

# Non-Communicable Diseases Watch



衛生防護中心  
Centre for Health Protection



衛生署  
Department of Health

**JUNE  
2025**



## **Breathing Alert: Chronic Obstructive Pulmonary Disease**

### **Key Messages**

- Over 80% of the global burden of chronic obstructive pulmonary disease (COPD) is attributed to a few modifiable risk factors, including smoking, air pollution, and occupational exposure to air-borne pollutants.
- To reduce the risk of developing COPD, the public are urged to avoid smoking (including secondhand smoking), take heed of the public announcement of ambient air quality and general health advice, and observe occupational safety and health rules.
- Stay physically active and getting vaccinations against influenza, pneumococcal infection or other lung infections as recommended by the doctor can also keep the lungs healthy.

# Introduction

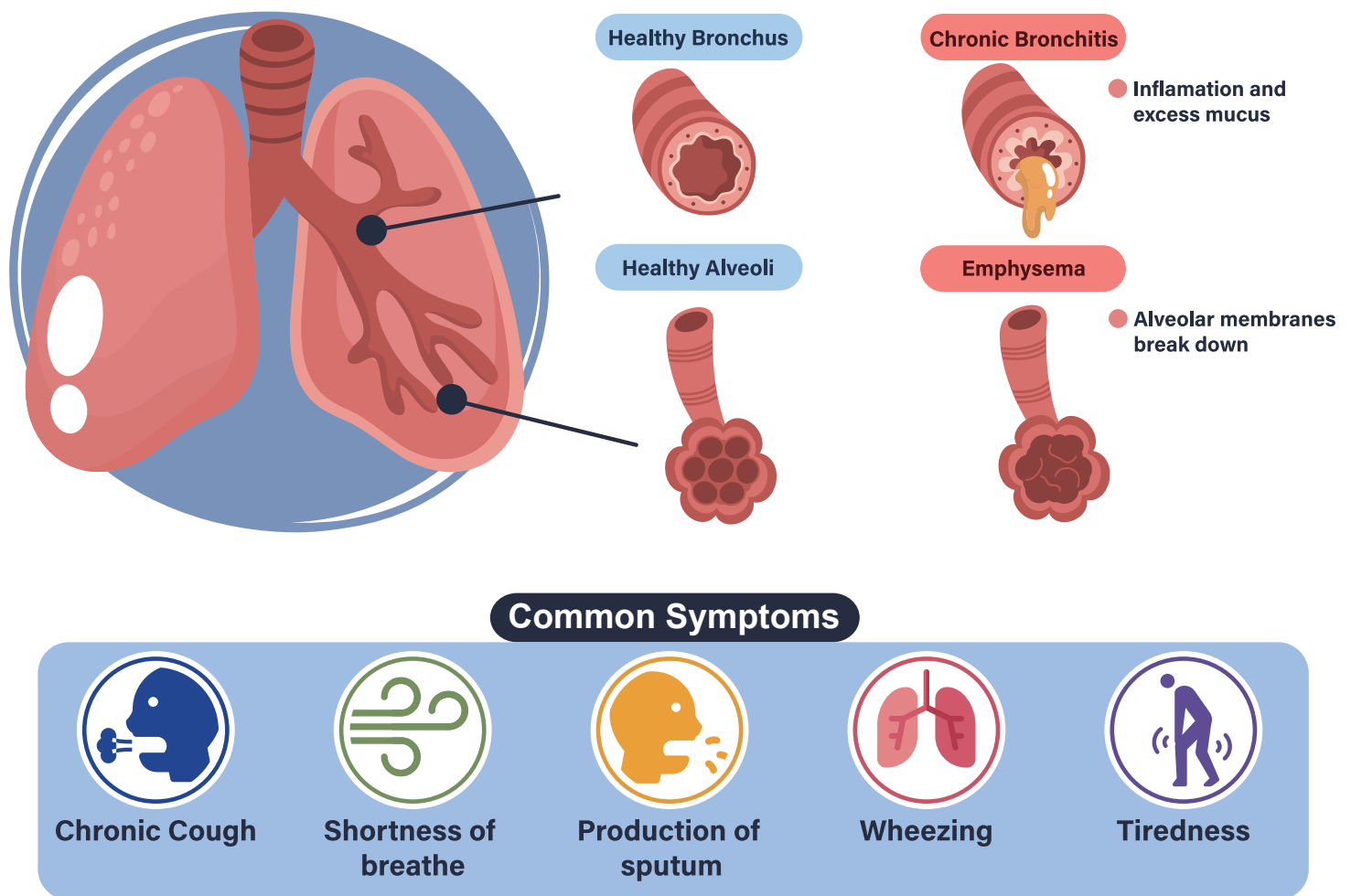


Figure 1: Manifestations of chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is a common lung disease characterised by persistent airflow limitation and respiratory symptoms<sup>1,2</sup>. As shown in Figure 1, the disease encompasses two main conditions: chronic bronchitis (with inflammation of the bronchial tubes and excess mucus production, causing the airways to narrow and limiting airflow into and out of the lungs) and emphysema (with destruction of the inner walls of alveoli (tiny air sacs) at the end of the airways in the lungs where oxygen is absorbed and carbon dioxide is released) that result in difficulty breathing and decreased amounts of oxygen being delivered to the body's tissues<sup>1,3,4</sup>.

Since COPD develops slowly, sufferers may ignore mild symptoms in the early stages. As the disease progresses, the symptoms become more severe and sufferers would find it more difficult to carry out their normal daily activities

due to COPD-related breathlessness<sup>1,5</sup>. It is worth noting that lung tissue and function cannot be fully restored after damage, so COPD cannot be completely cured. In addition, people with COPD will have a higher risk of developing cardiovascular diseases, lung cancer, lung infections and other health problems<sup>1,3,4</sup>.

As one of the leading causes of illness, disability and death worldwide, COPD (along with other chronic respiratory diseases) is included in the World Health Organization (WHO) Global Action Plan for the Prevention and Control of Non-communicable Diseases and the United Nations 2030 Agenda for Sustainable Development<sup>1</sup>. This article aims to provide an overview of COPD with an update on the local situation, urging members of the public to remain vigilant against the disease.

## COPD as a Global Health Issue

Despite considerable progress in reducing the global impact of many non-communicable diseases (such as heart disease and cancer), morbidity and mortality due to chronic respiratory diseases continues to surge. This increase is driven primarily by the growing burden of COPD<sup>5</sup>.

