Health Promotion Board

Treating Tobacco Use and Dependence

HPB-MOH Clinical Practice Guidelines 1/2013

Academy of Medicine, Singapore

College of Family Physicians, Singapore

Ministry of Health, Singapore

Singapore Armed Forces Medical Corps

Pharmaceutical Society of Singapore

Singapore Dental Association

Singapore Medical Association

Singapore Nursing Association

Singapore Psychological Society

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Levels of evidence and grades of recommendation

Levels of evidence

Level	Type of Evidence
1^{++}	High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias.
1^{+}	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.
1^{-}	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias.
2^{++}	High quality systematic reviews of case control or cohort studies. High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
2^{+}	Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.
2^{-}	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal.
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

Grades of recommendation

Grade	Recommendation
A	At least one meta-analysis, systematic review of RCTs, or RCT rated as 1^{++} and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1^{+}, directly applicable to the target population, and demonstrating overall consistency of results.
B	A body of evidence including studies rated as 2^{++}, directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1^{++} or 1^{+}
C	A body of evidence including studies rated as 2^{+}, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2^{++}
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2^{+}
GPP (Good Practice Points)	Recommended best practice based on the clinical experience of the guideline development group.

CLINICAL PRACTICE GUIDELINES

Treating Tobacco Use and Dependence

HPB-MOH Clinical Practice Guidelines 1/2013

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Statement of Intent

These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.

The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case. These guidelines should neither be construed as including all proper methods of care, nor exclude other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient, in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

Contents

Foreword

Globally, the use of tobacco continues to cause significant harm to human health and is a leading cause of preventable death. Tobacco use increases the risk of diseases such as lung cancer, chronic obstructive airway disease and cardiovascular disease, which are key contributors to the burden of disease in Singapore.

Since the 1970s, Singapore has been active in combating tobacco use and has implemented policies on tobacco control as part of the National Tobacco Control Programme. In our latest national health survey in 2010, we achieved a smoking prevalence of 14.3% – one of the world's lowest. This is a testament to our efforts and strategies towards tobacco control.

In our continuing battle against tobacco use, health professionals play a unique role in encouraging Singaporeans to live a smoke-free lifestyle. These revised guidelines aim to equip health professionals with current scientific evidence and knowledge on interventions to help smokers quit tobacco use. I hope these guidelines will assist all health professionals to deliver effective interventions to help tobacco users become tobacco-free.

PROFESSOR K SATKU
DIRECTOR OF MEDICAL SERVICES

Foreword

Over the years, the Health Promotion Board (HPB) has established comprehensive tobacco control measures together with the Ministry of Health to promote smoke-free lifestyle among Singaporeans. The multi-pronged strategy consists of four main areas, namely taxation and legislation, public education, collaborative partnerships and capacity building, and provision of smoking cessation services.

The development of Clinical Practice Guidelines (CPG) is a key strategy introduced to build the capacity of health professionals to guide their practice. The first CPG on smoking cessation was published in 2002 and the current CPG updates the evidence and recommendations for non-pharmacological and pharmacological interventions. It also focuses on specific populations that may require additional considerations (for example, pre-operative patients, adolescents, and pregnant women).

A panel of health experts was convened to develop this CPG and I would like to take this opportunity to thank the CPG workgroup for their valuable contribution. In addition to medical doctors, these guidelines were produced with allied health professionals like pharmacists, nurses, and counsellors in mind. We hope that the guidelines will prove useful for all in their daily practice.

MR ZEE YOONG KANG
CEO, HEALTH PROMOTION BOARD

Executive Summary

Treating tobacco use and dependence is an important public health goal that will improve the quality of care and the health of all Singaporeans. The primary goal of the clinical practice guidelines is to reduce the prevalence of tobacco use and dependence through cessation treatments.

There is strong evidence to show that tobacco use causes many chronic diseases such as ischaemic heart disease, stroke, multiple cancers, respiratory diseases and complications during pregnancy, that affect the population and the health delivery system.

This updated Clinical Practice Guidelines on Treating Tobacco Use and Dependence is developed to act as a resource and guide for all health professionals to identify and screen tobacco users, to deliver evidence-based tobacco use cessation treatments for patients and specific population groups who use tobacco. Specific populations include hospitalised and pre-operative patients, adolescents, pregnant women, and patients with psychiatric disorders, cardiovascular diseases or alcohol abuse disorder. The guidelines are developed based on comprehensive literature reviews on recent evidence on tobacco use and dependence treatments.

A suggested framework for treating tobacco use and dependence has also been developed to provide a simple step-by-step approach that all health professionals can use. The important message to every health professional is to make treating tobacco use and dependence a priority during the patient's visit. It is important that you ask your patient two key questions:

a) ***"Do you smoke?"*** b) ***"Do you want to quit?"*** – followed by the use of the recommendations as listed in the various sections of the guidelines.

Key Guideline Recommendations

Details of recommendations can be found in the main text at the pages indicated.

Non-pharmacological interventions

A Different forms of person-to-person behavioural support including individual, group and telephone support may be used as interventions to treat tobacco use and dependence. ***(pg 20)***

Grade A, Level 1+

A If resources are available, telephone support provided separately or as part of tobacco use and cessation intervention, should be offered to smokers undergoing a quit attempt. ***(pg 20)***

Grade A, Level 1+

A Where feasible, health professionals should provide multiple behavioural support sessions to treat tobacco use and dependence; with each session lasting more than 10 minutes. ***(pg 21)***

Grade A, Level 1+

B Behavioural interventions such as motivational interviewing or cognitive behavioural therapy may be used to help tobacco users quit. ***(pg 23)***

Grade B, Level 2++

B Technologies such as individual-tailored web-based interventions, or motivational interviewing mobile phone text messages may be considered for tobacco users attempting to quit. ***(pg 24)***

Grade B, Level 2+

A Acupuncture or hypnotherapy is not recommended routinely for reducing tobacco use and dependence. ***(pg 25)***

Grade A, Level 1++

A Whenever possible, both behavioural support and medication should be provided to tobacco users who have the intention to quit tobacco use. ***(pg 26)***

Grade A, Level 1++

Pharmacotherapy interventions

A All tobacco users who are trying to quit should be offered both behavioural support and medication unless there are contraindications or insufficient evidence of effectiveness in specific populations (i.e. pregnant women and adolescents). ***(pg 27)***

Grade A, Level 1+

B High-dose nicotine replacement may be considered for tobacco users with persistent cravings and withdrawal symptoms. ***(pg 28)***

Grade B, Level 2++

A Eight to twelve weeks of Nicotine Replacement Therapy (NRT) is recommended for most tobacco users undergoing a tobacco use quit attempt. ***(pg 29)***

Grade A, Level 1+

A Both bupropion SR and varenicline may be used in conjunction with behavioural support for patients attempting to quit. ***(pg 30)***

Grade A, Level 1++

A Nicotine patches may be combined with another form of NRT or bupropion SR to increase tobacco use abstinence. ***(pg 31)***

Grade A, Level 1+

C E-cigarettes should not be used or prescribed as smoking cessation aids. ***(pg 32)***

Grade C, Level 3

Specific Populations: Hospitalised and pre-operative patients

A Where resources are available, behavioural support should be offered by a trained advisor for tobacco use and dependence to all hospitalised patients who are tobacco users. ***(pg 34)***

Grade A, Level 1++

B NRT should be considered for hospitalised patients who are tobacco users and attempting to quit. ***(pg 34)***

Grade B, Level 1+

A If resources are available, intensive behavioural support interventions for tobacco use and dependence, including the use of NRTs, should be offered to patients over a period of 4 to 8 weeks prior to surgery. ***(pg 35)***

Grade A, Level 1+

Specific Populations: Adolescents

A All health professionals should provide brief but tailored advice on quitting tobacco use to adolescents who use tobacco. ***(pg 36)***

Grade A, Level 1+

A Pharmacotherapy, including the use of NRT, should not be used routinely in adolescent tobacco users attempting to quit. ***(pg 36)***

Grade A, Level 1++

Specific Populations: Pregnant women

B Pregnant women who use tobacco should be offered person-to-person behavioural support intervention as the first-line approach to treat tobacco use and dependence. ***(pg 38)***

Grade B, Level 1+

A Pharmacotherapy interventions should not be routinely used for pregnant women attempting to quit. ***(pg 38)***

Grade A, Level 1+

Specific Populations: Patients with psychiatric disorders

GPP NRTs should be used as the first-line treatment for persons with psychiatric disorders. ***(pg 39)***

GPP

GPP Psychiatric patients who are undergoing a quit attempt need to be monitored for adverse effects because of significant interactions between nicotine, pharmacotherapy for smoking cessation and common psychiatric drugs. ***(pg 39)***

GPP

Specific Populations: Patients with cardiovascular disease

A In patients with a recent acute coronary syndrome, NRT may be started just before hospital discharge to assist tobacco users attempting to quit. ***(pg 41)***

Grade A, Level 1+

A Varenicline or bupropion SR may also be used, in combination with behavioural interventions, for cardiovascular disease patients who use tobacco. ***(pg 41)***

Grade A, Level 1+

Specific Populations: Patients with co-morbid alcohol abuse

B All alcohol dependent patients who are also tobacco users, including those undergoing alcohol addiction treatment programmes, should be offered treatment for tobacco use and dependence. ***(pg 42)***

Grade B, Level 2+

1 Introduction

These Clinical Practice Guidelines on Treating Tobacco Use and Dependence are an update of the Smoking Cessation Guidelines developed by the Ministry of Health in 2002. The revised guidelines provide updated evidence-based recommendations to support the effectiveness of interventions to treat tobacco use and dependence. Tobacco dependence is a chronic condition that requires repeated interventions and multiple attempts to quit.

1.1 Objectives of guidelines

The aim of these guidelines is to assist all health professionals to identify and assess the tobacco use status of every patient and to deliver evidence-based effective tobacco use and dependence treatments.

1.2 Target users

The guidelines are intended for all health professionals, including doctors, dentists, psychologists, pharmacists, dieticians, social workers, occupational therapists, physiotherapists and nurses to assist them in their tobacco use cessation initiatives.

1.3 Emerging trends of tobacco use

1.3.1 Global trends

Tobacco use continues to be the leading global cause of preventable death and is a major public health threat to human health. The World Health Organization estimates that about 5 million people die prematurely each year from tobacco-related diseases.

If the current trend continues, by the year 2030 tobacco use will kill more than 8 million people worldwide each year; with 80% of these premature deaths occurring in low- and middle-income countries. By the end of the century, tobacco will kill a billion people or more unless urgent action is taken.[5]

Tobacco smokers are not only putting themselves at risk but also 1.8 billion non-smokers worldwide. In 2004, it was estimated that 40% of children, 33% of male and 35% of female non-smokers worldwide were exposed to environmental tobacco smoke (ETS).[6]

1.3.2 Smoking prevalence in Singapore

The prevalence rate of daily cigarette smoking among Singaporeans has increased from 12.6% in 2004 to 14.3% in 2010.[7] In 2010, the smoking prevalence was about 6 times higher among males (24.7%) compared to females (4.2%).[7] When compared across the ethnic groups, the proportion of smokers was highest among the Malays (26.5%), followed by the Chinese (12.8%) and Indians (10.1%). Smoking was also more prevalent among adults aged 18 to 29 years (16.3%) and adults aged 30 to 39 years (16.4%) compared to other age groups (11.4% – 14.5%).

Between 2004 and 2010 the smoking prevalence rate among the ethnic populations also increased. Among the Malays, smoking prevalence increased from 18.6% in 2004 to 26.5% in 2010. The proportion of smokers aged 18 to 29 years also rose from 18.2% to 25.3% among males, and from 6.7% to 7.3% among females.

