



SHAREABLE PDF

Epidemic and pandemic viral infections: impact on tuberculosis and the lung

A consensus by the World Association for Infectious Diseases and Immunological Disorders (WAidid), Global Tuberculosis Network (GTN), and members of the European Society of Clinical Microbiology and Infectious Diseases Study Group for Mycobacterial Infections (ESGMYC)

Catherine Wei Min Ong ^{1,2,42,43}, Giovanni Battista Migliori ^{3,42}, Mario Raviglione^{4,5}, Gavin MacGregor-Skinner⁶, Giovanni Sotgiu ⁷, Jan-Willem Alffenaar^{8,9,10,43}, Simon Tiberi ^{11,12,43}, Cornelia Adlhoc ^{13,44}, Tonino Alonzi¹⁴, Sophia Archuleta¹, Sergio Brusin^{13,44}, Emmanuelle Cambau^{15,43}, Maria Rosaria Capobianchi¹⁶, Concetta Castilletti¹⁶, Rosella Centis ³, Daniela M. Cirillo ^{17,43}, Lia D'Ambrosio ¹⁸, Giovanni Delogu^{19,20,43}, Susanna M.R. Esposito²¹, Jose Figueroa²², Jon S. Friedland ^{23,43}, Benjamin Choon Heng Ho ²⁴, Giuseppe Ippolito²⁵, Mateja Jankovic ^{26,43}, Hannah Yejin Kim^{8,9,10}, Senia Rosales Klintz^{13,44}, Csaba Ködmön^{13,44}, Eleonora Lalle¹⁶, Yee Sin Leo²⁷, Chi-Chiu Leung²⁸, Anne-Grete Mårtson ²⁹, Mario Giovanni Melazzini³⁰, Saeid Najafi Fard¹⁴, Pasi Penttinen ^{13,44}, Linda Petrone¹⁴, Elisa Petruccioli¹⁴, Emanuele Pontali³¹, Laura Saderi ⁷, Miguel Santin ^{32,33,43}, Antonio Spanevello^{34,35}, Reinout van Crevel^{36,37,43}, Marieke J. van der Werf ^{13,44}, Dina Visca ^{34,35}, Miguel Viveiros^{38,43}, Jean-Pierre Zellweger³⁹, Alimuddin Zumla⁴⁰ and Delia Goletti^{14,41,43}

 @ERSpublications

This consensus statement describes the effects of the viral infections resulting in epidemics and pandemics affecting the lung (MERS, SARS, HIV, influenza A (H1N1)pdm/09 and COVID-19) and their interactions with TB, the top infectious disease killer <https://bit.ly/2UUjhGu>

Cite this article as: Ong CWM, Migliori GB, Raviglione M, *et al.* Epidemic and pandemic viral infections: impact on tuberculosis and the lung. *Eur Respir J* 2020; 56: 2001727 [<https://doi.org/10.1183/13993003.01727-2020>].

This single-page version can be shared freely online.

ABSTRACT Major epidemics, including some that qualify as pandemics, such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), HIV, influenza A (H1N1)pdm/09 and most recently COVID-19, affect the lung. Tuberculosis (TB) remains the top infectious disease killer, but apart from syndemic TB/HIV little is known regarding the interaction of viral epidemics and pandemics with TB. The aim of this consensus-based document is to describe the effects of viral infections resulting in epidemics and pandemics that affect the lung (MERS, SARS, HIV, influenza A (H1N1)pdm/09 and COVID-19) and their interactions with TB. A search of the scientific literature was performed. A writing committee of international experts including the European Centre for Disease Prevention and Control Public Health Emergency (ECDC PHE) team, the World Association for Infectious Diseases and Immunological Disorders (WAidid), the Global Tuberculosis Network (GTN), and members of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) Study Group for Mycobacterial Infections (ESGMYC) was established. Consensus was achieved after multiple rounds of revisions between the writing committee and a larger expert group. A Delphi process involving the core group of authors (excluding the ECDC PHE team) identified the areas requiring review/consensus, followed by a second round to refine the definitive consensus elements. The epidemiology and immunology of these viral infections and their interactions with TB are discussed with implications for diagnosis, treatment and prevention of airborne infections (infection control, viral containment and workplace safety). This consensus document represents a rapid and comprehensive summary on what is known on the topic.

