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Dr Mora-Montes

Biología, Universidad de Guanajuato, Mexico

ASSOCIATE EDITOR IN CHIEF


Dr Mora-Montes

During his post as a clinical analyst, Prof. Mora-Montes developed a system for the differentiation of Candida species, based on in-house zymograms and colony morphology in cornmeal agar. As a postgraduate student, he generated a new and innovative method for in situ determination of glycosyl hydrolase activities and received the "Summa Cum Laude" distinction from Universidad de Guanajuato. Among the most important achievements during his time as a postdoctoral fellow at the University of Aberdeen (Scotland), he set up most of the immunological techniques within the Aberdeen Fungal Group and developed and standardized protocols for the isolation and purification of chitin, phospholipomannan, N-linked and O-linked mannans from fungal cells. Those protocols have not only benefited the Aberdeen Fungal Group, but other international groups dedicated to the study of the fungal cell wall, and are considered among the most popular and standardized methods for isolation and analysis of fungal cell wall components. In 2010, he established the Laboratory of Fungal Glycobiology at Universidad de Guanajuato (Mexico), with the main goal to understand the mechanisms behind the fungal cell wall synthesis and the interaction of medically relevant fungal pathogens with the host. This laboratory is characterized by its facilities to perform chemical, immunological, genetic, molecular and cellular analyses of human fungal pathogens. Therefore, it is among a handful of research facilities within Mexico and Latin America offering a multidisciplinary and integral approach to understand these pathogens. Currently, the group is developing molecular tools for genetic manipulation of medically relevant fungi, in particular Sporothrix and Candida species. Our group has a solid international reputation in the genetic study of these organisms, in the immune sensing of fungal cells, and the development of alternative models to analyze fungal virulence. Since 2016, he was awarded the level III distinction by SNI, the highest distinction awarded by the Mexican Government for Mexican Researchers under 65 years old. He currently holds editorial appointments in several peer-reviewed international journals and is the Deputy President of the Latin-American Society of Glycobiology.

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RESPONSE TO LETTER

More Caution Needs in Study Design and Method Selection for "In vitro Antibacterial Effect of Deconex and Sodium Hypochlorite Against Bacterial Taxa Isolated from Dental Units" [Response to Letter]

Amin M, Ardaneh M, Hashemzadeh M, Asarehzadegan Dezfuli A, JafarZadeh E

Infection and Drug Resistance 2019, 12:3987-3988

Published Date: **30 December 2019**

SHORT REPORT

Emergence of Almost Identical F36:A-:B32 Plasmids Carrying blaNDM-5 and qepA in Escherichia coli from Both Pakistan and Canada

Baloch Z, Lv L, Yi L, Wan M, Aslam B, Yang J, Liu JH

Infection and Drug Resistance 2019, 12:3981-3985

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ORIGINAL RESEARCH

Characterization of Antibiotic-Susceptibility Patterns, Virulence Factor Profiles and Clonal Relatedness in Proteus mirabilis Isolates from Patients with Urinary Tract Infection in Iran

Mirzaei A, Habibi M, Bouzari S, Asadi Karam MR

Infection and Drug Resistance 2019, 12:3967-3979

Published Date: **27 December 2019**

ORIGINAL RESEARCH

Clinical Manifestations and Risk Factors of Streptococcus suis Mortality Among Northern Thai Population: Retrospective 13-Year Cohort Study

Rayanakorn A, Katip W, Goh BH, Oberdorfer P, Lee LH

Infection and Drug Resistance 2019, 12:3955-3965

Published Date: **30 December 2019**

ORIGINAL RESEARCH

In vitro Antibacterial Activity of Isopropoxy Benzene Guanidine Against Multidrug-Resistant Enterococci

Zhang X, Han D, Pei P, Hao J, Lu Y, Wan P, Peng X, Lv W, Xiong W, Zeng Z

Infection and Drug Resistance 2019, 12:3943-3953

Published Date: **23 December 2019**

ORIGINAL RESEARCH

Fecal Carriage and Epidemiology of Carbapenem-Resistant Enterobacteriaceae Among Hospitalized Patients in a University Hospital

Liu Q, Liu L, Li Y, Chen X, Yan Q, Liu W

Infection and Drug Resistance 2019, 12:3935-3942

Published Date: **20 December 2019**

ORIGINAL RESEARCH

Colistin Plus Carbapenem versus Colistin Monotherapy in the Treatment of Carbapenem-Resistant Acinetobacter baumannii Pneumonia

Shi H, Lee JS, Park SY, Ko Y, Eom JS

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Published Date: **23 December 2019**

ORIGINAL RESEARCH

Baicalin Attenuates Mycoplasma gallisepticum-Induced Inflammation via Inhibition of the TLR2-NF-κB Pathway in Chicken and DF-1 Cells

Wu Z, Chen C, Miao Y, Liu Y, Zhang Q, Li R, Ding L, Ishfaq M, Li J

Infection and Drug Resistance 2019, 12:3911-3923

Published Date: **20 December 2019**

REVIEW

Antimicrobial Resistance: Implications and Costs

Dadgostar P

Infection and Drug Resistance 2019, 12:3903-3910

Published Date: **20 December 2019**

ORIGINAL RESEARCH

Epidemiology, Outcome and Risk Factors Analysis of Viral Infections in Children and Adolescents Undergoing Hematopoietic Cell Transplantation: Antiviral Drugs Do Not Prevent Epstein–Barr Virus Reactivation

Czyzewski K, Dziedzic M, Salamonowicz M, Fraczkiewicz J, Zajac-Spychala O, Zaucha-Prazmo A, Gozdzik J, Galazka P, Bartoszewicz N, Demidowicz E, Styczynski J

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Published Date: **17 December 2019**

ORIGINAL RESEARCH

Coexistence of blaNDM-1 and rmtC on a Transferrable Plasmid of a Novel ST192 Klebsiella aerogenes Clinical Isolate

Shen X, Liu L, Yu J, Cao X, Zhan Q, Guo Y, Wang L, Yu F

Infection and Drug Resistance 2019, 12:3883-3891

Published Date: **13 December 2019**

ORIGINAL RESEARCH

Association Between Biofilm Formation, Structure, and the Expression Levels of Genes Related to biofilm formation and Biofilm-Specific Resistance of Acinetobacter baumannii Strains Isolated from Burn Infection in Ahvaz, Iran

Amin M, Navidifar T, Shooshtari FS, Rashno M, Savari M, Jahangirmehr F, Arshadi M

Infection and Drug Resistance 2019, 12:3867-3881

Published Date: **12 December 2019**

ORIGINAL RESEARCH

Genotype Analysis of Clinical Candida albicans Isolates Using PCRs Targeting 25S rDNA and ALT Repeat Sequences of the RPS and Antifungal Susceptibility in Ouagadougou (Burkina Faso)

Sawadogo PM, Zida A, Soulama I, Sermé SS, Guiguemdé KT, Junior R, Sangaré I, Bamba S, Ouédraogo-Traoré R, Guiguemdé TR

Infection and Drug Resistance 2019, 12:3859-3866

Published Date: **16 December 2019**

ORIGINAL RESEARCH

Antimicrobial Resistance and Molecular Characteristics of Methicillin-resistant Staphylococcus aureus Isolates from Children Patients in Iran

Samadi R, Ghalavand Z, Mirnejad R, Nikmanesh B, Eslami G

Infection and Drug Resistance 2019, 12:3849-3857
Published Date: **9 December 2019**

ORIGINAL RESEARCH

Association Between Ambient Air Pollution and Elevated Risk of Tuberculosis Development

Lin YJ, Lin HC, Yang YF, Chen CY, Ling MP, Chen SC, Chen WY, You SH, Lu TH, Liao CM

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Published Date: **6 December 2019**

ORIGINAL RESEARCH

PAU-1, a Novel Plasmid-Encoded Ambler Class A β-Lactamase Identified in a Clinical Pseudomonas aeruginosa Isolate

Wang J, Xu T, Ying J, Zhou W, Chen Q, Qian C, Zhu X, Shen K, Li P, Li K, Bao Q, Lu J

Infection and Drug Resistance 2019, 12:3827-3834
Published Date: **5 December 2019**

ORIGINAL RESEARCH

Diversity of Virulence Genes in Multidrug Resistant Escherichia coli from a Hospital in Western China

Li X, Luo Q, Yu X, Zhang Y, Cao X, Li D

Infection and Drug Resistance 2019, 12:3817-3826
Published Date: **5 December 2019**

ORIGINAL RESEARCH

Talaromycosis-Associated Secondary Hemophagocytic Lymphohistiocytosis in Nine Human Immunodeficiency Virus-Negative Patients: A Multicenter Retrospective Study

Pan M, Qiu Y, Zeng W, Tang S, Feng X, Deng J, Wei X, He Z, Zhang J

Infection and Drug Resistance 2019, 12:3807-3816
Published Date: **4 December 2019**

ORIGINAL RESEARCH

Incidence, Bacterial Profiles, And Antimicrobial Resistance Of Culture-Proven Neonatal Sepsis In South China

Gao K, Fu J, Guan X, Zhu S, Zeng L, Xu X, Chang CY, Liu H

Infection and Drug Resistance 2019, 12:3797-3805
Published Date: **3 December 2019**

ORIGINAL RESEARCH

Molecular Epidemiological Insights into Colistin-Resistant and Carbapenemases-Producing Clinical Klebsiella pneumoniae Isolates

Di Tella D, Tamburro M, Guerrizio G, Fanelli I, Sammarco ML, Ripabelli G

Infection and Drug Resistance 2019, 12:3783-3795
Published Date: **3 December 2019**

ORIGINAL RESEARCH

A Novel Detection of Enterococcus faecalis Using Multiple Cross Displacement Amplification Linked with Gold Nanoparticle Lateral Flow Biosensor

Chen X, Ma K, Yi X, Xiao Z, Xiong L, Wang Y, Li S

Infection and Drug Resistance 2019, 12:3771-3781
Published Date: **4 December 2019**

CASE REPORT

Successful Treatment of Serious Meningitis Caused by Extremely Carbapenem-Resistant Enterobacter cloacae (MIC≥16mg/L) with i.v. Meropenem and i.v. Amikacin Plus Intraventricular Amikacin

He Z, Wang C, Liu B, Feng M, Wang Z

Infection and Drug Resistance 2019, 12:3765-3770
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ORIGINAL RESEARCH

Diagnostic Accuracy of Interleukin-27 in Bronchoalveolar Lavage Fluids for Pulmonary Tuberculosis

Lin S, Wang Y, Li Y, Xiao D, Guo J, Ma W, An W, Liu H, Shi Y, Zhang L, Cui J, Guan W

Infection and Drug Resistance 2019, 12:3755-3763
Published Date: **2 December 2019**

ORIGINAL RESEARCH

The Pathogenesis Of Streptococcus anginosus In Aerobic Vaginitis

Tao Z, Zhang L, Zhang Q, Lv T, Chen R, Wang L, Huang Z, Hu L, Liao Q

Infection and Drug Resistance 2019, 12:3745-3754

Published Date: **4 December 2019**

CASE REPORT

Use of Ultra-Deep Sequencing in a Patient with Tuberculous Coxitis Shows Its Limitations in Extrapulmonary Tuberculosis Diagnostics: A Case Report

Zhang C, Hu T, Xiu L, Li Y, Peng J

Infection and Drug Resistance 2019, 12:3739-3743

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REVIEW

Multiresistant Fusarium Pathogens on Plants and Humans: Solutions in (from) the Antifungal Pipeline?

Al-Hatmi AMS, de Hoog GS, Meis JF

Infection and Drug Resistance 2019, 12:3727-3737

Published Date: **28 November 2019**

ORIGINAL RESEARCH

Antibiotic Resistance And Genotyping Of Gram-Positive Bacteria Causing Hospital-Acquired Infection In Patients Referring To Children's Medical Center

Mamishi S, Mohammadian M, Pourakbari B, Hosseinpour Sadeghi R, Haghi Ashtiani MT, Abdosalehi MR, Rahmani M, Mahmoudi S

Infection and Drug Resistance 2019, 12:3719-3726

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ORIGINAL RESEARCH

Risk Factors And Clinical Outcomes Of Hospital-Acquired MRSA Infections In Chongqing, China

Mao P, Peng P, Liu Z, Xue Z, Yao C

Infection and Drug Resistance 2019, 12:3709-3717

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SHORT REPORT

Coexistence Of Plasmid-Mediated mcr-1 And blaNDM-4 Genes In A Klebsiella pneumoniae Clinical Strain In Vietnam

Le L, Tran LK, Le-Ha TD, Tran BP, Le-Vo HN, Nguyen YN, Nguyen HL, Hoang-Ngoc KQ, Matsumoto Y, Motooka D, Nakamura S, Jones JW, Iida T, Cao V

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Multi-Drug Resistant Escherichia coli Causing Early-Onset Neonatal Sepsis – a Single Center Experience from China

Zhu M, Jin Y, Duan Y, He M, Lin Z, Lin J

Infection and Drug Resistance 2019, 12:3695-3702

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Helicobacter pylori, Endoscopic, And Histologic Features Among Kidney Transplant Candidates In Southern Iran

Niknam R, Barfei M, Mahmoudi L

Infection and Drug Resistance 2019, 12:3687-3693

Published Date: **29 November 2019**

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Paradoxical Reaction In The Form Of New Pulmonary Mass During Anti-Tuberculosis Treatment: A Case Series And Literature Review

Guo T, Guo W, Song M, Ni S, Luo M, Chen P, Peng H

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ORIGINAL RESEARCH

Multidrug-Resistant Infections Among Hospitalized Adults With Community-Acquired Pneumonia In An Indonesian Tertiary Referral Hospital

Purba AKR, Ascobat P, Muchtar A, Wulandari L, Rosyid AN, Purwono PB, van der Werf TS, Friedrich AW, Postma MJ

Infection and Drug Resistance 2019, 12:3663-3675

Published Date: **25 November 2019**

ORIGINAL RESEARCH

Species Distribution And Antibiotic Susceptibility Of Nocardia Isolates From Yantai, China

Yi M, Wang L, Xu W, Sheng L, Jiang L, Yang F, Cao Q, Wu J

Infection and Drug Resistance 2019, 12:3653-3661

Published Date: **22 November 2019**

ORIGINAL RESEARCH

Epidemiology And Antifungal Susceptibility Patterns Of Invasive Fungal Infections From 2012 To 2014 In A Teaching Hospital In Central China

Xu H, Yu SY, Zhou ML, Ning YT, Xiao M, Li XG, Chen M, Kong F, Chen S, Ming L, Xu YC

Infection and Drug Resistance 2019, 12:3641-3651

Published Date: **22 November 2019**

ORIGINAL RESEARCH

Lower Rates Of Naturally Occurring Resistance-Associated Substitutions (RASs) In Hepatitis C Virus (HCV)-Infected Chronic Kidney Disease (CKD) Patients Than In HCV-Infected Patients With Only Liver Disease

Gupta E, Choudhary MC, Upadhyay N, Singh G, Nayak SL, Kumar M, Sarin SK

Infection and Drug Resistance 2019, 12:3635-3640

Published Date: **22 November 2019**

ORIGINAL RESEARCH

Antimicrobial Resistance and Resistance Determinant Insights into Multi-Drug Resistant Gram-Negative Bacteria Isolates from Paediatric Patients in China

Patil S, Chen H, Zhang X, Lian M, Ren PG, Wen F

Infection and Drug Resistance 2019, 12:3625-3634

Published Date: **22 November 2019**

METHODOLOGY

Designing A Pathogen-Focused Study To Address The High Unmet Medical Need Represented By Carbapenem-Resistant Gram-Negative Pathogens – The International, Multicenter, Randomized, Open-Label, Phase 3 CREDIBLE-CR Study

Bassetti M, Ariyasu M, Binkowitz B, Nagata TD, Echols RM, Matsunaga Y, Toyoizumi K, Doi Y

Infection and Drug Resistance 2019, 12:3607-3623

Published Date: **21 November 2019**

ORIGINAL RESEARCH

Comparative Study Of Genetic Diversity, Virulence Genotype, Biofilm Formation And Antimicrobial Resistance Of Uropathogenic Escherichia coli (UPEC) Isolated From Nosocomial And Community Acquired Urinary Tract Infections

Souza GM, Neto ERDS, da Silva AM, Iacia MVMS, Rodrigues MVP, Pereira VC, Winkelstroter LK

Infection and Drug Resistance 2019, 12:3595-3606

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ORIGINAL RESEARCH

Efficacy Of Line Probe Assay In Detection Of Drug-Resistant Pulmonary Tuberculosis In Comparison With GeneXpert And Phenotypic Methods In Iran And Genetic Analysis Of Isolates By MIRU-VNTR

Kazemian H, Kardan-Yamchi J, Bahador A, Khonsari S, Nasehi M, Hamzehloo G, Vaziri F, Salehi MR, Feizabadi MM

Infection and Drug Resistance 2019, 12:3585-3593

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Bacterial Profile And Antibiotic Susceptibility Pattern Of Urinary Tract Infection Among Children Attending Felege Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia

Belete Y, Asrat D, Woldeamanuel Y, Yihenew G, Gize A

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The Impact Of Pharmaceutical Interventions On The Use Of Carbapenems In A Chinese Hospital: A Pre–Post Study

Xin C, Xia Z, Li G

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First Reported Nosocomial Outbreak Of NDM-5-Producing Klebsiella pneumoniae In A Neonatal Unit In China

Kong Z, Cai R, Cheng C, Zhang C, Kang H, Ma P, Gu B

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Rapid Diagnosis Of Multidrug-Resistant Tuberculosis Impacts Expenditures Prior To Appropriate Treatment: A Performance And Diagnostic Cost Analysis

Li X, Deng Y, Wang J, Jing H, Shu W, Qin J, Pang Y, Ma X

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Published Date: **14 November 2019**

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Molecular Detection Of Multidrug-Resistant Salmonella Isolated From Livestock Production Systems In South Africa

Mthembu TP, Zishiri OT, El Zowalaty ME

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Published Date: **14 November 2019**

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Combined Effects Of Low Incubation Temperature, Minimal Growth Medium, And Low Hydrodynamics Optimize Acinetobacter baumannii Biofilm Formation

Eze EC, El Zowalaty ME

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Published Date: **15 November 2019**

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Epidemiology Of Human Pulmonary Infection With Nontuberculous Mycobacteria In Southeast China: A Prospective Surveillance Study

Lin S, Wei S, Zhao Y, Lin J, Pang Y

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A Newly Discovered Drug Resistance Gene rfaF In Helicobacter pylori

Lin J, Zhang X, Wen Y, Chen H, She F

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ORIGINAL RESEARCH

Pharmacodynamics Of Linezolid-Plus-Fosfomycin Against Vancomycin-Susceptible And -Resistant Enterococci In Vitro And In Vivo Of A Galleria mellonella Larval Infection Model

Qi C, Xu S, Wu M, Zhu S, Liu Y, Huang H, Zhang G, Li J, Huang X

Infection and Drug Resistance 2019, 12:3497-3505

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REVIEW

Prevalence, Risk Factors And Treatment Of The Most Common Gram-Negative Bacterial Infections In Liver Transplant Recipients: A Review

Shafiekhani M, Mirjalili M, Vazin A

Infection and Drug Resistance 2019, 12:3485-3495

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ORIGINAL RESEARCH

Early Start Of Tenofovir Treatment Achieves Better Viral Suppression In Pregnant Women With A High HBV Viral Load: A Real-World Prospective Study

Gao F, Zhang WT, Lin YY, Wang WM, Xu N, Bai GQ

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ORIGINAL RESEARCH

Estimation Of Direct Medical Costs Of Middle East Respiratory Syndrome Coronavirus Infection: A Single-Center Retrospective Chart Review Study

AlRuthia Y, Somily AM, Alkhamali AS, Bahari OH, AlJuhani RJ, Alsenaidy M, Balkhi B

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ORIGINAL RESEARCH

Virulence Factors Of Carbapenem-Resistant Pseudomonas aeruginosa In Hospital-Acquired Infections In Mansoura, Egypt

El-Mahdy R, El-Kannishy G

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Prevalence Of Self-Medication With Antibiotics Among Residents In United Arab Emirates

Abduelkarem AR, Othman AM, Abuelkhair ZM, Ghazal MM, Alzouobi SB, El Zowalaty ME

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Comparison Of drrA And drrB Efflux Pump Genes Expression In Drug-Susceptible And -Resistant Mycobacterium tuberculosis Strains Isolated From Tuberculosis Patients In Iran

Khosravi AD, Sirous M, Absalan Z, Tabandeh MR, Savari M

Infection and Drug Resistance 2019, 12:3437-3444

Published Date: **5 November 2019**

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The Anti-Mycobacterial Activity Of Ag, ZnO, And Ag- ZnO Nanoparticles Against MDR- And XDR-Mycobacterium tuberculosis

Heidary M, Zaker Bostanabad S, Amini SM, Jafari A, Ghalami Nobar M, Ghodousi A, Kamalzadeh M, Darban-Sarokhalil D

Infection and Drug Resistance 2019, 12:3425-3435

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RESEARCH LETTER

Absence Of Methicillin-Resistant Staphylococcus aureus (MRSA) In Cattle From Portugal: A One Health Approach

Correia S, Silva V, García-Díez J, Teixeira P, Pimenta K, Tejedor-Junco MT, Oliveira S, Igrejas G, Poeta P

Infection and Drug Resistance 2019, 12:3421-3423

Published Date: **4 November 2019**

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Clarithromycin-Susceptible But Virulent Helicobacter pylori Strains Infecting Iranian Patients' Stomachs

Khani S, Talebi Bezmin Abadi A, Mohabati Mobarez A

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Published Date: **1 November 2019**

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Interprofessional Antimicrobial Stewardship Influencing Clostridioides difficile Infection: An 8-Year Study Using Antimicrobial Use Density

Yoshida J, Kikuchi T, Ueno T, Mataga A, Asano I, Otani K, Tamura T, Tanaka M

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ORIGINAL RESEARCH

Clinical Characteristics And Risk Factors In Mixed-Enterococcal Bloodstream Infections

Zheng C, Cai J, Liu H, Zhang S, Zhong L, Xuan N, Zhou H, Zhang K, Wang Y, Zhang X, Tian B, Zhang Z, Wang C, Cui W, Zhang G

Infection and Drug Resistance 2019, 12:3397-3407

Published Date: **31 October 2019**

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Knowledge, Attitudes And Practices Regarding The Use Of Antibiotics. Study On The General Population Of Mureş County, Romania

Voidăzan S, Moldovan G, Voidăzan L, Zazgyva A, Moldovan H

Infection and Drug Resistance 2019, 12:3385-3396

Published Date: **31 October 2019**

ORIGINAL RESEARCH

Antibiotic resistance and genotyping of gram-negative bacteria causing hospital-acquired infection in patients referred to Children's Medical Center

Mamishi S, Mahmoudi S, Naserzadeh N, Hosseinpour Sadeghi R, Haghi Ashtiani MT, Bahador A, Abdosalehi MR, Rahmani M, Pourakbari B

Infection and Drug Resistance 2019, 12:3377-3384

Published Date: **29 October 2019**

ORIGINAL RESEARCH

Different Effects Of Amniotic Membrane Homogenate On The Growth Of Uropathogenic Escherichia coli, Staphylococcus aureus And Serratia marcescens

Šket T, Ramuta TŽ, Starčič Erjavec M, Kreft ME

Infection and Drug Resistance 2019, 12:3365-3375

Published Date: **29 October 2019**

CASE REPORT

Pandoraea sputorum Bacteremia In A Patient Who Had Undergone Allogeneic Liver Transplantation Plus Immunosuppressive Therapy: A Case Report

Xiao X, Tian H, Cheng X, Li G, Zhou J, Peng Z, Li Y

Infection and Drug Resistance 2019, 12:3359-3364

Published Date: **25 October 2019**

ORIGINAL RESEARCH

In Vitro Activity Of Ceftaroline And Comparators Against Staphylococcus aureus Isolates: Results From 6 Years Of The ATLAS Program (2012 To 2017)

Zhang Z, Chen M, Yu Y, Liu B, Liu Y

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CASE REPORT

Fatal Liver Infection Caused By Clostridium perfringens After Common Bile Duct Stenting Due To Pancreatic Cancer: A Case Report

