies have demonstrated that smoking is a strong risk factor for cardiovascular diseases such as coronary artery disease, stroke and peripheral artery diseases that are common in adults.23-28 Accordingly, patients receiving treatment to prevent cardiovascular diseases or treat acute or chronic phase of cardiovascular diseases should be strongly motivated to quit smoking according to medical evidence and encouraged to receive smoking cessation treatment. Smoking cessation treatment for patients with cardiovascular diseases differs from those for other patients in that patients are often forced to quit smoking after an unexpected cardiovascular event that suddenly occurs and to continue abstinence for life. Since the onset of cardiovascular disease is the biggest reason that motivates smokers to quit smoking, and advise to quit smoking from healthcare professionals will be a strong trigger for abstinence and may lead abstinence for life, physicians must provide appropriate smoking cessation programs for patients with cardiovascular diseases.
2. Significance of Smoking Cessation Treatment for Patients With Cardiovascular Diseases

Smoking cessation treatment is important for patients with cardiovascular diseases since tobacco use has acute and chronic effects on the cardiovascular diseases and significantly affects the prognosis of patients.

The nicotine in tobacco smoke is absorbed into the bloodstream through the lungs, and stimulates the adrenal cortex to release catecholamines that stimulates the sympathetic nervous system to cause peripheral vasoconstriction, and increases in blood pressure and heart rate. Nicotine also enhances the release of thromboxane A2, which is known to cause vasoconstriction and bronchoconstriction more potently than does nicotine. CO in tobacco smoke binds strongly to hemoglobin in red blood cells, causing chronic oxygen deficit of arterial blood. Smoking also enhances the production of extrinsic reactive oxygen species and free radicals to increase oxidative stress.

Smoking is known to increase the risk of ischemic heart disease, stroke (cerebral infarction and subarachnoid hemorrhage) and hypertension, great vessel diseases (development of abdominal aortic aneurysm, increase in aneurysm diameter, rupture of aneurysm, and death), peripheral artery diseases (e.g., arteriosclerosis obliterans, development and aggravation of Buerger's disease, and microvascular lesion secondary to diabetes), among other cardiovascular diseases. The prevalence of ischemic heart diseases begins to decrease relatively soon after smoking cessation. In addition, the incidences of recurrent myocardial infarction and death are lower among patients who quit smoking after onset of acute myocardial infarction than those who did not. It has been demonstrated that the risks for repeat coronary artery bypass grafting (CABG) and postoperative angina significantly decrease when patients quit smoking after their first CABG, but do increase when they restart smoking. It is believed that the risks for myocardial infarction, repeat CABG and angina in patients who had quit smoking do not differ from those in non-smokers. Studies have demonstrated that the anti-ischemic effects of β-blockers and calcium channel blockers are weak in smokers with angina, and improve after they quit smoking. The risk of stroke decreases rapidly within 2 years after smoking cessation and reaches a level similar to that in non-smokers within 5 years.

3. Smoking Cessation Treatment in Patients With Cardiovascular Diseases

1. Smoking Cessation Instruction to Prevent Cardiovascular Diseases

All smokers should be instructed repeatedly to quit smoking in every opportunity such as clinic visits and discussions after regular health check-ups no matter how short the instruction is. (See section I-2 “Simple Smoking Cessation Treatment” for basic methods).

All patients with other risk factors for cardiovascular diseases should be instructed to quit smoking.

Varenicline and/or nicotine replacement therapy should be considered.

2. Smoking Cessation Instruction for Patients in the Acute Phase of Cardiovascular Disease

Introduction to quit smoking (almost compulsory tobacco abstinence): Healthcare professionals should provide accurate information on the relationship between smoking and diseases on the basis of their medical expertise. A clear strong personalized message should be provided to urge every patient to quit smoking.

Continuation of smoking cessation: Healthcare professionals should encourage patients to continue not to smoke during the sub-acute and chronic stable phase of cardiovascular diseases. It is important to encourage not only the patients but also their families.

Nicotine replacement therapy should not be used.

3. Smoking Cessation Instruction for Patients in the Chronic Phase of Cardiovascular Disease

Ensure instruction at regular outpatient visits:

1. Describe smoking status in the medical record in such a way that is easy to determine changes over time in the patient smoking status.
2. When the patient is still smoking, the physicians should try to motivate him/her to quit smoking by giving clear and concrete messages about the disease and health hazards of smoking repeatedly.
3. Varenicline and/or nicotine replacement therapy should be recommended.
4. When the patient does not quit smoking despite the above measures, he/she should be recommended to visit a smoking cessation clinic.
5. Smoking status should be followed at each visit.
6. When the patient has restarted smoking, he/she should not be blamed but encouraged to retry cessation.