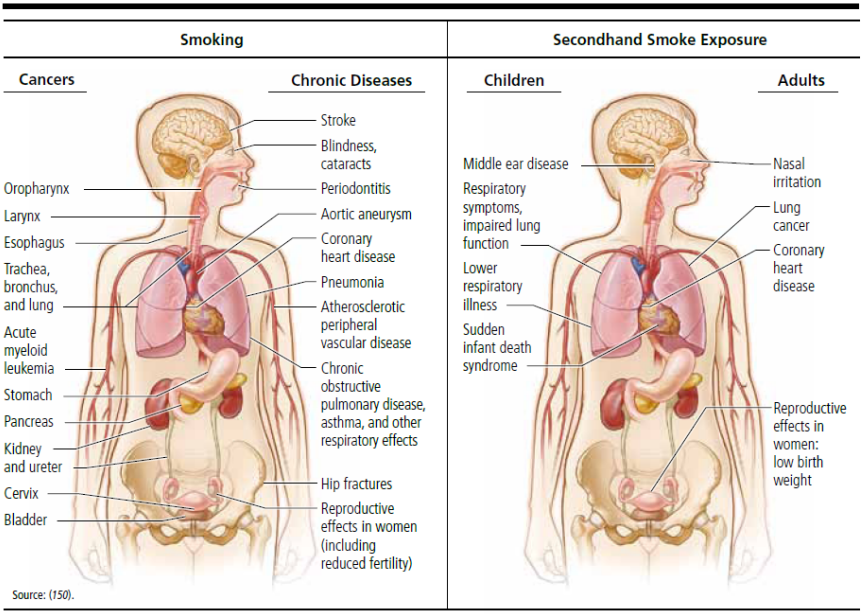
Among students, 6% of secondary 1 to 4 students smoked at least 1 day in the past 30 days.[8] These students first experimented with cigarettes when they were 13 years old. Social influencers play a part in an adolescent's uptake of smoking, with statistics clearly indicating that adolescents were more likely to pick up smoking if they had a parent, sibling or friend who smoked.

1.4 Harmful effects of tobacco

Tobacco use is a major risk factor for many diseases and is also the number one preventable cause of death in the world.[9] On average, a smoker dies 14 years prematurely due to tobacco-related diseases compared to a non-smoker.[10]

The harmful effects of tobacco use are well documented in numerous studies.[11-12] Tobacco use harms almost every organ in the human body as shown in Figure 1.

Figure 1: Harmful effects of tobacco use



WHO Report on the Global Tobacco Epidemic, 2011: Warning about the dangers of tobacco, World Health Organisation. Adapted with permission from: http://whqlibdoc.who.int/publications/2011/9789240687813_eng.pdf. Accessed on 1 November 2011.

1.5 Harmful effects of second-hand tobacco smoke

Second-hand tobacco smoke, also known as environmental tobacco smoke (ETS), is a combination of 'sidestream' smoke (the smoke that is given out by the burning of tobacco product) and 'mainstream' smoke (the smoke exhaled by the smoker). It is also the tobacco smoke that fills the air in restaurants, workplaces, bars, cars, homes and other enclosed spaces when tobacco users burn tobacco products such as cigarettes, cigars, bidis and shisha/waterpipes.[13]

There are more than 4000 chemicals in tobacco smoke, of which at least 250 are known to be harmful and more than 60 are known to cause cancer. There is no safe level of exposure to second-hand tobacco smoke.[12]

In 2004, approximately 603,000 deaths were attributed to second-hand tobacco smoke worldwide. Globally, exposure to second-hand tobacco smoke has been estimated to have caused 379,000 deaths from ischaemic heart disease, 165,000 from lower respiratory infections, 36,900 from asthma, and 21,400 from lung cancer. Forty-seven percent of deaths from second-hand tobacco smoke occurred in women, 28% in children, and 26% in men.[6] It was also estimated that living with a tobacco user increases the non-smokers' risk of developing lung cancer by 20% to 30%.[14]

1.6 Third-hand tobacco smoke

Third-hand smoke first appeared in medical literature in 2009 and it refers to residual tobacco smoke that remains on indoor surfaces after the cigarette has been extinguished.[15] This residue can react with common indoor air to produce dangerous cancer-causing carcinogens. It includes ultrafine chemical particles and volatile organic compounds, some of which are known to be toxic. Absorption of these particles could either occur through respiration, ingestion or through the skin.

Third-hand smoke is of concern particularly among young children living in tobacco-using households.

Although there appears to be an increasing interest and research on this, current evidence on its effects on health is still not well documented.[16]

1.7 Harmful effects of other forms of tobacco products

All forms of tobacco are harmful and addictive. There is no safe tobacco product. Other forms of tobacco products include smokeless tobacco (also called chewing tobacco, snuff), pipes, cigars, rolled tobacco, shisha/waterpipes, bidis and others.

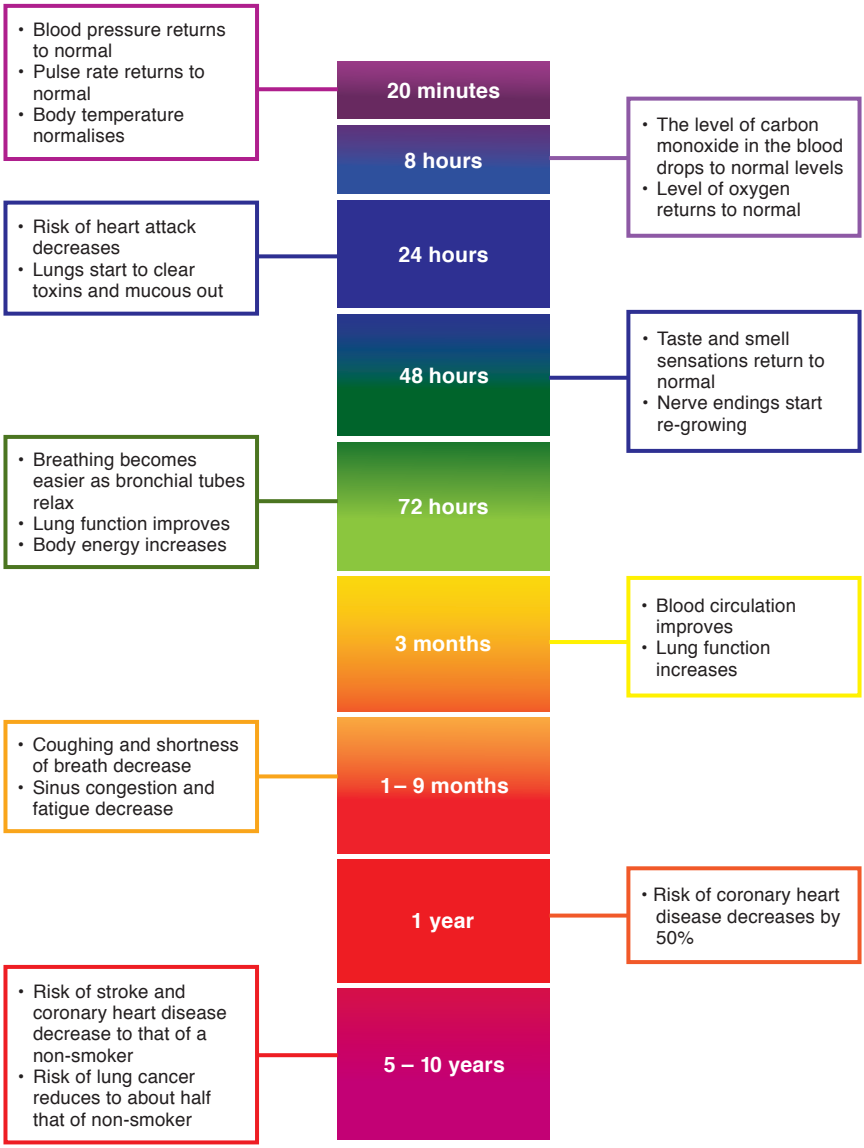
Cigar users are at risk of cancers of the lung, oral cavity, larynx and oesophagus. Heavy cigar smokers who inhale deeply are also at increased risk of coronary heart disease and chronic obstructive pulmonary disease.[12,17] Similarly smokers who smoke pipes are at higher risks of coronary heart disease and cerebrovascular disease when compared to non-smokers.[12] Studies also showed that shisha/waterpipes contain similar harmful chemicals as cigarettes and are as addictive as cigarettes.[18-22]

The use of other forms of tobacco products has become more prevalent especially among the adolescents globally.[23] In Singapore, among secondary 1 to 4 students who reported smoking at least 1 day in the past 30 days, 28.8% indicated using other forms of tobacco products such as shisha/waterpipes, chewing tobacco, bidis and others.[8] This will be an area of concern if the prevalence of using other forms of tobacco product increases.

1.8 Benefits of quitting

Quitting tobacco use has major and immediate health benefits for both men and women of all ages.[11, 24-25] It is also well established through numerous scientific studies that quitting tobacco use improves health and quality of life almost immediately. The benefits can start after 20 minutes of quitting tobacco use (see Figure 2).

Figure 2: Health benefits of quitting tobacco use



Adapted from Health Promotion Board: ***http://www.hpb.gov.sg/hpb/default.asp?pg_id=2564***

The benefits of quitting tobacco also apply to those who quit at an older age. For example, a healthy man aged 60 to 64 years who smokes a pack of cigarettes or more a day reduces his risk of dying from tobacco-related diseases by 10% for the next 15 years if he quits tobacco use. After 10 years of abstinence from tobacco, his risk of lung cancer is reduced by about 30% to 50%. This risk continues to decline with further abstinence from tobacco use.[25]

For patients with pre-existing medical conditions (e.g. ischaemic heart disease), quitting tobacco use is associated with a substantial reduction in risk of mortality. The risk is reduced by approximately 36% which is much greater compared with other secondary preventive interventions such as lowering cholesterol which has received greater attention in recent years.[26]

Furthermore, pregnant women who quit tobacco use before the second trimester of pregnancy can reduce their risk of having a low birth weight baby to that of a woman who has never smoked.[25] Stopping smoking also slows the rate of loss of lung capacity in chronic airways disease.

2 Suggested Framework for Treating Tobacco Use and Dependence

A framework has been developed as part of the guidelines to provide all health professionals with a systematic approach for treating tobacco use and dependence. Tobacco use is a chronic condition that often requires repeated cessation interventions in different forms. There are effective treatments for tobacco use and dependence that can significantly increase rates of long-term abstinence.[4]

Considerable progress has been made in the treatment for tobacco dependence, both in behavioural and pharmacological treatment interventions. Behavioural support and counselling remains the mainstay of treatment and may be effective alone.[27] However, many patients require additional pharmacotherapy to ameliorate physical withdrawal symptoms. The highest abstinence rates are usually achieved with a combination of behavioural support and medications.

Tobacco use and dependence treatment interventions can be carried out at 3 levels. Whether the health professional is able to carry out interventions at all the 3 levels would depend on the amount of time available and the competency level of the health professional.

2.1 Suggested framework for treating tobacco use and dependence comprises 3 intervention levels

Level 1:	The ABC Approach (Basic Level Intervention)
Level 2:	The 5 As Approach (Intermediate Level Intervention)
Level 3:	Intensive Behavioural Support (Advanced Level Intervention)

2.2 Level 1: The ABC Approach (Basic Level Intervention)[28]

The ABC approach is a simple and easy-to-remember aid for busy health professionals such as general practitioners (GPs), polyclinic doctors, specialists and ward nurses who have only 1 to 3 minutes to initiate the subject of tobacco use cessation during their consultation sessions.

The aim of the ABC approach is to incorporate tobacco use cessation advice as a routine opportunistic first-line intervention when providing consultation to patients.

The simple steps to the ABC approach are as follows:

Ask and document status of tobacco use for every patient
Brief advice to stop tobacco use for every patient who uses tobacco regardless of intention to quit
Cessation support for every patient who expresses the intention to quit

Ask: Ask every patient about tobacco use and document tobacco use status for all

Example: ***"Do you smoke or use any other forms of tobacco?"***

For patients who smoke or have recently stopped using tobacco, the tobacco use status should be checked and updated on a regular basis. Systems should be put in place to ensure tobacco use status is documented at each visit.

