













ERS 10 Principles for Lung Health

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This publication is the result of discussion which began at the ERS 2017 Presidential Summit held in Ghent, Belgium entitled: A public health approach to respiratory health. A follow up meeting chaired by Guy Joos and Ildiko Horvath to begin drafting the text was held in Brussels on 21 February 2018 attended by Carlos Robalo Cordeiro, Maeve Barry, Werner Bill, Torsten-Gerriet Blum, Marion Delcroix, Raquel Duarte, Mina Gaga,

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ERS 10 PRINCIPLES FOR LUNG HEALTH

Lung health matters. From our first cry to our last breath, our lungs fulfil more than a purely mechanical function, they represent a most tangible link to life. There are more than 40 different major respiratory diseases, all of which can seriously affect the lives of both children and adults. Yet despite encompassing a large number of potentially fatal diseases, respiratory diseases remain poorly understood by the public and crucially, receive minimal funding from most national governments, foundations and intergovernmental bodies. Nevertheless, steady progress has been made in several respiratory disease areas where survival and quality of life are now significantly better than a decade ago.

The European Respiratory Society (ERS) brings together volunteer experts in the field of lung disease and lung health. Through their shared knowledge and expertise, the ERS drives standards for lung science, education and advocacy. In setting out the ERS 10 Principles for Lung Health, the Society proposes a call to action to improve respiratory health which it invites all stakeholders – politicians, policy makers, patients and the public to support. Every breath counts.



1

EVERY BREATH COUNTS

Healthy lungs are a cornerstone of human health. Loss of lung function is linked to a worsening of cardiac and other conditions, together with a decrease in life expectancy. Respiratory diseases represent an important public health challenge. This is illustrated by many sources. On the World Health Organisation (WHO) list of the “Top 10 Global causes of Death” in 2016, chronic obstructive pulmonary disease

(COPD) was ranked as the third cause of death followed by lower respiratory infections in fourth place, trachea, bronchus and lung cancer in sixth position, with tuberculosis (TB) coming in tenth. Together, these diseases resulted in approximately 9 million deaths worldwide, second only to the combined death toll of ischemic heart diseases and stroke of 15.2 million.

Globally, respiratory diseases pose an immense worldwide health burden.

Five of these diseases are among the most common causes of severe illness and death worldwide:

- An estimated 251 million people were living with COPD in 2016, and around 3.17 million died due to COPD in 2015, making it the third leading cause of death worldwide – and the numbers are increasing.
- Approximately 334 million people suffer from asthma, which is the most common chronic disease of childhood, affecting 14% of children globally. The prevalence of asthma in children is rising. It is of great public health importance, as asthma causes approximately 489,000 deaths per year or more than 1,300 deaths per day, which are largely avoidable if asthma is properly treated.
- In 2015, 10.4 million people developed tuberculosis and 1.4 million people died.
- The most common lethal neoplasm in the world is lung cancer, which kills 1.6 million people each year, and the numbers are growing.
- More than 100 million people suffer from sleep-disordered breathing.
- Millions live with pulmonary hypertension.
- More than 50 million people struggle with occupational lung diseases.

During 2015 in the EU, 13.2% of all deaths were due to respiratory disease, with COPD accounting for the largest proportion. Almost 25,000,000 disability-adjusted life years (DALYS) were lost due to respiratory disease. DALYS are the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

Table 1
2015

Deaths attributed to	Worldwide		WHO European Region		EU 28	
	Deaths (000s) (% of total deaths)	Age standardized death rate (per 100 000 population)*	Deaths (000s) (% of total deaths)	Age-standardized death rate (per 100 000 population)	Deaths (000s) (% of total deaths)	Age-standardized death rate (per 100 000 population)
Ischaemic heart disease	8 756.0 (15.5)	149.7	2 429 (26.2)	142.0	983.5 (19.6)	67.0
Stroke	6 240.0 (11.1)	86.5	1 139 (12.3)	77.0	450.2 (9.0)	42.0
Lower respiratory infections	3 190.0 (5.7)	36.8	262 (2.8)	NA	162.8 (3.2)	NA
Chronic obstructive pulmonary disease	3 170.0 (5.6)	46.8	335 (3.6)	NA	221.0 (4.4)	NA
Trachea, bronchus, lung cancers	1 694.0 (3.0)	25.8	413 (4.5)	32.0	278.7 (5.5)	35.0
Diabetes mellitus	1 585.0 (2.8)	22.1	176 (1.9)	14.0	116.2 (2.3)	11.0
Alzheimer disease and other dementias	1 541.0 (2.7)	40.8	419 (4.8)	NA	331.6 (6.6)	NA
Diarrhoeal diseases	1 388.0 (2.5)	25.1	21 (0.2)	NA	15.0 (0.3)	NA
Tuberculosis	1 373.0 (2.4)	17.3	39 (0.4)	3.3	5.1 (0.1)	0.6
Road injury	1 342.0 (2.4)	18.3	80 (0.9)	8.4	27.1 (0.5)	4.5

* Data from 2016

Source: Global Health Estimates 2015: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2015. Geneva, World Health Organization; 2016.

European Health for All Database, Updated February 8, 2018.

WHO Mortality Database. Updated 2016.

Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Cause-Specific Mortality 1980-2016. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017.

