

Neumología y Cirugía de Tórax

www.revistanct.org.mx

Official journal:

Mexican Society of Pneumology and Thoracic Surgery
National Institute of Respiratory Diseases Ismael Cosío Villegas

Editor-in-chief

Juan Carlos Vázquez García
*Directorate of Education, National
Institute of Respiratory Diseases Ismael
Cosío Villegas/Mexican Society of
Pneumology and Chest Surgery*

Associated publishers

Pneumology:

Renata Báez Saldaña
*Clinical Service 3, National Institute of
Respiratory Diseases Ismael Cosío Villegas*

Pediatric Pneumology:

María del Carmen Cano Salas
*Subdirector of Education,
National Institute of Respiratory
Diseases Ismael Cosío Villegas*

Chest Surgery:

Francina Valezka Bolaños Morales
*Subdirector of Surgery, National Institute
of Respiratory Diseases Ismael Cosío Villegas*

Editorial Board

José Rogelio Pérez Padilla
*Research in Smoking and COPD,
National Institute of Respiratory
Diseases Ismael Cosío Villegas*

Patricio Santillán Doherty
*National Bioethics Commission,
Ministry of Health, Mexico*

Andrés Palomar Lever
ABC Medical Center, Mexico City

Mayra Edith Mejía Ávila
*Interstitial Lung Diseases Clinic,
National Institute of Respiratory
Diseases Ismael Cosío Villegas*

Mario Vargas Becerra
*Research in Bronchial Hyperreactivity,
National Institute of Respiratory
Diseases Ismael Cosío Villegas*

Assistant editors

Irene Sánchez Cuahutitla
V. Beatriz Ayala Robles
*Library and Publishing Office,
National Institute of Respiratory
Diseases Ismael Cosío Villegas*

Cover art and design

Diana Beatriz Campos Puebla
Emma Samantha González Benítez
*Audiovisual Office, National
Institute of Respiratory Diseases
Ismael Cosío Villegas*

Editorial Board

Luis Felipe Alva López
*Radiology and Molecular Imaging,
Hospital Médica Sur,
Mexico City, Mexico*

Luis M. Argote Greene
*Regional Director Thoracic and
Esophageal Surgery Cleveland
Clinic Florida Cleveland, USA*

Ivette Buendía Roldán
*Research Laboratory on Aging and
Fibrous Diseases, National Institute
of Respiratory Diseases Ismael
Cosío Villegas, Mexico City*

Guillermo Careaga Reyna
*High Specialty Medical Unit, General
Hospital "Dr. Gaudencio Garza"
CMN La Raza, IMSS, Mexico City*

José Luis Carrillo Alduenda
*Sleep Clinic, National Institute
of Respiratory Diseases Ismael
Cosío Villegas, Mexico City*

Armando Castorena Maldonado
*Medical Subdirector, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*

Miguel Gaxiola Gaxiola
*Morphology Laboratory, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*

Laura Graciela Gochicoa Rangel
*Department of Physiology, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*

Alejandro Gómez y Gómez
*Autonomous University of San Luis
Potosí, Center for Respiratory Diseases
(CERSLP), San Luis Potosí, Mexico*

Julio Edgardo González Aguirre
*University Hospital, Universidad
Nacional Autónoma de Nuevo
León, Nuevo León, Mexico*

Rogelio Jasso Victoria
*Department of Research in
Experimental Surgery, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*

Rafael Laniado-Laborín
*Tuberculosis Clinic and Laboratory
Tijuana General Hospital, Tijuana, Mexico*

José Antonio Loaiza Martínez
*Fundación de los Niños de las
Californias, Children's Hospital of
Las Californias, Tijuana, Mexico*

Fernando Alfredo Mata Ávalos
*José E. González University Hospital,
Autonomous University of Nuevo
León, Nuevo León, Mexico*

Raúl Olmos Zúñiga
*Experimental Lung Transplant Unit,
National Institute of Respiratory
Diseases Ismael Cosío Villegas,
Mexico City*

Luis Adrián Rendón Pérez
*Pneumology Service, CIPTIR,
Universidad Autónoma de Nuevo
León, Nuevo León, Mexico*

Mauricio Salcedo Vargas
*Research Unit in Biomedicine and
Genomic Oncology, Hospital de
Gineco-Pediatría 3-A, OOAD
Norte, Instituto Mexicano del
Seguro Social, Mexico City*

Christian Sánchez Castrillo
*Vivian Pellas Hospital,
Managua, Nicaragua*

Julio Sandoval Zárate
*ABC Medical Center,
Mexico City*

Saraí del Carmen Toral Freyre
*Technical Training School, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*

Claudia Vargas Domínguez
*PPD- Thermo Fisher, Medical
Associate Director, Madrid, Spain*

