



衛生防護中心  
Centre for Health Protection

# Non-Communicable Diseases Watch

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## Health Tips

In spite of medical advances, COPD is still an incurable disease at present. However, living well with COPD is possible through skills training in self-care, taking control of the symptoms, getting professional and family support, along with making appropriate lifestyle changes!

## Breathing Alert : COPD

Chronic obstructive pulmonary disease (COPD) is a life-threatening lung disease characterised by a persistent blockage of airflow from the lungs that cannot be fully reversed. It is a major cause of mortality and morbidity throughout the world. According to 2007 World Health Organization (WHO) estimates, as many as 210 million people around the world have the disease. In 2005, over 3 million people died of COPD, representing 5% of all deaths globally in that year. More importantly, mortality and disease burden of COPD are expected to increase in the coming decades due to ageing of the world's population and continued exposure to COPD risk factors. Without concerted efforts and effective interventions to cut risks, total deaths from COPD are predicted to increase by more than 30% in the next 10 years.<sup>1</sup> By 2030, COPD will become the 5<sup>th</sup> leading cause of global burden of disease (from 13<sup>th</sup> in 2004) and the 3<sup>rd</sup> leading cause of death worldwide (from 4<sup>th</sup> in 2004).<sup>2</sup>

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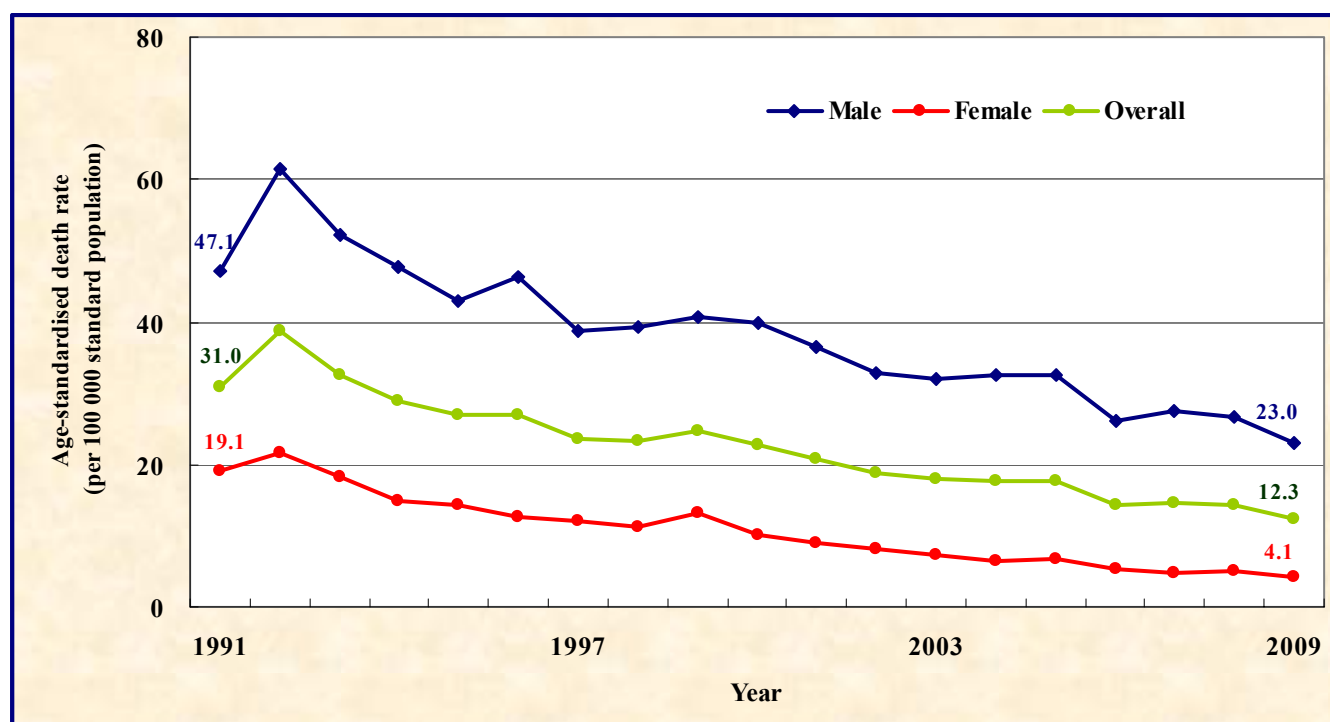
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## Review Local Situation