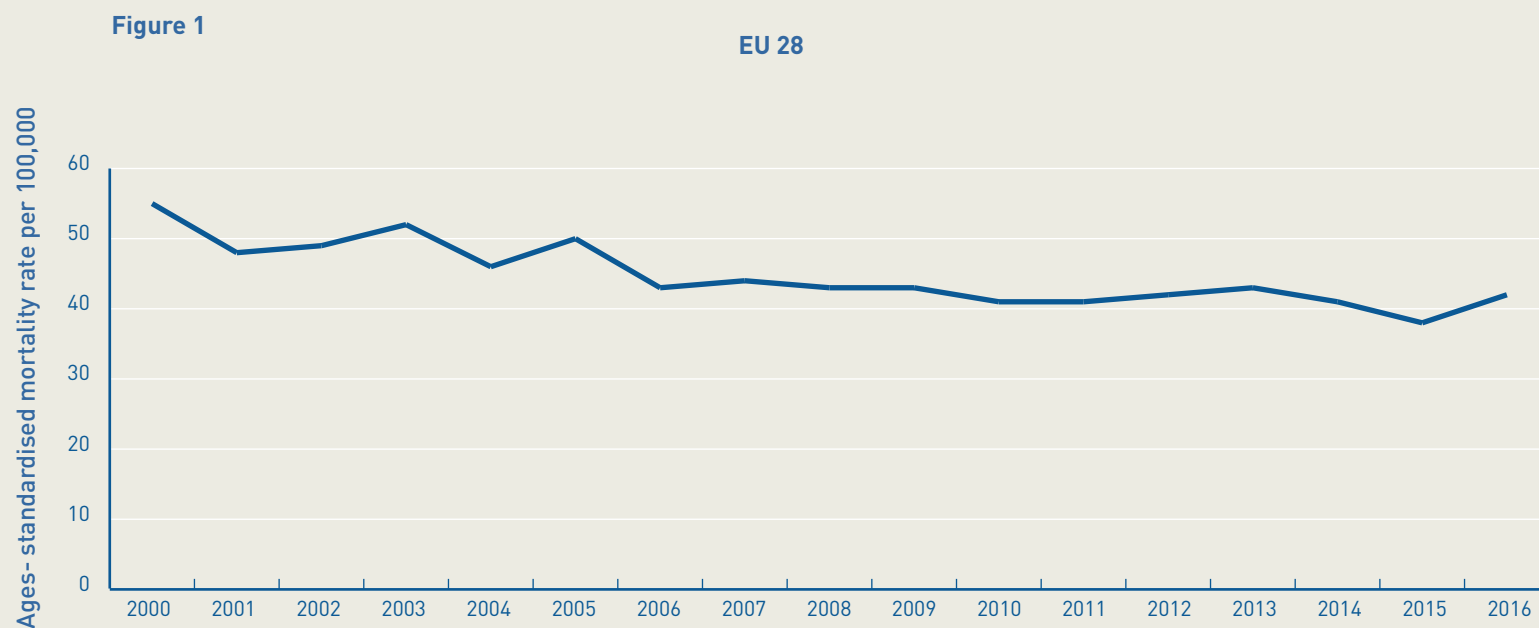
Table 2

2015

	Worldwide		WHO European Region		EU 28	
DALYs lost to	DALYs (000s)	% DALYs	DALYs (000s)	% DALYs	DALYs (000s)	% DALYs
Ischaemic heart disease	19 2055.5	7.2	43 965.7	14.8	126.8	0.09
Lower respiratory infections	142 384.0	5.3	6 334.8	2.1	2 357.0	1.6
Stroke	139 873.9	5.2	20,247	6.8	423.3	0.3
Preterm birth complications	102 297.2	3.8	3 261.0	1.1	825.2	0.6
Diarrhoeal diseases	84 928.2	3.2	779.0	0.3	222.5	0.2
Road injury	76 020.3	2.8	5 162.1	1.7	483.0	0.3
Chronic obstructive pulmonary disease	72 814.5	2.7	6 639.3	2.2	15 393.0	10.7
Diabetes mellitus	70 667.2	2.6	7 674.7	2.6	4 229.0	2.9
Birth asphyxia and birth trauma	67 265.6	2.5	1 445.0	0.5	241.7	0.2
Congenital anomalies	64 824.8	2.4	4 615.9	1.6	1 168.7	0.8
Trachea, bronchus, lung cancers	41 129.0	2.0	10 170.0	3.0	6433	4.5

Source: Global Health Estimates 2015: Burden of Disease by Cause, Age, Sex, by Country and by Region, 2000-2015. Geneva, World Health Organization; 2016. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Cause-Specific Mortality 1980- 2016. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017.

While we can see an overall decrease in mortality from respiratory disease when looking at EU Member States, over the last 20 years, there has been an increase from 2014-2015, suggesting that the advances gained must not be taken for granted.



Source: European Health for All Database, Updated February 8, 2018.

2

KNOW THE COST TO UNDERSTAND THE VALUE



Respiratory disease places a huge burden on society in terms of disability and premature mortality, and also in direct health service costs, drugs prescribed, and the indirect costs related to lost production. This section estimates these costs across the current 28-member countries of the European Union using published cost estimates and WHO and European data. Because of a lack of information related to other respiratory diseases, costs are estimated for only the more common conditions: COPD, asthma, lung cancer, tuberculosis, pneumonia/acute lower respiratory infections (ALRI), obstructive sleep apnoea syndrome (OSAS) and cystic fibrosis. The analysis is limited to countries of the EU because of the paucity of representative data relevant to most non-EU countries.

The estimated annual economic burden of COPD and asthma in terms of conventional direct (healthcare) and indirect (lost production) costs is presented in table 1, amounting to €82 billion in total. The direct and indirect costs of COPD and asthma are of similar magnitude (figure 1).

Fewer cost data are available for the remaining respiratory conditions. Together with those for COPD and asthma, the estimates are summarised in table 1, which also shows the monetised value of DALYs lost due to those conditions where estimation was possible. Taking the mean of the ranges, the grand total of direct costs is at least €55 billion annually. The indirect costs, even though only partially estimated, amount to at least €42 billion annually.

- The total cost of respiratory disease in the 28 countries of the EU alone amounts to more than €380 billion annually.
- This total cost includes the costs of direct primary and hospital healthcare (at least €55 billion), the costs of lost production (at least €42 billion) and the monetised value of disability-adjusted life-years (DALYs) lost (at least €280 billion).
- The annual costs of healthcare and lost productivity due to COPD are estimated as €48.4 billion and those due to asthma at €33.9 billion.
- The average direct healthcare cost per case of tuberculosis is about €7500 but for multidrug-resistant disease (MDR-TB) this increases to €33 000 and for extensively drug-resistant disease to €47 500.
- The average value of the DALYs lost by a patient with lung cancer is about €350 000.

The inpatient costs of pneumonia are estimated at €2.5 billion per annum. Estimation of the other direct and indirect costs of pneumonia was not possible. The cost of lost DALYs (€43.5 billion) represents those due to acute lower respiratory infections, including pneumonia.

Table 3

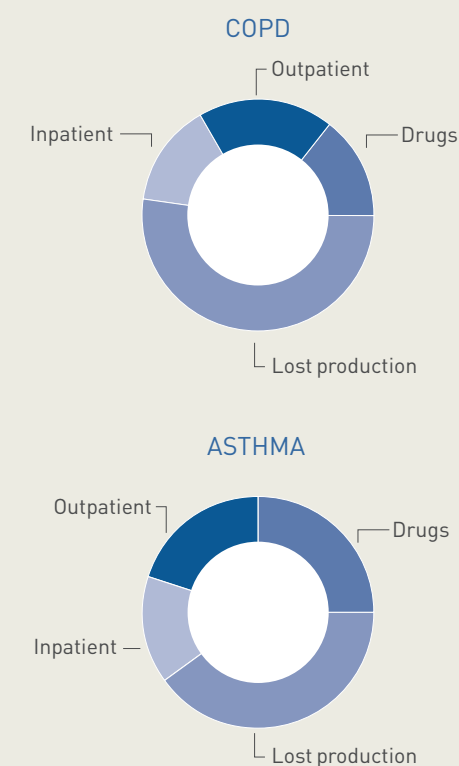
	Direct costs ¹ € bn	Indirect costs ² € bn€	Monetised value of DALYs lost € bn€	Total costs € bn
COPD	23.3	25.1	93.0	141.4
Asthma	19.5	14.4	38.3	72.2
Lung cancer	3.35	NA	103.0	106.4
TB	0.54 ³	+	5.37	5.9
OSAS	5.2	1.9	NA	7.1
Cystic fibrosis	0.6	NA	NA	0.6
Pneumonia/ALRI	2.5	NA	43.5	46.0
TOTAL	55.0	41.4	283.2	379.6

Aggregated annual direct and indirect costs and the value of disability-adjusted life-years (DALYs) lost for EU countries 2011 by disease (billions of euro at 2011 values).

COPD: chronic obstructive pulmonary disease; TB: tuberculosis; OSAS: obstructive sleep apnoea syndrome; ALRI: acute lower respiratory infections; NA: not available. ¹:primary care, hospital outpatient and inpatient care, drugs and oxygen; ²: lost production including work absence and early retirement; +: indirect costs included with direct costs.

Figure 2

Distribution of direct and indirect costs by category for chronic obstructive pulmonary disease (COPD) and asthma.





3

WORK BETTER TOGETHER

ERS, through the commitment of its members, plays a leading role in the fight against respiratory disease. Working together within ERS, the potential of members is amplified, and ERS seeks to build on this expertise and success through learning from and working with others beyond the Society.

ASTHMA

We can learn from the Finnish Asthma Programme 1994-2004 which implemented a new paradigm in treating asthma as an inflammatory condition from the outset, and the results have been impressive.

1. Patients with early asthma recovered

The number of children and adults benefitting from special reimbursement for drug costs levelled off in 2001 and began to decrease (highlighting the need for regular maintenance medication).

