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Improving Patient Adherence with Asthma Self-Management Practices: What Works?

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Effective asthma control is as dependent on patient behavior as it is on guideline-based asthma therapies. More than for many chronic illnesses, asthma management requires patients to be actively engaged in multiple self-management behaviors, including self-monitoring of symptoms, use of an asthma action plan, environmental control practices, and regular adherence with pharmacotherapy using appropriate device technique. When patients are appropriately adherent with these multiple recommendations there is a strong evidence-base that asthma can be very effectively controlled.¹

However, multiple studies have found that poor adherence with asthma self-management is very common and a significant contributor to inadequately controlled asthma.² Studies in adult and pediatric asthma patients suggest that adherence with controller therapies range from 30-70%.³ Less than half of families with asthma complete prescribed environmental control measures to reduce exposure to triggers such as appropriate cleaning measures,⁴ and dust mite covers, and only one in five families report willingness for pet removal⁵. Furthermore, up to 55% of patients with asthma still have frequent exposure to nicotine, despite intensive intervention.⁶

Poor adherence to asthma self-management guidelines contributes to greater asthma morbidity and mortality.⁷ Medication nonadherence has been associated with increased symptoms and healthcare utilization⁸ and more frequent oral steroid bursts.⁹ Exposure to secondhand smoke has been associated with lower quality of life scores, greater rescue inhaler use, lower lung function, and greater risk for emergency room visits, hospitalization and intensive care unit admission.¹⁰

Because of the central role adherence plays in effective asthma control it is critical for clinicians to pay as much attention to patient behavior as to pharmacotherapy. We outline below key factors in promoting optimal patient adherence.

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Assessment of Adherence

The starting point for improving patient adherence is first to assess adherence. Because patient response to treatment is highly individualized, the criteria for what constitutes sufficient adherence must be comparably personalized. This assessment is an important first step in developing tailored treatment recommendations that specifically target adherence to improve asthma outcomes. Furthermore, an assessment of adherence is often critical in correctly identifying if a patients' asthma control is due to nonadherence versus treatment-resistant asthma.¹¹

Many clinicians do not routinely assess treatment adherence during an office visit and instead rely on clinical judgment to rate adherence,¹² which has been shown to be no better than chance at identifying patients at risk for nonadherence.¹³ Verbal assessment of adherence with patients is often incomplete or inconsistent and is not done in a standardized manner. Self-report or asthma diaries, the most widely used measures of adherence, are simple to administer, and useful for identifying patients who will report nonadherence. However, because patients tend to over-report and exaggerate their adherence to therapy, there are concerns about their validity.¹⁴

Assessing Barriers to Adherence

Despite the limitations of self-report, routinely assessing patient's self-reported beliefs and behaviors related to asthma self-management adherence can provide invaluable clinical information. Specifically this assessment can reveal hidden barriers to asthma control. Common barriers to adherence include misunderstandings about therapy, concerns about medication, and difficulty fitting it into their daily life. Other systemic, tangible barriers to adherence include cost of medications or environmental control measures as well as access to care and pharmacy benefits. As with any clinical encounter a trusting nonjudgmental relationship between the patient and provider is important in encouraging the patient to discuss these potential barriers.

A second strategy for assessment that should be routinely incorporated into clinical encounters is review of pharmacy refill data. Pharmacy refill records provide overall estimates of the maximum possible adherence, but they do not confirm ingestion or appropriate patterns of use and cannot account for stockpiling of medicine. Collecting pharmacy refill data as a clinical assessment of adherence is increasingly feasible for patients enrolled in managed care or pharmacy benefits plans. The growing use of e-prescribing will further expand this option. Individual pharmacies can provide refill data on request also.

For patients with persistent, poorly controlled asthma clinicians may want to consider the use of electronic monitoring of medications to better understand how the patient's use of medication is related to asthma control. Electronic monitoring is generally considered to be the gold standard for medication adherence measurement, and they have been recommended for the evaluation of complex patients.¹⁵ One study have found that upward to 50% of patients referred to a tertiary severe asthma clinic had previously undiscovered nonadherence with controller therapy.¹⁶ These monitors can provide precise data about date

and time of medication use and can help tease out the role nonadherence may be playing in poor control.

Interventions to Improve Adherence

Because barriers to adherence can result from multiple factors, interventions to improve patient adherence need to be appropriately targeted to those factors that impede patient adherence. Research has demonstrated that adherence interventions also need to be varied and may include strategies such as patient education, adherence feedback, provider engagement, and follow-up at home using phone calls or text messaging.

