Coalesce Research Group

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*Joint Event*

3rd International Conference on

# EPIDEMIOLOGY AND PUBLIC HEALTH

&

2nd International Conference on

# RARE DISEASES AND ORPHAN DRUGS

November 04-05, 2024 | Las Vegas, USA

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# *Scientific Program*

# Scientific Program

**Monday**
**November 04, 2024**

3rd International Conference on
# Epidemiology and Public Health
&
2nd International Conference on
# Rare Diseases and Orphan Drugs

| Day 1 - November 04, 2024 | |
|---|---|
| Meeting Hall: The Grand Room | |
| 08:30 - 09:15 | Registrations |
| 09:15 - 09:30 | Opening Ceremony and Introduction |
| Keynote Presentations | |
| 09:30 - 10:10 | The Triad of Impact: Revolutionizing Rare Disease Research through Integrated Patient Engagement |
| | **Stephanie Collins, Biolaunch Solutions, USA** |
| 10:10 - 10:50 | Long-Term Effects of Environmental Lead on Erythropoietin Production in Young Adults: A Follow-Up Study of a Prospective Cohort in Kosovo |
| | **Pashko R Camaj, William Paterson University, USA** |
| Networking & Refreshments @ The Grand Room : 10:50 - 11:10 | |
| 11:10 - 11:50 | Migration: A Major Challenge to Health and Safety at Work |
| | **Mark Fuellemann, Practice & Experience Ltd, Switzerland** |
| Oral Presentations | |
| Session Chair | **Mark Fuellemann, Practice & Experience Ltd, Switzerland** |
| Session Chair | **Leanne Lester, University of Western Australia, Australia** |
| **Sessions:** | Public Health \| Infectious Diseases \| Epidemiology and Disease Control \| Occupational Safety and Health \| Environmental Health \| Women Health \| Rare Diseases and Orphan Drugs \| Rare Pediatric Diseases \| Patient Advocacy Group \| Mental Health \| Clinical Epidemiology |
| 11:50 - 12:15 | Women Sleeping Rough: The Health, Social and Economic Costs of Homelessness |
| | **Leanne Lester, University of Western Australia, Australia** |
| 12:15 - 12:40 | Employment Status of Parents and Mental Health of Children |
| | **Anasua Bhattacharya, Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health, USA** |
| 12:40 - 13:05 | The Role of Physical Fitness in the Prevention of Morbidity and Premature Mortality |
| | **Jaroslav Novák, University Hospital, Plzen/Pilsen, Czech Republic** |
| Group Photo: 13:05 - 13:15 | |
| Lunch: 13:15 - 14:15 @ The Grand Room | |
| 14:15 - 14:40 | From Feasibility to Pivotal Trial – The Lessons Learned and Implementation of a Pivotal Trial Assessing the Safety and Probable Benefit of a Pediatric Ventricular Assist Device |
| | **Ashley Magnavita, Carelon Research, USA** |
| 14:40 - 15:05 | Network Analysis of Multimorbidity in Middle-aged and Older Adults from the Perspective of Cluster Medicine |
| | **Beibei Xu, Peking University Health Science Center, China** |

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|---|---|
| 15:05 - 15:30 | Quality Indicators in the Clinical Microbiology Laboratory: An AMR One Health Approach |
| | **Martin R Evans, American Society for Microbiology, Washington DC** |
| 15:30 - 15:55 | Metastatic Diversity of Invasive Lobular Carcinoma |
| | **Najmah A Alsobahi, Makkah Health Cluster, Saudi Arabia** |
| | Networking & Refreshments @The Grand Room : 15:55 - 16:30 |
| 16:30 - 16:55 | Evaluation of the Antibiotic Resistance of Enterobacteriaceae Producing Extended-Spectrum Beta-Lactamases and Carbapenemase Isolated in Brazzaville (Congo) |
| | **Fils Landry MPELLE, Marien Ngouabi University, Republic of Congo** |
| | Poster Presentations |
| PP01 | Analysis of Data from the Methanol Poisoning Surveillance System, Dominican Republic during the Period 2020-2023. Dominican Republic |
| | **Fernando Vásquez Paez, Ministry of Public Health, Dominican Republic** |
| PP02 | The Comparison of Safety and Efficacy between Dexibuprofen and Ibuprofen: A Bibliometric and Meta-analysis |
| | **Beibei Xu, Peking University Health Science Center, China** |
| | Day-1 Concludes followed by Award Certifications |

3rd International Conference on
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| Day 2 - November 05, 2024 | |
|---|---|
| Meeting Hall: The Grand Room | |
| Keynote Presentations | |
| 10:00 - 10:40 | The Impact of Global Resurgence of Infectious Diseases in the Post-COVID Era |
| | **Martin R Evans, American Society for Microbiology, Washington DC, USA** |
| 10:40 - 11:20 | The Associations between Alcohol Consumption and Frailty: A Systematic Review and Dose-Response Meta-Analysis |
| | **Beibei Xu, Peking University Health Science Center, China** |
| Networking & Refreshments @ The Grand Room: 11:20 - 11:45 | |
| Oral Presentations | |
| Session Chair | **Pashko R Camaj, William Paterson University, USA** |
| Session Chair | **Martin R Evans, American Society for Microbiology, Washington DC, USA** |
| Session Co - Chair | **Tran Hau Khang, Hanoi Medical University, Vietnam** |
| **Sessions:** | Epidemiology and Public Health \| Rare Pediatric Diseases \| Drug Discovery for Rare Diseases \| Emerging Technologies in Rare Diseases \| Epidemiology of Aging and Gerontology and Microbiology |
| 11:45 - 12:10 | High "Fitness Age" As A Risk Factor for Morbidity and Premature Mortality in Relation to Rare Diseases |
| | **Jaroslav Novák, University Hospital, Plzen/Pilsen, Czech Republic** |
| 12:10 - 12:35 | Impact of a Quality Program on Overindication of Surgeries for Endometriosis and Cholecystectomies |
| | **Giancarlo Colombo, Hospital Israelita Albert Einstein, Brazil** |
| 12:35 - 13:05 | AI/ML to Identify and Stratify Social Determinants of Health Contributing to Cancer Disparity in Rural Appalachia |
| | **Ravi Vadapalli, Institute for Data Science and Computing, University of Miami, USA** |
| Lunch @The Grand Room: 13:05 - 14:00 | |
| 14:00 - 14:25 | Paediatric Rare Skin Diseases in Vietnam |
| | **Tran Hau Khang, Hanoi Medical University, Vietnam** |
| 14:25 - 14:50 | Value-Added Medicines for Addressing Unmet Needs of Rare Diseases |
| | **Shashi Kanth Muni, MSN Laboratories, India** |
| E-Poster Presentations | |

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|---|---|
| IDEP01 | Comorbidities and Breast Cancer Mortality in Portugal: A Retrospective Observational Study |
| | **Cecília M Antão, University of Lisbon, Portugal** |
| IDEP02 | Rare Cases of Hematohirosis in Both Adult and Children of Vietnam |
| | **Tran Hau Thach Lam, National hospital of Dermatology and Venereology, Vietnam** |

Day-2 Concludes followed by Award Certifications and Vote of Thanks

# Virtual Program

**Monday**
**November 04, 2024**

3rd International Conference on
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&
2nd International Conference on
# Rare Diseases and Orphan Drugs

| Virtual Presentations | |
|---|---|
| BST: 10.00 AM | |
| 10.00 - 10.15 | Introduction |
| **Presentations** | |
| 10.15 - 10.35 | Enhancing Quality of Life in Lysosomal Storage Diseases: A Focused Study in Malaysia |
| | **Noor Aziah Zainal Abidin, Management and Science University, Malaysia** |
| 10.35 - 10.55 | Measuring Spatial Inequalities in Maternal and Child Mortalities in Pakistan |
| | **Farzana Sher Muhammad, University of Malaya, Malaysia** |
| 10.55 - 11.15 | Model-Based Recursive Partitioning of Populations in Epidemiological Studies |
| | **Robert M West, University of Leeds, UK** |
| 11.15 - 11.35 | The Double Role of Nutrients in Immunity |
| | **Gheorghe Giurgiu, Deniplant-Aide Sante Medical Center, Romania** |
| 11.35 - 11.55 | Navigating Challenges and Insights from Acute Myocardial Infarction Registry Data in Sri Lanka; Lessons from a Developing Healthcare Landscape |
| | **Gotabhaya Ranasinghe, National Hospital of Sri Lanka, Sri Lanka** |
| 11.55 - 12.15 | Brian Activities and Spatial Memory Modulated by CA1 Electrical Stimulation |
| | **Elaheh Jafari, Islamic Azad University, Iran** |
| 12.15 - 12.35 | Enhancing Malaria Epidemic Response Through a Data-Driven District-Led Approach: A Case Study of Uganda |
| | **Jovan Baryamaujura, Ministry of Health, Uganda** |
| 12.35 - 12.55 | New Thinking in Clinical Trials: The Estimand Journey |
| | **Christine Fletcher, GSK, UK** |
| 12.55 - 13.15 | A Structural Equation Modelling Approach to Examine the Mediating Effect of Stress on Diet in Culturally Diverse Women of Childbearing Age |
| | **Karim Khaled, Birmingham City University, UK** |
| 13.15 - 13.35 | Nipah Virus- Case Series |
| | **Aneeta regi, Royal College of Surgeons, UK** |
| 13.35 - 13.55 | Youth Peer Facilitators Role in Promoting and Providing Support in HIV Testing Among University Students: A Case of Maseno University |
| | **Owino Samwel, Maseno University, Kenya** |
| 13:55- 14:15 | Nodding Syndrome: Characteristics and Findings of a Narrative Review of Epidemiology, Etiology, and Public Health Impact |
| | **Polyne Nafula Wechuli, Kenya Medical Training College, Kenya** |
| 14:15 - 14:35 | Integration Of Correlative and Explanatory Model Methods for Predicting the Growth of Biological Systems |
| | **Carlos Oscar Rodríguez Leal, University of Guadalajara, Mexico** |

# *Supporting Journal/Publishing Partner*


***Public Health***

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Established a special issue with **3rd International Conference on Epidemiology and Public Health**, scheduled for **November 04–05, 2024**, at the **Downtown Grand Hotel, Las Vegas, USA** as the theme "**Current research on Epidemiology and Public Health".**

Conference Special Issue Link https://www.aimspress.com/aimsph/article/6614/special-articles

# *Day-1*
# *Keynote Presentations*

# THE TRIAD OF IMPACT: REVOLUTIONIZING RARE DISEASE RESEARCH THROUGH INTEGRATED PATIENT ENGAGEMENT

**Stephanie Collins**
*Bio Launch Solutions, USA*

## Abstract

**Background:** The landscape of rare disease research is rapidly evolving, with patient engagement emerging as a critical factor in successful drug development. Despite growing recognition of its importance, the life science industry often struggles to effectively integrate patient voices throughout the product lifecycle.

**Objective:** This presentation aims to explore the evolving role of patient engagement in rare disease research, focusing on the intersection of patient advocacy, patient centricity, and patient experience. It will provide a comprehensive framework for life science companies to enhance their patient engagement strategies from early disease insight through post-market activities.

**Methods:** Drawing on real-world case studies and industry best practices, we will examine the three key pillars of patient engagement:

1. **Patient Advocacy:**
- Partnering with patient groups to amplify the patient voice
- Leveraging advocacy insights to shape research priorities
- Navigating the regulatory landscape with patient input

2. **Patient Centricity:**
- Embedding patient perspectives in organizational strategy
- Designing patient-centric clinical trials
- Developing meaningful endpoints and outcomes

3. **Patient Experience:**
- Capturing and analyzing patient-reported outcomes
- Improving the clinical trial experience for participants
- Translating patient insights into better care delivery

**Results:** We will present a strategic framework for integrating these three pillars throughout the drug development process, highlighting specific tools and methodologies for implementation.

**Discussion:** The presentation will address common challenges in patient engagement for rare diseases and propose innovative solutions. We will explore how this integrated approach can lead to faster drug development, improved clinical trial design, and more effective treatments.

**Conclusion:** By embracing a holistic approach to patient engagement that encompasses advocacy, centricity, and experience, life science companies can revolutionize rare disease research. This evolution not only aligns with regulatory expectations and ethical considerations but also promises to deliver more relevant and impactful treatments to patients in need.