2. Improved quality of life, return of normal lung function, working ability corresponded with age

The number of patients with severe disability decreased substantially. Disability pensions, allowances for days off work, and need for rehabilitation decreased by between 30- 50%.

3. Percentage of patients with severe and moderate asthma halved from 40% to 20%

In the early 1990s, 20% of patients had severe (uncontrolled) asthma, compared with 10% in 2001, 4% in 2010, and 2.5% in 2016

4. Number of hospital days decreased by 50%

Number of asthma hospital days fell by 56%, in relation to the number of asthmatics by 70%.

5. Annual costs per patient fell by 50% with early and effective treatment

Costs per patient fell by 36%, and related to the increase in gross national product by 50%. Costs covered include compensation for disability, drugs, hospital care and outpatient doctor visits.

A focus on severe asthma has allowed a more efficient use of resources. The European Lung White Book summarises the scientific awareness in this field. France, UK and other countries have well developed asthma campaigns, but a coordination at EU level of national programmes could be even more successful.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Exacerbations of COPD are the most costly impact associated with this highly prevalent disease. Mortality is also significantly increased after exacerbations, particularly if they are associated with hospital admissions. Therefore, successful prevention of exacerbations are an important cornerstone in the management of COPD. Such preventive programmes include pharmacological as well as non-pharmacological treatment strategies, preferably integrated in a comprehensive management plan shared across all areas of health care.

In 2017, ERS and the American Thoracic Society (ATS) assembled a panel of experts to review the evidence on strategies to manage exacerbations of COPD. The suggested interventions included non-invasive mechanical ventilation in case of respiratory failure, oral corticosteroids, antibiotic therapy and rehabilitation starting within three weeks after an exacerbation. The same group of experts also reflected on pharmacotherapy to prevent exacerbations. The joint reflection of experts from the two largest respiratory Societies ensured external validity of the proposed management or preventive strategies. The collaboration also resulted in a number of concrete objectives for future research to be conducted by members of the respective societies.

LUNG CANCER

ERS is both pilot and partner in lung cancer care. Seeking fruitful reciprocal collaborations, we aim to promote networking and knowledge exchange for the benefit of patients and professionals – likewise on the international, national and centre level throughout the entire lung cancer continuum.

Amongst others, Hungary, Portugal and the United Kingdom provide promising best practice pilots for routine low dose computed tomography (CT) scan lung cancer screening while the entire continent

is considering population-based programmes alike those already established in the USA. An interesting pilot screening programme for lung cancer that uses low-dose thoracic CT to target a high-risk population is being developed in Portugal. It is a pilot project with former uranium miners who were also smokers of more than 20 unit pack years. A total of 77 workers were identified, and to date the scheme has resulted in one false positive situation and identified 22 people for follow-up. This is a good example where the cost-effectiveness of a screening program for lung cancer may benefit from the selection of



a high-risk population, as is the case with the exposure to radioactive material along with smoking habits.

An ERS Task Force provided a first comprehensive snapshot of lung cancer care in Europe demonstrating substantial inequalities among and within countries (The European initiative for quality management in lung cancer care) and has been recently followed up with the development of manuals for lung cancer services and lung cancer registration agreed upon by a multiprofessional panel. Emphasising

the need to go beyond the defined essential standards with the implementation of advanced standards, ERS seeks to substantially improve and harmonise standards for lung cancer care throughout Europe. Countries like France, Germany as well as Denmark and the United Kingdom have already implemented distinct national initiatives focussing on centre-based networks, certification programmes, and national clinical lung cancer registries linked to peer-review processes, respectively, all of them leading to quality of care improvement.

RESPIRATORY INFECTIONS

Innovative measures to tackle infectious diseases can be found in Portugal where the promotion of seasonal vaccination is mandatory in the prevention of influenza and its complications. To monitor the vaccination process and to raise awareness, the Portuguese Societies of Pulmonology and general practitioners have set up a programme called Vaccinometer. Four times a year, around 2000 people from 4 different

demographic groups (people over 65 years of age, patients with chronic diseases, health professionals and people between 60 and 64 years of age) are surveyed and the results are shared on social media and through the official channels of both societies. The programme raises awareness of vaccination among the public and is supported by the health authorities in Portugal.



TUBERCULOSIS

In the field of tuberculosis, several collaborative schemes are in place at European and global level. In Europe, the WHO European Office in Copenhagen together with the European Centre for Disease Prevention and Control (ECDC) have a network of national representatives largely designed to support surveillance. TB-PANNET was an EU funded collaboration (7th Framework) that developed a

European laboratory working group, in which ERS and TBNET (an ERS Clinical Research Collaboration) were responsible for the educational aspects of the project. ERS funded a WHO consultation of low tuberculosis incidence countries (Rome 2013), which generated the WHO Framework for Tuberculosis Elimination in 2014. ERS has supported a European consortium of tuberculosis clinicians, microbiologists and researchers (TBNET) through its Clinical Research Collaboration (CRC) for the past 12 years and its work has been lauded by various European prizes for its highly cited publications and

guidelines. The CRC has highlighted the unequal access to treatment and drugs for the management of tuberculosis. Eastern Europe has the highest incidence of multi-drug resistant tuberculosis (MDR-TB) and the ERS has been instrumental in highlighting this area of need. In countries without a national advisory service for the management of complex MDR-TB, the ERS hosts a TB Consilium, an electronic platform operating in different languages (English, Russian, Spanish and Portuguese) offering free cost clinical support to manage difficult-to-treat cases of tuberculosis. The ERS has close ties with Latin America, where the relatively low incidence allows for a tuberculosis elimination project (ERS/Asociación Latinoamericana de Tórax SinTB project and the ERS/Sociedade Brasileira de Pneumologia e Tisiologiaec project and in collaboration with the Pan African Thoracic Society, Associação Respiratória de Língua Portuguesa and other partners). An ERS/WHO Digital Health report has promoted the use of mobile phones to improve the management of tuberculosis.



TBNET

<http://www.tb-net.org>



TB-PAN-NET

http://cordis.europa.eu/result/rcn/159240_en.html



TB Consilium

<https://www.tbconsilium.org>



ERS/WHO Digital Health Report

www.who.int/tb/publications/digitalhealth-meetingreport2017/en

RARE DISEASES

The European Cystic Fibrosis Society Patient Registry is a strong example of the benefits of working together on rare diseases. It collects demographic and clinical data from consenting people with cystic fibrosis (CF) in Europe, in accordance with agreed inclusion criteria and definitions. The information is used to measure, survey and compare aspects of CF and its treatment in participating countries, to deepen our understanding of CF, to improve standards of care, to provide data for epidemiological research and to facilitate public health planning. In the registry's database there is data from more than 42,000 people with CF, from 33 participating countries, and longitudinal data from 2008 to 2015. It is a unique resource reflecting the reality of CF across Europe. Interstitial lung diseases include multiple disorders, that are considered rare if taken individually, but not negligible if taken as a group (around 20% of visits in Pulmonology Centres). Registries on Idiopathic Pulmonary Fibrosis (IPF), sarcoidosis or other rare conditions are already present in different countries around the world. ERS collaborates actively with ATS, American College of Chest Physicians (CHEST), ALAT and others in order to produce guidelines for the diagnosis and treatment of IPF, sarcoidosis, and idiopathic interstitial pneumonias.