Affiliations: ¹Dept of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore. ²Institute for Health Innovation and Technology (iHealthtech), National University of Singapore, Singapore. ³Servizio di Epidemiologia Clinica delle Malattie Respiratorie, Istituti Clinici Scientifici Maugeri IRCCS, Tradate, Italy. ⁴Centre for Multidisciplinary Research in Health Science, University of Milan, Milan, Italy. ⁵Global Studies Institute, University of Geneva, Geneva, Switzerland. ⁶Dept of Public Health Sciences, Penn State College of Medicine, Hershey, PA, USA. ⁷Clinical Epidemiology and Medical Statistics Unit, Dept of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy. ⁸Sydney Pharmacy School, University of Sydney, Sydney, Australia. ⁹Westmead Hospital, Sydney, Australia. ¹⁰Marie Bashir Institute of Infectious Diseases and Biosecurity, University of Sydney, Sydney, Australia. ¹¹Blizard Institute, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK. ¹²Division of Infection, Royal London Hospital, Barts Health NHS Trust, London, UK. ¹³Public Health Emergency Team, European Centre for Disease Prevention and Control, Stockholm, Sweden. ¹⁴Translational Research Unit, Epidemiology and Preclinical Research Dept, "L. Spallanzani" National Institute for Infectious Diseases (INMI), IRCCS, Rome, Italy. ¹⁵AP-HP-Lariboisiere, Bacteriologie, Laboratory Associated to the National Reference Centre for Mycobacteria, IAME UMR1137, INSERM, University of Paris, Paris, France. ¹⁶Laboratory of Virology, Epidemiology and Preclinical Research Dept, "L. Spallanzani" National Institute for Infectious Diseases (INMI), IRCCS, Rome, Italy. ¹⁷Emerging Bacterial Pathogens Unit, IRCCS San Raffaele Scientific Institute, Milan, Italy. ¹⁸Public Health Consulting Group, Lugano, Switzerland. ¹⁹Università Cattolica Sacro Cuore, Roma, Italy. ²⁰Mater Olbia Hospital, Olbia, Italy. ²¹Pediatric Clinic, Pietro Barilla Children's Hospital, University of Parma, Parma, Italy. ²²National Health Service, London, UK. ²³St George's, University of London, London, UK. ²⁴Tuberculosis Control Unit, Dept of Respiratory and Critical Care Medicine, Tan Tock Seng Hospital, Singapore. ²⁵Scientific Direction, "L. Spallanzani" National Institute for Infectious Diseases (INMI), IRCCS, Rome, Italy. ²⁶School of Medicine, University of Zagreb and Clinic for Respiratory Diseases, University Hospital Center Zagreb, Zagreb, Croatia. ²⁷National Centre for Infectious Diseases, Singapore. ²⁸Hong Kong Tuberculosis, Chest and Heart Diseases Association, Wanchai, Hong Kong, China. ²⁹Dept of Clinical Pharmacy and Pharmacology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands. ³⁰Scientific Direction, Istituti Clinici Scientifici Maugeri IRCCS, Pavia, Italy. ³¹Dept of Infectious Diseases, Galliera Hospital, Genova, Italy. ³²Dept of Infectious Diseases, Bellvitge University Hospital-Bellvitge Biomedical Research Institute (IDIBELL), L'Hospitalet de Llobregat, Barcelona, Spain. ³³Dept of Clinical Science, University of Barcelona, L'Hospitalet de Llobregat, Barcelona, Spain. ³⁴Division of Pulmonary Rehabilitation, Istituti Clinici Scientifici Maugeri, IRCCS, Tradate, Italy. ³⁵Dept of Medicine and Surgery, Respiratory Diseases, University of Insubria, Varese-Como, Italy. ³⁶Radboudumc Center for Infectious Diseases, Radboud Institute for Health Sciences, Radboudumc, Nijmegen, The Netherlands. ³⁷Centre for Tropical Medicine and Global Health, Nuffield Dept of Medicine, University of Oxford, Oxford, UK. ³⁸Global Health and Tropical Medicine, Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon, Lisbon, Portugal. ³⁹TB Competence Centre, Swiss Lung Association, Berne, Switzerland. ⁴⁰Dept of Infection, Division of Infection and Immunity, University College London and NIHR Biomedical Research Centre, UCL Hospitals NHS Foundation Trust, London, UK. ⁴¹Saint Camillus International University of Health and Medical Sciences, Rome, Italy. ⁴¹These authors contributed equally. ⁴²Members of ESGMYC. ⁴³European Centre for Disease Prevention and Control Public Health Emergency team co-authors.

Correspondence: Delia Goletti, Translational Research Unit, Epidemiology and Preclinical Research Dept, "L. Spallanzani" National Institute for Infectious Diseases (INMI), IRCCS, Via Portuense 292, 00149, Rome, Italy. E-mail: delia.goletti@inmi.it

Correspondence: Giovanni Battista Migliori, Servizio di Epidemiologia Clinica delle Malattie Respiratorie, Istituti Clinici Scientifici Maugeri IRCCS, Via Roncaccio 16, Tradate, Varese, 21049, Italy. E-mail: giovannibattista.migliori@icsmaugeri.it