## Biography

Stephanie Collins is a Co-Founder and Managing Partner of Bio Launch Solutions, is a pioneering force in the biopharma industry with over 30 years of experience focused on rare diseases and innovative therapies. Her unique background blends nursing expertise with strategic business acumen, driving a patient-centered approach to drug development and commercialization. Based in Dallas, Texas, Stephanie has led the launch of transformative therapies and spearheaded national disease awareness campaigns. Her work spans complex commercial strategies and team development, significantly impacting pharmaceuticals and biotech. A respected mentor and industry leader, Stephanie is active in organizations like Professional Patient Advocates in Life Sciences, Healthcare Businesswomen's Association, and Women in Bio. Her strategic foresight and integration of nursing principles into business development have set new benchmarks in patient care and healthcare innovation. Stephanie's career exemplifies a commitment to enhancing patient outcomes while navigating the biopharma sector's challenges, making her a transformative figure in the industry.

# LONG-TERM EFFECTS OF ENVIRONMENTAL LEAD ON ERYTHROPOIETIN PRODUCTION IN YOUNG ADULTS: A FOLLOW-UP STUDY OF A PROSPECTIVE COHORT IN KOSOVO

**Pashko R Camaj, Joseph H Graziano, Emine Preteni, Dusan Popovac, Nancy Loiacono, Olgica Balac and Pam Factor-Litvak**

*William Paterson University, USA*

## Abstract

**Background:** A significant study undertaken in two Kosovo towns beginning in the mid-1980s shed much light on these topics and produced numerous landmark publications that contributed to the implementation of environmental policies. Following up with a study of a representative sample from that cohort, when they reached age 25, we reported the lasting effects of prenatal and early childhood exposure to environmental lead exposure.

**Objective:** Evaluate associations between current or past Pb exposure and: Blood pressure, serum levels of markers of systemic inflammation and endothelial dysfunction and EPO concentration in young adulthood.

**Methods:** From our prospective birth cohort study in Mitrovica (a mining town) and Pristina (a control town) Kosovo, from 1985-1998, we located and assessed blood lead concentration (BPb) and serum EPO in 101 participants (mean age 24.9 years old) in 2011.

**Results:** We found a small association between concurrent BPb and systolic BP (sBP) and a highly statistically significant association between concurrent BPb and sVCAM-1 in men, and a marginally significant association between concurrent PBb and sICAM. -1 in women. We did not find evidence of mediation. Also, our results suggest cumulative toxicity to the peritubular cells of the kidney that are responsible for EPO synthesis.

**Conclusion:** Exposure to Pb leads to small increases in sBP and perhaps to increased circulating levels of sVCAM-1. However, it also suggests that a dramatic reduction of Pb exposure may allow for a reversal of the impact that prolonged Pb exposure may have on EPO production.

**Abbreviations:** BPb, blood lead concentration; sBP, systolic blood pressure; sVCAM-1, soluble vascular adhesion molecule; sICAM-1, soluble intercellular cell adhesion molecule; EPO, erythropoietin; Hgb, Hemoglobin; BMI, body mass index.

## Biography

Pashko R Camaj currently is an adjunct professor at William Paterson University in Paterson, NJ, USA, where he teaches epidemiology, public and environmental health sciences for the Public Health Program students, bachelor's, and master's degrees. His research work with Columbia University's Mailman School of Public Health explored the long-term effects of lead from exposure during early childhood. He is also serving as a Vice President of the Department of Safety & Health within New York City Metropolitan Transportation Authority (MTA B&T), one of the divisions of the largest regional public transportation agency in US, with thousands of employees and millions of public transit customers.

# MIGRATION: A MAJOR CHALLENGE TO HEALTH AND SAFETY AT WORK

**Mark Fuellemann**

*Practice & Experience Ltd, Switzerland*

## Abstract

Migration creates a lot of diversity. Key words are language, culture, value systems, skills, work and life experience. Zero Harm to People, the vision of health and safety at work, on the other hand requires a lot of conformity: conform understanding of hazards, full compliance of standard operating procedures, shared values. Workers need to go through four steps to keep safe at work. They need to know, to understand, to accept and to do. In the area of Safety at Work approaches have been developed for managers to teach workers, to coach, motivate and to mentor them. Health at Work, however, presents still a huge challenge, since hazards are seldom visible, harm harms slowly and cohabits with harm for outside activities. Migration adds more challenges: when migrants workers start work there is no health baseline and the migrant workforce is apt to change very frequently. Management must establish an initial health check, must monitor frequently and also detect outside influences – which might be clashing with privacy laws.

## Biography

Mark Fuellemann graduated Masters in Physics from the ETH Zürich, later attending the Senior Management Program at the Harvard Business School and the Senior Leadership Program at IMD. Mid 1986 he joined the Holcim Cement Group (then "Holder bank") directing as a Senior Vice President different staff units such as Business Planning, Global Project Management, Management Reporting and, starting in 2006, Occupational Health and Safety, followed by running OH&S at the OC Oerlikon Group while writing a PhD thesis on OH&S (SAFETY AT WORK – AN ISSUE OF DAILY MANAGEMENT BEHAVIOR) at the ETH Zürich. Today he runs his own consultancy, teaches business planning, organizational development, change management and occupational safety at various universities in Switzerland, Brazil and India and is a speaker at global and international safety conferences.

# *Day-1*
# *Oral Presentations*

# WOMEN SLEEPING ROUGH: THE HEALTH, SOCIAL AND ECONOMIC COSTS OF HOMELESSNESS

## Leanne Lester

*University of Western Australia, Australia*

## Abstract

This study seeks to assess the health, social and economic outcomes associated with rough sleeping among women and compare those outcomes with those of (1) men sleeping rough, and (2) women experiencing other forms of homelessness (such as being housed in temporary supported accommodation due to family and domestic violence).

The study analyses survey data using the Vulnerability Index-Service Prioritization Decision Analysis Tool (VI-SPDAT) collected from 2735 women experiencing homelessness and 3124 men sleeping rough in Australian cities. We find that women sleeping rough report poorer physical and mental health outcomes and greater problematic drug and or alcohol use relative to both men sleeping rough and women experiencing other types of homelessness (all $p < 0.5$). Women sleeping rough report significantly higher levels of crisis service utilisation ($B = 17.9$, $SE = 3.9$, $p < 0.001$) and interactions with police in the previous 6 months ($B = 1.9$, $SE = 0.3$, $p < 0.001$) than women experiencing homelessness not sleeping rough. Women sleeping rough also report greater healthcare utilisation, and, therefore, healthcare costs, than women experiencing homelessness not sleeping rough and men sleeping rough (all $p < 0.05$).

From a policy perspective, the evidence presented in this research supports a social determinants approach that moves from addressing symptoms of poor health outcomes associated with homelessness to preventing and ending homelessness with a particular focus on the life trajectories of women. Integrated services and homelessness strategies need to be developed through a gender lens, providing women sleeping rough with tailored permanent housing with wrap-around supportive housing to address poor health outcome.

## Biography

Leanne Lester is the research manager at the Centre for Social Impact at the University of Western Australia (UWA). She is a senior research fellow at UWA, an epidemiologist and biostatistician who has over 25 years' experience in evaluation. Leanne provides specialised research methodology, data collection, linkage and data analysis expertise for business, not-for-profits, school and community-based research, education and advocacy. Leanne's research is varied, with current evaluations ranging from mental health, workplace sexual harassment, family and domestic violence, child advocacy, Out of Home Care services, women's refuge services and homelessness.

# EMPLOYMENT STATUS OF PARENTS AND MENTAL HEALTH OF CHILDREN

## Anasua Bhattacharya and Tapas Ray

*Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health, United States*

## Abstract

**Background:** The COVID-19 pandemic affected the mental health of working and non-working parents and their families.

**Objective:** This study evaluates how the pandemic affected the mental health of children classified by the employment status of their parents.

**Method:** We used National Health Interview Survey weighted pooled data for 2019 to 2022 and assessed if the pandemic affected the mental health of children. We evaluated their mental health using the following questions: (1) "does sample child currently receive services for mental health to help with his/her emotions/concentration/behaviour/mental health?" (2) "how often seems anxious/nervous/worried?", and (3) "how often seems sad/depressed?". We derived descriptive statistics and used logistic and multinomial logistic models to evaluate the effect of employment status of parents on children's mental health, controlling for sociodemographic variables.

**Results:** The descriptive statistics suggest that a higher percentage of children of working parents received mental health services in 2020 (62%) than in 2019 (57%), whereas, a lower percentage of children of non-working parents received these services in 2020 (73%) than in 2019 (89%). The odds ratios (ORs) obtained suggest that use of mental health services by children of working parents was higher in 2020 through 2022 than in 2019, the reference year (the ORs were 4.3, 19.1, and 4.0, in 2020, 2021, and 2022 respectively). Similarly, the relative risk ratios (RRRs) from multinomial logistic models signify that the children of working parents were more depressed and/or anxious during the pandemic (the RRRs of daily depression were 12.8, 2.3, and 6.0 and of anxiety were 1.5, 2.0, and 1.1, in 2020, 2021, and 2022 respectively).

**Conclusion:** The study concludes that children of working parents experienced higher rates of adverse mental health issues compared to those of non-working parents during the pandemic years.

## Biography

Anasua Bhattacharya is an economist within the Economic Research and Support Office (ERSO) at CDC/NIOSH and the NIOSH NORA Services sector co-coordinator. Her work focuses on designing studies to measure economic costs and benefits for occupational injuries and fatalities. Her most recent work has involved in developing studies to estimate costs of injuries, illnesses, and fatalities by industrial sectors and business sizes and forecast the future costs and their effects on the economy as a whole. She has also worked on projects that involve measuring costs of stress related disorders, shift of costs from the Workers' Compensation (WC) system to the group health medical insurance system, relationship between obesity, depression and WC costs using large WC claims and group health medical claims databases. Her current work focusses on mental health of workers and children, effects of extreme temperatures on workers, and on nonstandard employment.

# THE ROLE OF PHYSICAL FITNESS IN THE PREVENTION OF MORBIDITY AND PREMATURE MORTALITY

**Jaroslav Novák[1] and Milan Štork[2]**

[1]*Medical Faculty of Charles University, Czech Republic*
[2]*University of West Bohemia, Czech Republic*

## Abstract

Physical activity (PA) is one of the important factors influencing human health. According to the WHO recommendation, the minimum range of adult PA should include at least 150 minutes per week on five different days of moderate intensity, plus at least twice a week of moderately demanding resistance exercises to prevent muscle mass loss. Over the course of life, there is an age-related decrease in cardiorespiratory capacity (as measured by VO2max) of approximately 10 percent per decade. The level of VO2max is a significant factor related to the risk of metabolic syndrome, coronary heart disease and other health disorders.

A total cohort of 2901 examinations were divided into 5 groups according to the nature of physical activity: group A – endurance athletes, group B – team sports players, group C – other competitive athletes, group D – recreational leisure-time athletes, group E – people with health problems. Cardiorespiratory fitness was assessed according to the VO2max and METmax parameters found in the stress test on a bicycle ergometer. A gradually increased load until exhaustion was used. While in groups A to D cases that would be classified as NYHA 1 (METmax lower than 9) were quite rare (10 cases out of 2777, i.e. 0.3%), in groups E it was 20% in men (16 cases out of 82) and 52% in women (23 cases out of 44) of those examined. Accordingly, fitness age in groups A, B and C generally corresponded to a lower age than the calendar age, in groups E of both men and women, fitness age was significantly higher compared to the calendar age.

According to statistical data from the Czech Society of Cardiology, almost 3 million people were treated for cardiac disease in 2021, which represented 37.5% of the population over 25 years of age. It can be assumed that in most of these patients, fitness age reached higher values than their real calendar age.

In relation to infectious diseases, the state of the immune system plays an important role. Its level is largely determined by genetics, but secondary immunodeficiencies (acquired) are much more common. They are caused by various immunosuppressive factors, among which lifestyle factors play an important role. Smoking, alcohol consumption, poor nutrition aspects and last but not least, a sedentary lifestyle with a lack of physical activity can lead to a decrease in immune abilities. All these lifestyle risk factors significantly threaten the health of the Czech population. During the recent Covid-19 pandemic, the Czech Republic took 10th place in the global ranking by death rate in November 2023.

High fitness age represents a significant risk of morbidity in relation to non-communicable and also infectious diseases and probably also a significant limitation of quality of life. It turns out that the sustainability of the health system in the Czech Republic in the coming years will largely depend on the relationship of the population to their own health.