Joaquín A. Zúñiga Ramos
*Directorate of Research, National
Institute of Respiratory Diseases
Ismael Cosío Villegas, Mexico City*



Mexican Society of Pneumology and Thoracic Surgery

Jesús Javier Vázquez Cortés
President

José Luis Sandoval Gutiérrez
Vice-President

Luis Adrián Rendón Pérez
Past President

Ivette Buendía Roldán
Secretary

Sergio Garza Salinas
Treasurer



National Institute of Respiratory Diseases Ismael Cosío Villegas

Jorge Salas Hernández
General Manager

Juan Carlos Vázquez García
Director of Education

Joaquín A. Zúñiga Ramos
Director of Research

Justino Regalado Pineda
Medical Director

Neumología y Cirugía de Tórax

Address correspondence to: Dr. Juan Carlos Vázquez García, Editor-in-Chief of the journal Neumología y Cirugía de Tórax, Office of Library and Editorial, National Institute of Respiratory Diseases Ismael Cosío Villegas: Calzada de Tlalpan 4502, district Section XVI, Mexico City, 14080.
Telephone 55-5487-1700, ext., 5145.
Email address: neumolcirtorax@gmail.com

On the internet indexed and compiled in:

www.revistanct.org.mx,
www.medigraphic.com/neumologia,
www.smnyct.org.mx,
www.iner.salud.gob.mx,
www.socune.sld.cu,
www.neumoparaguay.org,
www.soboneumo.com,
www.neumofedeca.org

Cover image: Image produced by the National Institute of Allergy and Infectious Diseases (NIAID) of the United States of America. It is a digitally colorized scanning electron microscopy (SEM) image showing a large group of rod-shaped, orange-colored Mycobacterium tuberculosis bacteria that cause tuberculosis (TB) in humans.

The base of the image is available at: <https://phil.cdc.gov/Details.aspx?pid=18138>

The journal of **Neumología y Cirugía de Tórax** is the Official Organ of the Mexican Society of Pneumology and Chest Surgery, the National Institute of Respiratory Diseases Ismael Cosío Villegas, Cuban Society of Pneumology, Paraguayan Society of Pneumology, Bolivian Society of Pneumology, South American Association of Respiratory Endoscopy, International Association of Non-Invasive Mechanical Ventilation and the Central American and Caribbean Federation of Pneumology and Chest Surgery; it is published quarterly. The rights of reproduction of the content and graphic features of this edition (including by electronic means) are reserved in accordance with the Law in the signatory countries of the Pan American and International Copyright Conventions. Reservation of Rights No. 04-2009-100811303100-102. All rights reserved © 1985. The intellectual responsibility of the signed articles and photographs reverts to their authors. Art, design, typesetting by Graphimedic, S.A. de C.V. Tels: 55 8589-8527 to 31. Email address: emyc@medigraphic.com

Electronic libraries and indexes in which the journal of Neumología y Cirugía de Tórax has been registered

Regensburg University Library, Germany
<http://www.bibliothek.uni-regensburg.de/ezeit/fl.phtml?notation=WW-YZ&bibid=ZBMED&colors=3&frames=&toc=&sbg=>

Library of the Federal University of Sao Paulo, Brazil
<http://www.unifesp.br/dis/bibliotecas/revistas.htm>

Library of the Biomedical Research Institute, UNAM
<http://www.revbiomedicas.unam.mx>

Library of the Universidad Norte de Paraná, Brazil
http://www.unopar.br/bibli01/biologicas_periodicos.htm

Infodoctor (site of the Spanish Medical Societies) with search engine and more than 3,000 links to biomedical journals
<http://www.infodoctor.org/revistas.htm>

LATINDEX. Regional Online Information System for Scientific Journals in Latin America, the Caribbean, Spain and Portugal
<http://www.latindex.org/>

Virtual Health Library (VHL, Brazil)
<http://portal.revistas.bvs.br>

Library of the Institute of Biotechnology, UNAM
<http://www.biblioteca.ibt.unam.mx/revistas.php>

Italian Association of Libraries, (AIB)
<http://www.aib.it/aib/commiss/cnur/peb/peba.htm3>

State Medical Library of the Ministry of Heritage and Culture, Italy
<http://bms.beniculturali.it/ejnl/index.php>

Geneva Foundation for Medical Training and Research, Switzerland
http://www.gfmer.ch/Medical_journals/Revistas_medicas_acceso_libre.htm

PERIODICA (Index of Latin American Journals in Sciences), UNAM.
<http://biolat.unam.mx>

Medigraphic, Biomedical Literature
<http://www.medigraphic.org.mx>

Google Scholar
<http://scholar.google.com.mx/>

Scielo
<http://www.scielo.org.mx/>