Patients who have never used tobacco or have not used for many years need not be asked repeatedly.

Brief advice: Provide personalised advice to every patient who uses tobacco regardless of intention to quit

Example: ***"You may know the risks involved in using tobacco. As your healthcare provider, I want you to know that stopping tobacco use is the most important thing you can do to protect your health, especially since you have this medical condition."***

Brief advice appears to work by triggering a quit attempt. Advice can be strengthened by linking it to the smoker's existing tobacco-related medical condition. Document the advice that was given.

Cessation support: Ask if the patient is willing to quit and offer appropriate cessation support

- For tobacco users who are willing to quit:

Refer to specialised tobacco use cessation services (see Annex B)

- For tobacco users who are not willing to quit:

Ask for their reasons. Reinforce the advantages and acknowledge the disadvantages. Provide information on the tobacco use cessation services if they are agreeable (see Annex B).

Example:

"What are your reasons for not wanting to quit?"

"What are some reasons that might make you want to quit?"

"Although you have shared reasons not to quit, there are some reasons that make you think about quitting. If it's ok with you, I'd like to give you the list of cessation services available about where you can get help in case you change your mind."

2.3 Level 2: The 5 As Approach (Intermediate Level Intervention)

The 5 As approach (**A**sk, **A**dvise, **A**ssess, **A**ssist and **A**rrange) is an easy-to-implement intervention for health professionals in settings that allow them to spend a little more time on tobacco use cessation with their patients.[25]

This approach is recommended specially for health professionals such as GPs, nurse educators, case and care managers who can spend about 15 to 20 minutes to initiate assessment and cessation intervention with patients who use tobacco.

The 5 As approach comprises the following 5 steps:

Ask

Ask every patient about tobacco use and document tobacco use status for all.

(also see Section 2.2 Level 1: The ABC Approach: Ask)

Advise to Quit

Provide brief, firm, personalised advice to trigger a quit attempt. Advice can be strengthened by linking it to the smoker's existing tobacco-related medical condition. Document the advice that was given.

(also see Section 2.2 Level 1: The ABC Approach: Brief Advice)

Assess Willingness to Quit

Assess patient's readiness to change and determine the willingness to make a quit attempt.

Simply asking whether patients are willing to make a quit attempt will help offer the right kind of support:

- If patient is willing and ready to quit, set a quit date and provide cessation support to assist with quitting
- If patient is not willing to quit, continue to motivate them to quit.[4]

Assist in Quit Attempt

- For tobacco users who are willing and are ready to quit using tobacco:

  Discuss and refer patient to specialised tobacco use cessation services (see Annex B).

- For tobacco users who are not willing or not ready to quit:

  (1) Use motivational interviewing (MI) built around the 5 R's (**R**elevance, **R**isks, **R**ewards, **R**oadblocks and **R**epetition) to reinforce importance of quitting. There is evidence that MI is effective at increasing future quit attempts.[1-3] (For more information on MI, see Chapter 3)

  (2) Provide information on tobacco use cessation services so that they know where to seek help if they decide to quit (see Annex B).

- For tobacco users who have recently quit:

  Provide effective relapse prevention advice.

Arrange Follow Up

Regular follow up arrangements should be made to check on patients' progress in their attempts to quit.

2.4 Level 3: Intensive Behavioural Support (Advanced Level Intervention)

Intensive behavioural support is for tobacco users who agree to or want to quit tobacco use. This intervention is usually done by trained advisors who run specialised treatment services for tobacco use and dependence. They provide face-to-face individual or group support interventions. The duration for each session may range from 30 minutes to 1 hour (see Chapter 3).

Points to note for the Intensive Behavioural Approach:[4]

An assessment of the patient should determine whether the tobacco user is willing to make a quit attempt using intensive behavioural support.

Best tobacco use cessation results occur when different levels of intervention are provided by various health professionals.

There is evidence of a strong dose-response relationship between intensive behavioural support and quit rates. Where possible, multiple intensive behavioural support sessions should be provided with each session lasting more than 10 minutes.

Intensive behavioural support could either be carried out on an individual basis or in a group. Telephone support is also an effective method and can complement other treatments for tobacco use provided in a healthcare setting.

For better quit outcomes, intensive behavioural support should include two components when assisting tobacco users with quit attempts:

- Problem solving and coping skills
- Intra-treatment social support and encouragement (i.e. provide social support as part of the intervention)

Medication has shown to increase abstinence rates; hence its use should be encouraged for tobacco users as endorsed by recommendations in these guidelines.

3 Tobacco Use and Dependence Treatment Approaches: Non-pharmacological Interventions

Treatment for tobacco use and dependence can be facilitated by both non-pharmacological and pharmacotherapy interventions. The non-pharmacological approaches focus on improving self-confidence, increasing motivation, learning coping skills and overcoming withdrawal symptoms of tobacco users. Several scientific studies showed that self-efficacy to overcome tobacco use[29-30] was an important predictor of success.

In Singapore, health professionals (e.g. physicians, nurses, pharmacists, psychologists and trained advisors) provide tobacco use and dependence treatments. A systematic review confirmed that various health professionals achieved a similar level of success when delivering these interventions, regardless of their profession.[31]

3.1 Person-to-Person Behavioural Support

Person-to-person support (includes face-to-face individual support, group support, telephone support) used in tobacco use and dependence treatment has shown to help tobacco users quit. Any form of person-to-person behavioural support is effective and increases abstinence rates compared to minimal or no intervention.[4]

- **Individual Behavioural Support:** Individual behavioural support is the most commonly used method and many studies have found it effective in helping tobacco users quit.[32-34] A randomised controlled trial among 324 post-surgery smokers[35] found that intensive face-to-face behavioural support sessions of more than 10 minutes delivered by a trained advisor was about two times more likely to improve quit rates compared to less intensive behavioural support (15% vs. 8%).
- **Group Support:** Group support offers each individual with the learning opportunity and mutual support for tobacco use cessation. Studies that compared the effectiveness of group support, self-help interventions and individual behavioural support showed that programmes with group support interventions were more effective than those with self-help materials only.[36-37] However, there was insufficient evidence to compare the effectiveness of group support with individual behavioural support.[38-40]

- **Telephone Support:** Telephone support refers to tobacco interventions delivered via telephone by trained advisors, including call-back encounters (e.g. QuitLine). The services include recorded messages, counselling at the time of call, callback from a trained advisor and/or mailed materials.[41] The aim of telephone support is to enhance motivation, to teach coping and problem solving skills, and to strengthen self-efficacy.[42-43] It has been found that telephone support with multiple follow-up sessions increased the long-term abstinence rates.[44-45]

A Different forms of person-to-person behavioural support including individual, group and telephone support may be used as interventions to treat tobacco use and dependence.

Grade A, Level I^{+}

A If resources are available, telephone support provided separately or as part of tobacco use and cessation intervention, should be offered to smokers undergoing a quit attempt.

Grade A, Level I^{+}

3.2 Intensity of Behavioural Support

The intensity of behavioural support varies from a brief opportunistic contact to multiple sessions of psychological and behavioural interventions which could range from a few minutes to a few hours. Studies have demonstrated a dose-response relationship between the intensity of behavioural support and quit rates.[46-51]

A meta-analysis of 43 studies showed clear evidence that higher intensity behavioural support (> 10 minutes) significantly increased abstinence rate compared to low intensity behavioural support (< 3 minutes) (22.1% vs. 13.4%). Nonetheless, low intensity behavioural support remained more effective than having no support (e.g. self-help materials only) (10.9% abstinence rate).[31]

In addition, the authors also compared the number of behavioural support sessions and found that those with more than 8 sessions had the highest abstinence rates (24.7%), followed by 4 to 8 sessions (20.9%), and 2 to 3 sessions (16.3%).[31]

A recent systematic review of 38 trials conducted after year 2000 confirmed that increasing the intensity of behavioural support would likely increase quit rates by 10% to 15%.[52]

A Where feasible, health professionals should provide multiple behavioural support sessions to treat tobacco use and dependence; with each session lasting more than 10 minutes.

Grade A, Level 1+

3.3 Type of Behavioural Interventions

There are various types of behavioural interventions used to assist tobacco users to quit. Studies rarely use one particular type of behavioural intervention in isolation; many different types of interventions were often tailored to suit specific populations. Any form of behavioural intervention that provided support and encouragement was effective in assisting tobacco users to make changes in their health behaviour and practices.[53-55]

Cognitive behavior therapy (CBT) is a type of intervention that controls the psychological processes associated with the acquisition and maintenance of tobacco use that enables behaviour change (e.g. mood, feeling, cues, reinforcement).[56]

One randomised controlled trial[57] showed that a 12-week extended CBT with telephone support produced higher 7-day point prevalence abstinence rate at 20 weeks (45% vs. 29%). Another randomised controlled trial found that 1-hour sessions of CBT significantly increased quit rate compared to an advice-only control group at 6-month follow up (17.2% vs. 5.6%). These results were verified by breath carbon monoxide readings.[58]

Adopting CBT for a relapse prevention programme on skills-based training was also effective. There was a biologically verified 12-month continuous abstinence rate of 41.3% when compared with 34.1% (discussion group) and 33.3% (no treatment group).[59]

Motivational interviewing (MI) is another widely used technique to assist tobacco users in quitting by helping them explore and resolve their uncertainties about changing their behavior.[60] MI works in partnership with the tobacco user and avoids a confrontational approach. It has been effective when conducted by GPs and trained professional advisors.

MI has been used successfully to help individuals change their unhealthy behaviours such as drinking, drug use and HIV-risk behaviours.[61-62] Patients generally have high satisfaction with this approach.[63] A recent systematic review of randomised controlled trials among 9485 participants found that those who received MI were 1.45 times more likely to abstain from smoking compared to control group participants.[64]

GENERAL PRINCIPLES OF MOTIVATIONAL INTERVIEWING[60]

Principle 1: Express empathy

Acceptance facilitates change.
Skilful reflective listening is fundamental.
Ambivalence is normal.

E.g. Advisor: On the one hand, you want to stop smoking as it's affecting your stamina; on the other hand, you are afraid that you will not be able to cope with the stress of your job. It is certainly not easy to stop smoking.

Principle 2: Develop discrepancy

The tobacco user rather than the trained advisor should present the arguments for change.

Change is motivated by a perceived discrepancy between present behaviour and important personal goals and values.

E.g. Advisor: You mentioned that being a role model to your children is very important to you. How does smoking affect this?

Tobacco user: Hmm, I know I should stop smoking – I feel guilty when I smoke and I worry that they will also take up smoking when they grow older.

Principle 3: Roll with resistance

Avoid arguing for change.
Resistance is not directly opposed.
New perspectives are invited but not imposed.
The tobacco user is a primary resource in finding answers and solutions.
Resistance is a signal to respond differently.

E.g. Advisor: I can see that you are not ready to stop smoking right now. Although you are coughing a lot, you don't really see the need and this is certainly not the right time. So what I'm hearing you say is that you will stop smoking only when the time is right. When do you think that will be?

Principle 4: Support self-efficacy
A person's belief in the possibility of change is an important motivator. The tobacco user, not the trained advisor, is responsible for choosing and carrying out change.
The advisor's own belief in the person's ability to change becomes a self-fulfilling prophecy.

E.g. Advisor: You did stop smoking for 2 months last year and were able to deal with the withdrawal symptoms. So you're thinking that it might be possible to do so again during a less stressful period

Motivational Interviewing: Preparing People for Change. 2nd Edition, Miller WR and Rollnick S. 2002. ©Guilford Press. Reprinted with permission of The Guilford Press.

B Behavioural interventions such as motivational interviewing or cognitive behavioural therapy may be used to help tobacco users quit.

Grade B, Level 2++

3.4 Methods of Quitting Tobacco Use: Cold Turkey vs. Gradual Reduction

The cold turkey method is to stop tobacco use completely all at once and rely on will-power and determination to fight nicotine addiction.

