

Volume 42, No 9

ICHE



SEPTEMBER 2021

WU LIEN-TEH

# TEE Clean<sup>®</sup>

AUTOMATED TEE PROBE CLEANER DISINFECTOR

**Complete Probe Reprocessing to Protect  
Patient • TEE Probe • Technician**

- Validated Cleaning and Disinfection Process
- Filtered Rinse water — 5 Nanometer
- Electrical Leakage Testing
- Retains 15,000 Records In System Memory



[www.csmedicalllc.com](http://www.csmedicalllc.com)  
[www.teeclean.com](http://www.teeclean.com)

**CS Medical**

877.255.9472

CSAD.0023.200825

## CONTENTS

## Original Articles

- 1031** Effectiveness of barrier precautions for prevention of patient-to-patient transfer of a viral DNA surrogate marker  
*Heba Alhmidi, Jennifer L. Cadnum, Yilen K. Ng-Wong, Annette L. Jencson, Brigid M. Wilson and Curtis J. Donskey*
- 1037** Infection control challenges in setting up community isolation and treatment facilities for patients with coronavirus disease 2019 (COVID-19): Implementation of directly observed environmental disinfection  
*Shuk-Ching Wong, Ming Leung, Danny Wah-Kun Tong, Larry Lap-Yip Lee, Will Lok-Hang Leung, Frank Wan-Kin Chan, Jonathan Hon-Kwan Chen, Ivan Fan-Ngai Hung, Kwok-Yung Yuen, Deacons Tai-Kong Yeung, Kin-Lai Chung and Vincent Chi-Chung Cheng*
- 1046** Investigation of nosocomial SARS-CoV-2 transmission from two patients to healthcare workers identifies close contact but not airborne transmission events  
*Derek J. Bays, Minh-Vu H. Nguyen, Stuart H. Cohen, Sarah Waldman, Carla S. Martin, George R. Thompson, Christian Sandroock, Joel Tourtellotte, Janelle Vu Pugashetti, Chinh Phan, Hien H. Nguyen, Gregory Y. Warner and Bennett H. Penn*
- 1053** Severe acute respiratory coronavirus virus 2 (SARS-CoV-2) seroprevalence in healthcare personnel in northern California early in the coronavirus disease 2019 (COVID-19) pandemic  
*Joelle I. Rosser, Katharina Röltgen, Melissa Dymock, John Shepard, Andrew Martin, Catherine A. Hogan, Andra Blomkalns, Roshni Mathew, Julie Parsonnet, Benjamin A. Pinsky, Yvonne A. Maldonado, Scott D. Boyd, Sang-ick Chang, Marisa Holubar and on behalf of the Stanford Healthcare COVID-19 Workforce Response Group*
- 1060** Evaluating intervention strategies in controlling coronavirus disease 2019 (COVID-19) spread in care homes: An agent-based model  
*Le Khanh Ngan Nguyen, Susan Howick, Dennis McLafferty, Gillian H. Anderson, Sahaya J. Pravinkumar, Robert Van Der Meer and Itamar Megiddo*
- 1071** Simulating the effects of operating room staff movement and door opening policies on microbial load  
*Kevin M. Taaffe, Robert W. Allen, Lawrence D. Fredendall, Marisa Shehan, Mary Grace Stachnik, Taliyah Smith, Alfredo M. Carbonell, Emily Glover and Alexis Fiore*
- 1076** Timing and route of contamination of hospitalized patient rooms with healthcare-associated pathogens  
*Sarah N. Redmond, Basya S. Pearlmutter, Yilen K. Ng-Wong, Heba Alhmidi, Jennifer L. Cadnum, Sandra Y. Silva, Brigid M. Wilson and Curtis J. Donskey*



