A young girl with light brown hair is shown in profile, blowing a large, clear bubble. She is holding a red wand that is dripping with soapy water. The background is a soft-focus outdoor scene with green trees and a bright sky. The overall mood is peaceful and carefree.

CHAPTER 1 PREVENTION

97% of health expenses are presently spent on treatment but only 3% invested in prevention. In 2010, chronic obstructive pulmonary disease (COPD) alone was estimated to have cost the global economy €280 billion.

Respiratory diseases account for at least 17% of all deaths worldwide (table 1), which includes lower respiratory infections, COPD, TB and cancers of the lung and airways. In Europe, lung diseases are among the leading causes of mortality and morbidity. They result in a yearly financial burden of over €100 billion in Europe, which includes indirect costs due to millions of lost working days.

This section of the roadmap pinpoints specific cost-effective areas where EU and national policy makers can do more to prevent lung disease in the future, and to reduce the overall socioeconomic burden of these diseases. Health policy is a national competence; however, at EU level a lot of our recommendations would benefit from an EU level strategy encompassing chronic, non-communicable diseases. During the Belgian Presidency, the Council adopted, in December 2010, conclusions on innovative approaches for chronic diseases.

The EU and Member States need to increase their investments in prevention, an improved environment, and in promoting healthy lifestyles, but also focus on secondary prevention such as early screening and treatment, if the EU 2020 strategy is to yield on its promise of a smart and sustainable growth. The chronic disease challenge facing Europe goes far beyond public health. If not addressed, they threaten the “Europe 2020 strategy”, especially the goal to have 75% of the working population employed and productive.

Although this roadmap is about respiratory diseases, these diseases often occur along with other co-morbid conditions (where two or more chronic diseases may occur at the same time in the same individual). A cross-disease and interdisciplinary approach to prevention strategies for better lung health should be considered in future prevention actions.

AWARENESS

There are more than 40 respiratory diseases that affect both children and adults. Some are common, such as asthma, COPD, pneumonia and sleep apnoea, and others are rare, such as alpha-1 antitrypsin deficiency and pulmonary arterial hypertension.

Despite the overwhelming burden of respiratory disease, there is a general lack of understanding among patients and the public. As an example, although COPD may be the primary cause of death, it is often only recorded as a contributing cause, or it is omitted from the death certificate, with death attributed to another disease.

A much improved EU public awareness strategy on healthy lungs is needed, involving all policy makers and stakeholders, such as scientific societies, medical associations and patient organisations across Europe.

HEALTH DETERMINANTS

Tobacco, physical inactivity, poor diet and alcohol are the four major health determinants that account for

Table 1. Leading causes of death worldwide.

	Deaths in millions	% of deaths
Coronary heart disease	7.20	12.2
Stroke and other cerebrovascular disease	5.71	9.7
Lower respiratory infection	4.18	7.1
Chronic obstructive pulmonary disease	3.02	5.1
Diarrhoeal disease	2.16	3.7
HIV/AIDS	2.04	3.5
Tuberculosis	1.46	2.5
Trachea/bronchus/lung cancer	1.32	2.3
Road traffic accidents	1.27	2.2
Prematurity and low birth weight	1.18	2.0

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¹⁶ World Health Organization. Top Ten Causes of Death. Fact Sheet no. 310. www.who.int/mediacentre/factsheets/fs310_2008.pdf Date last accessed: June 15, 2011.

most of the chronic disability and death in Europe, but 97% of health expenses are presently spent on treatment and only 3% invested in prevention. ERS joined forces in an unprecedented prevention alliance, the ECDA, made up of 10 European organisations representing over 100,000 health professionals, to put the case for immediate political action to reverse the alarming rise in chronic non-communicable diseases, which affects more than a third of the population of Europe.

For more information about ECDA and to download its policy recommendations “A Unified prevention approach”, see: www.ersnet.org/index.php/eu-affairs/chronic-respiratory-disease.html

KEY POLICY RECOMMENDATIONS FOR FUTURE PREVENTION, EARLY DETECTION AND DIAGNOSIS IN THE EU

Awareness

- The EU and Member States must invest in the promotion of healthy lifestyles as the only sustainable way forward. Education, information (including health literacy) and raising awareness are important. However, structural measures including legislative approaches are also necessary.

Tobacco

- Smoking is the leading preventable cause of death in Europe and kills half of all lifetime users.

