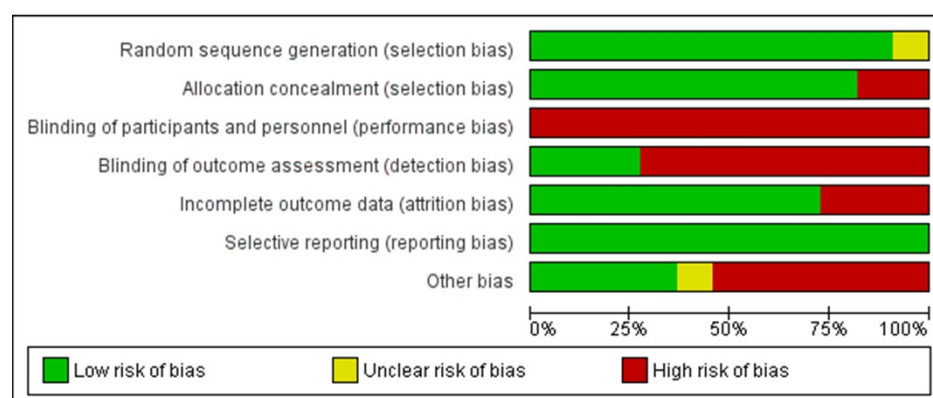


Supplementary figure S1: Risk of bias figures

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Armour et al. 2007	+	+	-	-	+	+	?
Charrois et al. 2006	+	+	-	+	-	+	-
Cordina et al. 2001	+	+	-	-	-	+	-
Garcia Cardenas et al. 2013	+	+	-	-	+	+	+
Manfrin et al. 2017	+	+	-	-	+	+	-
Mehuys et al. 2008	+	+	-	+	+	+	-
Munzenberger et al. 2007	+	-	-	-	+	+	-
Wang et al. 2010	?	-	-	-	-	+	+
Wong et al. 2017	+	+	-	-	+	+	+
Xaubet Olivera et al. 2016	+	+	-	+	+	+	+
Young et al. 2012	+	+	-	-	+	+	-



Supplementary table S1: Data extracted from included studies

CHARACTERISTICS	INFORMATION EXTRACTED
Risk of Bias (Cochrane tool) [18]	
Research Design	Study design
	Unit of randomisation (participant or cluster)
	Number of intervention and control groups/clusters
	Nature of control group
	Length of follow-up (months)
Context	Study location (country)
	Healthcare setting (e.g. community pharmacy)
Participants	Age (years)
	Sex (% male participants)
	Sample size (n - total, intervention group, control group)
	Study uptake (% invitations accepted)
	Attrition rate (% baseline sample lost)
	Baseline differences between intervention and control group
	Asthma control (controlled, partly controlled, uncontrolled)
Outcome measures	Adherence as primary outcome measure (yes/no)
	Adherence measures used
	Other study outcomes
Intervention delivery	Pharmacist training and support
	Delivery channel (pharmacist versus collaborative care)
	Delivery mode (e.g. face-to-face individual sessions)
Intervention content	Perceptions and Practicalities Approach (PAPA) [19]
	Behaviour Change Techniques (BCTs) Taxonomy [21]

Supplementary table S2: Examples of behaviour change techniques (BCTs) coded across studies