## Biography

Jaroslav Novák, M.D., Ph.D. was born in 14. 8. 1941 in Pilsen. In 1964 he graduated from the Faculty of Medicine of Charles University in Pilsen. In 1973 he completed a three-year coaching school at the Faculty of Physical Education and Sport at Charles University in Prague. Since graduation, he has been involved in sports medicine, mainly as an assistant professor at the Department of Sports Medicine at the Faculty of Medicine of Charles University in Pilsen. He has published about 500 professional and scientific papers, of which more than a hundred in foreign journals. He has lectured at dozens of congresses in Europe and overseas. In 2015 he defended his dissertation "Cardiorespiratory Fitness of the Sporting Population". As a doctor and coach, he worked for many years with national water polo teams. To this day, he is still active in sports in the "masters" categories. He and his wife Helena have three adult children and five grandchildren.

# FROM FEASIBILITY TO PIVOTAL TRIAL – THE LESSONS LEARNED AND IMPLEMENTATION OF A PIVOTAL TRIAL ASSESSING THE SAFETY AND PROBABLE BENEFIT OF A PEDIATRIC VENTRICULAR ASSIST DEVICE

**Ashley Magnavita, Victor Zak, Layla Baker, Christopher S. Almond, Ryan Davies, Jodie Lantz and William T Mahle**

*Carelon Research, Wilmington, USA*

## Abstract

**Background:** There is a need for a portable ventricular assist devices (VAD) for smaller children with advanced heart failure, that is safe, reliable, and durable. Current FDA approved VAD options are limited to older Para corporeal pulsatile devices that lack portability precluding hospital discharge. The Pumps for Kids, Infants and Neonates (PumpKIN) early feasibility study (EFS) enrolled 7 subjects with Standard Cardiac Anatomy into the single arm study to assess the feasibility and safety of the Jarvik 2015 VAD device, a fully implantable miniaturized continuous flow VAD that is portable. The EFS was completed in October 2023 and the pivotal trial received funding from the National Heart, Lung, and Blood Institute (NHLBI) in February 2024. The pivotal trial is a prospective, multicentre, single-arm clinical trial assessing the safety and probable benefit of the Jarvik 2015. Carelon Research is the Data Coordinating Center and Stanford University is the Clinical Coordinating Center.

**Objective:** To review the lessons learned of the EFS and how these were implemented into the pivotal trial.

**Methods:** The CCC and DCC considered multiple strategies to optimize the pivotal trial design based on the EFS experience. We will discuss the lessons learned and how they have been or plan to be implemented in the pivotal trial.

**Results:** Ten categories were highlighted with specific lessons learned from the EFS. Operationally, selection criteria, recruitment and enrolment were addressed. Clinically, addressing implant procedure and patient management and monitoring are among the categories of lessons learned.

**Conclusion:** After the lessons learned from the EFS were incorporated into the pivotal trial protocol, it was approved by the FDA, received funding from NHLBI and approval from Data Safety Monitoring Board and single IRB. The pivotal trial is planning to begin enrollment in late 2024/early 2025 with recruitment and enrolment for 28 months.

## Biography

Ashley Magnavita is Director of Clinical Research Project Management for Carelon Research. Ms. Magnavita oversees and mentors the Clinical Research Project Managers to ensure compliance with standard operating procedures and best practices. As the Director, she assists the Staff Vice President in initiatives to create policy and templates for the department. Ms. Magnavita has over 14 years of experience in clinical research with 10 years managing clinical trials. Her extensive experience is with industry sponsor funded and government funded research trials. She has extensive experience in feasibility, Phase II – IV trials as well as observational studies and registries. She has led several studies as the Data Coordinating Center Operations Principal Investigator such as the PumpKIN Early Feasibility study and currently serves as the Operations PI on the PumpKIN Pivotal trial.

# NETWORK ANALYSIS OF MULTIMORBIDITY IN MIDDLE-AGED AND OLDER ADULTS FROM THE PERSPECTIVE OF CLUSTER MEDICINE

**Zhou Yang, Shui-Kit Cheuk and Beibei Xu**

*Peking University Health Science Center, China*

## Abstract

**Background:** New sights have been introduced to conceptualize multimorbidity as non-random chronic conditions clustering, where clusters of conditions may exhibit longitudinal predictability.

**Objective:** To visualize non-random associations and analyze the predictability of condition cluster based on a comprehensive set of chronic conditions.

**Methods:** In this population-based study, data were extracted from UK Biobank. A list of 193 and 189 chronic conditions were analyzed among female and male, respectively. We utilized Markov random field model and network techniques to construct and visualize the non-random association network of chronic conditions. An overlapping community detection algorithm was employed to identify condition clusters. Subsequently, for a specific cluster, we used logistic regression to analyze the association between current morbidity state and future occurrence of intra-cluster conditions.

**Results:** 231,308 individuals with access to primary care record from UK Biobank were included. In the female non-random association network, 164 conditions showing non-random associations with at least one other condition. The conditions with the most associations were psychoactive substance abuse, osteoarthritis (excluding spinal), and depression. For males, 167 conditions displaying non-random associations and the conditions with the most associations were constipation, psychoactive substance abuse, and hypertension. 11 clusters in the non-random association networks were detected for both females and males. For anyone of the detected clusters, logistic regression showed that individuals who had conditions within the cluster at baseline were at a higher risk of subsequent incidence of intra-cluster conditions, compared with those without any intra-cluster condition at baseline.

**Conclusion:** The non-random association network and condition clusters constitute a hierarchical structure which can effectively illustrate the complex relationships among a large number of conditions. Multimorbidity could be conceptualized as non-random condition pairs and a series of largely predictable clusters of conditions.

## Biography

Our research team is dedicated to the field of aging health, adopting a comprehensive multidiscipline strategy that encompasses geriatrics, epidemiology, medical informatics, and health statistics. Our aim is to study the occurrence and development of chronic disease comorbidities, risk factors and predictive models. A critical aspect of our work is the exploration of assessment methods for the health status of the older population, with a particular emphasis on multimorbidity. This focus is designed to gain a profound understanding of the complex interplay between comorbid conditions and the natural course of aging.

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# QUALITY INDICATORS IN THE CLINICAL MICROBIOLOGY LABORATORY: AN AMR ONE HEALTH APPROACH

**Martin R Evans[1] and Kelly Araujo Silva[2]**

[1]*American Society for Microbiology, USA*
[2]*American Society for Microbiology, Brazil*

## Abstract

Quality Indicators (QIs) play a vital role in determining, observing, and evaluating performance for essential laboratory processes. These measures not only establish a baseline but also serve as a source of data for decision-making in the laboratory. In many public and private laboratories, particularly in resource-limited nations, QIs are either minimally implemented or absent. These indicators are essential for achieving ISO15189 accreditation and are integral to the Quality Management System. Additionally, quality measures are required for the execution of antimicrobial resistance (AMR) surveillance and One Health initiatives.

Practical measures including quality parameters and operational efficiency are needed in laboratories. The National Reference Laboratory (NRL) and Ministry of Health (MOH) must lead in standardizing these metrics which encompass quality, process performance, and resource management to provide comparative data. Successful implementation requires committed leadership, skilled staff, and a phased approach starting with core metrics and gradually including additional AMR-related indicators.

The World Health Organization's (WHO) Global Antimicrobial Resistance and Use Surveillance System (GLASS) requires national AMR data submission annually. A key issue identified in the GLASS 2022 Report is the number of NRL/lab networks that conduct AMR surveillance that are not using AST standards (19.8%) and local labs performing AST without an EQA program (51.4%). Further, there is wide variation in testing coverage, so data representativeness is a major limitation in interpreting AMR rates nationally. Suggested key AMR-related metrics will be presented including tracking progress in implementation and current AMR rates that can be incorporated into monthly sentinel site reporting to provide regional data.

Harmonized and standardized QIs are essential for delivering information on both quality and operational performance within the laboratory. These indicators are vital in supporting the monitoring and evaluation of selected priority pathogen AMR data, aligning with national standards and international efforts.

## Biography

Martin R Evans is a clinical laboratory director with a PhD in medical microbiology and immunology. As a microbiology consultant for the American Society for Microbiology (ASM) he has participated in CDC/ASM antimicrobial resistance (AMR) surveillance/One Health and other projects in Ethiopia, Kenya, Tanzania, Mozambique, Bangladesh, Brazil, and Mexico. As a senior laboratory and informatics consultant for the Association of Public Health Laboratories (APHL) he worked on APHL/CDC projects in Haiti, Kenya, Indonesia, Namibia, Uganda, South Africa and Zimbabwe. Dr Evans is a recipient of APHLs Thomas E. Maxson Education, Training and Workforce Development Award. Prior to consulting, Dr Evans was an Associate Director at the New York City Public Health Laboratory. Previously, Dr Evans spent 14 years in the private sector as a clinical laboratory director at Quest Diagnostics and SmithKline Beecham Clinical Laboratories. Prior to this, he was in academia including positions at Temple University and the University of Zimbabwe Faculty of Medicine. He is also a New York State licensed medical technologist and was elected as the first chairperson of the New York State Board for Clinical Laboratory Technology.

# METASTATIC DIVERSITY OF INVASIVE LOBULAR CARCINOMA

## Najmah A Alsobahi

*Makkah Health Cluster, Saudi Arabia*

## Abstract

**Introduction and importance:** The most common cancer among females worldwide and in Saudi Arabia is breast cancer. Lobular breast carcinoma is the second most common subtype of breast cancer. There are different patterns of metastasis as ductal breast cancer spreads to the liver, lung, brain, and bone while the lobular subtype metastasizes to the gastrointestinal tract.

**Case presentation:** A 69-year-old Indian pilgrim presented to the ER complaining of abdominal pain, vomiting, and abdominal distention admitted as a case of intestinal obstruction. CT scan demonstrated intestinal obstruction with transition zone at the terminal ileum. The patient underwent exploratory laparotomy where she was found to have a mass at the terminal ileum. Resection of around 8 cm of small bowel and primary anastomosis wesre done, histopathology revealed metastatic lobular breast carcinoma.

**Clinical Discussion**: Patients with metastatic breast cancer to the gastrointestinal tract often present with nonspecific symptoms, while acute cases present with complications such as perforation. In a retrospective review of metastatic breast cancer, the majority metastasize to the colon and rectum, while 19% to the small bowel. Palliative surgery is considered the first-line treatment of complicated patients, while stable cases are referred to medical oncology.

**Conclusion:** Breast cancer is the second most common cancer leading to death and lobular subtype has more propensity to metastasize to the gastrointestinal tract compared to ductal breast cancer. Regarding patients presenting to the emergency bay, treating the emergency complaints is the standard management. For immigrant patients, we highly recommend creating a data system for sending histopathology reports to facilitate follow-up in their countries.

## Biography

Najmah A Alsobahi Senior Registrar at Makkah Health Cluster, she is a Board-Certified General Surgeon from King Abdullah Medical City, Makkah. She has completed a Fellowship in Minimal Access Surgery

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# EVALUATION OF THE ANTIBIOTIC RESISTANCE OF ENTEROBACTERIACEAE PRODUCING EXTENDED-SPECTRUM BETA-LACTAMASES AND CARBAPENEMASE ISOLATED IN BRAZZAVILLE (CONGO)

**Fils Landry MPELLE[1], Etienne Nguimbi[1], Esther Nina Ontsira Ngoyi[2], Christian Aimé Kayath[1] and Jean-Marc Rolain[3]**

*[1]Marien Ngouabi University, Republic of the Congo*
*[2]Marien NGOUABI University, Republic of the Congo*
*[3]Unit Research Unit on Infectious and Tropical Emerging Diseases (URMITE), IHU, France*

## Abstract

**Objective:** To molecularly characterize the ESBL/AmpC/OXA-48 genes in clinical and environmental Enterobacteriaceae.

**Material and Methods:** The strains were identified by Api 20E and confirmed MALDI-TOF-MS. Sensitivity to antibiotics achieved by agar diffusion on HD, as well as the ESBL phenotype. Antibiotic resistance genes were characterized by PCR and sequencing. Sequences were assembled by Codon Code Aligner and compared by BlastX with GenBank, NCBI and ARGANNOT. Phylogenetic trees were constructed by MEGA7. The transfer of resistance genes carried out by conjugation using E. coli J53 as the recipient strain. The clonal relationship between the strains was made by MLST.