Gradual reduction is to gradually reduce the number of cigarettes over time. Methods include smoking only half the cigarette, waiting an hour longer each day before lighting up the first cigarette or weekly reduction in number of cigarettes smoked per day.

Many studies showed that gradual reduction produced similar results to cold turkey and any difference in the effectiveness was small, regardless of whether the method was used alone[65-68] or in conjunction with pharmacotherapy.[69-71] For example, an Australian study among 110 participants followed up over 1 year found no significant difference in abstinence rates between smokers who used cold turkey and gradual reduction.[68]

3.5 Technological & Social Media Interventions

Given the high internet penetration rates in Singapore households (over 90%), web-based tobacco use cessation interventions have the potential to reach a large percentage of the population who use tobacco. With the extensive usage of mobile phones, it can also be a potential medium for delivering treatments on tobacco use and dependence.

Many studies have shown that technology-based interventions generally yielded positive results.[72-75] Short-term efficacy of web-based intervention was demonstrated when tobacco users who received an automated behavioural intervention for smoking cessation reported a significantly higher abstinence rate compared to the control group (12.3% vs. 5.0%).[75] Outcomes were even more promising when the information was personalised with frequent automated contacts.[76]

Text message intervention through mobile phones also generated short-term (6 weeks) positive results.[77-78] Tobacco users who received text messages with motivational content were twice as likely to quit compared to those who did not receive a motivational message (10.7% vs. 4.9%).[79]

Combining the use of web-based and mobile phone-based interventions allowed long-term efficacy of maintenance of up to 1 year.[72-73] After 12 months, tobacco users who received this combined technological intervention were 2 to 3 times more likely to abstain from smoking compared to the control group who received a self-help booklet only.[72-73]

B Technologies such as individual-tailored web-based interventions, or motivational interviewing mobile phone text messages may be considered for tobacco users attempting to quit.

Grade B, Level 2^{+}

3.6 Complementary and Alternative Therapies

Acupuncture and hypnotherapy are 2 alternative interventions that have been adopted to treat tobacco use and dependence. Acupuncture is the insertion of needles at defined pressure points in the body with the aim of reducing the effects of withdrawal symptoms.[80] Hypnotherapy has been used to help tobacco users quit by reducing their desire to use tobacco and to strengthen their will-power to quit. However, there is insufficient evidence to support acupuncture or hypnotherapy as an effective tobacco use and dependence intervention.

A single study reported that the combined intervention of acupuncture and education was more effective than combining sham acupuncture and education in tobacco use reduction (52% vs 31%) and tobacco use cessation (40% vs 22%) during an 18-month self-reported follow up.[81] However, other studies did not show any significant difference between acupuncture and sham acupuncture on tobacco use[80,82-83] nor as an adjunct to nicotine replacement therapy and behavioural support interventions.[84]

For hypnotherapy, a small study of 20 participants reported a significantly higher 12-month point prevalence quit rate for tobacco users who experienced hypnotherapy compared to the control group.[85] However, pooling the results across 5 trials with 363 participants found no difference in tobacco use abstinence rates at 6 months or longer follow-ups between hypnotherapy and a brief advice intervention.[85-89] Furthermore, a meta-analysis of 11 randomised controlled trials was unable to confirm that hypnotherapy was at least equivalent to behavioural support therapy.[90]

A Acupuncture or hypnotherapy is not recommended routinely for reducing tobacco use and dependence.

Grade A, Level 1^{++}

3.7 Combining Behavioural Support and Medication

Medication such as nicotine replacement therapies (NRTs),[91-92] bupropion SR[93-94] and varenicline,[95] when combined with behavioural support is effective in promoting tobacco use cessation. Intensive behavioural support alone yielded quit rates ranging from 12% to 19%.[96-97] Compared to the success rates achieved with behavioural treatment alone, the combination of bupropion SR (150mg) and minimal adjunctive support yielded substantial improvements in quit rates (24.4%) at 3-month follow up.[94]

In another randomised controlled trial among 1,286 tobacco users, the one-week point prevalence abstinence rate was significantly higher for tobacco users who received a combination of nicotine gum and behavioural support compared to those who received behavioural support only (17.4% vs. 11.9%).[98] Therefore, the combination of medication (pharmacotherapy) with behavioural support interventions is more effective in sustaining tobacco use abstinence.[99]

A Whenever possible, both behavioural support and medication should be provided to tobacco users who have the intention to quit tobacco use.

Grade A, Level 1^{++}

4 Tobacco Use and Dependence Treatment Approaches: Pharmacotherapy Interventions

Currently in Singapore, there are 6 first-line medications (4 nicotine and 2 non-nicotine) that have been approved for the treatment of tobacco dependence.[4,100] When combined with behavioural support interventions, these pharmacotherapies have shown to reliably increase long-term abstinence rates.[4,22,101] (see Table 1 on page 32 for the effectiveness of each medication).

- Bupropion SR
- Nicotine gum
- Nicotine inhaler
- Nicotine lozenge
- Nicotine patch
- Varenicline

Because of the multifactorial nature of tobacco dependence, behavioural support interventions remain the mainstay of therapy. Almost all trials evaluating the efficacy of medications have included counselling. Medications alone, without behavioural support, are only modestly effective in the short term and may lead to higher relapse rates when compared to behavioural support alone.[102] Hence, while medications are important in mitigating physical withdrawal symptoms, all smokers undergoing a quit attempt should be offered behavioural support interventions as well.

A All tobacco users who are trying to quit should be offered both behavioural support and medication unless there are contraindications or insufficient evidence of effectiveness in specific populations (i.e.pregnant women and adolescents).

Grade A, Level 1+

4.1 Types of Pharmacotherapy Treatments Available

4.1.1 Nicotine Replacement Therapy (NRT)

The aim of nicotine replacement therapy (NRT) is to deliver nicotine with the intent to replace the nicotine obtained from tobacco products. NRTs seek to reduce the severity of nicotine withdrawal symptoms whilst allowing the tobacco users to focus on the psychosocial aspects of quitting tobacco use.[103]

NRTs are safe and serious adverse effects are uncommon. The most commonly reported systemic adverse effects are sleep disturbance (insomnia and abnormal dreams), headache, nausea and/or vomiting, dizziness, gastrointestinal complaints and palpitations.[104]

In general, NRTs are effective treatments for tobacco dependence. The use of nicotine patch, nicotine gum and nicotine inhaler have shown to approximately double the long-term abstinence rates compared to controls receiving placebo treatment.[4,105-108]

There is a clear advantage in smokers who are highly dependent (smoke a first cigarette within 30 minutes of waking) using 4mg gum compared to 2mg gum.[108-110] One trial compared 4mg and 2mg gum for treating highly dependent smokers and the quit rates were significantly higher for 4mg gum than 2mg gum at 6 weeks, 1 year, and 2 years (60% vs 41%, 39% vs 16%, and 34% vs 16%) respectively.[110] The 4mg lozenge is recommended for use in highly dependent smokers (smoke a first cigarette within 30 minutes of waking).[111]

Although studies of higher-dose nicotine patch treatment have not consistently demonstrated increased tobacco abstinence rates compared with standard dose patch treatment (15mg/16hr or 21mg/24hr),[4,108] higher doses may be appropriate for patients with high nicotine dependence (smoking ≥30 cigarettes/day). Higher doses may also be considered for tobacco users relapsing because of persistent craving and withdrawal symptoms on a standard dose therapy.[112-113] If a high-dose approach is used, the initial dose of nicotine patch can be approximated by matching the patch dose to the number of cigarettes smoked per day.[114-115]

B High-dose nicotine replacement may be considered for tobacco users with persistent cravings and withdrawal symptoms.

Grade B, Level 2^{++}

4.1.2 Nicotine Assisted Reduction to Stop (NARS)

In some European countries, NRTs (gum, inhaler, lozenges) are licensed to assist tobacco users to reduce the number of cigarettes smoked before quitting. For tobacco users not ready to stop, nicotine assisted reduction to stop (NARS) refers to the use of NRT to help smokers reduce the number of cigarettes. This resulted in twice the number of smokers completely quitting at 6 months. Using NRT while smoking did not lead to serious health problems.[116]

Although NARS may not be suitable for all tobacco users, it may be a useful short-term intermediary approach for tobacco users who are not ready to quit immediately. As the health benefit gained from reducing the amount of tobacco use remains unclear, the best option is to quit tobacco use completely. The NARS approach should be used with the aim to achieve abstinence within 6 months. If a reduction of at least 50% of tobacco use (e.g. cigarettes smoked) is not achieved in the first 6 weeks, there is little efficacy of NARS on quitting tobacco use.[117]

4.1.3 Duration of NRT Use

In most countries where NRT is available, it has been approved for use for a duration of 6 to 12 months. Although relatively brief NRT treatments of 8 to 12 weeks may be adequate, occasionally tobacco users may benefit from treatments of longer durations to reduce the likelihood of relapse.[4,108,118]

A Eight to twelve weeks of nicotine replacement therapy (NRT) is recommended for most tobacco users undergoing a tobacco use quit attempt.

Grade A, Level 1+

4.2 Non-nicotine Pharmacotherapy

There are two first-line prescription-only medications that have been approved for tobacco use and dependence treatment. Both of these are oral medications.

4.2.1 Varenicline

Varenicline has been approved in over 80 countries for treatment of tobacco use and dependence. Varenicline is a partial nicotine agonist and may help with tobacco addiction by maintaining moderate levels of dopamine to counteract withdrawal symptoms and to reduce cravings. In addition, it is a nicotine antagonist, thus preventing the binding of actual nicotine from tobacco.

After 8 weeks of treatment, the continuous abstinence rate at 24 weeks was approximately tripled when compared with placebo.[119-120] Varenicline was also more effective than bupropion SR or transdermal NRT in adult tobacco users who are motivated to quit.[119-120] In addition, extending the duration of treatment to 6 months further improved the 1-year abstinence rates by preventing relapse.

4.2.2 Bupropion SR

Bupropion SR is an anti-depressant that works by blocking the effects of nicotine and by reducing the severity of withdrawal symptoms through dopaminergic and adrenergic pathways in the brain.[121]

A Cochrane review[122] with 36 trials (over 11,000 participants) found that tobacco users on bupropion SR were almost twice more likely to abstain from tobacco use compared with placebos. Quit rates were also higher among tobacco users administered with bupropion SR as opposed to the control group (17% vs. 7%). Bupropion SR is effective at increasing quit rates of 6 months or longer.

A Both bupropion SR and varenicline may be used in conjunction with behavioural support for patients attempting to quit.

Grade A, Level 1^{++}

4.3 Combined Pharmacotherapy Interventions

The following combination of pharmacotherapy interventions may be useful to increase abstinence rates especially among heavy smokers (≥20 sticks per day):

(1) Combination of different forms of NRTs,

(2) Combination of bupropion SR and NRT, or

(3) Combination of varenicline and NRT.

Many tobacco users, particularly heavy users, experience withdrawal symptoms despite being administered the maximum recommended doses of single medications. By combining medications, it provides an opportunity to increase abstinence rates and reduce withdrawal symptoms. The use of combination pharmacotherapy interventions has been proven to be as effective as or more effective than single medication interventions.[123]

4.3.1 Combined NRTs

Different forms of NRTs may be combined to treat tobacco use and dependence. A systematic review involving 7 studies with over 3,200 tobacco users using NRT to quit found that combining NRTs significantly increased long-term (≥6 months) abstinence rates compared with single NRT or no NRT.[108] Evidence indicated that it was beneficial to combine nicotine patch with an acute dosing type (e.g. gum, lozenge, inhaler) to allow ad-lib dosing compared to single therapy.[123-126] In addition, for tobacco users smoking more than 20 sticks a day, bupropion SR combined with nicotine patch[97] or lozenges[123] significantly increased the quit rates compared with NRT alone.

Combination therapy may be most useful for those tobacco users at highest risk of relapse,[127] e.g. heavy tobacco users, tobacco users who have multiple relapses or those with psychiatric co-morbidities.

A Nicotine patches may be combined with another form of NRT or bupropion SR to increase tobacco use abstinence.

