

Supplementary Table 3. Data sources for calculating duration of symptoms, the number of untreated or insufficiently treated persons, absenteeism and the effects on cognitive, social and emotional functioning and related presenteeism in Asia

Country	Source	Study summary
<i>Duration of symptoms of AR and urticaria</i>		
Singapore	Andiappan AK, Puan KJ, Lee B, Nardin A, Poidinger M, Connolly J, et al. Allergic airway diseases in a tropical urban environment are driven by dominant mono-specific sensitization against house dust mites. <i>Allergy</i> . 2014;69:501-9.	The reactivity against common allergens in two independent cohorts of 576 and 7,373 ethnic Chinese adults in Singapore was determined by skin prick tests, specific IgE titres and total serum IgE. 70%-80% of the population tested were found to be sensitised to the house dust mite allergen, which dominated other classes of allergens. This was associated with a high prevalence of AR and asthma (40% and 18% respectively). 65% of individuals had persistent AR (defined by ARIA guidelines).
	Data used to guide extrapolation of symptom duration in Asia: Loh CY, Chao SS, Chan YH, Wang DY. A clinical survey on compliance in the treatment of rhinitis using nasal steroids. <i>Allergy</i> . 2004;59:1168-72.	65 consecutive newly diagnosed patients with persistent rhinitis were treated with pre-weighed bottles of intranasal triamcinolone acetonide. Their compliance to therapy was subjectively determined by self-reporting and objectively determined the WMC after 30 days. A higher WMC (at least 50%) was associated with significantly improved mean total symptom scores.
Thailand	Kulthanan K, Wachirakaphan C. Prevalence and clinical characteristics of chronic urticaria and positive skin prick testing to mites. <i>Acta Derm Venereol</i> . 2008;88:584-88.	The study assessed the clinical relevance of mite-sensitivity to the prevalence and management of CIU in 172 Thai patients. A high prevalence of mite-sensitivity (assessed by skin prick testing) was found in patients with CIU, however this had little clinical relevance to their symptoms. The median duration of disease in patients with CIU and mite-sensitivity was 19 months.
Asia	Tham EH, Lee AJ, Bever HV. Aeroallergen sensitization and allergic disease phenotypes in asia. <i>Asian Pac J Allergy Immunol</i> . 2016;34:181-9.	This article reviews the sensitisation to aeroallergens and allergic disease phenotypes in Asia. House dust mite allergies are present in up to 90% of Asian patients. Tropical regions (including South-East Asia) have stable climates and experience little environmental fluctuations in allergen exposure. As such, allergic disease phenotypes in the region are usually perennial.
Europe	Zuberbier T, Lotvall J, Simoens S, Subramanian SV, Church MK. Economic burden of inadequate management of allergic diseases in the European Union: a GA(2) LEN review. <i>Allergy</i> 2014;69:1275-79.	Published literature and online information was reviewed to assess the cost of allergic diseases to European societies. The cost of insufficient treatment was estimated to range between EUR 55-151 billion per annum. For this model, the duration of symptoms was assumed as 75 days per annum.
<i>Number of untreated or insufficiently treated persons in the group</i>		
Singapore	Loh CY, Chao SS, Chan YH, Wang DY. A clinical survey on compliance in the treatment of rhinitis using nasal steroids. <i>Allergy</i> . 2004;59:1168-72.	65 consecutive newly diagnosed patients with persistent rhinitis were treated with pre-weighed bottles of intranasal triamcinolone acetonide. Their compliance to therapy was subjectively determined by self-reporting and objectively determined the WMC after 30 days. A higher WMC (at least 50%) was associated with significantly improved mean total symptom scores. Generally, patients overestimated their level of compliance to treatment – 87% of patients reported >75% compliance, however WMC measurement found only 65% patients achieved high levels of compliance.
	Heng JK, Koh LJ, Toh MP, Aw DC. A study of treatment adherence and quality of life among adults with chronic urticaria in Singapore. <i>Asia Pac Allergy</i> . 2015;5:197-202.	103 patients with CU answered questionnaires about their adherence to therapy (Morisky 8-Item Medication Adherence Scale) and quality of life (modified chronic urticaria quality of life questionnaire). Most patients (71.9%) had low adherence to therapy and interference with sleep and pruritic were the most important factors in reducing QoL.
Europe	Data used to guide extrapolation of treatment rate in Asia: Zuberbier T, Lotvall J, Simoens S, Subramanian SV, Church MK. Economic burden of inadequate management of allergic diseases in the European Union: a GA(2) LEN review. <i>Allergy</i> . 2014;69:1275-79.	Published literature and online information was reviewed to assess the cost of allergic diseases to European societies. The cost of insufficient treatment was estimated to range between EUR 55-151 billion per annum. In this model, it was assumed that only 10% of patients were optimally treated.
<i>Absenteeism due to AR and urticaria in the employable age group</i>		
Asia	Katelaris CH, Lai CK, Rhee CS, Lee SH, Yun WD, Lim-Varona L, et al. Nasal allergies in the Asian-Pacific population: results from the Allergies in Asia-Pacific Survey. <i>Am J Rhinol Allergy</i> 2011;25 Suppl 1:S3-15.	Individuals in Asia-Pacific (Australia, China, Hong Kong, Malaysia, Singapore, Taiwan, Vietnam and Philippines) were surveyed about the prevalence and treatment of AR and its impact on their QoL. Of the 1,403 adults and 192 children included in the survey, 8.7% of respondents were diagnosed with AR. The study found allergic symptoms (at their worst) impacted work productivity as follows: 20% (Hong Kong), 16% (Malaysia), 31% (Philippines) and 22% (Singapore). The rates of absenteeism were 3% (Hong Kong), 4% (Malaysia), 1% (Philippines), 6% (Singapore) and 2% (Vietnam).