➤ European Cystic Fibrosis Patient Registry
<https://www.ecfs.eu/ecfspr>

ERS also supports ongoing efforts to build a European registry on interstitial lung diseases. The ERN-LUNG is a network of European healthcare providers dedicated to ensuring and promoting excellence in care and research for the benefit of patients affected by rare respiratory diseases. Complex lung diseases require multidisciplinary care along with psycho-social support. This complexity can be due to the underlying genetic mechanism of the disease, the secondary changes and damage done to other organ systems. Early diagnosis and access to specialist care can improve outcomes for many of these conditions. ERN-LUNG addresses a number of rare and complex pulmonary conditions such as idiopathic pulmonary fibrosis, cystic fibrosis, non-cystic fibrosis bronchiectasis, pulmonary hypertension, mesothelioma and chronic lung allograft dysfunction.

ERN-LUNG's vision is to be a European knowledge hub for such diseases and to decrease morbidity and mortality from them in people of all ages. It is a non-profit, international, professional, patient-centric and scientific network and it is committed Europe-wide and globally to the prevention, diagnosis and treatment of rare respiratory diseases through patient care and advocacy, education and research. In keeping with these goals, ERN-LUNG will interact with both national and international organisations which have similar goals.

➤ ERN-LUNG <https://ern-lung.eu>



4

PROMOTE LUNG HEALTH

If we are to effectively promote lung health, then we need to develop legislation and policies to prevent respiratory disease and promote lung health. This means we need to engage in diverse policy areas such as tobacco control, smoking cessation, housing, energy, transport, air quality and occupational exposures.

FOCUS ON RISK FACTORS

Tobacco Control Committee

Each year 700,000 Europeans die due to smoking- this corresponds to the population of Riga or Seville. Approximately eight to nine out of ten cases of COPD and lung cancer are attributable to current and past smoking. Tobacco contributes to many deaths from respiratory infections and helps fuel the global epidemic of tuberculosis. Smoking is without doubt the most important determinant of pulmonary disease and the single most important factor, if we want to prevent respiratory disease.

We know what works: high prices on tobacco, legislation to protect children and adults from second-hand exposure, strict marketing bans, regulation of tobacco products (e.g. flavours) and packages (e.g. plain packaging), banning the display of tobacco products at point-of-sale, raising public awareness and limiting interactions between public officials /civil servants and the tobacco industry. This must be combined with effective free smoking cessation services (optimally combining professional counselling with free or subsidised smoking cessation medication). Also, a proactive approach to smoking cessation is recommended as social inequality in smoking is increasing in many countries.

Environment and Health Committee

One of the most important environmental pollutants, which influence respiratory morbidity and mortality, is ambient air pollution. Among environmental risk factors, ambient air pollution was the most important cause of disease, leading to more than 4 million premature deaths and more than 100 million DALYs annually worldwide in 2016. Important respiratory health effects of ambient air pollution include, but are not limited to, the development and exacerbation of chronic respiratory disease, lower respiratory tract infections and lung cancer. Interventions to reduce health effects of air pollution can be accomplished on different regulatory levels, including state or supranational legislation on limit values for emissions and emission control, the development and revision of ambient air quality guidelines by authoritative bodies such as the WHO, and the support of regional air quality reduction efforts. Target groups for air pollution reduction interventions are therefore state or regional authorities, the population and specifically vulnerable patient groups to raise awareness and educate about protective measures, and multipliers from non-governmental bodies

NON-COMMUNICABLE DISEASES (NCDs)

NCDs at the UN and WHO

In 2011, ERS attended the United Nations high-level meeting on non-communicable disease prevention and control, aimed at setting a global agenda to tackle NCDs. The subsequent Global Action Plan for Prevention and Control of NCDs (2013-2020) sought to show proven interventions. In 2015, countries made NCDs a targeted focus of action for the UN within the Sustainable Development Goals (SDGs). Goal 3 seeks to “ensure healthy lives and promote well-being for all at all ages”, and specifically, “by 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.”

A 2018 report from a WHO Independent High-Level Commission on NCDs warns that progress towards fulfilling commitments has been disappointing and unless there is a serious change in approach, SDG 3 will not be achieved. The report notes a number of measures aimed at reducing tobacco use, as best buys for the prevention and control of cardiovascular diseases (stroke and heart attacks), cancers, diabetes and respiratory disease:

- Increase excise taxes and prices on tobacco products
- Implement plain/standardised packaging and/or large graphic health warnings on all tobacco packages
- Enact and enforce comprehensive bans on tobacco advertising, promotion and sponsorship
- Eliminate exposure to second-hand tobacco smoke in all indoor workplaces, public places, and on public transport
- Implement effective mass media campaigns that educate the public about the harms of smoking/ tobacco use and second-hand smoke

The report comes ahead of renewed efforts in September 2018, where the United Nations General Assembly is staging the third High-level Meeting on the prevention and control of non-communicable diseases (NCDs), which will undertake a comprehensive review of the global and national progress achieved in putting measures in place to combat NCDs. ERS plans to attend and together with the European Public Health Alliance (EPHA) and the European Chronic Disease Alliance (ECDA) urges the European Union to show political leadership at the meeting, to work towards a meaningful outcomes documents which commits to a number of priorities including a boost in NCD investment, smart fiscal policies that promote health and ensuring equitable access to treatment and health care.

NCDs WITHIN THE EU

In the context of the UN discussions on NCDs, including the High-Level meeting on NCDs on the 27th of September 2018, the work of the Multi-Stakeholder Platform (MSP) on the Implementation of the SDGs at EU level, and the changing EU leadership in 2019, a number of actions can be taken to deliver on the SDGs in the EU and to ensure robust, effective and innovative EU leadership in health. As founding members of the European Chronic Disease Alliance, ERS calls for:

A structured EU framework on chronic diseases

- Developed in partnership with national competent authorities, experts, patient organisations and with the involvement of the non-health sectors including environment and agriculture
- With actions across multiple sectors supported through different EU funding instruments

A European Chronic Disease Awareness Day

- Serving as an overall framework for coordinated action at EU, national and local levels
- Acting as a pillar to incentivise Member States and stakeholders to raise awareness, educate and initiate new programmes to prevent, control and treat chronic diseases throughout Europe

Targeted funding and investment to address chronic diseases

Investment in chronic diseases should cover:

- Prevention, by financing measures, initiatives that support action on risk factors and early detection
- Treatment and care: for patient-centred, integrated and multidisciplinary care with equitable access
- Research and innovation
- Social inclusion and workforce participation

At the disease level, we also need to advocate for the best diagnosis, treatment and care:

ASTHMA

To push legislation and policies promoting lung health we need to better understand asthma heterogeneity, in particular severe asthma phenotypes and endotypes. Health systems should take into consideration the characterisation of the asthma patient, both from the clinical and biological point of view, to prevent disease progression, improve management of the disease and ensure correct use of new pharmacological treatments. We should aim to reinforce

asthma education, ensuring that every patient with asthma is treated appropriately. The outcome would be better control, including reduction of hospitalisations, as shown by the success of the Finnish asthma programme. National experiences, diagnostic and treatment flow charts should be gathered into a European model. Accessibility of asthma services and rehabilitation programmes should be promoted by National and European policies.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

The poor uptake of spirometry to initiate the early diagnosis of lung disease remains a problem, despite efforts to standardise spirometry and promote its use. The number of undiagnosed COPD patients remains alarmingly high. Under diagnosis also undermines the start of early treatment or preventive strategies. The discrepancy with the wide uptake of sphygmomanometry to diagnose hypertension is striking. Since lung function is an important prognostic marker, and being undiagnosed with COPD leads to poor prognosis and increased risk for adverse health outcomes, a single, well conducted, spirometry

could be made a mandatory vital test in people over 50 years of age. Such legislation is currently not in place.

Once patients are symptomatic their diagnosis is more often made and pharmacologic treatment is established following internationally recognised treatment strategies (Global Initiative for Chronic Obstructive Lung Disease - GOLD) or local guidelines (National Institute for Health and Care – NICE) Excellence in the UK).

