

*Innovation and Equity: Shaping the Future of Typhoid and Other Invasive Salmonellosis*

## Agenda

### Tuesday, March 24

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| 07:00-08:30 | <b>Registration</b>   |
| 8:30-08:40  | <b>Welcome</b><br>Rebecca Martin, Sabin Vaccine Institute, USA  |
| 08:40-09:00 | <b>Opening Remarks</b><br>Denise Garrett, Sabin Vaccine Institute, USA  |
| 09:00-10:00 | <b>Plenary</b><br><b>From Trials to Triumph: Implementation and Real-World Impact of Vaccination</b><br>This plenary opens the conference by highlighting what we are learning from the real-world implementation of typhoid conjugate vaccines. It brings together perspectives on global evidence, country implementation, and key outcomes that reflect real-world impact.<br><br><ul style="list-style-type: none"> <li>Matthew Laurens, University of Maryland, USA</li> <li>Senjuti Saha, Child Health Research Foundation, Bangladesh</li> <li>Lady Rosny Wandji Nana, Université Joseph KI-ZERBO, Burkina Faso</li> <li>Emmanuel Mugisha, PATH, Uganda</li> </ul> |
| 10:00-10:30 | <b>Coffee Break</b><br><i>Poster Viewing</i>  |

10:30-12:30

### Abstract Session

#### The Power of Protection: Real-World Vaccine Performance

- Effectiveness of the TYPHIBEV® (Vi-CRM197 conjugate) vaccine introduction in Nepal: a test-negative, case-control study  
*Dipesh Tamrakar, Dhulikel Hospital, Kathmandu University Hospital, Nepal*
- Assessing the Long-term Protection of Typhoid Conjugate Vaccine among Bangladeshi Children: Evidence from a Cluster Randomised Trial  
*Farhana Khanam, icddr,b, Bangladesh*
- Immunogenicity of a Heterologous Typhoid Conjugate Vaccine Booster with different dosing intervals, in Nepali children: An Observational Study  
*Huma Subhani, Patan Academy of Health Sciences, Nepal*
- Medium-term Effectiveness of Typhoid Conjugate Vaccine in Nepal: Evidence from TyVAC and TyVOID study  
*Shrijana Shrestha, Patan Academy of Health Sciences, Nepal*
- Antibody Response and Safety After Booster Vaccination with Heterologous Typhoid Conjugate Vaccine 5–6 Years After Primary Vaccination in Burkinabe Children  
*Jean Sawadogo, Groupe de Recherche Action en Santé, Burkina Faso*
- From Crisis to Control: A Study of Typhoid Conjugate Vaccine Impact in Harare, Zimbabwe (2017–2024)  
*Talent Bvochora-Mudavanhu, Harare City Health Department, Zimbabwe*
- Two Year Outcome of an Island-Wide Typhoid Vaccination Campaign in the Northern Division of Fiji  
*Alumita Vuakanisakea, International Vaccine Institute (Ty-Five Project), Fiji*
- Evaluating the Impact of Typhoid Conjugate Vaccine Introduction on Typhoid Burden in Pakistan  
*Farah Naz Qamar, Aga Khan University, Pakistan*

12:30-14:00

### Lunch

13:00-14:00

### Workshop

#### Tackling Invasive Non-Typhoidal Salmonella in Africa: Integrating Genomics, Epidemiology, and One Health Strategies for Sustainable Antimicrobial Resistance and Disease Control

Moderators: Melita Gordon, University of Liverpool, UK  
John Crump, University of Otago, New Zealand

- Carriage and shedding of MDR iNTS strains in children in Kenyan children: Genomic characterization and vaccine implication  
*Kelvin Kering, KEMRI, Kenya*
- Longitudinal high-resolution household transmission dynamics and latent infection modelling of NTS in Malawi  
*Peter Johnston, University of Liverpool, Malawi Liverpool Wellcome Programme, UK*
- Genomic and metagenomic insights into environmental reservoirs of nontyphoidal salmonella among children in a disease-endemic, resource-challenged setting  
*Collins Kebenei, KEMRI, Kenya*
- Leveraging sero-epidemiological and functional immunological findings from 4 contrasting African site cohorts, to understand iNTS exposure and protection  
*Helen Dale, University of Edinburgh, Scotland*