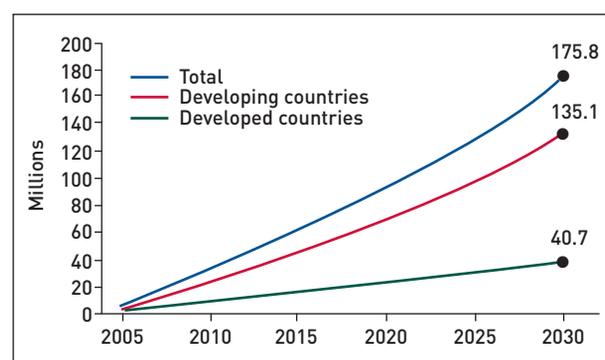


Figure 4. Cumulative tobacco-related deaths, world-wide 2005–2030. Reproduced with permission from the publisher.¹⁷

¹⁷ Shafey O, Eriksen M, Ross H, *et al.* The Tobacco Atlas. 3rd Edn. World Lung Foundation, American Cancer Society, 2010.

¹⁸ de Leeuw F, Horálek J. Assessment of the Health Impacts of Exposure to PM_{2.5} at a European Level. Bilthoven, European Topic Centre on Air and Climate Change, 2009. Available from: http://air-climate.eionet.europa.eu/docs/ETCACC_TP_2009_1_European_PM2.5_HIA.pdf

Worldwide, if current smoking patterns continue, tobacco will kill about 10 million people every year by 2020 (fig. 4).

- Ensure full implementation of all aspects of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), in particular comprehensive smoke-free legislation implemented throughout Europe, and the introduction of mandatory pictorial warnings and standardised packaging on tobacco products.
- Commit EU Member States to actively implement outcomes following the UN high level summit on non-communicable diseases. Action from all government agencies is needed to address non-communicable disease-related challenges. For example, raising excise taxes on tobacco, the most effective short-term tobacco control intervention, must be accomplished by government agencies and policy makers outside the health sector.
- Ensure that public health policy is protected from the vested interests of the tobacco industry. Many vested interests may try to block or weaken national and global strategies on chronic diseases. Tobacco control advocates have long experience in fighting the powerful tobacco industry. The tobacco industry must play no part in decision-making on public health policy (Article 5.3 Guidelines, FCTC).

Environment

- Outdoor air pollution is the biggest environmental health threat in Europe today leading to significant reductions of life expectancy and productivity. Fine particles and ozone are the most serious pollutants and it is urgent that their concentrations are reduced significantly in Europe.
- Pollution of fine particles is associated with more than 455,000 premature deaths due to cardio-respiratory effects every year in the 27 EU member states, corresponding to almost 4.5 million years of life lost (fig. 5).¹⁸

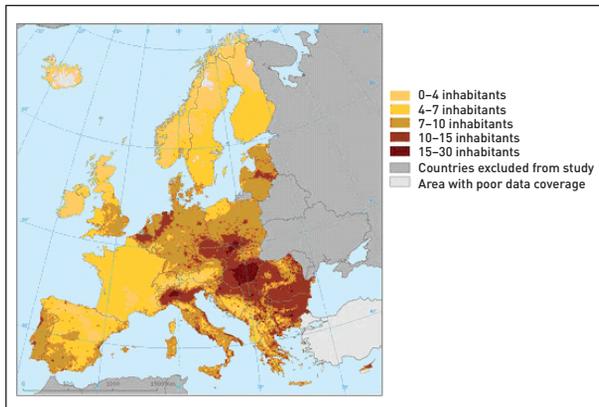


Figure 5. Premature mortality (per 10,000 per year) attributable to PM_{2.5} exposure (reference year 2005). Reproduced with permission from the publisher.¹⁹

- Step up efforts to implement the WHO recommended air quality guidelines for outdoor and indoor air, and the WHO Parma Declaration on Environment and Health and the Commitment to Act which mentions the need to tackle the health effects of climate change, emerging health risks and the threat of a growing burden of non-communicable diseases. More info is available at: www.euro.who.int/en/who-we-are/policy-documents/parma-declaration-on-environment-and-health
- Protect vulnerable populations such as children, citizens suffering from respiratory diseases, and the elderly from the harmful effects of air pollutants such as fine particulate matter and ozone. The European Commission and Parliament can assist this process by supporting a robust revision of the EU Air Quality Directives to ensure a better protection of public health with binding exposure reduction targets.