ERS and ATS have raised concerns over the poor uptake of non-pharmacological treatment strategies such as pulmonary rehabilitation. More advanced treatment, such as lung volume reduction, is not yet available across the globe, but surely holds promise. Lung transplantation, a treatment option for very severe

patients with poor prognosis, is largely dependent on the capacity of transplant centres and a shortage of donors in many countries. Shifting donor legislation towards more liberal systems of 'opting-out' rather than 'opting-in' have a positive impact on availability of lungs and will provide more end-stage patients with this therapeutic option.

LUNG CANCER

Tobacco control is still the most effective measure to prevent the biggest cancer killer in Europe, yet the proportion of never smokers among lung cancer patients in Europe continues to increase.

Lung cancer is more successfully treated when diagnosed at an early, potentially curable stage underlining the importance of population-based CT screening programmes in high-risk individuals. ERS, together with our European partner societies have the expertise to develop common guidelines to help European states to implement such comprehensive screening programmes.

When it comes to diagnostics, therapy and follow-up in lung cancer, this is best done in multidisciplinary lung cancer services which offer joint, personalised and patient-centred decision making as well as care by multiple professions along the pathway of individuals and their caregivers affected by lung cancer. Our vision integrates European lung cancer guidelines, lung cancer services and lung cancer registries to a vivid "guideline cycle" aiming at steady quality improvement. A lung cancer surveillance similar to that on tuberculosis could provide important information to policy makers to and drug developers in order to tackle this deadly disease.

RESPIRATORY INFECTIONS

Promotion of vaccination and an increase in vaccine uptake by people in risk groups are known to decrease mortality due to lower respiratory infections. Taken together with a stringent policy concerning antibiotic use, both are key to curb the figures of pneumonia and other infections of the respiratory system. Simple interventions, including improved hand hygiene and use of masks or other preventive measures, can also

be advocated, as they have been shown to help to control epidemics and also nosocomial infections. Education, strengthened preventive measures, contact screening and efficient treatment all play a part in the elimination of tuberculosis and preventing the development of multidrug resistant strains.

ANTIMICROBIAL RESISTANCE (AMR)

The European Public Health Alliance coordinated an “EU One Health Action Plan on AMR” as an acknowledgement of the gravity of the AMR crisis at European and global level and as a commitment for continued action. ERS was involved in the preparation of the Action Plan and offers its support to the European Commission and its Executive Agencies to address the following actions:

- Involve civil society in AMR-One Health policymaking;
- Support the development and implementation of National Action Plans and allocate adequate European funds to actions against AMR;
- Address all aspects of the One Health approach;
- Improve and regularly update the data on AMR burden in Europe;
- Analyse and benchmark collected data;
- Make full use of EU legislative powers in AMR relevant sectors;
- Nurture and actively involve healthcare professionals, including students;
- Put into practice existing evidence and continue scientific research to obtain a better understanding;
- Adopt a “prevention is better than cure” approach;
- Support and promote the use of rapid diagnostic tests;
- Empower patients and raise public awareness.

TUBERCULOSIS

In 2014 the WHO launched the End TB Strategy, based on three pillars (pillar one: Integrated, patient-centred care and prevention; pillar two: Bold policies and supporting systems; pillar three: Intensified research and innovation). The new strategy includes tuberculosis elimination in its vision. Tuberculosis control aims at reducing the incidence of tuberculosis transmission and, consequently, of the disease, based on early diagnosis and treatment of infectious cases of tuberculosis

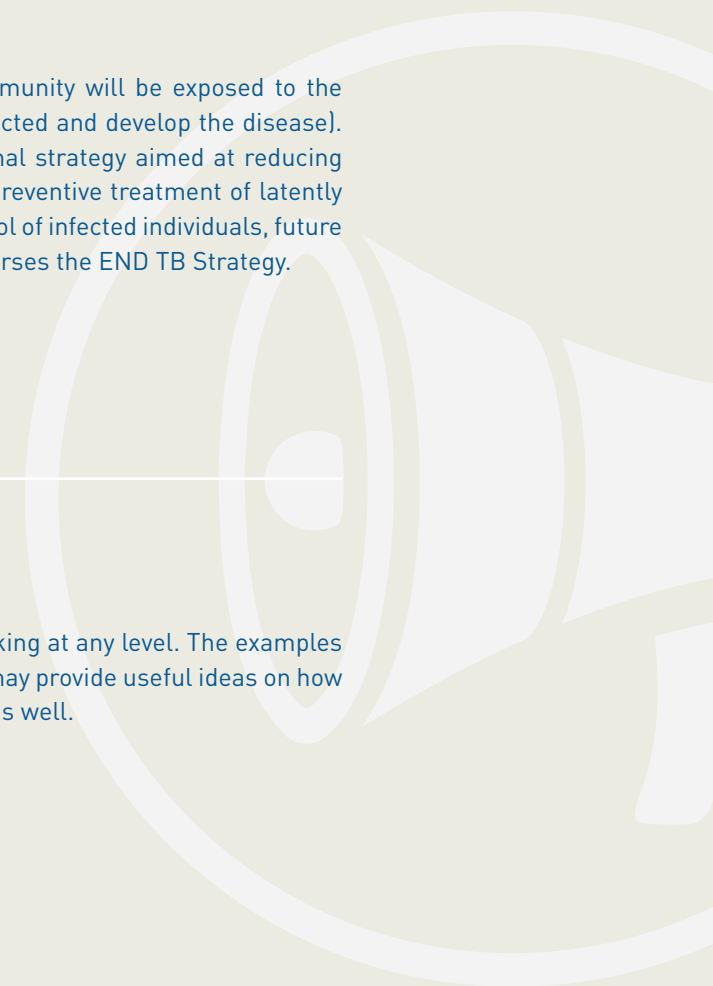
(less and less new people in the community will be exposed to the contact with the bacilli and will be infected and develop the disease). Tuberculosis elimination is an additional strategy aimed at reducing the prevalence of infection, based on preventive treatment of latently infected individuals. By reducing the pool of infected individuals, future cases will be prevented. ERS fully endorses the END TB Strategy.

➤ End TB Strategy http://www.who.int/tb/post2015_strategy/en/

RARE DISEASES

The emergence of strong patient networks and their public engagement are good examples of participatory health care provision. The “if about them - do it with them” message underlines the importance of

involvement of patients in decision making at any level. The examples gained from these rare disease areas may provide useful ideas on how to combat major respiratory diseases as well.





5

LOOK AGAIN AT OUR HEALTH SYSTEMS

We need to look again at our healthcare systems to carry out a fitness check. We need them to be preventive rather than reactive – health systems, not healthcare systems.

Health systems for respiratory health would ideally include national programmes for the main respiratory diseases, but there are many other elements which could be considered. In particular, there are a number of ERS initiatives which could provide support:

NEW SUPPORT TOOLS

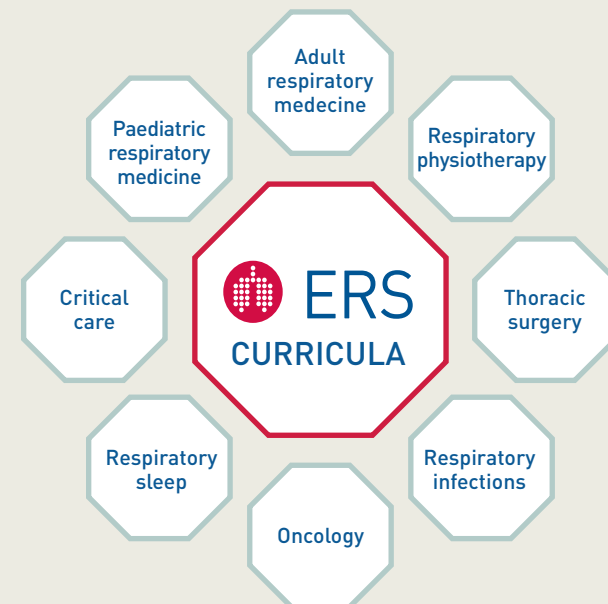
The ERS/WHO TB Consilium could be used as the inspiration for a decision-making tool/app that would work for different diseases areas. It would be particularly useful in helping clinicians make decisions on new treatments and could serve to avoid the over/under or indeed misuse of treatments.

