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Editorial

EDITORIAL NOTE ON PULMONARY DRUG DELIVERY TO OLDER PEOPLE

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EDITORIAL

Pulmonary diseases, such as asthma and chronic obstructive pulmonary disease (COPD), are common in older people. Treatment principles are well established in this group of patients; however, inadequate training and improper inhaler techniques often results in poor treatment outcomes. Healthcare professionals often do not have the required knowledge about the most common inhaler devices. Age-related conditions like cognitive ability and physical strength would also impact on the inhaler usage. Pharmacokinetics and pharmacodynamics may be affected by physiological changes, like impaired renal and hepatic functions and reduced lung functions. Adjusting and optimizing the inhaler device to the patient preferences, improvement of the drug formulation and inhalers, and using different adherence strategies might improve the treatment outcomes in elderly patients.

Pulmonary drug delivery is the inhalation of drug formulation through mouth and the further deposition of inhaled pharmacological agent in lower airways is the main purpose of this drug delivery route.

Before the inhaled drug can be absorbed into the blood from the lung periphery, it has several barriers to overcome: lung surfactant, surface lining fluid, epithelium, interstitium and basement membrane and the endothelium. Drug absorption is regulated by a thin alveolar-vascular permeable barrier.

For other small molecules, inhalation is also a fast way to get into the body because drug efflux transporters and metabolizing enzymes are present in the lung at much lower levels than the gastrointestinal tract. Lipophilic small molecules are absorbed extremely fast, $t_{1/2}$ (abs)

approximately 1 to 2 minutes.

Volatile drugs, such as gaseous anesthetics, alcohol, or drugs with high volatility, are excreted via the lungs into expired air. Biotransformation or drug metabolism is the process by which the drug is chemically converted in the body to a metabolite.

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