**Inspiratory Flow Rate and Inhalation Techniques of COPD Patients in Routine Clinical Practice: Evaluation and Training**

*Rathasart Pengpu¹  Chaicharn Phothirat¹  Warawut Chaiwong¹*

¹Division of Pulmonary, Critical Care and Allergy Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand

**Background:** Inappropriateness of inspiratory flow and inhalation techniques of inhaled medication devices are associated with decreased medication delivery and poor disease control.

**Objective:** To evaluate the appropriateness of inspiratory flow rate and inhalation techniques of three inhaled devices (pMDI, Accuhaler®, and Handihaler®) in Thai COPD patients.

**Methods:** A cross-sectional study was conducted at chest clinic of our center. Inspiratory flow rates were measured using an In-Check DIAL device. Inhalation techniques were checked by a experienced nurse. A comparison between pre- and post-training appropriate inspiratory flow rates of each device and risk factors of inappropriateness of inspiratory flow were analyzed.

**Results:** A total of 59 COPD patients using 77 devices (aged 70.4±10.3 years, 63.25±24.8% predicted FEV1) were recruited. Approximately 54.1%and 22.1% of devices were used with appropriate inspiratory flow rate and inhalation techniques, respectively. Appropriate inspiratory flow rates and appropriate inhalation techniques were 42.9%, 50%, 71.4% and 4.5%, 23.5%, 38.1% according to pMDI, Accuhaler® and Handihaler® devices, respectively. After immediate training of appropriate inspiratory flow rate, significant improvement was observed only in MDI group (42.9% vs 95.0 %, p= 0.001). The potential risk factors of inappropriate inspiratory flow rate were CAT score ≥10, aged > 70 years, ≥ 65% predicted FEV1 and low education ( 51.5% vs 33.3%, 54.8% vs 30.8%, 53.8% vs 35.5% and 48.8% vs 31.2%, respectively).

**Conclusion:** Inappropriate inspiratory flow rates and incorrect inhalation techniques of inhaled medication devices are common. Immediate training of inspiratory flow rate is significantly improved with pMDI group only.

**Keywords:** Chronic obstructive pulmonary disease, Inhalation, Technique, Device, Inspiratory flow