

WORKSHOP

Developing a Comprehensive Therapeutic Research Strategy for the Converging Epidemics of TB, T2DM, and HIV

Sponsored by

National Institute of Allergy and Infectious Diseases
National Institute of Diabetes and Digestive and Kidney Diseases
Office of AIDS Research

May 10 and 11, 2016
5601 Fishers Lane, Room LD20
Rockville, Maryland

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AGENDA

May 10 (Tuesday), 2016

8:00-8:30 **Registration**

8:30-9:00 **Welcome and Opening Remarks**

*Judith Fradkin (National Institute of Diabetes and Digestive and Kidney Diseases)
Richard Hafner (National Institute of Allergy and Infectious Diseases)*

9:00-12:00 **Session 1: Current and Future Impact of the Converging Epidemics**

Co-Chairs: *Julia Critchley (St. George's, University of London)
Anil Kapur (World Diabetes Foundation)*

Session Overview:

- Updating on policy, practice and research gaps in the joint epidemiology and public health practice
- Understanding the dynamic interactions between TB-DM and HIV epidemics – now and in the future
- Health system impact and response to converging epidemics

9:00-9:05 **The Bali Declaration on TB/Diabetes – How Do we Track Progress on Research and Policy?**

Anil Kapur (World Diabetes Foundation)

9:05-9:20 **Effect of Diabetes on TB Incidence and Transmission – In High Burden Countries – Trends on Modeling Studies**
Hsien-Ho Lin (National Taiwan University)

9:20-9:35 **Making Health Systems Responsive to Deal with the Double Burden of Diabetes and TB**
Venkat Narayan (Emory University School of Medicine)

9:35-9:50 **TB and Diabetes in a Hispanic and Obese Community Along the US/Mexico Border**
Blanca I. Restrepo (University of Texas Science Health Center)

9:50-10:05 **TB, Diabetes, and Vitamin A**
Megan Murray (Harvard School of Public Health)

10:05-10:20 **Break**

10:20-10:35 **TB Treatment Outcomes in DM Patients – Review Update and Research Evidence Gaps**
Julia Critchley (St. George's, University of London)

10:35-10:50 **Implementation of Clinical Standards for Management and Prevention of Diabetes and TB in Low Resources Settings**
Richard Brostrom (Centers for Disease Control and Prevention)

10:50-12:00 Panel Discussion – Identifying Research Priorities for TB, Diabetes, and HIV – Knowledge Gaps in Population Health, Barriers to Non-Communicable Diseases and Infectious Disease Multi-Morbidity Research, and Programmatic Challenges to Implementation

Naomi “Dinky” Levitt (University of Cape Town)

Venkat Narayan (Emory University School of Medicine)

Ajay M. V. Kumar (International Union Against Tuberculosis and Lung Disease)

Richard Brostrom (Centers for Disease Control and Prevention)

12:00-1:00 **Lunch**

1:00-5:00 Session 2: Pre-Clinical Research – Critical Gaps and Key Research Directions

Co-Chairs: *Randy Basaraba (Colorado State University)*
Larry Schlesinger (The Ohio State University)

Session Overview:

This session will address the emerging science demonstrating intricate links between host metabolic pathways and inflammatory networks that can go awry in TB, DM, and HIV and potential related host-directed therapy targets. We will address:

- Important biochemical processes, receptor signaling pathways (e.g., RAGE), and nuclear transcription factors that influence host metabolic and immunologic responses
- Immunometabolism and trained immunity
- Relevant animal models
- Current and future therapeutic approaches based on the biologic pathways presented

1:00-1:05 **Introduction**
Randy Basaraba (Colorado State University)

1:05-1:30 **Nuclear Receptors and Associated Proteins in Innate Immune Activation Pertaining to Metabolic Disorders and TB**
Larry Schlesinger (The Ohio State University)

1:30-1:55 **Metabolite-Induced ROS Overproduction Activates the Diverse Biochemical and Molecular Mechanisms Underlying Diabetic Complications**
Michael Brownlee (Albert Einstein College of Medicine)