ERS setting standards

ERS develops standardised educational syllabi and curricula in adult respiratory medicine, paediatric respiratory medicine and in disease specific areas to support the harmonisation of training across countries.

Public health surveillance

From a public health perspective, we need to ensure that respiratory disease is recognised as a priority surveillance area. Due to climate change and rapid changes in other environmental factors, an active surveillance system is desired to track the onset of new forms of respiratory conditions and mark the changes in the trends of well-known diseases. Healthcare professionals need support and training in reporting and understanding the added value that reporting brings.





6

ENSURE LUNG HEALTH IS ACCESSIBLE FOR ALL

Respiratory failure: from lung attack to a chronic respiratory handicap
The concept of a “heart attack” is universally understood and easily recognised. Less well-known is the concept of a “lung attack” (i.e. acute respiratory failure ARF) – a sudden deterioration of the respiratory system, associated with symptoms of distress such as shortness of breath. A lung attack requires prompt treatment by invasive or non-invasive assistance tools, such as oxygen-therapy, mechanical ventilation or extracorporeal lung supportive devices, which need to be carried out by specialist expert units.

A lung attack, is a distressing condition for patients, and a challenging field for clinicians working both in and outside of Intensive Care Units (ICU) and Respiratory High Dependency Care Units (RHDCU) environment. It is associated with a high hospital morbidity and mortality rate, ethical issues and an increased consumption of health resources.

The outcome for the patient is strongly dependent on the expertise of team, the care provided by the setting and workload and the competence in using the technology (i.e. ventilator and non-ventilatory lung assistance devices). This is especially true for chronic respiratory diseases (such as airway and interstitial diseases), which see severe exacerbations requiring a precise strategy to be rapidly applied in case of a lung attack. Awareness is not enough for patients; care must also be accessible.

The in-hospital mortality of severe exacerbation of COPD requiring ICU admission is up to 15%, with a 1-year mortality of 22–43%. Acute respiratory distress syndrome (ARDS) is a devastating pulmonary condition. Mortality rates vary between 35% and 46% for mild and severe ARDS respectively. ARDS is under recognized by physicians and evidence-based strategies are often not applied.

Patients suffering from a lung attack require sophisticated monitoring and therapeutic strategies based on different techniques of mechanical ventilation and extra-corporeal lung support. Ventilatory dependent patients and their families must be supported, particularly following discharge from hospital, as this dependency can have huge implications on quality of life and exacerbate already existing health inequalities.

Weaning from mechanical ventilation has become an increasingly pressing problem that has to be dealt in specialized units and account for a large amount of costs in ICU and in RHDCU settings. Even if people experiencing prolonged weaning is a minority of mechanically ventilated patients, however, their life expectancy is by far lower as compared to those who are easily liberated from the ventilator support (eg. less than 50% at 90 days after receiving ventilation).

Home care of chronically ill people with respiratory diseases is costly, demanding and represents a challenging point for EU that has to guarantee the equity of care for fragile end-stage patients. Long-term oxygen therapy (LTOT), when appropriately prescribed and correctly used, has clearly been shown to improve survival in hypoxemic COPD patients. Unfortunately, despite the strong level of evidence, there has

been reported a large variability in the prescription, adherence and follow up of oxygen-dependent patients in Europe.

A growing population of patients with comorbidities will prove difficult to wean from mechanical ventilation. This population is likely to grow in the next decades as more complex cases are now treated in ICUs. Care in specialized ventilator weaning units may improve outcome for these patients and meet patients / family needs.

The reported, although probably underestimated, prevalence of patients with chronic respiratory failure requiring home mechanical ventilation (HMV) in Europe is 6.6 per 100 000 people. There are challenges when providing HMV, including patients and caregiver training, adequacy of respiratory care, reimbursement policy, and need of patient/family cooperation. Furthermore, factors such as patients' chronic diseases and their exacerbations, need of technology and lack of professional supervision make the management of ventilator dependent individuals by family and non-professional caregivers a difficult task. Supervision by external companies has many limitations, such as lack of standardization, lack of regular feedback to the prescribing centres, costs and logistical problems.

PATIENT FOCUS

The profile of the average patient is changing; they are getting older, living with multiple chronic conditions, and are becoming more empowered. The patient / doctor relationship is also changing; the number of patients who visit their doctor today without having already done their own research is falling, as is the number of patients who will accept advice from their healthcare provider without discussion or questioning.

The European Lung Foundation (ELF) carried out a survey to assess the future needs of its patient organisations across Europe and were able to identify a number of key trends.

First – patients do not want to be patients. No one wants to live with a chronic condition. But prevention is not a priority for healthcare systems and governments and must look to the future. Better awareness is needed about risk factors, including smoking, air quality, physical activity and nutrition – and more research needs to be done into the impact of these risk factors on the lung and what individuals can do to protect their lung health in the womb, in childhood and throughout their life time. The importance of breathing clean air must be emphasised whenever possible.

If patients are going to be given the best possible treatment for their condition, there is a need to have a quick and early diagnosis. This means that healthcare providers must be well educated on the signs and symptoms of common and rare lung conditions, and novel and non-invasive tools must be identified. Patients must also be given the opportunity to get access to experts across Europe to ensure they receive a quick and accurate diagnosis.

Self-management and self-monitoring are both goals to strive for to ensure that patients are able to best care for themselves – as well as adequate education. In addition, people living with multiple chronic conditions need to be confident that they are being cared for by a multidisciplinary team with representation of experts in all their conditions and by a group that have a holistic view of the individual and their care, including their psychological and social needs. Access to best care and treatment is also a patient priority – fair and equal treatment in all countries and all areas.

Finally, palliative and end of life care must be given much care and attention. The preferences and wishes of patients should be discussed and considered at a time that is right for the individual. The holistic management of chronic and debilitating symptoms, such as breathlessness, must be given high priority.

ASTHMA

Prevention strategies, diagnostic work-up and treatment flow-charts for asthma are part of the Global Initiative for Asthma guidelines but evidence of their application in all the European countries should be obtained at any level from GP to specialized centres. Clear indicators to select which patients would take major advantage of being followed in specialised centres are needed. Increased opportunities for asthma characterisation should be guaranteed to all patients in order to ensure the most appropriate therapy is received.

ERS organises high quality and affordable online education to healthcare professionals worldwide. There is great potential for patient organisations and networks to help identify gaps in care. Efforts are being made to reduce obesity and promote healthy lifestyles as a means to reduce asthma due to obesity. National laws to reduce occupational asthma are available in many European countries. Comorbidity plans, applied at National and Regional levels, should increase the possibility to face the different aspects of more severe asthmatic patients.

LUNG CANCER

Pulmonologists must redefine their role as pilots and partners in a disease as complex as lung cancer. The expertise of handling thoracic disorders is an inherent basis for efficient management in lung cancer – with its particular thoracic complications and comorbidities – as well as the coordination of care in collaboration with other disciplines and professions. Our actions and cooperation begin with prevention and screening, include all diagnostic as well as curative and palliative treatment measures, and stretch to follow-up as well as management of survivorship and end-of-life period.

