



CTS SCIENTIFIC PROGRAM 2020

Monday October 19, 2020

Held in conjunction with CHEST Annual Meeting **Virtually**
(Live and On-demand)

Program Chair: Dr. François Maltais

“Live” Virtual Session - 16:30 – 17:30 (CDT)

2020 CTS Honorary Lecture: The Magic of Rehabilitation

Roger Goldstein, MD, FRCPC, University of Toronto, Toronto, ON

This talk will focus on the rapid progress of Pulmonary Rehabilitation from anecdotal experience to an established science recommended by professional respiratory societies around the world. At the end of the session, participants will be able to:

1. Understand key milestones in the growth of rehabilitation
2. Discuss adjuncts and creative options to improve outcomes
3. Comment on the impact and consequences of the COVID pandemic on PR

Dr. Roger Goldstein is a Professor of Medicine and Physical Therapy at the University of Toronto, Director of Respiratory Medicine at West Park Healthcare Centre, Senior Scientist Respiratory Rehabilitation Research and Editor of international textbook on Pulmonary Rehabilitation (August 2020). Dr. Roger Goldstein is an internationally renowned expert in pulmonary rehabilitation and the management of chronic respiratory diseases. As a medical Specialist, he provides in-patient and out-patient services across the full spectrum of care for individuals who require ongoing mechanical assistance to help them breathe. As a Professor of Medicine and Physical Therapy at the **University of Toronto**, Dr. Goldstein devotes a considerable amount of time to research, teaching and education to locally and internationally trained medical residents and research fellows.

On-demand sessions

Pulmonary Venous and Capillary Disease in Pulmonary Hypertension: Zebras or Horses?

Jason Weatherald, MD, FRCPC, University of Calgary, Calgary, AB

Pulmonary veno-occlusive disease/pulmonary capillary hemangiomatosis are rare lung diseases that cause pulmonary hypertension. Recent studies have highlighted the importance of microvascular remodeling in the pulmonary veins and capillaries in more common types of pulmonary hypertension such as left heart disease, lung disease, chronic thromboembolic disease and pulmonary arterial hypertension. At the end of this session, participants will be able to:

1. Recognize the clinical features, diagnosis of pulmonary veno-occlusive disease/pulmonary capillary hemangiomatosis
2. Explain the clinical relevance of the pulmonary venous and capillary remodeling in common types of pulmonary hypertension

Dr. Jason Weatherald is a pulmonologist and Assistant Professor at the University of Calgary. He trained with Professors Marc Humbert and Olivier Sitbon in Paris, France from 2016-2017. He is a co-founder of the Canadian Pulmonary Hypertension Registry and is starting a new research program at the University of Calgary focusing on patient-oriented research and exercise in pulmonary vascular diseases.

HIV, Accelerated COPD, and the Dysbiotic Lung

Janice Leung, MD, FRCPC, University of British Columbia, Vancouver, BC

Patients living with HIV are susceptible to early and more severe manifestations of COPD. In this session, the dysbiotic lung - the culmination of repeated pulmonary infections, chronic inflammation, and latent HIV reservoirs - is described as a model for accelerated COPD. At the end of this session, participants will be able to:

1. Describe the risks for and manifestations of COPD in patients living with HIV and
2. Discuss new data describing microbial and molecular changes that occur in the lung with chronic HIV infection

Dr. Janice Leung is a respirologist and clinician-scientist at the University of British Columbia where her primary clinical and research interest is in airways disease in patients living with HIV. She is a Michael Smith Foundation Health-Professional Investigator and a CIHR Early Career Investigator and has grant support from CIHR, Genome BC, and the BC Lung Association. She also serves as a COPD section editor for Chest.