#### Panel Discussion

- *Megan Carey, MMGH Consulting GmbH, USA*
- *Stefano Malvolti, MMGH Consulting GmbH, Switzerland*
- *Gianluca Breggi, Sclavo Vaccines Association, Italy*

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| 14:00-15:30 | <p><b>Symposium</b><br/> <b>Turning the Tide on Typhoid: TCV Introduction and Impact</b><br/> Moderators: Emmanuel Mugisha, PATH, Uganda<br/> Farah Qamar, Aga Khan University, Pakistan</p> <ul style="list-style-type: none"> <li>• Mobilizing momentum: How Burkina Faso reached 10 million children in seven days<br/> <i>Eric Nebie, PATH, Burkina Faso</i></li> <li>• Equity and complexity: school-based vaccination during the MR/TCV campaign in Kenya<br/> <i>Rose Jalang'o, National Vaccine &amp; Immunization Program, Kenya</i></li> <li>• Equity at scale: Bangladesh's road to reaching more than 40 million children with TCV<br/> <i>Muhibul Kashem, PATH, Bangladesh</i></li> <li>• Vaccines of equity: Reaching an extended age cohort with TCV and MMCV in Niger<br/> <i>Rachidou Souley, Ministry of Public Health, Population, and Social Affairs, Niger</i></li> <li>• Impact of TCV on antimicrobial use among suspected typhoid fever patients in Pakistan<br/> <i>Megan Carey, LSHTM, UK</i></li> <li>• Modelling the Initial Impact and Predicted Future Benefits of TCV in Pakistan<br/> <i>Alicia N. M. Kraay, Institute for Disease Modelling/Bill &amp; Melinda Gates Foundation, USA</i></li> </ul>                |
| 15:30-16:00 | <p><b>Coffee Break</b><br/> <b>Poster Viewing</b></p>   |
| 16:00-17:30 | <p><b>Abstract Session</b><br/> <b>Keeping a Watchful Eye: Surveillance and Burden of Disease</b></p> <ul style="list-style-type: none"> <li>• Environmental Surveillance to Complement Clinical Surveillance in the Context of TCV Introduction in the Northern Division of Fiji<br/> <i>Raphael Zellweger, International Vaccine Institute (IVI), South Korea</i></li> <li>• Using Population-based and School-Based Rapid Serosurveys to Characterize Geographic and Age Variability of Enteric Fever burden in Pakistan<br/> <i>Mehreen Adnan, University of Oxford, UK</i></li> <li>• Seroepidemiology and serum bactericidal activity of IgG antibodies to Non typhoidal Salmonella in healthy Children in Mukuru informal settlement in Kenya<br/> <i>Schola Kamwethya, KEMRI, Kenya</i></li> <li>• Leveraging multiplex bead-based immunoassays to identify undiagnosed enteric fever: a prospective, hospital-based fever study in rural South and Southeast Asia<br/> <i>Sophie Kang, University of Oxford, Mahidol-Oxford Tropical Medicine Research Unit (MORU)</i></li> <li>• A Machine Learning Approach to Defining and Predicting the Scale of Typhoid Fever Outbreaks<br/> <i>Zeean Pithawala, Yale University, USA</i></li> </ul> |
| 17:30-19:30 | <p><b>Evening Reception</b></p>   |

## Wednesday, March 25

07:30-08:30

### Sunrise Session

#### Value Case for Combination Vaccines

Moderators: Farzana Bano Muhib and Muhibul Kashem, PATH, USA/Bangladesh

TCV Combination Vaccines, and Public Health and Market Opportunity Analysis for Bi-valent Vaccine

*Farzana Muhib, PATH, USA and Muhibul Kashem, PATH, Bangladesh*

8:30-9:30

### Plenary

#### No Silver Bullets: Integrating AMR, WASH, and Climate

This plenary highlights the need for integrated prevention strategies that go beyond vaccines. It brings together antimicrobial resistance, WASH, and environmental and climate perspectives to strengthen prevention and control of typhoid and other invasive salmonellosis.

