Epidemiology Across Time: Learning from the Past, Acting Now, Preparing for the Future—Diversity, Complexity, and Inclusion in a Disrupted World

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In the post–COVID-19 era, health risks are increasingly shaped by complexity. Conflict, climate extremes, socioeconomic instability, population displacement, the infodemic, and rapid technological innovation—including the widespread adoption of artificial intelligence—interact as a complex adaptive system, producing feedback loops, nonlinear change, and cascading disruptions rather than isolated events. Shared forces therefore lead to divergent consequences: differences in exposure, resources, institutions, and resilience translate into unequal outcomes across and within societies, reinforcing a downward spiral in which poor health further reduces coping capacity and accelerates harm.In this Organizer Presentation, I argue that epidemiology must be strengthened as a future-making science that is fit for complexity—able to integrate multiple scales (from individual biology to global systems), recognize time lags and tipping points, and remain decision-relevant under uncertainty. The core theme is that diversity is a functional requirement to prevent blind spots in complex systems: without diversity of lived realities, cultures and values, disciplines, methods and data sources, and perspectives, we risk producing evidence that misrepresents the system and policies that unintentionally amplify inequities. Inclusion is the mechanism that converts diversity into impact, building legitimacy and trust through fair participation and sustained public engagement, particularly in polarized information environments.The scientific program of this Annual Meeting is designed to advance these aims. The main symposium invites leading experts outside epidemiology to articulate what is expected of epidemiologists in solving complex, interconnected health challenges. A special lecture addresses what should be prepared for the next pandemic, followed by a symposium led by the SCARDA epidemiology consortium on epidemiologic readiness and practice for future threats. Meeting in Nagasaki also reminds us that evidence from the past can shape the future: a dedicated session on the epidemiology of atomic-bombing health effects reflects on irreversible harm, long time horizons, and responsibility to future generations. From past to present to future, this meeting calls on epidemiologists across all fields to engage with complexity and help build a more equitable and resilient world.

Biography

Satoshi Kaneko (MD, MPH, PhD) graduated from the National Defense Medical College (1990), earned an MPH from the Harvard School of Public Health (1997), and received a PhD from the University of Occupational and Environmental Health, Japan (2001). He is Senior Professor of Eco-epidemiology at the Institute of Tropical Medicine, Nagasaki University (since 2016). He served as Director of the Kenya Research Station (2018–2024) and currently directs the Center for Infectious Disease Research in Asia and Africa at the same institute.