Grade A, Level 1+

Table 1: Comparison of the effectiveness of various medications at ≥6 months compared to placebo

Medications	Odds ratio[#]	95% C.I.[#]
Bupropion SR	2.12	1.76 – 2.56
Nicotine gum (6 – 14 weeks)	1.65	1.37 – 2.01
Nicotine gum (>14 weeks)		
Nicotine inhaler	2.18	1.38 – 3.45
Nicotine nasal spray^	2.37	1.57 – 3.60
Nicotine patch (6 – 14 weeks)	1.88	1.60 – 2.22
Nicotine patch (>14 weeks)		
Varenicline (1mg/day)	2.55	1.99 – 3.24
Varenicline (2mg/day)		

^ Not available in Singapore

[#] Adapted from Pharmacotherapies for smoking cessation: a meta-analysis of randomized controlled trials 2008[22]

4.4 Other Nicotine Products (e.g. Electronic Nicotine Delivery System known as e-cigarettes)

New nicotine products (or tobacco substitutes) are being developed. One example is the e-cigarette which is a device that looks like a real cigarette and simulates the action of smoking. However, it does not burn or combust tobacco leaves, but utilises a replaceable cartridge containing nicotine, flavouring and additives. It is frequently marketed as an effective smoking cessation device as it claims to deliver "clean" nicotine, without any of the chemicals and tar found in normal cigarettes.

However, research into its long-term safety and efficacy is preliminary and largely lacking. So far, there has been no randomised controlled trial evaluating the e-cigarette as a smoking cessation aid. The World Health Organization (WHO) has stated that it does not support e-cigarettes as a legitimate form of therapy to help smokers quit, as the evidence available to date is insufficient to support the claim.

Such nicotine products have not been approved for use as cessation aids in Singapore and the import, sale and distribution of the e-cigarette is prohibited by law under the Tobacco (Control and Sale of Advertising) Act.

C E-cigarettes should not be used or prescribed as smoking cessation aids.

Grade C, Level 3

5 Treatment and Management of Specific Populations

A HOSPITALISED & PRE-OPERATIVE PATIENTS

5.1 Hospitalised Patients

As most hospitals in Singapore have smoke-free policies, a hospitalisation episode represents an opportunity for patients who use tobacco to experience a period of abstinence. In addition, if the hospitalisation is due to a condition related to tobacco use, the patient may be more receptive towards tobacco cessation advice, thus providing a "teachable" moment for the health professional.[128] Since hospitalised patients are forced to stop tobacco use temporarily, they may benefit from NRTs to cope with the withdrawal symptoms. This is regardless of whether the patient is ready to quit the habit.

Hospitalised patients offered routine tobacco cessation behavioural support are more likely to quit tobacco use compared to those receiving brief advice. In one meta-analysis of 33 studies, continuous 1-month behavioural support (telephone support) by a trained advisor increased the long-term quit rates by 65%.[128]

In another randomised controlled trial, intensive behavioural support and transdermal NRT increased 1-year abstinence rate when compared to minimal behavioural support alone (29% vs. 20%).[91]

Five trials studied the addition of NRT to intensive behavioural support.[91,129-132] When analysed collectively, NRT increased the likelihood of sustained abstinence, although the results did not reach statistical significance.[128] The results of these trials were consistent with the broader literature on the effect of NRT on abstinence rates.

There are no studies comparing pharmacotherapy with placebo alone, without behavioural support. There was one trial that compared the use of bupropion SR with placebo[133] but no statistically significant difference was found. To date, varenicline has not been systematically assessed among hospitalised patients. Nevertheless, given its efficacy in other settings, its expected effects are unlikely to differ.

A Where resources are available, behavioural support should be offered by a trained advisor for tobacco use and dependence to all hospitalised patients who are tobacco users.

Grade A, Level 1++

B NRT should be considered for hospitalised patients who are tobacco users and attempting to quit.

Grade B, Level 1+

5.2 Pre-operative Patients

Tobacco smoke has serious effects on cardiac and pulmonary functions. Nicotine increases blood pressure, pulse rate and systemic vascular resistance, thereby making the heart work harder. In addition, nicotine causes coronary vasoconstriction. Carbon monoxide displaces oxygen and can potentially reduce oxygen availability by 8% to 12%.[134] Tobacco smoke also reduces mucociliary function in the airways and increases mucus production. These effects lead to an accumulation of mucus in the airways, thus increasing the risk of pulmonary infections.[135] Furthermore, tobacco use also impairs wound healing after surgery[136] and increases the risk of anastomotic leakage post-colorectal surgery.[137]

Thus, patients who use tobacco and are undergoing elective surgery have an increased risk of post-operative complications including acute coronary syndromes, atelectasis and pneumonia. For example, a retrospective study found that tobacco users have a 3 to 6-fold increase in pulmonary complications.[138-139]

Increasingly, health professionals seek to mitigate such risks by providing pre-operative tobacco use and dependence interventions. As patients undergoing elective surgery may be motivated to reduce the risk of post-operative complications, they are likely to be more receptive to treatments for tobacco use and dependence. The hospital also provides a smoke-free environment to encourage abstinence from tobacco use.

The effectiveness of intensive weekly behavioural support 4 to 8 weeks prior to surgery was determined by the combined results of 5 randomised controlled trials. These patients were also offered NRT, self-help materials and additional telephone support as and when necessary. Results showed that with intensive behavioural support, abstinence rate increased by about ten-fold.[140] Furthermore, intensive behavioural support was able to sustain quit rates at 12-month follow-up.[141-142] For example, a study among 118 patients who had 4 weeks of weekly face-to-face behavioural support, together with the use of NRT prior to surgery, reported a 12-month abstinence rate of 39% compared to 2% in the control group.[142] Most of these behavioural support sessions were conducted by trained nurses or assistants. In contrast, a brief intervention of one face-to-face and/or telephone support session yielded substantially lower abstinence rates.

Additional benefits of pre-operative treatments for tobacco use and dependence included its effect on post-operative morbidity and mortality. Offering intensive pre-operative treatments for tobacco use and dependence reduced the incidence of post-operative complications (e.g. wound infection, re-operation, length-of-stay in intensive care unit).[141-142] For example, the post-operative complications were reduced by almost 3 times when patients received intensive behavioural support 4 to 8 weeks prior to a hip and knee replacement surgery (18% vs. 52%).[141] Brief support interventions for tobacco use and dependence, however, did not reduce post-operative complications.[143-144]

The optimal period for quitting tobacco use prior to surgery is uncertain. However, given that tobacco-related impairment of immune function may be reversed within 6 to 8 weeks of tobacco abstinence[138] and lung function may improve after 6 to 8 weeks of abstinence,[145] interventions starting 4 to 8 weeks prior to surgery may be reasonable. This is supported by the results of the randomised controlled trials discussed earlier.

A If resources are available, intensive behavioural support interventions for tobacco use and dependence, including the use of NRTs, should be offered to patients over a period of 4 to 8 weeks prior to surgery.

Grade A, Level 1+

B. ADOLESCENTS

Adolescence is the time when tobacco use is initiated and the transition from experimentation to some level of tobacco dependence occurs.[146] In Singapore, the average age of initiation for tobacco use is 16 years of age.[7]

The Student Health Survey 2009 findings showed that social influencers, either a parent, sibling or friend who smoked, played a part in an adolescent's uptake of smoking.[8] More than 50% of adolescent smokers had at least one parent who smoked. Encouraging parents to quit smoking by educating them on the harms of tobacco smoke exposure on their child(ren) is a potential tool that can address an adolescent's initiation of smoking and reduce tobacco-related health burdens on the smoker as well as his family members.[147]

Health professionals should use opportunistic interventions to explore the advantages and disadvantages of tobacco use and the benefits of stopping tobacco use to identify salient aspects of tobacco use on health with the adolescent tobacco user.[148-149] Adolescent tobacco users who were screened by their health professional reported significantly more quit attempts than those who were neither screened nor advised in a retrospective observational study.[150]

Another randomised controlled trial found that tobacco users aged 14 to 19 years who received one session of motivational interviewing reported higher 7-day abstinence rate at 6-month follow-up compared to those who received standardised brief advice (23% vs 3%).[148]

Although NRT is considered safe for use in adolescents who use tobacco, systematic reviews found that using pharmacological interventions to assist them in quitting did not have a significant effect on tobacco use abstinence rate.[151] However, health professionals may consider, on a case-by-case basis, the use of NRT in adolescents who exhibit significant physical withdrawal symptoms.

A All health professionals should provide brief but tailored advice on quitting tobacco use to adolescents who use tobacco.

Grade A, Level 1+

A Pharmacotherapy, including the use of NRT, should not be used routinely in adolescent tobacco users attempting to quit.

Grade A, Level 1++

C. PREGNANT WOMEN

Tobacco use during pregnancy is associated with specific risks to the pregnancy. It is well established that smoking during pregnancy increases the risk of ectopic pregnancy, pre-term premature rupture of membranes, placental complications, pre-term delivery and spontaneous miscarriage.[152] The foetal and infant risks of tobacco use during pregnancy are: low birth weight, sudden infant death syndrome, increase in childhood respiratory illnesses and possible cognitive deficits associated with learning and behavioural disorders.[4,153-156]

A systematic review confirmed that tobacco use interventions in pregnancy reduced the incidence of low birth weight and pre-term births, and an increase in the mean birth weight of 39g was reported in the treatment group.[157] Furthermore, there was evidence that quitting tobacco use, even in the late third trimester, led to improved pregnancy outcomes.[158-159]

During pregnancy, women have regular contact with their midwives/nurses, obstetricians or general practitioners for routine antenatal care. These health professionals are in a unique position to initiate quitting tobacco use and these women are more likely to quit during pregnancy than any other time in their lives.[160] Meta-analysis also showed that person-to-person behavioural interventions among pregnant women were more effective (quit rates of more than 80%) than brief advice to quit.[4]

Pharmacotherapy such as NRTs, bupropion SR and varenicline has not been sufficiently tested for efficacy and safety in pregnant women.

Evidence supporting the use of NRTs during pregnancy is generally lacking.[161-162] When pregnant women were randomly assigned to a combined NRT and behavioural intervention compared with behavioural intervention alone, no significant differences in abstinence rates were reported.[161] For example, a recent randomised controlled trial of 1050 pregnant women recruited between 12 to 24 weeks of gestation showed no significant improvement in cessation rates when NRT was added to behavioural cessation support compared to controls (9.4% vs 7.6%).[163] Importantly, the rates of adverse pregnancy and birth outcomes were similar in the two groups.

Both varenicline and bupropion SR also have very limited evidence on safety and efficacy for use during pregnancy. There are also product warnings mandated by the US Food and Drug Administration about the risk of psychiatric symptoms and suicidal tendencies associated with their use.[164]

Based on current evidence, the efficacy and safety of pharmacological aids for tobacco use and dependence treatment among pregnant women is not established. If it is to be considered for use amongst pregnant women who have failed behavioural cessation support, there must be a comprehensive discussion with the pregnant women regarding the potential benefits and risks of these medications.

B Pregnant women who use tobacco should be offered person-to-person behavioural support intervention as the first-line approach to treat tobacco use and dependence.

Grade B, Level 1+

A Pharmacotherapy interventions should not be routinely used for pregnant women attempting to quit.

Grade A, Level 1+

D. PATIENTS WITH PSYCHIATRIC DISORDERS

There have been many myths concerning tobacco use and dependence in psychiatric patients.

The common myths are:

- Psychiatric patients do not wish to quit smoking.
- Psychiatric patients experience deterioration in their condition if they quit smoking.
- Psychiatric patients are unable to quit smoking.
- It is difficult/impossible to implement a smoking ban in psychiatric units.

