

Supplemental Material

Literatur

- 1 Bousquet J, Khaltaev N: Global surveillance, prevention and control of chronic respiratory diseases. A comprehensive approach. Global Alliance against Chronic Respiratory Diseases, World Health Organization, 2007.
- 2 Gibson GJ, Loddenkemper R, Lundback B, et al.: Respiratory health and disease in Europe: the new European Lung White Book. *Eur Respir J* 2013;42(3):559–563.
- 3 Vandenplas O, Vinnikov D, Blanc PD, et al.: Impact of rhinitis on work productivity: a systematic review. *J Allergy Clin Immunol Pract* 2017;6:1274–1286.
- 4 Munoz-Cano R, Ribo P, Araujo G, et al.: Severity of allergic rhinitis impacts sleep and anxiety: results from a large Spanish cohort. *Clin Transl Allergy* 2018;8:23.
- 5 Svanes C, Sunyer J, Plana E, et al.: Early life origins of chronic obstructive pulmonary disease. *Thorax* 2010;65(1):14–20.
- 6 Perret JL, Dharmage SC, Matheson MC, et al.: The interplay between the effects of lifetime asthma, smoking, and atopy on fixed airflow obstruction in middle age. *Am J Respir Crit Care Med* 2013;187(1):42–48.
- 7 To T, Zhu J, Larsen K, et al.: Progression from asthma to chronic obstructive pulmonary disease. Is air pollution a risk factor? *Am J Respir Crit Care Med* 2016;194(4):429–438.
- 8 Samolinski B, Fronczak A, Włodarczyk A, et al.: Council of the European Union conclusions on chronic respiratory diseases in children. *Lancet* 2012;379(9822):e45–6.
- 9 Samolinski B, Fronczak A, Kuna P, et al.: Prevention and control of childhood asthma and allergy in the EU from the public health point of view: Polish Presidency of the European Union. *Allergy* 2012;67:726–731.
- 10 Council conclusions on Healthy Ageing across the Lifecycle. 3206th Employment, social policy, health and consumer affairs Council meeting. Brussels, 7 December 2012. 2012. http://www.consilium.europa.eu/uedocs/cms_data/docs/press-data/en/lsa/134097.pdf. (Zugriff 07.01.2019).
- 11 Bousquet J, Tanasescu C, Camuzat T, et al.: Impact of early diagnosis and control of chronic respiratory diseases on active and healthy ageing. A debate at the European Union Parliament. *Allergy* 2013;68(5):555–561.
- 12 Muraro A, Fokkens WJ, Pietikainen S, et al.: European symposium on precision medicine in allergy and airways diseases: report of the European Union Parliament Symposium (October 14, 2015). *Allergy* 2016;71(5):583–587.
- 13 Hellings PW, Borrelli D, Pietikainen S, et al.: European summit on the prevention and self-management of chronic respiratory diseases: report of the European Union Parliament Summit (29 March 2017). *Clin Transl Allergy* 2017;7:49.
- 14 Bousquet J, Anto JM, Sterk PJ, et al.: Systems medicine and integrated care to combat chronic noncommunicable diseases. *Genome Med.* 2011;3(7):43.
- 15 Peters MJ: E-cigarettes and airways' disease: behind the smokescreen. *Respirology*. 2018;23(1):14–15.
- 16 Yanbaeva DG, Dentener MA, Creutzberg EC, et al.: Systemic effects of smoking. *Chest* 2007;131(5):1557–1566.
- 17 Petersen AM, Pedersen BK: The anti-inflammatory effect of exercise. *J Appl Physiol* 2005;98(4):1154–1162.
- 18 Cohen AJ, Brauer M, Burnett R, et al.: Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015. *Lancet* 2017;389(10082):1907–1918.
- 19 Hansel NN, McCormack MC, Kim V: The effects of air pollution and temperature on COPD. *COPD*. 2016;13(3):372–379.
- 20 Sheehan WJ, Gaffin JM, Peden DB, et al.: Advances in environmental and occupational disorders in 2016. *J Allergy Clin Immunol* 2017;140(6):1683–1692.

- 21 Peden DB: Impact of pollution on allergy/immunology. *J Allergy Clin Immunol* 2018;141(3):878–879.
- 22 Ruokolainen L, Fyhrquist N, Haahtela T: The rich and the poor: environmental biodiversity protecting from allergy. *Curr Opin Allergy Clin Immunol* 2016;16:421–426.
