



The cost of respiratory disease

The estimated annual economic burden of COPD and asthma in terms of conventional directy (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 2, 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 inpatient costs of pneumonia are estimated as €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.

	Direct costs [#] € bn	Indirect costs € 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 ⁺	+	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
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Table 2 – 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. #: primary care, hospital outpatient and inpatient care, drugs and oxygen; †: lost production including work absence and early retirement; ‡: indirect costs included with direct costs.

Data on DALYs lost due to respiratory disease were obtained from WHO Health Statistics 2011 and the Global Burden of Disease study and are set out for each disease in tables 2 and 3, together with their monetised value. The major DALY losses are from lung cancer, COPD, lower respiratory tract infections and asthma. The total loss is about 5.2 million DALYs at a cost of €300 billion.

The greatest economic burden of respiratory diseases on health services and lost production in the EU is due to the chronic problems of COPD and asthma, at about €20 billion each for healthcare and €25 billion and €15 billion, respectively, for lost production. The greatest loss from disability and premature mortality is from lung cancer and COPD, followed by pneumonia/ALRI and asthma (tables 2 and 3).

Disease	DALYs lost per year (thousands)	Annual monetised value € bn
Lung cancer	1873	103.0
COPD	1691	93.0
TB	103	5.6
Pneumonia/ALRI	790	43.5
Asthma	697	38.3
Total	5154	283.4

Table 3 – Cost of disability-adjusted life-years (DALYs) lost to respiratory disease in the EU (monetised values are billions of euro at 2011 values). COPD: chronic obstructive pulmonary disease; TB: tuberculosis; ALRI: acute lower respiratory infections.

	Deaths (thousands)	Cases (thousands)	Direct costs per case €	Indirect costs €	Monetised value of DALYs lost €	Total annual cost per case €
COPD	150	23 000	1013	1091	4043	6147
Asthma	0.42	10 000	1950	1450	4043	7443
Lung cancer	257	292	11 473	NA	352 740	364 213
TB	4.9	72	7467 ^{#,†}	†	78 750	86 217

Table 4 – Average annual cost per case for the major respiratory diseases in the EU, 2011. COPD: chronic obstructive pulmonary disease; TB: tuberculosis; NA: not available. #: fully sensitive TB €6832 per case; MDR-TB €33 320 per case; XDR-TB €47 573 per case; †: indirect costs included with direct costs.

The course of both lung cancer and TB tends to be short-lived, with total treatment and costs concentrated within the year of diagnosis. Although there are many more cases of COPD and asthma, the individual mortality from lung cancer is much higher, while the course of COPD and asthma extends over many years. The costs per case per year, therefore, show a very different order than for total costs (table 4), with lung cancer and TB showing the heaviest annual costs per case for healthcare, disability and premature mortality. The direct costs of cases of drug resistant TB are considerably higher than those associated with drug sensitive disease. In effect, because of the nature of the diseases, in most patients the estimates for lung cancer and TB approach the lifetime costs, but they represent only a small proportion of lifetime costs for COPD and asthma, for which over several years the total costs per case are likely to be 20–30-fold greater than the annual cost.

[See the entire Economic Burden of Lung Disease Chapter](#)



ERR highlight: Anti-IgE treatment suppresses inflammatory airway response and remodelling markers in allergic asthma
<https://t.co/aQJ6NU1KdJ>

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