However, there is evidence to show that psychiatric patients who use tobacco do benefit from tobacco dependence interventions. For example, in one meta-analysis, the use of bupropion SR increased the odds of a 4-week abstinence by about three-fold.[165] In another randomised controlled trial, the use of nicotine patch plus lozenges increased the 6-month quit rate with an odds ratio of 2.34.[123]

The other major consideration is that nicotine is a potent enzyme inducer. Consequently, blood levels of certain psychiatric medications* may increase when patients stop using tobacco, and side effects such as sedation may develop. Nevertheless, the patient will respond to a lower dose of the psychiatric drug.

Finally, due to reported incidences of neuropsychiatric reactions, including exacerbated depression and suicidal tendencies with both bupropion SR and varenicline, NRT is preferred in psychiatric patients. If bupropion SR or varenicline is used, close monitoring is highly recommended.

GPP NRTs should be used as the first-line treatment for persons with psychiatric disorders.

GPP

GPP Psychiatric patients who are undergoing a quit attempt need to be monitored for adverse effects because of significant interactions between nicotine, pharmacotherapy for smoking cessation and common psychiatric drugs.

GPP

**Some examples are those metabolised by the CYP 1A2 microsomal system, including clozapine, fluphenazine, haloperidol, oxazepam, desmethyldiazepam, clomipramine, nortriptyline, imipramine, desipramine, doxepin, and propranolol.*

E. PATIENTS WITH CARDIOVASCULAR DISEASE

Tobacco use is strongly associated with increased risk of cardiovascular disease.[166] Tobacco smoke increases the risks of acute myocardial infarction, sudden cardiac death, stroke, aortic aneurysm and peripheral vascular disease.[166] Tobacco use has demonstrated to be multiplicative when it interacts with other cardiovascular risk factors, such as hypertension, resulting in a higher risk as opposed to an additive effect.[167]

Interventions for tobacco use and dependence have been shown to greatly reduce these adverse cardiovascular outcomes.[168] For example, in a randomised controlled trial of 209 patients admitted to the critical care unit with acute coronary syndrome or decompensated heart failure, intensive behavioural interventions initiated just before hospital discharge reduced 2-year mortality rate by 77%, when compared to routine care.[168]

Specific Concerns Regarding Pharmacotherapy for Patients with Ischaemic Heart Disease

Nicotine has several adverse effects on the cardiovascular system. These include increasing blood pressure and heart rate, coronary vasoconstriction and platelet activation, leading to a pro-thrombotic state.[169] Hence, there is concern that using NRTs may increase the risk of adverse cardiovascular events in patients with ischaemic heart disease.

However, many randomised controlled trials have demonstrated the safety of NRTs in patients with cardiovascular disease,[104,170-171] with meta-analyses showing no increase in myocardial infarction or death with the use of NRT.[172] In the trial of patients admitted to the critical care unit, 75% of them received NRT.[168]

Both bupropion SR and varenicline are also effective at increasing abstinence rates among tobacco users with ischaemic heart disease.[133,173] For example, in a randomised controlled trial of 700 patients with ischaemic heart disease, those who received varenicline increased the 4-week continuous quit rate by more than three times when compared to placebo (47% vs. 14%).[173] However, a recent meta-analysis[174] found a very small increase in non-fatal myocardial infarction and the need for coronary re-vascularization in the varenicline arm. Nevertheless, the number of events is too low for any conclusion to be made (e.g. 7 events vs. 3 events for non-fatal myocardial infarction).

As tobacco use is a major risk factor for cardiovascular disease and there are substantial benefits to patients who successfully quit tobacco use, the risk of increased cardiovascular events, in comparison to the efficacy of varenicline, is small.[173]

A In patients with a recent acute coronary syndrome, NRT may be started just before hospital discharge to assist tobacco users attempting to quit.

Grade A, Level 1+

A Varenicline or bupropion SR may also be used, in combination with behavioural interventions, for cardiovascular disease patients who use tobacco.

Grade A, Level 1+

F. PATIENTS WITH CO-MORBID ALCOHOL ABUSE

There is a strong correlation between tobacco use and alcohol dependence, where approximately 80% of alcohol-dependent individuals use tobacco.[175] Conversely, tobacco users were also found to be 2 to 3 times more at risk of being alcohol dependent.[176]

Historically, there has been much concern about introducing interventions to treat tobacco use among patients undergoing treatment for alcohol dependence. This stems from the misconception that tackling two substance abuse addictions concurrently might prove overwhelming for the patient and could affect the chances of recovery from alcohol addiction.[177-178]

However, the majority of the patients in alcohol dependence treatment programmes are also interested in quitting tobacco use.[179] Studies have shown that the inclusion of treatments for tobacco use amongst other addiction programmes did not negatively affect the rates of treatment completion or abstinence motivation,[180] nor did alcoholism impede attempts to quit tobacco use.[181]

Participation in treatment for tobacco use and dependence simultaneously with other substance abuse treatment was associated with a 25% increased chance of long-term abstinence from alcohol and other drugs.[179]

B All alcohol dependent patients who are also tobacco users, including those undergoing alcohol addiction treatment programmes, should be offered treatment for tobacco use and dependence.

Grade B, Level 2+

6 Clinical Quality Improvement

The following indicators are proposed to measure tobacco use cessation interventions:

6.1 Process evaluation indicators for tobacco use cessation interventions include:

- Proportion of patients asked about their smoking status
- Proportion of health professionals who offer brief advice regarding cessation of tobacco use

6.2 Outcome evaluation indicator of tobacco use cessation intervention includes:

- Proportion of tobacco users who abstain from smoking for a duration of 6 months

7 Cost-Effectiveness of Tobacco Use and Dependence Interventions

Tobacco use exerts heavy costs on society not only through higher medical costs but also through the loss of productivity due to tobacco-related illnesses.

In Singapore, the social cost of smoking, including both the direct costs (healthcare and hospitalisation cost) and indirect costs (value of lost income, productivity) ranged between S$673 million to S$839 million in 1997.[182]

An economic evaluation of Singapore's National Smoking Control Programme for the period 1986 to 2006 showed that the programme resulted in an estimated cost savings of $90.65 million for averting lung cancer and chronic obstructive pulmonary disease.[183] This suggested that tobacco use and dependence education and prevention initiatives do impact both the direct and indirect costs and hence are cost-effective.

Annex A Drug Dosages and Adverse Effects

	Dosage	Adverse effects	More information
Nicotine Patch	>20 cigarettes/day: use 21mg/24hr OR 15mg/16hr ≤20 cigarettes/day: use 14mg/24hr OR 15mg/16hr 15mg/16hr OR 21mg/24hr FOR 4 – 8 weeks 10mg/16hr OR 14mg/24hr FOR 2 – 4 weeks 5mg/16hr OR 7mg/24hr FOR 2 – 4 weeks Taper as tolerated	Common adverse effects: • Sleep disturbance (insomnia & abnormal dreams) • Headache • Nausea and/or vomiting • Dizziness • Gastrointestinal complaints • Palpitations • Skin irritation/rash at the application site Discontinue use if systemic allergic reactions with generalised rash are reported.	Method of application: • Applied in the morning upon rising • Removed either: (1) at bedtime for 16-hr patch, or (2) the next morning for 24-hr patch • Used patch must be removed before applying another patch Application sites: • For use on non-hairy, non-broken area of skin on the chest, hip or upper arm. • Application sites on the skin should be alternated to minimise skin irritation
Nicotine Gum	>20 cigarettes/day: use 4mg ≤20 cigarettes/day: use 2mg If first cigarette <30 minutes after waking: use 4mg If first cigarette ≥30 minutes after waking: use 2mg Initial dose: 1 piece every 1 to 2 hr Usual dose: 8 to 12 pieces/day Taper as tolerated	Common adverse effects: • Jaw fatigue • Mouth and throat soreness • Headache • Hiccups • Nausea	Directions for use: • Chewed intermittently and held in the mouth for over 30 min in response to a craving to smoke • Avoid food and acidic drinks 15 minutes before and during use Users: • May **not** be appropriate for users of dentures.

Nicotine Inhaler	Initial dose: 1 cartridge every 1 to 2 hours Minimum of 6 cartridges per day Taper as tolerated	Common adverse effects: • Cough • Irritation in the mouth and throat • Rhinitis • Headache • Nausea	Directions for use: • Do **not** inhale into the lungs (like a cigarette) but "puff" as if lighting a pipe • Best effects with continuous puffing for 20 minutes • Avoid food and acidic drinks 15 minutes before and during use Users: • Aimed at smokers who miss the mouth-to-hand action of smoking
Nicotine Lozenge	If first cigarette <30 minutes after waking: use 4mg (nicotine polacrilex) If first cigarette ≥30 minutes after waking: use 1mg (nicotine bitartrate) or 2mg (nicotine polacrilex) Initial dose: 1 lozenge every 1 to 2 hr Usual dose: 8 to 12 lozenges/day Taper as tolerated	Common adverse effects: • Mouth and throat soreness • Coughing	Directions for use: • Held in the mouth while they dissolve (for about 30 minutes) • Avoid food and acidic drinks 15 minutes before and during use
Bupropion SR Tablets	Treatment should start one week before target quit date. Initiate with 150mg once daily for 3 days; Increase to 150mg twice daily. Treatment should continue for 7 to 12 weeks.	Common adverse effects: • Tachycardia • Headache • Insomnia • Dizziness • Xerostomia • Weight loss • Neuropsychiatric events (e.g. behavioural change, mood change, suicidal thoughts, attempted suicide)	If significant progress has not been made by the 7th week of treatment, success is unlikely and treatment discontinuation should be considered.

		Patients with the following medical history should be closely monitored for risk of seizures: • History of seizure • Eating disorders • Head trauma • Tumour in central nervous system • Severe hepatic cirrhosis • Abrupt discontinuation of sedative-hypnotics or ethanol • Medications which lower seizure threshold (antipsychotics, antidepressants, theophyllines, systemic steroids), stimulants, or hypoglycemic agents	
Varenicline Tablets	Treatment should start one week before target quit date. Days 1 to 3: 0.5mg once daily Days 4 to 7: 0.5mg twice daily Maintenance (≥ Day 8): 1mg twice daily	Common adverse effects: • Insomnia • Headache • Abnormal dreams • Nausea Monitor for neuropsychiatric events: • Violent and aggressive thoughts • Suicidal thoughts • Impaired judgment • Impaired mental capability	Patients who cannot tolerate adverse events may require temporary (or permanent) reduction in dose. If patients successfully quit smoking at the end of the 12 weeks, they may continue for another 12 weeks to help maintain success. If not successful in the first 12 weeks, then medication should be stopped to reassess factors contributing to failure.

Note: The dosage administered should be tailored accordingly to patient's condition.