- 23 Schiavoni G, D’Amato G, Afferni .: The dangerous liaison between pollens and pollution in respiratory allergy. *Ann Allergy Asthma Immunol* 2017;118(3):269–275.
- 24 Barker DJ, Bull AR, Osmond C, et al.: Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;301(6746):259–262.
- 25 Krauss-Etschmann S, Bush A, Belusci S, et al.: Of flies, mice and men: a systematic approach to understanding the early life origins of chronic lung disease. *Thorax* 2013;68(4):380–384.
- 26 Bousquet J, Tanasescu C, Camuzat T, et al.: Impact of early diagnosis and control of chronic respiratory diseases on active and healthy ageing. A debate at the European Union Parliament. *Allergy*. 2013;68: 555–561.
- 27 Bousquet J, Anto JM, Berkouk K, et al.: Developmental determinants in non-communicable chronic diseases and ageing. *Thorax* 2015;70(6): 595–597.
- 28 Consultation on the pilot European Innovation Partnership on Active and Healthy Ageing. 2011. http://ec.europa.eu/information_society/activities/einclusion/deployment/ahaip/consultation/index_en.htm. (Zugriff 07.01.2019).
- 29 Hopkinson NS, Hart N, Jenkins G, et al.: Climate change and lung health: the challenge for a new president. *Thorax* 2017;72(4):295–296.
- 30 D’Amato G, Vitale C, Lanza M, et al.: Climate change, air pollution, and allergic respiratory diseases: an update. *Curr Opin Allergy Clin Immunol* 2016;16(5):434–440.
- 31 Witt C, Schubert AJ, Jehn M, et al.: The effects of climate change on patients with chronic lung disease. A systematic literature Review. *Dtsch Arztebl Int* 2015;112(51-52):878–883.
- 32 Gerardi DA, Kellerman RA: Climate change and respiratory health. *J Occup Environ Med*. 2014;56 (Suppl 10):S49–54.
- 33 Erickson LE: Reducing greenhouse gas emissions and improving air quality: two global challenges. *Environ Prog Sustain Energy* 2017;36 (4):982–988.
- 34 Bousquet J, Hellings PW, Agache I, et al.: ARIA Phase 4 (2018): change management in allergic rhinitis and asthma multimorbidity using mobile technology. *J Allergy Clin Immunol* 2018. <https://doi.org/10.1016/j.jaci.2018.08.049>.
- 35 Bachert C, Bousquet J, Hellings P: Rapid onset of action and reduced nasal hyperreactivity: new targets in allergic rhinitis management. *Clin Transl Allergy* 2018;8:25.
- 36 Bateman ED, Reddel HK, O’Byrne PM, et al.: As-needed budesonide-formoterol versus maintenance budesonide in mild asthma. *N Engl J Med* 2018;378(20):1877–1887.
- 37 Souza-Machado C, Souza-Machado A, Franco R, et al.: Rapid reduction in hospitalisations after an intervention to manage severe asthma. *Eur Respir J* 2010;35(3):515–521.
- 38 Management of chronic obstructive pulmonary disease in adults in primary and secondary care (partial update). This guideline partially updates and replaces NICE clinical guideline 12. Developed by the National Clinical Guideline Centre for Acute and Chronic Conditions. National Institute for Health and Clinical Excellence, NSH, UK, 2010. <http://guidance.nice.org.uk/CG101> (Zugriff 07.01.2019).
- 39 Zorgstandaard for COP, Asthma in adults and asthma in children, 2012. http://www.longalliantie.nl/files/5113/7994/2952/LAN_Zorgstandaard_COPD-2013-juni.pdf, http://www.longalliantie.nl/files/4113/7335/4473/Zorgstandaard_Astma_Volwassenen.pdf, http://www.longalliantie.nl/files/9513/7335/4440/Zorgstandaard_Astma_Kinderen_en_Jongeren.pdf (Zugriff 07.01.2019).
- 40 Asthma. Quality standards, QS25, February 2013, NICE, 2013. <http://guidance.nice.org.uk/QS25> (Zugriff 07.01.2019).
- 41 QOF clinical indicators 2013/14: summary tables, 2013. http://www.eguidelines.co.uk/eguidelinesmain/external_guidelines/ (Zugriff 07.01.2019).