4. Available Materials

1. Smoking cessation guidebook: Three steps to quit smoking, “PASSPORT to STOP SMOKING”, edited by the JCS
2. Educational DVD for prevention of smoking: “STOP SMOKING”, planned, produced by the JCS

The prevention of active and passive smoking is recommended in several guideline documents reported by the JCS. In the Guidelines for the Primary Prevention of Ischemic Heart Disease in 2001, “complete smoking cessation” and prevention of passive smoking are recommended. Smoking cessation is also recommended in many other JCS guideline documents including the Guidelines for Secondary Prevention of Myocardial Infarction, the Guidelines on Indications for Coronary Intervention for the Treatment of Coronary Artery Disease, and the Guidelines for Treatment of Chronic Heart Failure. The AHA Guidelines for Primary Prevention of Cardiovascular Disease and Stroke: 2002 Update also listed complete smoking cessation and no exposure to environmental tobacco smoke as a goal.

4. Targets of Tobacco Control by Healthcare Professionals Involved in the Treatment of Cardiovascular Diseases

In April 2002, the JCS adopted on anti-smoking declaration, saying “as the leading professional association for cardiovascular specialists in Japan, hereby declares that we will vigorously fight against smoking by working to ban smoking, encouraging smoking cessation, and preventing passive smoking exposure. The JCS will promote the importance of these countermeasures to the public.” With the three basic principles of (1) beginning within our own membership, (2) calling for hospitals and medical schools to be engaged in tobacco control, and (3) calling for patients, general public, and society to be engaged in tobacco control, the JCS has proposed 10 specific targets to promote smoke-free environments.
1. Smoking and Respiratory Diseases

Smoking affects many organs in the body, but most significantly affects the respiratory organs that are exposed directly to tobacco smoke. The effects of smoking on the airways and lungs include morphological changes and changes of lung function such as respiratory function (gas exchange) and non-respiratory functions (defensive function and metabolism).

Smoking causes both morphological and functional changes in the respiratory system, which may result in various symptoms and diseases. Table 6 lists respiratory diseases for which smoking is a strong risk factor. Lung cancer and chronic obstructive pulmonary disease (COPD) are the two major respiratory diseases associated with smoking.

A causal relationship between smoking and lung cancer has now been well established in many epidemiological studies and experimental research. The risk of lung cancer in smokers is several to over 10-fold that in nonsmokers. Many epidemiological studies have shown a dose-response relationship between cigarette consumption and lung cancer mortality. It is known that the risk of lung cancer death is higher in individuals who smoke higher numbers of cigarettes per day, those who have smoked for a longer period of time, those with a higher Brinkman index, and the risk of lung cancer is higher in individuals who began to smoking at a younger age. Smokers are at a high risk of developing not only lung squamous cell carcinoma and small cell lung carcinoma but also large cell lung carcinoma and lung adenocarcinoma when it comes to the risk of different tissue types of lung cancer.

COPD is characterized by obstructive ventilator disturbance caused by pulmonary emphysema and/or chronic bronchitis. However, COPD is not a diagnostic term widely used in the general practice setting in Japan. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guideline44 that was introduced recently in Japan indicates that “Its pulmonary component is characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lung to noxious particles or gases.” Although it is believed that smoking accounts for 80 to 90% of the risk of COPD, not all smokers develop COPD: The risk of clinically significant COPD is high in 15 to 20% of smokers who are susceptible to tobacco smoke.

2. Effects of Smoking Cessation in Patients With Respiratory Diseases (Benefits)

A dose-response relationship has been observed between the incidence of lung cancer and COPD and smoking, and many studies have demonstrated that smoking cessation is effective in preventing and treating these diseases. According to the results of studies in and outside of Japan, the risk of lung cancer decreases by 30 to 50% in the first 10 years after smoking cessation, and gradually decreases thereafter. Studies in the UK and in the United States have reported that lung cancer mortality began to decline in association with a significant decrease in smoking rate. It is known that smoking cessation reduces the changes in pulmonary function over time and improves life expectancy.

3. Smoking Cessation Treatment in Patients With Respiratory Diseases

Smoking cessation treatment includes education and instruction for smokers. It is important to treat them as patients through appropriate education and instruction to encourage them to quit smoking. Table 7 lists the smoking cessation programs described in the COPD Guideline by the Japanese Respiratory Society (1st edition).
4. Approaches to Smoking Cessation by Respiratory Disease Specialists and Academic Societies in the Field of Respiratory Medicine

Smoking by respiratory disease specialists who treat patients with smoking-related diseases such as lung cancer and COPD is extremely problematic. They must be role models for a smoke-free, healthy lifestyle and encourage patients and general public to quit smoking. Academic societies in the field of respiratory medicine have actively committed to anti-smoking education, and the Japanese Respiratory Society (former name: the Japan Society of Chest Diseases) was the first academic society in Japan to publish the “Recommendations Concerning Smoking” in 1997.66 Following this, other academic societies published recommendations and declarations concerning anti-smoking measures and smoking cessation. Those published by academic societies in the field of respiratory medicine include the “Tokyo Declaration on Tobacco” by the International Association for the Study of Lung Cancer, the “Anti-Smoking Declaration” by the Japan Lung Cancer Society, and the “Anti-Smoking Declaration” by the Japan Society for Respiratory Endoscopy (former name: the Japan Society for Bronchology).67,68 The Japanese Respiratory Society adopted the “Anti-Smoking Declaration” at the 43rd annual meeting in March 2003. The declaration describes that “the eligible members must be non-smokers.”