Xu J, Wang Y, Cui H, Chen J

Infection and Drug Resistance 2019, 12:3343-3347

Published Date: **24 October 2019**

ORIGINAL RESEARCH

Occurrence, Genetic Diversities And Antibiotic Resistance Profiles Of Salmonella Serovars Isolated From Chickens

Akinola SA, Mwanza M, Ateba CN

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Published Date: **24 October 2019**

ORIGINAL RESEARCH

Prevalence Of mcr-1 Among Cefotaxime-Resistant Commensal Escherichia coli In Residents Of Vietnam

Kawahara R, Khong DT, Le HV, Phan QN, Nguyen TN, Yamaguchi T, Kumeda Y, Yamamoto Y

Infection and Drug Resistance 2019, 12:3317-3325

Published Date: **23 October 2019**

SHORT REPORT

Rapid Carbapenemase Detection With Xpert Carba-R V2 Directly On Positive Blood Vials

Cointe A, Walewski V, Hobson CA, Doit C, Bidet P, Dortet L, Bonacorsi S, Birgy A

Infection and Drug Resistance 2019, 12:3311-3316

Published Date: **23 October 2019**

ORIGINAL RESEARCH

Antimicrobial Resistance And Molecular Characteristics Among Neisseria gonorrhoeae Clinical Isolates In A Chinese Tertiary Hospital

Zheng Z, Liu L, Shen X, Yu J, Chen L, Zhan L, Chen H, Lin C, Jiang Y, Xia H, Wang L, Yu F

Infection and Drug Resistance 2019, 12:3301-3309

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Characterization Of Chromosome-Mediated Colistin Resistance In Escherichia coli Isolates From Livestock In Korea

Kim S, Woo JH, Kim N, Kim MH, Kim SY, Son JH, Moon DC, Lim SK, Shin M, Lee JC

Infection and Drug Resistance 2019, 12:3291-3299

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ORIGINAL RESEARCH

Outbreak Of Klebsiella pneumoniae Carbapenemase-Producing Klebsiella aerogenes Strains In A Tertiary Hospital In China

Hao M, Shen Z, Ye M, Hu F, Xu X, Yang Y, Wu S, Lin D, Qin X, Wang M

Infection and Drug Resistance 2019, 12:3283-3290

Published Date: **21 October 2019**

ORIGINAL RESEARCH

Multidrug-Resistant Tuberculosis In A Referral Center In Rome: 2011– 2016

Cannas A, Butera O, Gualano G, Parracino MP, Venditti C, Mazzarelli A, Palmieri F, Girardi E, Di Caro A

Infection and Drug Resistance 2019, 12:3275-3281

Published Date: **18 October 2019**

ORIGINAL RESEARCH

High Level Aminoglycoside Resistance And Distribution Of The Resistance Genes In Enterococcus faecalis And Enterococcus faecium From Teaching Hospital In Malaysia

Moussa AA, Md Nordin AF, Hamat RA, Jasni AS

Infection and Drug Resistance 2019, 12:3269-3274

Published Date: **21 October 2019**

ORIGINAL RESEARCH

Shanghai Parents' Perception And Attitude Towards The Use Of Antibiotics On Children: A Cross-Sectional Study

Wang J, Sheng Y, Ni J, Zhu J, Zhou Z, Liu T, Zhang X, Zhao Q

Infection and Drug Resistance 2019, 12:3259-3267

Published Date: **17 October 2019**

ORIGINAL RESEARCH

Leprosy Reactions In Childhood: A Prospective Cohort Study In The Brazilian Amazon

Bandeira SS, Pires CA, Quaresma JAS

Infection and Drug Resistance 2019, 12:3249-3257

Published Date: **17 October 2019**

ORIGINAL RESEARCH

An Evaluation Of Antibiotics Prescribing Patterns In The Emergency Department Of A Tertiary Care Hospital In Saudi Arabia

Alanazi MQ, Salam M, Alqahtani FY, Ahmed AE, Alenaze AQ, Al-Jeraisy M, Al Salamah M, Aleanizy FS, Al Daham D, Al Obaidy S, Al-Shareef F, Alsaggabi AH, Al-Assiri MH

Infection and Drug Resistance 2019, 12:3241-3247

Published Date: **16 October 2019**

ORIGINAL RESEARCH

Functional Synergy Of Antimicrobial Peptides And Chlorhexidine Acetate Against Gram-Negative/Gram-Positive Bacteria And A Fungus In Vitro And In Vivo

Zhu J, Huang Y, Chen M, Hu C, Chen Y

Infection and Drug Resistance 2019, 12:3227-3239

Published Date: **15 October 2019**

ORIGINAL RESEARCH

Sensitivity Pattern Of Salmonella typhi And Paratyphi A Isolates To Chloramphenicol And Other Anti-Typhoid Drugs: An In Vitro Study

Patil N, Mule P

Infection and Drug Resistance 2019, 12:3217-3225

Published Date: **14 October 2019**

REVIEW

Bacteria Exploit Autophagy For Their Own Benefit

Xiong Q, Yang M, Li P, Wu C

Infection and Drug Resistance 2019, 12:3205-3215

Published Date: **11 October 2019**

ORIGINAL RESEARCH

Dissemination Of t437-SCCmecIV And Coagulase-Negative t037-SCCmecIII Types Among Borderline Oxacillin-Resistant Staphylococcus aureus Isolated From Skin Infections And Diabetic Foot Ulcers

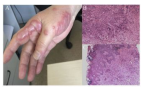
Stańkowska M, Garbacz K, Piechowicz L, Bronk M

Infection and Drug Resistance 2019, 12:3197-3203

Published Date: **10 October 2019**

CASE REPORT

Disseminated Talaromyces marneffei And Mycobacterium avium Infection Accompanied Sweet's Syndrome In A Patient With Anti-Interferon-γ Autoantibodies: A Case Report



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Published Date: **10 October 2019**

REVIEW

Meningococcal Group B Vaccine For The Prevention Of Invasive Meningococcal Disease Caused By Neisseria meningitidis Serogroup B

Rivero-Calle I, Raguindin PF, Gómez-Rial J, Rodriguez-Tenreiro C, Martinón-Torres F

Infection and Drug Resistance 2019, 12:3169-3188

Published Date: **9 October 2019**

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Shigella: Antibiotic-Resistance Mechanisms And New Horizons For Treatment

Ranjbar R, Farahani A

Infection and Drug Resistance 2019, 12:3137-3167

Published Date: **7 October 2019**

ORIGINAL RESEARCH

Characterization Of The Interaction Between Subviral Particles Of Hepatitis B Virus And Dendritic Cells – In Vitro Study

Farag MMS, Peschel G, Müller M, Weigand K

Infection and Drug Resistance 2019, 12:3125-3135

Published Date: **7 October 2019**

ORIGINAL RESEARCH

Characterization of phenotypic and genotypic traits of carbapenem-resistant Acinetobacter baumannii clinical isolates recovered from a tertiary care hospital in Taif, Saudi Arabia

El-Badawy MF, Abdelwahab SF, Alghamdi SA, Shohayeb MM

Infection and Drug Resistance 2019, 12:3113-3124

Published Date: **3 October 2019**

ORIGINAL RESEARCH

Rectovaginal Colonization With Pathogenic Escherichia coli During Pregnancy And Neonatal Outcomes

Liu TH, Wang HP, Cho FN, Wang JL, Hung CH, Chiou YH, Chen YS, Lee SSJ, Cheng MF

Infection and Drug Resistance 2019, 12:3103-3112

Published Date: **30 September 2019**

ORIGINAL RESEARCH

Resistance To First-Line Antituberculosis Drugs And Prevalence Of pncA Mutations In Clinical Isolates Of Mycobacterium tuberculosis From Zunyi, Guizhou Province Of China

Cao Z, Lan Y, Chen L, Xiang M, Peng Z, Zhang J, Zhang H

Infection and Drug Resistance 2019, 12:3093-3102

Published Date: **30 September 2019**

RESPONSE TO LETTER

"Is Fosfomycin As Effective As Claimed On MDR Gram-Negative Bacteria Causing UTI?" [Response To Letter]

Gopichand P, Agarwal G, Natarajan M, Mandal J, Deepanjali S, Parameswaran S, Dorairajan LN

Infection and Drug Resistance 2019, 12:3091-3092

Published Date: **3 October 2019**

ORIGINAL RESEARCH

Antagonistic Effects Of Baicalin On Mycoplasma gallisepticum-Induced Inflammation And Apoptosis By Restoring Energy Metabolism In The Chicken Lungs

Ishfaq M, Zhang W, Hu W, Waqas Ali Shah S, Liu Y, Wang J, Wu Z, Ahmad I, Li J

Infection and Drug Resistance 2019, 12:3075-3089

Published Date: **1 October 2019**

ORIGINAL RESEARCH

Management Of Patients With Hepatitis B Virus Reactivation Post–DAA Treatment Of Chronic Hepatitis C Virus Infection In HCV–HBV Coinfected Patients With Pretreatment HBeAg Seroconversion And Early Degree Of Hepatic Fibrosis

Osman HA, Ghweil AA, Sabry AMM, Mahdy RE, Khodeary A

Infection and Drug Resistance 2019, 12:3067-3073

Published Date: **30 September 2019**

MINI-REVIEW

Infectious dermatoses that can manifest as vesicles

Hu Y

Infection and Drug Resistance 2019, 12:3063-3066

Published Date: **27 September 2019**

ORIGINAL RESEARCH

Molecular characterization and prevalence of antibiotic resistance in Helicobacter pylori isolates in Kuala Lumpur, Malaysia

Hanafiah A, Binmaeil H, Raja Ali RA, Mohamed Rose I, Lopes BS

Infection and Drug Resistance 2019, 12:3051-3061

Published Date: **27 September 2019**

CORRIGENDUM

A Comparison Between Dexlansoprazole Modified Release–Based And Lansoprazole-Based Nonbismuth Quadruple (Concomitant) Therapy For First-Line Helicobacter pylori Eradication: A Prospective Randomized Trial [Corrigendum]

Tai WC, Liang CM, Bi KW, Kuo CM, Lu LS, Wu CK, Yang SC, Kuo YH, Lee CH, Huang CF, Hsu CN, Hsu PI, Wu DC, Hu TH, Wu KL, Chuah SK

Infection and Drug Resistance 2019, 12:3049-3050

Published Date: **25 September 2019**

ORIGINAL RESEARCH

Molecular Characterization Of Vancomycin-Resistant Enterococcus faecalis Among Inpatients At Iranian University Hospitals: Clonal Dissemination Of ST6 And ST422

Zalipour M, Esfahani BN, Halaji M, Azimian A, Havaei SA

Infection and Drug Resistance 2019, 12:3039-3047

Published Date: **25 September 2019**

ORIGINAL RESEARCH

Characterization Of blaNDM-5-Positive Escherichia coli Prevalent In A University Hospital In Eastern China

Sun P, Xia W, Liu G, Huang X, Tang C, Liu C, Xu Y, Ni F, Mei Y, Pan S

Infection and Drug Resistance 2019, 12:3029-3038

Published Date: **24 September 2019**

ORIGINAL RESEARCH

CP-CRE/non-CP-CRE Stratification And CRE Resistance Mechanism Determination Help In Better Managing CRE Bacteremia Using Ceftazidime–Avibactam And

Aztreonam–Avibactam

Zou H, Xiong SJ, Lin QX, Wu ML, Niu SQ, Huang SF

Infection and Drug Resistance 2019, 12:3017-3027

Published Date: **23 September 2019**

ORIGINAL RESEARCH

Computational analysis of naturally occurring resistance-associated substitutions in genes NS3, NS5A, and NS5B among 86 subtypes of hepatitis C virus worldwide

Wu R, Geng D, Chi X, Wang X, Gao X, Xu H, Shi Y, Guan Y, Wang Y, Jin J, Ding Y, Niu J

Infection and Drug Resistance 2019, 12:2987-3015

Published Date: **19 September 2019**

ORIGINAL RESEARCH

Coproduction Of MCR-9 And NDM-1 By Colistin-Resistant Enterobacter hormaechei Isolated From Bloodstream Infection

Yuan Y, Li Y, Wang G, Li C, Xiang L, She J, Yang Y, Zhong F, Zhang L

Infection and Drug Resistance 2019, 12:2979-2985

Published Date: **19 September 2019**

ORIGINAL RESEARCH

Distinct Antimicrobial Resistance Profiling Of Clinically Important Aeromonas Spp. In Southwest China: A Seven-Year Surveillance Study

Yang S, He T, Sun J, Sun S

Infection and Drug Resistance 2019, 12:2971-2978

Published Date: **18 September 2019**

ORIGINAL RESEARCH

Genomic Analysis Of A KPC-2-Producing Klebsiella Pneumoniae ST11 Outbreak From A Teaching Hospital In Shandong Province, China

Chi X, Hu G, Xu H, Li X, Xiao T, Zhou Y, Xia H, Zou H, Han H, Zheng B, Gao H, Li X

Infection and Drug Resistance 2019, 12:2961-2969

Published Date: **19 September 2019**

REVIEW

Phage therapy as a renewed therapeutic approach to mycobacterial infections: a comprehensive review

Azimi T, Mosadegh M, Nasiri MJ, Sabour S, Karimaei S, Nasser A

Infection and Drug Resistance 2019, 12:2943-2959

Published Date: **17 September 2019**

ORIGINAL RESEARCH

Intracellular anti-leishmanial effect of Spergulin-A, a triterpenoid saponin of Glinus oppositifolius

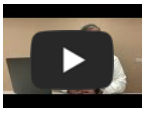
Banerjee S, Mukherjee N, Gajbhiye RL, Mishra S, Jaisankar P, Datta S, Das Saha K

Infection and Drug Resistance 2019, 12:2933-2942

Published Date: **17 September 2019**

CLINICAL TRIAL REPORT

A comparison between dexlansoprazole modified release–based and lansoprazole-based nonbismuth quadruple (concomitant) therapy for first-line Helicobacter pylori eradication: a prospective randomized trial



Tai WC, Liang CM, Bi KW, Kuo CM, Lu LS, Wu CK, Yang SC, Kuo YH, Lee CH, Huang CF, Hsu CN, Hsu PI, Wu DC, Hu TH, Wu KL, Chuah SK

Infection and Drug Resistance 2019, 12:2923-2931

Published Date: **16 September 2019**

PERSPECTIVES

Cell Death And Zika Virus: An Integrated Network Of The Mechanisms Of Cell Injury

Sousa JR, Azevedo RSS, Quaresma JAS, Vasconcelos PFC

Infection and Drug Resistance 2019, 12:2917-2921

Published Date: **13 September 2019**

CORRIGENDUM

Molecular Epidemiology And Clinical Significance Of Corynebacterium Striatum Isolated From Clinical Specimens [Corrigendum]

Suh JW, Ju Y, Lee CK, Sohn JW, Kim MJ, Yoon YK

Infection and Drug Resistance 2019, 12:2915-2916
Published Date: **13 September 2019**

ORIGINAL RESEARCH

Evaluation of essential oil obtained from Mentha×piperita L. against multidrug-resistant strains

Muntean D, Licker M, Alexa E, Popescu I, Jianu C, Buda V, Dehelean CA, Ghiulai R, Horhat F, Horhat D, Danciu C

Infection and Drug Resistance 2019, 12:2905-2914
Published Date: **13 September 2019**

SHORT REPORT

Clinical Outcomes Of Colistin In Combination With Either 6-G Sulbactam Or Carbapenems For The Treatment Of Extensively Drug-Resistant Acinetobacter Baumannii Pneumonia With High MIC To Sulbactam, A Prospective Cohort Study

Ungthammakhun C, Vasikasin V, Changpradub D

Infection and Drug Resistance 2019, 12:2899-2904
Published Date: **13 September 2019**

ORIGINAL RESEARCH

Molecular epidemiology and antimicrobial resistance of invasive non-typhoidal Salmonella in China, 2007–2016

Zhan Z, Xu X, Gu Z, Meng J, Wufuer X, Wang M, Huang M, Chen J, Jing C, Xiong Z, Zeng M, Liao M, Zhang J

Infection and Drug Resistance 2019, 12:2885-2897
Published Date: **12 September 2019**

ORIGINAL RESEARCH

Association of diabetes mellitus with hepatitis B and hepatitis C virus infection: evidence from an epidemiological study

Liu Y, Ye S, Xiao X, Zhou T, Yang S, Wang G, Sun C, Zhang B, Wang G

Infection and Drug Resistance 2019, 12:2875-2883
Published Date: **12 September 2019**

ORIGINAL RESEARCH

Potential role of the antimicrobial peptide Tachyplesin III against multidrug-resistant P. aeruginosa and A. baumannii coinfection in an animal model

Qi J, Gao R, Liu C, Shan B, Gao F, He J, Yuan M, Xie H, Jin S, Ma Y

Infection and Drug Resistance 2019, 12:2865-2874
Published Date: **23 September 2019**

ORIGINAL RESEARCH

The resistance mechanism of Escherichia coli induced by ampicillin in laboratory

Li M, Liu Q, Teng Y, Ou L, Xi Y, Chen S, Duan G

Infection and Drug Resistance 2019, 12:2853-2863
Published Date: **11 September 2019**

REVIEW

Post-splenectomy sepsis: preventative strategies, challenges, and solutions

Luu S, Spelman D, Woolley IJ

Infection and Drug Resistance 2019, 12:2839-2851
Published Date: **12 September 2019**

ORIGINAL RESEARCH

Comparative genomic analysis and multi-drug resistance differences of Acinetobacter baumannii in Chongqing, China

Pu L, Jian Z, Pan F, Geng Y, He M, Liao P

Infection and Drug Resistance 2019, 12:2827-2838
Published Date: **11 September 2019**

ORIGINAL RESEARCH

Diversity and frequency of resistance and virulence genes in blaKPC and blaNDM co-producing Klebsiella pneumoniae strains from China

Liu X, Zhang J, Li Y, Shen Q, Jiang W, Zhao K, He Y, Dai P, Nie Z, Xu X, Zhou Y

Infection and Drug Resistance 2019, 12:2819-2826
Published Date: **10 September 2019**

ORIGINAL RESEARCH

Functional characteristics of CYP3A4 allelic variants on the metabolism of loperamide in vitro

Lin QM, Li YH, Liu Q, Pang NH, Xu RA, Cai JP, Hu GX

Infection and Drug Resistance 2019, 12:2809-2817

Published Date: **10 September 2019**

ORIGINAL RESEARCH

Deep-sequencing study of HCV G4a resistance-associated substitutions in Egyptian patients failing DAA treatment

Amer F, Yousif MM, Hammad NM, Garcia-Cehic D, Gregori J, Rando-Segura A, Nieto-Aponte L, Esteban JI, Rodriguez-Frias F, Quer J

Infection and Drug Resistance 2019, 12:2799-2807

Published Date: **10 September 2019**

ORIGINAL RESEARCH

Characterization of the plasmid of incompatibility groups IncFIIpKF727591 and IncpKPHS1 from Enterobacteriaceae species

Wang S, Dai E, Jiang X, Zeng L, Cheng Q, Jing Y, Hu L, Yin Z, Gao B, Wang J, Duan G, Cai X, Zhou D

Infection and Drug Resistance 2019, 12:2789-2797

Published Date: **6 September 2019**

ORIGINAL RESEARCH

Evaluation of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry for identifying VIM- and SPM-type metallo-β-lactamase-producing Pseudomonas aeruginosa clinical isolates

Li J, Hu W, Li M, Deng S, Huang Q, Lu W

Infection and Drug Resistance 2019, 12:2781-2788

Published Date: **6 September 2019**

SHORT REPORT

Genetic characterization of a novel sequence type of multidrug-resistant Citrobacter freundii strain recovered from wastewater treatment plant

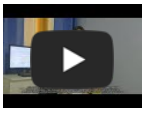
Jiang X, Cui X, Liu W, Xu H, Zheng B

Infection and Drug Resistance 2019, 12:2775-2779

Published Date: **6 September 2019**

ORIGINAL RESEARCH

The role of cfa gene in ampicillin tolerance in Shigella



Liu Q, Li M, Teng Y, Yang H, Xi Y, Chen S, Duan G

Infection and Drug Resistance 2019, 12:2765-2774

Published Date: **5 September 2019**

ORIGINAL RESEARCH

Coagulative biomarkers on admission to the ICU predict acute kidney injury and mortality in patients with septic shock caused by intra-abdominal infection

Xu Z, Cheng B, Fu S, Liu X, Xie G, Li Z, Ji Y, Fu Q, Xu Z, Fang X

Infection and Drug Resistance 2019, 12:2755-2764

Published Date: **4 September 2019**

ORIGINAL RESEARCH

Characterization of antibiotic resistance and virulence factors of Escherichia coli strains isolated from Iranian inpatients with urinary tract infections

Haghighatpanah M, Mojtahedi A

Infection and Drug Resistance 2019, 12:2747-2754

Published Date: **3 September 2019**

ORIGINAL RESEARCH

Emergence of novel methicillin-resistant Staphylococcus aureus strains in a tertiary care facility in Riyadh, Saudi Arabia

Senok A, Somily AM, Nassar R, Garaween G, Kim Sing G, Müller E, Reissig A, Gawlik D, Ehricht R, Monecke S

Infection and Drug Resistance 2019, 12:2739-2746

Published Date: **3 September 2019**

ORIGINAL RESEARCH

High rate of multiresistant Klebsiella pneumoniae from human and animal origin

Yang F, Deng B, Liao W, Wang P, Chen P, Wei J

Infection and Drug Resistance 2019, 12:2729-2737

Published Date: **3 September 2019**

CORRIGENDUM

Optimizing compliance with surgical antimicrobial prophylaxis guidelines in patients undergoing gastrointestinal surgery at a referral teaching hospital in southern Iran: clinical and economic impact [Corrigendum]

Mahmoudi L, Ghouchani M, Mahi-Birjand M, Bananzadeh A, Akbari A

Infection and Drug Resistance 2019, 12:2727-2728

Published Date: **2 September 2019**

REVIEW

Global prevalence of antibiotic resistance in blood-isolated Enterococcus faecalis and Enterococcus faecium: a systematic review and meta-analysis

Jabbari Shiadeh SM, Pormohammad A, Hashemi A, Lak P

Infection and Drug Resistance 2019, 12:2713-2725

Published Date: **2 September 2019**

LETTER

Is fosfomycin as effective as claimed on MDR Gram-negative bacteria causing UTI? [Letter]

Singh G, Singh BR

Infection and Drug Resistance 2019, 12:2711-2712

Published Date: **2 September 2019**

ORIGINAL RESEARCH

Rapid diagnosis of neonatal sepsis by PCR for detection of 16S rRNA gene, while blood culture and PCR results were similar in E.coli-predominant EOS cases

EL-Amir MI, El-Feky MA, Abo Elwafa DA, Abd-Elmawgood EA

Infection and Drug Resistance 2019, 12:2703-2710

Published Date: **30 August 2019**

ORIGINAL RESEARCH

Escherichia coli O25b-ST131 and O16-ST131 causing urinary tract infection in women in Changsha, China: molecular epidemiology and clinical characteristics

Zhong YM, Liu WE, Meng Q, Li Y

Infection and Drug Resistance 2019, 12:2693-2702

Published Date: **30 August 2019**

ORIGINAL RESEARCH

Time series analysis of antibacterial usage and bacterial resistance in China: observations from a tertiary hospital from 2014 to 2018

Zeng S, Xu Z, Wang X, Liu W, Qian L, Chen X, Wei J, Zhu M, Gong Z, Yan Y

Infection and Drug Resistance 2019, 12:2683-2691

Published Date: **28 August 2019**

ORIGINAL RESEARCH

Simultaneous detection of eleven sexually transmitted agents using multiplexed PCR coupled with MALDI-TOF analysis

Xiu L, Zhang C, Li Y, Wang F, Peng J

Infection and Drug Resistance 2019, 12:2671-2682

Published Date: **28 August 2019**

ORIGINAL RESEARCH

Development, optimization, and validation of an in-house Dot-ELISA rapid test based on SAG1 and GRA7 proteins for serological detection of Toxoplasma gondii infections