- 42 Haahtela T, Tuomisto LE, Pietinalho A, et al.: A 10 year asthma programme in Finland: major change for the better. *Thorax* 2006;61(8):663–7043.
- 43 Haahtela T, Valovirta E, Kauppi P, et al.: The Finnish Allergy Programme 2008–2018 – scientific rationale and practical implementation. *Asia Pac Allergy* 2012;2(4): 275–279.

- 44 Haahtela T, von Hertzen L, Makela M, et al.: Finnish Allergy Programme 2008–2018 – time to act and change the course. *Allergy* 2008;63(6):634–645.
- 45 Haahtela T, Valovirta E, Bousquet J, et al., and the Allergy Programme Steering G: The Finnish Allergy Programme 2008–2018 works. *Eur Respir J* 2017;49(6).
- 46 Selroos O, Kupczyk M, Kuna P, et al.: National and regional asthma programmes in Europe. *Eur Respir Rev* 2015;24(137):474–483.
- 47 Bousquet J, Dahl R, Khaltayev N: Global alliance against chronic respiratory diseases. *Allergy*. 2007;62(3):216–223.
- 48 Lodrup Carlsen KC, Haahtela T, Carlsen KH, et al.: Integrated allergy and asthma prevention and care: report of the MeDALL/AIRWAYS ICPs meeting at the Ministry of Health and Care Services, Oslo, Norway. *Int Arch Allergy Immunol* 2015;167(1):57–64.
- 49 Haahtela T, Herse F, Karjalainen J, et al.: The Finnish experience to save asthma costs by improving care in 1987–2013. *J Allergy Clin Immunol* 2017;139(2):408–414.
- 50 Haahtela T, Valovirta E, Hannuksela M, et al.: Kansallinen allergiaohjelma 2008–2018 puolivälissä – suunnanmuutos tuo tuloksia. *Suom Lääkäril* 2015;35(2):2165–2172.
- 51 Kinnula VL, Vasankari T, Kontula E, et al.: The 10-year COPD Programme in Finland: effects on quality of diagnosis, smoking, prevalence, hospital admissions and mortality. *Prim Care Respir J* 2011;20(2):178–183.
- 52 Campbell H, Hotchkiss R, Bradshaw N, et al.: Integrated care pathways. *BMJ*. 1998;316(7125):133–7.
- 53 Overill S: A practical guide to care pathways. *J Integr Care* 1998;2:93–98.
- 54 Cingi C, Gevaert P, Mosges R, et al.: Multi-morbidities of allergic rhinitis in adults: European Academy of Allergy and Clinical Immunology Task Force Report. *Clin Transl Allergy* 2017;7:17.
- 55 De Greve G, Hellings PW, Fokkens WJ, et al.: Endotype-driven treatment in chronic upper airway diseases. *Clin Transl Allergy* 2017;7:22.
- 56 Bousquet J, Khaltayev N, Cruz AA, et al.: Allergic rhinitis and its impact on asthma (ARIA) 2008 update (in collaboration with the World Health Organization, GA(2)LEN and AllerGen). *Allergy* 2008;63(Suppl 86):8–160.
- 57 Bosnic-Anticevich S, Costa E, Menditto E, et al.: Aria pharmacy 2018 «Allergic rhinitis care pathways for community pharmacy». *Allergy*. 2018. <https://doi.org/10.1111/all.13701>.
- 58 Bousquet J, Neukirch F, Bousquet PJ, et al.: Severity and impairment of allergic rhinitis in patients consulting in primary care. *J Allergy Clin Immunol* 2006;117(1):158–162.
- 59 Bousquet J, Annesi-Maesano I, Carat F, et al.: Characteristics of intermittent and persistent allergic rhinitis: DREAMS study group. *Clin Exp Allergy* 2005;35(6):728–732.
- 60 Bousquet PJ, Devillier P, Tadmouri A, et al.: Clinical relevance of cluster analysis in phenotyping allergic rhinitis in a real-life study. *Int Arch Allergy Immunol* 2015;166(3):231–240.
- 61 del Cuvillo A, Montoro J, Bartra J, Valero A, Ferrer M, Jauregui I, et al.: Validation of ARIA duration and severity classifications in Spanish allergic rhinitis patients—the ADRIAL cohort study. *Rhinology*. 2010;48(2):201–205.