Self-Management Education

Patient education is the foundation for promoting adherence and effective self-management. Key components of successful adherence promotion interventions include providing reinforcement for patients' efforts to change, providing feedback on progress, tailoring education to patients' needs and circumstances, and continuity of care and education. Meta-analyses have supported the value of educational interventions for improving patient adherence with asthma self-management practices.¹⁷ For example, Jansen et al,¹⁵ showed that participants who received an individualized self-management intervention had 3-fold greater odds of higher than 60% adherence at the end of the study and were less likely to report nighttime awakenings or use of rescue medication. Critical to successful patient education is understanding each patient's comprehension and retention of information presented. Recent research has highlighted the prevalence of poor health literacy among patients and in particular the contributing role low health literacy plays in poor asthma adherence and outcomes.¹⁸ Educational materials, format and presentation should therefore be appropriately tailored to the literacy needs of each patient and clinicians should confirm understanding using a "tell me back" style of education.

Patient Adherence Monitoring and Feedback

Monitoring patient's adherence and providing feedback and reinforcement is a powerful behavioral strategy that has shown promise in improving asthma self-management. For example, Onyirimba et al.¹⁹ used an electronic MDI to monitor inhaler adherence in adults with asthma. This electronic adherence data was then used to provide direct clinician-to-patient feedback. After 12 weeks this intervention resulted in adherence above 70% in the intervention group compared with adherence below 50% in the control group. Similar strategies have been used in community-based studies to improve asthma outcomes. Otsuki et al.²⁰ found that a home-based adherence monitoring and feedback intervention delivered to high-risk, inner-city children and caregivers significantly improved ICS adherence and reduced asthma morbidity.

While the use of electronic monitoring devices is generally impractical in most clinical settings, electronic pharmacy records are an increasingly accessible strategy for monitoring patient adherence. In a recent study Williams et al. found that when clinicians used patient pharmacy-based adherence data during an asthma clinical encounter, patient adherence was significantly increased.²¹ In this cluster randomized trial (N=2698) physicians received

detailed information about how to access patients' pharmacy refill information, as well as educational information highlighting the importance of patient adherence with asthma therapy and how to discuss adherence and give feedback to their adult patients. Overall study results found no significant differences in adherence between the intervention arm and the control arm, likely due to the fact that few physicians accessed or viewed patients' electronic adherence data. However, for those clinicians who did view their patient's detailed adherence data, patient adherence was significantly higher (35.7%) compared to those clinicians who did not view adherence data, suggesting that using pharmacy records to monitor and provide feedback is an effective strategy to improve adherence.

Patient-Provider Visits and Communication

Routine office visits are an important component of asthma care. In fact frequent office visits for asthma has been shown to be related to improve patient adherence and self-management.²² Providers are encouraged to use these visits to review key aspects of patient care such as inhaler technique, medication treatment plans, adverse side effects and adherence. The use of validated objective assessments of asthma control such as the Asthma Control Test (ACT) are also recommended by NAEPP guidelines.²³ These recommended activities have been shown to not only improve patient care and outcomes but may be used for provider Maintenance of Certification (MOC) for board certification.²⁴

The quality and the nature of patient-clinician communication about asthma has also been shown to be related to improved adherence with therapy.²⁵ For example, Wilson et al.²⁶ found that engaging patients' in shared decision-making when selecting asthma treatment regimens resulted in significantly higher asthma controller adherence and improved measures of asthma control, including quality of life, asthma morbidity and pulmonary function.

Technology Interventions

Because patient adherence with asthma self-management practices is an active, ongoing process, adherence promotion strategies should also be long-term and adaptive to patients' changing needs. Information technology (IT) tools are increasingly being applied to change health behaviors and promote patient adherence. In particular, IT advances now offer low-cost and feasible applications to support adherence via monitoring, prompts and reminders. For example, interactive phone messaging systems (commonly called Interactive Voice Recognition or IVR) have been used to reach large populations at low cost to deliver tailored adherence promotion messages to patients. Bender et al.²⁷ found that IVR reminder and educational calls to improve pediatric adherence with ICS therapy resulted in adherence levels that were 32% higher for intervention parents compared to control parents, as well as more favorable attitudes toward controller therapy. Another simple IT strategy that is generating considerable interest for adherence promotion is the use of SMS text messaging. In a randomized clinical trial of 216 adults with asthma, Petrie et al.²⁸ found that texting individualized messages regarding medication beliefs and adherence improved patient adherence by an average of 10%. A potential limitation of SMS interventions is the patient cost for receiving SMS texts.

Conclusion

Successful clinical management of asthma is as dependent on clinician skill and attention to patient behavior as it is on clinician's selection of guideline-based pharmacotherapy. Fortunately, there is a growing toolbox of adherence assessment tools and interventions that can be effectively integrated into clinical practice to improve and sustain patient adherence. Core clinical pearls for promoting asthma adherence include offering tailored, literacy-appropriate self-management education, providing ongoing adherence monitoring and feedback, and when possible, taking advantage of IT tools to prompt, remind and support long-term maintenance of adherence.

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