1. Smoking Status Among Women

The smoking rate among women in Japan has been nearly stable since 1965. However, changes in prevalence by age group indicate that smokers are decreasing among women in their 40s and older, but are clearly increasing in younger women, which reflects an increasing tendency in smoking rate among pregnant women. Since the smoking rate among women in Japan has been lower than those in other countries, appropriate anti-smoking measures may decrease smoking rate and mortality without increasing female smokers further.

2. Special Considerations for Smoking Cessation Treatment in Women

Women are more susceptible to smoking than men. Nicotine dependence tends to be more severe in women than in men. Smoking during pregnancy causes adverse effects beyond the mother. Smoking during pregnancy means that chemicals contained in tobacco smoke affect child during the most important periods of development and growth in the uterus and after birth. Smoking cessation during pregnancy is difficult since pregnant women cannot use varenicline and nicotine replacement therapy (these drugs are basically contraindicated during pregnancy), and pregnant women may have a sense of guilt when they cannot quit smoking.

3. Significance of Smoking Cessation Treatment for Women

Ovarian endocrine function plays an important role in the life cycle of women. Tobacco smoke affects ovarian function. Smoking cessation is important in (1) improving ovarian function affected by smoking, (2) avoiding adverse effects on the next generation, and (3) eliminating adverse cosmetic effects. Of course, smoking cessation is important in preventing and treating smoking-related diseases and preventing recurrence of diseases, and especially the effects of smoking cessation on infectious diseases are significant. Also, smoking cessation decreases the risk of thrombosis, the most important adverse effect of oral contraceptives.

1. Ovarian Function

Smoking cessation may improve menstrual pain, abnormal menstrual cycles, and secondary amenorrhea, prevent premature menopause due to smoking, and decrease the incidence of infertility.

2. Effects on the Fetus and Complications of Pregnancy

Relationships of the following with smoking have been demonstrated: Fetal growth retardation, premature birth, placental complications (placenta previa and premature separation of a normally implanted placenta), early/premature rupture of membranes, and perinatal death. Smoking cessation may lower the incidence of these complications.

Relationship with smoking is apparent based on a lot of reliable study results: Abortion,49 ectopic pregnancy,50 and reduced milk volume.51 Relationship has been pointed out but no clear causal relationship was demonstrated: Cleft lip and palate,52 absent limbs,53 urogenital malformation,54 and neural tube defect,55 etc. Women should quit smoking before they become pregnant to ensure preventing these complications.

Recently, fetal programming studies have been performed, and studies on the relationship between smoking during pregnancy and disorders of children after reaching adulthood have been reported. There are reports suggesting relationships of smoking during pregnancy with development of such as neuromedical disorders and diabetes mellitus.56,57

3. Cosmetic Aspects

Adverse cosmetic effects of smoking: Decreased skin elasticity increase in skin wrinkles, disorders of the hair (poliosis and alopecia), chapped lips, discoloration of the teeth and gum, halitosis, voice alteration, and hirsutism

4. Other Disorders

It is believed that exposure to tobacco smoke may affect the incidence of breast cancer, cervical cancer, and bacterial vaginosis.

The risk of COPD is higher in female smokers than in male smokers.

5. Use of Oral Contraceptives

Use of oral contraceptives increases the incidence of cardiovascular disorders (angina attacks) in smoking women 12-fold than in non-smoking women.58,59

4. Smoking Cessation Treatment in Women

Women of all ages should be urged to quit smoking regardless of whether they are nonpregnant, pregnant, or lactating. As a first step, physicians should ask all female patients regarding their smoking status.

1. Steps in Smoking Cessation Treatment

First, patients should be assessed for smoking status and severity of nicotine dependence, and asked concerning their willingness to quit smoking (stages of change toward smoking cessation).

Patients in the precontemplation stage should receive clear and substantial messages on “why smoking cessation is necessary” to motivate them by explaining the most relevant risk factor among those described in the section 3.

Patients in the contemplation stage should further motivated
by providing information and methods for smoking cessation, encouraging and giving assurance of support.

For patients in the preparation stage, smoking cessation treatment should be scheduled and implemented.

Patients in the action and maintenance stages should be praised for continued abstinence, and remotivated to continue and prevent a smoking relapse.

After treatment begins, patients should visit the clinic at week 1, and then at month 1 of treatment.

2. Precautions for Women
Women should quit smoking before pregnancy. In particular, smoking cessation is a precondition for women undergoing treatment for infertility.

