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# A randomised controlled trial of the effect of a connected inhaler system on medication adherence in uncontrolled asthmatic patients

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**In individuals with uncontrolled asthma, data feedback on maintenance therapy use from a connected inhaler system led to increased maintenance adherence and feedback on rescue medication usage led to more rescue-free days but did not improve asthma control** <https://bit.ly/39kmVBA>

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**ABSTRACT** Suboptimal adherence to maintenance therapy contributes to poor asthma control and exacerbations. This study evaluated the effect of different elements of a connected inhaler system (CIS), comprising clip-on inhaler sensors, a patient-facing app and a healthcare professional (HCP) dashboard, on adherence to asthma maintenance therapy.

This was an open-label, parallel-group, 6-month, randomised controlled trial in adults with uncontrolled asthma (asthma control test (ACT) score less than 20) on fixed-dose inhaled corticosteroids/long-acting  $\beta$ -agonist maintenance therapy (n=437). All subjects received fluticasone furoate/vilanterol ELLIPTA dry-powder inhalers for maintenance and salbutamol/albuterol metered-dose inhalers for rescue, with a sensor attached to each inhaler. Participants were randomised to one of five CIS study arms (allocation ratio 1:1:1:1:1) reflecting the recipient of the data feedback from the sensors, as follows: 1) maintenance use to participants and HCPs (n=87); 2) maintenance use to participants (n=88); 3) maintenance and rescue use to participants and HCPs (n=88); 4) maintenance and rescue use to participants (n=88); and 5) no feedback (control) (n=86).

For the primary endpoint, observed mean $\pm$ SD adherence to maintenance therapy over months 4–6 was 82.2 $\pm$ 16.58% (n=83) in the “maintenance to participants and HCPs” arm and 70.8 $\pm$ 27.30% (n=85) in the control arm. The adjusted least squares mean $\pm$ SE was 80.9 $\pm$ 3.19% and 69.0 $\pm$ 3.19%, respectively (study arm difference: 12.0%, 95% CI 5.2–18.8%; p<0.001). Adherence was also significantly greater in the other CIS arms *versus* the control arm. The mean percentage of rescue medication free days (months 4–6) was significantly greater in participants receiving data on their rescue use compared with controls. ACT scores improved in all study arms with no significant differences between groups.

A CIS can improve adherence to maintenance medication and reduce rescue medication use in patients with uncontrolled asthma.