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PRESENTATION TITLE: What is new on Remdesivir and other Covid-19 antiviral treatments

ABSTRACT: Remdesivir was the first antiviral drug approved by the US Food and Drug Administration for the treatment of COVID-19. How was this compound discovered and developed? The objective of this presentation is to provide a review of the pre-clinical data that justified clinical trials early in the pandemic in 2020. Remdesivir is a nucleotide analogue prodrug that inhibits the RNAdependent RNA polymerase of SARS-CoV-2 the causative agent of COVID-19. The compound shows a broad spectrum of antiviral activities against various RNA viruses and gained attention as a possible treatment for Ebola virus disease in the years after the 2014 outbreak in West Africa. In 2019, it was evaluated in a randomized clinical trial in the Democratic Republic of the Congo and human safety data became available. Cell culture studies also revealed potent antiviral effects against coronaviruses, including severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) viruses. Animal studies demonstrated prophylactic and therapeutic efficacy. Moreover, selection experiments pointed to a high barrier for the development of resistance. The collective data presented a compelling rationale for the clinical evaluation of remdesivir as a treatment for COVID-19. In February 2020, it was reported that remdesivir inhibits replication of SARS-CoV-2. The mechanism of action includes inhibition of RNA synthesis when the compound is present in the primer and template strand, respectively. The NIH-sponsored Adaptive COVID-19 Treatment Trial provided evidence to show that remdesivir accelerates recovery from COVID-19. Seemingly in contrast, the WHO's Solidarity trial suggests that the drug does not reduce the time of recovery. Neither of the two trials showed significant reductions in mortality. The keynote will attempt to reconcile the data and conclude with a discussion on the future of remdesivir.

BIOGRAPHY: DR. Matthias Götte Professor and Chair, Department of Medical Microbiology & Immunology Faculty of Medicine & Dentistry, Li Ka Shing Institute of Virology, University of Alberta, CANADA TITLE: Breakthrough work on the Covid-19 remdesivir drug BIOGRAPHY: Dr. Matthias Götte is Professor and Chair of the Medical Microbiology & Immunology Department at the University of Alberta. He obtained his PhD degree at the MaxPlanck-Institute of Biochemistry in Martinsried, Germany. Following postdoctoral training at the Lady Davis Institute for Medical Research in Montreal, Dr. Götte joined the Department of Microbiology & Immunology at McGill University. His research focuses on viral polymerases and mechanisms associated with drug action and drug resistance. While at McGill, he studied HIV-1 reverse transcriptase, HCV RNA-dependent RNA polymerase (RdRp), and HCMV DNA polymerase. Results from his laboratory have contributed to the discovery of novel classes of viral polymerase inhibitors. In 2014, he relocated his lab to the University of Alberta and developed a platform for the study of RdRp complexes of WHO priority pathogens, including Ebola, Lassa, CCHFV, Nipah and coronaviruses. His lab has elucidated mechanisms of RNA synthesis inhibition of the broadspectrum antiviral remdesivir. Dr. Götte serves on the Canadian COVID-19 Therapeutic Task Force.