**Results:** 209 strains were isolated: 56 environmental and 153 clinical. 95 strains (45.45%) were ESBL. 43 E. coli, 35 K. pneumoniae, 7 Ent. cloacae, and 3 C. freundii. 3 P. mirabilis, 3 S. marcescens and 1 Arizona spp. Except for imipenem, total resistance to most beta-lactams, as well as aminosides and fluoroquinolones. TEM-1 was predominant (42.10%), followed by CTX-M-15 (32.63%). ACT-1 was found in 6 strains and CMY-2 in 2 strains; OXA-48 in 5 strains. MLST showed that the 2 K. pneumoniae OXA-48 strains were genetically different ST15 and ST460. Conjugation and transformation showed that bla-OXA-48 was not carried by a plasmid.

**Conclusion:** Our study revealed the spread of ESBL type TEM-1, CTX-M15 and AmpC in our hospitals which exposes to a growing problem of therapeutic management.

## Biography

Fils Landry MPELLE, Hospital Practitioner Biologist; PhD in Microbiology-Molecular Biology, Bio-Informatics and Immunology from Marien Ngouabi University Brazzaville Congo in 2020 and Master in Applied Immunology and Molecular Biology from Marien NGOUABI University Brazzaville Congo in 2014. Laboratory Manager of the United Nations Clinic in Brazzaville. Research teacher in microbiology, immunology and molecular biology at the Faculty of Health Sciences of Marien NGOUABI University. Research interests include public health and safety, infectious diseases, bacterial resistance to antibiotics, multi-drug resistance strains, extended spectrum beta-lactamases, carbapenemase, cephalosporinases. Resistance to antituberculosis drugs.

# *Day-1*
# *Poster Presentations*

# ANALYSIS OF DATA FROM THE METHANOL POISONING SURVEILLANCE SYSTEM, DOMINICAN REPUBLIC DURING THE PERIOD 2020-2023. DOMINICAN REPUBLIC.

**Fernando Vásquez Páez**

*Ministry of Public Health, Dominican Republic*

## Abstract

**Background:** Acute methanol poisoning occurs mainly due to accidental consumption of adulterated liquor. In the Dominican Republic until 2023, 943 cases have been reported with a fatality rate of 46.6% (441).

**Objective:** Analyze cases of methanol poisoning in the national epidemiological surveillance system (SINAVE) in the Dominican Republic in the period 2020 -2023.

**Methods:** Descriptive study of the epidemiological surveillance of methanol poisoning with cases, morbidity-mortality and incidence corresponding to the Dominican Republic in the period 2020 to 2023. The data were obtained from the Ministry of Public Health. Attributes analyzed opportunity for notification, acceptability and data quality. Information processing with the Office 2019 package, presented in tables and graphs.

**Results:** Analyzed 943 cases reported to SINAVE. The most affected sex was male, the age group of 40-49 years recorded the highest number of reported cases with 25% (782/943) of the cases and the median age was 45 years. The highest incidence rate was recorded in 2021 in the national district and Santo Domingo with 484. The highest mortality rate was recorded in 2021 (214). The most frequent symptom was vomiting 24.5% (231/943) and nausea with 23.6% (223/943). No sample was taken in 80% (754/943) of the cases. The attributes of opportunity showed that 51% of the cases were reported within 24 hours, for the quality of the data the omission of variables such as comorbidity occupied 85% and acceptability. 89.5% of notifiers consider the system to be easy.

**Conclusion:** Mortality is high. It is recommended to reinforce surveillance of this event and preventive measures both to the Ministry of Health, the National Health Service, as well as the country's authorities.

## Biography

Fernando Vásquez Páez has extensive experience in emergency alert and response in Public Health such as epidemic outbreaks. It works on disease prevention through the analysis of intelligence data, as well as control of events that occur in the Dominican Republic with situations of importance for public health with national and international impact. He has a humanitarian sense that he developed during his 20 years in the Dominican Red Cross where he intervened in many emergencies and disasters and even today continues to alleviate human suffering alongside that institution. He has just finished his first book titled "My Cholera with Vibrio", which will soon be published, which recounts the impact of facing an epidemic outbreak and the challenges in field work before, during and after a Cholera event.

# THE COMPARISON OF SAFETY AND EFFICACY BETWEEN DEXIBUPROFEN AND IBUPROFEN: A BIBLIOMETRIC AND META-ANALYSIS

**Beibei Xu**

*Peking University Health Science Center, China*

## Abstract

**Background:** Ibuprofen is a widely used nonsteroidal anti-inflammatory drug (NSAID) in clinical practice. Unlike racemic ibuprofen, dexibuprofen consists solely of the active S(+)-enantiomer. Previous studies have suggested that S-enantiomer was more effective in human and associated with fewer side effects in animal. However, the current literature lacks comprehensive, high-quality evidence from clinical settings.

**Objective:** To perform a bibliometric analysis, systematic review, and meta-analysis to compare the safety and efficacy of dexibuprofen and ibuprofen in clinical trials.

**Methods:** We searched four scientific databases (PubMed, Embase, Web of Science, and CNKI) for studies published before Apr 15, 2024. Duplicate articles were excluded. Bibliometric analysis was conducted using R package bibliometrix and VOS viewer. The systematic review and meta-analysis were restricted to in vivo human clinical trials. Efficacy was defined as patient- or physician-reported satisfaction, pain relief, or therapeutic effectiveness, while safety was assessed by the overall adverse events. Relative risks (RR) were pooled using the random-effects method. We performed subgroup analyses based on dosage.

**Results:** Of 841 articles retrieved for the bibliometric analysis, 21 articles were included for the meta-analysis. Articles were distributed across 438 journals, indicating a lack of concentrated focus in specific journals. The keyword co-occurrence network identified major research focuses as NSAID, pharmacokinetics, enantiomer, and reactivity. The meta-analysis showed that dexibuprofen at 100% of the ibuprofen dosage demonstrated statistically significant higher efficacy (RR = 1.08, 95% confidence interval [CI]: 1.02-1.13), while no statistical significance was observed at the 50% (RR = 1.00, 95% CI: 0.97, 1.04) or 70% dosage (RR = 1.09, 95% CI: 0.99, 1.19). Moreover, no statistically significant differences in safety were found across all three Dexibuprofen dosage groups.

**Conclusion:** Dexibuprofen at 100% of the ibuprofen dosage showed statistically significant higher efficacy, while other dosage groups showed no statistically significant differences in either safety or efficacy.

## Biography

Beibei Xu is an associate researcher and doctoral supervisor at the Center for Medical Informatics, Peking University. Graduated from the Bethune School of Medicine, Jilin University, and studied for a master's and doctoral degree in nutritional epidemiology at the College of Anthropology, Auburn University, USA. She also studied at the School of Mathematics and obtained a master's degree in applied statistics. After graduation, she conducted postdoctoral research at the Center for Medical Informatics, Peking University, the School of Health, Aarhus University, Denmark, and the Moores Cancer Center, University of California, San Diego, USA. She conducted interdisciplinary research using different types of medical and health data and published more than 50 SCI and Chinese core articles. She presided over and participated in many National Natural Science Foundation and ministerial projects.

# *Day-2*
# *Keynote Presentations*

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# THE IMPACT OF GLOBAL RESURGENCE OF INFECTIOUS DISEASES IN THE POST-COVID ERA

**Martin R Evans[1] and Santa Elizabeth Ceballos[2]**

*[1]American Society for Microbiology, Washington DC, USA*
*[2]Prevention and Health Promotion, Ministry of Health, Mexico*

## Abstract

There has been a global resurgence of infectious diseases in the post-COVID years of 2022-23 with the emergence or re-emergence of numerous etiologic agents such as influenza, dengue, cholera, monkeypox, RSV, tuberculosis, Mycoplasma pneumoniae and others compared to pre-pandemic years. Globally during 2024, there are increased cases of measles, polio, and pertussis. In the Americas, there are outbreaks of dengue and Oropouche fever. During the summer of 2024 in the United States, there is an ongoing outbreak of avian influenza A H5N1 which is impacting dairy cattle and causing human infections, and an increase in the number of cases and hospitalizations of COVID.

Additionally, the COVID years impacted the level of antimicrobial resistance (AMR) and One Health (human, animal, environment). Our AMR responses included improved tracking and data collection, increasing infection prevention and control (IPC) efforts, progress in antibiotic stewardship, a new focus on addressing antimicrobials and AMR threats in the environment, and new therapeutics, diagnostics, and vaccines. Is this sufficient? What are our continued challenges, where are we today, and what is the blueprint going forward?

What is the impact of microbial evolution and how has this changed microbial pathogenesis? What are our challenges today going into the winter respiratory season in the northern hemisphere? Are we following all the vaccination recommendations? Is our collective outbreak detection, surveillance, response, and level of global preparedness sufficient?

What are our challenges, and how best do we allocate our resources to build public health capacity and regain public trust? This presentation will cover a wide variety of topics on the global resurgence in infectious diseases, detection, response, and our level of preparedness.

## Biography

Martin R Evans is a clinical laboratory director with a PhD in medical microbiology and immunology. As a microbiology consultant for the American Society for Microbiology (ASM) he has participated in CDC/ASM antimicrobial resistance (AMR) surveillance/One Health and other projects in Ethiopia, Kenya, Tanzania, Mozambique, Bangladesh, Brazil, and Mexico. As a senior laboratory and informatics consultant for the Association of Public Health Laboratories (APHL) he worked on APHL/CDC projects in Haiti, Kenya, Indonesia, Namibia, Uganda, South Africa and Zimbabwe. Dr Evans is a recipient of APHLs Thomas E. Maxson Education, Training and Workforce Development Award. Prior to consulting, Dr Evans was an Associate Director at the New York City Public Health Laboratory. Previously, Dr Evans spent 14 years in the private sector as a clinical laboratory director at Quest Diagnostics and SmithKline Beecham Clinical Laboratories. Prior to this, he was in academia including positions at Temple University and the University of Zimbabwe Faculty of Medicine. He is also a New York State licensed medical technologist and was elected as the first chairperson of the New York State Board for Clinical Laboratory Technology.

# THE ASSOCIATIONS BETWEEN ALCOHOL CONSUMPTION AND FRAILTY: SYSTEMATIC REVIEW AND DOSE-RESPONSE META-ANALYSIS

**Le Ma, Shui-Kit Cheuk, Huijing Zhang and Beibei Xu**

*Peking University Health Science Center, China*

## Abstract

**Background:** Frailty is a prevalent condition among the older population which increases the risk of various adverse health outcomes. Numerous studies have explored the relationship between alcohol consumption and frailty, yielding inconsistent and sometimes contradictory findings.

**Objective:** To clarify the association between different levels of alcohol consumption and the risk of frailty.

**Methods:** We conducted a systematic review and dose-response meta-analysis, searching four electronic databases for studies that provided relevant data on drinking status and frailty status. The quality of each study was assessed using the Quality Assessment Tool for Observational Cohort, Cross-Sectional and Case-Control studies from the National Institute of Health. A dose-response meta-analysis was conducted to explore potential linear and non-linear associations. Restricted cubic splines were applied with three fixed knots at the 10th, 50th, and 90th percentiles. Pooled Odds Ratios (ORs) and 95% Confidence Intervals (CIs) were estimated by using a random-effects model.

**Results:** This review encompassed seventy-two articles, comprising a total of 3,012,171 participants. The pooled OR for frailty risk among drinkers compared to nondrinkers and occasional drinkers was 0.56 (95%CI: 0.48-0.64). A U-shaped relationship between alcohol consumption and frailty risk was identified. Alcohol consumption of less than 54.5 grams per day was associated with a reduced risk of frailty, while intake above this threshold may increase the risk. Notably, the lowest frailty risk was observed at an alcohol consumption level of approximately 20.5 grams per day.

**Conclusion:** Moderate alcohol consumption may serve as a protective factor against frailty, but this effect diminishes as consumption levels increase. Future research should account for the non-linear relationship between alcohol intake and frailty risk.

## Biography

Beibei Xu is an associate researcher and doctoral supervisor at the Center for Medical Informatics, Peking University. Graduated from the Bethune School of Medicine, Jilin University, and studied for a master's and doctoral degree in nutritional epidemiology at the College of Anthropology, Auburn University, USA. She also studied at the School of Mathematics and obtained a master's degree in applied statistics. After graduation, she conducted postdoctoral research at the Center for Medical Informatics, Peking University, the School of Health, Aarhus University, Denmark, and the Moores Cancer Center, University of California, San Diego, USA. She conducted interdisciplinary research using different types of medical and health data and published more than 50 SCI and Chinese core articles. She presided over and participated in many National Natural Science Foundation and ministerial projects.