Room for Improvement: New Methods for Screening and Diagnosis of CF Related Diabetes

Grace Lam, MD, PhD, FRCPC, University of Alberta, Edmonton, AB

Cystic Fibrosis related diabetes (CFRD) is an increasingly common problem as patients with CF are living longer than before. CFRD development is associated with poor pulmonary outcomes, such as increased pulmonary exacerbations and falls in lung function (FEV1). As the onset of disease is often insidious, the CF Foundation recommends screening with the 2h oral glucose tolerance test (OGTT) annually starting at the age of 10. However, this is an onerous and time consuming test such that there is poor patient adherence (typically reported as 20-30%) to testing. Thus, there is a need for a simpler alternative to CFRD screening. In this talk, we present evidence to support the use of serum fructosamine and/or HbA1c as potential alternatives to the OGTT for more streamlined CFRD screening. At the end of this session, participants will be able to:

1. Describe the current challenges to screening for Cystic Fibrosis related Diabetes (CFRD)
2. Evaluate the testing performance of potential new alternatives tests for faster CFRD screening against the current gold standard assay

Dr. Grace Lam is a new academic pulmonologist at the University of Alberta specializing in the care of patients with Cystic Fibrosis (CF) who completed her MD/PhD training at the University of Toronto, residency and fellowship at the University of Alberta and CF training at the University of British Columbia. She has been an invited speaker to a number of local and international conferences and has been awarded the CF Canada/Gilead Sciences Inc Clinical Fellowship award in recognition of her achievements and potential in the field of CF. Currently, she is the lead investigator in a national multi-center study on alternative screening methods in CF related diabetes (CFRD).

Pro/Con Debate: To Lock Down or Not to Lock Down: That is the Question!

Pro Lockdown: *Samir Gupta, MD, FRCPC, University of Toronto, Toronto, ON*

Con Lockdown: *Darryl Adamko, MD, FRCPC, University of Saskatchewan, Saskatoon, SK*

Since the WHO's declaration of the SARS-CoV-2 pandemic in March 2020, many countries implemented lockdown measures to halt the spread of Covid-19. This resulted in forced closures of many businesses, schools and universities, while residents were required to stay home and work from home. This session will review the evidence surrounding the benefits and harms of lockdowns, and debate whether the lockdowns implemented by many countries around the world in the context of Covid-19 have been beneficial. At the end of this session, participants will be able to:

1. Discuss the observed pros and cons of lockdowns initiated by various jurisdictions at the outset of the SARS-CoV-2 pandemic
2. Evaluate the evidence surrounding the benefits and harms of societal lockdowns in the context of viral pandemics such as the SARS-CoV-2 pandemic

Dr. Darryl J. Adamko is a Pediatric Pulmonary specialist with a strong bench research background after training at The Johns Hopkins University in Baltimore, Maryland. He was an Associate Professor of Pediatric Pulmonary Medicine at the University of Alberta from 2001-11. He is now a Professor of Pediatric Pulmonary Medicine at the University of Saskatchewan where he is Division Head of Respiriology and Pediatric Research. Dr. Adamko's research focuses on mechanisms of virus-induced asthma attacks and the development of a novel urine-based diagnostic test for asthma using mass spectrometry.

Dr. Samir Gupta is a clinician-scientist at the Li Ka Shing Knowledge Institute of St. Michael's Hospital and an Associate Professor in the Department of Medicine at the University of Toronto. He is a Staff Respiriologist in the Division of Respiriology at St. Michael's Hospital. He completed his Master's degree in Clinical Epidemiology at the University of Toronto, followed by a fellowship in Knowledge Translation Research. His main research interest is in knowledge translation across the spectrum of respiratory illness, with a focus on electronic tools for behaviour change. He also has an interest in rare lung disease research methods, and the Hepatopulmonary Syndrome in particular. He serves as Chair of the Canadian Respiratory Guidelines Committee and holds the University of Toronto Michael Locke Term Chair in Knowledge Translation and Rare Lung Disease Research.