It is never too late to quit smoking even during pregnancy. Smoking cessation is effective at any time.

Smoking women often hesitate to quit due to fear of weight gain after smoking cessation. Weight gain is a major reason for such hesitation. It may be prevented with drug therapy (the degree of weight gain is relatively small when using nicotine replacement therapy), behavioral therapy (patients should be encouraged to brush their teeth and drink cold water but not eat snacks to cope with nicotine withdrawal symptoms, and perform exercise and deep breathing), and dietary therapy (patients should be instructed to eat more vegetables and have the right diet).

Since unemployed women may have problems such as isolation, poor communication, and boredom, at a loose end that may hinder successful smoking cessation, they should be instructed to improve their lifestyle as well. A strong support system should also be established to follow them frequently.

When treating pregnant women, both patients and their family members should be encouraged to quit smoking. Smoking cessation for all family members is necessary and may be more effective than instructing the pregnant women only.

Since smoking cessation treatment during pregnancy is challenging as varenicline and nicotine replacement therapy cannot be used during pregnancy, healthcare professionals should not pursue short-term effects, and should instruct them patiently to achieve successful smoking cessation over a long span of time. Pregnancy is a good opportunity to quit smoking because patients visit the clinic regularly and may be motivated effectively.

Care should be taken to minimize the risk of smoking relapse after childbirth when patients visit the clinic less frequently. Mothers have many factors such as childcare stress that may lead to smoking relapse. Patients should receive sufficient instruction regarding the risks of smoking to both mother and child during pregnancy and thereafter.

4. Children and Adolescents

1. Underage Smoking and Importance of Smoking Cessation Treatment
In Japan, underage smoking has become increasingly prevalent, especially among junior and senior high school girls.

The effects of harmful chemicals in tobacco smoke are significantly greater in growing children than in adults. A serious problem of smoking in youths is that nicotine dependence develops in a shorter period of time in children than in adults. For example, it has been reported that children 12 to 13 years of age who smoke only for several weeks or months have nicotine dependence and feel difficult to quit. Children with “nicotine dependence” cannot quit smoking of their own will, and need treatment for nicotine dependence.

2. Smoking Cessation Treatment for Children
1. Basic Methods of Smoking Cessation Clinics for Children
Since children who smoke generally do not have sufficient ability to solve problems by themselves, tend to lack positive feelings about themselves, and may have social problems either at home or in school, it is important to accept their feelings and carefully listen to them. Healthcare professionals should not blame them without giving them a chance to explain why they smoke. Rather, they should talk with children at ease in asking them for their reasons for starting to smoke and smoking status, and about their daily life, school life, and friendship, and assess the severity of their nicotine dependence.

Smoking cessation treatment for children should include provision of correct information on the adverse effects of tobacco, and treatment mainly using nicotine patches under careful supervision. Photos, figures, and videos are useful tools to explain the effects of direct and passive smoking and effects of smoking during pregnancy on the fetus, among others.

2. Nicotine Dependence and Treatment
Children should be instructed that nicotine dependence, a disease of the brain which cannot work properly without nicotine, is the cause of difficulty in quitting smoking, and that appropriate treatment may help smoking cessation. Children should be instructed how to use nicotine patches. If they are willing to use them, nicotine patches for 1 to 2 weeks (7 to 14 patches) should be prescribed. Nicotine patches are available as large, medium- and small-sized patches. Medium-sized patches are often sufficient for junior and senior high school students, but the required dose may vary among individuals. Usually a nicotine patch should be applied daily to the upper arm or lower back after wake-up, and kept the patch on by bedtime. When the children use nicotine patches 1 to 2 weeks to control tobacco craving and can be free from tobacco for 1 to 2 weeks, they can often overcome physical nicotine dependence. However, the number of patches required to achieve it may significantly vary among individuals.

For example, instructions for children may include “Try these patches for 3 days (or within a week). Apply one patch in the morning, and remove it before bed. You will not want to smoke when you use the patches. When you feel it would be OK without the patches, try without a patch next day. You may not want to smoke during the day. But if you crave a cigarette, use a patch immediately. For a while, nicotine patch deliver nicotine, the craving will be reduced soon. Keep the patch before bed, and try again without a patch next morning. The time without the patch will be longer and longer, and finally you will not need any patches or cigarettes.”

3. Follow-up After Smoking Cessation Treatment
Children should be followed-up after outpatient sessions to ensure abstinence. When they or their parents wish follow-up, physicians should follow-up the children for abstinence by requesting that they visit the clinic regularly or contacting them via phone.

Follow-up with visits to the clinic should be performed every 1 or 2 weeks, while those with telephone calls from the clinic should be performed several days after the last visit and then every 1 or 2 weeks thereafter. Physicians should not blame children even if they have restarted smoking, and should listen to them sympathetically and encourage them to retry.

When children and their parents agree, physicians will con-
tact their teachers or nurses in their schools to ask them to support the children in school. They will be highly motivated when they feel support from adults close to them.