# *Day-2*
# *Oral Presentations*

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# HIGH "FITNESS AGE" AS A RISK FACTOR FOR MORBIDITY AND PREMATURE MORTALITY IN RELATION TO RARE DISEASES

**Jaroslav Novák[1], Milan Štork[2] and Ondřej Topolčan[3]**

*[1]University Hospital, Plzen/Pilsen, Czech Republic; Medical Faculty of Charles University, Czech Republic*
*[2]Technology/RICE, University of West Bohemia, Czech Republic*
*[3]University Hospital, Czech Republic*

## Abstract

Physical activity (PA) is one of the important factors influencing human health. According to the WHO recommendation, the minimum range of adult PA should include at least 150 minutes per week on five different days of moderate intensity, plus at least twice a week of moderately demanding resistance exercises to prevent muscle mass loss. Over the course of life, there is an age-related decrease in cardiorespiratory capacity (as measured by VO2max) of approximately 10 percent per decade. The level of VO2max is a significant factor related to the risk of metabolic syndrome, coronary heart disease and other health disorders.

A total cohort of 2901 examinations were divided into 5 groups according to the nature of physical activity: group A – endurance athletes, group B – team sports players, group C – other competitive athletes, group D – recreational leisure-time athletes, group E – people with health problems. Cardiorespiratory fitness was assessed according to the $VO_2$max and METmax parameters found in the stress test on a bicycle ergometer. A gradually increased load until exhaustion was used. While in groups A to D cases that would be classified as NYHA 1 (METmax lower than 9) were quite rare (10 cases out of 2777, i.e. 0.3%), in groups E it was 20% in men (16 cases out of 82) and 52% in women (23 cases out of 44) of those examined. Accordingly, fitness age in groups A, B and C generally corresponded to a lower age than the calendar age, in groups E of both men and women, fitness age was significantly higher compared to the calendar age.

According to statistical data from the Czech Society of Cardiology, almost 3 million people were treated for cardiac disease in 2021, which represented 37.5% of the population over 25 years of age. It can be assumed that in most of these patients, fitness age reached higher values than their real calendar age.

This also applies to patients with rare diseases. In some rare diseases, e.g. dextrocardia, the patient does not have to be limited at all. The Paralympic Games are an example that sports at a high-performance level can be practiced with appropriate training even with very serious health disabilities. In many other rare diseases, however, the nature of the disease does not allow for any more demanding movement. In such cases, the WHO recommendations on physical activity of the population apply: Any amount of physical activity is better than none; all physical activity counts; all age groups should limit the amount of time being sedentary. Adults with these chronic conditions may wish to consult with a physical activity specialist or health-care professional for advice on the types and amounts of activity appropriate for their individual needs, abilities, functional limitations/complications, medications, and overall treatment plan. Long-term benefits of physical activity have been described in a number of serious rare diseases, e.g. Pompe disease. On the other hand, high fitness age represents a significant risk of morbidity and probably also a significant limitation of quality of life.

## Biography

Jaroslav Novák, M.D., Ph.D. was born in 14. 8. 1941 in Pilsen. In 1964 he graduated from the Faculty of Medicine of Charles University in Pilsen. In 1973 he completed a three-year coaching school at the Faculty of Physical Education and Sport at Charles University in Prague. Since graduation, he has been involved in sports medicine, mainly as an assistant professor at the Department of Sports Medicine at the Faculty of Medicine of Charles University in Pilsen. He has published about 500 professional and scientific papers, of which more than a hundred in foreign journals. He has lectured at dozens of congresses in Europe and overseas. In 2015 he defended his dissertation "Cardiorespiratory Fitness of the Sporting Population". As a doctor and coach, he worked for many years with national water polo teams. To this day, he is still active in sports in the "masters" categories. He and his wife Helena have three adult children and five grandchildren.

# IMPACT OF A QUALITY PROGRAM ON OVERINDICATION OF SURGERIES FOR ENDOMETRIOSIS AND CHOLECYSTECTOMIES

**Mauro Dirlando Conte-de-Oliveira, Haggeas da Silveira Fernandes, Ana Luiz Vasconcelos, Fernanda Aparecida de Paula Russo, Daniel Tavares Malheiro, Giancarlo Colombo, Paula Pelegrini, Otavio Berwanger, Vanessa Teich, Alexandre Marra, Fernando Gatti de Menezes, Miguel Cendoroglo Neto and Sidney Klajner**

*Hospital Israelita Albert Einstein, Brazil*

## Abstract

**Background:** About 45% of patients receive medical services with minimal or no benefit (low-value care). In addition to increasing costs for the health system, performing invasive procedures without indication poses potentially preventable risks to patient safety.

**Objective:** To determine whether a managed quality improvement program can prevent cholecystectomies and surgeries for endometriosis treatment with minimal or no benefit to patients.

**Methods:** This was a before and after study conducted in a private hospital in São Paulo, Brazil, whose main medical remuneration model is fee-for-service. All patients whose surgeon scheduled a cholecystectomy or surgery for endometriosis between August 1, 2020 to May 31, 2021 were evaluated. The intervention consisted of allowed the performance of only procedures that meet the previously defined criteria or whose indication was validated by a board of experts.

**Results:** A total of 430 patients were analyzed. The program prevented the unnecessary performance of 13% of cholecystectomies (P = 0.0001) and 22.2% (P = 0.0006) of surgeries for the treatment of endometriosis. This allowed an estimated annual cost reduction to the health system of US$ 485,112.87.

**Conclusion:** In a hospital with private practice and fee-for-service medical remuneration, the definition of clear criteria for indicating surgery and the analysis of cases that do not meet these criteria by a board of reputable experts at the institution resulted in a statistically significant reduction of low-value cholecystectomies and endometriosis surgeries.

## Biography

Giancarlo Colombo is a physician and the manager of the Department of Medical Practices (DPM) at the Israelita Albert Einstein Hospital. This division is responsible for overseeing and regulating all medical activities within the institution. Passionate about creating quality improvement processes, he has established numerous programs during his tenure that oversee the entire professional journey of approximately 15,000 physicians. These programs encompass a rigorous registration process; the development and updating of care pathways, which detail all stages of the care episode; the definition and management of necessary training for physicians in each hospital department; and the analysis of all relevant adverse events by specialists, followed by the creation of action plans to implement barriers preventing the recurrence of similar incidents. Within this context, the Adequacy of Care Management Program was established, currently managing the appropriate indication of 9 procedures and continuously expanding its scope.

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# AI/ML TO IDENTIFY AND STRATIFY SOCIAL DETERMINANTS OF HEALTH CONTRIBUTING TO CANCER DISPARITY IN RURAL APPALACHIA

**Aisha Montgomery, Ravi Vadapalli, Sepideh Shokouhi, Josh Schilling, Leigh Boehmer, Douglas Flora, David Chism, Aasems Jacob, Praduman Jain and Anil Shanker**

*Institute for Data Science and Computing, University of Miami, USA*

## Abstract

**Background:** In the medically underserved area of rural Appalachia, cancer mortality rates are 32% higher than the US average and rising. Social determinants of health (SDOH) are known barriers to cancer care in rural regions, however, their measurable impact on cancer survival has not been evaluated.

**Objectives:** To build a machine-learning (ML) model using SDOH (vs. clinical) data features to predict colorectal cancer survival in Appalachians ≥ 5 years post-diagnosis.

**Methods:** Data were drawn from a representative sample of 7,718 Appalachian adults (age 18-100+) with malignant colorectal and rectosigmoid cancer diagnosed between 2000-2017 at community cancer centers in Kentucky and Tennessee, which included demographic, clinical diagnostic, treatment, and SDOH indicators. Clinical, demographic and SDOH features were stratified and added to the ML model to evaluate their effect on model predictability. Logistic regression, XGBoost, and XGBoost hyper-parameterized were used to analyze data. Further, three versions of the ML model were tested: 1) only clinical data features, 2) only SDOH features, and 3) combined clinical +SDOH features.

**Results:** Patients were average age 67 ± 13.2 years, 49% female, and 66% rural. Feature stratification identified marital status, employment, and insurance status as SDOH features with the highest impact on model output. Combining clinical and SDOH features in the ML model provided the highest model performance, indicated by increased area under the receiver operating curve (0.791), as compared to using only clinical (0.758) or only SDOH (0.662) features.

**Conclusion:** These findings demonstrate the importance of SDOH factors on cancer outcomes in an underserved population. Further, the data methods highlight the need for diverse, community based EHR datasets in AI/ML research to address disparities. Continuation of this work may contribute to best practices in the creation and use of diverse clinical and SDOH datasets to improve AI/ML-based outcomes to better address cancer disparities.

## Biography

Ravi Vadapalli is the Director of Advanced Computing at Frost Institute for Data Science and Computing and Research Associate Professor in Electrical and Computer Engineering at University of Miami. He is also a faculty member of Sylvester Comprehensive Cancer Center (SCCC) – an NCI designated cancer center. He has over 20 years of experience in high-performance computing (HPC) and data science algorithms and information technologies across diverse applications in science, engineering, humanities, and medicine. His current research and teaching interests are in harnessing HPC and AI/ML technologies for accelerating modeling and simulation of complex physical phenomena and creating future workforce for sustainable research and innovation.

# PAEDIATRIC RARE SKIN DISEASES IN VIETNAM

## Tran Hau Khang

*National Hospital of Dermatology and Venereology (NHDV), Vietnam*

## Abstract

**Background:** In Vietnam, the tropical climate influences a wide range of skin diseases such as fungus, bacterial infections, atopic dermatitis, contact dermatitis, hives. According to the data of the National Hospital of Dermatology and Venereology (NHDV), the most common skin conditions in children include infectious skin diseases, atopic, contact dermatitis, acne… However, the data of Paediatric Rare Skin Diseases are very limited.

**Objective:** The objective of the study: to describe the pattern of Rare Skin Diseases in Children in Vietnam from 2013-2023

**Methods:** All patients aged between 0-15 years who presented with skin conditions at the NHDV were examined and consulted with at least 2 Dermatologists. The diagnosis was mainly made clinically and histopathologically. Relevant laboratory investigations such as genetics, haematology...were performed when the diagnosis was unclear

**Results:** From 2013-2023, 36 patients aged 0-15 were detected with Rare Skin Conditions at the NHDV. Among them, the most prevalent diagnosis in male was 68%. The common cause of rare skin Disorders was genetics with 57%, following: psychological disorders: 28%, unknown: 15%. Some conditions were very rare/rarest in Vietnam such as: Haematidrosis, Degos disease, Osteoma cutis, Aplasia cutis congenital, Progeria syndrome. Several patients were successfully treated at the NHDV and/oral their families.

**Conclusion:** Overall, genetic cause was most common of Rare Skin Diseases in Vietnam in Children aged between 0-15 years. This study gives a breakthrough in research on rare skin Diseases and It may help to plan Dermatology expansion of educational programs and preventive measures on Rare Skin conditions in Vietnam.

## Biography

Tran Hau Khang, born in Ha Tinh Province, Vietnam, is a distinguished Vietnamese dermatologist. He has served as a professor at Hanoi Medical University since 2002 and held the positions of Vice-Director and Director at the National Hospital of Dermatology and Venereology from 1996 to 2015. He was also the Deputy-Head and Head of the Department of Dermatology at Hanoi Medical University during the same period. Khang was the President of the Vietnamese Society for Dermatology and Venereology (2011-2022) and Deputy President of the Asian Academy of Dermatology and Venereology (2009-2019). He has been an influential member of various editorial boards and a senior consultant at the National Hospital of Dermatology and Venereology. Recognized with numerous awards, including the People's Physician title and several accolades from the Ministry of Health, his research focuses on leprosy, STDs, and autoimmune diseases. He has authored over 243 papers and numerous books, contributing significantly to dermatology literature.

# VALUE-ADDED MEDICINES FOR ADDRESSING UNMET NEEDS OF RARE DISEASES

**Shashi Kanth Muni and Jayapala Reddy AV**
*MSN Laboratories, India*

## Abstract

**Background:** Rare diseases, which affect fewer than 1 in 2,000 individuals, often lack adequate treatments due to their limited commercial viability and high development costs. Value-Added Medicines (VAMs) offer a promising solution by enhancing existing drugs to meet unmet needs. These enhancements range from reformulations to new indications and combination therapies, providing substantial benefits for patients, healthcare providers, and payers.

**Objective:** This review seeks to demonstrate how VAMs can address unmet needs in rare diseases by repurposing existing medicines, optimizing drug formulations, and refining treatment strategies. The primary focus is to show how these approaches can improve patient outcomes without creating significant additional economic burdens.