In 2021, the Global Burden of Disease Study<sup>6</sup> estimated that there were 213 million prevalent cases of COPD worldwide, with an increase of 30.2% compared to 2010. The global number of COPD incident cases also increased by 31.4% during the same period to 16.9 million in 2021. Being the fourth leading cause of death across the globe,

COPD accounted for 3.72 million deaths in 2021 with an increase of 20.9% compared to 2010<sup>6</sup>. While women outnumbered men in both prevalence and incidence, more men than women died of COPD in 2021 (Figure 2)<sup>6</sup>.

More importantly, the global disease burden of COPD is expected to increase due to the general growing and ageing of the world's population along with continued exposure to COPD risk factors<sup>2, 3, 7</sup>. By 2050, a modeling study projected that the global prevalence of COPD would approach 600 million cases, with disproportionate growth in females and in low- and middle-income countries<sup>7</sup>.



Figure 2: Global prevalence, incidence and mortality of COPD in 2021 among females and males

## Causes and Risk Factors of COPD

Over 80% of the global burden (expressed as disability-adjusted life years, i.e. the number of life years lost due to ill-health, disability, or early death) of COPD is attributed to a few modifiable risk factors, including smoking, air pollution (outdoor and indoor), and occupational exposure to air-borne pollutants (such as dusts, fumes or chemicals)<sup>4, 6, 8</sup>.

### Smoking

Smoking is the leading cause of COPD. It damages the airways and lung tissue, leading to inflammation and reduced airflow. However, non-smokers can also develop COPD through exposure to secondhand smoke<sup>5, 9</sup>. The disease risk is dose-related (i.e. the longer duration of smoking, the more cigarettes smoked per day or the longer the duration of exposure to secondhand smoke, the higher the disease risk)<sup>10</sup>. In high-income countries, over 70% of COPD cases are attributed to tobacco smoking<sup>1, 9</sup>. In low- to middle-income countries, tobacco smoking accounts for 30%–40% of COPD cases<sup>1</sup>.



Compared to non-smokers, studies showed that current smokers were over 3 times as likely to develop COPD. For ever/former smokers, the corresponding risk was about doubly likely to have the disease<sup>11</sup>. Of note, the latest scientific evidences show that current and ever/former e-cigarette users had about 50% and 80% increased risk of developing COPD, respectively<sup>12</sup>. While people who have been exposed to secondhand smoke for even a short time (5 years or less) would have a 78% increased risk of COPD, the corresponding risks in those with a longer time exposure of more than 5 years would be about 3 times higher<sup>13</sup>.