An earlier study, which used a validated COPD prevalence model to estimate the prevalence of COPD in 12 Asia-Pacific countries and regions, projected that 3.5% of people aged 30 and above in Hong Kong had moderate to severe COPD.<sup>3</sup> Another local prevalence study included 1 008 randomly selected people aged 60 and above from 20 elderly community centres and used the lung function test result of FEV<sub>1</sub>/FVC ratio of <70% (i.e. the ratio of post-bronchodilator forced expiratory volume in one second (FEV<sub>1</sub>) to the forced vital capacity (FVC) <70%) as evidence of airflow obstruction. Results showed that 14.0% of subjects had moderate to very severe COPD. If using the lower limit of normal range values for the FEV<sub>1</sub>/FVC ratio as to reduce over-diagnosis of COPD, the corresponding prevalence was 8.5%.<sup>4</sup>

COPD exacerbations often require hospital admissions. In 2009, there were over 29 600 episodes of in-patient discharges and deaths attributed to COPD in public and private hospitals.<sup>5</sup> Despite the age-standardised death rates due to COPD have decreased markedly in the past 19 years (Figure 1), the disease accounted for 1 628 registered deaths in 2009, representing 4.0% of all registered deaths in that year.<sup>6</sup> As shown in Table 1, both the rate of in-patient discharges and deaths and the mortality rate attributed to COPD were found to increase substantially with age.

Figure 1: Age-standardised death rate due to COPD by sex, 1991-2009



Sources: Department of Health and Census and Statistics Department.

Table 1: Disease burden of COPD by age group, 2009

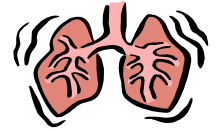
Age group	Episodes of in-patient discharges and deaths in public and private hospitals <sup>^</sup>		Registered deaths <sup>@</sup>	
	Number	Rate <sup>*</sup>	Number	Rate <sup>*</sup>
44 and below	866	21.6	3	0.1
45-64	3 359	160.6	72	3.4
65 and above	25 405	2 843.3	1 552	173.7
<b>Total</b>	<b>29 630</b>	<b>423.1</b>	<b>1 628</b>	<b>23.2</b>

Notes: <sup>^</sup> Provisional figures in the year 2009.

<sup>@</sup> Included one death with unknown age.

<sup>\*</sup>Rate per 100 000 mid-year population of respective age group.

Sources: Hospital Authority, Department of Health, and Census and Statistics Department.



## Know the Risk Factors

Individuals' susceptibility to COPD is often determined by an interaction between environmental exposures and host factors (Box 1)<sup>7,8</sup>

### Box 1: Risk factors for COPD

#### *Environmental exposures*

- \* Tobacco smoke (from active and passive smoking)
- \* Occupational exposure to dusts, chemicals, vapours and fumes
- \* Indoor air pollution (e.g. from heating or cooking with biomass in poorly ventilated dwellings)
- \* Outdoor air pollution (e.g. fossil fuel combustion from motor vehicle emissions)

#### *Host factors*

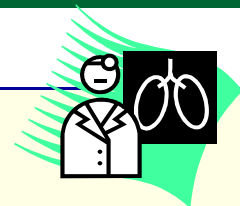
- \* Gene defect (e.g. deficiency of  $\alpha$ 1-antitrypsin which is an enzyme that protects the lung from damage)
- \* Gender (males are more at risk in comparison with females, probably because of the differences in their patterns of smoking and occupation exposures)
- \* Advancing age (because of physiological decline in respiratory function)
- \* Suboptimal lung growth and development (occurring during gestation, birth and childhood)
- \* Oxidation stress (i.e. an excess of oxidants mostly resulted from smoking or air pollutants, and/or a depletion of antioxidants as a result of low dietary intake or genetic predisposition that can produce direct or indirect injurious effects in the lungs)
- \* Respiratory infections (including viral and bacterial)
- \* Co-morbidities (such as chronic asthma or pulmonary tuberculosis)
- \* Poor nutrition (that can reduce respiratory muscle strength and endurance)