Teimouri A, Modarressi MH, Shojaee S, Mohebali M, Rezaian M, Keshavarz H

Infection and Drug Resistance 2019, 12:2657-2669

Published Date: **27 August 2019**

LETTER

More caution needs in study design and method selection for "In vitro antibacterial effect of Deconex and sodium hypochlorite against bacterial taxa isolated from dental units" [Letter]

Emami A, Pirbonyeh N, Javanmardi F

Infection and Drug Resistance 2019, 12:2655-2656
Published Date: **28 August 2019**

REVIEW

Plastic binding feature of polymyxins: the effect on MIC susceptibility measurements

Sharafi T, Ardebili A

Infection and Drug Resistance 2019, 12:2649-2653
Published Date: **27 August 2019**

ORIGINAL RESEARCH

Risk factors associated with prolonged intestinal colonization of ESBL-producing Enterobacteriaceae – a prospective cohort study

Ljungquist O, Schönbeck M, Riesbeck K, Tham J

Infection and Drug Resistance 2019, 12:2637-2648
Published Date: **26 August 2019**

ORIGINAL RESEARCH

Emergence of two Escherichia coli strains co-harboring mcr-1 and blaNDM in fresh vegetables from China

Liu BT, Song FJ

Infection and Drug Resistance 2019, 12:2627-2635
Published Date: **23 August 2019**

REVIEW

Therapeutic compounds targeting Lipid II for antibacterial purposes

Malin JJ, de Leeuw E

Infection and Drug Resistance 2019, 12:2613-2625
Published Date: **23 August 2019**

REVIEW

Functional aspects, phenotypic heterogeneity, and tissue immune response of macrophages in infectious diseases

de Sousa JR, Da Costa Vasconcelos PF, Quaresma JAS

Infection and Drug Resistance 2019, 12:2589-2611
Published Date: **22 August 2019**

ORIGINAL RESEARCH

Diagnostic performance of direct latex agglutination, post-enrichment latex agglutination and culture methods in screening of group B streptococci in late pregnancy: a comparative study

El Shahaway AA, El Maghraby HM, Mohammed HA, Abd Elhady RR, Abdelrhman AA

Infection and Drug Resistance 2019, 12:2583-2588
Published Date: **22 August 2019**

ORIGINAL RESEARCH

On-treatment improvement of an emerging psychosomatic depressive disorder among salmonella carriers: a multicenter experience from Egypt

Bakeer MS, Youssef MI, Elshazly HM, Abdel-Samiee M, El-Gendy AA, Abouzed M, Othman W, Abdelkareem M, Abozeid M, Awad SM, Khalil FO, Bedair HM, Diab KA, Seif AS, Youssef MF, Sakr AA, Abdelsameea E

Infection and Drug Resistance 2019, 12:2573-2582
Published Date: **22 August 2019**

ORIGINAL RESEARCH

Prevalence of methicillin-resistant Staphylococcus aureus (MRSA) carriage and pattern of antibiotic resistance among sheep farmers from Southern Italy

Mascaro V, Squillace L, Nobile CGA, Papadopoli R, Bosch T, Schouls LM, Casalinuovo F, Musarella R, Pavia M

Infection and Drug Resistance 2019, 12:2561-2571
Published Date: **20 August 2019**

ORIGINAL RESEARCH

Antibiotic susceptibility profile and prevalence of mecA and lukS-PV/lukF-PV genes in Staphylococcus aureus isolated from nasal and pharyngeal sources of medical students in Ecuador

Bastidas CA, Villacrés-Granda I, Navarrete D, Monsalve M, Coral-Almeida M, Cifuentes SG

Infection and Drug Resistance 2019, 12:2553-2560

Published Date: **16 August 2019**

ORIGINAL RESEARCH

Application of the susceptible–infected–recovered deterministic model in a GII.P17 emergent norovirus strain outbreak in Romania in 2015

Popovici ED, Negru DG, Olariu T, Nagy M, Dinu S, Oprisan G, Zota L, Baditoiu LM

Infection and Drug Resistance 2019, 12:2543-2551

Published Date: **16 August 2019**

ORIGINAL RESEARCH

Augmented renal clearance is associated with inadequate antibiotic pharmacokinetic/pharmacodynamic target in Asian ICU population: a prospective observational study

Wu CC, Tai CH, Liao WY, Wang CC, Kuo CH, Lin SW, Ku SC

Infection and Drug Resistance 2019, 12:2531-2541

Published Date: **16 August 2019**

ORIGINAL RESEARCH

Assessment of the immunogenicity and protective efficiency of a novel dual-promoter DNA vaccine, harboring SAG1 and GRA7 genes, from RH strain of Toxoplasma gondii in BALB/c mice

Mavi SA, Modarressi MH, Mohebali M, Shojaee S, Zeraati H, Teimouri A, Keshavarz H

Infection and Drug Resistance 2019, 12:2519-2530

Published Date: **15 August 2019**

ORIGINAL RESEARCH

Prevalence and molecular epidemiology characteristics of carbapenem-resistant Escherichia coli in Heilongjiang Province, China

Cheng P, Li F, Liu R, Yang Y, Xiao T, Ishfaq M, Xu G, Zhang X

Infection and Drug Resistance 2019, 12:2505-2518

Published Date: **12 August 2019**

ORIGINAL RESEARCH

Community-associated Staphylococcus aureus PVL+ ST22 predominates in skin and soft tissue infections in Beijing, China

Xiao N, Yang J, Duan N, Lu B, Wang L

Infection and Drug Resistance 2019, 12:2495-2503

Published Date: **12 August 2019**

ORIGINAL RESEARCH

Outcomes of therapeutic keratoplasty for severe infectious keratitis in Chongqing, a 16-year experience

Zhang Q, Zhao M, Xu M, Gu F, Liu Q, Chen Y, Zhang H, Kijlstra A

Infection and Drug Resistance 2019, 12:2487-2493

Published Date: **12 August 2019**

ORIGINAL RESEARCH

Antimicrobial susceptibility changes of Escherichia coli and Klebsiella pneumoniae intra-abdominal infection isolate-derived pathogens from Chinese intra-abdominal infections from 2011 to 2015

Zhang H, Tong D, Johnson A, Zhang G, Xu Z, Yang Y, Zhang J, Li D, Duan S, Wang Y, Yang Q, Xu Y

Infection and Drug Resistance 2019, 12:2477-2486

Published Date: **9 August 2019**

ORIGINAL RESEARCH

Gentamicin susceptibility of Neisseria gonorrhoeae isolates from 7 provinces in China

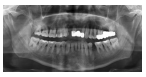
Liu JW, Xu WQ, Zhu XY, Dai XQ, Chen SC, Han Y, Liu J, Chen XS, Yin YP

Infection and Drug Resistance 2019, 12:2471-2476

Published Date: **9 August 2019**

CASE REPORT

A community-acquired lung abscess attributable to odontogenic flora



Guo W, Gao B, Li L, Gai W, Yang J, Zhang Y, Wang L

Infection and Drug Resistance 2019, 12:2467-2470

Published Date: **8 August 2019**

ORIGINAL RESEARCH

Prevalence, risk and genetic characteristics of drug-resistant tuberculosis in a tertiary care tuberculosis hospital in China

Zhao LL, Huang MX, Xiao TY, Liu HC, Li MC, Zhao XQ, Liu ZG, Jiang Y, Wan KL

Infection and Drug Resistance 2019, 12:2457-2465

Published Date: **7 August 2019**

CASE REPORT

An unexpected case of Bartonella alsatica prosthetic vascular graft infection

Puges M, Ménard A, Berard X, Geneviève M, Pinaquy JB, Edouard S, Pereyre S, Cazanave C

Infection and Drug Resistance 2019, 12:2453-2456

Published Date: **7 August 2019**

ORIGINAL RESEARCH

Evaluating the potential use of electronic tongue in early identification and diagnosis of bacterial infections

Al Ramahi R, Zaid AN, Abu-Khalaf N

Infection and Drug Resistance 2019, 12:2445-2451

Published Date: **7 August 2019**

ORIGINAL RESEARCH

Optimizing compliance with surgical antimicrobial prophylaxis guidelines in patients undergoing gastrointestinal surgery at a referral teaching hospital in southern Iran: clinical and economic impact

Mahmoudi L, Ghouchani M, Mahi-Birjand M, Bananzadeh A, Akbari A

Infection and Drug Resistance 2019, 12:2437-2444

Published Date: **6 August 2019**

ORIGINAL RESEARCH

Escherichia coli belonging to ST131 rarely transfers blactx-m-15 to fecal Escherichia coli

Thingholm KR, Hertz FB, Løbner-Olesen A, Frimodt-Møller N, Nielsen KL

Infection and Drug Resistance 2019, 12:2429-2435

Published Date: **6 August 2019**

ORIGINAL RESEARCH

Antibacterial mechanism of peptide Cec4 against Acinetobacter baumannii

Peng J, Long H, Liu W, Wu Z, Wang T, Zeng Z, Guo G, Wu J

Infection and Drug Resistance 2019, 12:2417-2428

Published Date: **5 August 2019**

ORIGINAL RESEARCH

Prevalence of Candida blood stream infections among children in tertiary care hospital: detection of species and antifungal susceptibility

Khairat SM, Sayed AM, Nabih M, Soliman NS, Hassan YM

Infection and Drug Resistance 2019, 12:2409-2416

Published Date: **5 August 2019**

ORIGINAL RESEARCH

Primary drug resistance among tuberculosis patients with diabetes mellitus: a retrospective study among 7223 cases in China

Song W, Shao Y, Liu J, Tao N, Liu Y, Zhang Q, Xu T, Li S, Yu CB, Gao L, Cui L, Li Y, Li H

Infection and Drug Resistance 2019, 12:2397-2407

Published Date: **2 August 2019**

CASE REPORT

A case of persistent bacteraemia by Ralstonia mannitolilytica and Ralstonia pickettii in an intensive care unit

Basso M, Venditti C, Raponi G, Navazio AS, Alessandri F, Giombini E, Nisii C, Di Caro A, Venditti M

Infection and Drug Resistance 2019, 12:2391-2395

Published Date: **2 August 2019**

ORIGINAL RESEARCH

Association between cell growth and vancomycin resistance in clinical community-associated methicillin-resistant Staphylococcus aureus

Yamaguchi T, Ando R, Matsumoto T, Ishii Y, Tateda K

Infection and Drug Resistance 2019, 12:2379-2390

Published Date: **1 August 2019**

ORIGINAL RESEARCH

Whole-genome sequence analysis of multidrug-resistant uropathogenic strains of Escherichia coli from Mexico

Paniagua-Contreras GL, Monroy-Pérez E, Díaz-Velásquez CE, Uribe-García A, Labastida A, Peñaloza-Figueroa F, Domínguez-Trejo P, García LR, Vaca-Paniagua F, Vaca S

Infection and Drug Resistance 2019, 12:2363-2377

Published Date: **1 August 2019**

ORIGINAL RESEARCH

Analysis of two pheromone-responsive conjugative multiresistance plasmids carrying the novel mobile optrA locus from Enterococcus faecalis

Shang Y, Li D, Shan X, Schwarz S, Zhang SM, Chen YX, Ouyang W, Du XD

Infection and Drug Resistance 2019, 12:2355-2362

Published Date: **1 August 2019**

METHODOLOGY

Lateral flow biosensor combined with loop-mediated isothermal amplification for simple, rapid, sensitive, and reliable detection of Brucella spp

Li S, Liu Y, Wang Y, Chen H, Liu C, Wang Y

Infection and Drug Resistance 2019, 12:2343-2353

Published Date: **30 July 2019**

ORIGINAL RESEARCH

The prevalence of respiratory pathogens in adults with community-acquired pneumonia in an outpatient cohort

Chen J, Li X, Wang W, Jia Y, Lin F, Xu J

Infection and Drug Resistance 2019, 12:2335-2341

Published Date: **30 July 2019**

ORIGINAL RESEARCH

Potential effects of microbial air quality on the number of new cases of diabetes type 1 in children in two regions of Poland: a pilot study

Michalska M, Wąż P, Zorena K, Bartoszewicz M, Korzeniowska K, Krawczyk S, Beń-Skowronek I, Myśliwiec M

Infection and Drug Resistance 2019, 12:2323-2334

Published Date: **29 July 2019**

ORIGINAL RESEARCH

Forecasting the seasonality and trend of pulmonary tuberculosis in Jiangsu Province of China using advanced statistical time-series analyses

Liu Q, Li Z, Ji Y, Martinez L, Zia UH, Javaid A, Lu W, Wang J

Infection and Drug Resistance 2019, 12:2311-2322

Published Date: **26 July 2019**

CORRIGENDUM

An increasing trend of neonatal invasive multidrug-resistant group B streptococcus infections in southern China, 2011–2017 [Corrigendum]

Gao K, Guan X, Zeng L, Qian J, Zhu S, Deng Q, Zhong H, Pang S, Gao F, Wang J, Long Y, Chang C, Liu H

Infection and Drug Resistance 2019, 12:2309-2310

Published Date: **25 July 2019**

ORIGINAL RESEARCH

Conventional oral and secondary high dose vaginal metronidazole therapy for recurrent bacterial vaginosis: clinical outcomes, impacts of sex and menses

Sobel JD, Kaur N, Woznicki NA, Boikov D, Aguin T, Gill G, Akins RA

Infection and Drug Resistance 2019, 12:2297-2307

Published Date: **24 July 2019**

ORIGINAL RESEARCH

Indole-core-based novel antibacterial agent targeting FtsZ

Yuan W, Yu Z, Song W, Li Y, Fang Z, Zhu B, Li X, Wang H, Hong W, Sun N

Infection and Drug Resistance 2019, 12:2283-2296

Published Date: **24 July 2019**

ORIGINAL RESEARCH

Impact of pre-transplant infection management on the outcome of living-donor liver transplantation in Egypt

Saleh AM, Hassan EA, Gomaa AA, El Baz TM, El-Abgeegy M, Seleem MI, Abo-amer YEE, Elsergany HF, Mahmoud EIED, Abd-Elsalam S

Infection and Drug Resistance 2019, 12:2277-2282

Published Date: **24 July 2019**

ORIGINAL RESEARCH

Molecular characterization of para-aminosalicylic acid resistant Mycobacterium tuberculosis clinical isolates in southwestern China

Luo M, Li K, Zhang H, Yan X, Gu J, Zhang Z, Chen Y, Li J, Wang J, Chen Y

Infection and Drug Resistance 2019, 12:2269-2275

Published Date: **24 July 2019**

REVIEW

Profile of sofosbuvir/velpatasvir/voxilaprevir in the treatment of hepatitis C

Childs-Kean LM, Brumwell NA, Lodl EF

Infection and Drug Resistance 2019, 12:2259-2268

Published Date: **23 July 2019**

ORIGINAL RESEARCH

Association between vitamin D and latent tuberculosis infection in the United States: NHANES, 2011–2012

Wang CY, Hu YL, Wang YH, Chen CH, Lai CC, Huang KL

Infection and Drug Resistance 2019, 12:2251-2257

Published Date: **22 July 2019**

ORIGINAL RESEARCH

Characterization of NDM-5- and CTX-M-55-coproducing Escherichia coli GSH8M-2 isolated from the effluent of a wastewater treatment plant in Tokyo Bay

Sekizuka T, Inamine Y, Segawa T, Kuroda M

Infection and Drug Resistance 2019, 12:2243-2249

Published Date: **23 July 2019**

METHODOLOGY

Fluorescence enzymatic assay for bacterial polyphosphate kinase 1 (PPK1) as a platform for screening antivirulence molecules

Campos F, Álvarez JA, Ortiz-Severín J, Varas MA, Lagos CF, Cabrera R, Álvarez SA, Chávez FP

Infection and Drug Resistance 2019, 12:2237-2242

Published Date: **22 July 2019**

ORIGINAL RESEARCH

Evaluation of Nano-curcumin effects on expression levels of virulence genes and biofilm production of multidrug-resistant Pseudomonas aeruginosa isolated from burn wound infection in Tehran, Iran

Shariati A, Asadian E, Fallah F, Azimi T, Hashemi A, Yasbolaghi Sharahi J, Taati Moghadam M

Infection and Drug Resistance 2019, 12:2223-2235

Published Date: **23 July 2019**

ORIGINAL RESEARCH

Expansion of Salmonella Typhi clonal lineages with ampicillin resistance and reduced ciprofloxacin susceptibility in Eastern China

Lv D, Zhang D, Song Q

Infection and Drug Resistance 2019, 12:2215-2221

Published Date: **22 July 2019**

ORIGINAL RESEARCH

Multilocus sequence typing and blaESBL characterization of extended-spectrum beta-lactamase-producing Escherichia coli isolated from healthy humans and swine in Northern Thailand

Seenama C, Thamlikitkul V, Ratthawongjirakul P

Infection and Drug Resistance 2019, 12:2201-2214

Published Date: **19 July 2019**

ORIGINAL RESEARCH

High dose of vancomycin plus gentamicin incorporated acrylic bone cement decreased the elution of vancomycin

Li T, Fu L, Wang J, Shi Z

Infection and Drug Resistance 2019, 12:2191-2199

Published Date: **18 July 2019**

ORIGINAL RESEARCH

Chlorquinaldol, a topical agent for skin and wound infections: anti-biofilm activity and biofilm-related antimicrobial cross-resistance

Bidossi A, Bottagisio M, De Grandi R, Drago L, De Vecchi E

Infection and Drug Resistance 2019, 12:2177-2189

Published Date: **19 July 2019**

RESPONSE TO LETTER

Prevalence of quinolone-resistant uropathogenic Escherichia coli in a tertiary care hospital in south Iran [Response to letter]

Malekzadegan Y, Rastegar E, Moradi M, Heidari H, Sedigh Ebrahim-Saraie H

Infection and Drug Resistance 2019, 12:2175-2176

Published Date: **23 July 2019**

ORIGINAL RESEARCH

A nationwide utilization survey of therapeutic drug monitoring for five antibiotics in South Korea

Choi R, Woo HI, Park HD, Lee SY

Infection and Drug Resistance 2019, 12:2163-2173

Published Date: **18 July 2019**

LETTER

Quinolones and fluoroquinolones are useless to counter uropathogenic Escherichia coli infections [Letter]

Singh BR

Infection and Drug Resistance 2019, 12:2161-2162

Published Date: **18 July 2019**

REVIEW

Staphyloxanthin: a potential target for antivirulence therapy

Xue L, Chen YY, Yan Z, Lu W, Wan D, Zhu H

Infection and Drug Resistance 2019, 12:2151-2160

Published Date: **17 July 2019**

ORIGINAL RESEARCH

High incidence of multidrug-resistant Escherichia coli coharboring mcr-1 and blaCTX-M-15 recovered from pigs

Shafiq M, Huang J, Ur Rahman S, Shah JM, Chen L, Gao Y, Wang M, Wang L

Infection and Drug Resistance 2019, 12:2135-2149

Published Date: **16 July 2019**

ORIGINAL RESEARCH

Antimicrobial resistance pattern and molecular genetic distribution of metallo-β-lactamases producing Pseudomonas aeruginosa isolated from hospitals in Minia, Egypt

Farhan SM, Ibrahim RA, Mahran KM, Hetta HF, Abd El-Baky RM

Infection and Drug Resistance 2019, 12:2125-2133

Published Date: **16 July 2019**

ORIGINAL RESEARCH

Resistance mechanisms and molecular epidemiology of carbapenem-nonsusceptible Escherichia coli in Taiwan, 2012-2015

Chang YT, Siu LK, Wang JT, Wu TL, Chen YH, Chuang YC, Lin JC, Lu PL

Infection and Drug Resistance 2019, 12:2113-2123

Published Date: **16 July 2019**

ORIGINAL RESEARCH

The first report of a novel IncHI1B blaSIM-1-carrying megaplasmid pSIM-1-BJ01 from a clinical Klebsiella pneumoniae isolate

Lü Y, Zhao S, Liang H, Zhang W, Liu J, Hu H

Infection and Drug Resistance 2019, 12:2103-2112

Published Date: **19 July 2019**

ORIGINAL RESEARCH

Evaluating the antimicrobial resistance patterns among major bacterial pathogens isolated from clinical specimens taken from patients in Mofid Children's Hospital, Tehran, Iran: 2013–2018

Azimi T, Maham S, Fallah F, Azimi L, Gholinejad Z

Infection and Drug Resistance 2019, 12:2089-2102

Published Date: **17 July 2019**

ORIGINAL RESEARCH

Development of a multiple cross displacement amplification combined with nanoparticles-based biosensor assay to detect Neisseria meningitidis

Li S, Liu C, Liu Y, Ma Q, Wang Y, Wang Y

Infection and Drug Resistance 2019, 12:2077-2087

Published Date: **15 July 2019**

ORIGINAL RESEARCH

Epidemiology and molecular characterization of mcr-1 in Escherichia coli recovered from patients with bloodstream infections in Changsha, central China

Zhong YM, Liu WE, Zheng ZF

Infection and Drug Resistance 2019, 12:2069-2076

Published Date: **12 July 2019**

ORIGINAL RESEARCH

Community acquired urinary tract infections among adults in Accra, Ghana

Donkor ES, Horlortu PZ, Dayie NTKD, Obeng-Nkrumah N, Labi AK

Infection and Drug Resistance 2019, 12:2059-2067

Published Date: **11 July 2019**

ORIGINAL RESEARCH

Vancomycin-resistant enterococcal infection in a Thai university hospital: clinical characteristics, treatment outcomes, and synergistic effect

Hemapanpairoa J, Changpradub D, Thunyaharn S, Santimaleeworagun W

Infection and Drug Resistance 2019, 12:2049-2057

Published Date: **11 July 2019**

ORIGINAL RESEARCH

Virulence-associated genes and drug susceptibility patterns of uropathogenic Escherichia coli isolated from patients with urinary tract infection

Farajzadah Sheikh A, Goodarzi H, Yadyad MJ, Aslani S, Amin M, Jomehzadeh N, Ranjbar R, Moradzadeh M, Azarpira S, Akhond MR, Hashemzadeh M

Infection and Drug Resistance 2019, 12:2039-2047

Published Date: **17 July 2019**

ORIGINAL RESEARCH

Efficacy of combinations of colistin with other antimicrobials involves membrane fluidity and efflux machinery

Armengol E, Domenech O, Fusté E, Pérez-Guillén I, Borrell JH, Sierra JM, Vinas M

Infection and Drug Resistance 2019, 12:2031-2038

Published Date: **11 July 2019**

ORIGINAL RESEARCH

Synergism of cationic antimicrobial peptide WLBU2 with antibacterial agents against biofilms of multi-drug resistant Acinetobacter baumannii and Klebsiella pneumoniae

Swedan S, Shubair Z, Almaaytah A

Infection and Drug Resistance 2019, 12:2019-2030

Published Date: **9 July 2019**

CASE REPORT

Successful treatment of Trichosporon asahii fungemia with isavuconazole in a patient with hematologic malignancies

Feugray G, Krzisch D, Dehais M, Razakandrainibe R, Gargala G, Favennec L, Lepretre S, Camus V, Costa D

Infection and Drug Resistance 2019, 12:2015-2018

Published Date: **9 July 2019**

ORIGINAL RESEARCH

In vitro effect of fosfomycin on multi-drug resistant gram-negative bacteria causing urinary tract infections

Gopichand P, Agarwal G, Natarajan M, Mandal J, Deepanjali S, Parameswaran S, Dorairajan LN

Infection and Drug Resistance 2019, 12:2005-2013

Published Date: **9 July 2019**

CORRIGENDUM

Eugenol, a potential schistosomicidal agent with anti-inflammatory and antifibrotic effects against Schistosoma mansoni, induced liver pathology [Corrigendum]

El-kady AM, Ahmed A, Hassan T, El-Deek H, Fouad S, Althagfan SS

Infection and Drug Resistance 2019, 12:2003-2004

Published Date: **10 July 2019**

ORIGINAL RESEARCH

The increasing threat of silver-resistance in clinical isolates from wounds and burns

Hosny AEDMS, Rasmy SA, Aboul-Magd DS, Kashef MT, El-Bazza ZE

Infection and Drug Resistance 2019, 12:1985-2001

Published Date: **8 July 2019**

ORIGINAL RESEARCH

Viral dynamics among HCV infected patients with different genotypes treated with genotypic specific or pan-genotypic direct-acting antiviral agent combinations