**Methods:** The analysis includes case studies of well-known drugs that have been successfully repurposed to treat rare diseases. It examines different VAM strategies such as reformulation, repositioning, and combination therapies, highlighting their clinical value and cost-effectiveness. Notable examples, including the repurposing of thalidomide and sildenafil, are explored to illustrate the potential of VAMs in rare disease treatment.

**Results:** VAMs have demonstrated marked improvements in efficacy, safety, and patient quality of life through innovative drug repurposing. For example, sildenafil, initially developed to treat angina, was repurposed for erectile dysfunction and subsequently for pulmonary arterial hypertension, while thalidomide, after its early usage and infamous reputation as one of the most potent teratogenic substances, was successfully repositioned for multiple myeloma, improving survival rates. These successes exemplify the transformative power of VAMs in addressing rare diseases.

**Conclusion:** VAMs offer a sustainable and effective approach to treating rare diseases by transforming existing medicines to meet specific needs. They provide enhanced therapeutic outcomes, optimized formulations, and expanded indications, all the while helping to alleviate the economic burden on healthcare systems.

## Biography

Shashi Kanth Muni is an accomplished pharmaceutical physician with over 14 years of experience in medical affairs and clinical research. He has been pivotal in driving new product launches and regulatory approvals, notably spearheading India's first indigenous SARS-CoV-2 vaccine, COVAXIN as well as successful approval of an orphan drug in India. Dr. Muni has extensive expertise in vaccines, gastroenterology and cardiology therapeutic areas. He has held key roles at MSN Laboratories, Bharat Biotech, and Dr. Reddy's Laboratories, where he led clinical trials, KOL engagements, and medical education initiatives. His leadership in new product ideation has resulted in successful launches and the optimization of medical processes, earning multiple awards for excellence. Dr. Muni holds an Executive MBA from the Indian School of Business and is recognized for his dedication to improving healthcare outcomes through strategic innovation and collaboration.

# *Day-2*
# *E-Poster Presentation*

# COMORBIDITIES AND BREAST CANCER MORTALITY IN PORTUGAL: A RETROSPECTIVE OBSERVATIONAL STUDY

**Cecília M Antão and Paulo J Nogueira**

*University of Lisbon, Portugal*

## Abstract

**Background:** Breast cancer is a major cause of cancer mortality among women worldwide and the first cause of cancer death of women resident in Portugal. Its screening, diagnosis and treatment has received increased attention from the Portuguese public health authorities.

**Objective:** To examine the association between age-related comorbidities and breast cancer mortality in Portugal mainland from 2010 to 2018.

**Methods:** Clinical information was extracted directly from the morbidity database of public hospitals. The sample population were 70,927 women with any diagnosis of breast cancer who attended a Portuguese public hospital from 2010-2018 as outpatients or in internment. Data were treated with R-studio (frequencies per age group and per comorbidity) and SPSS (Pearson correlation). Adjusted odd ratio were calculated to determine which comorbidities were associated with an increased chance of death from breast cancer.

**Results:** Mortality rate due to breast cancer showed a net decrease during the study period and reached 4.37% in 2018. Higher incidence comorbidities were secondary malignant neoplasm of axilla and upper lymph nodes (52.4%), hypertension (46.8%), secondary malignant neoplasm of bone and bone marrow (34.8%), hyperlipidemia (19.3%), and diabetes (17.4%). Women suffering from breast cancer and another comorbidity had an increased chance of death. Depression was not correlated to mortality and obesity was negatively correlated (-0,013). Age odds ratio was 1.042 and the age group 40-49 had the highest incidence of breast cancer from 2013 to 2018. The Lisbon district accounted for the highest percentage of BC patients in all years.

**Conclusion:** Older women co-diagnosed with breast cancer and multiple morbidities, namely secondary malignant neoplasm of axilla and hypertension, showed a higher risk of mortality. Geography and the breast cancer screening policies may play a role in the incidence and prevention of breast cancer in Portugal.

## Biography

Cecília M. Antão has her expertise in pharmacovigilance and mission to improving the health of patients with lesser literacy and access to personalized medicine. Her dedication to scientific and educational research along with her experience in patient-centered roles in the pharmaceutical industry have provided her with the bases for a social approach of public health. She has been building bridges among private and public stakeholders, academic researchers, healthcare professionals, and patients through the years, with a special focus in oncology (research, medical information, and treatment). She is currently engaged in setting the foundation for a new project involving the elderly and the public healthcare management supported by local stakeholders.

# RARE CASES OF HEMATOHIROSIS IN BOTH ADULT AND CHILDREN OF VIETNAM

## Tran Hau Thach Lam and Tran Hau Khang

*National Hospital of Dermatology and Venereology, Vietnam*

## Abstract

Hematohirosis is a very rare condition of sweating blood. It usually happens in patients with extreme mental stress. There are only a few reports in the literature. A 26-year-old male and a 7-year-old girl both came to our hospital with blood-like liquid discharge from their normal skin. There were no injuries or a history of other bleeding disorders in either of them. These episodes occurred after a mental stress period and improved or completely recovered with the use of propranolol, diazepam, and vitamin C.

## Biography

Tran Hau Thach Lam is a young clinical dermatologist based in Hanoi, Vietnam, committed to advancing skin health and patient education. Dr. Lam is known for his patient-centered approach and has been involved in various community outreach programs, providing free skin screenings and educating the public about skin health. He actively participates in international dermatology conferences, sharing his insights and experiences in diverse skin disorders. Fluent in both Vietnamese and English, Dr. Nguyen aims to bridge the gap in dermatologic care and is dedicated to improving access to skin health services in Vietnam and beyond.

# *Virtual Presentations*

# ENHANCING QUALITY OF LIFE IN LYSOSOMAL STORAGE DISEASES: A FOCUSED STUDY IN MALAYSIA

**Noor Aziah Zainal Abidin[1], Lock-Hock N[2] and Gaik Siew C[3]**

*[1]Management and Science University, Malaysia*
*[2]Genetic Department, Hospital Kuala Lumpur, Malaysia*
*[3]Genetic Department, Hospital Pulau Pinang, Malaysia*

## Abstract

**Background:** Lysosomal Storage Diseases (LSDs) represent a significant health challenge globally, characterized by a group of rare genetic disorders resulting from enzyme deficiencies within the lysosomes. These conditions lead to the accumulation of undigested molecules, significantly impacting multiple body systems and reducing quality of life. In Malaysia, there is a notable lack of specific data regarding the prevalence and impact of LSDs, which hinders the development of effective healthcare strategies and policies tailored to the needs of affected individuals.

**Objective:** This study aims to assess the quality of life (QOL) of individuals with LSDs in Malaysia and determine the disease's prevalence. Insights gained are intended to guide healthcare policy formulation and improve patient care services within the country.

**Methods:** A two-phase approach is employed. The first phase conducts a Quality-of-Life Survey among Hospital Kuala Lumpur patients using the validated instrument (EQ-5D) to measure health-related QOL across psychological, social, and economic dimensions. The second phase focuses on a prevalence study utilizing hospital records and national health databases to establish epidemiological data on LSDs in Malaysia. This combined methodology ensures comprehensive coverage of both patient experiences and statistical prevalence data.

**Results:** This study is expected to provide key insights into the daily challenges faced by individuals with LSDs, enhancing understanding of the broader impact of these diseases on patients and healthcare systems. By establishing robust prevalence data, the study will contribute significantly to the local and global understanding of LSDs, aiding in the formulation of targeted health policies and interventions.

**Conclusion:** Addressing the gap in knowledge regarding LSDs in Malaysia is important for improving the quality of life for affected individuals and informing health policy decisions. The outcomes of this research will likely lead to better healthcare strategies, more effective resource allocation, and an overall enhancement in patient care for LSDs within Malaysia and potentially other similar contexts globally.

## Biography

Noor Aziah Zainal Abidin, a public health specialist, holds a medical and Master of Public Health from Universiti Kebangsaan Malaysia and the University of Malaya, respectively. Currently, she is an Associate Professor and the Head of the Community Medicine Department at Management and Science University. Her career at the Ministry of Health involved drafting national policies and management strategies for Obstetrics, Gynaecology, and Paediatrics, including rare diseases. She has been involved in developing the National Framework for the Rare Disease Programme and drafting guidelines for Enzyme Replacement Therapy. She held the role of secretariat of the National Committee for Rare Diseases at the Ministry of Health before transitioning to academia

# MEASURING SPATIAL INEQUALITIES IN MATERNAL AND CHILD MORTALITIES IN PAKISTAN

## Farzana Sher Muhammad

*University of Malaya, Malaysia*

## Abstract

**Background:** In developing countries, the death probability of a child and mother is more significant than in developed countries; these inequalities in health outcomes are unfair. The present study encompasses a spatial analysis of maternal and child mortalities in Pakistan.

**Objective:** The study aims to estimate the District Mortality Index (DMI), measure the inequality ratio and slope and ascertain the spatial impact of numerous factors on DMI scores across Pakistani districts.

**Methods:** Micro-level household datasets from multiple indicator cluster surveys (MICS) were used to estimate the DMI. To find out how different the DMI scores were, the inequality ratio and slope were used. This study further utilized spatial autocorrelation tests to determine the magnitude and location of the spatial dependence of the clusters with high and low mortality rates. The Geographically Weighted Regression (GWR) model was also applied to examine the spatial impact of socioeconomic, environmental, health, and technological attributes on DMI.

**Results:** The inequality ratio for DMI showed that the upper decile districts are 16 times more prone to mortalities than districts in the lower decile, and the districts of Baluchistan depicted extreme spatial heterogeneity in terms of DMI. The findings of the Local Indicator of Spatial Association (LISA) and Moran's test confirmed spatial homogeneity in all mortalities among the districts in Pakistan. The H-H clusters of maternal mortality and DMI were in Baluchistan, and the H-H clusters of child mortality were seen in Punjab. The results of GWR showed that the wealth index quintile has a significant spatial impact on DMI; however, improved sanitation, handwashing practices, and antenatal care adversely influenced DMI scores.

**Conclusion:** The findings reveal a significant disparity in DMI and spatial relationships among all mortalities in Pakistan's districts. Additionally, socioeconomic, environmental, health and housing variables have an impact on DMI. Policymakers may mitigate these mortalities by focusing on vulnerable zones and implementing geographically targeted policies.

## Biography

Farzana Sher Muhammad is a PhD candidate in her final year. She has expertise in evaluating spatial inequalities in health outcomes. Her focus is on constructing the District Mortality Index (DMI) which is based on the procedure proposed by the World Health Organization (Weaver et al., 2014) for evaluating the Urban Health Index (UHI). It has two advantages. First, it permits the choice of the number of indicators and the size of the analysis. Second, the single composite metric is beneficial in assessing and comparing spatial inequalities across different localities. DMI may be a valuable point of reference for tracing any country's progress towards SDGs.

# MODEL-BASED RECURSIVE PARTITIONING OF POPULATIONS IN EPIDEMIOLOGICAL STUDIES

**Robert M West, Paul Andrzejowski and Hussain Jaafari**

*University of Leeds, UK*

## Abstract

**Background:** Many epidemiological studies assume that risk factors impact outcomes in the same way for the whole population. This assumption, although commonly made, may not hold. Further it is rare that such an assumption is investigated.

**Objective:** To demonstrate that a data-driven statistical approach can be undertaken to explore the assumption that risk factors are consistently associated across the population.

**Methods:** Data were drawn from 4 different studies: the Rome Foundation Global Epidemiology Study (RFGES), The English Longitudinal Study of Ageing (ELSA), The National Health and Nutrition Examination Survey (NHANES), and the Functional Outcomes in Trauma Study (FIT). The statistical analysis involved model-based recursive partitioning yielding a tree structure with fitted (logistic) linear models. In the final study the modelling included random effects. Care was taken to avoid overfitting.

**Results:** In all four studies presented, partitioning of the population led to marked improvements of the models and revealed risk factors that differed for different partitions. The partitioning was data-driven and limited by the significance of statistical tests. The size of partitions was also required to be above a given threshold to support public-health interests.

**Conclusion:** Partitioning of a population can improve model fitting and reveal variations in associations that can have important implications for public health planning.

## Biography

Robert M West is Professor of Biostatistics at the University of Leeds with research interests in the analysis of observational data. He has considerable experience with electronic health records and the challenges concerned with robust interpretation. In terms of epidemiology, the use of more advanced statistical and machine learning methods can reveal interesting findings. Professor West has a number of PhD students involved with modern statistical and machine learning methods working in medicine, health, and epidemiology.