- 62 Jauregui I, Davila I, Sastre J, Bartra J, del Cuvillo A, Ferrer M, et al.: Validation of ARIA (allergic rhinitis and its impact on asthma) classification in a pediatric population: the PEDRIAL study. *Pediatr Allergy Immunol*. 2011;22(4):388–392.
- 63 Brozek JL, Bousquet J, Baena-Cagnani CE, Bonini S, Canonica GW, Casale TB, et al.: Allergic rhinitis and its impact on asthma (ARIA) guidelines: 2010 revision. *J Allergy Clin Immunol*. 2010;126(3):466–476.
- 64 Dykewicz MS, Wallace DV, Baroody F, Bernstein J, Craig T, Finegold I, et al.: Treatment of seasonal allergic rhinitis: an evidence-based focused 2017 guideline update. *Ann Allergy Asthma Immunol*. 2017;119(6):489–511.
- 65 Brozek JL, Bousquet J, Agache I, Agarwal A, Bachert C, Bosnic-Anticevich S, et al.: Allergic rhinitis and its impact on asthma (ARIA) guidelines—2016 revision. *J Allergy Clin Immunol*. 2017;140(4):950–958.
- 66 Bousquet J, Arnavielhe S, Bedbrook A, et al.: Treatment of allergic rhinitis using mobile technology with real world data: The MASK observational pilot study. *Allergy* 2018;73(9):1763–1774.
- 67 Russell S, Ogunbayo OJ, Newham JJ, et al.: Qualitative systematic review of barriers and facilitators to self-management of chronic obstructive pulmonary disease: views

- of patients and healthcare professionals. *NPJ Prim Care Respir Med* 2018;28(1):2.
- 68 Kessler R, Casan-Clara P, Koehler D, et al.: COMET: a multicomponent home-based disease-management programme versus routine care in severe COPD. *Eur Respir J* 2018;51(1):1701612.
 - 69 Murphy LA, Harrington P, Taylor SJ, et al.: Clinical-effectiveness of self-management interventions in chronic obstructive pulmonary disease: an overview of reviews. *Chron Respir Dis* 2017;14(3):276–288.
 - 70 Chronic asthma: management London, National Institute for Health and Care Excellence (UK), 2017, November 2017.
 - 71 Barry MJ, Edgman-Levitan S: Shared decision making – pinnacle of patient-centered care. *N Engl J Med* 2012;366(9):780–781.
 - 72 Florin J, Ehrenberg A, Ehnfors M: Clinical decision-making: predictors of patient participation in nursing care. *J Clin Nurs* 2008; 17(21):2935–2944.
 - 73 Buchanan A: Medical paternalism. *Philos Public Aff* 1978;7(4):370–390.
 - 74 mHealth. New horizons for health through mobile technologies. Global Observatory for eHealth series – Vol 3 WHO Library Cataloguing-in-Publication Data, 2011. http://www.who.int/goe/publications/goe_mhealth_web.pdf. (Zugriff 07.01.2019).
 - 75 Stephani V, Opoku D, Quentin W: A systematic review of randomized controlled trials of mHealth interventions against non-communicable diseases in developing countries. *BMC Public Health* 2016;16: 572.
 - 76 Bousquet J, Chavannes NH, Guldemond N, et al.: Realising the potential of mHealth to improve asthma and allergy care: how to shape the future. *Eur Respir J* 2017;49(5): 1700447.
 - 77 Mozaffar H, Cresswell KM, Williams R, et al.: Exploring the roots of unintended safety threats associated with the introduction of hospital e-Prescribing systems and candidate avoidance and/or mitigation strategies: a qualitative study. *BMJ Qual Saf* 2017;26(9):722–733.
 - 78 Bousquet J, Arnavielhe S, Bedbrook A, et al.: MASK 2017: ARIA digitally-enabled, integrated, person-centred care for rhinitis and asthma multimorbidity using real-world-evidence. *Clin Transl Allergy* 2018;8:45.
 - 79 Honkoop PJ, Simpson A, Bonini M, et al: MyAirCoach: the use of home-monitoring and mHealth systems to predict deterioration in asthma control and the occurrence of asthma exacerbations; study protocol of an observational study. *BMJ Open* 2017;7(1):e013935.
 - 80 Bousquet J, Anto JM, Annesi-Maesano I, et al.: POLLAR: impact of Air POLLution on Asthma and Rhinitis; a European Institute of Innovation and Technology Health (EIT Health) project. *Clin Transl Allergy* 2018;8:36.