In order to overcome the various forms of inequalities within the lung cancer care continuum throughout Europe, we need to align and

advance standards, perform periodical gap analyses and develop quality improvement strategies using these findings, seeking implementation at national and centre level – all mutually with professional partners and other stakeholders as well as in alliance with ELF and other patient organisations. Providing equal access to modern and/or resource intensive processes (i.e. molecular diagnostics, modern targeted or immune therapies, early integration of palliative care) will need powerful professional advocates such as ERS who can demand necessary financial backing at the EU level, and likewise support advocacy by national societies at their respective national level.

TUBERCULOSIS

Tuberculosis is a transmissible disease, so universal free access to prevention, diagnostic and treatment services is necessary both as an individual human right and as a public health strategy. The best prevention strategy consists of rapidly diagnosing and treating infectious cases. Early diagnosis including universal drug-susceptibility testing, taking advantage of the rapid methods and whole genome sequencing. Systematic screening of contacts and high-risk groups are essential components of tuberculosis control and elimination strategies. Treatment of all people with tuberculosis including MDR-TB and extensively drug resistant (XDR-TB) cases, and adequate patient support is therefore necessary, including tuberculosis /HIV collaborative activities, and management of co-morbidities.

Preventive treatment of latently infected individuals, and anti-tuberculosis vaccination are also important components of the clinical package. Recently, the importance of developing standards to complement guidelines has been emphasised and the European Standards for tuberculosis care (ESTC) were newly revised within a ERS/ECDC collaborative project. Guidelines represent long, comprehensive documents containing all the details the physician might need for managing tuberculosis, but the standards are a simple set of principles that guide the day-to-day clinical decisions. The international standards have been adapted to the European situation, where access to health care and technology allows for higher standards than might be feasible in other parts of the world.

LUNG TRANSPLANTATION

While the EU is taking a number of positive steps to address this situation – by means of an action plan, funding of projects and a directive on standards of quality and safety of human organs – large difference in practices and results exist across the EU. Donor policy varies across Europe leading to inequalities even within Eurotransplant – where depending on national policy countries can end up as net providers.

Lung transplantation is not accessible for all patients as some countries have no programme, or would want to start up a programme but need help. There is a very specific role for a new ERS lung

transplantation course to meet these questions in cooperation with the European Society of Thoracic Surgeons. In addition, some countries have lung transplantation but no rehabilitation which greatly affects outcomes.

The most important problem after surgery remains chronic lung allograft dysfunction (CLAD). In response, a CLAD registry is being set up in Europe (EuroCLAD) with the aim of identifying patients according to rigid standard criteria, to discuss treatment modalities and to set up multicentre studies in Europe.

- EU Action Plan on Organ Donation and Transplantation
https://ec.europa.eu/health/archive/ph_threats/human_substance/oc_organs/docs/organs_action_en.pdf
- Eurotransplant
<https://www.eurotransplant.org/cms/index.php?page=patients>

RARE DISEASES

The importance of guidelines or documents on best clinical practice on interstitial lung diseases is mirrored by the homogenous clinical approach and the multidisciplinary discussion that is adopted in different countries and by the increase of knowledge and awareness

in the pulmonology community and in the patients' associations. A collaborative initiative between the ERS and patient associations on idiopathic pulmonary fibrosis is in preparation.

7

USE OUR VOICE AS PATIENTS AND PROFESSIONALS



The strength of ERS lies in the expertise of its more than 30,000 members. A key benefit of ERS is that it addresses all respiratory diseases, from the big five to the rare diseases, and from prevention to care. This is a sizable community, based on science and education allowing for advocacy grounded on the evidence. ERS is a reliable, unbiased partner and we should not be afraid to use our voice to engage with policy and politics. ELF is uniquely placed to ensure that the patient voice is both heard and understood. Each ERS member has the capacity to become a two-minute advocate – equipped with a simple message on defined topics with which to engage not only policy makers but also media and the public. We have the evidence, but only in speaking out can we tackle the knowledge-action gap that must be overcome in order to effect change.

ERS TWO-MINUTE ADVOCACY

Tobacco:

Effective implementation of the EU Tobacco Products Directive, regulation of new tobacco products along with continued support for proven smoking cessation programmes.

Environment:

Air quality legislation which sets pollutant limits based on the latest proven scientific evidence on adverse health effects and recognises the co-benefits in tackling climate change.

Chronic diseases:

A structured, coordinated, and funded approach to tackling NCDs including concrete public health measures based on the WHO “best buys” for risk factor prevention.

Infectious diseases:

An integrated and comprehensive EU framework to improve TB prevention, treatment and care and the allocation of adequate funding to research, in particular on multi-drug resistant TB and extensively-resistant TB.

Research framework:

A broad research funding programme with a better convergence between research and clinical needs while keeping a long-term perspective on biomedical research.



8

MAKE DATA WORK FOR EVERYONE

To give any benefit to public health and clinical action we need not only enhanced surveillance, but big data along with big infrastructure. Comprehensive disease registries are needed to ensure full epidemiological and clinical population coverage and equally much more detailed data collection within collaborative Pan-European centre-based networks. In light of rapidly expanding diversity in diagnostic and therapeutic options, the collection of high-quality real-life data through prospective data collection for e.g. in lung cancer will gain increasing research interest as validation of or alternatives for classical clinical trial-derived patient data. ERS could lead such collection through its Clinical Research Collaborations (CRCs) as tools for monitoring and creating surveillance methodologies to ensure stronger surveillance systems.

The European Multicentre Bronchiectasis Audit and Research Collaboration (EMBARC) was originally established as an ERS CRC with the objective of developing a European Bronchiectasis Registry and bringing researchers together internationally to drive improvements in clinical research, clinical care and education. EMBARC is multidisciplinary, bringing bronchiectasis specialists together with basic scientists, microbiologists, physiotherapists, specialist nurses and patients. Developing new treatments for bronchiectasis will require a better understanding of the pathophysiology and natural history of the disease.

The objectives of the study are:

- to develop a pan-European, multicentre bronchiectasis registry incorporating baseline data collection with annual follow-up data for at least 5 years;
- to describe the demographics, comorbidities, aetiology, medication usage, resource consumption, exacerbations, microbiology, severity and prognosis of bronchiectasis across Europe (in summary, a comprehensive description of characteristics and burden of this disease across the continent);
- to facilitate multinational cooperation, within and without Europe; and
- to facilitate the creation of national registries in European countries that currently do not have a bronchiectasis research infrastructure.

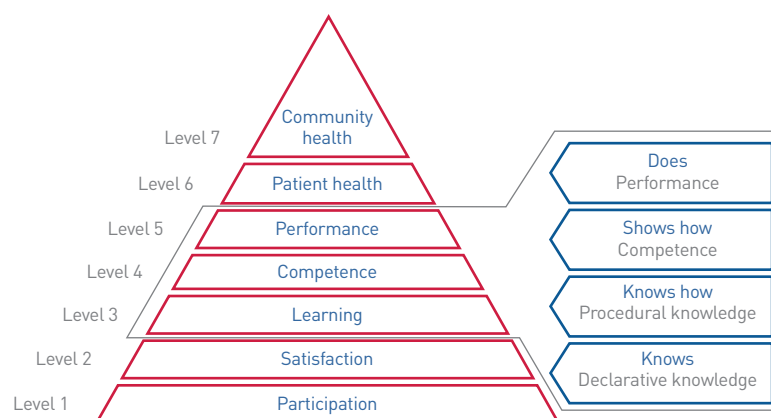
The project as a whole also aims to ensure the needs and experiences of people with bronchiectasis across Europe inform all EMBARC activities. This has been achieved through the creation of a patient advisory group (PAG) and inclusion of PAG representatives on the EMBARC steering group. The EMBARC network is an open collaboration: anyone with an interest in bronchiectasis can join and take part in network activities.