# THE DOUBLE ROLE OF NUTRIENTS IN IMMUNITY

**Major Gheorghe GIURGIU[1] and Manole COJOCARU[2,3]**

*[1]Deniplant-Aide Sante Medical Center, Biomedicine, Romania*
*[2]Academy of Romanian Scientists, Romania*
*[3]Titu Maiorescu University, Faculty of Medicine, Romania*

## Abstract

**Background:** Nutrients are the substances found in food which drive biological activity, and are essential for the human body. Several studies have emphasized that some nutrients may increase an individual risk for cancer, while others may be protective. Dietary nutrients may be converted into metabolites by intestinal microbes that serve as biologically active molecules affecting regulatory functions in the host.

**Objectives:** To demonstrate role of nutrients as functional foods in the management of immunity.

**Materials and Methods:** This includes the role of macronutrients, micronutrients, and the gut microbiome in mediating immunological effects. Nutritional modulation of the immune system has applications within the clinical setting, but can also have a role in healthy populations, acting to reduce or delay the onset of immune-mediated chronic diseases. Ongoing research in this field will ultimately lead to a better understanding of the role of diet and nutrients in immune function

**Results:** Probiotics may restore the composition of the gut microbiome and introduce beneficial functions to gut microbial communities, resulting in amelioration or prevention of gut inflammation and other intestinal or systemic disease phenotypes. A well-functioning immune system is critical for survival. The immune system must be constantly alert, monitoring for signs of invasion or danger. Cells of the immune system must be able to distinguish self from non-self and furthermore discriminate between non-self molecules which are harmful (e.g., those from pathogens) and innocuous non-self molecules (e.g., from food).

**Conclusion:** This presentation describes how diet and intestinal luminal conversion by gut microbes play a role in immune-mediated chronic diseases.

# NAVIGATING CHALLENGES AND INSIGHTS FROM ACUTE MYOCARDIAL INFARCTION REGISTRY DATA IN SRI LANKA; LESSONS FROM A DEVELOPING HEALTHCARE LANDSCAPE

## Gotabhaya Ranasinghe

*National Hospital of Sri Lanka, Sri Lanka*

## Abstract

In Sri Lanka, uncertainties persist regarding the adherence to recommended guidelines for timely reperfusion therapy in the management of acute myocardial infarction (AMI). To address this gap, the Registry of Acute Myocardial Infarction in Sri Lanka (RAMISL) was initiated in March 2017. This study aims to analyze AMI care patterns, identify current limitations and barriers and discuss future-oriented solutions to enhance AMI care efficiency in Sri Lanka.

Operating across four main cardiology departments, RAMISL utilizes a real-time mobile platform to collect data on both ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI) patients. Data was analyzed for a 6-year duration (2018-2023).

By 2023, a two-fold increase in AMI cases was observed. Median patient age was 59 years, with

52.7 % males and 12.4% diagnosed with STEMI. Primary Percutaneous Coronary Intervention (PPCI), rescue PCI (R-PCI) and thrombolysis were performed in 11.3%, 8.7% and 13.4% of cases, respectively. In-hospital mortality stood at 2.4%, with 1.6% being STEMI-related. Median 'doorto-needle time' was 55 minutes and median 'door-to-balloon time' was 110 minutes. Identified limitations include low P-PCI coverage and significant time delays in the treatment initiation. Barriers encompass delays in evaluation and diagnosis, geographical distance between hospitals and transportation inefficiencies.

The significant rise in registry encounters highlights the importance of continuous data collection for monitoring and enhancing care. Future plans involve expanding the registry to include patients from additional hospital and implementing the triage and transfer multi-level model of STEMI care, known as the "Wagon Wheel Model", in Sri Lanka.

## Biography

Gotabhaya Ranasinghe, a leading general and interventional cardiologist in Sri Lanka, serves as Senior Consultant Cardiologist at the National Hospital of Sri Lanka and within the Sri Lanka Navy, as Surgeon Rear Admiral. He has earned fellowships from the Royal College of Physicians London, Ceylon College of Physicians, American College of Cardiology and Asia Pacific Society of Interventional Cardiology. He was a former President of the Sri Lanka College of Cardiology and is the co-founder of the 'Sri Lanka STEMI Forum'. His latest contribution to cardiology: SCADLE (Spontaneous Coronary Artery Dissection with Leukoencephalopathy) Syndrome which was first ever reported is documented in the European Heart Journal in 2023. He is also an avid wildlife enthusiast and enjoys traveling.

# BRIAN ACTIVITIES AND SPATIAL MEMORY MODULATED BY CA1 ELECTRICAL STIMULATION

**Elaheh Jafari[1] and Hojjatallah Alaei[2]**

*[1]Islamic Azad University, Iran*
*[2]Isfahan University of Medical Sciences, Iran*

## Abstract

**Background:** Hippocampus is the innermost part of the cortex, temporal lobe that extends to the lower brain and then extends to the lower surface of the lateral ventricles. As respects the involvement of the hippocampus in cognitive and emotional activity and relationship with the common neurological diseases, the aim of this study was to assess the effect of hippocampal electrical stimulation on brain waves and spatial memory.

**Objective:** In this research, the effect of hippocampal electrical stimulation on brain waves and spatial memory was studied.

**Method's:** The rats were anaesthetized (n = 8 each group) and the electrodes were implanted into the CA1 by stereotaxic instrument. Electrical stimulation with (25 μA) and (100 μA) were induced into CA1; then spatial learning and memory was investigated by Morri's water maze test, and then EEG was recorded for each rat.

**Result's:** Learning increased in the group stimulated with 25μA frequency compared to the sham group. This effect increased with high intensity (100 μA) of electrical stimulation. (Oneway ANOVA, Tukey's; P = 0.041). Also, this current intensity electrical stimulation increases frequency waves of delta (53.88 ± 2.03), reducing the frequency waves of alpha (11.96 ± 0.68), beta (19.72 ± 1.03), and theta (14.42 ± 0.85). Therefore, electrical stimulation strengthened and improved the recall stage (Tukey's: P = 0.007).

**Conclusion:** High-intensity electrical simulation was visible impact on brain waves specially delta waves which, play important role to consolidation of memory.

## Biography

Elaheh Jafari have started working in a psychology center in Isfahan since 2012. I have been in spadana center as a psychologist which tried to get experience in this field. I learnt a lot of psychology methods in additional courses. Afterwards, I became acquainted with neuroscience lab in the University of Medical Science Isfahan and then I offered my master thesis to Prof. Hojjatalah Alaie and he accepted immediately my proposal. Moreover, other professor also offered me other work in the lab and I have been working in this laboratory between 2016 and 2020.I moved to Italy last year and currently live in Rome.

# ENHANCING MALARIA EPIDEMIC RESPONSE THROUGH A DATA-DRIVEN DISTRICT-LED APPROACH: A CASE STUDY OF UGANDA

**Jovan Baryamaujura[1], Maureen Katusiime[1,2], Mudashiru Bbuye[1,4], Grace Akello[1], John Rek[1] Catherine Maiteki[1], Jimmy Opigo[1], Daniel Kyabayinze[1] Arthur Shem Kasambula[1], Atek Kagirita[1] and Henry Kyobe Bosa[1,3]**

*[1]Ministry of Health, Uganda*
*[2]Makerere University School of Public Health, Uganda*
*[3]Uganda People's Defence Forces, Uganda*
*[4]Makerere University Lung Institute, College of Health Sciences, Makerere University, Uganda*

## Abstract

**Background:** The abstract introduces a district-led response to malaria outbreaks in Uganda, driven by an Incident Management System (IMS) inspired by successful responses to COVID-19 and Ebola outbreaks. The rise in malaria cases in 2022 prompted a re-evaluation of strategies, particularly in districts where Indoor Residual Spraying (IRS) was implemented. This manuscript introduces a district-led response to malaria outbreaks, driven by a data-centric Incident Management System (IMS).

**Introduction:** The IMS, organized around surveillance, epidemiological investigations, laboratory services, and partner coordination, aims to empower districts in malaria programming and response. This data-centric framework aligns with the World Health Organization's recommendations for a district-led response, focusing on tailored interventions at various levels to control outbreaks and enhance district capacity sustainably.

**Incident Management System Overview and Choice of Interventions**

The implementation plan includes thematic interventions on parasitic prevalence, environmental assessment, and mortality, emphasizing systematic outbreak investigations, environmental management, and mortality assessments. Community engagement plays a crucial role in disseminating findings, fostering positive behavioral change, and developing community-led interventions. Leveraging the watch>alert>response>recovery framework, the IMS organizes epidemic responses systematically. Surveillance, epidemiological investigations, laboratory services, and partner coordination are streamlined through pillars, ensuring a coordinated approach.

**Conclusion:** The district-led response guided by the IMS offers a promising strategy to mitigate malaria outbreaks in Serere, Butaleja, Kibuku, and Amolatar Districts, aiming to reduce morbidity and mortality associated with malaria outbreaks through a data-driven, bottom-up approach. The abstract outlines a comprehensive framework that has been implemented and holds potential to significantly reduce the morbidity and mortality associated with malaria outbreaks in the targeted areas.

# NEW THINKING IN CLINICAL TRIALS: THE ESTIMAND JOURNEY

## Christine Fletcher

*GSK, UK*

## Abstract

The ICH E9(R1) addendum on Estimands and Sensitivity Analyses in Clinical Trials has introduced a new estimand framework for the design, conduct, analysis, and interpretation of clinical trials. Whilst the focus of this guideline is on confirmatory clinical trials, the framework can be applied to other types of clinical trials and non-interventional studies. In this presentation experiences from the Pharmaceutical Industry of implementing the estimand framework will be shared including examples from clinical trials and non-interventional studies. Key lessons learned will be summarised and emerging best practices and points to consider on strategies for implementing a new estimand thinking process will be proposed. Whilst much of the focus of implementing ICH E9(R1) to date has been on defining estimands, some of the important aspects relating to the choice of statistical analysis methods and sensitivity analyses to ensure estimands can be estimated robustly with minimal bias will also be discussed. ICH E9(R1) was introduced just before the start of the COVID-19 pandemic, but a positive outcome has been the acceleration of the adoption of the estimand framework. In summary, there have been many important learnings on the estimand journey to date and continued sharing of case studies will help to further advance the understanding and increase awareness across all clinical researchers of the estimand framework.

## Biography

Christine Fletcher is a Vice President Biostatistics at GSK. She leads a group of statisticians supporting the development of new and approved medicines in immunology, hepatology, respiratory, neuroscience, renal, HIV, infectious disease and global health. Chrissie has worked in the Pharmaceutical Industry for over 30 years and has experience of developing and commercialising new medicines in a variety of clinical disease areas across all phases of clinical development and post-approval activities. She previously worked at Amgen in a variety of leadership roles and began her career working at SmithKline Beecham Pharmaceuticals. Chrissie is actively engaged in statistical societies, pharmaceutical trade associations and initiatives relating to the Pharmaceutical Industry. Chrissie is a Council member of EFSPI and a member of the EFPIA Clinical Research Expert Group where she leads the Innovation in Clinical Trials team. Chrissie was the lead EFPIA representative for the ICH E9(R1) Working Group, and she leads the EFPIA/EFSPI estimand implementation working group. In 2019, Chrissie received the Women in Data "Twenty in Data and Technology" award and received honorary membership of PSI for her significant contributions. Chrissie is a Chartered Statistician of the Royal Statistical Society (RSS), and she has an MSc in Applied Statistics and a BSc (Hons) in Statistics with Management Science Techniques.

# A STRUCTURAL EQUATION MODELLING APPROACH TO EXAMINE THE MEDIATING EFFECT OF STRESS ON DIET IN CULTURALLY DIVERSE WOMEN OF CHILDBEARING AGE

**Karim Khaled, Fotini Tsofliou and Vanora Hundley**
*Birmingham City University, UK*

## Abstract

**Background:** Stress has been shown to be associated with poor nutrition among young women. However, studies around the topic have major limitations in their methodologies and the role of confounding factors within this association remains unclear in the literature.

**Objective:** To investigate the associations between stress and dietary quality/patterns in a culturally diverse population of childbearing-aged women.

**Methods:** A secondary analysis of data from two studies conducted in UK and Lebanon was performed using Structural Equation Modelling (SEM) to explore the role of country context, socio-economic status, and physical variables. Participants were healthy women of childbearing age (n = 493). Variables measured were dietary intake, stress, physical activity, sociodemographic variables, and Body Mass Index. These were included in the SEM analysis to examine the mediating effect of stress.

**Results:** The results showed that, among all variables, only country had a significant effect on dietary quality and patterns through the mediatory effect of stress. Participants from Lebanon were found to have higher stress levels compared to participants from the UK, and this contributed to a lower adherence to a Mediterranean diet.