Occupational health

- Prioritise actions on respiratory diseases in the context of the need for a healthy and productive workforce and in particular with regard to demographic change and the EU 2020 agenda of inclusive and sustainable growth.
- Prepare for the challenge of the rise in allergies, which has increased markedly in the EU

¹⁹ *Ibid.*

²⁰ 30 minutes of moderate physical activity on 5 days per week or 20 minutes of vigorous intensity on 3 days per week. Important message: include activities to promote strength and bone health.

population to 20% for allergy and 8% for asthma, and which will create substantial socioeconomic costs and new challenges in the workplace. Occupational allergens and irritants, and work-aggravated asthma will need special attention.

- Promote the concept of exposure standards for allergens and respiratory irritants as a major primary prevention initiative. There is a clear need because many allergens are not regulated by REACH, the European Community Regulation on chemicals and their safe use.

Physical activity

- Promote physical activity as a normal part of healthcare. It should include guidance on how to translate general public health recommendations on physical activity²⁰ into levels that correspond to the capacity of the patient.
- Prevention of chronic diseases starts early in life. Healthy lifestyles need to be included in the school curricula, including access to periods of physical activity and exercise throughout the school day. The pilot European Innovation Partnership on Active and Healthy Ageing should also include ways to promote such simple prevention strategies.
- Encourage people with lung conditions to continue to exercise. Recent evidence shows that effective weight reduction, smoking cessation and physical activity can help those affected by milder cases of chronic respiratory orders, e.g. sleep apnoea and COPD.
- There is a need to optimise physical training in patients with lung disease. Specific programmes such as pulmonary rehabilitation need to be tailored and made much more accessible across Europe for patients with respiratory disease. Currently, disappointing numbers of patients (less than 10%) have access to adapted fitness facilities.

Diet and nutrition

- Member States should ensure screening of nutritional status and awareness of over and underweight (fig. 6). This is of particular

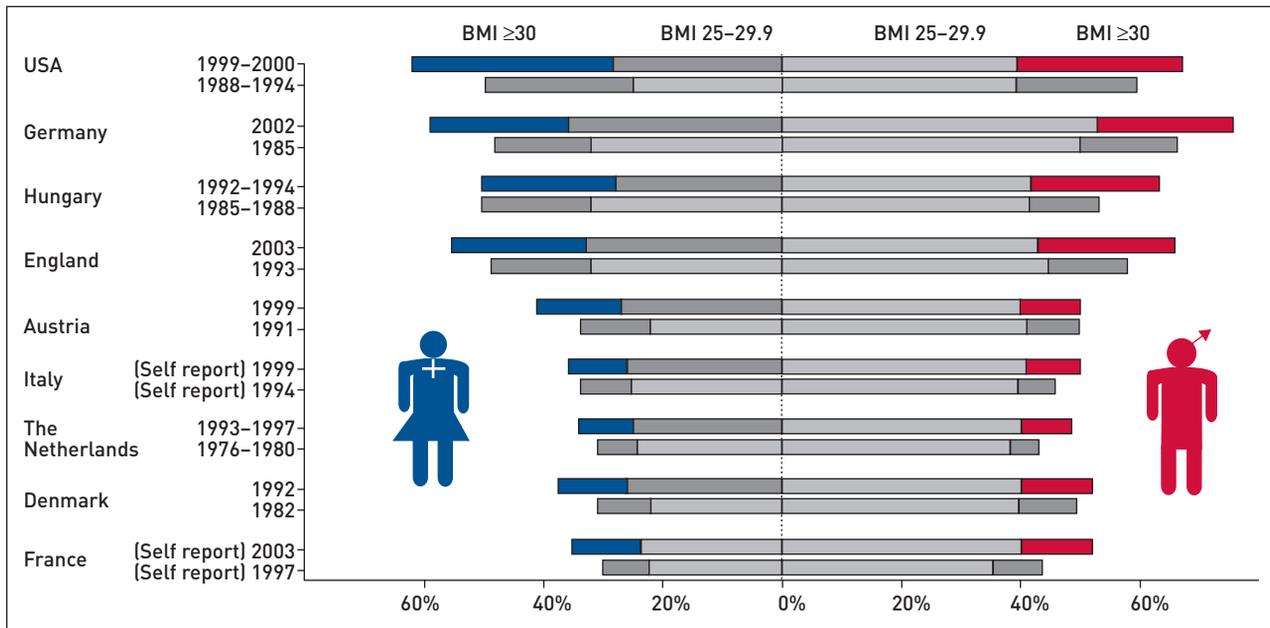


Figure 6. Changes in adult overweight and obesity in selected countries. Reproduced with permission from the publisher.²¹

importance in respiratory conditions. Regular monitoring in all areas of child and adolescent growth and development, e.g. height, weight and lung capacity, should be initiated in the EU Member States.

