

This month we are pleased to publish the proceedings from the conference, *Respiratory Medications for COPD and Adult Asthma: Pharmacologic Actions to Clinical Applications*. The Journal is grateful to the triumvirate of chairs, Roy Pleasants, Neil MacIntyre, and Sam Giordano for shepherding the idea through to fruition. The Journal is also grateful to the American Respiratory Care Foundation for support of the conference.

Williams and Rubin detail the clinical pharmacology of bronchodilators, in COPD and asthma. They discuss the action of beta-agonists as well as anticholinergic bronchodilators including onset and duration of action. A discussion of new receptor subtypes and G protein signaling demonstrates how these advances in drug discovery might produce safer bronchodilators with fewer adverse effects and longer activity.

Corticosteroids represent a common therapy for both COPD and asthma treating both inflammation and modulating immune function. Williams describes the use of corticosteroids to suppress allergic and inflammatory responses through both systemic and topical administration. Well known important adverse events related to long-term corticosteroid use, and dosing strategies to avoid these, are reviewed in detail. This paper includes important details on systemic effects of inhaled corticosteroids related to dose, drug, and bioavailability.

Pleasants describes the use of oral maintenance therapies for obstructive lung disease as adjunctive or replacement therapy of inhaled medications. This includes a host of drugs such as phosphodiesterase inhibitors, theophylline, macrolides, leukotriene modifiers, and mucocactive agents (N-acetylcysteine). Oral agents avoid issues related to proper use of inhaled drugs, have novel mechanisms of action and perhaps most importantly, reduce costs. The growing role of macrolide antibiotics in preventing COPD exacerbations is discussed in detail. Pleasants also describes the use of oral N-acetylcysteine as a therapy to reduce exacerbations in COPD.

Charlie Strange provides a comprehensive review of anti-proteases and alpha-1 antitrypsin augmentation primarily as therapy for treatment of alpha-1 antitrypsin emphysema. All current alpha-1 protease inhibitors are administered intravenously to increase serum and alveolar epithelial lining fluid concentrations of alpha-1 antitrypsin. Strange provides a discussion of the use of anti-protease therapy in COPD via the inhaled route and explores potential uses of these agents outside of the current approved indication.

Biologics present promising new targets for treatment of COPD and asthma. Unlike traditional therapies, biologics act on the underlying pathways of the disease pathophysiology. At this level, biomarkers and endotypes may allow treatment to be personalized for a given patient. Targets for asthma and COPD include IgE, IL-5, IL-4/13, TSLP, IL-17, and tyrosine kinases. Wechsler reviews preliminary work on biologics, detailing the favorable safety profile and potential for personalized therapy in severe asthma.

Pleasants and Hess review aerosol delivery devices for obstructive lung diseases, highlighting the importance of inhaled medications in the treatment of chronic lung disease. Aerosol delivery devices have evolved significantly in the last half-century including use during mechanical ventilation and the development of dry powder inhalers. This review details the importance of appropriate coordination and use by patients and caregivers. The authors describe new methods for monitoring aerosol therapy. Additionally, they detail how new science and careful clinical application of aerosol delivery can assist clinicians in optimizing therapy.

Oxygen therapy, based on two trials dating from 40 years ago, remains the basis for care of the COPD patient at home to the present day. Branson provides a complete review of the use of home oxygen therapy for resting hypoxemia, exertional hypoxemia and sleep-related hypoxemia. The role of oxygen in acute care of the COPD patient garners less attention, but this paper details the impact of low inspired oxygen concentrations on hypercarbia and mortality in this scenario. Additional areas of emphasis include equipment for home oxygen therapy, recent changes in reimbursement, and patient satisfaction.

Burkes and Donohue provide a review of the 2017 Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines emphasizing changes to the assessment and management of stable COPD. This includes a focus on symptom burden and frequency of exacerbations. GOLD categorizes patients based on disease burden and modifies treatment regimens to avoid exacerbations and relieve symptoms. The paper details this approach to personalized COPD care.

Lugogo and Meghdadpour review the National Asthma Education and Prevention Program and Global Initiative for Asthma guidance for the routine management of asthma. They emphasize the growing appreciation of asthma as a heterogeneous disease with diverse underlying pathophysiology. As with other papers in this issue, the personalization of asthma care based on endotypes is described. While the emphasis is on guidelines, alternative therapies, approaches using previously described therapies and treatment in special populations are discussed in detail.

Wise and Putcha review medication regimens for managing COPD exacerbations. This paper focuses on treatment using the pharmacotherapy described in a number of the preceding articles. COPD exacerbation contributes significantly to COPD morbidity and mortality. Their paper concentrates on the use of bronchodilators, corticosteroids, and antibiotics to prevent exacerbations. They also point out that despite the utility of these drugs, the ideal drug, dosage, and duration of treatment are hotly debated.

Maselli and Peters review therapy for acute asthma. This paper details the use of short-acting beta agonists and short-acting muscarinic antagonists for asthma in the acute setting as well as the importance of oral corticosteroids. The authors also explore other medications such as intravenous magnesium sulfate and methylxanthines, noting that both play a minor role but have potential toxicity. They also describe the use of helium-oxygen mixtures in spontaneously breathing subjects to improve aerosol delivery and minimize the work of breathing.

Mann and Meyer explore the world of drug development for asthma and COPD from a regulatory point of view. They explain basic regulatory terms and discuss the regulatory pathways towards approval. This paper details the key clinical regulatory challenges faced by new drugs for asthma and COPD (overall and by class of drug), citing relevant examples and lessons learned. They also cover the issue of generic drug development of inhaled drugs.

Maureen George provides a review of medication adherence in asthma and COPD. She describes the conditions impacting patient adherence and non-adherence. This paper is a shift from the previous topics, focusing on patient behavior and highlighting how the best drugs and drugs regimens are both obfuscated by non-adherence. This enlightening paper reviews the topics of intentional and non-intentional adherence and the differing methods implemented to correct each. Shared decision-making, motivational interviewing, and coaching are discussed. She describes the prevalence of non-adherence to asthma and COPD management aims, the factors affecting adherence, and the effectiveness of strategies targeting unintentional and intentional non-adherence.