Annex B List of Tobacco Use and Dependence Treatment Services

Information is correct at time of updating (March 2013). For the most updated information, please refer to www.hpb.gov.sg

	HEALTH PROMOTION BOARD	TELEPHONE	WEBSITE
1	QuitLine	1800 438 2000	hbp_QuitLine@hpb.gov.sg
2	HPB Website on tobacco use and cessation	-	www.hpb.gov.sg/smokefree
3	Tobacco use and cessation website for youth smokers	-	www.breakfree.sg

By appointment only

	QUIT SMOKING SERVICES	TELEPHONE	OPERATING HOURS
1	**Changi General Hospital** Department of Pharmacy 2 Simei Street 3 Singapore 529889	6850 3333	Mon & Fri: 2.00pm – 5.00pm Tue: 9.00am – 12.00pm
2	**Institute of Mental Health** Department of Pharmacy Buangkok Green Medical Park 10 Buangkok View Singapore 539747	6389 3666/ 6389 2077	Depends on availability
3	**Khoo Teck Puat Hospital** Department of Pharmacy 90 Yishun Central Singapore 768828	6555 8828	Wed: 9.00am – 12.00pm
4	**National University Hospital** Department of Pharmacy 5 Lower Kent Ridge Road Singapore 119074	6772 5733	Wed: 2.00pm – 5.00pm
5	**Singapore General Hospital** Department of Respiratory & Critical Care Medicine Outram Road Singapore 169608	6321 4377	Tue: 3.30pm – 4.30pm Tue, Wed & Thu: 8.00am – 9.30am
6	**Singapore Heart Foundation** 9 Bishan Place #07-01 Junction 8 Office Tower Singapore 579837	6354 9370/ 6354 9348	Thu: 2.00pm – 5.00pm (By Appointments only)
7	**Tan Tock Seng Hospital** Medical Centre Suite 4A Smoking Cessation Programme 11 Jalan Tan Tock Seng Singapore 308433	6889 4343/ 6889 4345	Wed: 2.00pm – 4.00pm Fri: 9.00am – 12.00pm

	NATIONAL HEALTHCARE GROUP POLYCLINICS	TELEPHONE	OPERATING HOURS
1	**Ang Mo Kio Polyclinic** Blk 723 Ang Mo Kio Avenue 8 #01-4136 Singapore 560723	6355 3000	Monday: 2.00pm – 4.30pm
2	**Bukit Batok Polyclinic** 50 Bukit Batok West Ave 3 Singapore 659164		Monday: 2.00pm – 4.30pm
3	**Choa Chu Kang Polyclinic** 2 Teck Whye Crescent Singapore 688846		Wednesday (Nur) Thurs & Fri (Allied Health) 2pm – 4.30pm
4	**Clementi Polyclinic** Blk 451 Clementi Avenue 3 #02-307 Singapore 120451	6872 7137 (Pharmacy)	Strictly by appointment only
5	**Hougang Polyclinic** 89 Hougang Avenue 4 Singapore 538829	6355 3000	Tuesday: 2.00pm – 4.30pm
6	**Jurong Polyclinic** 190 Jurong East Avenue 1 Singapore 609788		Thursday: 2.00pm – 4.30pm
7	**Toa Payoh Polyclinic** 2003 Toa Payoh Lorong 8 Singapore 319260		4th Friday of the month ONLY: 2.00pm – 4.30pm
8	**Woodlands Polyclinic** 10 Woodlands Street 31 Singapore 738579		Wednesday: 2.00pm – 4.30pm
9	**Yishun Polyclinic** 100 Yishun Central Singapore 768826	6355 3000	Friday: 2.00pm – 4.30pm

	SINGHEALTH POLYCLINICS	TELEPHONE	OPERATING HOURS
1	**Bedok Polyclinic** Blk 212 Bedok North Street 1 #03-147 Singapore 460212	6243 6753	Mon & Thu: 2.00pm – 4.00pm
2	**Bukit Merah Polyclinic** Blk 163 Bukit Merah Central #04-3565 Singapore 150163	6377 5225	Fri: 2.00pm – 4.00pm
3	**Geylang Polyclinic** 21 Geylang East Central Singapore 389707	6547 6930/ 6547 6947	Thu: 2.00pm – 4.00pm
4	**Outram Polyclinic** 3 Second Hospital Avenue Level 2 Health Promotion Board Building Singapore 168937	6435 3160	Mon: 2.00pm – 4.00pm
5	**Marine Parade Polyclinic** Blk 80 Marine Parade Central #01-792 Singapore 440080	6342 5029/ 6342 5030	Wed: 2.00pm – 4.00pm
6	**Queenstown Polyclinic** 580 Stirling Road Singapore 148958	6471 9537/ 6471 9538	Thu: 2.00pm – 4.00pm
7	**Pasir Ris Polyclinic** 1 Pasir Ris Drive 4 #01-11 Singapore 519457	6585 5417	Wed: 2.00pm – 4.00pm
8	**Tampines Polyclinic** 1 Tampines Street 41 Singapore 529203	6587 7252/ 6786 4070	Tue & Thu: 2.00pm – 4.00pm
9	**Sengkang Polyclinic** 2 Sengkang Square #01-06 Sengkang Community Hub Singapore 545025	6315 3511/ 6315 3500	Wed: 2.00pm – 4.00pm

PHARMACY-BASED QUIT SMOKING SERVICES

Prior appointment preferred to ensure availability of pharmacist

	NATIONAL HEALTHCARE GROUP PHARMACIES	TELEPHONE	OPERATING HOURS
1	**Ang Mo Kio Polyclinic Pharmacy** Blk 723 Ang Mo Kio Avenue 8 #01-4136 Singapore 560723	6554 7462	Mon – Fri: 8.00am – 4.30pm Sat: 8.00am – 12.30pm Sun & PH: Closed Please call for appointment.
2	**Bukit Batok Polyclinic Pharmacy** 50 Bukit Batok West Ave 3 Singapore 659164	6896 2271	
3	**Choa Chu Kang Polyclinic Pharmacy** 2 Teck Whye Crescent Singapore 688846	6765 9663	
4	**Clementi Polyclinic Pharmacy** Blk 451 Clementi Avenue 3 #02-307 Singapore 120451	6872 7137	
5	**Hougang Polyclinic Pharmacy** 89 Hougang Avenue 4 Singapore 538829	6489 8078	
6	**Jurong Polyclinic Pharmacy** 190 Jurong East Avenue 1 Singapore 609788	6665 6467	
7	**Toa Payoh Polyclinic Pharmacy** 2003 Toa Payoh Lorong 8 Singapore 319260	6354 7330	
8	**Woodlands Polyclinic Pharmacy** 10 Woodlands Street 31 Singapore 738579	6369 7024	
9	**Yishun Polyclinic Pharmacy** 100 Yishun Central Singapore 768826	6757 7794	

	GUARDIAN QUIT CENTRES	TELEPHONE	OPERATING HOURS
1	**Guardian Health & Beauty** **Ang Mo Kio Central Blk 704** Blk 704 Ang Mo Kio Avenue 8 #01-2559 Singapore 560704	6456 5766/ 6456 3455	Mon – Sun & PH: 10.00am – 10.00pm
2	**Guardian Health & Beauty** **Bedok Central** Blk 210 New Upper Changi Road #01-715 Singapore 460210	6444 0072	Mon – Sun & PH: 9.30am – 9.30pm
3	**Guardian Health & Beauty** **Bukit Panjang Plaza** 1 Jelebu Road #01-01/02 Singapore 677743	6762 1214	Mon – Sun & PH: 11.00am – 8.00pm
4	**Guardian Health & Beauty** **Causeway Point** No. 1 Woodlands Square #B1-27/30 Causeway Point Singapore 738079	6894 3014	Mon – Sun & PH: 10.00am – 10.00pm
5	**Guardian Health & Beauty** **Clementi Mall** 3155 Commonwealth Avenue West #03-56/60/61 The Clementi Mall Singapore 129588	6659 9234	Mon – Sun & PH: 10.00am – 10.00pm
6	**Guardian Health & Beauty** **Compass Point** 1 Sengkang Square #B1-32/35 Compass Point Singapore 545078	6315 9031	Mon – Sun & PH: 10.00am – 10.00pm
7	**Guardian Health & Beauty** **Funan IT Mall** 109 North Bridge Road #01-28/29 Funan The IT Mall Singapore 179097	6338 3603	Mon – Sun & PH: 10.30am – 7.00pm
8	**Guardian Health & Beauty** **Great World City** 1 Kim Seng Promenade #B1-18/19 Great World City Singapore 237994	6235 4037/ 6836 4905	Mon – Sun & PH: 11.00am – 10.00pm
9	**Guardian Health & Beauty** **Hougang** Blk 205 Hougang Street 21 #01-129 Heartland Mall – Kovan Singapore 530205	6487 4580	Mon – Fri: 11.00am – 10.00pm Sat – Sun & PH: 10.00am – 10.00pm

10	**Guardian Health & Beauty IMM** 2 Jurong East Street 21 #01-57 IMM Building Singapore 609601	6566 7660	Mon – Sun & PH: 10.00am – 10.00pm
11	**Guardian Health & Beauty Jurong Point** 63 Jurong West Central 3 #B1-27/28 Jurong Point Shopping Centre Singapore 648331	6794 0501	Mon – Sun & PH: 11.00am – 10.00pm
12	**Guardian Health & Beauty LOT 1** 21 Choa Chu Kang Avenue 4, #B1-26 /27, Lot 1 Shopping Mall Singapore 689812	6468 6712	Mon – Fri: 11.00am to 9.00pm
13	**Guardian Health & Beauty Northpoint** 930 Yishun Avenue 2 #B1-01/02 Northpoint Shopping Centre Singapore 769098	6754 6574	Mon – Sun & PH: 10.00am – 10.00pm
14	**Guardian Health & Beauty Parkway Parade** 80 Marine Parade Road #B1-147/149 Parkway Parade Singapore 449269	6344 2102	Mon – Sun & PH: 10.00am – 10.00pm
15	**Guardian Health & Beauty Plaza Singapura** 68 Orchard Road #B2-14 Plaza Singapura Singapore 238839	6338 0813	Mon – Fri: 11.30am – 9.00pm
16	**Guardian Health & Beauty Serangoon NEX** 23 Serangoon Central #B1-62/63 Singapore 556083	6634 2189	Mon – Fri: 10.00am – 10.00pm Sat – Sun & PH: 11.00am – 10.00pm
17	**Guardian Health & Beauty Somerset 313** 313 Orchard Road #B3-13/14/15/16 313 @ Somerset Singapore 238895	6634 0991	Mon – Fri: 11.00am – 8.00pm
18	**Guardian Health & Beauty Suntec Mall City** 3 Temasek Boulevard #02-063/065/067 Suntec City Mall Singapore 038983	6338 4377	Mon – Fri: 11.00am – 8.00pm Sat – Sun & PH: 10.00am – 9.00pm

19	**Guardian Health & Beauty** **Tampines MRT** 20 Tampines Central 1 #01-01 Tampines MRT Singapore 529538	6788 2908	Mon – Sun & PH: 9.30am – 9.30pm
20	**Guardian Health & Beauty** **Toa Payoh Blk 190** Blk 190 Toa Payoh Lorong 6 #01-578 Singapore 310190	6352 5912	Mon – Sun & PH: 11:00am – 9:00pm
21	**Guardian Health & Beauty** **West Mall** 1 Bukit Batok Central Link #01-27 West Mall Shopping Centre Singapore 658713	6794 0903	Mon – Sun & PH: 10:00am – 10:00pm

	UNITY QUIT CENTRES	TELEPHONE	OPERATING HOURS
1	**Unity Ang Mo Kio** 53 Ang Mo Kio Ave 3 #B2-21/25 Singapore 569933	6552 2001	Mon – Sat: 8.00am – 9.30pm Sun: 10.30am – 9.30pm PH: 10.30am – 6.00pm
2	**Unity Bukit Timah Plaza** 1 Jalan Anak Bukit #B1-01 Bukit Timah Plaza Singapore 588996	6466 2957	Mon – Fri: 10.30am – 6.30pm Sat: 10.00am – 2.30pm Sun/PH: Closed
3	**Unity Clementi Mall** 3155 Commonwealth Avenue West #B1-10/11 The Clementi Mall Singapore 129588	6659 4719	Mon – Sat: 9.00am – 9.30pm Sun: 10.30am – 9.30pm PH: 10.30am – 6.00pm
4	**Unity Jurong East** Jurong East Central 1 #B1-05 Jcube Singapore 609731	6684 4080	Mon – Fri: 1.00pm – 9.00pm Sat: 10.00am – 9.30pm Sun/PH: Closed
5	**Unity Lot 1** 21 Choa Chu Kang Avenue 4 #B1-04/05 Singapore 689812	6763 7678	Mon – Sat: 9.00am – 9.30pm Sun: 10.30am – 9.30pm PH: 10.30am – 6.00pm
6	**Unity Tanjong Pagar** Blk 5 #01-01 Tanjong Pagar Plaza Singapore 081005	6323 1281	Mon – Fri: 10.00am – 6.00pm Sat: 10.00am – 2.30pm Sun/PH: Close
7	**Unity Toa Payoh Central** 500 Toa Payoh Lorong 6 #B1-30 Singapore 310500	6352 2933	Mon – Sat: 9.00am – 9.30pm Sun: 10.30 am – 9.30pm PH: 10.30am – 6.00pm