Nevertheless, smoking in any form (active or passive smoking) is the most commonly encountered risk factor for COPD worldwide. According to individual countries, the risk attributable to active smoking in COPD varies from 40% to 70%.<sup>8</sup> In smokers, the risk for COPD is dose-related. Age at starting to smoke, total pack-years smoked, and current smoking status are predictive of COPD mortality.<sup>7</sup> For passive smoking, a cross-sectional analysis in China observed that individuals who were heavily exposed to passive smoking (equivalent to 40 hours a week for more than 5 years) were 48% more likely to have symptoms of COPD than unexposed individuals.<sup>9</sup> While occupational exposure is an under-appreciated risk factor for COPD<sup>7</sup>, results of a systematic epidemiological review into occupational factors associated with COPD showed that about 15% of COPD cases might be attributable to workplace exposure.<sup>10</sup> Furthermore, indoor air pollution resulting from the burning of wood and other biomass fuels has also been identified as a significant COPD risk factor, especially among women in low-income countries or rural villages because domestic cooking is a major part of their daily life.<sup>7</sup> Another meta-analysis also reported that people exposed to biomass smoke have a risk of developing COPD 2.44 times that of those not exposed to biomass smoke.<sup>11</sup> While outdoor air pollution is associated with increased emergency department visits, more hospital admissions and higher mortality for patients with COPD<sup>12</sup>, the risk attributed to outdoor air pollutants in development of COPD is much smaller than that for indoor air pollutants. WHO estimates that urban air pollution causes about 1% of COPD cases in high-income countries and 2% in nations of low- and middle-income countries.<sup>13</sup>

In Hong Kong, cigarette smoking is by far the most important risk factor for COPD.<sup>14</sup> Thus, the best way to prevent COPD is no smoking (including avoidance of passive smoking). For support to quit smoking, call the Integrated Smoking Cessation Hotline of Department of Health (DH) at 1833 183. For those working in a dusty area or around chemical fumes and gases, they should take appropriate precautionary measures (such as using suitable respiratory protective equipment during work) as to reduce personal exposure to lung irritants and the risk of developing COPD.

### Recognize Symptoms Early

Early recognition of COPD symptoms enables early diagnosis and treatment to slow down the progressive damage to the lungs. Key symptoms of COPD include chronic cough, shortness of breath (especially with physical activity), excessive mucus (sputum) production, chest tightness and wheezing. The severity of symptoms would depend on how much lung damage the patients have. However, COPD develops slowly that sufferers may ignore mild or subtle symptoms in early stages, or attribute early symptoms to ageing or being out of shape until significant airflow limitation has occurred. Thus, those who are at higher risk of developing COPD (notably smokers) should watch out for respiratory symptoms and seek medical advice early when indicated (Box 2).



#### Box 2: Could it be COPD?<sup>15</sup>

Answer the following 5 questions and see whether you have COPD.

- 1. Do you cough several times on most days?**
- 2. Do you bring up phlegm or mucus most days?**
- 3. Do you get out of breath more easily than others of your age?**
- 4. Are you older than 40 years?**
- 5. Are you a current smoker or an ex-smoker?**

If you have answered *'YES' to three or more* of the above questions, there is a possibility that you have COPD. For proper diagnosis, it is advisable for you to consult a doctor and have lung function investigations (such as spirometry test).

In case you have any breathing problems, however, you should talk to a doctor and take appropriate steps (such as quit smoking) to reduce your risk of developing COPD .

Source: Global Initiative for Chronic Obstructive Lung Disease.



## Control the Illness

For COPD patients, appropriate treatment can help control symptoms, slow down disease progression, prevent further lung damage and improve quality of life. Based on individualized assessment of disease severity and therapeutic responses, treatment may consist of pharmacotherapy, pulmonary rehabilitation (Box 3), oxygen therapy (when patients have a low level of oxygen in their blood) or surgical interventions (in very severe cases).

### Box 3: Pulmonary rehabilitation

Pulmonary rehabilitation is a programme for patients with chronic lung diseases (including COPD). Its principal goals are to help patients breathe easier, optimize physical functions and improve quality of life.

Pulmonary rehabilitation is usually coordinated by a team of health care professionals experienced in providing care to people with lung conditions, including doctors, nurses, physiotherapists, occupational therapists and dieticians, etc. Components of pulmonary rehabilitation may vary, but generally consist of teaching breathing exercise, methods of removing sputum (e.g. expectoration posture and skills), coordination of respiration and body movements, physical exercise, methods of saving physical strength, stress managing skills and nutrition counselling.

In Hong Kong, a number of public hospitals and non-governmental organizations offer pulmonary rehabilitation or supportive services to COPD patients. For details or referrals, please talk with a doctor or contact individual hospitals or organizations (such as call the Hong Kong Society for Rehabilitation at 2792 1122, or visit its website <http://www.rehabsociety.org.hk/english.html>).