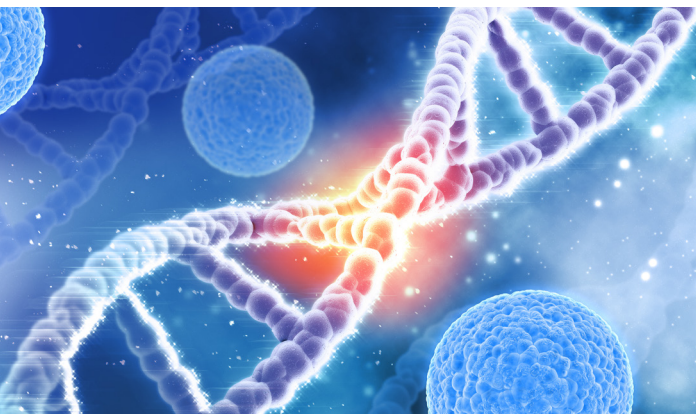
Similarly, exposure to air pollutants, such as vehicle emissions and industrial fumes, can worsen lung function over time. Major air pollutants associated with COPD development and exacerbation include particulate matters and gaseous pollutants like ozone, carbon monoxide, nitrogen dioxide and sulfur dioxide<sup>14</sup>. In 2021, air pollution accounts for 48% of COPD deaths globally<sup>15</sup>. In low- and middle-income countries, exposure to household

air pollution (mainly due to the use of biomass or other polluting fuels and technologies in poorly ventilated dwellings) is also major risk factor<sup>1</sup>, accounting for 23% of all COPD deaths in adults<sup>16</sup>. Women are more susceptible to lung damage from the use of biomass fuels (such as wood, animal dung, charcoal and crop residues) because domestic cooking is a major part of their daily life<sup>16</sup>.



## Occupational exposure to air-borne pollutants

Occupational exposure to air-borne pollutants (in particular, dust) as a cause of COPD has been recognised for decades<sup>17, 18</sup>. In never-smokers, exposure to workplace pollutants is an important risk factor for COPD<sup>19</sup>. Such exposure is common in many industries and occurs in a broad range of occupations<sup>5</sup>. Besides, individuals in industrial workplaces very often are exposed to a combination of pollutants rather than a single substance. For example, a carpenter may be exposed to wood dust as well as other air pollutants from solvent-based paints and adhesives<sup>20</sup>.



## Non-modifiable risk factors

COPD risk significantly increases with advancing age. Other non-modifiable host factors include gene defects (such as deficiency of the protein alpha-1 antitrypsin that protects the lungs from inflammation and damage), suboptimal lung growth and development during gestation, birth or childhood<sup>1, 2</sup>.

# Burden of COPD in Hong Kong



COPD deserves attention as other noncommunicable diseases in Hong Kong, especially amongst the elderly (Table 1). According to the Population Health Survey 2020-22, 0.5% of non-institutionalised persons aged 15 and above self-reported that they had doctor-diagnosed COPD<sup>21</sup>. COPD exacerbations often require hospital admissions. In 2023, there were over 18 000 episodes of in-patient discharges and deaths<sup>22</sup> and 991 registered deaths attributed to COPD<sup>23</sup>.

Table 1: Burden of COPD

Age group	Prevalence of doctor-diagnosed COPD <sup>+</sup> , 2020-22		Episodes of inpatient discharges and deaths, 2023		Registered deaths, 2023	
	Number	Rate <sup>^</sup>	Number	Rate <sup>^</sup>	Number	Rate <sup>^</sup>
44 and below	3 900	158	1 008	28.8	4	0.1
45 ~ 64	9 000	392	2 583	107.9	32	1.3
65 and above	17 400	1 268	14 752	898.5	955	58.2
Total	30 300	493	18 343	243.4	991	13.2

Notes: Figures may not add up to the total due to rounding

<sup>+</sup>persons aged 15 and above; <sup>^</sup>rate per 100 000 mid-year population of respective age group

## Prevention and Control of COPD

The Government of the Hong Kong Special Administrative Region (the Government) recognises the significance of chronic respiratory diseases including COPD on the health of the local population. As smoking is the most important risk factor in the development of COPD, the Government has been taking a multi-pronged approach to strengthen tobacco control through taxation, legislation, enforcement, publicity, education as well as smoking cessation services. The prevalence of daily cigarette smokers among local people aged 15 or above has significantly reduced from 14.4% in 2003 to 9.1% in 2023, which is one of the lowest in the world. However, there are still about 580 000 people who have a habit of smoking traditional cigarettes every

day<sup>24</sup>. The Government will continue to push ahead with its tobacco control work, including measures to prevent non-smokers from picking up the smoking habit and provide full support to smokers to quit smoking.