BEHAVIOUR CHANGE TECHNIQUE	CODED IN	DEFINITION [21] AND EXAMPLE QUOTE
1.1 Goal setting (behaviour)	Armour et al (2007) [24]	Set or agree a goal defined in terms of the behaviour to be achieved “Eighty-seven (53%) of the intervention patients set goals related to medications (e.g. “remembering to take medications even when well”)... (p.500)” [24]
1.3 Goal setting (outcome)	Armour et al (2007) [24] García-Cárdenas et al. (2013) [27]	Set or agree on a goal defined in terms of a positive outcome of wanted behaviour “Exercise tolerance (e.g. “increase exercise” and “be more active”) was another common theme of goals...as was asthma control (e.g. “not to wake up at night with asthma”)... (p. 500)” [24]
1.4 Action planning	Armour et al (2007) [24] Charrois et al. (2006) [25] Munzenberger & Hill (2007) [30] Wong et al. (2007) [32] Young et al. (2012) [34]	Prompt detailed planning of performance of the behaviour (must include at least one of context, frequency, duration and intensity). Context may be environmental (physical or social) or internal (physical, emotional, or cognitive) – includes implementation intentions. “If necessary, patients received an updated written action plan summarising their medical treatment. (p.149)” [30]
1.5 Review behaviour goals 1.7 Review outcome goals	Armour et al (2007) [24]	Review behaviour goal(s)/outcome goal(s) jointly with the person and consider modifying goal(s) or behaviour change strategy in light of achievement. From published protocol : “Whether or not the patient needed to attend visit 3 was based on the patients’ asthma management and achievement of goals. This decision was left to the pharmacists’ discretion. (p.34)” [55]
2.2 Feedback on behaviour	Cordina et al. (2001) [26] Manfrin et al. (2017) [28]	Monitor and provide informative or evaluative feedback on performance of the behaviour (e.g. form, frequency, duration, intensity). “The pharmacists were trained to identify pharmaceutical care issues (PCIs) which could impact on optimal medicines use or asthma control and provide advice to patients and recommendations to their GP, as necessary. (p.3)” [28]
2.4 Self-monitoring of outcome of behaviour	Cordina et al. (2001) [26] Wang et al. (2010) [31]	Establish a method for the person to monitor and record the outcome(s) of their behaviour as part of a behaviour change strategy. “Patients were monitored by supplying them with a peak flow meter and asking them to record their PEF rate in the morning and evening, together with asthma symptoms, on a diary card. Patients were instructed to present their diary card to their community pharmacist for review monthly when patients collected their drugs. (p.1198)” [26]
2.7 Feedback on outcome(s) of behaviour	Cordina et al. (2001) [26] Mehuys et al. (2008) [29]	Monitor and provide feedback on the outcome of performance of the behaviour “Pharmacists [gave] advice based on the [Asthma Control Test] score of the patient...(p. 791)” [29]
4.1 Instructions on how to perform a behaviour	Armour et al (2007) [24] Charrois et al. (2006) [25] Cordina et al. (2001) [26] García-Cárdenas et al. (2013) [27] Mehuys et al. (2008) [29] Wong et al. (2007) [32] Xaubet Olivera et al. (2016) [33] Young et al. (2012) [34]	Advise or agree on how to perform the behaviour (includes “Skills Training”) “Patients were educated using verbal instructions, physical demonstration, and written information about turbuhaler use (p.1348)” [27]
4.2 Information about antecedents	García-Cárdenas et al. (2013) [27] Xaubet Olivera et al. (2016) [33]	Provide information about antecedents (e.g. social and environmental situations and events, emotions, cognitions) that reliably predict performance of the behaviour “When appropriate, the type of non-adherence (intentional or unintentional) and causes of intentional nonadherence were explored with the Beliefs about Medicines

		Questionnaire and Health Beliefs Model. (p.1348)” [27]
5.1 Information about health consequences	Armour et al (2007) [24] Cordina et al. (2001) [26] Wang et al. (2010) [31] Wong et al. (2007) [32]	Provide information (e.g. written, verbal, visual) about health consequences of performing the behaviour “PharMS consisted of (i) education on asthma (including signs and symptoms, trigger factors, consequences of uncontrolled asthma) with the aid of a booklet which was especially designed for asthma patients (p.4)” [32]
6.1 Demonstration of the behaviour	Armour et al (2007) [24] Charrois et al. (2006) [25] Cordina et al. (2001) [26] García-Cárdenas et al. (2013) [27] Wong et al. (2007) [32]	Provide an observable example of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate “Verbal education and demonstration of inhaler technique were supported by written information and provision of a short videotape for home viewing. (p.1198)” [26]
7.5 Remove aversive stimulus	Armour et al (2007) [24] Charrois et al. (2006) [25] Cordina et al. (2001) [26] Manfrin et al. (2017) [28]	Advise or arrange for the removal of an aversive stimulus to facilitate behaviour change From published protocol: “The pharmacists also provided adherence support, discussed potential or actual drug related problems, and prompted for medical checks.(pg. 34)” [55]
8.1 Behavioural practice/rehearsal	Mehuys et al. (2008) [29]	Prompt practice or rehearsal of the performance of the behaviour one or more times in a context or at a time when the performance may not be necessary, in order to increase habit and skill From protocol (Translated from Flemish): “Next, ask the patient to use their inhaler again and check whether he/she has mastered the correct technique. (p.4)” [56]
15.1 Verbal persuasion about capability	Young et al. (2012) [34]	Tell the person that they can successfully perform the wanted behaviour, arguing against self-doubts and asserting that they can and will succeed From published protocol: “Pharmacists used motivational interviewing (MI) to address problems related to low self-efficacy or motivation. MI is a theory-based skilful clinical method and style of counselling and psychotherapy designed for assessing patients’ source of motivation and assisting patients to commit to change. MI has been found to overcome motivational barriers and adhere to prescribed regimens. (p.5)” [57]