**Conclusion:** This study shows that for women of childbearing age, having a good diet quality/pattern is dependent on stress levels and country context.

## Biography

Karim Khaled professional career spans across multiple institutions and roles, showcasing his versatility and commitment to the field of human nutrition. His tenure as an Assistant Professor in Human Nutrition at Birmingham City University stands out, where he designed and led modules on nutrition, food science, epidemiology, and biochemistry for both undergraduate and postgraduate students. Additionally, his role as a Lecturer in Nutrition and Behaviour at Bournemouth University further solidified his teaching and research capabilities. His work as a clinical dietitian and community nutritionist in Lebanon provided him with invaluable practical experience in healthcare settings, complementing his academic knowledge.

Dr. Khaled's research has earned him considerable recognition within the academic community. His work on diet quality, mental health, and structural equation modeling is frequently cited in both nutrition and public health literature, reflecting the critical nature of his findings. He is regarded as a leading voice in the field, and his systematic reviews have become key references for researchers and policymakers alike.

# NIPAH VIRUS- CASE SERIES

**Aneeta Regi**
*Royal College of Surgeons, UK*

## Abstract

**Introduction:** Nipah virus (NiV) is an emerging zoonotic pathogen responsible for outbreaks of severe respiratory illness and encephalitis, particularly in South and Southeast Asia. With a high mortality rate and potential for human-to-human transmission, NiV presents a critical public health challenge. This report is a comprehensive overview of the virus's epidemiology, modes of transmission, and clinical manifestations. Emphasis will be placed on the primary vectors, including fruit bats and contaminated food, as well as the significant human-to-human spread observed during outbreaks.

A 24 year old student who was visiting his hometown of Malappuram, in the southern Indian state of Kerala, has become the second person to die from Nipah virus infection in the state this year, the country's national laboratory confirmed on 15 September 2024. The first was a 14 year old boy who died in June 2024 within days of testing positive for Nipah.

The World Health Organization lists Nipah virus as a priority pathogen, with a high potential to cause pandemics. The virus spreads through bodily contact.

Officials in Kerala have been struggling to contain Nipah virus in recent years. Last September they closed schools, offices, and public transport in the Kozhikode district in response to a re-emergence of the virus infecting 2, after the outbreak in 2018, with 18 infected patients, killing 17 people. The current outbreak is the sixth spillover event since 2018.

In the Malaysian outbreak, of the 71 people affected, 50 died. The outbreak had a mortality rate of about 40 percent in humans. To stop Nipah in 1999, the government ordered the slaughter of more than one million pigs. Years later, fresh outbreaks resurfaced in India and Bangladesh — with a mortality rate around 70 percent.

Nipah viral disease outbreak in 2018 was reported in Kozhikode district, northern Kerala, India and the fruit bats have been identified as the source of the outbreak. India has had Nipah outbreaks at least twice before — both times in the eastern state of West Bengal in 2001 and 2007.

During the outbreak in 2018, it was reported that the two brothers had cleaned out an abandoned, bat-infested well in the compound and soon after which both young men fell ill soon after. Out of the 18 patients with Nipah Virus, 4 patients were from the same family. The next day, a 31-year-old nurse who tended to members of the infected family, died of Nipah. With every new casualty, health practitioners faced a difficult situation in handling the body of the deceased without exposing family members to bodily fluids, which could infect them with the virus while performing last rites. All health personnel were advised to be dressed in full protective gear — gloves, gowns, eye protection shields, masks and shoe covers.

The same protocol used for the Ebola outbreak was enforced here. The body, packed in two airtight plastic bags, was buried deeper than usual, lowered into a 10-foot pit filled with 11 pounds of bleaching powder.

People who contract the virus rapidly deteriorate, suffering acute respiratory distress syndrome and

encephalitis, the latter causing brain inflammation, neurological symptoms, swelling and convulsions. Patients were classified as having confirmed cases of Nipah virus infection if they had antibodies reactive with Nipah virus antigen. The mainstay of Nipah virus detection are Molecular tests such as reverse transcription polymerase chain reaction (RT-PCR).

Patients were considered to have probable cases of Nipah virus infection if they had symptoms consistent with Nipah virus infection during the same time and in the same community as patients with confirmed cases.

Fever, altered mental status, headache, cough, respiratory difficulty, vomiting, and convulsions were the most common signs and symptoms; clinical and radiographic features of acute respiratory distress syndrome of Nipah illness were identified during the fourth outbreak. Among those who died, death occurred a median of 6 days (range, 2–36 days) after the onset of illness. Patients who died were more likely than survivors to have a temperature >37.8 degrees Celsius, altered mental status, difficulty breathing, and abnormal plantar reflexes.

**Conclusion:** Nipah virus infection produced rapidly progressive severe illness affecting the central nervous and respiratory systems. High pathogenicity of NiV in humans, and lack of vaccines or therapeutics to counter this disease have attracted attention of researchers worldwide for developing effective NiV vaccine and treatment regimens.

The severe and devastating consequences of the coronavirus pandemic were undoubtedly made worse by a substantial lack of pandemic preparedness. A recent outbreak of Nipah virus in India in 2018 has raised the question of whether we should start to consider it as a future threat.

# YOUTH PEER FACILITATORS ROLE IN PROMOTING AND PROVIDING SUPPORT IN HIV TESTING AMONG UNIVERSITY STUDENTS: A CASE OF MASENO UNIVERSITY

**Owino Samwel[1] and Lidoros Lordlaro[2]**

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*[2]HERAF*

## Abstract

**Background:** In 2022, the National Syndemic Diseases Control Council of Kenya highlighted that 52% of the new HIV cases occurred among the AYPs aged between 12-24 years. The high rates of unprotected and irresponsible sexual behaviour and low HIV testing uptake in Tertiary learning institutions, underscore the need for resonate and wide-reaching interventions for this population. In this regard, Maseno University Aids Control Unit (ACU), recruited and trained students as youth peer educators to promote HIV testing services in the institution.

**Methods:** A mixed methods approach was utilized in Maseno university from May to August 2023. Stratified random sampling was used to recruit 1200 study participants from the 13 schools in Maseno University. Simple structured surveys were used to collect quantitative and qualitative data from the participants who had earlier been engaged by peer educators. Quantitative data was analysed descriptively while qualitative data was analysed thematically.

**Results:** The uptake of HIV testing among students aged 18-24 years was 32% (384). Facility HIV testing accounted for 43% (166) of the cases. Testing uptake for Maseno University Health centre was at 39.8% accounting for 66 of the participants. Testing uptake at the ACU was at 61.2%. Furthermore, HIV self-testing was at 57%. Low facility HIV uptake among the participants resulted from the stigma associated with accessing the services in the Aids Control Unit. Peer educators were instrumental in providing psychosocial support, referral for services and spreading HIV testing information among students including the use of self-test kits.

**Conclusion:** Peer facilitators play a crucial role in reaching populations such as adolescents and youths. Emphasis should be placed in addressing psychosocial and social aspects in HIV as well, creating a youth friendly HIV testing environment. Integration of peer-led interventions including functional supportive structures in HIV care programs is imperative.

## Biography

Owino Samwel is a final year undergraduate student pursing public health with information technology. Passionate about demystifying the undisclosed challenges facing the field of preventive and promotive health, he delves in early career research on the emerging and reemerging issues of public health concern with an aim to influence future policies and programs in navigating around such critical health issues. Owino is certain to shape the future public health trajectory and amicably offer at hand sustainable solutions through research.

# NODDING SYNDROME: CHARACTERISTICS AND FINDINGS OF A NARRATIVE REVIEW OF EPIDEMIOLOGY, ETIOLOGY, AND PUBLIC HEALTH IMPACT

**Polyne Nafula Wechuli**
*Kenya Medical Training College, Kenya*

## Abstract

**Background:** Nodding Syndrome is a neurological disorder that affects children of certain districts in East Africa. Little is known about this condition. It is a severe symptom that include repetitive nodding seizures, progressive impaired cognitive ability and stunted growth. Though it is well recognized as a public health issue the exact cause has not yet been established but most frequently it has been attributed to an infection while there are theories of exposure to toxins in the environment in the world.

**Objective:** This paper seeks to provide a narrative review of Nodding Syndrome literature with an emphasis on epidemiology, proposed causes, and effects on public health among rural communities especially those with limited resources settings.

**Methods:** A search was made using the identified databases including the PubMed, Google Scholar among others. These terms represent the following concern such as; Nodding Syndrome, neurological disorder, East Africa, epidemiology and etiology. Based on our search of articles in English, the present understanding of this condition was summarized.

**Findings:** The review notes that Nodding Syndrome is most prevalent among children aged between 5 and 15 years and is endemic in Uganda, South Sudan, and Tanzania; the clinical manifestations of Nodding Syndrome include nodding movements that progress with time, seizure, and intellectual disability. Its etiology is unknown, but current studies are underway trying to establish correlation with Onchocerciasis, inflammation secondary to malnutrition and neurotoxin. The disorder brings about socioeconomic complications which include disability, stigma and strain of health facilities in the affected areas.

**Conclusion:** Nodding Syndrome pose diagnostic, therapeutic, and community-based management dilemmas. More investigation focusing on its causes therefore is warranted in order to stage appropriate interventions in public health domains. Thus, awareness, early identification, and provided services are required to reduce this disorder's consequences for the identified populations.

## Biography

Polyne Nafula Wechuli is a clinically accredited practicing clinical officer. In clinical care, her patient-oriented approaches make her establish innovative directions for creating community health in partnership with her research and academic background. Having been in the research, evaluation, teaching, and healthcare administrative positions for several years, she has served rural and underserved populace immensely. Polyne's work-and-health model compounds the P and LP approaches of public health advocacy and prevention and incorporates them into a comprehensive, synergistic system for the delivery of healthcare services. Her clinical experience is therefore beneficial in attending to students' needs as well as various patient's needs since she understands their equity and inclusion. Caring, professional and possessing an unyielding desire for patient quality improvement and enabling future health practitioners, she records an indomitable passion for global and community health.

# INTEGRATION OF CORRELATIVE AND EXPLANATORY MODEL METHODS FOR PREDICTING THE GROWTH OF BIOLOGICAL SYSTEMS

**Carlos Oscar Rodríguez Leal**
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## Abstract

In this work, several correlative and explanatory modelling methods complement and improve each other, and information from systems is used to make predictions of the future behaviour of different systems, which is finally applied to the prediction of growth of biological systems, with particular interest in the evolution of epidemics. both in the short, medium and long term. The basic correlative models to be used are linearization and linear regression and statistical methods, Taylor series for discrete datasets, neural networks, inverse problem method, etc. Typical models such as binary fission, population density-dependent multiplication rates, Malthus model, Leslie matrix model, logistic growth model, and stochastic logistic growth model are used for explanatory models. As for the extra information used, there is the variable growth of epidemics depending on the seasons of the year, population conglomerations, etc. All these methods are used together, using techniques that complement and correct each other, to arrive at results that are compared with real records, where the precision of such joint techniques is shown. In addition, some of the individual methods employed are known methods, while others are known but modified and improved methods, or even original novel methods, such as Taylor polynomials for discrete datasets.

**Background:** In the use of methods for forecasting the evolution of epidemiological systems, there is a wide variety of alternatives. In this work, an integration of existing methods, as well as existing improved methods and new methods, is carried out, complemented with important information on the future evolution of such systems, in order to arrive at more accurate prediction results in the short, medium and long term.

**Objective:** Integrate a wide variety of methods for predicting the evolution of epidemiological systems, obtaining more accurate predictions in the short, medium and long term.

**Methods:** Various models of population growth are used, both correlative and explanatory, along with useful information from the environment of the populations studied, all of which is integrated through novel methods in order to make more accurate predictions in the short, medium and long term about population growth, and in particular about the growth of epidemics.

**Results:** The joint analysis of the methods used yields satisfactory results, as more accurate predictions are made about the evolution of the growth of epidemics in the short, medium and long term.

**Conclusion:** This paper shows that the joint analyses of correlative, explanatory and pertinent information models produce more accurate predictions in the short, medium and long term, by applying different special integrative techniques of the different models according to the respective time frame.

## Biography

Carlos Oscar Rodríguez Leal has experience in inverse problems with joint investment in geophysics, giving some lectures on the subject. He also has experience in the neural network method, studying in a self-taught way. He has published some articles on mathematics and physics, and has participated in several conferences on mathematics, physics and philosophy.

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