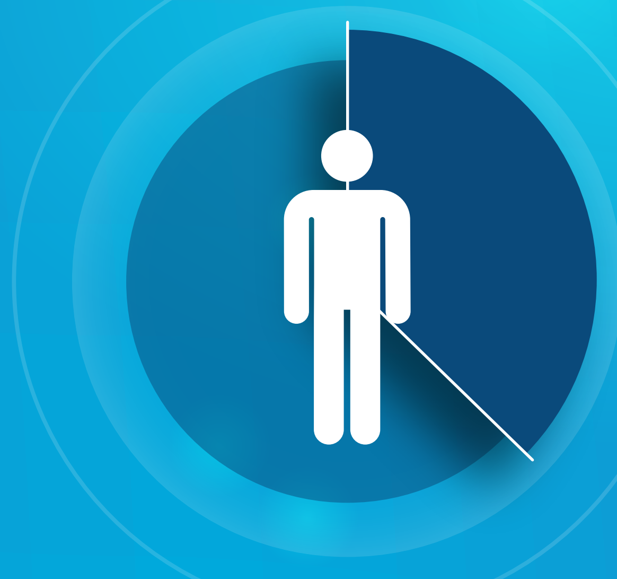
Using digital and drug delivery innovations to improve adherence in asthma

Background



39% of patients with asthma **remain uncontrolled** despite current treatment with inhaled therapies[1]

30–70% of patients with asthma **do not adhere to their treatment**[2]

Poor adherence and improper inhaler technique may:

- Increase risk of severe exacerbations[3]
- Affect mortality[3]
- Decrease symptom control[3]
- Impact quality of life[3]
- Increase direct and indirect costs of care[3]

Reasons for poor adherence vary

Unintentional non-adherence examples[4]:

- **Misunderstanding** about instructions
- Forgetfulness, cognitive impairment or presence of psychological problems
- No **daily routine**

Intentional non-adherence examples[4]:

- Concern about **side effects**
- Treatment viewed as **unnecessary**
- Resent **impact on daily life**

Medication/regimen factors examples:

- Incorrect inhaler use
  - **50%** of patients are **unable to use their inhaler correctly** even with training[5]
- Burdensome, complex or costly treatment regimens

Patient concerns and beliefs should be discussed in order to understand their medication-taking behaviour[4]

Adequate follow-up is essential to optimise adherence among patients with asthma

Evidence-based interventions to increase adherence[4] include technical, behavioural and educational interventions

Simplified dosing regimens (technical)
Once-daily rather than twice-daily dosing

Inhalation reminders (technical/behavioural)
Remind patients of upcoming doses or alert them to missed doses

Home visits (behavioural/ educational)
By trained asthma nurses

Shared decision making (behavioural)
Between patient and doctor, taking into account the patient's preferred medication and dosing

Patient training (educational)
Inhaler skills training and follow up checks on technique

Digital and drug delivery innovations

Inhaler devices that address patient needs

- Should be consistent and simple to use[6]

Inhaler tracking sensors used with mobile Health (mHealth) apps provide patients with[7–9]

- Inhalation confirmation
- Medication reminders
- Access to real data
- Such technologies may lead to significant improvements in medication adherence and asthma control[10]

Telemedicine

- Improves patient **awareness**[11]
- Facilitates shared decision-making, shown to improve adherence
- Encourages **self-management**[11]

mHealth applications

- Enable disease understanding and self management[5]
- Improve asthma control and treatment adherence[2,12,13]

References
1. Buhl R, et al. Respir Med 2020;162:105859; **2.** Asthma UK. Available from: https://www.asthma.org.uk/f29019fc/globalassets/get-involved/external-affairs-campaigns/publications/connected-asthma/connected-asthma---aug-2016.pdf [Last accessed November 2019]; **3.** Engelkes M, et al. Eur Respir J 2015;45:396–407; **4.** Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention. Available from www.ginasthma.org [Last accessed December 2019]; **5.** Azzi E, et al. NPJ Prim Care Respir Med 2017;27:29.; **6.** Ibrahim M, et al. Med Devices. 2015;8:131–139; **7.** Jeminiwa R, et al. Resp Med. 2019;149:59–68; **8.** Merchant RK, et al. J Allergy Clin immunol Pract 2016;4:455–463; **9.** Howard S, et al. BMJ Open Resp Res 2016;3:e000159; **10.** Chan AH, et al. Lancet Respir Med 2015;3:210–219; **11.** Morrison D, et al. Chron Respir Dis 2017;14:407–404; **12.** Kosse RC, et al. Respir Med 2019;149:45–51; **13.** Farzandipour M, et al. App Clin Inform 2017;8:1068–1081.

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