

# **SELF-management maintenance Inhalation therapy with EHealth (SELFIE); a study on eHealth use in patient care and research**

**Esther Kuipers, Charlotte Poot, Michel Wensing, Niels H Chavannes, Peter AGM De Smet, Martina Teichert.**

**Background** Electronic monitoring devices (EMDs) are available to remind patients with respiratory diseases in taking their medication and to register inhalations for feedback to patients and healthcare providers, as well as for data collection in research settings.

**Purpose** This study aimed to assess the validity, the patient reported usability and acceptability of an EMD.

**Method** 21 community pharmacies in the Netherlands were invited to participate in this observational study. Patient reported inhalations were questioned by phone calls every two to four days during five weeks and compared to EMD registrations to assess the positive predictive value (PPV) of the registrations. Patients' experiences and acceptance were collected by a questionnaire.

**Findings** 32 patients were included in 18 pharmacies and 886 medication doses were validated. Of these, 751 registrations matched with patient-reported use (true positives, 84.8%). 30 inhalation registrations did not represent patient-reported drug intake (false positives, 3.4%). The positive predictive value (PPV) was 96.2%. 105 patient reported inhalations were not recorded in the database (false negatives, 11.8%). This could have been the result of either technical- or user-related issues. Patients judged the EMD in general to be acceptable and easy to use, but not all were willing to continue its use. Reminders and motivational messages were not appreciated by all users in this convenience sample, and more possibilities to adapt the application to individual needs were desired.

**Conclusion** We found an acceptable PPV, but a high number of false negative registrations compared to patient reported inhalations. Validity of EMDs should be tested in real world settings and applications should offer possibilities to individualize the settings. More attention is needed to identify those patients that benefit from EMD use.