- 1082** A “resistance calculator”: Simple stewardship intervention for refining empiric practices of antimicrobials in acute-care hospitals  
*Shani Zilberman-Itskovich, Nathan Strul, Khalil Chedid, Emily T. Martin, Akram Shorbaje, Itzhak Vitkon-Barkay, Gil Marcus, Leah Michaeli, Mor Broide, Matar Yekutieli, Yarden Zohar, Hadas Razin, Amitai Low, Ariela Strulovici, Boaz Israeli, Gal Geva, David E. Katz, Eli Ben-Chetrit, Mutaz Dodin, Sorabh Dhar, Leo Milton Parsons II, Abdiel Ramos-Mercado, Keith S. Kaye and Dror Marchaim*
- 1090** Reductions in vancomycin and meropenem following the implementation of a febrile neutropenia management algorithm in hospitalized adults: An interrupted time series analysis  
*Trang D. Trinh, Luke Strnad, Lloyd Damon, John H. Dzundza, Larissa R. Graff, Laura M. Griffith, Alexandra Hiltz-Horeczko, Rebecca Olin, Samantha Shenoy, Catherine DeVoe, Lusha Wang, Rosa Rodriguez-Monguio, Tina M. Gu, Scott R. Hampton, Brian Allan C. Macapinlac, Katherine Yang, and Sarah B. Doernberg*
- 1098** An eight-year multicenter study on short-term peripheral intravenous catheter–related bloodstream infection rates in 100 intensive care units of 9 countries in Latin America: Argentina, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Mexico, Panama, and Venezuela. Findings of the International Nosocomial Infection Control Consortium (INICC)  
*Victor Daniel Rosenthal, Gustavo Jorge Chaparro, Eduardo Alexandrino Servolo-Medeiros, Dayana Souza-Fram, Daniela Vieira da Silva Escudero, Sandra Milena Gualtero-Trujillo, Rayo Morfin-Otero, Esteban Gonzalez-Diaz, Eduardo Rodriguez-Noriega, Miguel Angel Altuzar-Figueroa, Guadalupe Aguirre-Avalos, Julio César Mijangos-Méndez, Federico Corona-Jiménez, Blanca Estela Hernandez-Chena, Mohamed Rajab Abu-Jarad, Evelia Maria Diaz-Hernandez, María Guadalupe Miranda-Navales, José Guillermo Vázquez-Rosales, Daisy Aguilar-De-Morós, Elizabeth Castaño-Guerra, Gabriel Munoz-Gutierrez, Nepomuceno Mejia, Jenia Johana Acebo-Arcenales and Gabriela Di-Silvestre*

### Commentaries

- 1105** SHEA Pediatric Leadership Council commentary: Ambulatory management of neonates born to mothers infected with severe acute respiratory coronavirus virus 2 (SARS-CoV-2)  
*Lorry G. Rubin, Larry K. Kociolek, Joshua K. Schaffzin, Latania K. Logan, Judith A. Guzman-Cottrill, Jason Lake, Carolyn Caughell, Allison H. Bartlett, Karen A. Ravin, Martha Muller, Lynn Ramirez-Avila and for the SHEA Pediatric Leadership Council*
- 1108** SHEA Pediatric Leadership Council commentary: Personal protective equipment during care of children with multisystem inflammatory syndrome in children (MIS-C)  
*Martha L. Muller, Latania K. Logan, Larry K. Kociolek, Judith A. Guzman-Cottrill, Allison H. Bartlett, Joshua K. Schaffzin, Karen A. Ravin, Lorry G. Rubin, Jason Lake, Carolyn Caughell and Lynn Ramirez-Avila for the SHEA Pediatric Leadership Council*
- 1111** Assessing the healthcare epidemiology environment—A roadmap for SHEA’s future  
*David K. Henderson, Corey A. Forde, Sarah Haessler, Ibukunoluwa C. Kalu, Latania K. Logan, Anurag Malani, A. Rekha Murthy, Clare Rock, David J. Weber, Sharon B. Wright, Deborah Yokoe and Mary K. Hayden for the SHEA Board of Trustees*

