



# Position, Future, and Challenges of a Smoke-free Hospital in Taiwan

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## Abstract

**Introduction** Cigarette smoking is the most important preventable cause to public health in the world. More than 7 million people died from smoking-related diseases per year. Evidences revealed that stopping smoking is one of the most cost-effective medical interventions for those morbidity and mortality and smoke-free hospital is the most appropriate campus to provide comprehensive stop smoking services and smoke-free environment for both inpatients, outpatients, their families, community citizens and people in different workplaces.

**Discussion** Smoke-free hospitals in Taiwan provide comprehensive stop smoking services (smoking cessation clinic, personal consultation, smoking cessation group therapy, cessation medicine and smoking cessation service in workplace), not all hospitals provide every kind of smoking cessation services or medicines, but smoke-free hospitals provide a systemic and effective network, integrating schools, communities, workplace and army to make Smoke-free Taiwan a bio-ecosystem to fight against tobacco companies.

**Conclusion** The experience of Taiwan's smoke-free hospitals can help other developing countries that just started to regulate the use of tobacco and help smokers to quit. In the future, the usage of e-cigarette and heated tobacco product (ex: IQOS) will be a huge challenge in tobacco control.

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## Position of smoke-free hospital

According to the statistics of the Health Promotion Administration (HPA) of Taiwan, at least 27,000 deaths are caused by tobacco smoking every year. The direct and indirect costs (medical expenses) and productivity losses caused by smoking are up to NT\$109.6 billion (USD 3.5 billion) annually (1). Tobacco use is a major risk factor in public health and preventive medicine. Smoking is associated with almost all chronic diseases (cancer, cardiovascular disease, pneumonia, stroke, and diabetes) and the life expectancy of smokers is reduced by >10 years on average (2;3). Besides the serious harm to smokers, the damage from second- and third-hand smoke is also well-established and recognized (4). Moreover, tobacco harm to vulnerable populations, such as adolescents and youths, should not be neglected (5;6). Therefore, preventing harm from tobacco use is an urgent priority in the national public health policy.

The World Health Organization (WHO) has published six cost-effective measures

— the MPOWER approach — to assist countries worldwide in promoting the Framework Convention on Tobacco Control (FCTC). The MPOWER approach (M: monitor tobacco use and prevention policies; P: protect people from tobacco smoke; O: offer help to quit tobacco use; W: warn about the dangers of tobacco; E: enforce bans on tobacco advertising, promotion and sponsorship; R: Raise taxes on tobacco) has been considered the most effective method so far (7).

In Taiwan, besides the implementation of the new tobacco control laws in 2009, the HPA has been vigorously promoting smoke-free hospitals since 2002. Taiwan supports all the MPOWER measures, and as an example of the “O” part (offering cessation assistance), Taiwan has supported one of the most comprehensive cessation services with world-leading results (8). Thousands of hospitals have joined the program of smoke-free hospitals to provide cessation treatment, and the smoking population decreased by 1,260,000 since 2009, with the adult smoking rate decreasing from 21.9% in



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2008 to 14.5% in 2017 (9). Given the importance of smoke-free hospitals implementation, we will take the actual implementation of smoke-free hospitals in Taiwan as an example to introduce and discuss the practice of smoke-free hospitals.

### Smoke-free environment - Taiwan's smoke-free hospitals

According to Taiwan's tobacco control regulation, it is explicitly stipulated that all hospitals must be entirely smoke-free with complete ban on smoking, including e-cigarettes.

All shops in hospitals are not allowed to sell conventional cigarettes and e-cigarettes. Smoke free signs must be displayed in the hospitals, including the entrance areas. In addition, smoke-free environments should be constantly promoted through continuous broadcasting, video wall broadcasting, electronic display screen, health education leaflets, or hospital publications. Anyone who smokes in the hospital is subject to a penalty from NT\$2,000 to \$10,000 (USD 65 to 325), and the hospital will be fined from NT\$10,000 to \$50,000 (USD 325 to 1,625) for providing smoking-related items such as ashtray.