3. Measures to Prevent Underage Smoking and Avoid Smoking Relapse

Nicotine replacement therapy is effective in underage smokers as in adults,62 and many children can quit smoking after using nicotine patches for a relatively short period of time. However, it is difficult to continue abstinence from tobacco for a long period of time, and many children restart smoking. There are many reasons why children restart smoking, including a social environment that still accepts smoking as well as easy access to tobacco products via vending machines.

Not only education and instruction for children, but also strict measures, such as removal of tobacco vending machines and a ban on smoking scenes on TV drama, and cartoons are needed to prevent underage smoking in our society as a whole.63

Table 8. Benefits of Smoking Cessation Treatment in Dental Clinics

<table>
<thead>
<tr>
<th>Benefits of Smoking Cessation Treatment in Dental Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Since the incidence and prevalence of oral cavity disorders are high, dentists see many patients of various age groups repeatedly.</td>
</tr>
<tr>
<td>2. Dentists may support and instruct smoking cessation regularly during periodic dental check-ups.</td>
</tr>
<tr>
<td>3. Oral health care instructions by dentists or dental hygienists may include smoking cessation support.</td>
</tr>
<tr>
<td>4. Patients may be strongly motivated since they can observe their oral lesions by themselves.</td>
</tr>
<tr>
<td>5. Smoking cessation education may be provided for smokers who have not experienced systemic effects of smoking.</td>
</tr>
</tbody>
</table>

5. Dental and Oral Cavity Disorders

1. Smoking and Dental Disorders

The oral cavity is the first part of the body to be exposed to tobacco smoke. Tobacco smoke is involved in the development and progression of oral cavity disorders and reduces the efficacy of dental treatment. Active smoking is related to abnormalities of the oral mucosa, periodontal tissues, teeth, salivary gland, tongue, lips, dental restorative materials, and prosthetic appliances, as well as halitosis and abnormalities of saliva. Smoking during pregnancy is related to anomalies of the lips and palate of the fetus. Passive smoking is related to periodontal diseases, dental caries in children, and abnormal deposition of melanin in gingiva. Smoking cessation reduces the risk of oral cavity disorders and thus ensures more effective dental treatment. According to the latest, 2004 Surgeon General’s Report on the health consequences of smoking, scientific evidence for causal relationships of active smoking with cancer of the mouth and periodontal disease have been established.64

2. Chewing Tobacco

The use of chewing tobacco (betel quid), which is common in South Asia, especially India and Southeast Asia, is important in explaining the effects of nitroso compounds found in tobacco products on the oral mucosa. Betel quid is a combination of areca nut (fruit of the betel palm), betel leaf (leaf of piper betle), slaked lime, and tobacco leaf. During chewing betel quid containing tobacco leaf, alkaloids such as arecoline contained in areca nut are nitrosated to form carcinogenic N-nitrosamines which interact with DNA and proteins. Slaked lime, a strong alkaline, causes inflammation of submucosal tissues, and produces reactive oxygen species that damage DNA in cells of the oral mucosa.65,66 These stimuli induce leukoplakia, verrucous tumor, and squamous cell carcinoma in the mouth. It has been reported that anemic changes and submucous fibrosis in the mouth caused by the chewing of betel quid leads to cancer of the mouth. In countries where the use of betel quid is common, patients with cancer of the mouth account for as many as 30% of all cancer patients. These findings in Southeast Asia suggest the risk of smoking as well as nitroso compounds contained in tobacco gums, the chewing of which is becoming common in Japan (See photo in Table 9). Careful consideration is thus needed concerning the long-term use of nicotine-containing products in the mouth.

3. Smoking Cessation Treatment for Dental Patients

Based on the experience in developed countries where smoking cessation treatment has achieved favorable results, the benefits of smoking cessation treatment in dental clinics (e.g., department of dentistry and oral surgery in hospitals, dental offices, and public dental health activities including dental check-ups) have been specified67,68 (Table 8). Dental clinics may motivate patients to quit smoking and support them if they are willing to quit smoking. In a recent report in the United States, smoking cessation treatment by dental healthcare professionals, the effects of which are evaluated comprehensively as treatment by healthcare professionals other than physicians, is effective in the delivery of smoking cessation treatment and should be performed. As of 2002, there are 65,073 dental offices and 1,265 dental hospitals in Japan. It is estimated that 1.15 million people per day, accounting for 17% of all patients visiting an outpatient clinic, visited their dentist in 1999. The number of patients visiting a dentist for the treatment of dental caries exceeded 40 per 1,000 people in almost all age groups between 5 and 74 years in 2001. When smoking cessation treatment for dental patients becomes common, and if one patient per month quits smoking in each clinic, a total of 0.8 million people in the various age groups will quit smoking each year.