## Concise Communications

- 1115** Change in hospital antibiotic use and acquisition of multidrug-resistant gram-negative organisms after the onset of coronavirus disease 2019  
*Jacqueline T. Bork, Surbhi Leekha, Kimberly Claeys, Hyunuk Seung, Megan Tripoli, Anthony Amoroso and Emily L. Heil*
- 1118** Utilization of the Sharing Antimicrobial Reports for Pediatric Stewardship (SHARPS) Collaborative electronic mailing list (listserv) by healthcare professionals  
*Christopher C. McPherson, Zachary A. Vesoulis, Talene A. Metjian, Mirela Grabic, Summer Reyes, Sydney Reyes, Christina Krucylak, Cindy Terrill and Jason G. Newland*
- 1121** Antimicrobial never events: Objective application of a framework to assess vancomycin appropriateness  
*Jiajun Liu, Nicholas J. Mercurio, Susan L. Davis, Tenzin Palmo, Shivek Kashyap, Twisha S. Patel, Lindsay A. Petty, Paul R. Yarnold, Keith S. Kaye and Marc H. Scheetz*
- 1124** A multi-institutional outbreak of New Delhi metallo- $\beta$ -lactamase– producing *Escherichia coli* with subsequent acquisition of the *Klebsiella pneumoniae* carbapenemase gene  
*Ester Solter, Jason C. Kwong, Aaron Walton, Norelle Sherry, Benjamin P. Howden, M. Lindsay Grayson, David Schwartz, Elizabeth Temkin, Sammy Frenk, Yehuda Carmeli and Mitchell J. Schwaber*
- 1128** Changes in the accuracy of administrative data for the detection of surgical site infections  
*Brian T. Bucher, Meng Yang, Julie Arndorfer, Cherie Frame, Jan Orton, Matthew H. Samore and Kristin K. Dascomb*

## Research Briefs

- 1131** Implementation of Society for Hospital Epidemiology of America (SHEA) and Centers for Disease Control and Prevention (CDC) Outbreak Response Training Program tools to develop a dedicated coronavirus disease 2019 (COVID-19) hospital in Lucas County, Ohio  
*Jennifer A. Hanrahan, Joel A. Kammeyer, Deana Sievert, Brenda Naylor, Sadik Khuder and Brian Kaminski*
- 1132** Monthly trend in mortality and length of stay among coronavirus disease 2019 (COVID-19) patients: Analysis of a nationwide multihospital US database  
*Xiaozhou Fan, Barbara H. Johnson, Stephen S. Johnston, Nivesh Elangovanraaj, Prerna Kothari, Avrum Spira, Paul Coplan and Rahul Khanna*
- 1136** Development and implementation of a short duration antibiotic therapy algorithm for uncomplicated gram-negative bloodstream infections  
*Esther Y. Bae, Kathryn Dzintars, Fidelia Bernice, Pranita D. Tamma, Sara E. Cosgrove and Edina Avdic*

## Letters to the Editor

- 1139** Reply to Greene: New SHEA expert guidance for infection prevention in the anesthesia work area needs improvement  
*Valerie Deloney, Andrew Bowdle, David J. Birnbach, L. Silvia Munoz-Price, Richard C. Prielipp, Marjorie A. Geisz-Everson, B. Lynn Johnston and Joshua Schaffzin*

- 1140** A novel virtual hospital at home model during the coronavirus disease 2019 (COVID-19) pandemic  
*Patrick P. Ryan, Kellie L. Hawkins, Stacey Altman, Lisa Granatowski, Bradley D. Shy, Jeremy Long and Rebecca Hanratty*
- 1143** Clearing the air: Addressing air clearance times for infectious aerosols in healthcare facilities  
*Andrew W. Hurlburt, Rita J. DeKleer and Elizabeth A. Bryce*
- 1145** Managing humidity support in intubated ventilated patients with coronavirus disease 2019 (COVID-19)  
*Hui-Ling Lin, James B. Fink, Ying-Huang Tsai and Gwo-Hwa Wan*
- 1146** Atypical COVID-19: Preventing transmission from unexpected cases  
*Angela Chow, Htet Lin Htun, Win Mar Kyaw, Hou Ang, Glenn Tan, Huei Nuo Tan, Li Wearn Koh, Bernard Yu-Hor Thong and Brenda Ang*
- 1149** Incidence, risk factors, timing, and outcome of influenza versus COVID-19–associated putative invasive aspergillosis  
*Camille Sarrazyn, Sofie Dhaese, Birgit Demey, Stefaan Vandecasteele, Marijke Reynders and Jens T. Van Praet*
- 1150** Aerosolized SARS-CoV-2 transmission risk: Surgical or N95 masks?  
*Petrack Periyasamy, B. H. Ng, Umi K. Ali, Zetti Z. Rashid and Najma Kori*
- 1152** *Sphingomonas paucimobilis* infection among a patient with a history of injection drug use: An opportunity for improvement of medical chart documentation  
*Michael A. Goulart, Marko Predic and Chad D. Neilsen*
- 1153** Antimicrobial stewardship programs and convalescent plasma for COVID-19: A new paradigm for preauthorization?  
*Michael P. Stevens, Payal K. Patel and Priya Nori*
- 1154** Regarding data visualization  
*David Birnbaum*
- 1155** Successful public health measures preventing coronavirus disease 2019 (COVID-19) at a Michigan homeless shelter  
*Dan Kelly, Holly Murphy, Ravi Vadlamudi, Ruth Kraut, Kate Dalessio, Anurag N. Malani, Meghan Glabach and Juan Luis Marquez*
- 1156** Prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) in respiratory cultures and diagnostic performance of the MRSA nasal polymerase chain reaction (PCR) in patients hospitalized with coronavirus disease 2019 (COVID-19) pneumonia  
*Chitra D. Punjabi, Theresa Madaline, Inessa Gendlina, Victor Chen, Priya Nori and Liise-anne Pirofski*
- 1158** Asymptomatic coronavirus disease 2019 (COVID-19) in hospitalized patients  
*Victor C. Passarelli, Klinger Faico-Filho, Luiz V. L. Moreira, Luciano Kleber de Souza Luna, Danielle D. Conte, Clarice Camargo, Ana H. Perosa and Nancy Bellei*