- Zoe Dyson, London School of Hygiene and Tropical Medicine, UK
- Ginny Pitzer, Yale University, USA
- Erica Fuhrmeister, University of Washington, USA
- Jason Andrews, Stanford University, USA

9:30-10:00

### Coffee Break

*Poster Viewing*

10:00-11:30

### Symposium

#### Informing Equitable and Impactful Typhoid Vaccine Distribution through Environmental and Serological Surveillance

Moderators: Nicholas Grassly, Imperial College London, UK

Jessica Seidman, Sabin Vaccine Institute, USA

- Expanding seroincidence estimation across settings: methodological insights from IgA and IgG antibody kinetics  
*Kristen Aiemjoy, UC Davis, Mahidol University Faculty of Tropical Medicine, USA*
- Integrating seroepidemiologic data into global enteric fever burden models for TCV decision-making  
*Zeean Pithawala, Yale School of Public Health, USA*
- Assessing enteric fever seroincidence following TCV introduction  
*James Meiring, University of Liverpool, UK*  
*Michael Owusu, Kwame Nkrumah University of Science and Technology, Ghana*
- Durability of typhoid vaccine impact following an initial campaign in Vellore, India: evidence from environmental surveillance  
*Venkata Mohan Raghava, Christian Medical College, Vellore, India*
- Early detection of emerging Salmonella Typhi genotypes in Nigeria using environmental surveillance  
*Veronica Ogunleye, University of Ibadan, Nigeria*
- Scaling typhoid environmental surveillance to the national level in Ghana  
*Michael Owusu, Kwame Nkrumah University of Science & Technology, Ghana*

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| 11:30-13:00 | <p><b>Abstract Session</b><br/> <b>Evolution in Action: Genomics and Resistance</b></p> <ul style="list-style-type: none"> <li>Global phylogeographic analysis of the emergence and spread of Antimicrobial Resistant typhoid<br/> <i>Zoe Anne Dyson, London School of Hygiene and Tropical Medicine, UK</i></li> <li>Emergence and circulation of ceftriaxone-resistant Salmonella Typhi 4.3.1.2.B1 strain in Bangladesh<br/> <i>Yogesh Hooda, Child Health Research Foundation</i></li> <li>Antimicrobial Resistance, Genetic Adaptations and Biofilm Formation in <i>Salmonella</i> Typhi Isolates from Asymptomatic Carriers<br/> <i>Peter Muturi, KEMRI, Kenya</i></li> <li>An updated population structure and nomenclature of invasive <i>Salmonella</i> Typhimurium<br/> <i>Ine Hoeben, University of Antwerp, Belgium</i></li> <li>Integrated genomic, epidemiologic, and phenotypic investigation of XDR Salmonella Isangi in Malawi and South Africa<br/> <i>Peter Johnston, University of Liverpool, UK</i></li> <li>AmpliconTyper – tool for analysing ONT multiplex PCR data from environmental and other complex samples<br/> <i>Anton Spadar, London School of Hygiene and Tropical Medicine, UK</i></li> </ul>   |
| 13:00-14:30 | <p><b>Lunch</b></p>   |
| 13:30-14:30 | <p><b>Workshop</b><br/> <b>Shaping the Future of Enteric Fever Treatment Trials: Populations, Outcomes, and Priorities</b><br/> Moderators: Megan Carey and Christopher Parry, LSHTM, UK</p> <ul style="list-style-type: none"> <li>Overview of global antimicrobial resistance and introduction to session format and objectives<br/> <i>Megan Carey, LSHTM, Amsterdam Institute for GHD, MMGH Consulting, USA</i></li> <li>Defining the key questions for the next generation of randomized controlled treatment trials for typhoid fever<br/> <i>Christopher Parry, University of Oxford, Liverpool School of Tropical Medicine, UK</i></li> <li>Identifying regional treatment challenges and trial priorities for typhoid fever in India<br/> <i>Priscilla Rupali, Christian Medical College, Vellore, India</i></li> <li>Identifying regional treatment challenges and trial priorities for typhoid fever in Kenya<br/> <i>Collins Kebenei and Kelvin Kering, Kenya Medical Research Institute, Kenya</i></li> <li>Identifying regional treatment challenges and trial priorities for typhoid fever in Pakistan<br/> <i>Farah Naz Qamar, Aga Khan University, Pakistan</i></li> <li>Identifying regional treatment challenges and trial priorities for typhoid fever in Malawi<br/> <i>James Meiring, University of Liverpool, Malawi Liverpool Wellcome Programme, UK</i></li> </ul> |