Paolucci S, Novazzi F, Piralla A, Maserati R, Gulminetti R, Novati S, Barbarini G, Sacchi P, Fratini A, Bellotti L, Baldanti F

Infection and Drug Resistance 2019, 12:1975-1984

Published Date: **8 July 2019**

ORIGINAL RESEARCH

A high prevalence of human T-lymphotropic virus (HTLV 1/2) infection among Afro-descendants, Esmeraldas province, Ecuador – need for the implementation of surveys and control programs

Mosquera-Herrera CE, Aspiazu-Miranda EP, de Waard JH, Garcia-Bereguiain MA

Infection and Drug Resistance 2019, 12:1969-1974

Published Date: **8 July 2019**

REVIEW

Recombinant human papillomavirus nonavalent vaccine in the prevention of cancers caused by human papillomavirus

Toh ZQ, Kosasih J, Russell FM, Garland SM, Mulholland EK, Licciardi PV

Infection and Drug Resistance 2019, 12:1951-1967

Published Date: **4 July 2019**

ORIGINAL RESEARCH

Epidemiology of Plasmodium falciparum infection and drug resistance markers in Ota Area, Southwestern Nigeria

Olasehinde GI, Diji-Geske RI, Fadina I, Arogundade D, Darby P, Adeleke A, Dokunmu TM, Adebayo AH, Oyelade J

Infection and Drug Resistance 2019, 12:1941-1949

Published Date: **5 July 2019**

ORIGINAL RESEARCH

Molecular and phenotypical characterization of two cases of antibiotic-driven ceftazidime-avibactam resistance in blaKPC-3-harboring Klebsiella pneumoniae

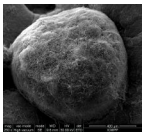
Venditti C, Nisii C, D'Arezzo S, Vulcano A, Capone A, Antonini M, Ippolito G, Di Caro A

Infection and Drug Resistance 2019, 12:1935-1940

Published Date: **3 July 2019**

CASE REPORT

Invasive pulmonary infection due to Thermoascus crustaceus in a kidney transplant recipient



Mareș M, Moroti-Constantinescu VR, Voroneanu L, Doroftei F, Covic A, Mederle OA

Infection and Drug Resistance 2019, 12:1929-1934

Published Date: **3 July 2019**

ORIGINAL RESEARCH

Evaluating the clinical significance of nontuberculous mycobacteria isolated from respiratory samples in Iran: an often overlooked disease

Mortazavi Z, Bahrmand A, Sakhaee F, Doust RH, Vaziri F, Siadat SD, Fateh A

Infection and Drug Resistance 2019, 12:1917-1927

Published Date: **3 July 2019**

REVIEW

Omadacycline: a novel aminomethylcycline

Burgos RM, Rodvold KA

Infection and Drug Resistance 2019, 12:1895-1915

Published Date: **2 July 2019**

ORIGINAL RESEARCH

In vitro activity of newer antimicrobials against penicillin non-susceptible strains of Streptococcus pneumoniae

Hipp M, Burckhardt I

Infection and Drug Resistance 2019, 12:1889-1893

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Multiplex loop-mediated isothermal amplification (multi-LAMP) assay for rapid detection of mcr-1 to mcr-5 in colistin-resistant bacteria

Zhong LL, Zhou Q, Tan CY, Roberts AP, El-Sayed Ahmed MAEG, Chen G, Dai M, Yang F, Xia Y, Liao K, Liang Y, Yang Y, Feng S, Zheng X, Tian GB

Infection and Drug Resistance 2019, 12:1877-1887

Published Date: **2 July 2019**

ORIGINAL RESEARCH

Genetic characterization of two vancomycin-resistant Staphylococcus aureus isolates in Kerman, Iran

Ziasistani M, Shakibaie MR, Kalantar-Neyestanaki D

Infection and Drug Resistance 2019, 12:1869-1875

Published Date: **4 July 2019**

REVIEW

Ceftolozane/tazobactam for the treatment of complicated intra-abdominal and urinary tract infections: current perspectives and place in therapy

Escolà-Vergé L, Pigrau C, Almirante B

Infection and Drug Resistance 2019, 12:1853-1867

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Antiviral and immunomodulatory effects of polyphenols on macrophages infected with dengue virus serotypes 2 and 3 enhanced or not with antibodies

Jasso-Miranda C, Herrera-Camacho I, Flores-Mendoza LK, Dominguez F, Vallejo-Ruiz V, Sanchez-Burgos GG, Pando-Robles V, Santos-Lopez G, Reyes-Leyva J

Infection and Drug Resistance 2019, 12:1833-1852

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Usefulness of serum D-dimer for preoperative diagnosis of infected nonunion after open reduction and internal fixation

Wang Z, Zheng C, Wen S, Wang J, Zhang Z, Qiu X, Chen Y

Infection and Drug Resistance 2019, 12:1827-1831

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Antibiotic resistance: a hospital-based multicenter study in Tabuk city, Kingdom of Saudi Arabia

Yagoub U, Al Qahtani B, Hariri IAL, Al Zahrani A, Siddique K

Infection and Drug Resistance 2019, 12:1815-1825

Published Date: **28 June 2019**

ORIGINAL RESEARCH

Efficacy of humanized single large doses of caspofungin on the lethality and fungal tissue burden in a deeply neutropenic murine model against Candida albicans and Candida dubliniensis

Prépost E, Tóth Z, Perlin DS, Gesztelyi R, Kardos G, Kovács R, Nagy F, Forgács L, Majoros L

Infection and Drug Resistance 2019, 12:1805-1814

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Genetic diversity and antibiotic susceptibility of uropathogenic Escherichia coli isolates from kidney transplant recipients

Mohammadzadeh M, Tavakoli M, Yaslianifard S, Asadi E, Golmohammadi R, Mirnejad R

Infection and Drug Resistance 2019, 12:1795-1803

Published Date: **9 July 2019**

ORIGINAL RESEARCH

Whole genome analysis reveals new insights into the molecular characteristics of Clostridioides difficile NAP1/BI/027/ST1 clinical isolates in the People's Republic of China

Lv T, Chen Y, Guo L, Xu Q, Gu S, Shen P, Quan J, Fang Y, Chen L, Gui Q, Ye G, Li L

Infection and Drug Resistance 2019, 12:1783-1794

Published Date: **1 July 2019**

ORIGINAL RESEARCH

Association between biofilm formation, structure and antibiotic resistance in Staphylococcus epidermidis isolated from neonatal septicemia in southwest Iran

Farajzadeh Sheikh A, Asareh Zadegan Dezfuli A, Navidifar T, Fard SS, Dehdashtian M

Infection and Drug Resistance 2019, 12:1771-1782

Published Date: **27 June 2019**

ORIGINAL RESEARCH

Psychoactive drug prescription and urine colonization with extended-spectrum β-lactamase-producing Enterobacteriaceae

Bachtarzi R, Boureau AS, Mascart C, Batard E, Montassier E, Bémer P, Bourigault C, Berrut G, de Decker L, Chapelet G

Infection and Drug Resistance 2019, 12:1763-1770

Published Date: **28 June 2019**

ORIGINAL RESEARCH

Evaluation of gut bacterial community composition and antimicrobial resistome in pregnant and non-pregnant women from Saudi population

Khan I, Yasir M, Farman M, Kumosani T, AlBasri SF, Bajouh OS, Azhar EI

Infection and Drug Resistance 2019, 12:1749-1761

Published Date: **21 June 2019**

ORIGINAL RESEARCH

Evaluation of agar culture plates to efficiently identify small colony variants of methicillin-resistant Staphylococcus aureus

Watanabe Y, Oikawa N, Hariu M, Seki M

Infection and Drug Resistance 2019, 12:1743-1748

Published Date: **21 June 2019**

ORIGINAL RESEARCH

Epidemic IncX3 plasmids spreading carbapenemase genes in the United Arab Emirates and worldwide

Mouftah SF, Pál T, Darwish D, Ghazawi A, Villa L, Carattoli A, Sonnevend Á

Infection and Drug Resistance 2019, 12:1729-1742

Published Date: **21 June 2019**

ORIGINAL RESEARCH 

Molecular typing revealed the emergence of pvl-positive sequence type 22 methicillin-susceptible Staphylococcus aureus in Urumqi, Northwestern China

Yuan W, Liu J, Zhan Y, Wang L, Jiang Y, Zhang Y, Sun N, Hou N

Infection and Drug Resistance 2019, 12:1719-1728

Published Date: **20 June 2019**

ORIGINAL RESEARCH 

A novel mechanism of action of ketoconazole: inhibition of the NorA efflux pump system and biofilm formation in multidrug-resistant Staphylococcus aureus

Abd El-Baky RM, Sandle T, John J, Abuo-Rahma GEDAA, Hetta HF

Infection and Drug Resistance 2019, 12:1703-1718

Published Date: **14 June 2019**

ORIGINAL RESEARCH

Pivmecillinam compared to other antimicrobials for community-acquired urinary tract infections with Escherichia coli, ESBL-producing or not – a retrospective cohort study

Jansåker F, Boel JB, Thønnings S, Hertz FB, Hansen KH, Frimodt-Møller N, Knudsen JD

Infection and Drug Resistance 2019, 12:1691-1702

Published Date: **13 June 2019**

ORIGINAL RESEARCH

Prevalence of quinolone-resistant uropathogenic Escherichia coli in a tertiary care hospital in south Iran

Malekzadegan Y, Rastegar E, Moradi M, Heidari H, Sedigh Ebrahim-Saraie H

Infection and Drug Resistance 2019, 12:1683-1689

Published Date: **19 June 2019**

ORIGINAL RESEARCH

Successful surgical management of invasive pulmonary fungal infection in patients with leukemia

Dong M, Li X, Liu J, Song Z, Zhao H, Wei S, Chen G, Chen J

Infection and Drug Resistance 2019, 12:1675-1681

Published Date: **18 June 2019**

ORIGINAL RESEARCH

In vitro reduction of colistin susceptibility and comparative genomics reveals multiple differences between MCR-positive and MCR-negative colistin-resistant Escherichia coli

Luo Q, Niu T, Wang Y, Yin J, Wan F, Yao M, Lu H, Xiao Y, Li L

Infection and Drug Resistance 2019, 12:1665-1674

Published Date: **12 June 2019**

ORIGINAL RESEARCH

Identification and antifungal susceptibility profiles of Kodamaea ohmeri based on a seven-year multicenter surveillance study

Zhou M, Yu S, Kudinha T, Xiao M, Wang H, Xu Y, Zhao H

Infection and Drug Resistance 2019, 12:1657-1664

Published Date: **12 June 2019**

ORIGINAL RESEARCH

Association of pvl gene with incomplete hemolytic phenotype in clinical Staphylococcus aureus

Gao M, Sang R, Wang G, Xu Y

Infection and Drug Resistance 2019, 12:1649-1656

Published Date: **14 June 2019**

ORIGINAL RESEARCH

Substitution of lysine for isoleucine at the center of the nonpolar face of the antimicrobial peptide, piscidin-1, leads to an increase in the rapidity of bactericidal activity and a reduction in toxicity

Taheri B, Mohammadi M, Momenzadeh N, Farshadzadeh Z, Roozbehani M, Dehghani P, Hajian S, Darvishi S, Shamseddin J

Infection and Drug Resistance 2019, 12:1629-1647

Published Date: **14 June 2019**

ORIGINAL RESEARCH

In vitro and in vivo activity of ciprofloxacin/fosfomycin combination therapy against ciprofloxacin-resistant Shigella flexneri isolates

Liu Y, Li H, Zhang Y, Ye Y, Gao Y, Li J

Infection and Drug Resistance 2019, 12:1619-1628

Published Date: **11 June 2019**

CORRIGENDUM

Self-medication of antibiotics: investigating practice among university students at the Malaysian National Defence University [Corrigendum]

Haque M, Rahman NAA, McKimm J, Kibria GM, Azim Majumder MA, Haque SZ, Islam MZ, Daher AM, Zulkifli Z, Rahman S, Lutfi SNNB, Aishah Binti Othman NS

Infection and Drug Resistance 2019, 12:1617-1618

Published Date: **11 June 2019**

REVIEW

Recent advances in the treatment of C. difficile using biotherapeutic agents

Giau VV, Lee H, An SSA, Hulme J

Infection and Drug Resistance 2019, 12:1597-1615

Published Date: **10 June 2019**

ORIGINAL RESEARCH

Quorum quenching activity of Bacillus cereus isolate 30b confers antipathogenic effects in Pseudomonas aeruginosa

Raafat MM, Ali-Tammam M, Ali AE

Infection and Drug Resistance 2019, 12:1583-1596

Published Date: **7 June 2019**

ORIGINAL RESEARCH

Rapid simultaneous detection of blaoxa-23, Ade-B, int-1, and ISCR-1 in multidrug-resistant Acinetobacter baumannii using single-tube multiplex PCR and high resolution melting assay

Sun H, Xiao G, Zhang J, Pan Z, Chen Y, Xiong F

Infection and Drug Resistance 2019, 12:1573-1581

Published Date: **7 June 2019**

ORIGINAL RESEARCH

Spinal brucellosis in Hulunbuir, China, 2011–2016

Liang C, Wei W, Liang X, De E, Zheng B

Infection and Drug Resistance 2019, 12:1565-1571

Published Date: **6 June 2019**

ORIGINAL RESEARCH

Characterization of a NDM-7 carbapenemase-producing Escherichia coli ST410 clinical strain isolated from a urinary tract infection in China

Xu J, He F

Infection and Drug Resistance 2019, 12:1555-1564

Published Date: **6 June 2019**

ORIGINAL RESEARCH

Characterization of a small plasmid carrying the carbapenem resistance gene blaOXA-72 from community-acquired Acinetobacter baumannii sequence type 880 in China

Jia H, Sun Q, Ruan Z, Xie X

Infection and Drug Resistance 2019, 12:1545-1553

Published Date: **6 June 2019**

ORIGINAL RESEARCH

Multidrug-resistant Shigella infection in pediatric patients with diarrhea from central Iran

Abbasi E, Abtahi H, van Belkum A, Ghaznavi-Rad E

Infection and Drug Resistance 2019, 12:1535-1544

Published Date: **7 June 2019**

ORIGINAL RESEARCH

Simvastatin improves the eradication rate of Helicobacter pylori: upper Egypt experience

Hassan AM, Shawky MAEG, Mohammed AQ, Haridy MA, Eid KAEA

Infection and Drug Resistance 2019, 12:1529-1534

Published Date: **5 June 2019**

ORIGINAL RESEARCH

The microbiota of the bilio-pancreatic system: a cohort, STROBE-compliant study

Di Carlo P, Serra N, D'Arpa F, Agrusa A, Gulotta G, Fasciana T, Rodolico V, Giammanco A, Sergi C

Infection and Drug Resistance 2019, 12:1513-1527

Published Date: **11 June 2019**

ORIGINAL RESEARCH

Prognostic factors in pediatric pneumococcal meningitis patients in mainland China: a retrospective multicenter study

Wang C, Xu H, Deng J, Yu H, Chen Y, Wang S, Huang W, Hao J, Wang C, Deng H, Chen Y

Infection and Drug Resistance 2019, 12:1501-1512

Published Date: **7 June 2019**

CASE REPORT

Absence of cutaneous involvement in disseminated Talaromyces marneffei infection in an AIDS patient: a case report and literature review

Pongpech N, Rotjanapan P

Infection and Drug Resistance 2019, 12:1493-1499

Published Date: **4 June 2019**

REVIEW

Letermovir for the prevention of cytomegalovirus infection and disease in transplant recipients: an evidence-based review

El Helou G, Razonable RR

Infection and Drug Resistance 2019, 12:1481-1491

Published Date: **4 June 2019**

ORIGINAL RESEARCH

Infectious complications in children with malignant bone tumors: a multicenter nationwide study

Czyzewski K, Galazka P, Zalas-Wiecek P, Gryniewicz-Kwiatkowska O, Gietka A, Semczuk K, Chelmecka-Wiktorczyk L, Zak I, Salamonowicz M, Fraczkiewicz J, Zajac-Spychala O, Bien E, Plonowski M, Wawrykow P, Pierlejewski F, Gamrot Z, Malas Z, Stolpa W, Musial J, Styczynski J

Infection and Drug Resistance 2019, 12:1471-1480

Published Date: **30 May 2019**

CORRIGENDUM

Sofosbuvir–daclatasvir improves hepatitis C virus–induced mixed cryoglobulinemia: Upper Egypt experience [Corrigendum]

Hassan AM, Osman HA, Mahmoud HS, Hassan MH, Hashim AKA, Ameen HH

Infection and Drug Resistance 2019, 12:1469-1470

Published Date: **29 May 2019**

ORIGINAL RESEARCH

Clinical characteristics, treatment outcomes, and prognostic factors of Pneumocystis pneumonia in non-HIV-infected patients

Liu CJ, Lee TF, Ruan SY, Yu CJ, Chien JY, Hsueh PR

Infection and Drug Resistance 2019, 12:1457-1467

Published Date: **30 May 2019**

ORIGINAL RESEARCH

Quinolone resistance mechanisms among third-generation cephalosporin resistant isolates of Enterobacter spp. in a Bulgarian university hospital

Markovska R, Stoeva T, Dimitrova D, Boyanova L, Stankova P, Mihova K, Mitov I

Infection and Drug Resistance 2019, 12:1445-1455

Published Date: **28 May 2019**

ORIGINAL RESEARCH

Changing antibiotic susceptibility pattern in uropathogenic Escherichia coli over a period of 5 years in a tertiary care center

Prasada S, Bhat A, Bhat S, Shenoy Mulki S, Tulasidas S

Infection and Drug Resistance 2019, 12:1439-1443

Published Date: **29 May 2019**

ORIGINAL RESEARCH

Visual outcomes of post-cataract endophthalmitis caused by Mycobacterium fortuitum

Di Y, Chen X

Infection and Drug Resistance 2019, 12:1433-1438

Published Date: **4 June 2019**

ORIGINAL RESEARCH

First-line Helicobacter pylori eradication rates are significantly lower in patients with than those without type 2 diabetes mellitus

Yao CC, Kuo CM, Hsu CN, Yang SC, Wu CK, Tai WC, Liang CM, Wu KL, Huang CF, Bi KW, Lee CH, Chuah SK

Infection and Drug Resistance 2019, 12:1425-1431

Published Date: **29 May 2019**

ORIGINAL RESEARCH

Efficacy and safety of delafloxacin in the treatment of acute bacterial skin and skin structure infections: a systematic review and meta-analysis of randomized controlled trials

Lan SH, Lai CC, Lu LC, Chang SP, Huang HT

Infection and Drug Resistance 2019, 12:1415-1423

Published Date: **27 May 2019**

ORIGINAL RESEARCH

Impact of individualized active surveillance of carbapenem-resistant enterobacteriaceae on the infection rate in intensive care units: a 3-year retrospective study in a teaching hospital of People's Republic of China

Li S, Guo FZ, Zhao XJ, Wang Q, Wang H, An YZ, Zhu FX

Infection and Drug Resistance 2019, 12:1407-1414

Published Date: **24 May 2019**

ORIGINAL RESEARCH

Enhancing the antibacterial activity of polymyxins using a nonantibiotic drug

Krishnamurthy M, Lemmon MM, Falcinelli EM, Sandy RA, Dootz JN, Mott TM, Rajamani S, Schaecher KE, Duplantier AJ, Panchal RG

Infection and Drug Resistance 2019, 12:1393-1405

Published Date: **27 May 2019**

ORIGINAL RESEARCH

Lipid profile improvement in virologically suppressed HIV-1-infected patients switched to dolutegravir/abacavir/lamivudine: data from the SCOLTA project

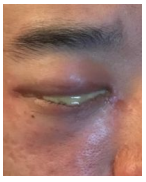
Bagella P, Squillace N, Ricci E, Gulminetti R, De Socio GV, Taramasso L, Pellicanò G, Menzaghi B, Celesia BM, Dentone C, Orofino G, Bonfanti P, Madeddu G

Infection and Drug Resistance 2019, 12:1385-1391

Published Date: **23 May 2019**

CASE REPORT

Gonococcal conjunctivitis after incomplete treatment of gonococcal urethritis



Wang MF, Wang L, Li LF

Infection and Drug Resistance 2019, 12:1381-1384

Published Date: **23 May 2019**

ORIGINAL RESEARCH

The evaluation of the synergistic antimicrobial and antibiofilm activity of AamAP1-Lysine with conventional antibiotics against representative resistant strains of both Gram-positive and Gram-negative bacteria

Almaaytah A, Abualhaijaa A, Alqudah O

Infection and Drug Resistance 2019, 12:1371-1380

Published Date: **23 May 2019**

ORIGINAL RESEARCH

Spoligotyping analysis of Mycobacterium tuberculosis in Khyber Pakhtunkhwa area, Pakistan

Ali S, Khan MT, Anwar Sheed K, Khan MM, Hasan F

Infection and Drug Resistance 2019, 12:1363-1369

Published Date: **20 May 2019**

ORIGINAL RESEARCH

Comparison of high-dose, short-course levofloxacin treatment vs conventional regimen against acute bacterial infection: meta-analysis of randomized controlled trials

Chen CW, Chen YH, Cheng IL, Lai CC

Infection and Drug Resistance 2019, 12:1353-1361

Published Date: **17 May 2019**

ORIGINAL RESEARCH

Self-medication of antibiotics: investigating practice among university students at the Malaysian National Defence University

Haque M, Rahman NAA, McKimm J, Kibria GM, Azim Majumder MA, Haque SZ, Islam MZ, Binti Abdullah SL, Daher AM, Zulkifli Z, Rahman S, Kabir R, Lutfi SNNB, Aishah Binti Othman NS

Infection and Drug Resistance 2019, 12:1333-1351

Published Date: **17 May 2019**

ORIGINAL RESEARCH

Phenotypic and genotypic characterization of multi-drug-resistant Escherichia coli isolates harboring blaCTX-M group extended-spectrum β-lactamases recovered from pediatric patients in Shenzhen, southern China

Patil S, Chen X, Lian M, Wen F

Infection and Drug Resistance 2019, 12:1325-1332

Published Date: **16 May 2019**

ORIGINAL RESEARCH

Comparative effectiveness of antifungal agents in patients with hematopoietic stem cell transplantation: a systematic review and network meta-analysis

Su HC, Hua YM, Feng IJ, Wu HC

Infection and Drug Resistance 2019, 12:1311-1324

Published Date: **15 May 2019**

ORIGINAL RESEARCH

The efficacy and safety of ceftaroline in the treatment of acute bacterial infection in pediatric patients – a systemic review and meta-analysis of randomized controlled trials

Chen CW, Chang SP, Huang HT, Tang HJ, Lai CC

Infection and Drug Resistance 2019, 12:1303-1310

Published Date: **15 May 2019**

ORIGINAL RESEARCH

Nine-year analysis of isolated pathogens and antibiotic susceptibilities of microbial keratitis from a large referral eye center in southern China

Lin L, Duan F, Yang Y, Lou B, Liang L, Lin X

Infection and Drug Resistance 2019, 12:1295-1302

Published Date: **15 May 2019**

ORIGINAL RESEARCH

Clinical features and outcomes of tetanus: a retrospective study

Fan Z, Zhao Y, Wang S, Zhang F, Zhuang C

Infection and Drug Resistance 2019, 12:1289-1293

Published Date: **16 May 2019**

SHORT REPORT

A novel plasmid carrying carbapenem-resistant gene blaKPC-2 in Pseudomonas aeruginosa

Hu YY, Wang Q, Sun QL, Chen GX, Zhang R

Infection and Drug Resistance 2019, 12:1285-1288

Published Date: **14 May 2019**

CASE REPORT

Successful management of Mycobacterium abscessus complex lung disease in an otherwise healthy infant

Liu H, Dong F, Liu J, Liu J, Pang Y, Zhao S, Lu J, Li H

Infection and Drug Resistance 2019, 12:1277-1283

Published Date: **15 May 2019**

ORIGINAL RESEARCH

Plasma indoleamine 2,3-dioxygenase activity as a potential biomarker for early diagnosis of multidrug-resistant tuberculosis in tuberculosis patients

Shi W, Wu J, Tan Q, Hu CM, Zhang X, Pan HQ, Yang Z, He MY, Yu M, Zhang B, Xie WP, Wang H