4. Organizational Measures

Prefectural dental associations have begun or are planning to provide smoking cessation treatment. This commitment is expected to increase the number of people who quit smoking under the instruction of dentists. However, dentists in Japan are not formally allowed to prescribe nicotine patches, though they are in other developed countries in which successful tobacco control has been obtained. The unavailability of nicotine patches in many dental clinics has hindered dentists from promoting smoking cessation more successfully. The Japanese Society for Oral Health, the Japanese Society of Oral and Maxillofacial Surgeons, the Japanese Society of Periodontology, and the Japanese Association for Dental Science have adopted declaration on tobacco control. In 1996, the World Dental Federation (FDI) established the Section on World Dentistry Against Tobacco and adopted the FDI position statement on tobacco. The International Association for Dental Research and the International Federation of Dental Educators and Associations have performed activities in accordance with the FDI. The Japan Dental Association adopted an anti-smoking declaration in 2005.

Since dental clinics are important in performing antimoking activities and smoking cessation treatment, the current...
laws and regulations should be promptly revised to promote smoking cessation treatment by dentists and include smoking cessation treatment in the list of practices covered by social insurance, determine fees for smoking cessation treatment, and secure financing for it. In 2001, the American Dental Association included descriptions of smoking cessation treatment in its clinical recommendations. It is also important to create a forum to share information on smoking cessation treatment in dentistry.

Dental healthcare professionals should be actively encouraged to quit smoking as well. Smoking by dental healthcare professionals decreases the motivation of patients to quit, and dental healthcare professionals with nicotine dependence may deny the importance of antismoking activities and rationalize their smoking habit. Environmental changes such as total smoking bans in healthcare facility that are currently under way are important not only in preventing passive smoking but also in prompting dental healthcare professionals who smoke to attempt to quit smoking.

6. Status Before Surgery and Surgical Diseases

1. Effects of Smoking on Physical Function Before Surgery
Nicotine, a major component of tobacco smoke that affects circulatory function, increases heart rate and systolic and diastolic blood pressure. Smoking causes coronary and systemic microcirculation disorders as a result of decreasing vasodilator reserve over time. The level of carboxyhemoglobin (COHb) in the blood is significantly higher in smokers than in non-smokers. Since CO causes a left shift of the oxyhemoglobin dissociation curve and binds to cytochromes to inhibit aerobic metabolism, smokers have chronic tissue hypoxia.

Circulatory dysfunction and tissue hypoxia start to improve after 2 to 3 days of abstinence. Ciliary movement starts to recover in 4 to 6 days, and sputum volume is normalized in 2 to 6 weeks. However, more than 3 months of abstinence is required to normalize clearance, and at least 4 weeks are required to improve peripheral airway disorders.

Smoking also impairs immune function. It has been reported that the prevalences of chronic bronchitis in patients planned to undergo surgery are about 5% and 25% among non-smokers and smokers, respectively.

2. Effects of Smoking on the Results of Surgery
1. Intraoperative Complications
Schwilch et al reported that the incidence of intraoperative respiratory complications (reintubation, laryngospasm, bronchospasm, aspiration, hypoventilation, and hypoxemia) was 3.1% among non-smokers and 5.5% among smokers. The relative risk of intraoperative respiratory complications was 1.8 in all smokers, 2.3 in young smokers, and 6.3 in young obese patients. The incidence of bronchospasm was especially high in smokers.

2. Postoperative Complications
Impaired pulmonary function due to smoking may cause postoperative respiratory complications. Wellman et al have reported that the incidence of respiratory complications after abdominal or chest surgery is twice as high in smokers as in non-smokers, and Bluman et al have reported a corresponding ratio of 4. Relationships of smoking with adult respiratory distress syndrome (ARDS), acute myocardial infarction, development of atrial fibrillation, and perioperative death have been reported.

3. Smoking Cessation Support as Pre- and Postoperative Management
1. Effects of Smoking Cessation Before Surgery on Postoperative Complications
Warner et al reported that the incidence of postoperative respiratory complications was significantly lower in patients who quit smoking for ≥8 weeks before coronary surgery (14.5%) than in those who quit smoking for less than 8 weeks (57.1%), and that the incidence of such complications did not differ between patients who quit smoking for ≥6 months before coronary surgery and non-smoking patients. Nakagawa et al reported that the incidence of postoperative respiratory complications following pulmonary surgery was significantly lower in non-smokers (23.9%) than in smokers (43.2%), and lower in smokers who quit smoking for ≥4 weeks (34.7%) than in those who continued smoking. These findings indicate that patients should quit smoking for 4 to 8 weeks before surgery to prevent postoperative respiratory complications. Kuri et al reported that the incidence of delayed wound healing following head and neck reconstructive surgery was 85.7% in smokers, 67.6%, 55.0%, and 59.1% in smokers who had quit smoking for ≤3 weeks, ≤6 weeks, and ≥7 weeks before surgery, respectively, and 47.5% in non-smokers, and that smoking cessation for at least 3 weeks before surgery improves wound healing in such surgery.

