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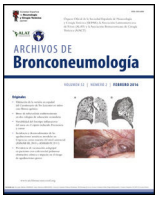

Editorial

# SEPAR's year: Air quality. SEPAR statement on climate change☆

## Año SEPAR por la calidad del aire. Papel de la SEPAR en favor del control del cambio climático

### Introduction

The available evidence on climate change (understood as such the acceleration of a natural process caused by anthropogenic drivers) is immense.[1] Human activity has generated a massive increase in greenhouse gases: in less than 100 years, $CO_2$ concentrations in the atmosphere have increased from about 280 ppm to more than 400 ppm,[2] resulting in global warming. Since the late 19th century, the overall average temperature of the Earth's surface has increased by almost a degree more than predicted. Rising sea levels, heat waves, and explosive forest fires are also direct causes of global warming. It is important to emphasize that the damage caused by climate change is not homogeneous: the least developed countries are the most severely affected, while the most vulnerable populations, the elderly and the children, suffer the most.

### Climate change and its effect on health

Climate change has a major impact on wellbeing, and constitutes one of the main health challenges of the 21st century.[3] Climate change is thought to be associated with the death of at least >250,000 individuals per year,[4] and affects the health of the inhabitants of the planet is in multiple ways.[5] Infections derived from vector displacement due to global warming are perhaps the best-known effect. The clearest examples are outbreaks of malaria, hantavirus, dengue, zika, and chikungunya.[6] Moreover, the increase in torrential rains leads to large collections of stagnant water that, together with the increase in temperatures, cause outbreaks of diarrheal diseases.[7] Other variables affected by climate change include allergic diseases, psychiatric diseases, malnutrition and migration (along with the health impact these population movements entail).

### Climate change and its effect on respiratory health

Climate change is a direct threat to respiratory health, either by aggravating chronic diseases or by facilitating their emergence.[8] Sudden changes in temperature are directly related to morbidity and mortality in respiratory diseases as common as asthma or COPD. Not only is cold weather responsible for increased mortality, but days of extreme heat are also related to respiratory mortality from pneumonia or COPD.[9] Pollution is another factor aggravated by climate change. Exposure to particulate matter influenced by climate change is clearly associated with respiratory symptoms, reduced lung function, worsening asthma, and the development of chronic bronchitis.[10] Data show how air pollution can increase the risk of atopic sensitization or exacerbate symptoms of already atopic patients. The European Respiratory Society (ERS) itself calls on pulmonologists to play a key role in the fight against climate change. Respiratory specialists must be as active in the fight against global warming as we have always been in combatting smoking.[11]

### Climate change and the health sector

The high global warming potential of national healthcare systems has been highlighted in recent years. It is estimated that the Spanish National Health System (NHS) is responsible for 4.5% of the annual greenhouse gases of our country, which is equivalent to approximately 17 $MtCO_2$.[12] Some of this carbon footprint is generated by inhalers, which account for a considerable amount of NHS greenhouse gases. Pressurized inhalers (pMDI) use hydrofluorocarbon (HFC) propellants, greenhouse gases with an impact 1,400 to 3,900 times more potent than CO2. In our country, about 52% of inhalers prescribed are pMDI, and an annual average of more than 15 million units are sold per year, producing approximately 400,000 tons of $CO_2$ tons per year.

### Role of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) in combatting climate change

The environment has always been a priority for SEPAR, as witnessed by the creation of the Respiratory Diseases of Occupational and Environmental Origin area. This area is pushing out a raft of initiatives to support a more sustainable planet and to tackle environmental pollution head on. We are now in the 2021 SEPAR Year of Air Quality, Climate Change, and Health, and various activities are being implemented to raise awareness among our members about pollution and climate change, ranging from specific courses to lectures and outreach efforts. Another facet of our Society's push towards mitigating climate change is the development of strategies aimed at promoting respiratory health in a global warming setting. These interventions begin on a personal level: we urge our

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**Table 1**
SEPAR recommendations for reducing climate change.

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| SEPAR recommends that its members impress the importance of climate change on all patients affected by respiratory diseases |
| SEPAR recommends that its members promote the circular economy and encourage their patients to recycle drugs and devices |
| SEPAR recommends prioritizing dry powder and fine mist inhalers over MDI, where appropriate |
| SEPAR recommends and commits to supporting research on the impact of climate change on respiratory health |
| SEPAR is committed to raising awareness of the impact of climate change on health |
| SEPAR undertakes to raise awareness among the health authorities of the need for a change towards a more sustainable healthcare system |
| SEPAR recommends that all clinical guidelines developed by the Society take climate change into consideration |

MDI: Controlled-dose pressurized inhalers; SEPAR: Spanish Society of Pulmonology and Thoracic Surgery.

members to use low-carbon transport and to be mindful of the environmental costs of attending meetings and congresses. Recommendations are also made on a professional level: our members are encouraged to raise their patients' awareness during visits when offering medical advice, and to encourage them to commit to the circular economy and to recycle devices. They are also urged to prioritize dry powder or fine mist inhalers over MDI. SEPAR has a clear role as a leading scientific society in climate change, a position which requires a number of undertakings. We are committed to educating and informing not only our members, but also society at large on climate change, and this awareness must be translated into action by implementing environmental measures that can reduce the carbon footprint of the health sector. SEPAR's commitment to raising awareness and actively promoting a move towards environmental action in healthcare is a priority. Promoting global measures to contribute to more sustainable health is a political task that requires the pressure and the drive of scientific societies. We at SEPAR are aware of the importance of preventing our public health system from worsening the public's health.

## Conclusions

SEPAR fully recognizes that climate change is a major challenge in the health sector, and one that particularly affects respiratory diseases. Pulmonologists and all other professionals involved in respiratory medicine have a fundamental responsibility for the health of their patients, and this includes reducing the carbon footprint of the health sector as far as possible. SEPAR urges us to act to reduce our carbon footprint at both a personal and a professional level, and is committed to leading management-level actions aimed at achieving a more sustainable health system (Table 1).

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