Infection and Drug Resistance 2019, 12:1265-1276

Published Date: **14 May 2019**

ORIGINAL RESEARCH

Cefuroxime compared to piperacillin/tazobactam as empirical treatment of Escherichia coli bacteremia in a low Extended-spectrum beta-lactamase (ESBL) prevalence cohort

Thønnings S, Jansåker F, Gradel KO, Styrishave B, Knudsen JD

Infection and Drug Resistance 2019, 12:1257-1264

Published Date: **13 May 2019**

REVIEW

Recent advances in Staphylococcus aureus infection: focus on vaccine development

Ansari S, Jha RK, Mishra SK, Tiwari BR, Asaad AM

Infection and Drug Resistance 2019, 12:1243-1255

Published Date: **13 May 2019**

ORIGINAL RESEARCH

Antiretroviral drug resistance mutations among patients failing first-line treatment in Hanoi, Vietnam

Tien TV, Pho DC, Hong LT, Ba HP, Nam LV, Hung PN

Infection and Drug Resistance 2019, 12:1237-1242

Published Date: **10 May 2019**

ORIGINAL RESEARCH

Genetic variation in metronidazole metabolism and oxidative stress pathways in clinical Giardia lamblia assemblage A and B isolates

Saghaug CS, Klotz C, Kallio JP, Brattbakk HR, Stokowy T, Aebischer T, Kursula I, Langeland N, Hanevik K

Infection and Drug Resistance 2019, 12:1221-1235

Published Date: **10 May 2019**

ORIGINAL RESEARCH

Antimicrobial susceptibility among Streptococcus pneumoniae and Haemophilus influenzae collected globally between 2015 and 2017 as part of the Tigecycline Evaluation and Surveillance Trial (TEST)

Zhang Z, Chen M, Yu Y, Pan S, Liu Y

Infection and Drug Resistance 2019, 12:1209-1220

Published Date: **10 May 2019**

ORIGINAL RESEARCH

Simulating moxalactam dosage for extended-spectrum β-lactamase-producing Enterobacteriaceae using blood antimicrobial surveillance network data

Huang C, Shi Q, Zheng B, Ji J, Ying C, Yu X, Wang H, Xiao Y

Infection and Drug Resistance 2019, 12:1199-1208

Published Date: **8 May 2019**

REVIEW

Prevalence of antibiotic resistance in Escherichia coli strains simultaneously isolated from humans, animals, food, and the environment: a systematic review and meta-analysis

Pormohammad A, Nasiri MJ, Azimi T

Infection and Drug Resistance 2019, 12:1181-1197

Published Date: **8 May 2019**

ORIGINAL RESEARCH

Association of the genes encoding Metallo-β-Lactamase with the presence of integrons among multidrug-resistant clinical isolates of Acinetobacter baumannii

Amin M, Navidifar T, Saleh Shooshtari F, Goodarzi H

Infection and Drug Resistance 2019, 12:1171-1180

Published Date: **13 May 2019**

ORIGINAL RESEARCH

Prevalence of Staphylococcus aureus carriage and pattern of antibiotic resistance, including methicillin resistance, among contact sport athletes in Italy

Mascaro V, Capano MS, Iona T, Nobile CGA, Ammendolia A, Pavia M

Infection and Drug Resistance 2019, 12:1161-1170

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Investigation of the prevalence of genes conferring resistance to carbapenems in Pseudomonas aeruginosa isolates from burn patients

Khosravi AD, Taee S, Dezfuli AA, Meghdadi H, Shafie F

Infection and Drug Resistance 2019, 12:1153-1159

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Low prevalence of resistance genes in sheltered homeless population in Marseille, France, 2014–2018

Ly TDA, Hadjadj L, Hoang VT, Louni M, Dao TL, Badiaga S, Tissot-Dupont H, Raoult D, Rolain JM, Gautret P

Infection and Drug Resistance 2019, 12:1139-1151

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Cost-effectiveness analysis of the use of letermovir for the prophylaxis of cytomegalovirus in adult cytomegalovirus seropositive recipients undergoing allogenic hematopoietic stem cell transplantation in Italy

Restelli U, Croce D, Pacelli V, Ciceri F, Girmenia C

Infection and Drug Resistance 2019, 12:1127-1138

Published Date: **8 May 2019**

ORIGINAL RESEARCH

Emergence of multidrug resistance and extensive drug resistance among enterococcal clinical isolates in Egypt

Said HS, Abdelmegeed ES

Infection and Drug Resistance 2019, 12:1113-1125

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Effects of sub-inhibitory concentrations of meropenem and tigecycline on the expression of genes regulating pili, efflux pumps and virulence factors involved in biofilm formation by Acinetobacter baumannii

Navidifar T, Amin M, Rashno M

Infection and Drug Resistance 2019, 12:1099-1111

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Antimicrobial resistance and risk factors for mortality of pneumonia caused by Klebsiella pneumoniae among diabetics: a retrospective study conducted in Shanghai, China

Liu B, Yi H, Fang J, Han L, Zhou M, Guo Y

Infection and Drug Resistance 2019, 12:1089-1098

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Evaluation of efflux pump activity of multidrug-resistant Salmonella Typhimurium isolated from poultry wet markets in India

Anbazhagan PV, Thavitiki PR, Varra M, Annamalai L, Putturu R, Lakkineni VR, Pesingi PK

Infection and Drug Resistance 2019, 12:1081-1088

Published Date: **6 May 2019**

CASE REPORT

Next-generation-sequencing technology used for the detection of Mycoplasma hominis in renal cyst fluid: a case report

Xiao N, Gai W, Hu WG, Li JX, Zhang Y, Zhao XY

Infection and Drug Resistance 2019, 12:1073-1079

Published Date: **23 May 2019**

ORIGINAL RESEARCH

Prevalence and risk factors for colonization by extended-spectrum β-lactamase-producing or ST 131 Escherichia coli among asymptomatic adults in community settings in Southern Taiwan

Wu PC, Wang JL, Hsueh PR, Lin PH, Cheng MF, Huang IF, Chen YS, Lee SS, Guang-Yuan M, Yu HC, Hsu CL, Wang FW, Chen CS, Hung CH, Ko WC

Infection and Drug Resistance 2019, 12:1063-1071

Published Date: **3 May 2019**

ORIGINAL RESEARCH

Direct use of eazyplex® SuperBug CRE assay from positive blood cultures in conjunction with inpatient infectious disease consulting for timely appropriate antimicrobial therapy in Escherichia coli and Klebsiella pneumoniae bloodstream infections

Fiori B, D'Inzeo T, Posteraro B, Menchinelli G, Liotti FM, De Angelis G, De Maio F, Fantoni M, Murri R, Scoppettuolo G, Ventura G, Tumbarello M, Pennestrì F, Taccari F, Sanguinetti M, Spanu T

Infection and Drug Resistance 2019, 12:1055-1062

Published Date: **3 May 2019**

ORIGINAL RESEARCH

Combined administration of antibiotics increases the incidence of antibiotic-associated diarrhea in critically ill patients

Ma H, Zhang L, Zhang Y, Liu Y, He Y, Guo L

Infection and Drug Resistance 2019, 12:1047-1054

Published Date: **1 May 2019**

ORIGINAL RESEARCH

Design and characterization of a new hybrid peptide from LL-37 and BMAP-27

Al Tall Y, Abualhaijaa A, Alsaggar M, Almaaytah A, Masadeh M, Alzoubi KH

Infection and Drug Resistance 2019, 12:1035-1045

Published Date: **30 April 2019**

SHORT REPORT

Antibiotic resistance and heavy metal tolerance plasmids: the antimicrobial bulletproof properties of Escherichia fergusonii isolated from poultry

Galetti R, Penha Filho RAC, Ferreira JC, Varani AM, Darini ALC

Infection and Drug Resistance 2019, 12:1029-1033

Published Date: **7 May 2019**

ORIGINAL RESEARCH

Drug–drug interaction study of imatinib and voriconazole in vitro and in vivo

Lin QM, Xie S, Qiu X, Chen J, Xu RA

Infection and Drug Resistance 2019, 12:1021-1027

Published Date: **30 April 2019**

ORIGINAL RESEARCH

Application of a hybrid model in predicting the incidence of tuberculosis in a Chinese population

Li Z, Wang Z, Song H, Liu Q, He B, Shi P, Ji Y, Xu D, Wang J

Infection and Drug Resistance 2019, 12:1011-1020

Published Date: **29 April 2019**

ORIGINAL RESEARCH

The first report of emerging mobilized colistin-resistance (mcr) genes and ERIC-PCR typing in Escherichia coli and Klebsiella pneumoniae clinical isolates in southwest Iran

Moosavian M, Emam N

Infection and Drug Resistance 2019, 12:1001-1010

Published Date: **29 April 2019**

ORIGINAL RESEARCH

Differences in microbial etiology between hospital-acquired pneumonia and ventilator-associated pneumonia: a single-center retrospective study in Guang Zhou

Feng DY, Zhou YQ, Zou XL, Zhou M, Zhu JX, Wang YH, Zhang TT

Infection and Drug Resistance 2019, 12:993-1000

Published Date: **29 April 2019**

RESPONSE TO LETTER

Further considerations on rotavirus vaccination and seizure-related hospitalization rates

Gómez-Rial J, Sánchez-Batán S, Rivero-Calle I, Pardo-Seco J, Martinón-Martínez JM, Salas A, Martinón-Torres F

Infection and Drug Resistance 2019, 12:989-991

Published Date: **29 April 2019**

REVIEW

Current progress in the prevention of mother-to-child transmission of hepatitis B and resulting clinical and programmatic implications

Jourdain G, Ngo-Giang-Huong N, Khamduang W

Infection and Drug Resistance 2019, 12:977-987

Published Date: **26 April 2019**

REVIEW

Molecular mechanisms related to colistin resistance in Enterobacteriaceae

Aghapour Z, Gholizadeh P, Ganbarov K, Bialvaei AZ, Mahmood SS, Tanomand A, Yousefi M, Asgharzadeh M, Yousefi B, Kafil HS

Infection and Drug Resistance 2019, 12:965-975

Published Date: **24 April 2019**

ORIGINAL RESEARCH

Comparative study of antimicrobial resistance and biofilm formation among Gram-positive uropathogens isolated from community-acquired urinary tract infections and catheter-associated urinary tract infections

Shrestha LB, Baral R, Khanal B

Infection and Drug Resistance 2019, 12:957-963

Published Date: **23 April 2019**

CASE REPORT

Whole-genome characterization and resistance-associated substitutions in a new HCV genotype 1 subtype

von Massow G, Garcia-Cehic D, Gregori J, Rodriguez-Frias F, Macià MD, Escarda A, Esteban JI, Quer J

Infection and Drug Resistance 2019, 12:947-955

Published Date: **24 April 2019**

ORIGINAL RESEARCH

Grazoprevir/elbasvir in peginterferon alfa plus ribavirin experienced patients with chronic genotype 1 HCV/HIV co-infection: a non-randomized, open-label clinical trial

Lin YC, Li SW, Ku SY, Hsieh HT, Lin MH, Chang SY, Wu WW, Sun NL, Cheng SH, Cheng CY

Infection and Drug Resistance 2019, 12:937-945

Published Date: **18 April 2019**

ORIGINAL RESEARCH

Detection of Mycoplasma pneumoniae in Mexican children with community-acquired pneumonia: experience in a tertiary care hospital

Merida-Vieyra J, Aquino-Andrade A, Palacios-Reyes D, Murata C, Ribas-Aparicio RM, De Colsa Ranero A

Infection and Drug Resistance 2019, 12:925-935

Published Date: **18 April 2019**

ORIGINAL RESEARCH

Investigation of six plasmid-mediated quinolone resistance genes among clinical isolates of pseudomonas: a genotypic study in Saudi Arabia

El-Badawy MF, Alrobaian MM, Shohayeb MM, Abdelwahab SF

Infection and Drug Resistance 2019, 12:915-923

Published Date: **29 April 2019**

ORIGINAL RESEARCH

Susceptibilities of Gram-negative bacilli from hospital- and community-acquired intra-abdominal and urinary tract infections: a 2016–2017 update of the Chinese SMART study

Zhang H, Johnson A, Zhang G, Yang Y, Zhang J, Li D, Duan S, Yang Q, Xu Y

Infection and Drug Resistance 2019, 12:905-914

Published Date: **24 April 2019**

ORIGINAL RESEARCH

Characterization of antibiotic-susceptibility patterns and virulence genes of five major sequence types of Escherichia coli isolates cultured from extraintestinal specimens: a 1-year surveillance study from Iran

Hojabri Z, Mirmohammadkhani M, Darabi N, Arab M, Pajand O

Infection and Drug Resistance 2019, 12:893-903

Published Date: **17 April 2019**

REVIEW

Evaluation of treatment options for methicillin-resistant Staphylococcus aureus infections in the obese patient

Narayanan N, Adams CD, Kubiak DW, Cheng S, Stoianovici R, Kagan L, Brunetti L

Infection and Drug Resistance 2019, 12:877-891

Published Date: **17 April 2019**

ORIGINAL RESEARCH

Candida isolates causing refractory or recurrent oropharyngeal candidiasis in 11 hospitals in China

Yu SY, Zhang L, Chen S, Kong F, Xiao M, Wang H, Hou X, Zhou ML, Zhang G, Zhang JJ, Duan SM, Kang W, Xu YC

Infection and Drug Resistance 2019, 12:865-875

Published Date: **18 April 2019**

ORIGINAL RESEARCH

The impact of lifestyle upon the probability of late bacterial infection after soft-tissue filler augmentation

Marusza W, Olszanski R, Sierdzinski J, Szyller K, Ostrowski T, Gruber-Miazga J, Netsvyetayeva I

Infection and Drug Resistance 2019, 12:855-863

Published Date: **23 April 2019**

ORIGINAL RESEARCH

Comparison of pegylated interferon monotherapy and de novo pegylated interferon plus tenofovir combination therapy in patients with chronic hepatitis B

Zheng C, Yan H, Zeng J, Cai S, Wu X

Infection and Drug Resistance 2019, 12:845-854

Published Date: **12 April 2019**

ORIGINAL RESEARCH

Molecular epidemiology and resistance profiles among healthcare- and community-associated Staphylococcus aureus keratitis isolates

Peterson JC, Durkee H, Miller D, Maestre-Mesa J, Arboleda A, Aguilar MC, Relhan N, Flynn Jr HW, Amescua G, Parel JM, Alfonso E

Infection and Drug Resistance 2019, 12:831-843

Published Date: **11 April 2019**

ORIGINAL RESEARCH

Para-aminosalicylic acid increases the susceptibility to isoniazid in clinical isolates of Mycobacterium tuberculosis

Zhang T, Jiang G, Wen S, Huo F, Wang F, Huang H, Pang Y

Infection and Drug Resistance 2019, 12:825-829

Published Date: **11 April 2019**

ORIGINAL RESEARCH

Procalcitonin-guided antibiotic discontinuation in ventilator-associated pneumonia: a prospective observational study

Wang Q, Hou D, Wang J, An K, Han C, Wang C

Infection and Drug Resistance 2019, 12:815-824

Published Date: **10 April 2019**

ORIGINAL RESEARCH

In vitro antibacterial effect of deconex and sodium hypochlorite against bacterial taxa isolated from dental units

Amin M, Ardaneh M, Hashemzadeh M, Asarehzadegan Dezfuli A, JafarZadeh E

Infection and Drug Resistance 2019, 12:805-814

Published Date: **11 April 2019**

ORIGINAL RESEARCH

First investigation of the presence of SPATE genes in Shigella species isolated from children with diarrhea infection in Ahvaz, southwest Iran

Moosavian M, Ghaderiyan GH, Shahin M, Navidifar T

Infection and Drug Resistance 2019, 12:795-804

Published Date: **10 April 2019**

ORIGINAL RESEARCH

Differential recognition of Candida tropicalis, Candida guilliermondii, Candida krusei, and Candida auris by human innate immune cells

Navarro-Arias MJ, Hernández-Chávez MJ, Garcia-Carnero LC, Amezcua-Hernández DG, Lozoya-Pérez NE, Estrada-Mata E, Martínez-Duncker I, Franco B, Mora-Montes HM

Infection and Drug Resistance 2019, 12:783-794

Published Date: **8 April 2019**

ORIGINAL RESEARCH

Mechanisms of azole resistance in clinical isolates of Candida glabrata from two hospitals in China

Yao D, Chen J, Chen W, Li Z, Hu X

Infection and Drug Resistance 2019, 12:771-781

Published Date: **5 April 2019**

ORIGINAL RESEARCH

Efficacy and safety of cycloserine-containing regimens in the treatment of multidrug-resistant tuberculosis: a nationwide retrospective cohort study in China

Wang J, Pang Y, Jing W, Chen W, Guo R, Han X, Wu L, Yang G, Yang K, Chen C, Jiang L, Cai C, Dou Z, Diao L, Pan H, Wang J, Du F, Xu T, Wang L, Li R, Chu N

Infection and Drug Resistance 2019, 12:763-770

Published Date: **3 April 2019**

ORIGINAL RESEARCH

Reactivation of herpesvirus in patients with hepatitis C treated with direct-acting antiviral agents

Ghweil AA, Helal MM

Infection and Drug Resistance 2019, 12:759-762

Published Date: **2 April 2019**

ORIGINAL RESEARCH

Entecavir monotherapy versus de novo combination of lamivudine and adefovir for compensated hepatitis B virus-related cirrhosis: a real-world prospective multicenter cohort study

Wu X, Zhou J, Xie W, Ding H, Ou X, Chen G, Ma A, Xu X, Ma H, Xu Y, Liu X, Meng T, Wang L, Sun Y, Wang B, Kong Y, Ma H, You H, Jia J

Infection and Drug Resistance 2019, 12:745-757

Published Date: **1 April 2019**

CASE REPORT

Diffuse multibacillary leprosy patient with Lucio's phenomenon and positive anticardiolipin antibody misdiagnosed as lupus erythematosus panniculitis in the People's Republic of China

Gao W, Chen Z, Jiang H, Shi Y, Zhang W, Wang H

Infection and Drug Resistance 2019, 12:741-744

Published Date: **2 April 2019**

SHORT REPORT

Characterization of a carbapenem- and colistin-resistant Enterobacter cloacae carrying Tn6901 in blaNDM-1 genomic context

Le-Ha TD, Le L, Le-Vo HN, Anda M, Motooka D, Nakamura S, Tran LK, Tran Phuong Thi-Bich, Iida T, Cao V

Infection and Drug Resistance 2019, 12:733-739

Published Date: **3 April 2019**

ORIGINAL RESEARCH

Cycloserine for treatment of multidrug-resistant tuberculosis: a retrospective cohort study in China

Li Y, Wang F, Wu L, Zhu M, He G, Chen X, Sun F, Liu Q, Wang X, Zhang W

Infection and Drug Resistance 2019, 12:721-731

Published Date: **29 March 2019**

ORIGINAL RESEARCH

Eugenol, a potential schistosomicidal agent with anti-inflammatory and antifibrotic effects against Schistosoma mansoni, induced liver pathology

El-kady AM, Ahmad AA, Hassan TM, El-Deek HEM, Fouad SS, Althagfan SS

Infection and Drug Resistance 2019, 12:709-719

Published Date: **28 March 2019**

LETTER

Letter to the editor regarding "Rotavirus infection beyond the gut"

Orrico-Sánchez A, López-Lacort M, Muñoz-Quiles C, Martinez-Beneito MA, Díez-Domingo J

Infection and Drug Resistance 2019, 12:707-708

Published Date: **28 March 2019**

ORIGINAL RESEARCH

Serological evidence of Coxiella burnetii infection in cattle and farm workers: is Q fever an underreported zoonotic disease in Ecuador?

Echeverría G, Reyna-Bello A, Minda-Aluisa E, Celi-Erazo M, Olmedo L, García HA, Garcia-Bereguiain MA, de Waard JH

Infection and Drug Resistance 2019, 12:701-706

Published Date: **9 April 2019**

ORIGINAL RESEARCH

What drives inappropriate use of antibiotics? A mixed methods study from Bahawalpur, Pakistan

Atif M, Asghar S, Mushtaq I, Malik I, Amin A, Babar ZUD, Scahill S

Infection and Drug Resistance 2019, 12:687-699

Published Date: **26 March 2019**

ORIGINAL RESEARCH

Genotypic characterization of Pseudomonas aeruginosa isolates from Turkish children with cystic fibrosis

Sener Okur D, Yuruyen C, Gungor O, Aktas Z, Erturan Z, Akcakaya N, Camcioglu Y, Cokugras H, Koksalan K

Infection and Drug Resistance 2019, 12:675-685

Published Date: **27 March 2019**

ORIGINAL RESEARCH

Risk factors with the development of infection with tigecycline- and carbapenem-resistant Enterobacter cloacae

Jiang Y, Jia X, Xia Y

Infection and Drug Resistance 2019, 12:667-674

Published Date: **20 March 2019**

ORIGINAL RESEARCH

Characterization and analysis of a novel diguanylate cyclase PA0847 from Pseudomonas aeruginosa PAO1

Zhang Y, Guo J, Zhang N, Yuan W, Lin Z, Huang W

Infection and Drug Resistance 2019, 12:655-665

Published Date: **21 March 2019**

ORIGINAL RESEARCH

High prevalence of KPC-2-producing hypervirulent Klebsiella pneumoniae causing meningitis in Eastern China

Xu M, Fu Y, Fang Y, Xu H, Kong H, Liu Y, Chen Y, Li L

Infection and Drug Resistance 2019, 12:641-653

Published Date: **18 March 2019**

CLINICAL TRIAL REPORT

Susceptibility rates of clinically important bacteria collected from intensive care units against colistin, carbapenems, and other comparative agents: results from the Surveillance of Multicenter Antimicrobial Resistance in Taiwan (SMART)

Lai CC, Chen YS, Lee NY, Tang HJ, Lee SSJ, Lin CF, Lu PL, Wu JJ, Ko WC, Lee WS, Hsueh PR

Infection and Drug Resistance 2019, 12:627-640

Published Date: **14 March 2019**

ORIGINAL RESEARCH

System dynamics modeling of public health services provided by China CDC to control infectious and endemic diseases in China

Li M, Yu W, Tian W, Ge Y, Liu Y, Ding T, Zhang L

Infection and Drug Resistance 2019, 12:613-625

Published Date: **13 March 2019**

ORIGINAL RESEARCH

Molecular characterization, serotypes and phenotypic and genotypic evaluation of antibiotic resistance of the Klebsiella pneumoniae strains isolated from different types of hospital-acquired infections

Ranjbar R, Kelishadrokhi AF, Chehelgerdi M

Infection and Drug Resistance 2019, 12:603-611

Published Date: **20 March 2019**

ORIGINAL RESEARCH

Increase in antibiotic resistant Helicobacter pylori in a University Hospital in Japan

Kageyama C, Sato M, Sakae H, Obayashi Y, Kawahara Y, Mima T, Matsushita O, Yokota K, Mizuno M, Okada H

Infection and Drug Resistance 2019, 12:597-602

Published Date: **12 March 2019**

REVIEW

In vitro activity and pharmacodynamic/pharmacokinetic parameters of clarithromycin and azithromycin: why they matter in the treatment of respiratory tract infections

Davidson RJ

Infection and Drug Resistance 2019, 12:585-596

Published Date: **8 March 2019**

ORIGINAL RESEARCH

Characterization of the most common embCAB gene mutations associated with ethambutol resistance in Mycobacterium tuberculosis isolates from Iran

Khosravi AD, Sirous M, Abdi M, Ahmadkhosravi N

Infection and Drug Resistance 2019, 12:579-584

Published Date: **6 March 2019**

ORIGINAL RESEARCH

High rates of CTX-M group-1 extended-spectrum β-lactamases producing Escherichia coli from pets and their owners in Faisalabad, Pakistan

Abbas G, Khan I, Mohsin M, Sajjad-ur-Rahman, Younas T, Ali S

Infection and Drug Resistance 2019, 12:571-578

Published Date: **6 March 2019**

REVIEW

Clinical utility of tafenoquine in the prevention of relapse of Plasmodium vivax malaria: a review on the mode of action and emerging trial data