2. Effects of Preoperative Smoking Cessation Treatment
In a randomized comparative study by Møller et al in patients who did or did not receive preoperative smoking intervention before surgery, the incidence of postoperative complications was significantly lower in the smoking intervention group (18%) than in the control group (52%). The incidence of postoperative complications did not decrease in smokers who decreased the number of cigarettes smoked before surgery. These findings suggested that smoking cessation treatment but not a simple reduction of the number of cigarette use was effective in preventing postoperative complications. The authors also conducted a study in which the incidence of postoperative complications was significantly decreased in patients who received smoking cessation treatment for ≥4 hours/week and in patients with higher educational status. Detailed explanation of the risks of postoperative complications and delayed wound healing in smokers may motivate patients to quit smoking before surgery and continue abstinence thereafter. It has been found that smokers planned to undergo surgery are more highly motivated to quit smoking than other smokers, and that simple instructions and treatment for smoking cessation may be highly effective. In particular, patients with lung cancer are highly motivated, and it has been reported that abstinence rate is improved when varenicline and nicotine replacement therapy are introduced immediately after the diagnosis of lung cancer.

3. Prevention of Smoking Relapse
Although many patients quit smoking when cancer is diagnosed, 14 to 58% of patients continue smoking, and patients who quit smoking before surgery often restart smoking after the surgical treatment. Further studies should be performed to investigate how to approach patients who restart smoking after discharge or treatment and how to use effective measures including varenicline and nicotine replacement therapy.
III Immediate Problems

On February 27, 2005, the WHO FCTC was enforced. In commemoration of this enforcement, which is important in the promotion of a smoke-free society in Japan, the nine academic societies pointed out problems that should be solved promptly.

Current problems regarding smoking in Japan are summarized as follows:

1 Insufficient “Measures to Prevent Underage Smoking”
   1-1 There are many underage smokers.
   1-2 Educational methods to prevent underage smoking have not been fully established.
   1-3 Social systems including school education to prevent underage smoking have not been established.

2 Insufficient “Measures to Protect Non-Smokers From Tobacco Smoke”
   2-1 The harms of passive smoking have not been fully recognized.
   2-2 Sufficient measures to protect non-smokers from passive smoking have not been implemented.

3 Insufficient “Recognition of the Harms of Smoking and Implementation of Smoking Cessation Treatment”
   3-1 Healthcare professionals and educators who must be role models in society are not fully aware of the harms of smoking, and many of them are smokers.
   3-2 Low prevalence of smoking cessation treatment.
   3-3 Methods of smoking cessation treatment have not been established, and anti-smoking drugs confirmed effective in foreign countries have not been approved in Japan.

4 Insufficient “Social Systems and Policies for Promotion of a Smoke-Free Society”
   4-1 Tobacco products are relatively cheap, and there are problems in terms of distribution routes, advertisements, and new tobacco products development.
   4-2 There is no government organization dedicated to smoking-related problems.
   4-3 No study organizations for continuous research on smoking-related problems have been established.

For the above-listed immediate problems, the following measures are proposed.

1. Prevention of Underage Smoking and Promotion of Smoking Cessation

Education should be widely given to the society on the harms of underage smoking. Educational organization should be established in the national and local governments as well as other suitable levels. The number of healthcare professionals who may educate on the prevention of underage smoking and provide smoking cessation treatment for underage smokers when requested by school should be increased. Cooperation between healthcare professionals, schools, and social support systems such as local child counseling centers should be established. In accordance with the WHO FCTC, tobacco vending machines should be removed.

2. Sufficient Protection of Non-Smokers From Passive Smoking

2-1 Increase in Recognition of the Harms of Passive Smoking

Information on the harms of passive smoking should be provided at every possible opportunity, and anti-passive smoking campaigns should be deployed. Since passive smoking is a significant health concern, healthcare organizations and healthcare professionals should provide information and promote campaigns elsewhere.

2-2 Implementation of Prevention of Passive Smoking in Accordance With the Health Promotion Law

In order to ensure the prevention of passive smoking in accordance with the Health Promotion Law, information on effective preventive measures should be provided. Total smoking ban is the only way to avoid passive smoking in public spaces. Since it is particularly important to avoid passive smoking in school, we strongly request a total smoking ban on school grounds throughout Japan. We also request that the government enact laws to protect non-smokers from passive smoking and revise relevant laws and regulations (e.g., the Industrial Safety and Health Act, notifications) to ensure the avoidance of passive smoking.

3. Education on the Harms of Smoking and Widespread Implementation of Smoking Cessation Treatment

3-1 Implementation of Campaigns and Education on the Harms of Smoking

Education on the harms of smoking may motivate smokers to quit smoking. All healthcare professionals and the national and local governments must provide opportunities for both smokers and non-smokers to learn about the harms of smoking and methods to quit smoking.