8	**Unity White Sands** 1, Pasir Ris Central Street 3 #01-12/12A Singapore 518457	6581 7736	Mon – Fri: 10.30am – 6.30pm Sat: 10.00am – 2.30pm Sun/PH: Closed
9	**Unity Yew Tee Point** 21 Choa Chu Kang North 6 #B1-08/09 Singapore 689578	6762 6549	Mon – Fri: 10.00am – 6.00pm Sat: 10.00am – 2.30pm Sun/PH: Closed

	WATSON QUIT CENTRES	TELEPHONE	OPERATING HOURS
1	**Watson's Pharmacy** **Bedok Central** Blk 211 New Upper Changi Road, # 01-735/737 Singapore 460211	6246 0873	10.00am – 3.00 pm 6.00pm – 9.00pm (Mon, Wed, Thurs & Fri) 11.00am – 9.00pm (Sunday including PH) TELE PHARMACY: Tue & Sat
2	**Watson's Pharmacy** **Causeway Point** No 1 Woodlands Square #B1-14/15 Causeway Point Singapore 738099	6891 1620	12.00pm – 8.30pm (Mon – Thurs, Sat – Sun, including PH) TELE PHARMACY: Fri
3	**Watson's Pharmacy** **Clementi Mall** 3155 Commonwealth Avenue West #B1-37/38/39 Clementi Mall Singapore 129588	6659 4792	12.00pm – 9.00pm (Mon – Wed, Fri – Sun, including PH) TELE PHARMACY: Thurs
4	**Watson's Pharmacy** **Compass Point** 1 Sengkang Square, Compass Point #02-12 Singapore 545078	6881 6209	11.30am – 8.00pm (Mon, Tue, Thurs – Sat including PH) TELE PHARMACY: Wed & Sun
5	**Watson's Pharmacy** **Great World City** 1 Kim Seng Promenade #01-35A/54 Great World City Singapore 237994	6836 9767	12.00pm – 8.30pm (Mon – Wed, Fri – Sat, including PH) TELE PHARMACY: Thurs & Sun
6	**Watson's Pharmacy** **Holland Village** 211 Holland Avenue #01-09 Holland Road Shopping Centre Singapore 278967	6763 3667	11.30am – 8.00pm (Tues – Sat) TELE PHARMACY: Mon & Sun CLOSED: PH

7	**Watson's Pharmacy** **IMM** 2 Jurong East Street 21 #01-53 IMM Building Singapore 609601	6566 8465	11.30am – 9.30pm (Mon, Wed – Sun, including PH) TELE PHARMACY: Tues
8	**Watson's Pharmacy** **ION** 2 Orchard Turn #B4-12 Singapore 238801	6509 8129	11.30am – 9.00pm (Mon, Wed – Sun, including PH) TELE PHARMACY: Tues
9	**Watson's Pharmacy** **International Plaza** 10 Anson Road #01-62/63/64/65/66/67 International Plaza Singapore 079903	6223 0546	10.30am – 7.00pm (Mon – Fri) CLOSED: Sat, Sun & PH
10	**Watson's Pharmacy** **Jurong Point** 1, Jurong West Central, #B1-12/13 Jurong Point Singapore 648886	6790 8770	11.00am – 10.00pm (Mon – Sun including PH)
11	**Watson's Pharmacy** **Lucky Plaza** 304 Orchard Road #B1-27/41, 28/40, 29/39 & 30 Lucky Plaza Singapore 238863	6736 0956	11.00am – 7.30pm (Tue – Sun, including PH) TELE PHARMACY: Mon
12	**Watson's Pharmacy** **Marina Bay Financial Centre** 8A Marina Boulevard #B2-57/58/59 Marina Bay Financial Centre Singapore 018984	6634 1744	10.30am – 7.00pm (Mon – Fri) CLOSED: Sat, Sun & PH
13	**Watson's Pharmacy** **Marina Bay Sands** 2 Bayfront Avenue #B2-59 Marina Bay Sands Singapore 018972	6688 7419	12.00pm – 9.00pm (Mon – Wed, Fri) 11.00am – 10.00pm (Sat, Sun & PH) TELE PHARMACY: Thurs
14	**Watson's Pharmacy** **Marina Square** 6 Raffles Boulevard, Marina Square, #02-212 Singapore 039594	6336 7653	12.00pm – 8.30pm (Tue – Fri) 11.30am – 9.30pm (Sat, Sun & PH) TELE PHARMACY: Mon
15	**Watson's Pharmacy** **NEX Mall** 23 Serangoon Central #02-57 NEX Mall Singapore 556083	6483 9202	11.30am – 8.00pm (Mon, Tue, Thurs, Fri, Sun & PH) TELE PHARMACY: Wed & Sat

16	**Watson's Pharmacy** **Ngee Ann City** 391 Orchard Road Takashimaya Shopping Centre #B2-06 - 09 Singapore 238872	6733 2437	10.00am – 10.00pm (Mon – Sun & PH)
17	**Watson's Pharmacy** **North Point** 930, Yishun Avenue 2 #B1-64/65/66/67 Northpoint Shopping Centre Singapore 769098	6753 3036	11.30am – 8.00pm (Mon – Wed, Fri, Sun & PH) TELE PHARMACY: Thurs & Sat
18	**Watson's Pharmacy** **Novena Square** 238 Thomson Road #02-07/09 Singapore 307683	6259 1975	11.30am – 9.00pm (Mon, Tue, Thurs – Sun, including PH) TELE PHARMACY: Wed
19	**Watson's Pharmacy** **Parco Bugis Junction** 200 Victoria Street #02-27-33 Parco Bugis Junction Singapore 188021	6338 8154	11.00am – 10.00pm (Mon – Sun & PH)
20	**Watson's Pharmacy** **Parkway Parade** 80 Marine Parade Road #B1-14/15/16 Parkway Parade Singapore 449269	6440 4923	11.00am – 10.00pm (Mon – Fri, including PH) 10.00am – 10.00pm (Sat & Sun)
21	**Watson's Pharmacy** **Raffles City** 252 North Bridge Road #B1-42 Raffles City Singapore 179103	6334 2462	11.00am – 10.00pm (Mon – Sun & PH)
22	**Watson's Pharmacy** **Resort World Sentosa** 26 Sentosa GateWay Resorts World Sentosa #01-00 Singapore 098138	6684 9091	11.30am – 9.30pm (Thu, Sun & PH) CLOSED: Mon – Wed
23	**Watson's Pharmacy** **Suntec City Mall** 3 Temasek Boulevard #01-081/083 Suntec City Mall Singapore 038983	6337 2521	11.00am – 7.30pm (Tue – Sat, including PH) TELE PHARMACY: Mon & Sun
24	**Watson's Pharmacy** **Airport Terminal 1** 50 Airport Boulevard #02-134D Singapore 819663	6214 9357	7.30am – 9.30pm (Mon – Sun, including PH)

25	**Watson's Pharmacy** **Airport Terminal 1 Transit** 80 Airport Boulevard #02-16 D/T Lounge West Singapore 819663	6214 9817	24 hrs (Mon – Sun, including PH)
26	**Watson's Pharmacy** **Airport Terminal 3 Basement** 65 Airport Boulevard #B2-24 Singapore 819663	6581 1393	10.30am – 4.00pm (Mon – Sun, including PH) TELE PHARMACY: 4.00pm – 10.00pm
27	**Watson's Pharmacy** **Airport Terminal 3 Check-in Hall** 65 Airport Boulevard #02-95/96 Singapore 819663	6441 1837	10.30am – 3.30pm (Mon – Sun, including PH)
28	**Watson's Pharmacy** **Airport Terminal 3 Transit** 65 Airport Boulevard #02-29 Singapore 819663	6582 3707	6.00am – 1.00am (Mon – Sun, including PH)
29	**Watson's Pharmacy** **Tampines Mall** 4 Tampines Central 5 #B1-07/08/09 Tampines Mall Singapore 529510	6781 9304	11.30am – 9.00pm (Tue – Sun, including PH) TELE PHARMACY: Mon
30	**Watson's Pharmacy** **The Paragon** 290 Orchard Road #B1-32/33/37 The Paragon Singapore 238859	6737 4910	10.00am – 10.00pm (Mon – Sun & PH)
31	**Watson's Pharmacy** **Tiong Bahru Plaza** 302, Tiong Bahru Road #01-19/20 Tiong Bahru Plaza Singapore 168732	6271 6897	11.30am – 8.00pm (Mon – Thurs, Sun, including PH) TELE PHARMACY: Fri & Sat
32	**Watson's Pharmacy** **Toa Payoh HDB Hub** Blk 190 Toa Payoh Lorong 6 #01-510 Singapore 310190	6259 1334	10.30am – 9.30pm (Mon – Sun, including PH)
33	**Watson's Pharmacy** **Vivo City** 1, HarbourFront Walk #B2-17 Vivo City Singapore 098585	6376 9430	11.00am – 9.00pm (Mon – Sun, including PH)

**Duration of counselling session may vary*

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Self-assessment (MCQs)

After reading the Clinical Practice Guidelines, you can claim one CME point under Category 3A (Self-Study) of the SMC Online CME System. Alternatively, you can claim one CME point under Category 3B (Distance Learning – Verifiable Self Assessment) if you answer at least 60% of the following MCQs correctly. You can submit your answers through the SMJ website at this link: http://sma.org.sg/publications/index.aspx?ID=26 (the link will only be available once the July 2013 issue of SMJ becomes available). The answers will be published in the SMJ September 2013 issue and at the MOH/HPB webpage for these guidelines after the period for submitting the answers is over.

Instruction: For each of the following statements, please choose "True" or "False".

	Questions	**True**	**False**
1.	Regarding tobacco use and quitting:		
	a) The harmful effects of tobacco use can also be attributed to second-hand tobacco smoke (i.e. Environmental Tobacco Smoke).	☐	☐
	b) Studies show that waterpipe or shisha is less harmful and less addictive than cigarettes.	☐	☐
	c) Patients with pre-existing medical conditions such as ischemic heart disease also benefit from quitting.	☐	☐
	d) Almost all the nicotine from tobacco use is metabolised in the body within one month of cessation.	☐	☐
2.	Regarding tobacco use and dependence interventions:		
	a) As a first line intervention, all health professionals should use the ABC approach – "Ask, Brief advice, Cessation support".	☐	☐
	b) Combination of counselling and medication is the most effective intervention for tobacco use cessation.	☐	☐
	c) For pregnant women, the first line tobacco use cessation intervention should be behavioural support.	☐	☐
	d) Psychiatric patients experience deterioration in their condition if they quit smoking.	☐	☐

3. Pertaining to patients who use tobacco and are about to undergo surgery:

	True	False
a) Smokers undergoing elective surgery are at increased risk of post-operative complications when compared to non-smokers.	☐	☐
b) Intensive tobacco dependence intervention prior to surgery increases the rate of smoking cessation by about ten-fold.	☐	☐
c) Brief advice regarding smoking may increase abstinence rates compared to no advice but does not reduce the risk of post-operative complications.	☐	☐
d) The optimal timing for stopping tobacco use is about two weeks prior to surgery.	☐	☐

4. Regarding tobacco use cessation in adolescents:

a) Nicotine Replacement Therapy (NRT) is not routinely recommended for adolescents.	☐	☐
b) Health professionals should take into account adolescents' preparedness to quit smoking for effective intervention.	☐	☐
c) In Singapore, the average age of smoking initiation is 13 years old.	☐	☐
d) Pharmacological interventions have significantly improved abstinence rate in adolescents who wish to quit smoking.	☐	☐

5. Regarding alcohol and tobacco use:

a) Alcohol abusers are 2 to 3 times more likely to smoke.	☐	☐
b) Patients on alcohol dependence programmes are not interested in tobacco use cessation.	☐	☐
c) Participants in smoking cessation programmes are more likely to abstain from alcohol and other drugs.	☐	☐
d) Alcoholism does not negate smoking cessation attempts.	☐	☐

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Academy of Medicine, Singapore

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Singapore Medical Association

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