14:30-16:00

### **Symposium**

#### **Correlates of Protection for Vaccine Development**

Moderators: Malick Gibani, Maheshi Ramasamy, and Xinxue Liu, Oxford Vaccine Group, UK

- Defining the Correlate of Protection for Typhoid Conjugate Vaccine Using Three-Stage Bayesian Modelling  
*Yiyuan Zhang, Oxford Vaccine Group, UK*
- Identifying Immunological Correlates of Protection from a Vaccine Controlled Human Infection Model of Salmonella Paratyphi A  
*Naina McCann, Oxford Vaccine Group, UK*
- Establishing a Controlled human infection model of Salmonella Paratyphi A in endemic setting  
*Saba Siddiqui, Aga Khan University*
- Using GMMA Vaccines to Identify Mechanisms of Protection against iNTS  
*Leila Godfrey, University of Oxford, UK*
- Establishing Correlates of Immunity from Naturally Exposed Populations  
*Agness Lakudzala, Malawi-Liverpool Wellcome Research Programme, Malawi*
- Using Human Challenge Models to Define Correlates of Protection against Salmonella Typhimurium  
*Anna Rydlova, Imperial College London, UK*

16:00-16:30

### **Coffee Break**

*Poster Viewing*

16:30-18:00

### **Abstract Session**

#### **From Bench to Breakthrough: Immunology & Vaccine Development**

- Safety and immunogenicity results of a phase I clinical trial of bivalent typhoid and paratyphoid A conjugate vaccine in healthy Indian adult participants  
*Pavankumar Daultani, Zydus Lifesciences Ltd.*
- Results from phase1/2a RCT to evaluate the safety & immunogenicity of a trivalent vaccine against iNTS & typhoid in healthy European and African adults  
*Yasir Shitu Isa, GSK Vaccines Institute for Global Health*
- Phase 2 trial in sub-Saharan Africa to assess the safety and immunogenicity of a Trivalent Salmonella Conjugate Vaccine (TSCV)  
*Wilbur Chen, University of Maryland School of Medicine, USA*
- A Phase 2/3 experience to assess the safety and immunogenicity of a bivalent typhoid - paratyphoid A vaccine in India and Kenya  
*Sanket Gaidhane, Serum Institute of India*
- Humoral mechanisms by which asymptomatic malaria exposures in the community may attenuate naturally acquired immunity against iNTS disease in Malawian children  
*Agness Ethel Lakudzala, Malawi-Liverpool Wellcome Trust, Malawi*

## Thursday, March 26

7:30-8:30

### Sunrise Session

#### Vaccine Schedule Modelling

Moderators: Catherine Wenger and Virginia Pitzer, Yale University, USA  
Megan Carey, LSHTM, MMGH Consulting, USA

