

**ISAM One-Day Workshop**  
**The Basics of Aerosol Technology for Respiratory Drug Delivery**  
**ISAM Pre-Congress Workshop**  
**Montreux, Switzerland**  
**25 May 2019**

**Target Audience:** Providers of lung health, including clinicians, pediatricians, internists, nurses, pharmacists, respiratory therapists and asthma educators. Participants with clinical, administrative and teaching responsibilities to integrate program content into practice and resource support.

**Should attendees have specific expertise to benefit from this session?** No

**Session Summary:**

This course will focus on practical aspects of clinical aerosol medicine. Speakers will discuss aerosol devices, selection for different patient groups (e.g., pediatrics), device interchangeability, common use errors and why patients fail to adhere to prescribed therapy. Hands-on device demonstration and a practical session on how to teach correct use of inhaler devices will include strategies/resources available for teaching patients and healthcare workers. Special considerations and recent innovations in aerosol therapy will be explored.

**Objectives:**

At the conclusion of this session, the participant will be able to:

1. Describe basic physiology and factors that affect aerosol dose and delivery.
2. Define terms used to describe aerosol characteristics, generation and delivery.
3. Identify a broad range of aerosol devices and their principles of operation.
4. List methods of aerosol characterization and dose estimation.
5. Discuss device selection criteria for a variety of patient and clinical situations.

**Statement of Clinical/Scientific Importance:**

Worldwide, medical aerosols are prescribed for more than 80 million patients each year. Surveys report between 28 -68 % of patients do not use their inhalers sufficiently to benefit from their inhaled medications, correlating with 39 – 67% of physicians, nurses, pharmacists and allied health personnel unable to demonstrate critical performance steps for effective administration. This workshop is designed to narrow this professional practice gap by increasing knowledge of the devices and techniques of aerosol delivery and the evidence supporting differential selection for specific patient groups, from infants to adults, and patients in wealthy industrialized nations to the third world. Participants will gain competence with hands-on exposure to a broad range of nebulizers and inhalers. Methods and strategies for teaching health care workers, care providers and patients will be discussed. New devices and novel applications for aerosol medicine, such as inhaled vaccines will be presented. This workshop will enable a broad range of clinicians and educators to better enable their patients to more effectively self-administer and adhere to therapies crucial to management of their respiratory disease, improving both patient health and quality of life. This workshop will also be useful for scientists and researchers who are new to the aerosol research field, and who want to develop a better understanding of aerosol dosing and delivery characteristics.

**Workshop Chairs:**     **Jim Fink**  
                                  **Sunalene Devadason**

**8:45 AM - 9:00 AM:**    *Opening remarks*  
                                  **Jim Fink, PhD, Rush Medical School, USA**

### **Session 1: Introduction**

**9:00 AM - 9:45 AM:**    *Basics of Respiratory Drug Delivery I :*  
                                  Physical principles determining aerosol deposition (in vitro)  
                                  **Anthony Hickey, PhD, University of North Carolina, USA**

**9:45 - 10:30 AM:**     *Aerosol Devices*  
                                  **Kevin Stapleton, PhD, Allergan, USA**

**10:30 – 10:45 AM:**    **Coffee Break**

**10:45 – 11:30 AM:**    *Basics of Respiratory Drug Delivery II :*  
                                  Anatomical and physiological principles affecting aerosol deposition in vivo  
                                  **Chris O’Callaghan, University College London**

### **Session 2: Hands on Aerosol Device Workshop (Jim Fink, PhD)**

**11:30 – 12:30 PM:**    *Stations include:*  
                                  *Jet Nebulisers*  
                                  *Mesh and Smart Nebulizers*  
                                  *pMDIs and Accessories*  
                                  *DPIs*  
                                  *Training Aids*

**12:30 – 1:30 PM:**     **Lunch Break**

### **Session 3: Getting it Right: Device Selection, Training and Adherence**

**1:30 – 2:15 PM:**     *Pediatric Considerations*  
                                  **Sunalene Devadason, PhD, University of Western Australia**

**2:15 – 3:00 PM:**     *Differential Device Selection and Integration of Device to Patient – Patient education and training*  
                                  **Arzu Ari , PhD, RRT, FAARC, Texas State University, USA/TUR**

#### **Session 4: What comes next? New innovations in Device and Drug Development**

- 3:00 – 3:45 PM:**      *Innovation in Aerosols in Medicine – From Smart Nebulizers to Critical Care to Vaccines*  
**Jim Fink, PhD, RRT, Aerogen Pharma Corp, USA**
- 3:45 – 4:30 PM:**      *Nuts and Bolts for Planning and Conducting Inhalation Toxicology Studies for Drug Development*  
**Ron K Wolff, Safety Consulting Inc., USA**
- 4:30 – 4:40PM:**      **Concluding Remarks**