Hounkpatin AB, Kreidenweiss A, Held J

Infection and Drug Resistance 2019, 12:553-570

Published Date: **6 March 2019**

ORIGINAL RESEARCH

Antimicrobial activities of ceftazidime–avibactam, ceftolozane–tazobactam, and other agents against Escherichia coli, Klebsiella pneumoniae, and Pseudomonas aeruginosa isolated from intensive care units in Taiwan: results from the Surveillance of Multicenter Antimicrobial Resistance in Taiwan in 2016

Liao CH, Lee NY, Tang HJ, Lee SSJ, Lin CF, Lu PL, Wu JJ, Ko WC, Lee WS, Hsueh PR

Infection and Drug Resistance 2019, 12:545-552

Published Date: **4 March 2019**

ORIGINAL RESEARCH

Genetic basis for metronidazole and clarithromycin resistance in Helicobacter pylori strains isolated from patients with gastroduodenal disorders

Hashemi SJ, Sheikh AF, Goodarzi H, Yadyad MJ, Seyedian SS, Aslani S, Assarehzadegan MA

Infection and Drug Resistance 2019, 12:535-543

Published Date: **4 March 2019**

ORIGINAL RESEARCH

Loop-mediated isothermal amplification for detection of Legionella pneumophila in respiratory specimens of hospitalized patients in Ahvaz, southwest Iran

Moosavian M, Seyed-Mohammadi S, Saki M, Shahi F, Khoshkholgh Sima M, Afshar D, Barati S

Infection and Drug Resistance 2019, 12:529-534

Published Date: **1 March 2019**

ORIGINAL RESEARCH

Profiles of hematological parameters in Plasmodium falciparum and Plasmodium vivax malaria patients attending Tercha General Hospital, Dawuro Zone, South Ethiopia

Awoke N, Arota A

Infection and Drug Resistance 2019, 12:521-527

Published Date: **5 March 2019**

ORIGINAL RESEARCH

Characterization of a novel blaNDM-5-harboring IncFII plasmid and an mcr-1-bearing IncI2 plasmid in a single Escherichia coli ST167 clinical isolate

Xu L, Wang P, Cheng J, Qin S, Xie W

Infection and Drug Resistance 2019, 12:511-519

Published Date: **1 March 2019**

ORIGINAL RESEARCH

Impact of a probiotic-based hospital sanitation on antimicrobial resistance and HAI-associated antimicrobial consumption and costs: a multicenter study

Caselli E, Arnoldo L, Rognoni C, D'Accolti M, Soffritti I, Lanzoni L, Bisi M, Volta A, Tarricone R, Brusaferro S, Mazzacane S

Infection and Drug Resistance 2019, 12:501-510

Published Date: **27 February 2019**

ORIGINAL RESEARCH

Rational use of antibiotics in an intensive care unit: a retrospective study of the impact on clinical outcomes and mortality rate

Ali M, Naureen H, Tariq MH, Farrukh MJ, Usman A, Khattak S, Ahsan H

Infection and Drug Resistance 2019, 12:493-499

Published Date: **26 February 2019**

ORIGINAL RESEARCH

Extensively drug-resistant Gram-negative bacterial bloodstream infection in hematological disease

Zhou L, Feng S, Sun G, Tang B, Zhu X, Song K, Zhang X, Lu H, Liu H, Sun Z, Zheng C

Infection and Drug Resistance 2019, 12:481-491

Published Date: **26 February 2019**

ORIGINAL RESEARCH

Treatment of late bacterial infections resulting from soft-tissue filler injections

Marusza W, Olszanski R, Sierdzinski J, Ostrowski T, Szyller K, Mlynarczyk G, Netsvyetayeva I

Infection and Drug Resistance 2019, 12:469-480

Published Date: **20 February 2019**

ORIGINAL RESEARCH

Epidemiology of carbapenem-resistant Enterobacteriaceae: a 5-year experience at a tertiary care hospital

Chotiprasitsakul D, Srichatrapimuk S, Kirdlarp S, Pyden AD, Santanirand P

Infection and Drug Resistance 2019, 12:461-468

Published Date: **20 February 2019**

ORIGINAL RESEARCH

Antimicrobial resistance, virulence genes profiling and molecular relatedness of methicillin-resistant Staphylococcus aureus strains isolated from hospitalized patients in Guangdong Province, China

Liang Y, Tu C, Tan C, El-Sayed Ahmed MAEG, Dai M, Xia Y, Liu Y, Zhong LL, Shen C, Chen G, Tian GB, Liu J, Zheng X

Infection and Drug Resistance 2019, 12:447-459

Published Date: **25 February 2019**

CASE SERIES

Detection of four patients who were infected by Schistosoma haematobium in Vietnam

De NV, La T, Minh PN, Dao PTB, Duyet LV

Infection and Drug Resistance 2019, 12:439-445

Published Date: **18 February 2019**

ORIGINAL RESEARCH

The efficacy and safety of nemonoxacin compared with levofloxacin in the treatment of community-acquired pneumonia: a systemic review and meta-analysis of randomized controlled trials

Chang SP, Lee HZ, Lai CC, Tang HJ

Infection and Drug Resistance 2019, 12:433-438

Published Date: **14 February 2019**

CORRIGENDUM

Retrospective analysis of relationships among the dose regimen, trough concentration, efficacy, and safety of teicoplanin in Chinese patients with moderate–severe Gram-positive infections [Corrigendum]

Zhou L, Gao Y, Cao W, Liu J, Guan H, Zhang H, Shi Y, Lv W, Cheng L

Infection and Drug Resistance 2019, 12:431-432

Published Date: **14 February 2019**

ORIGINAL RESEARCH

Metabolic mechanism of ceftazidime resistance in Vibrio alginolyticus

Liu SR, Peng XX, Li H

Infection and Drug Resistance 2019, 12:417-429

Published Date: **13 February 2019**

ORIGINAL RESEARCH

Biochemical but not compositional recovery of skin mucosal microbiome communities after disruption

Brumlow CE, Luna RA, Hollister EB, Gomez JA, Burcham LA, Cowdrey MB, Primm TP

Infection and Drug Resistance 2019, 12:399-416

Published Date: **13 February 2019**

ORIGINAL RESEARCH

Epidemiologic analysis and control strategy of Klebsiella pneumoniae infection in intensive care units in a teaching hospital of People's Republic of China

Wang CR, Yuan Z, Huang WX, Yan L, Tang J, Liu CW

Infection and Drug Resistance 2019, 12:391-398

Published Date: **12 February 2019**

ORIGINAL RESEARCH

Plasmid-mediated colistin resistance gene mcr-1 in Escherichia coli and Klebsiella pneumoniae isolated from market retail fruits in Guangzhou, China

Yang F, Shen C, Zheng X, Liu Y, El-Sayed Ahmed MAE, Zhao Z, Liao K, Shi Y, Guo X, Zhong R, Xu Z, Tian GB

Infection and Drug Resistance 2019, 12:385-389

Published Date: **11 February 2019**

ORIGINAL RESEARCH

New Delhi metallo-β-lactamase-producing Acinetobacter isolates among late-onset VAP patients: multidrug-resistant pathogen and poor outcome

Elbrolosy AM, Labeeb AZ, Hassan DM

Infection and Drug Resistance 2019, 12:373-384

Published Date: **11 February 2019**

ORIGINAL RESEARCH

Clinical outcome of Escherichia coli bloodstream infection in cancer patients with/without biofilm formation: a single-center retrospective study

Zhang Q, Gao HY, Li D, Li Z, Qi SS, Zheng S, Bai CS, Zhang SH

Infection and Drug Resistance 2019, 12:359-371

Published Date: **11 February 2019**

ORIGINAL RESEARCH

Alternative eradication regimens for Helicobacter pylori infection in Indonesian regions with high metronidazole and levofloxacin resistance

Miftahussurur M, Waskito LA, Syam AF, Nusi IA, Siregar G, Richardo M, Bakry AF, Rezkitha YAA, Wibawa IDN, Yamaoka Y

Infection and Drug Resistance 2019, 12:345-358

Published Date: **31 January 2019**

ORIGINAL RESEARCH

The impact of initial antibiotic treatment failure: real-world insights in patients with complicated, health care-associated intra-abdominal infection

Peeters P, Ryan K, Karve S, Potter D, Baelen E, Rojas-Farreras S, Rodríguez-Baño J

Infection and Drug Resistance 2019, 12:329-343

Published Date: **31 January 2019**

ORIGINAL RESEARCH

The blood transcriptional signature for active and latent tuberculosis

Deng M, Lv XD, Fang ZX, Xie XS, Chen WY

Infection and Drug Resistance 2019, 12:321-328

Published Date: **30 January 2019**

ORIGINAL RESEARCH

Utility of presepsin, soluble triggering receptor expressed on myeloid cells-1, and neutrophil CD64 for early detection of neonatal sepsis

El-Madbouly AA, El Sehemawy AA, Eldesoky NA, Abd Elgalil HM, Ahmed AM

Infection and Drug Resistance 2019, 12:311-319

Published Date: **29 January 2019**

ORIGINAL RESEARCH

Platelet-rich plasma plays an antibacterial, anti-inflammatory and cell proliferation-promoting role in an in vitro model for diabetic infected wounds

Li T, Ma Y, Wang M, Wang T, Wei J, Ren R, He M, Wang G, Boey J, Armstrong DG, Deng W, Chen B

Infection and Drug Resistance 2019, 12:297-309

Published Date: **29 January 2019**

ORIGINAL RESEARCH

Comparative analysis of KPC-2-encoding chimera plasmids with multi-replicon IncR:IncpA1763-KPC:IncN1 or IncFIIpHN7A8:IncpA1763-KPC: IncN1

Qu D, Shen Y, Hu L, Jiang X, Yin Z, Gao B, Zhao Y, Yang W, Yang H, Han J, Zhou D

Infection and Drug Resistance 2019, 12:285-296

Published Date: **24 January 2019**

LETTER

Selection between aztreonam and cephalosporins for treatment of infections with pseudomonads needs more caution

Singh BR

Infection and Drug Resistance 2019, 12:281-284

Published Date: **24 January 2019**

ORIGINAL RESEARCH

Prevalence and predictors of occult hepatitis C virus infection among Egyptian patients who achieved sustained virologic response to sofosbuvir/daclatasvir therapy: a multi-center study

Mekky MA, Sayed HI, Abdelmalek MO, Saleh MA, Osman OA, Osman HA, Morsy KH, Hetta HF

Infection and Drug Resistance 2019, 12:273-279

Published Date: **22 January 2019**

ORIGINAL RESEARCH

Mutations in gyrB play an important role in ciprofloxacin-resistant Pseudomonas aeruginosa

Feng X, Zhang Z, Li X, Song Y, Kang J, Yin D, Gao Y, Shi N, Duan J

Infection and Drug Resistance 2019, 12:261-272

Published Date: **8 February 2019**

CASE REPORT

Central nervous system Listeria monocytogenes infection mimicking central nervous system idiopathic inflammatory demyelinating disease

Xu R, Bai Y, Duan C, Zhao S, Chen X, Yang Q

Infection and Drug Resistance 2019, 12:255-259

Published Date: **22 January 2019**

ORIGINAL RESEARCH

Prevalence and antimicrobial resistance of Shigella species isolated from diarrheal patients in Ahvaz, southwest Iran

Sheikh AF, Moosavian M, Abdi M, Heidary M, Shahi F, Jomezadeh N, Seyed-Mohammadi S, Saki M, Khoshnood S

Infection and Drug Resistance 2019, 12:249-253

Published Date: **22 January 2019**

ORIGINAL RESEARCH

Treatment of severe ventriculitis caused by extensively drug-resistant Acinetobacter baumannii by intraventricular lavage and administration of colistin

Chen F, Deng X, Wang Z, Wang L, Wang K, Gao L

Infection and Drug Resistance 2019, 12:241-247

Published Date: **21 January 2019**

ORIGINAL RESEARCH

Resistance rates of non-albicans Candida infections in Taiwan after the revision of 2012 Clinical and Laboratory Standards Institute breakpoints

Hii IM, Liu CE, Lee YL, Liu WL, Wu PF, Hsieh MH, Ho MW, Chen YH, Wang FD

Infection and Drug Resistance 2019, 12:235-240

Published Date: **15 January 2019**

PERSPECTIVES

Gene drives as a response to infection and resistance

Hayirli TC, Martelli PF

Infection and Drug Resistance 2019, 12:229-234

Published Date: **14 January 2019**

ORIGINAL RESEARCH

Molecular characterization of the pilS2 gene and its association with the frequency of Pseudomonas aeruginosa plasmid pKLC102 and PAPI-1 pathogenicity island

Bahramian A, Khoshnood S, Shariati A, Doustdar F, Salimi Chirani A, Heidary M

Infection and Drug Resistance 2019, 12:221-227

Published Date: **11 January 2019**

ORIGINAL RESEARCH

Drug resistance profiles and trends in drug-resistant tuberculosis at a major hospital in Guizhou Province of China

Lan YB, Li YQ, Chen L, Zhang JY, Zhang H

Infection and Drug Resistance 2019, 12:211-219

Published Date: **10 January 2019**

ORIGINAL RESEARCH

Association of MBL2 gene polymorphisms with pulmonary tuberculosis susceptibility: trial sequence meta-analysis as evidence

Mandal RK, Khan MA, Hussain A, Dar SA, Alouffi S, Jawed A, Wahid M, Panda AK, Lohani M, Akhter N, Khan S, Mishra BN, Haque S

Infection and Drug Resistance 2019, 12:185-210

Published Date: **11 January 2019**

CORRIGENDUM

Detection and characterization of a clinical Escherichia coli ST3204 strain coproducing NDM-16 and MCR-1 [Corrigendum]

Li X, Mu X, Zhang P, Zhao D, Ji J, Quan J, Zhu Y, Yu Y

Infection and Drug Resistance 2019, 12:183-184

Published Date: **8 January 2019**

ORIGINAL RESEARCH

Oral sitafloxacin vs intravenous ceftriaxone followed by oral cefdinir for acute pyelonephritis and complicated urinary tract infection: a randomized controlled trial

Lojanapiwat B, Nimitvilai S, Bamroongya M, Jirajariyavej S, Tiradechavat C, Malithong A, Predanon C, Tanphaichitra D, Lertsupphakul B

Infection and Drug Resistance 2019, 12:173-181

Published Date: **8 January 2019**

ORIGINAL RESEARCH

Molecular epidemiology and clinical significance of Corynebacterium striatum isolated from clinical specimens

Suh JW, Ju Y, Lee CK, Sohn JW, Kim MJ, Yoon YK

Infection and Drug Resistance 2019, 12:161-171

Published Date: **4 January 2019**

ORIGINAL RESEARCH

Virulence and genomic features of a blaCTX-M-3 and blaCTX-M-14 coharboring hypermucoviscous Klebsiella pneumoniae of serotype K2 and ST65

Fu Y, Xu M, Liu Y, Li A, Zhou J

Infection and Drug Resistance 2019, 12:145-159

Published Date: **3 January 2019**

ORIGINAL RESEARCH

Phenotypic and genotypic determinants of mupirocin resistance among Staphylococcus aureus isolates recovered from clinical samples of children: an Iranian hospital-based study

Mahmoudi S, Mamishi S, Mohammadi M, Banar M, Haghi Ashtiani MT, Mahzari M, Bahador A, Pourakbari B

Infection and Drug Resistance 2019, 12:137-143

Published Date: **3 January 2019**

ORIGINAL RESEARCH

In vitro activity of colistin in combination with various antimicrobials against Acinetobacter baumannii species, a report from South Iran

Kheshti R, Pourabbas B, Mosayebi M, Vazin A

Infection and Drug Resistance 2019, 12:129-135

Published Date: **31 December 2018**

ORIGINAL RESEARCH

Molecular epidemiology of ESBL-producing E. coli and K. pneumoniae: establishing virulence clusters

Surgers L, Boersma P, Girard PM, Homor A, Geneste D, Arlet G, Decré D, Boyd A

Infection and Drug Resistance 2019, 12:119-127

Published Date: **31 December 2018**

CASE SERIES

Outpatient ertapenem therapy in an ESBL-high-prevalence area: an efficacy, safety, and cost study

Ortiz-Álvarez A, Delgado-Ramírez MA, Cuevas-Zuñiga M, Hernández-Carrera T, Moncada Barrón D, Aguilar-Zapata D, Valdez Vázquez RR, Ramírez-Hinojosa JP, Rodríguez-Zulueta AP

Infection and Drug Resistance 2019, 12:111-117

Published Date: **28 December 2018**

ORIGINAL RESEARCH

Prevalence and molecular characteristics of mcr-1 gene in Salmonella typhimurium in a tertiary hospital of Zhejiang Province

Lu J, Quan J, Zhao D, Wang Y, Yu Y, Zhu J

Infection and Drug Resistance 2019, 12:105-110

Published Date: **28 December 2018**

REVIEW

Evaluation of the accuracy of molecular assays targeting the mutation A2059G for detecting high-level azithromycin resistance in Neisseria gonorrhoeae: a systematic review and meta-analysis

Wang F, Liu JW, Liu HY, Huang J, Chen SC, Chen XS, Yin YP

Infection and Drug Resistance 2019, 12:95-104

Published Date: **28 December 2018**

ORIGINAL RESEARCH

Additional benefits of GeneXpert MTB/RIF assay for the detection of pulmonary tuberculosis patients with prior exposure to fluoroquinolones

Tang P, Xu P, Shu W, Wang X, Guo J, Song H, Li S, Pang Y, Wu M

Infection and Drug Resistance 2019, 12:87-93

Published Date: **27 December 2018**

ORIGINAL RESEARCH

Silencing of OCH1 unveils the role of Sporothrix schenckii N-linked glycans during the host–fungus interaction

Lozoya-Pérez NE, Casas-Flores S, de Almeida JR, Martínez-Álvarez JA, López-Ramírez LA, Jannuzzi GP, Trujillo-Esquivel E, Estrada-Mata E, Almeida SR, Franco B, Lopes-Bezerra LM, Mora-Montes HM

Infection and Drug Resistance 2019, 12:67-85

Published Date: **28 December 2018**

ERRATUM

Prevalence of resistance-associated substitutions to direct-acting antiviral agents in hemodialysis and renal transplant patients infected with hepatitis C virus [Erratum]

Tavares RCF, Feldner AC, Pinho JR, Malta FM, Carvalho-Filho RJ, Santana RA, Fusco Duarte de Castro V, Dastoli GT, Custódio Lima J, Ferraz ML

Infection and Drug Resistance 2019, 12:65-66

Published Date: **24 December 2018**

REVIEW

Rotavirus infection beyond the gut

Gómez-Rial J, Sánchez-Batán S, Rivero-Calle I, Pardo-Seco J, Martinón-Martínez JM, Salas A, Martinón-Torres F

Infection and Drug Resistance 2019, 12:55-64

Published Date: **24 December 2018**

ORIGINAL RESEARCH

Endemic dissemination of different sequence types of carbapenem-resistant Klebsiella pneumoniae strains harboring blaNDM and 16S rRNA methylase genes in Kerman hospitals, Iran, from 2015 to 2017

Kiaei S, Moradi M, Hosseini-Nave H, Ziasistani M, Kalantar-Neyestanaki D

Infection and Drug Resistance 2019, 12:45-54

Published Date: **21 December 2018**

ORIGINAL RESEARCH

Emergence and molecular characterization of multidrug-resistant Klebsiella pneumoniae isolates harboring blaCTX-M-15 extended-spectrum β-lactamases causing ventilator-associated pneumonia in China

Xu H, Huo C, Sun Y, Zhou Y, Xiong Y, Zhao Z, Zhou Q, Sha L, Zhang B, Chen Y

Infection and Drug Resistance 2019, 12:33-43

Published Date: **20 December 2018**

RETRACTION

Detection of Mycobacterium lepromatosis in patients with leprosy in India [Retraction]

Ahuja M, Lavania M, Singh I, Turankar RP, Chhabra S, Narang T, Dogra S, Sengupta U

Infection and Drug Resistance 2019, 12:31-32

Published Date: **21 December 2018**

ORIGINAL RESEARCH

In vitro activity of cefoperazone and cefoperazone-sulbactam against carbapenem-resistant Acinetobacter baumannii and Pseudomonas aeruginosa

Lai CC, Chen CC, Lu YC, Chuang YC, Tang HJ

Infection and Drug Resistance 2019, 12:25-29

Published Date: **20 December 2018**

ORIGINAL RESEARCH

Performance evaluation of the (1,3)-β-D-glucan detection assay in non-intensive care unit adult patients

Murri R, Camici M, Posteraro B, Giovannenze F, Taccari F, Ventura G, Scoppettuolo G, Sanguinetti M, Cauda R, Fantoni M

Infection and Drug Resistance 2019, 12:19-24

Published Date: **20 December 2018**

ORIGINAL RESEARCH

Prevalence and phenotypic characterization of carbapenem-resistant Klebsiella pneumoniae strains recovered from sputum and fecal samples of ICU patients in Zhejiang Province, China

Shu L, Lu Q, Sun R, Lin L, Sun Q, Hu J, Zhou HW, Chan EW, Chen S, Zhang R

Infection and Drug Resistance 2019, 12:11-18

Published Date: **18 December 2018**

REVIEW

Bezlotoxumab for the prevention of Clostridium difficile infection: a review of current evidence and safety profile

Alonso CD, Mahoney MV

Infection and Drug Resistance 2019, 12:1-9

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Infection and Drug Resistance

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ORIGINAL RESEARCH

Multidrug-Resistant Infections Among Hospitalized Adults With Community-Acquired Pneumonia In An Indonesian Tertiary Referral Hospital

This article was published in the following Dove Press journal:
Infection and Drug Resistance

Abdul KR Purba[1–5]
Purwantyastuti Ascobat[4]
Armen Muchtar[4]
Laksmi Wulandari[6]
Alfian Nur Rosyid[6]
Priyo Budi Purwono[7]
Tjip S van der Werf[8]
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Objectives: To evaluate the clinical and microbiological appearance among hospitalized pneumonia patients focusing on resistance and risk factors for mortality in a referral hospital.

Patients and methods: The study was an observational retrospective study on patients with CAP from 2014 to 2016 at Dr Soetomo referral hospital of Surabaya, Indonesia. All positive cultures with antimicrobial susceptibility results from blood and respiratory specimens were included. Patients infected with drug-susceptible pathogens and MDR organisms were also assessed in terms of clinical characteristics, day-3 clinical improvement, and 14-day mortality.

Results: Of 202 isolates, 181 possessed antimicrobial susceptibility data. *S. pneumoniae* was the most prevalent pathogen causing CAP (18.3%). Most patients were empirically treated with ceftriaxone (n=75; 41.4%). Among beta-lactam antibiotics, the susceptibility to the third-generation cephalosporins remained relatively high, between 67.4% and 82.3%, compared with the other beta-lactams such as amoxicillin/clavulanate and ampicillin/sulbactam (a sensitivity rate of 36.5% and 47.5, respectively). For carbapenem antibiotics, imipenem and meropenem susceptibility was 69.6% and 82.3% respectively. Approximately 22% of isolates were identified as MDR that showed significant differences in clinical outcomes of 14-day mortality rates ($p<0.001$). Notably, patients with day-3 improvement had a lower risk of mortality (OR= 0.06; 95% CI= 0.02–0.19).

Conclusion: One-fifth of causative agents among hospitalized CAP cases were identified as MDR organisms. The pathogens of MDR and non-MDR CAP remain susceptible to the third-generation cephalosporins. Together with additional consideration of culture findings and Pneumonia Severity Index (PSI) assessment, a 3-day clinical assessment is essential to predict the prognosis of 14-day mortality.

Keywords: gram-negative bacteria, pneumonia, microbial sensitivity tests, developing country, day-3 improvement

Introduction

Community-acquired pneumonia (CAP) is mostly due to bacterial infections which are specifically recognized as community-acquired bacterial pneumonia (CABP).[1] All guidelines agree that at least one empiric antibiotic is needed especially for hospitalized patients.[2–5] The international association, Community-Acquired Pneumonia Organization (CAPO) reported that between 2001 and 2011 mortality rates of the infection reached 7.3%, 9.1%, and 13.3%, in North America, Europe, and South America respectively.[6] In 2013, the

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incidence rates of CAP in low-middle-income countries (LMICs) such as Indonesia was 4.5% and remained high at 4% in 2018.[7,8] No available published data relates to the mortality of the disease in the country.