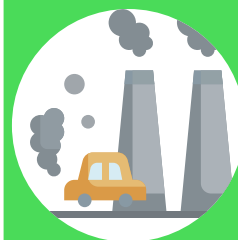
In tackling ambient air pollution problems, the Government has also implemented a series of measures to reduce emissions from local electricity generation, vehicles, vessels and more. In June 2021, the Government announced the “Clean Air Plan for Hong Kong 2035”, setting out long-term goals and strategies to further enhance the air quality with a view to lead Hong Kong to become a livable city with air quality on par with major international cities by 2035<sup>25</sup>.

**Individuals too can contribute to the prevention and control of COPD by taking appropriate actions to keep the lungs healthy and staying vigilant against the disease. Key actions include:**



**Do not smoke and avoid secondhand smoke.** Current smokers should quit smoking immediately. For free quitting services, please visit [www.livetobaccofree.hk/en/free-quit-tools/free-cessation-services.html](http://www.livetobaccofree.hk/en/free-quit-tools/free-cessation-services.html), or call the Quitline 1833 183.

**Be aware of air pollution.** The Environmental Protection Department regularly monitors the local air quality and communicates the short-term health risk posed by air pollution to the general public through the Air Quality Health Index (AQHI). Members of the public are encouraged to take heed of the public announcement of ambient air quality and general health advice, such as reducing or avoiding outdoor physical exertion when the health risk category reaches Very High or Serious<sup>26</sup>.



**Observe occupational safety and health rules** to minimise occupational exposure and protect the lungs from hazard at work, such as putting on appropriate personal respiratory protective equipment when exposed to dust, fumes or chemicals during work.

**Be physically active** to keep the lungs healthy and overall fitness. Adults are urged to engage in at least 150–300 minutes of moderate-intensity aerobic physical activity (such as brisk walking); or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week<sup>27</sup>.



**Get vaccinations** against influenza, pneumococcal infection or other lung infections as recommended by the doctor.

**Know the causes and risk factors of COPD** as well as recognise related symptoms (Box 1). Seek medical advice if indicated.



**Working in partnership, we can make our lungs healthier and reduce the local burden of COPD.**

#### Box 1: "Could It Be COPD" Questionnaire<sup>28</sup>

##### Could it be COPD?

- ☐ Do you cough several times on most day?
- ☐ Do you bring up phlegm or mucus most days?
- ☐ Do you get out of breath more easily than others of your age?
- ☐ Are you older than 40 years?
- ☐ Are you a current smoker or an ex-smoker?

If you answer **YES to 3 or more** of the questions, it is advisable to consult a doctor to see if you might have COPD.

Source: Global Initiative for Chronic Obstructive Lung Disease, at <https://goldcopd.org/patients-advocacy-groups/>