9

RAISE THE PROFILE OF LUNG SCIENCE AND EDUCATION

Developing a European/global respiratory health agenda for research and education



ERS has the ambitious task of developing services and educational content for a diverse group of health professionals, all with different health systems, resources, cultures, expectations and local challenges. The society is developed by respiratory professionals for respiratory professionals, it works thanks to hundreds of members volunteering that strive to develop scientific and educational projects that serve the community in an independent manner. Being a home for different professional groups and ensuring patient input is taken into consideration in projects and programme developments, ERS expects a better global approach to patients' conditions and aims at best outcomes for patients care.

Adapted figure from:
MOORE D. E., GREEN J. S., GALLIS H. A. (2009) Achieving desired results and improved outcomes: Integrating planning and assessment throughout learning activities. *Journal of Continuing Education in the Health Professions* 29, 1–15

Research and innovation are crucial to our understanding, optimal management and future treatment of respiratory disease. Presently, collaboration in Europe lacks a strong strategic scientific framework for tackling chronic diseases. We need a scientific platform in Europe to consolidate expertise and resources across borders, providing significant added value. This would address the currently fragmented respiratory research landscape in Europe and help accelerate the translation of

discoveries into applications that will impact healthcare delivery in the future. On a broader level, the Alliance for Biomedical Research is one means to tackle this deficit, given that cross-fertilisation between clinical disciplines is vital. Looking at lung science, we must ensure that respiratory medicine remains an attractive speciality for young researchers, and ERS is committed in this regard.

ERS Research Agency

The central aim of the ERS Research Agency is to facilitate respiratory research through the coordination and support of the respiratory research community, and to promote high-quality, multinational respiratory research with the goal of improving the health of respiratory patients. The Research Agency is currently providing various services including, among others:

- Support research consortiums in raising funds e.g. with Horizon2020, IMI-JU application or negotiation with funding partners
- Assist Clinical Research Collaborations (CRCs) in the development of work plans
- Provide operation support for the conduct of pan-European projects

The Research Agency also aims to be active in the following areas:

Standards, guidance and training

Together with the Science Council, ERS will target this area through Europe-wide guidance to ensure respect of data privacy and data sharing good practice; by developing training programmes on research methods and best practice in data management and analysis, and on the regulatory environment or by producing Standard Operating Procedures (SOPs).

Supporting researcher career development

The ERS will target this area by ensuring involvement of early-career members in ERS Research projects.

Obtaining funding, and coordinating research projects and clinical research

The ERS will target this area by assisting in the design of research studies, by supporting the development of proposals for funding at the pan-European level, by reviewing and approving studies, ensuring an ERS seal of quality or by coordinating the conduct of multi-national research projects and clinical studies.

ERS Education

ERS not only offers a variety of educational programmes for respiratory physicians and experts, but also caters for other professional groups and disciplines within its educational portfolio, with initiatives such as the Spirometry training programme, developed for all healthcare professionals wanting to advance their skills in this fundamental technique. By providing better access to educational resources, ERS is supporting the respiratory professional workforce and strengthening the capacity of health systems to provide high quality preventative care.

Smoking cessation with WHO

Recognizing the importance of tobacco cessation to attain the global NCD targets and the need for training health professionals in tobacco cessation in target countries, the WHO and ERS formed a novel collaboration - a successive 3-year project (2016-2019). The purpose is to drive capacity building in tobacco cessation interventions to all patients with respiratory diseases both in hospital and primary care settings. The project, which has run training sessions in Greece, Moldova, Bangladesh and Ecuador aims to assist countries in creating

a national training network and to build its capacity to train primary care providers to routinely provide brief tobacco interventions to all patients with respiratory diseases. It is also developing an online training course on brief tobacco interventions for primary care providers based on WHO developed training package.

Lung cancer remains the biggest cancer killer in Europe and health systems are looking for more cost-effective and accurate tools for screening and diagnosing lung cancer. A recent minimally invasive procedure within the field of interventional pulmonology, endobronchial ultrasound (EBUS), is helping professionals in daily practice to diagnose and stage lung cancer but also to assess mediastinal nodes for other diseases such as sarcoidosis, tuberculosis or metastases from extra thoracic malignancies. ERS delivers a well-established structured training programme on EBUS that is running several times a year in Europe with the objective to train a maximum number of respiratory physicians to perform independent EBUS procedures, in order to better assess patient history and results and interpret results to draw conclusions on patients' diagnosis.



10

SHARE OUR SUCCESS IN LUNG HEALTH AND INNOVATION

Disseminating knowledge and innovation based on best practices on similar countries

ERS is a shared community and its added value lies in supporting this community to share their stories.

In promoting shared experiences, not only in terms of the latest science or guidelines of care but beyond to encompass more personal or career support, ERS can help shape the lung community.

In addressing topics such as interview skills, communication training for difficult situations, more support for early-career members, we will build a communication platform to engage with members on multiple levels and create new channels to expand our community.

ERS has the right platform to disseminate scientific breakthroughs – namely the European Respiratory Journal – a leading respiratory journal (third highest impact journal among Society supported Journals in the field.) It also caters to clinicians and scientists through a host of other high

quality, peer-reviewed publications. The Society organises the largest face-to-face event in the respiratory calendar with the annual ERS International Congress that brings together more than 20,000 scientists, researchers and healthcare professionals from all over the world. Scientists, clinicians and industry partners share their top successes with each other, policy makers and the media. ERS also has a patient and public facing voice via the European Lung foundation and our Advocacy and European Affairs office in Brussels ensures that the need for “lung health in all policies” is communicated to policy makers and opinion leaders. Links to national societies through the conference of European Respiratory Societies helps to disseminate policy messages to the local level and social media channels that target all people interested in lung health. By further investing in these channels ERS will continue to make sure that Europe and the world is more than ever aware that ‘every breath counts’.

LIST OF ABBREVIATIONS

ALAT: Asociación Latinoamericana de Tórax

ALRI: Acute lower respiratory infections

AMR: Antimicrobial resistance

ARDS: Acute respiratory distress syndrome

ARF: Acute respiratory failure

ATS: American Thoracic Society

CF: Cystic fibrosis

CHEST: American College of Chest Physicians

CLAD: Chronic lung allograft dysfunction

COPD: Chronic obstructive pulmonary disease

CRCs: Clinical research collaborations

DALYS: Disability adjusted life years

EBUS: Endobronchial ultrasound

ECDAs: European Chronic Disease Alliance

ECDc: European Centre for Disease Control

ELF: European Lung Foundation

EMBARC: European Multicentre Bronchiectasis Audit and Research Collaboration

EPHA: European Public Health Alliance

ERS: European Respiratory Society

ESTC: European Standards of tuberculosis care

GOLD: Global Initiative for Chronic Obstructive Lung Disease

HMV: Home mechanical ventilation

ICU: Intensive care unit

IPF: Idiopathic pulmonary fibrosis

LTOT: Long-term oxygen therapy

MDR-TB: Multi-drug resistant tuberculosis

MSP: Multi-stakeholder platform

NCDs: Non-communicable disease

NICE: National Institute for Health and Care Excellence

OSAS: Obstructive sleep apnoea syndrome

RHDCU: Respiratory High Dependency Care Units

SDGs: Sustainable Development Goals

TB: Tuberculosis

WHO: World Health Organisation

XDR-TB: Extensively drug-resistant tuberculosis



ERS

EUROPEAN
RESPIRATORY
SOCIETY