Besides, COPD patients should learn how to deal with the disease and take an active role in self-care. Studies showed that COPD patients who had been educated and involved in managing their own conditions would have a significant reduction in breathlessness and hospital admissions.<sup>16</sup> Here are some recommended actions that people with COPD can take to live better.

**Stop smoking.** It is the most important step in slowing the progression of COPD. Seek professional help if indicated.

**Comply with the treatment regimes and have regular follow-up.** Know the use, effects and side-effects of the medications, and take them as prescribed. If inhalation devices (including home oxygen) are required, be skilled-up and use them correctly.

**Get appropriate vaccinations** as recommended by the doctor, such as vaccinations against influenza and pneumococcal disease. Avoid contact with people with colds and influenza or other infections.

**Watch out for symptoms of chest infection or flare-up.** Be aware of some warning signs, including more coughing or breathless than usual, change in amount or colour of sputum (such as yellow-green or brown), fever, loss of appetite or less energy for usual activities. Consult a doctor and report symptoms early when feeling unwell.

**Enroll in a pulmonary rehabilitation programme** or join a patient support group.

**Keep the air clean at home.** Avoid triggers that can make COPD worse, such as cigarette smoke or other fumes, dusts, strong smells, or breathing very cold or very humid air.

**Monitor public announcements of air quality.** Stay indoors when outdoor air quality is poor.



**Eat a well-balanced diet.** Include at least 5 servings of fruit and vegetables a day and appropriate amounts of high fibre cereals or grains, proteins and dairy products. Drink adequate amounts of water or other fluids, but limit alcohol and caffeine.

**Exercise regularly.** This can maintain or improve muscle strength and overall fitness. Start slowly and then build up gradually as tolerated with sufficient rest breaks. Talk to a doctor for a customized exercise prescription if indicated.

**Maintain an optimal weight.** Being overweight may interfere with breathing and increase oxygen requirement, causing the lungs to work even harder. Similarly, being underweight can have a negative impact on lung function, impair exercise tolerance and increase risk of infection.

**Get enough rest and sleep.** Not getting enough rest can affect both physical and mental health, whereas a good night's sleep can help body get stronger and better able to cope with the disease.

**Manage negative emotions.** Stress, anxiety or low mood can affect breathing and oxygen requirement. Talk with someone when feeling anxious or low, or seek professional help if indicated. Find healthy ways to release stress. Schedule time to relax and do things that are enjoyable, such as taking a leisure walk, practising yoga, listening to music or reading a book.

**Conserve energy.** Do activities slowly. Put the often needed items within easy reach. Ask for help from family and friends with daily tasks if necessary.

In spite of medical advances, COPD is still an incurable disease at present. However, living well with COPD is possible through skills training in self-care, taking control of the symptoms, getting professional and family support, along with making appropriate lifestyle changes !

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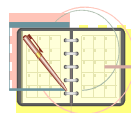
## News Bites

COPD exacerbations increased the risk of myocardial infarction and stroke, a British study reported.

Using the self-controlled case series approach, the study analyzed data from 25 857 patients with COPD. COPD exacerbations were defined as having treatment with prescribed oral corticosteroids greater than 20 mg per day and/or selected oral antibiotics. Over a 2-year observation period (February 2003 to February 2005), there were 524 myocardial infarctions in 426 patients and 633 strokes in 482 patients identified, yielding the incidence rate for myocardial infarction and stroke of 1.1 and 1.4 per 100 patient-years respectively. Furthermore, the study found it was 1.27 times more likely to have myocardial infarction 1-5 days after COPD exacerbation and 26% more likely to develop stroke 1-49 days after COPD exacerbation.

The investigators concluded that the findings might have implications for COPD therapy (in both stable and exacerbated states).

[Source: Donaldson GC, Hurst JH, Smith CJ, et al. Increased risk of myocardial infarction and stroke following exacerbation of COPD. *Chest* 2010; 137(5): 1091-7.]



## Event Calendar



World COPD Day is an annual event organized by the Global Initiative for Chronic Obstructive Lung Disease to improve awareness and care of COPD around the world. The first World COPD Day was held in 2002.

Each year, organizers in more than 50 countries worldwide carry out various activities, making the day one of the world's most important days for COPD awareness and education.

For the World COPD Day 2010, it will take place on Wednesday, November 17 around the theme

**“2010 - The fear of the Lung: Measure your lung health - Ask your doctor about a simple breathing test called spirometry”.**

To learn more about the World COPD Day and past events, please visit its designated website at <http://www.goldcopd.com/WCDIndex.asp>.

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