- Models for the Transmission Dynamics of Typhoid Fever  
*Kyra Grantz, Institute for Disease Modeling, Gates Foundation, USA*
- Real-World Data to Calibrate Vaccine Effectiveness and Duration of Protection  
*Alina Muellenmeister, Burnet Institute, Australia*
- Cost-Effectiveness Analysis: Parameter Identification in Light of Data Gaps  
*Tigist Menkir, Stanford University, USA*
- Comparative Insights: Synthesizing Findings and Identifying Key Sources of Uncertainty  
*Catherine Wenger, Yale School of Public Health, USA*
- Panel discussion: Implications of Models for Informing Vaccine Recommendations  
*Firdausi Qadri, icddr,b, Farah Qamar, Aga Khan University, and Jacob John, CMC Vellore*

8:30-9:30

### Plenary

#### Next-Generation Tools and Innovation: Advancing Diagnostics, Vaccines, and Surveillance

This plenary explores emerging tools shaping the future of typhoid and other invasive salmonellosis, with particular attention to advances in diagnostics, vaccines, and epidemiological and environmental surveillance.

- Annelies Wilder-Smith, WHO, Switzerland
- Musa Hindiyeh, WHO, Switzerland
- Richelle Charles, Harvard University, USA
- Nick Grassly, Imperial College London, UK

9:30-10:00

### Coffee Break

Poster Viewing

10:00-12:00

### Abstract Session

#### Evidence that Moves Policy: Getting to Impact

- An Evaluation of Public Knowledge, Attitudes and Prevention Practices Relating to Typhoid Disease in High-Risk Urban and Peri-Urban Areas of Lilongwe, Malawi  
*Adriano Lubanga, Clinical Research and Education Management Services, Malawi*
- Empowering Community Health Volunteers to Strengthen Typhoid Prevention and Immunization Readiness in Nairobi's Informal Settlements  
*Julia Macharia, Community Health Volunteer CBO, Kenya*
- Breaking Barriers: How Local Solutions in Refugee Settlements Triumph Over TCV Vaccine Hesitancy and Shatter Myths:  
*Muhumuza Umar, Africa CDC, Ethiopia*
- From vaccine development to policy research and implementation: WHO-led efforts to combat invasive Salmonella disease  
*Ana Belen Ibarz Pavon, WHO, Switzerland*

- Antibiotic treatment for enteric fever in Controlled Human Infection Models (CHIM) at the Oxford Vaccine Group  
*Margarete Paganotti Vicentine, University of Oxford, UK*
- Cost-effectiveness Analysis of Introduction of Typhoid Conjugate Vaccine into Indonesia's National Immunisation Program  
*Jonathan Hasian Haposan, Universitas Gadjah Mada, Yogyakarta, Indonesia*
- Using Anti-Vi IgG and Machine Learning to Infer Typhoid Conjugate Vaccine Coverage after the Malawi National TCV campaign  
*Priyanka Patel, Malawi Liverpool Wellcome Trust, Malawi*

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| 12:00-13:00 | <b>Lunch</b>  |
| 13:00-14:30 | <b>Abstract Session</b><br><b>Late Breakers</b>   |
| 14:30-15:00 | <b>Coffee Break</b><br><i>Poster Viewing</i>  |
| 15:00-15:45 | <b>Closing Panel</b><br><b>Sustaining Momentum and Scaling Impact Against Typhoid and iNTS</b> <ul style="list-style-type: none"> <li>• Annelies Wilder-Smith, WHO, Switzerland</li> <li>• Rebecca Martin, Sabin Vaccine Institute, USA</li> <li>• Duncan Steele, Gates Foundation, USA</li> <li>• GAVI Representative (TBD)</li> <li>• Duncan Bellamy, Wellcome Trust, UK</li> </ul> <p>This session closes the meeting with a forward-looking, interactive conversation on how we collectively sustain momentum and translate progress into lasting impact.</p> |
| 15:45-16:00 | <b>Poster Awards</b>  |
| 16:00-16:20 | <b>Closing Remarks</b><br>Duncan Steele, Gates Foundation, USA  |
| 16:20-16:30 | <b>Meeting Adjourned</b>  |