### Smoke-free hospitals in Taiwan provide comprehensive services for smoking cessation treatment

In addition to providing a good smoke-free environment, hospitals in Taiwan are classified into different levels based on their scale and training capacities. Hospitals can provide cessation treatments according to their own conditions. Currently, the smoking cessation treatment services provided by Taiwan's medical centers has been regarded as role model to learn from.

1. Cessation clinics: Physicians who have received training in smoking cessation therapy provide cessation services to patients who come to their clinics or would open a specialized cessation service. Each case of smoking cessation receives smoking cessation education or counseling at the least. Physicians provide smoking cessation-related medicines to smokers, as required, or to those who do not meet the standards for the HPA's medication subsidy application. Currently, Taiwan provides an 8-week treatment in out patient cessation clinics. Smokers are subsidized for two courses per year. The cost of cessation medicines if prescribed, is less than NT\$200 (USD 7) per visit with the subsidies.
2. Cessation consultation: Instructors trained to provide smoking cessation education can provide immediate and effective cessation counseling to smokers. Cessation education is the best option for those who do not meet the cessation medicines treatment requirements (ex: patients aged <18 years; FTND (The Fagerström Test for Nicotine Dependence) <4; smoking <10 cigarettes per day; or pregnant women) or do not temporarily want to use cessation medicines. The HPA intends to provide two consultation courses (up to eight consultation sessions) per year. Smoking education or consultation for smoking cessation is free of charge.
3. Smoking cessation medicines: Smoking cessation clinics in Taiwan's smoke-free hospital provide smoking cessation medicines. Drug profiles are as follows (not all smoking cessation medicines are provided by every hospital):
  - (1) Nicotine replacement therapy (NRT): Various nicotine-containing smoking cessation medicines including transdermal patch, gum, inhaler, nasal spray, lozenge, and microtab, are prescribed. Empirical medical studies have shown that NRT can increase the success rate of smoking cessation by nearly 200% (10).
  - (2) Non-nicotine medicine: There are two types of non-nicotine medicines, which must be prescribed by the physicians.
    - [1] Sustained-release bupropion SR: It is the only antidepressant drug recognized for its efficacy in smoking cessation, which is like that of a single type of nicotine (11); common side effects are insomnia and dry mouth.
    - [2] Varenicline: It is a partial agonist of nicotine  $\alpha 4\beta 2$  acetylcholine receptor. It binds to nicotine receptors in the brain, thereby reducing the pleasure of smoking and discourages smoking. It stimulates dopamine secretion, which alleviates nicotine craving and uncomfortable withdrawal symptoms, and is currently the mono-drug with the best smoking cessation effect (12).
4. Inpatient Smoking cessation: Regarding inpatient smokers, it is an excellent opportunity to quit smoking during their stay in the hospital. Taiwan's smoke-free hospitals initiated the second-generation cessation services in March 2012, providing smoking cessation services for inpatients



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and emergency patients. Generally, inpatient smokers are having more severe health conditions than outpatient smokers, therefore, often have stronger cessation motivation. Regardless of inpatient or outpatient smoking cessation, most smoke-free hospitals in Taiwan offer health education and drug treatment services for smoking cessation as well as follow-up phonecalls after services. The success rate of smoking cessation is improved in smokers for which smoking cessation start when they stay in the hospitals (13).

5. Smoking cessation group: Smoking cessation group is a behavioral therapy proven to be effective (14). However, it normally requires more time than outpatient clinics. Generally, smoking cessation classes last for 10–12 hours and are subdivided into 4–6 classes and, requires a higher level of cooperation. The contents of the classes include (1) harm of smoking for body; (2) the correct method of smoking cessation; (3) nutrition and exercise during smoking cessation (obesity prevention); (4) stress management during smoking cessation; (5) behavioral changes during smoking cessation; (6) prevention of smoking relapse and story sharing. In addition to these, the classes can be combined with drug treatment, which may lead to more effective results (15).
6. Smoking cessation in the workplace: After reporting to the local health authorities, the smoking cessation teams of smoke-free hospitals can provide smoking cessation health education and treatment (smoking cessation clinics and smoking cessation drug prescriptions) in workplaces so the workers who cannot take a leave are also able to use smoking cessation resources. Since this would involve the transformation of smoking cessation treatment location, close cooperation between medical units and workplaces is required to ensure smooth progress. Medicine prescriptions may be difficult to carry out; therefore, prior communication, planning of clinical space, medical records and registration of individual smokers, preparation of medicine, and internet connection between workplaces and hospital information system should be taken into account.