In order to achieve the appropriate therapeutics, updated epidemiology of antimicrobial resistance is required to support therapeutic guidelines. International associations such as the British and American Thoracic Societies (BTS and ATS) have indicated that gram-positive bacteria are the most widespread causes of CAP.[3,5] Nevertheless, the guidelines reflected studies published in 2003 from high-income countries where *Streptococcus pneumoniae* was identified as the dominant pathogen causing CAP,[9] and beta-lactam antibiotics were recommended as the preferred treatment.[2,3,5]

Studying CAP among LMICs, etiology of the disease was generally problematic. Less restriction of antibiotic use in the community and the differences in the healthcare systems in LMICs may impact on the existence of MDR pathogens.[10,11] Indiscriminate use of antimicrobials, not guided by microbiological guidance, generally results in the emergence of antimicrobial resistance, both for individual patients and at the community level. The World Health Organization (WHO) has labeled the use of anti-infectives with a high warning in the global report on surveillance of antimicrobial resistance.[12] Antibiotic resistance leads to long hospitalization periods, treatment failure, and a high economic burden.[13,14]

Local epidemiology may vary by country, and therefore local protocols and guidelines should be based on local prevalence and susceptibility data, which will guide appropriate use of antibiotics, thereby improving outcomes, reducing the duration of hospitalization and preventing the emergence of antimicrobial resistance with inherent increased costs. The local epidemiology of CAP etiology could support stakeholders to develop strategies on prescribing to control the resistance in the community and in hospitals. The major gap between the guidelines' review and the local patterns in terms of the pathogens causing CAP may drive several healthcare centers to implement the use of different antibiotics as alternative treatments to the resistance of community infections.[15] Notably, *Acinetobacter baumannii* infections associated with CAP contributed to multidrug resistance (MDR) and has led to high mortality in Asia Pacific countries.[16–18] In Indonesia, the data on recent CAP etiology and MDR is limited. This study aims to analyze on the etiology of CAP and MDR-CAP, with a focus on the rate of antibiotic resistance and the risk factors for CAP-related mortality in an Indonesian tertiary referral hospital.

Materials And Methods

Study Design And Ethical Approval

We performed a retrospective observational study involving adult patients newly admitted to hospital with CAP. We collected the data from Dr. Soetomo Hospital, a large tertiary referral and academic hospital with approximately 1,514 beds in East Java, Indonesia. The study proposal was submitted to the research and development center of Dr. Soetomo Hospital. The study was approved by the ethical committee of Dr. Soetomo Hospital, Surabaya, Indonesia, with letter no. 480/Panke.KKE/X/2014). The committee decided that the study did not need a review in terms of patient consent because of the retrospective observational design. The study complies with the agreement on Indonesia research conduct and the Declaration of Helsinki (Ethical Principles for Medical Research Involving Human Subjects version 2013).[19] The data was obtained from the medical record department with patient anonymity and confidentiality maintained.

Patients And Treatment

The data was gathered from the inpatient registry database with an International Classification of Diseases (ICD) code of 10 J.18.x from 2014 to 2016. The inclusion criteria of the study included all inpatients aged 20 years or above with CAP as a primary diagnosis. The respiratory tract sputum or blood samples were collected before the start of empirical antimicrobial treatment. We only included patients who met the diagnosis based on the national guidelines for CAP from the Indonesian Society of Respirology.[20] The diagnosis was based on new pulmonary infiltrates on the chest radiograph, progressive cough, purulent sputum, fever (>38°C), and at least two additional symptoms consisting of increased dyspnea, pleuritic pain, leukocytosis (>10,000/mm^3) or leukopenia (<4,500/mm^3), lung consolidation suggested by dullness to percussion of the chest, and abnormal chest auscultation findings including crepitations, crackles, or rhonchi. We excluded patients who had received parenteral antibiotics 48 hrs before hospitalization, those with negative cultures, and those hospitalized in other healthcare facilities more than 14 days within 30 days before the current hospital admission. Regarding CAP diagnosis, a pulmonologist made a visit at the first 24–48 hrs of admission to clarify the diagnosis. Therefore, we also excluded patients who died

within 24 hrs after admission. In the hospital, patients received empirical antibiotics according to a guideline of the Indonesian Society of Respirology for CAP within 24h of admission. To ensure adequate identification of etiology among CAP patients who had culture samples obtained after empirical antibiotic administrations, and also excluded any patients whose culture samples were obtained more than 48 hrs after admission. The description of the management of hospitalized CAP patients is presented in Table 1.

Microbiological Evaluation

Bacterial culture from patients' sputum and blood samples collected within the first 24h of admission was tested for microbiological evaluation. In terms of quality, the sputum was considered to be acceptable where it contained >25 granulocytes and <10 squamous epithelial cells per low-power field (x10).[21] The eligible sputum specimen was subsequently submitted to species identification and susceptibility testing. We assessed the susceptibility to the available antimicrobial agents in the hospital including amoxicillin-clavulanate (AMC), ampicillin-sulbactam (SAM), ticarcillin-clavulanate (TIC), piperacillin-tazobactam (PIP), cefazolin (CFZ), ceftazidime (CAZ), cefoperazone-sulbactam (CFP, trimethoprim-sulfamethoxazole (STX), ciprofloxacin (CIP), levofloxacin (LVX), moxifloxacin (MXF), imipenem (IPM), and meropenem (MEM). Testing of amikacin (AMK) and gentamicin (GEN) susceptibilities were conducted only for Gram-negative bacteria (GNB). In particular, vancomycin susceptibility was tested on Gram-positive bacteria (GPB) only. Pathogens were defined as multidrug-resistant (MDR) if the organisms were resistant to at least one single agent in three or more groups of antimicrobial agents.[22] The antimicrobial susceptibility pattern was reported as sensitive (S), intermediate-susceptible (I), or resistant (R) for each isolated species based on the microbiology department of the hospital using the Clinical and Laboratory Standards Institute (CLSI) criteria.[23]

Clinical Evaluation

To explore the impact of MDR infections compared to non-MDR infections, we compared baseline demographics, physical examination, laboratory and radiology findings, comorbidities, pneumonia severity index (PSI) scores, the need for intensive care, the empirical antimicrobial treatment given, length of stay (LoS), clinical improvement on day-3, and 14-day mortality. On day-3 of hospital admission, we assessed the following clinical symptoms comparing with baseline on admission: mental status; respiratory rate (n: 12–24/min); heart rate (n:≤100 beats/min); systolic blood pressure (cut-off ≥90 mmHg); arterial oxygen saturation (cut-off: ≥90%); oral intake ability; temperature (<38.5°C); and leucocyte count (3.5–10.5 x10^9/L).[3] PSI is a validated scoring system representing the baseline physiologic parameters and pre-existing comorbidities adding up a total score of 19 factors; the total score is categorized into five classes: class I (<51), class II (51–70), class III (71–90), class IV (91–130), and class V (>130).[24]

Statistical Analysis

The statistical analyses were performed using SPSS (SPSS 23, University of Groningen, Netherlands). For categorical data, chi-square (or Fisher exact test with more than 20% cells with

Table 1 Indonesian Guideline For CAP Patients

Patient Care	The Strategies:
Wards	One of the following options: 1. Beta-lactam iv + beta-lactamase inhibitor iv 2. The second and third generation of cephalosporins iv 3. Respiratory fluoroquinolone iv Macrolide (additional antibiotic when atypical infections identified)
Intensive care	No pseudomonal infection: 1. The third-generation of cephalosporin iv + macrolide When a pseudomonal infection presents, one of the following options: 1. Anti-pseudomonal cephalosporin iv 2. Carbapenem iv + anti-pseudomonal antibiotic iv 3. Aminoglycoside iv If there is an atypical infection, using the following three-drug combination: Anti-pseudomonal cephalosporin iv (or carbapenem iv) + macrolide (or respiratory fluoroquinolone iv) + aminoglycoside iv

Note: Adapted from Indonesian Society of Respirology. Guideline for diagnosis and management of community pneumonia in Indonesia[Perhimpunan Dokter Paru Indonesia. Pneumonia komuniti: pedoman diagnosis & penatalaksanaan di Indonesia]. 2003. Available: http://www.klikpdpi.com/konsensus/konsensus-pneumoniakom/pnkomuniti.pdf.[20]

expected values less than 5) were used. For continuous variables, the distribution of data was first tested. Data with normal distribution were provided as mean and standard deviation (SD). Otherwise, the data were expressed as median with 25th and 75th percentiles. The differences among the empirical antibiotics on all analyses were considered statistically significant at p-value <0.05. Multivariate analysis was used to determine whether there was an independent association of three risk factors of 14-day mortality. First, the host factors analyzed were gender, age (60 or above), cardiovascular disease, neoplasm, diabetes mellitus (DM), liver diseases, renal insufficiency, since those comorbidities were independent risk factors of mortality.[25,26] Also, PSI class 3 or above, and day-3 improvement were integrated assessments considered in the analyses. Second, the pathogen factor of drug-susceptible or MDR. Third, the treatment: combinations of empirical antimicrobials compared to a single antimicrobial agent. Each risk factor was presented as an odds ratio (OR) with a confidence interval (CI) of 95% where the value of 95% CI not including 1 indicated no statistical difference.

Results

Pathogen Characteristics And Antimicrobial Susceptibility

Two hundred and two bacterial isolates were collected from 181 patients. Each patient had one result of antimicrobial susceptibility testing. The identified causative agents are shown in Table 2. Most culture specimens were collected

Table 2 Etiology Characteristics (n=202 Isolates)

Bacterial Agents	N	Percentage	Blood Culture	Sputum Culture	MDR-CAP
Single-agent					
A. baumannii	27	13.4		27	13
Enterobacter spp	10	5.0		10	3
E. coli	10	5.0		10	1
K. pneumoniae	25	12.4		25	9
P. aeruginosa	18	8.9		18	8
S. aureus	9	4.5		9	2
S. non-haemolyticus	4	2.0		4	
S. pneumoniae	26	12.9		26	1
S. viridans	31	15.3		31	
Mixed-agents					
A. baumannii	1	0.5	1		
+ *M. tuberculosis*	1	0.5		1	
Enterobacter spp	1	0.5	1		1
+ *H. influenzae*	1	0.5		1	
K. pneumoniae	1	0.5	1		1
+ *M. tuberculosis*	1	0.5		1	
K. pneumoniae	1	0.5	1		1
+ *H. influenzae*	1	0.5		1	
P. aeruginosa	1	0.5		1	1
+ *Pantoe agglomerans*	1	0.5	1		
S. pneumoniae	1	0.5		1	
+ *Cronobacter sakazakii*	1	0.5		1	
S. pneumoniae	4	2.0		4	
+ *H. influenzae*	4	2.0		4	
S. pneumoniae	4	2.0		4	1
+ *M. tuberculosis*	4	2.0		4	
S. pneumoniae	2	1.0		2	
+ *Staphyloccus spp* (coagulase negative)	2	1.0		2	
S. viridans	2	1.0		2	1
+ *M. tuberculosis*	2	1.0		2	
S. viridans	3	1.5		3	1
+ *H. influenzae*	3	1.5		3	

from the respiratory tract (97.5%). The dominant pathogen was *S. pneumoniae* (18.3%) followed by *S. viridans* (17.8%), *A. baumannii* (13.9%), *K. pneumoniae* (13.4%), *P. aeruginosa* (9.4%), *Enterobacter spp*. (5.4%), *E. coli* (5%), *S. aureus* (4.5%). Isolates of *H. influenzae* (4.5%), *M. tuberculosis* (4%), *S. non-haemolyticus* (2%), and Coagulase-Negative Staphylococci (1%) were identified as mixed pathogens. Of all identified bacteria, 44 were MDR organisms (22%), of which *A. baumannii* demonstrated to be the most prevalent pathogen among MDR isolates (6.4%) (Table 2). Ciprofloxacin and amoxicillin/clavulanic had the lowest potential efficacy of antibiotics against MDR organisms (Figure 1). In general, with reference to all pathogens (n=181), the third-generation cephalosporins had fair sensitivity at 67.4%, 70.2%, 70.7%, and 82.3% for cefotaxime, ceftriaxone, ceftazidime, cefoperazone respectively. Vancomycin appeared susceptible to all GPB. Likewise, among GNB, susceptibility was 84.2% for amikacin and 78.9% for gentamicin (Table 3).

The Impact Of MDR Infections On Clinical Manifestation

A total of 181 patients satisfied the study criteria. Patients were predominantly male (64.6%) with a mean age of 56.5 years. Predominant complaints during hospital admission were dyspnea (98.3%) and fever (96.1%). Another common clinical presentation was cough and chest discomfort, documented at 73.5% and 21%, respectively. The most common comorbidity was diabetes mellitus (28.2%) followed by neoplasm (25.4%), cardiovascular disease (11.6%), renal insufficiency (17.1%) and hepatic disorder (7.2%) (Table 4).

Within non-MDR infections, most patients clinically manifested with PSI class III (49.6%). In contrast, patients with MDR infections were mostly in PSI class IV (43.2%). Of 44 patients with MDR, 22.7% needed intensive care, which was a significantly higher proportion than those with non-MDR (13.1%). Also, the most common antibiotics for empirical treatment either as single or combined use were ceftriaxone (49.2%), ceftazidime (39.8%), and levofloxacin (27.6%). The use of empirical antibiotic combination was higher in patients with MDR (34.1%) compared to non-MDR infections (10.9%).

Bivariate comparisons of patient characteristics and the clinical outcomes between non-MDR and MDR infections are presented in Table 4. The clinical characteristics and clinical outcomes were significantly different with respect to neoplasm (17.5% vs 50%), DM (24.1% vs 40.9%), PSI class I to V (p-value=0.003), day-3 improvement (55.5% vs 11.4%) and 14-day mortality (21.9% vs 26.8%). The median duration of hospitalization between the two groups was not significantly different (11.5 vs 12.6 d).

The Risk Factors Of Mortality

Multivariate analysis of variables considered relevant to the outcome of 14-day mortality is presented in Table 5. Among patient factors, patients with neoplasm (OR=2.76;

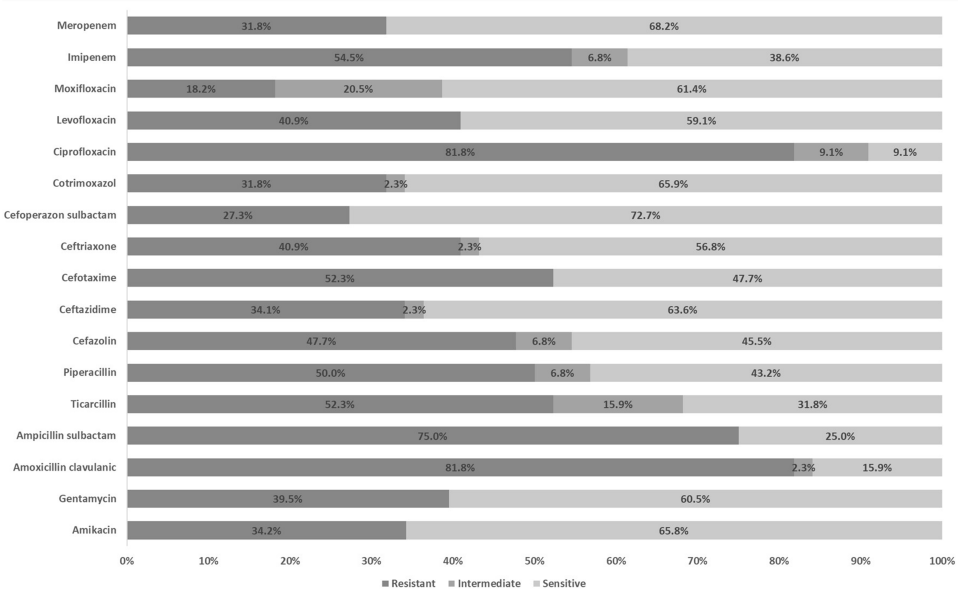

Figure 1 Resistance, intermediate, and sensitivity rates of multidrug-resistant agents causing hospitalized community-acquired pneumonia.

Table 3 Antibiotic Susceptibility Pattern Among CAP Associated Pathogens

Bacteria	AMK, n(%)	GEN, n(%)	AMC, n(%)	SAM, n(%)	TIC, n(%)	PIP, n(%)	CFZ, n(%)	CAZ, n(%)	CTX, n(%)	CRO, n(%)	CFP, n(%)	SXT, n(%)	CIP, n(%)	LVX, n(%)	MXF, n(%)	IPM, n(%)	MEM, n(%)	VAN, n(%)
A. baumannii (n=28)																		
S	23 (82.1)	22 (78.6)	3 (10.7)	15 (53.6)	5 (17.9)	12 (42.9)	8 (28.6)	15 (53.6)	13 (46.4)	15 (53.6)	26 (92.9)	20 (71.4)	6 (21.4)	17 (60.7)	13 (46.4)	14 (50.0)	21 (75.0)	NA
I	0	1 (3.6)	0	0	8 (28.6)	3 (10.7)	5 (17.9)	2 (7.1)	1 (3.6)	3 (10.7)	0	0	5 (17.9)	0	12 (42.9)	4 (14.3)	1 (3.6)	NA
R	5 (17.9)	5 (17.9)	25 (89.3)	13 (46.4)	15 (53.6)	13 (46.4)	15 (53.6)	11 (39.3)	14 (50.0)	10 (35.7)	2 (7.2)	8 (28.6)	17 (60.7)	11 (39.3)	3 (10.7)	10 (35.7)	6 (21.4)	NA
E. coli (n=10)																		
S	8 (80.0)	9 (90.0)	6 (60.0)	3 (30.0)	2 (20.0)	6 (60.0)	4 (40.0)	8 (80.0)	8 (80.0)	7 (70.0)	9 (90.0)	7 (70.0)	6 (60.0)	7 (70.0)	7 (70.0)	8 (80.0)	9 (90.0)	NA
I	0	0	0	2 (20.0)	2 (20.0)	0	2 (20.0)	0	1 (10.0)	0	0	1 (10.0)	1 (10.0)	1 (10.0)	2 (20.0)	2 (20.0)	0	NA
R	2 (20.0)	1 (10.0)	4 (40.0)	5 (50.0)	6 (60.0)	4 (40.0)	4 (40.0)	2 (20.0)	1 (10.0)	3 (30.0)	1 (10.0)	2 (20.0)	3 (30.0)	2 (20.0)	1 (10.0)	0	1 (10.0)	NA
Enterobacter. spp (n=11)																		
S	10 (90.9)	9 (81.8)	2 (18.2)	2 (18.2)	5 (45.5)	7 (63.6)	2 (18.2)	8 (72.7)	7 (63.6)	8 (72.7)	10 (90.9)	6 (54.5)	7 (63.6)	10 (90.9)	4 (36.4)	7 (63.6)	10 (90.9)	NA
I	0	0	0	0	3 (27.3)	1 (9.1)	0	2 (18.2)	0	0	0	1 (9.1)	1 (9.1)	0	5 (45.5)	2 (18.2)	0	NA
R	1 (9.1)	2 (18.2)	9 (81.8)	9 (81.8)	3 (27.3)	3 (27.3)	9 (81.8)	1 (9.1)	4 (36.4)	3 (27.3)	1 (9.1)	4 (36.4)	3 (27.3)	1 (9.1)	2 (18.2)	2 (18.2)	1 (9.1)	NA
K. pneumoniae (n=27)																		
S	25 (92.6)	22 (81.5)	7 (25.9)	7 (25.9)	6 (22.2)	16 (59.3)	11 (40.7)	17 (63.0)	18 (66.7)	18 (66.7)	22 (81.5)	21 (77.8)	8 (29.6)	21 (77.8)	17 (63.0)	19 (70.4)	22 (81.5)	NA
I	0	0	1 (3.7)	1 (3.7)	7 (25.9)	1 (3.7)	2 (7.4)	2 (7.4)	0	0	1 (3.7)	3 (11.1)	2 (7.4)	0	7 (25.9)	3 (11.1)	1 (3.7)	NA
R	2 (7.4)	5 (18.5)	19 (70.4)	19 (70.4)	14 (51.9)	10 (37.0)	14 (51.9)	8 (29.6)	9 (33.3)	9 (33.3)	4 (14.8)	3 (11.1)	17 (63.0)	6 (22.2)	3 (11.1)	5 (18.5)	4 (14.8)	NA
P. aeruginosa (n=19)																		
S	14 (73.7)	13 (68.4)	2 (10.5)	4 (21.1)	5 (26.3)	9 (47.4)	6 (31.6)	16 (84.2)	11 (57.9)	10 (52.6)	15 (78.9)	8 (42.1)	7 (36.8)	13 (68.4)	9 (47.4)	12 (63.2)	17 (89.5)	NA
I	0	0	0	0	5 (26.3)	2 (10.5)	3 (15.8)	1 (5.3)	0	1 (5.3)	0	1 (5.3)	3 (15.8)	0	7 (36.8)	3 (15.8)	0	NA
R	5 (26.3)	6 (31.6)	17 (89.5)	17 (89.5)	9 (47.4)	8 (42.1)	10 (52.6)	2 (10.5)	8 (42.1)	8 (42.1)	4 (21.1)	10 (52.6)	9 (47.4)	6 (31.6)	3 (15.8)	4 (21.1)	2 (10.5)	NA
S. aureus (n=9)																		
S	NA	NA	5 (55.6)	7 (77.8)	8 (88.9)	5 (55.6)	8 (88.9)	7 (77.8)	6 (66.7)	6 (66.7)	7 (77.8)	8 (88.9)	1 (11.1)	7 (77.8)	7 (77.8)	5 (55.6)	5 (55.6)	9 (100)
I	NA	NA	1 (11.1)	0	0	1 (11.1)	0	0	1 (11.1)	2 (22.2)	0	0	3 (33.3)	1 (11.1)	2 (22.2)	3 (33.3)	3 (33.3)	0
R	NA	NA	3 (33.3)	2 (22.2)	1 (11.1)	3 (33.3)	1 (11.1)	2 (22.2)	2 (22.2)	1 (11.1)	2 (22.2)	1 (11.1)	5 (55.6)	1 (11.1)	0	1 (11.1)	1 (11.1)	0
S. pneumoniae (n=37)																		
S	NA	NA	26 (70.3)	26 (70.3)	27 (73.0)	30 (81.1)	26 (70.3)	26 (70.3)	28 (75.7)	30 (81.1)	26 (70.3)	28 (75.7)	27 (73.0)	30 (81.1)	27 (73.0)	32 (86.5)	35 (94.6)	9 (100)
I	NA	NA	2 (5.3)	2 (5.3)	4 (10.8)	2 (5.4)	2 (5.3)	3 (8.1)	3 (8.1)	2 (5.4)	4 (10.8)	0	2 (5.4)	0	4 (10.8)	2 (5.3)	2 (5.3)	0
R	NA	NA	9 (24.3)	9 (24.3)	6 (16.2)	5 (13.3)	9 (24.3)	8 (21.6)	6 (16.2)	5 (13.5)	7 (18.9)	9 (24.3)	8 (21.6)	7 (18.9)	6 (16.2)	3 (8.1)	0	0

(*Continued*)

Table 3 (Continued).