Long-term Monitoring of Patients with Fibrotic Interstitial Lung Disease: A Canadian Thoracic Society Position Statement

Jolene Fisher, MD, FRCPC, University of Toronto, Toronto, ON

Longitudinal monitoring of patients with fibrotic interstitial lung disease (ILD) is essential to identifying disease progression and guiding management decisions. Routine assessment of pulmonary symptoms and physiology are important for physician decision making surrounding initiation or altering of ILD medications and the timing of lung transplant and/or palliative care referrals. Patients with fibrotic ILD are at increased risk for certain respiratory and non-respiratory comorbidities and these are important considerations in long-term monitoring. This talk will summarize the key components of long-term monitoring of fibrotic ILD, including the appropriate frequency of monitoring, specific symptoms to consider and the objective testing that should be routinely performed. Identifying disease progression and how it influences management decisions, as well as, specific considerations in the time of COVID-19 will be addressed. At the end of this session, participants will be able to:

1. Summarize the key components of monitoring patients with fibrotic interstitial lung disease
2. Define disease progression in fibrotic interstitial lung disease and understand how it influences management decisions
3. Identify specific COVID-19 related considerations for long term monitoring of patients with fibrotic interstitial lung disease

Dr. Jolene Fisher is a clinician investigator and the research director of the Interstitial Lung Disease Program at the University Health Network and Assistant Professor of Medicine at the University of Toronto. She received her Doctor of Medicine and Internal Medicine residency training from the University of Manitoba. She then completed a Respiriology residency, Interstitial Lung Disease fellowship and a Master of Science in Clinical Epidemiology and Health Care Research at the University of Toronto. Her research interests include interstitial lung diseases, health services research, registries and outcomes research.

Development of Animal Models for SARS-CoV-2 for Vaccines and Therapeutics

Darryl Falzarano, PhD, University of Saskatchewan, Saskatoon, SK

SARS-CoV-2 emerged in late 2019 and has resulted in a global pandemic. Rapid isolation of the virus and subsequent development of small animal models, including hamsters and ferrets, has allowed the assessment of vaccines, antivirals and immunotherapeutics. The establishment of animal models is a key step for the evaluation of countermeasures in order to down-select approaches that do not appear to be successful. Understanding the pathogenesis and improving the animal models remains a goal of our research group while we look to understand what drives severe disease and whether immune enhancement poses a risk following vaccination or possible re-infection. Both hamster and ferret models of infection have been established in our lab, with both models having benefits and caveats. Hamsters show more extensive virus replication in the lower respiratory tract and sometimes infection leads to fatal outcomes, while

ferrets show little to no signs of disease but shed a significant amount of virus in their upper respiratory tract. A subunit vaccine containing a portion of the SARS-CoV-2 spike protein (S1) was shown to induce neutralizing following a prime/boost in ferrets and significantly reduced virus replication in the upper respiratory tract. Interestingly, the adjuvant used TriAdj or AddaVax, induced similar magnitudes of immune responses, but only TriAdj significantly reduced levels of virus. This vaccine approach is also immunogenic in hamsters, with challenge data pending. In a separate approach, we have also demonstrated that hamsters are a useful model for the evaluation of monoclonal antibodies. At the end of the session, participants will be able to:

1. Understand the usefulness and limitations of the available small animal models for SARS-CoV-2 in vaccine and therapeutic development.
2. Discuss different vaccine approaches to SARS-CoV-2
3. Explore the pathogenesis of SARS-CoV-2 in small animal models

Dr. Darryl Falzarano is a Research Scientist at VIDO-InterVac at the University of Saskatchewan. His lab is focused on developing for vaccines for coronaviruses. Previously, they have used an alpaca model to assess numerous vaccines for MERS-CoV that are targeted for use in camels. Now his lab is focused on developing and improving small animal models for SARS-CoV-2, including hamsters and ferrets, assess vaccines, antivirals and immunotherapeutics. VIDO-InterVac develops vaccines for both humans and agricultural animals and is home to the International Vaccine Centre – the largest containment level 3 facility in Canada.