- 1160** Characterizing coinfection in children with COVID-19: A dual center retrospective analysis  
*David D. Zhang, Mary Ellen Acree, Jessica P. Ridgway, Nirav Shah, Aniruddha Hazra, Urmila Ravichandran and Madan Kumar*
- 1162** Construction of a container isolation ward: A rapidly scalable modular approach to expand isolation capacity during the coronavirus disease 2019 (COVID-19) pandemic  
*Liang En Wee, Esther Monica Peijin Fan, Raphael Heng, Shin Yuh Ang, Juat Lan Chiang, Thuan Tong Tan, Moi Lin Ling and Limin Wijaya*
- 1165** Hospital-onset *Clostridioides difficile* infections during the COVID-19 pandemic  
*Yuying Luo, Lauren T. Grinspan, Yichun Fu, Victoria Adams-Sommer, D. Kyle Willey, Gopi Patel and Ari M. Grinspan*
- 1166** Return to work during coronavirus disease 2019 (COVID-19): Temperature screening is no panacea  
*David H. Slade and Michael S. Sinha*
- 1168** Characterization of *Mycobacterium chimaera* in a heater-cooler unit in Latvia  
*Janis Kimsis, Ilva Pole, Inga Norvaisa, Uga Dumpis and Renate Ranka*
- 1170** Impact of the pandemic on antimicrobial consumption patterns  
*Cristófer Farias da Silva, Caroline Deutschendorf, Fabiano Márcio Nagel, Camila Hubner Dalmora, Rodrigo Pires dos Santos and Thiago Costa Lisboa*

*An Official Publication of the Society for Healthcare Epidemiology of America*

## EDITOR

Suzanne F. Bradley, MD • Ann Arbor, MI

## DEPUTY EDITOR

Carol Chenoweth, MD • Ann Arbor, MI

## ASSOCIATE EDITORS

David P. Calfee, MD, MS • New York, NY  
Lindsay E. Nicolle, MD • Winnipeg, Manitoba  
Trevor C. Van Schooneveld, MD • Omaha, NE  
David Weber, MD, MPH • Chapel Hill, NC

## STATISTICS CONSULTANTS

Jon P. Furuno, PhD • Portland, OR  
Jessina C. McGregor, PhD • Portland, OR

## MANAGING EDITOR

Lindsay MacMurray • New York, NY

## PAST EDITORS

*Infection Control* • Portland, OR  
Richard P. Wenzel, MD, 1980-1987 (vols. 1-8)  
*Infection Control & Hospital Epidemiology*  
Richard P. Wenzel, MD, 1988-1992 (vols. 9-13)  
Michael D. Decker, MD, 1993-2001 (vols. 14-22)  
Barry M. Farr, MD, 2002-2004 (vols. 23-25)  
William R. Jarvis, MD, 2005-2006 (vols. 26 and 27)

## EDITORIAL ADVISORY BOARD

Deverick Anderson, MD, MPH • Durham, NC  
Anucha Apisarnthanarak, MD • Pratumthani, Thailand  
Lennox Archibald, MD, FRCP • Alachua, FL  
Shailen Banerjee, PhD • Atlanta, GA