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Supplementary Table 3. Continued

Country	Source	Study summary
Europe	Data used for guidance to estimate absenteeism in Asia: Zuberbier T, Lotvall J, Simoens S, Subramanian SV, Church MK. Economic burden of inadequate management of allergic diseases in the European Union: a GA(2) LEN review. <i>Allergy</i> . 2014;69:1275-79.	Published literature and online information was reviewed to assess the cost of allergic diseases to European societies. The cost of insufficient treatment was estimated to range between EUR 55-151 billion per annum. In this model, it was assumed that only 10% of patients were optimally treated.
USA	Data used for guidance to estimate absenteeism in Asia: Lamb CE, Ratner PH, Johnson CE, Ambegaonkar AJ, Joshi AV, Day D, et al. Economic impact of workplace productivity losses due to allergic rhinitis compared with select medical conditions in the United States from an employer perspective. <i>Curr Med Res Opin</i> . 2006;22:1203-10.	8,267 employees in USA were surveyed about the impact of predefined health conditions on their levels of absenteeism and presenteeism at work. AR was the most prevalent disease reported (55% of respondents). Respondents reported experiencing symptoms for 52.5 days and were absent for 3.6 days per annum. AR was also associated with the highest loss in productivity per employee (USD 593).
<i>Effects on cognitive, social and emotional functioning, and related presenteeism</i>		
Asia	Katellaris CH, Lai CK, Rhee CS, Lee SH, Yun WD, Lim-Varona L, et al. Nasal allergies in the Asian-Pacific population: results from the Allergies in Asia-Pacific Survey. <i>Am J Rhinol Allergy</i> . 2011;25 Suppl 1:S3-15.	Individuals in Asia-Pacific (Australia, China, Hong Kong, Malaysia, Singapore, Taiwan, Vietnam and Philippines) were surveyed about the prevalence and treatment of AR and its impact on their QoL. Of the 1,403 adults and 192 children included in the survey, 8.7% of respondents were diagnosed with AR. 50% of respondents in the region reported that symptoms of AR interfered with their work. A third of adults and caregivers with children reported that AR affected their lives to a moderate degree when symptoms were most severe.
	Meltzer EO, Blaiss MS, Naclerio RM, Stoloff SW, Derebery MJ, Nelson HS, et al. Burden of allergic rhinitis: allergies in America, Latin America, and Asia-Pacific adult surveys. <i>Allergy Asthma Proc</i> . 2012;33 Suppl 1:S113-S141.	This study surveyed 2,500 adults with AR in USA to investigate the symptoms, impact on QoL and productivity and management of AR. The results were compared with findings from similar telephone surveys in Latin America and Asia-Pacific. Nasal allergies were found to have a significant impact on the productivity of employees in Asia-Pacific. The reported productivity dropped from 89% (no symptoms) to 65% (symptoms at worst) – a drop of 24%. Similarly, productivity decreased by 23% in USA and 33% in Latin America.
Europe	Data used for guidance to estimate presenteeism and minimal rate of presenteeism: Zuberbier T, Lotvall J, Simoens S, Subramanian SV, Church MK. Economic burden of inadequate management of allergic diseases in the European Union: a GA(2)LEN review. <i>Allergy</i> . 2014;69:1275-79.	Published literature and online information was reviewed to assess the cost of allergic diseases to European societies. The cost of insufficient treatment was estimated to range between EUR 55–151 billion per annum. In the model used to calculate these costs, a presenteeism rate of 10%-20% was assumed.

AR, Allergic rhinitis; CIU, Chronic idiopathic urticaria; CU, Chronic urticaria; QoL, Quality of life; WMC, Weight of medicine consumed.