### Smoke-free hospitals are an important force for the promotion of smoke-free environments

Smoke-free hospitals are completely smoke-free areas and the main facilities for smoking cessation treatment and health education. Therefore, they play a very important role in generating network of smoke-free environments. Currently, many hospitals in Taiwan have good and frequent interactions with their neighboring communities. Medical institutions play an invisible role in health promotion. They continue to conduct lectures on smoking cessation or health promotion in communities and improve their awareness of hazards of tobacco products, which is an important part (W) of the MPOWER approach. People's awareness is more conducive to promote smoke-free environments and protect the health of themselves and their families. Such propaganda can be carried out in schools, workplaces, and even in the army and prisons.

With the implementation of the laws for tobacco prevention and control, smoking is completely banned at secondary vocational schools or other schools for younger students in Taiwan. Although colleges and universities can set up smoking areas in their campus, as consequences of the promotional campaign carried out by the HPA and the Ministry of Education, many colleges and universities have joined the smoke-free program. Smoke-free education and smoking cessation treatment can be integrated in the schools, which may lead to a better understanding of damages of smoking among teachers and students and favor the implementation of smoke-free campus. This concept has been gradually implemented in smoke-free workplaces, army, and prisons.

### Future and challenges of smoke-free hospitals

The smoke-free concept has extended from hospitals in Taiwan to other places outside the hospitals such as the workplaces, communities, military, and prisons. This concept has been integrated into international medical care, leading to the implementation of smoking cessation services in many countries. Currently, 180 countries have signed the WHO FCTC. In many developing countries, the overwhelming abuse of tobacco may be caused by the lack of comprehensive regulations or laws on tobacco control or awareness of damages of tobacco products. Meanwhile, health care



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resources in developing countries are often severely limited or inadequate. Therefore, public health and preventive medicine, including smoking cessation, vaccination, and infectious diseases prevention, will be the most effective strategy; thus, it is worth vigorously promoting.

Future challenges for smoke-free hospitals include the following: (1) The lack of regulations of new tobacco-related products such as e-cigarettes in Taiwan. Although e-cigarettes are not legal in Taiwan, there are many e-cigarette vendors. According to a recent report, although e-cigarettes can help quit smoking somehow (16;17), new problems such as e-cigarette addiction could occur in a near future. Moreover, e-cigarettes are not completely safe, they contain heavy metals, volatile substances, and even carcinogens, in addition to the risk of explosion. However, for teenagers who do not receive effective smoking cessation medicines, the appearances and different flavors of e-cigarettes are extremely attractive (2). Tobacco products in Taiwan are very cheap, which cannot create necessary economic pressure to smokers (3). Finally, many hospitals are reluctant to invest in full-time staff as the subsidies to hospitals for smoking cessation treatment are low. The incoherent implementation and execution of quality improvement of smoking cessation program has caused the outflow of talents every year, which will be a big challenge for Taiwan's smoke-free hospitals.

### Conclusion

Taiwan's smoke-free hospitals offer comprehensive tobacco cessation treatments. According to the MPOWER approach proposed by WHO, the scope of smoke-free hospitals should include monitoring of smoking prevalence (national or hospital base); implementation and promotion of smoke-free environment and policies to protect people from second-hand smoke; radio announcements and educational campaigns of damages of smoking; total ban on tobacco advertising, promotion, and sponsorship, along with the selling of all tobacco products. Therefore, the role of smoke-free hospitals in tobacco control is crucial. Although there are many challenges, these will be overcome one by one, ultimately Taiwan's smoke-free hospitals will become a global role model.

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