# References

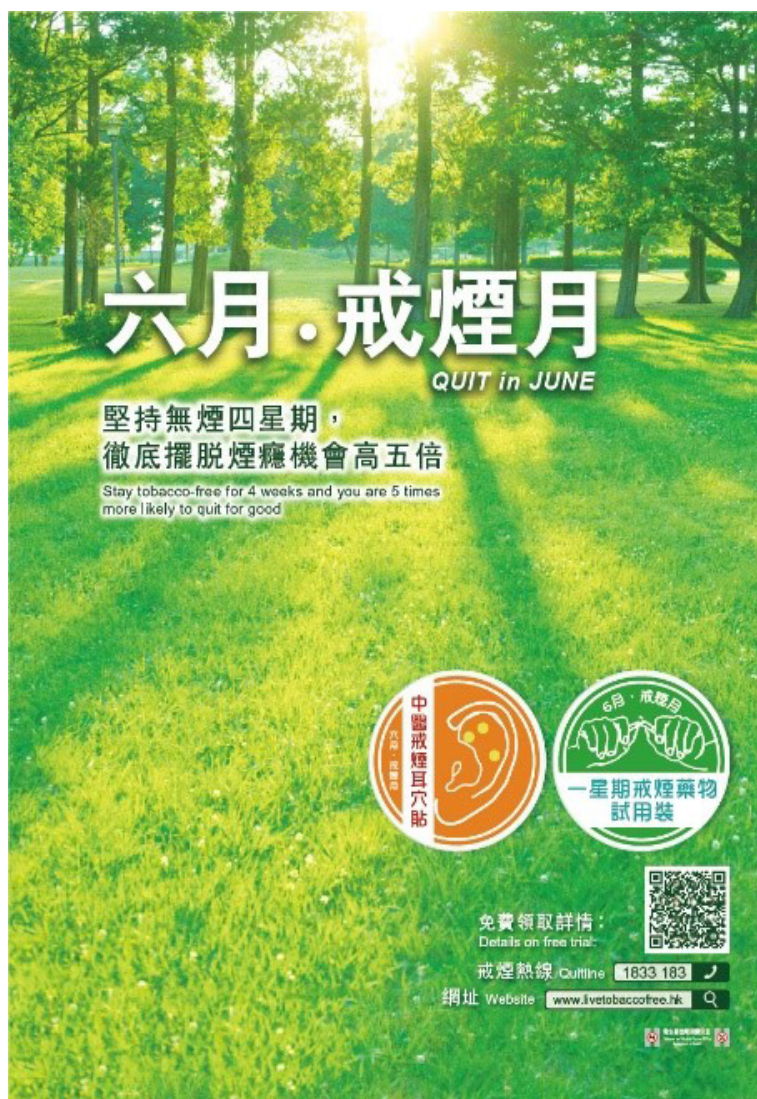
1. Chronic Obstructive Pulmonary Disease (COPD) (16 March 2023). Geneva: World Health Organization. Accessed 1 April 2025: [https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-\(copd\)](https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)).
2. Christenson SA, Smith BM, Bafadhel M, et al. Chronic obstructive pulmonary disease. *Lancet* 2022;399(10342):2227-2242.
3. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease (2024 Report). Fontana, WI: Global Initiative for Chronic Obstructive Lung Disease. Accessed 1 April 2025: <https://goldcopd.org/2024-gold-report/>.
4. Billo NE, Banatvala N, Bovet P, et al. Chronic respiratory diseases. Burden, epidemiology and priority interventions. In Banatvala N, Bovet P, (Eds). *Noncommunicable Diseases A Compendium*. London and New York: Routledge 2023.
5. Stolz D, Mkorombindo T, Schumann DM, et al. Towards the elimination of chronic obstructive pulmonary disease: A Lancet Commission. *Lancet* 2022;400(10356):921-972.
6. Chronic Obstructive Pulmonary Disease - Level 3 Cause (Last updated 16 May 2024). Seattle, WA: Institute for Health Metrics and Evaluation. Accessed 1 April 2025: <https://www.healthdata.org/>.
7. Boers E, Barrett M, Su JG, et al. Global burden of chronic obstructive pulmonary disease through 2050. *JAMA Network Open* 2023;6(12):e2346598.
8. Safiri S, Carson-Chahhoud K, Noori M, et al. Burden of chronic obstructive pulmonary disease and its attributable risk factors in 204 countries and territories, 1990-2019: Results from the Global Burden of Disease Study 2019. *British Medical Journal* 2022;378:e069679.
9. Tobacco and Chronic Obstructive Pulmonary Disease (COPD). Geneva: World Health Organization, 2023. Accessed 1 April 2025: <https://iris.who.int/bitstream/handle/10665/374026/9789240084452-eng.pdf?sequence=1>
10. Bhatt SP, Kim YI, Harrington KF, et al. Smoking duration alone provides stronger risk estimates of chronic obstructive pulmonary disease than pack-years. *Thorax* 2018;73(5):414-421.
11. Adeloye D, Song P, Zhu Y, et al. Global, regional, and national prevalence of, and risk factors for, chronic obstructive pulmonary disease (COPD) in 2019: A systematic review and modelling analysis. *Lancet Respiratory Medicine* 2022;10(5):447-458.
12. Malvi A, Khatib MN, Ganesan S, et al. Assessing the impact of electronic nicotine delivery systems on chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Respiratory Medicine* 2025;241:108059.
13. Chen P, Li Y, Wu D, et al. Secondhand smoke exposure and the risk of chronic obstructive pulmonary disease: A systematic review and meta-analysis. *International Journal of Chronic Obstructive Pulmonary Disease* 2023;18:1067-1076.
14. Li J, Sun S, Tang R, et al. Major air pollutants and risk of COPD exacerbations: A systematic review and meta-analysis. *International Journal of Chronic Obstructive Pulmonary Disease* 2016;11:3079-3091.
15. State of Global Air 2024. Special Report. Boston, MA: Health Effects Institute, 2024. Accessed 1 April 2025: <https://www.stateofglobalair.org/resources/report/state-global-air-report-2024>.
16. Household Air Pollution (16 October 2024). Geneva: World Health Organization. Accessed 1 April 2025: <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>.
17. Murgia N, Gambelunghie A. Occupational COPD-The most under-recognized occupational lung disease? *Respirology* 2022;27(6):399-410.
18. Peng C, Yan Y, Li Z, et al. Chronic obstructive pulmonary disease caused by inhalation of dust: A meta-analysis. *Medicine* 2020;99(34):e21908.
19. Yang IA, Jenkins CR, Salvi SS. Chronic obstructive pulmonary disease in never-smokers: risk factors, pathogenesis, and implications for prevention and treatment. *Lancet Respiratory Medicine* 2022;10(5):497-511.
20. Sadhra S, Kurmi OP, Sadhra SS, et al. Occupational COPD and job exposure matrices: A systematic review and meta-analysis. *International Journal of Chronic Obstructive Pulmonary Disease* 2017;12:725-734.
21. Population Health Survey 2020-22. Hong Kong SAR: Department of Health.
22. In-patient Statistics 2023. Hong Kong SAR: Hospital Authority, Department of Health and Census and Statistics Department.
23. Mortality Statistics. Hong Kong SAR: Department of Health and Census and Statistics Department.
24. Thematic Household Survey Report No. 79. Pattern of Smoking. Hong Kong SAR: Census and Statistics Department.
25. Air Pollution Control Strategies. Hong Kong SAR: Environmental Protection Department. Accessed 1 April 2025: [https://www.epd.gov.hk/epd/english/environmentinhk/air/prob\\_solutions/strategies\\_apc.html](https://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/strategies_apc.html).
26. Air Quality Health Index - Recommended Precautionary Actions. Hong Kong SAR: Environmental Protection Department. Accessed 1 April 2025: <https://www.aqhi.gov.hk/en/health-advice/sub-health-advice.html>.
27. WHO Guidelines on Physical Activity and Sedentary Behavior. Geneva: World Health Organization, 2020.
28. Could It Be COPD? Global Initiative for Chronic Obstructive Lung Disease. Accessed 1 April 2025: <https://goldcopd.org/patients-advocacy-groups/>.