- The EU and Member States should continue to push for increased consumption of fruit and vegetables, antioxidants, flavonoids, fish and omega-3 fatty acids, which are all associated with better lung function. High fruit intake and higher intake of cruciferous vegetables, such as broccoli and cabbage in individuals with a specific genotype, and a diet high in phytoestrogens (found in nuts and soy products), have all been shown to be associated with a lower risk of lung cancer.
- The EU should produce more accurate scientific evidence of the link between diet and lung diseases.

Health inequalities and migration

- ERS welcomes the recent Commission Communication on “Solidarity in Health” with the aim of tackling existing social and health inequalities in Europe, which constitutes a major challenge, especially for respiratory health.

- Social inequality causes a higher proportion of deaths in respiratory disease than in any other disease. Respiratory diseases are associated with social inequalities in all age groups, particularly in children. In Europe alone, there were 62,000 deaths recorded from TB in 2009. Reducing health inequalities could make an important contribution to the prevention of respiratory infections and there needs to be more concerted action in this area in the future.
- The underlying reasons for poor respiratory health in migrant and socially excluded groups need to be tackled. These include poor housing, poor nutrition and other negative health-related behaviours, as well as barriers to accessing health and other services, stigmatisation and discrimination.
- Promote social support and educational programmes to improve uptake among low socioeconomic status patients, and ensure that patient education programmes are better tailored for people in deprived areas, in order to increase patient treatment initiation and adherence.

²¹ International Association for the Study of Obesity/International Obesity Task Force. EU Platform Briefing Paper. London, International Obesity Task Force, 2005. Available from: http://ec.europa.eu/health/ph_determinants/life_style/nutrition/documents/iotf_en.pdf

Regular lung health check

- Raise awareness and understanding of the need for regular lung function testing from an early age onwards. Lung function tests should be part of an individual's general medical check-up.
- Ensure that the simple lung function test (called spirometry) is used for accurate diagnosis of COPD and asthma. Spirometry as a tool for early detection should be implemented as a population-based quality-assured screening programme.
- Spirometry can be used as a screening test of general respiratory health and it is known that impaired spirometry is one of the major risk factors for cardiovascular disease. Spirometry also has prognostic value in neuromuscular disease. This is a very cost-effective and simple way to prevent the worst effects of chronic diseases. Early diagnosis leads to early treatment and early treatment is an important step to reducing healthcare costs in the EU.
- The development of novel tools to detect lung disease in at-risk populations is needed such as novel imaging techniques and sleep studies. Efficient, cost-effective screening programmes to detect lung diseases at an early stage, e.g. cystic fibrosis postnatal screening needs to be developed and promoted.

Lung cancer

- There is a need to develop more effective lung cancer screening methods, such as endoscopic lung cancer detection techniques, screening with high-resolution computed tomography, and in future, to investigate the application of modern molecular techniques for people at risk.
- We welcome the EU's efforts in assessing the health risks of nanotechnologies *via* the Scientific Committee on Newly Identified and Emerging Health Risks (SCENIHR). There is a need to continuously clarify the health risks of

nanotechnologies and nanoparticles, in particular those used in everyday life, for example water repellent sprays.

Early life events, prevention in infants, and immunisation

- There is lack of awareness of the importance of pre-natal and early-life events for future lung health and development of respiratory diseases in adulthood. Pre-natal factors are known to condition lung health later in life.
- There is a need to develop improved use of vaccines to prevent whooping cough, epiglottitis and pneumococcal infections and to develop new vaccines against common respiratory viruses, and in this respect we welcome the Council conclusions of June 6, 2011 on childhood immunisation. The benefit of the decrease in bacterial infections due to vaccination programmes for infants is among the most important achievements of modern medicine.
- Childhood asthma will continue to be a priority. Asthma is and will be the most common chronic disease in schoolchildren and adolescents. In allergic rhinitis and asthma, new individualised allergy vaccines could become a possible treatment for the prevention of asthma.
- The initiative of the Polish EU Presidency on childhood respiratory diseases is an important step in addressing these urgent concerns, and it is hoped that our recommendations in this area will be taken on board by the Member States.

Patient empowerment

- The public and patients need access to reliable and accurate health information, carefully and transparently designed. The content and quality of patient information needs to be improved by working in partnership with health professionals, patient groups and the European Medicines Agency (EMA).