Bacteria	AMK, n(%)	GEN, n(%)	AMC, n(%)	SAM, n(%)	TIC, n(%)	PIP, n(%)	CFZ, n(%)	CAZ, n(%)	CTX, n(%)	CRO, n(%)	CFP, n(%)	SXT, n(%)	CIP, n(%)	LVX, n(%)	MXF, n(%)	IPM, n(%)	MEM, n(%)	VAN, n(%)
S. viridans (n=36)																		
S	NA	NA	15 (41.7)	20 (55.6)	28 (77.8)	27 (75.0)	26 (72.2)	27 (75.0)	27 (75.0)	29 (80.6)	30 (83.3)	25 (69.4)	23 (63.9)	30 (83.3)	22 (61.1)	29 (80.6)	30 (83.3)	9 (100)
I	NA	NA	8 (22.2)	8 (22.2)	4 (11.1)	4 (11.1)	8 (22.2)	6 (16.7)	5 (13.9)	4 (11.1)	4 (11.1)	1 (2.8)	7 (19.4)	0	6 (16.7)	4 (11.1)	4 (11.1)	0
R	NA	NA	13 (36.1)	8 (22.2)	4 (11.1)	5 (13.9)	2 (5.6)	3 (8.3)	4 (11.1)	3 (8.3)	2 (5.6)	10 (27.8)	6 (16.7)	6 (16.7)	8 (22.2)	3 (8.3)	2 (5.6)	0
All organisms (n=181)																		
S	80 (84.2)[a]	75 (78.9)[a]	66 (36.5)	86 (47.5)	90 (49.7)	116 (64.1)	95 (52.5)	128 (70.7)	122 (67.4)	127 (70.2)	149 (82.3)	123 (68.0)	85 (47.0)	137 (75.7)	108 (59.7)	126 (69.6)	149 (82.3)	86 (100)[b]
I	0[a]	1 (1.1)[a]	16 (8.8)	15 (8.3)	33 (18.2)	14 (7.7)	22 (12.2)	16 (8.8)	12 (6.6)	11 (6.1)	9 (5.0)	8 (4.4)	28 (15.5)	2 (1.1)	47 (26.0)	27 (14.9)	15 (8.3)	0[b]
R	15 (15.8)[a]	19 (20.0)[a]	99 (54.7)	80 (44.2)	58 (32.0)	51 (28.2)	64 (35.4)	37 (20.4)	47 (26.0)	43 (23.8)	23 (12.7)	50 (27.6)	68 (37.6)	42 (23.2)	26 (14.4)	28 (15.5)	17 (9.4)	0[b]

Notes: [a]Among 95 Gram-negative isolates including *A. baumannii*, *E. coli*, *Enterobacter. spp*, *K. pneumoniae*, and *P. aeruginosa*. [b]Among 86 Gram-positive isolates including *S. aureus*, *S. pneumoniae*, *S. viridans*, and *Staphylococcus non-haemolyticus*.

Abbreviations: AMC, amoxicillin-clavulanate; AMK, amikacin; CAZ, ceftazidime; CFP, cefoperazone; CFZ, cefazolin; CIP, ciprofloxacin; CRO, ceftriaxone; CTX, cefotaxime; GEN, gentamycin; I, intermediate; IPM, imipenem; LVX, levofloxacin; MEM, meropenem; MXF, moxifloxacin; NA, not applicable; PEN, Penicillin; PIP, piperacillin-tazobactam; R, resistant; S, sensitive; SAM, ampicillin-sulbactam; SXT, trimethoprim-sulfamethoxazole; TIC, ticarcillin-clavulanate; VAN, vancomycin.

95% CI=1.03–7.36) and those with PSI class III or above (OR=9.19; 95% CI=1.51–55.89) had a significantly increased risk of mortality. Clinical improvement at day-3 appeared to provide protection, with decreased mortality; OR=0.06; 95% CI=0.02–0.19.

Discussion

Our study suggests that CAP in the study area is not only caused by GPB but also frequently by GNB. The pathogens generally remained sensitive to third-generation cephalosporins which are also recommended by the local guideline. Microbiological culturing of sputum and blood provided clinically relevant information concerning the identity of pathogens with their susceptibility to antimicrobials. Clearly amoxicillin and penicillin even if combined with a beta-lactamase inhibitor are no longer effective in our setting. Our results support a strategy to avoid these agents for patients admitted to hospital with CAP, particularly in LMICs. Empirical treatment for CAP should indeed be guided by culture data that are locally obtained and susceptibility testing.[27,28]

In our study, *S. pneumoniae* was the most common pathogen, with conserved penicillin susceptibility. A study on *S. pneumoniae* infections in 13 Asian countries reported that the incidence of the pathogen was high at 29.2% among CAP in Pan-Asia.[29] Mixed pathogens are an important consideration since they may lead to delayed response or even a lack of clinical improvement. Like the systematic review conducted on studies in Asia, our findings also revealed mixed infections with *S. pneumoniae* and *M. tuberculosis* or *H. influenzae*.[30,31] In contrast to community-acquired viridans streptococcal pneumonia, our study pointed out that the organism had low sensitivity to amoxicillin/clavulanate acid. The mechanism of resistance to penicillin among *S. viridans* isolates seems to be through alteration of the penicillin-binding proteins (PBPs), especially among patients with underlying diseases.[32] The change on the site of PBPs generates inadequate binding not only for penicillin but also for other β-lactams including cephalosporins.[33,34] *S. viridans* organisms in our study might also represent normal microbial flora as colonization in the upper-respiratory tract.[35,36] However, invading to lower-respiratory tract or bloodstream, *S. viridans* could lead to serious infections. In previous clinical reports, *S. viridans* could cause complications of parapneumonic effusion or empyema in patients with CAP.[37–39] One of the important organisms commonly encountered among those causing pneumonia is

Table 4 Comparisons Of Clinical Characteristics Between Non-MDR and MDR

Clinical Characteristics	All Patients (n=181)	Non-MDR (n=137)	MDR (n=44)	p-Value
Gender				
Male, n (%)	117(64.6)	84(61.3)	33(75.0)	0.099
Female, n (%)	64(35.4)	53(38.7)	11(25.0)	
Age (years), mean (SD)	56.5(12.8)	55.7(12.6)	59.0(13.5)	0.157
Chief complaints at hospital admission				
Fever, n (%)	174(96.1)	130(94.9)	44(100.0)	0.137
Cough, n (%)	133(73.5)	100(75.2)	33(24.8)	0.793
Dyspnea, n (%)	178(98.3)	134(97.8)	44(100.0)	0.431
Chest discomfort, n (%)	38(21.0)	26(19.0)	12(27.3)	0.240
RR (/min), median (P_{25}-P_{75})	26(22–28)	24(22–28)	26(22.5–28)	0.210
Body temperature (°C), median (P_{25}-P_{75})	37.0(36.7–37.8)	37.0(36.7–37.8)	37.0(36.7–37.7)	0.756
Blood leucocytes (per mm^3), median (P_{25}-P_{75})	14,865(11,450–18,650)	15,000(11,500–18,200)	14,075(11,155–19,700)	0.750
SBP (mmHg), median (P_{25}-P_{75})	120(110–130)	110(110–130)	120(110–140)	0.253
DBP (mmHg), median (P_{25}-P_{75})	70(70–80)	70(70–80)	75(70–80)	0.929
Arterial blood gas				
pH, median (P_{25}-P_{75})	7.44(7.40–7.49)	7.44(7.40–7.49)	7.43(7.39–7.50)	0.721
pCO_2 (mmHg), median (P_{25}-P_{75})	36.0(31.0–45.7)	37.0(31.0–47.0)	35.0(30.6–39.6)	0.149
pO_2 (mmHg), median (P_{25}-P_{75})	76.1(67.0–98.4)	78.0(68.0–101.5)	76.0(61.0–95.7)	0.152
Base excess, median (P_{25}-P_{75})	1.1(−2.0–5.8)	1.8(−1.8 to 6.0)	0.3(−3.3 to 4.5)	0.192
HCO_3, median (P_{25}-P_{75})	25.2(22.2–30.3)	25.7(22.4–30.5)	24.9(21.7–28.6)	0.292
SO_2, median (P_{25}-P_{75})	96.0(94.0–98.1)	96.0(94.0–98.1)	96.3(92.2–98.3)	0.509
Pleural effusion, n (%)	26(14.4)	19(13.9)	7(15.9)	0.737
Co-morbidities				
Cardiovascular diseases, n (%)	21(11.6)	15(10.9)	6(13.6)	0.628
Neoplasm, n (%)	46(25.4)	24(17.5)	22(50.0)	<0.001*
Diabetes mellitus, n (%)	51(28.2)	33(24.1)	18(40.9)	0.031*
Hepatic disorder, n (%)	13(7.2)	9(6.6)	4(9.1)	0.392
Renal insufficiency, n (%)	31(17.1)	22(16.1)	9(20.5)	0.501
PSI class				
Class I, n (%)	14(7.7)	13(9.5)	1(2.3)	0.003*
Class II, n (%)	22(12.2)	20(14.6)	2(4.5)	
Class III, n (%)	84(46.4)	68(49.6)	16(36.4)	
Class IV, n (%)	48(26.5)	29(21.2)	19(43.2)	
Class V, n (%)	13(7.2)	7(5.1)	6(13.6)	
Intensive care	28(15.5)	18(64.3)	10(22.7)	0.126
Empirical antibiotics				
Ceftazidime, n (%)	56(30.9)	44(32.1)	12(27.3)	0.506
Ceftriaxone, n (%)	75(41.4)	63(46.0)	12(27.3)	
Levofloxacin, n (%)	20(11.0)	15(10.9)	5(11.4)	
Ceftazidime + levofloxacin, n (%)	16(8.8)	9(6.6)	7(15.9)	
Ceftriaxone + levofloxacin, n (%)	14(7.7)	6(4.4)	8(18.2)	
Clinical follow-up				
Length of stay, median (P_{25}-P_{75})	12.0(8.0–16.0)	11.5(8.0–15.8)	12.6(9.0–16.4)	0.374
Day-3 improvement, n (%)	81(44.8)	76(55.5)	5(11.4)	<0.001*
14-day mortality rates, n (%)	55(30.4)	30(21.9)	25(56.8)	<0.001*

Note: *Statistically significant, p-value < 0.05.

Abbreviations: DBP, diastolic blood pressure; max, maximum; med, median; min, minimum; MDR, multidrug-resistant; PSI, pneumonia severity index; RR, respiratory rate; SBP, systolic blood pressure.

Table 5 Multivariate Analysis Of Risk Factors For Mortality Among CAP Patients

Variable	CAP Mortality		Univariate Analysis			Multivariate Analysis		
	No (n=126)	Yes (n=55)	OR	95% CI	p-value	aOR	95% CI	p-value
Host factors								
Male	82(65.1)	35(63.6)	0.939	0.485–1.817	0.852	0.483	0.190–1.229	0.127
Age>60	40(31.7)	26(47.3)	1.928	1.008–3.688	0.047	1.482	0.585–3.751	0.407
Cardiovascular disease	9(7.1)	12(21.8)	3.628	1.428–9.216	0.007	2.401	0.684–8.422	0.171
Neoplasm	21(16.7)	25(45.5)	4.167	2.053–8.458	<0.001	2.755*	1.031–7.361	0.043
Diabetes mellitus	24(19.0)	27(49.1)	4.098	2.054–8.177	<0.001	2.098	0.780–5.642	0.142
Liver disease	7(5.6)	6(10.9)	2.082	0.666–6.509	0.208	3.800	0.633–22.810	0.144
Renal insufficiency	18(14.3)	13(23.6)	1.857	0.837–4.123	0.128	1.917	0.592–6.201	0.277
PSI class ≥3	92(73.0)	53(96.4)	9.793	2.262–42.407	0.002	9.188*	1.510–55.891	0.016
Day-3 improvement	77(61.1)	4(7.3)	0.050	0.017–0.147	<0.001	0.055*	0.016–0.190	<0.001
Agent factor								
MDR-bacterial infections	19(15.1)	25(45.5)	4.693	2.282–9.651	<0.001	1.259	0.471–3.361	0.646
Treatment factor								
Antibiotic combination	14(11.1)	16(29.1)	3.282	1.468–7.338	0.004	2.424	0.717–8.196	0.154

Note: *Statistically significant in multivariate analysis, the aOR CI95% does not include a value of 1.
Abbreviations: CAP, community-acquired pneumonia; MDR, multidrug resistance; OR, odds ratio; aOR, adjusted odds ratio; PSI, pneumonia severity index.

Methicillin-resistant *Staphylococcus aureus* (MRSA).[40] Community-acquired MRSA (CA-MRSA) has emerged as an important pathogen for CAP. In several hospitals in Indonesia, an identification test of MRSA for pneumonia patients has not been routinely conducted considering the cost and the results of a previous study reporting the low prevalence of CA-MRSA among patients admitted to the hospital.[41]

We identified *A. baumannii* as a causative agent for CAP with high antimicrobial resistance. GNB has been determined as the dominant pathogen causing CAP in Indonesia and other countries of Asia.[30,31,42] Outbreaks of *A. baumannii* are currently responsible for community and nosocomial-infectious diseases such as in South Asia where the species has been observed as a cause of pneumonia since 1989.[43] *Acinetobacter* species are commonly encountered as colonizing organisms in the upper-respiratory and gastrointestinal tracts.[44] Therefore, MDR *Acinetobacter* is problematic, especially in immunocompromised hosts. Of 28 *Acinetobacter* infections in our study, around 60% were highly resistant to ciprofloxacin. Similarly, the results from a previous study investigated the resistance mechanism of 75 *Acinetobacter* species from Walter Reed Army Medical Center (WRAMC). Among the respiratory specimens, 80% of isolates were identified as being resistant to ciprofloxacin and cefepime.[45] In addition, we found that *E. coli* had poor sensitivity to penicillins. Most of the isolates were highly sensitive to third-generation cephalosporins, fluoroquinolones, and carbapenems. A previous study in Indonesia found that 8% of *E. coli* were resistant to ciprofloxacin commonly through independent selection among resistant mutants.[46] Notably, *K. pneumoniae* presented as the highest prevalent GNB in 7 Asian countries with a low resistance rate to cefuroxime and ceftriaxone.[47] *K. pneumoniae* in Indonesia should be considered as a threat for potential outbreaks as 15% of adults, and 7% of children tested carried this organism.[48] Previous evidence regarding CAP etiology in Semarang, the sixth biggest city in Indonesia, has reported results in line with this study. The study found that the prevalence of *K. pneumonia* was the most commonly identified among bacteria causing CAP. MDR *K. pneumoniae, E. coli*, and *Enterobacter spp*. expressed extended-spectrum b-lactamases (ESBLs). These enzymes inactivate penicillins and cephalosporins leading to limited treatment options with currently available antimicrobial agents.[24]

The clinical relevance of GNB findings from respiratory specimens among pneumonia patients is usually debated as it might reflect colonization rather than pulmonary infection. Low awareness of infection prevention and high transmission between patients and the community is challenging in LMICs. The prevalence of GNB is lower in some regions especially in Europe, the US, and Canada except in the context of hospital-acquired pneumonia;[49–51] notably different from reports from Asian countries, as reflected by recommendations made by the ATS and BTS in their respective guidelines.[3,5,47]

The crucial concern of CAP management in most guidelines is *P. aeruginosa* infection, which carries a poor prognosis and high mortality.[2,3,5,20] In our study, *P. aeruginosa* remained sensitive to anti-pseudomonal β-lactam antibiotics such as ceftazidime and cefoperazone. Comparing our results with other LMICs, our findings were similar to a Nigerian study on 232 pneumonia patients with 77% and 75.5% having isolates sensitive to ceftazidime and levofloxacin, respectively.[52] For Egypt, a study on CAP revealed that *P. aeruginosa* had the highest resistance to levofloxacin (56.5%) followed by ciprofloxacin and piperacillin/tazobactam which rated at 47.8%.[53]

Malignancy as an underlying disease was earlier reported to be associated with high mortality (27%) among CAP patients.[54] Neoplastic disease is scored +30 in the PSI scoring system.[24] A prediction value of PSI has been used widely to estimate mortality. PSI class III or above indicates that the risk of death is high, and the patients need hospitalization. We used PSI categorization since this system includes 19 comprehensive aspects. According to ATS/IDSA guidelines, patients started on empirical antimicrobial therapy who show clinical improvement within the first three days could safely be switched from intravenous to oral antibiotics.[3,55] In our study, we explored whether the day-3 evaluation would be a critical time point to evaluate the efficacy of empirical treatment and to estimate patients' risk of mortality. An assessment of clinical response at day 4 of patients with community-acquired bacterial pneumonia (CABP) was also suggested by the Food and Drug Administration (FDA) guidance.[56] In line, our findings recommend a combination assessment of clinical response in the first three days as an additional value to PSI scoring where both assessments were investigated as independent risk factors for mortality among patients with pneumonia. Moreover, the successful treatment response to empirical treatment could help to switch to oral antimicrobial treatment on day 3, with additional information that will then be available from culture and susceptibility data from the Microbiology Laboratory.

Despite the results obtained in the study, there were several limitations. First, only patients with a positive culture were included. Thus the results may not be representative for all patients especially those in whom culturing was either not tried, or failed to yield causative organisms. Second, we did not include antibiotics given after culture results became available especially in critically ill patients where the selection of antimicrobial drugs and the dosages may have impacted on the clinical outcomes, including mortality. Third, we conducted the study at a single center, albeit a large hospital in Indonesia; extrapolation of our results needs confirmation in other centers on Java or even Indonesia and beyond. Forth, our exclusion of patients who died within 24 hrs might have caused bias, with the most severely ill patients potentially having an early fatal outcome. Notwithstanding, in the absence of a specified and verified diagnosis, valid inclusion seemed impossible. A further limitation of our study concerns the fact that it is not impossible that some CAP diagnoses were misclassified hospital-/ventilator-acquired pneumonia. Given the involvement of the pulmonologist in specifying and verifying the diagnosis in an early stage, we do not expect many (or even any) misclassifications in this respect.

However, the study provides updated information about the local pattern of resistance to antimicrobials among MDR-CAP. The presence of MDR organisms in the community is an indicator of the complex hindrances faced in the implementation of the national health system. Besides high transmission of pathogens in the tropical environment, the free access to antibiotics in the community among LMICs could be the main cause of MDR.

The study supports the notion that the use of antibiotics in the community urgently needs to be restricted to control the emergence of further resistance. Private sectors and governments need to monitor the pattern of pathogens and the resistance to antibiotics regularly. Our report adds important information needed to select empirical antimicrobial treatment for CAP, including the coverage of GNB infections for LMICs like Indonesia.

Conclusion

S. pneumoniae was the predominant pathogen of hospitalized CAP. GNB were common as well, and these organisms should likewise be considered and covered in empirical treatment. *A. baumannii* and *K. pneumoniae* were common and carried a high risk for MDR-CAP. Concerning the implementation of the local guideline where β-lactam antibiotics are used for empirical treatments in CAP patients, the pathogens generally remain highly susceptible to the third-generation cephalosporins. Rapid and advanced microbiological diagnostics are required to monitor further drug resistance emergence and to ensure that empirical therapy remains effective for CAP. This data should be incorporated in the design for local guidelines for empirical treatment of CAP. Eventually, we recommend assessing clinical response to therapy within the first three

days follow up as this has an important prognostic value that adds to the PSI scoring system and microbiological evaluation.

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Author contributions

All authors contributed to data analysis, drafting and revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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Dr. SOETOMO

KOMITE ETIK PENELITIAN KESEHATAN
RSUD Dr. SOETOMO SURABAYA

KETERANGAN KELAIKAN ETIK
(" ETHICAL CLEARANCE ")

408 / Panke.KKE / X / 2014

KOMITE ETIK RSUD Dr. SOETOMO SURABAYA TELAH MEMPELAJARI SECARA SEKSAMA RANCANGAN PENELITIAN YANG DIUSULKAN, MAKA DENGAN INI MENYATAKAN BAHWA PENELITIAN DENGAN JUDUL :

"Analisis Farmakoekonomi Terapi Antibiotik Pada Pasien Pneumonia di RSUD Dr. Soetomo Surabaya"

PENELITI UTAMA: Abdul Khairul Rizki Purba, dr., M.Sc

PENELITI LAIN : Dr. Laksmi Wulandari, dr., Sp.P (K). FCCP

UNIT/LEMBAGA/TEMPAT PENELITIAN : RSUD Dr. Soetomo Surabaya

DINYATAKAN LAIK ETIK

SURABAYA, 16 OCT 2014

KETUA

Komite Etik Penelitian Kesehatan

(Prof. Hari Sukanto, dr., Sp.KK (K)
NIP. 19471115 1973 03 1 001

Source details

Infection and Drug Resistance

Open Access

Scopus coverage years: from 2009 to Present

Publisher: Dove Medical Press

ISSN: 1178-6973

Subject area: Medicine: Pharmacology (medical) | Medicine: Infectious Diseases | Pharmacology, Toxicology and Pharmaceutics: Pharmacology

Source type: Journal

CiteScore 2020
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SJR 2020
1.033

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1.364

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$$5.6 = \frac{8.956 \text{ Citations to date}}{1.610 \text{ Documents to date}}$$

Last updated on 06 March, 2022 • Updated monthly

CiteScore rank 2020

Category	Rank	Percentile
Medicine — Pharmacology (medical)	#98/246	60th
Medicine — Infectious Diseases	#118/288	59th
Pharmacology,		

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Infection and Drug Resistance

COUNTRY

New Zealand

Universities and research institutions in New Zealand

SUBJECT AREA AND CATEGORY

Medicine
Infectious Diseases
Pharmacology (medical)

Pharmacology, Toxicology and Pharmaceutics
Pharmacology

PUBLISHER

Dove Medical Press Ltd.

H-INDEX

39

PUBLICATION TYPE

Journals

ISSN

11786973

COVERAGE

2009-2020

INFORMATION

Homepage

How to publish in this journal

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SCOPE

About Journal Editors Peer Reviewers Articles Article Publishing Charges Aims and Scope Call For Papers ISSN: 1178-6973 Editor-in-Chief: Professor Suresh Antony An international, peer-reviewed, open access journal that focuses on the optimal treatment of infection (bacterial, fungal and viral) and the development and institution of preventative strategies to minimize the development and spread of resistance.

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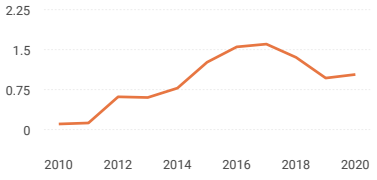
1	2	3	4	5
Chinese Journal of Infection and Chemotherapy	**Expert Review of Anti-Infective Therapy**	**Annals of Clinical Microbiology and**	**Clinical Microbiology Reviews**	**Journal of Chemotherapy**
CHN	GBR	GBR	USA	GBR
90% similarity	**88%** similarity	**88%** similarity	**86%** similarity	**83%** similarity

SJR



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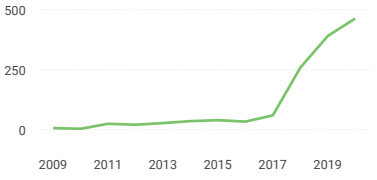

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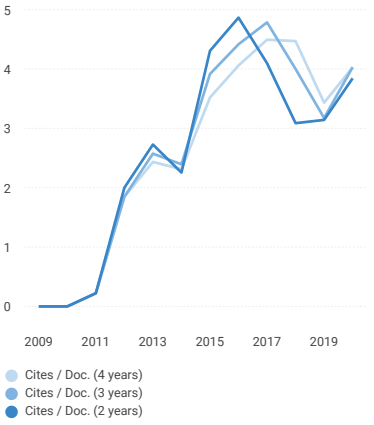

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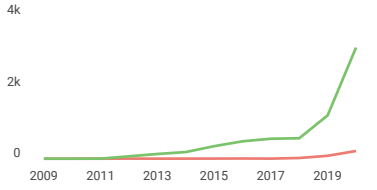

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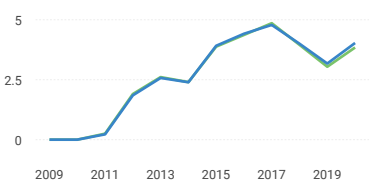
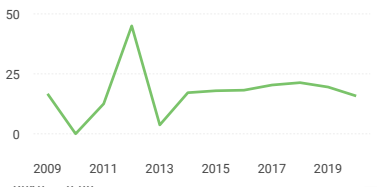


% International Collaboration



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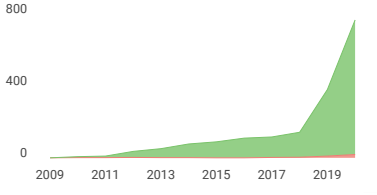

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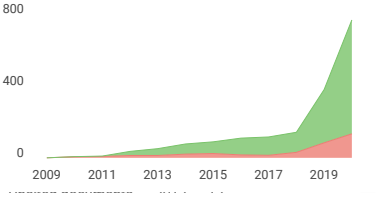

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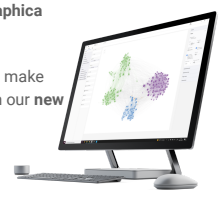

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