3-2 Development of Human Resources to Provide Smoking Cessation Treatment and Support for Smokers

Currently, only a limited number of healthcare professionals are capable of providing smoking cessation treatment and support for smokers to quit smoking. Specialists in smoking cessation treatment and patient support must be fostered.

3-3 Establishment of Smoking Cessation Treatment and Institutionalization to Promote the Widespread Use of Effective Methods for Such Treatment

More feasible methods should be developed and institutionalized to promote the widespread use of effective measures to quit smoking. Smoking cessation treatment should be covered by the NHI, and anti-smoking drugs should be listed on the NHI drug price list. Moreover, anti-smoking drugs that have been confirmed effective and safe in foreign countries should be approved and launched promptly in Japan.

Problems With Tobacco Gum

In October 2003, the world’s first chewing gum-type tobacco product was launched in the Tokyo metropolitan area. Tobacco gum is classified as a “tobacco product” (smokeless chewing
tobacco) in the Tobacco Industries Act. This product is a chewing gum containing tobacco leaf, and appears similar to conventional chewing gums (Table 9). This product was test-marketed in kiosks in stations of private railroads by emphasizing its “usefulness for smokers who cannot smoke” when smoking ban to prevent passive smoking extended to cover more areas according to the Health Promotion Law.

Chewing tobacco products have been demonstrated in many countries to increase the risk of development of oral cavity disorders including cancer and decrease the QOL significantly.

Anti-smoking civilian groups opposed the release of tobacco gum. In November 2003, the Japanese Society of Oral and Maxillofacial Surgeons and the Japanese Society for Oral Health jointly submitted a petition to the Ministry of Finance to request that the government release precautions for the product or withdraw approval of it. In 2004, the Office for Lifestyle-Related Disease Control, General Affairs Division, Health Service Bureau of the Ministry of Health, Labour, and Welfare (MHLW) published “Information on health-related issues of tobacco gum” on the MHLW website to describe its health-related risks and the risk of misuse of it by children. A member of the Diet asked questions concerning the risk of confusing tobacco gum with nicotine gum in smoking cessation treatment and the risk for underage use of such gum. In April 2004, the Japan Medical-Dental Association for Tobacco Control held an impromptu symposium entitled “Smokeless Tobacco or Health” to discuss the effects of smokeless tobacco products (Table 9), and issued a warning to the society that “if we make a bad judgement now, we will have serious problems in the future”.

In some foreign countries, products containing tobacco leaf such as tobacco candies and tobacco toothpastes are available. Tobacco gum is a dangerous step for nextgeneration tobacco products. The WHO recommended that prohibition of promotion, advertising, and labeling of nicotine-containing products be promptly performed.

### 4. Implementation of Social Systems and Policies to Promote a Smoke-Free Society

#### 4-1 Solve Problems Concerning Tobacco Price, Distribution, Advertisements, and New Tobacco Products

The WHO FCTC requests strict regulation of the price, distribution, and advertisement of tobacco products. We request that the government implement laws and regulations conforming to the WHO FCTC.

#### 4-2 Establish Government and Private Organizations Dedicated to Smoking-Related Problems

There are no national, public or private organizations dedicated to tobacco control in Japan, and there are no specialists dedicated to smoking-related problems, which may delay implementation of measures to promote smoke-free society. We strongly request the government to establish an administrative organization which can dedicate to tobacco control and promote tobacco control measures actively and include medical professionals in it.

#### 4-3 Establish an Organization for Continuous Research on Smoking-Related Problems

Japan urgently needs to perform long-term epidemiological studies, large-scale interventional studies of effective smoking cessation procedures, long-term investigations of the efficacy of educational programs to prevent underage smoking, interventional studies on smoking cessation support for women and adolescents, and studies based on comparisons of policies between Japan and other countries.

### References

10. World Health Organization. WHO Framework Convention on Tobacco

<table>
<thead>
<tr>
<th>Table 9. Risks of Tobacco Gum Hardly Distinguishable From Those of Conventional Chewing Gums That Have Been Pointed Out by Specialists</th>
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<tbody>
<tr>
<td>1. The biggest problem is a possible increase in underage tobacco use.</td>
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<td>2. Tobacco gum may increase the development of nicotine dependence in adolescents.</td>
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<td>3. Nicotine intake is not noticeable by others.</td>
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<td>4. Tobacco gum may be confused with nicotine gum used in smoking cessation treatment.</td>
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<td>5. Smokeless tobacco products may be misunderstood as a safe product.</td>
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<td>6. Tobacco gum may decrease the motivation of smokers who have been motivated to quit as a result of the limitation for smoking areas and anti-smoking education, and may delay the initiation for smoking cessation.</td>
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<td>7. Epidemiological data are wrongly considered to suggest that smokeless tobacco products decrease the incidence of lung cancer.</td>
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68. Christen AG, McDonald JL, Christen JA. The impact of tobacco use and cessation on normal malignant and pre-cancerous oral and dental disease. Indianapolis; Indian University School of Dentistry, 1991; 1 – 74.