Elise M. Beltrami, MD, MPH • Atlanta, GA  
Jo Anne Bennett, RN, PhD • New York, NY  
David Birnbaum, PhD, MPH • Sidney, BC  
Marc Bonten, MD • Utrecht, Netherlands  
Christian Brun-Buisson, MD • Creteil, France  
John P. Burke, MD • Salt Lake City, UT  
Yehuda Carmeli, MD, MPH • Tel Aviv, Israel  
Donald E. Craven, MD • Burlington, MA  
Christopher Crnich, MD, MS • Madison, WI  
Erika D'Agata, MD, MPH • Boston, MA  
Daniel Diekema, MD • Iowa City, IA  
Erik Dubberke, MD, MSPH • St. Louis, MO  
Charles E. Edmiston, Jr., PhD • Milwaukee, WI  
Mohamad Fakhri, MD, MPH • Grosse Pointe Woods, MI  
Petra Gastmeier, MD • Berlin, Germany  
Jeffrey Gerber, MD, PhD • Philadelphia, PA  
Dale N. Gerding, MD • Hines, IL  
Donald A. Goldmann, MD • Boston, MA  
Nicholas Graves, PhD • Brisbane, Australia  
Donna Haiduven, RN, PhD, CIC • Tampa, FL  
Anthony D. Harris, MD, MPH • Baltimore, MD  
Elizabeth Henderson, PhD • Calgary, AB  
David K. Henderson, MD • Bethesda, MD  
Loreen A. Herwaldt, MD • Iowa City, IA  
Peter N. R. Heseltine, MD • Brea, CA  
John A. Jernigan, MD, MS • Atlanta, GA  
Mini Kamboj, MD • New York, NY  
Carol A. Kauffman, MD • Ann Arbor, MI  
James T. Lee, MD, PhD • St. Paul, MN

L. Clifford McDonald, MD • Atlanta, GA  
Allison McGeer, MD • Toronto, ON  
Leonard A. Mermel, DO, ScM • Providence, RI  
Robert R. Muder, MD • Pittsburgh, PA  
Linda Mundy, MD • Collegeville, PA  
Joseph M. Mylotte, MD, CIC • Buffalo, NY  
Jan Evans Patterson, MD • San Antonio, TX  
David A. Pegues, MD • Philadelphia, PA  
Didier Pittet, MD, MS • Geneva, Switzerland  
Isaam Raad, MD • Houston, TX  
Manfred L. Rotter, MD, DipBact • Vienna, Austria  
William A. Rutala, PhD, MPH • Chapel Hill, NC  
Lisa Saiman, MD, MPH • New York, NY  
Sanjay Saint, MD, MPH • Ann Arbor, MI  
Sorana Segal-Maurer, MD • Flushing, NY  
Lynne M. Schulster, PhD • Atlanta, GA  
John A. Sellick, DO • Amherst, NY  
Andrew E. Simor, MD • Toronto, ON  
Philip W. Smith, MD • Omaha, NE  
Kurt Stevenson, MD, MPH • Columbus, OH  
Nimalie Stone, MD • Atlanta, GA  
Thomas Talbot, MD, MPH • Nashville, TN  
Paul Tambyah, MBBS • Singapore  
William Trick, MD • Chicago, IL  
Antoni Trilla, MD, PhD • Barcelona, Spain  
Robert A. Weinstein, MD • Chicago, IL  
Andreas Widmer, MD, MS • Basel, Switzerland  
Marcus Zervos, MD • Detroit, MI

*Infection Control & Hospital Epidemiology* (ISSN 0899-823X) is published monthly by Cambridge University Press, One Liberty Plaza, New York, NY 10006, USA.

## Editorial Office

Communications should be addressed to the Editor, *Infection Control & Hospital Epidemiology*, One Liberty Plaza, New York, NY 10006 (email: [iche.managingeditor@cambridge.org](mailto:iche.managingeditor@cambridge.org)). Contributors should consult the Instructions for Contributors, which is available at the journal's Web site.

## Advertising

Please direct advertising inquiries to M. J. Mrvica Associates, 2 West Taunton Avenue, Berlin, NJ 08009 (e-mail: [mjmrvica@mrvica.com](mailto:mjmrvica@mrvica.com); telephone: 856-768-9360, fax: 856-753-0064). Publication of an advertisement in *Infection Control & Hospital Epidemiology* does not imply endorsement of its claims by the Society for Healthcare Epidemiology of America, by the Editor, or by Cambridge University Press.