# QUIT IN JUNE

The Tobacco and Alcohol Control Office (TACO) of the Department of Health has launched the "Quit in June" campaign to call on smokers to make a quit attempt in order to reduce their risk of tobacco-related diseases and deaths. Quitting is beneficial to smokers and brings immediate and long-term health benefits. Smokers who stay tobacco-free for four weeks would be five times more likely to quit for good.

There are more than 100 reasons to quit tobacco once and for all. TACO collaborates with community pharmacies, smoking cessation clinics, DH clinics, and District Health Centres/District Health Centre Expresses to provide free one-week smoking cessation drugs (nicotine replacement therapy "NRT") trial packs, and Chinese medicine ear points patches to encourage quitting. For more details about the Campaign, please visit website: [www.livetobaccofree.hk/](http://www.livetobaccofree.hk/).



## Editorial Board

Editor-in-Chief		Dr Anne CHEE
Members		Dr Patrick CHONG, Dr SK CHUANG, Dr Cecilia FAN, Mr Kenneth LAM, Dr Joanna LEUNG, Dr April LI, Dr CY LI, Dr KK NG, Dr Geeta SHARMA, Dr Kellie SO, Dr Lilian WAN
Production Assistants		Ms Cynthia CHEUNG, Mr KK FUNG, Mr Paul FUNG, Ms Sharon LAU, Ms Natalie LEUNG

## Disclaimer

This publication is produced by the Non-communicable Disease Branch, Centre for Health Protection of the Department of Health, 18/F Wu Chung House, 213 Queen's Road East, Wan Chai, Hong Kong

All rights reserved

Please send all comments and/or questions to [so\\_dp3@dh.gov.hk](mailto:so_dp3@dh.gov.hk)

Centre for Health Protection Website

[www.chp.gov.hk](http://www.chp.gov.hk)