Results and Conclusion

Findings suggest that objective feedback on inhalation time and flow can help patients to improve their inhalation technique. In addition to regular subjective assessment, 27 patients (71%) report that the objective feedback was useful, and they felt that they improved their inhalation technique. All of the 6 operators reported that the automated feedback was a useful tool when they assessed inhalation technique.

Background and Aim

Correct inhalation technique is important. Metered dose inhalers (MDIs) and dry powder inhalers (DPIs) require different inhalation techniques. In addition, inhaler devices may have different properties with regard to inhalation flow required to achieve optimum deposition. Usually, evaluation and subsequent training of inhalation technique is subjective and performed by nurses, doctors, or pharmacists. Peak inspiratory flow (PIF) meters and training devices give some information on flow but lack in data on time length of inhalation and the timing during inhalation when PIF is reached. This pilot study aims to evaluate a new digital device that measures inspiratory flow over time and provides automated feedback on inhalation technique.

Method

Teenagers (n=40) who used inhalers for asthma treatment inhaled through a disposable mouthpiece connected to variable resistance (In-Check DIAL) and a spirometer (MIR Spirobank II). Software was developed by Medituner AB. Data was collected to an iPad via Bluetooth and an algorithm gave immediate visual and text feedback if the inhalation technique was suitable to the inhaler selected. If the subject’s inhalation was near to the inhaler device manufacturers specifications the software suggested how the inhalation technique could be improved in terms of length or force of inhalation. If criteria were not met, the software suggested an inhaler that was better suited to the patient’s inhalation. A respiratory nurse also performed a subjective assessment of inhalation technique including device handling. Subjects and respiratory nurses filled out questionnaires about the experience of objectively measuring the inhalation technique.

Next steps: We are now using the device to further test inhalation technique in different age groups in patients with COPD and asthma.