## Permissions

Articles may be copied or otherwise reused without permission only to the extent permitted by Sections 107 and 108 of the US Copyright Law. Permission to copy articles for personal, internal, classroom, or library use may

be obtained from the Copyright Clearance Center (<http://www.copyright.com>, email: [info@copyright.com](mailto:info@copyright.com)). For all other uses, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, please contact Cambridge University Press. Full details may be found at: [www.cambridge.org/about-us/rights-permissions](http://www.cambridge.org/about-us/rights-permissions).

## Subscriptions

The individual subscription rate for 2021 is \$296. Individuals have the option to order directly from Cambridge University Press. Institutional print + electronic and e-only subscriptions are available from Cambridge University Press and include unlimited online access; rates are tiered according to an institution's type and research output and may be reviewed at the journal's homepage on Cambridge Core: [cambridge.org/ICHE](http://cambridge.org/ICHE).

Please direct subscription inquiries and requests for back issues to Customer Services at Cambridge University Press, e-mail: [subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org) (USA, Canada, and Mexico) or [journals@cambridge.org](mailto:journals@cambridge.org) (outside of USA, Canada, and Mexico).

**Postmaster:** Send address changes to *Infection Control & Hospital Epidemiology*, Cambridge University Press, One Liberty Plaza, New York, NY 10006 USA.



## About the cover:



Starting in 2015, the cover format of each volume of *Infection Control and Hospital Epidemiology* will be changed in order to honor one of the many professionals throughout history who not only recognized how disease might be spread, but also how those principles could be applied to reduce healthcare associated infections.

Wu Lien-teh, M.D., MPH was born Gnoh Lean Tuck in Malaysia in 1879. His father, who was Chinese, immigrated to Penang to work as a goldsmith. In 1896, Wu won the Queen's Scholarship allowing him to enroll at Emmanuel College in Cambridge University. After training at St. Mary's Hospital in London, Wu pursued research at the Liverpool School of Tropical Medicine, the Pasteur Institute, and the Bacteriological Institute of Halle in the fields of bacteriology, malaria, and tetanus. By the age of 24, Dr. Wu was the first student of Chinese descent to graduate from Cambridge with a medical degree.

Dr. Wu returned to Malaysia in 1903, to find that there were no posts in the Medical Service for non-British specialists. After a brief time studying beri-beri, he returned to Penang to establish a medical practice. He advocated for the abolition of gambling, spirits and opium which impacted local government coffers. Wu soon found himself to be in possession of an ounce of opium for which he was prosecuted. In 1907, Wu left Malaysia to accept an invitation to serve as the Vice-Director of Imperial Army Medical College in Tientsin, China.

In 1910, an outbreak of a rapidly fatal respiratory disease occurred in the Chinese-Russian town of Harbin in Manchuria. The outbreak began amongst 10,000 hunters who stayed in crowded inns; they sought marmots for their pelts which, when appropriately dyed, could pass for sable. Wu, being conversant in French and German, was dispatched to work with foreign medical officers. No one had seen pneumonic plague in recent memory, but Dr. Wu strongly suspected the diagnosis and had to overcome Chinese prohibitions against performing postmortems to prove it. With his direction, travel was restricted, plague hospitals were built and the symptomatic isolated, their homes were disinfected, and asymptomatic contacts were identified and quarantined in freight cars. Bodies that could not be buried in the frozen soil were cremated contrary to the teachings of Confucianism. Everyone was encouraged to wear anti-plague masks, the forerunner of the N95 mask. One senior physician who notably refused to wear a mask died of the disease. By the Lunar New Year in 1911, the outbreak had ceased; 60,000 inhabitants had died.

Dr. Wu was nominated for the Nobel Prize for his work as a plague fighter; he directed the National Quarantine Service and was the first president of the China Medical Society. He also championed the modernization of Chinese Medical and Public Health Systems. After the Japanese occupation of China in 1937, he returned to Malaysia where he practiced medicine until retirement at the age of 80. Dr. Wu Lien-teh died on January 20, 1960 following a stroke.

---

Cover image: The Wu Lien Teh Memorial Museum in Harbin, China (<https://wulienteh.com/1453/dr-wu-lien-teh-memorial-museum/>).