1:55-2:20 **RAGE Signal Transduction Mediates Chronic Inflammation in Obesity, Type 2 Diabetes and its Complication: Mechanisms and Therapeutic Opportunities**
Ann Marie Schmidt (NYU Langone Medical Center)

2:20-2:45 **Immunometabolic Circuits in Anti-Mycobacterial Host Defense and Trained Immunity**
Mihai Netea (Radboud University Medical Center)

2:45-3:00 **Break**

3:00-3:25 **Mouse Models of TB with Metabolic Comorbidities**
Hardy Kornfeld (University of Massachusetts Medical School)

3:25-3:50 **Pathogenesis of Diabetes-TB Comorbidity in the Guinea Pig Model**
Brendan Podell (Colorado State University)

3:50-5:00 **Group Discussion**

5:00 **Adjourn**

May 11 (Wednesday), 2016

8:30-12:00 **Session 3: Clinical Research to Improve Management and Prevention**

Co-Chairs: *Reinout van Crevel (Radboud University Medical Center)*
Hardy Kornfeld (University of Massachusetts Medical School)

Session Overview

This session addresses issues related to prevention and management of combined TB-diabetes and TB-HIV. In this session we aim to identify research priorities for:

- DM prevention, and the interaction of pre-diabetes and TB
- TB prevention among people with DM and HIV
- Clinical management of TB-DM
- Drug-drug interactions in TB-DM and TB-HIV
- Host-directed therapy for TB, and immunomodulatory effects of DM drugs

8:30-8:35 **Session Overview**
Hardy Kornfeld (University of Massachusetts Medical School)

8:35-8:55 **Diabetes Prevention and Tuberculosis**
Susan Fisher-Hoch (University of Texas Health Science Center)

8:55-9:20 **Latent TB in Diabetes and HIV**
Dick Menzies (McGill University)

9:20-9:45 **Impact of Glucose Metabolism Disorder in Pulmonary TB**
Bruno Andrade (FIOCRUZ)

9:45-10:10 **Clinical Management of Combined TB and Diabetes**
Reinout van Crevel (Radboud University Medical Center)

10:10-10:25 **Break**

10:25-10:50 **Drug-Drug Interactions in TB-Diabetes and HIV-TB**

Kelly Dooley (Johns Hopkins University)

10:50-11:15 **Host-directed Therapy and Immunomodulatory Effects of Diabetes Drugs**

Amit Singhal (Singapore Immunology Network)

11:15-12:00 Group Discussion

12:00-1:00 **Lunch**

1:00-3:00 Session 4: Integrated Research Approaches, Including Implementation

Co-Chairs: *Blanca I. Restrepo (University of Texas Science Health Center)*
Katharina Ronacher (Stellenbosch University)

Session Overview:

- Field and operational research in patients with TB and pre-DM or DM
- Impact of pre-DM on latent TB infection
- Role of Vitamin D on TB, and the relationship between Vitamin D, TB and diabetes
- Role of immune-neuroendocrine systems to study and combat the TB-diabetes co-epidemic

1:00-1:25 **TB/Diabetes: From Targeted LTBI Testing to TB Treatment Outcomes in California**

Lisa Pascopella (California Department of Public Health)

1:25-1:50 **Influence of Prediabetes on Immune Responses in Latent TB Infection**

Subash Babu (NIAID-NIRT-ICER)

1:50-2:05 **Immune-endocrine Interactions in Type 2 Diabetes During Latent and Active TB**

Katharina Ronacher (Stellenbosch University)

2:05-2:20 **Vitamin D on TB – Clinical Trial Update and Possible Implications for TB/Diabetes**

Adrian Martineau (Queen Mary University of London)

2:20-2:45 **Taking on the Diabetes-TB Epidemic in India: Advocacy, Operational Research, and Program Implementation**

Ajay M. V. Kumar (International Union Against Tuberculosis and Lung Disease)

2:45-3:00 Group Discussion

3:00-3:15 **Break**

3:15-4:45 **Session 5: Group Discussion of Significant Conclusions and Recommendations**

4:45-5:00 **Wrap-up and Next Steps**

Richard Hafner (National Institute of Allergy and Infectious Diseases)

Judith Fradkin (National Institute of Diabetes and Digestive and Kidney Diseases)

5:00 **Adjourn**