

Patient Education the Key to Optimal Medication Delivery and Compliance

by Jane M. Martin, BA, CRT

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In recent years, the pharmaceutical industry has made great strides in engineering inhaled medications, making them easier to use and more beneficial for pulmonary patients. However, the best medicine housed within the most brilliantly constructed product is of no use unless the person needing it actually uses it; and the device is of little use unless he or she can operate it effectively, understand when to use it, and have some idea of how it affects the lungs. Add to this various physical limitations along with confusion associated with the fact that one may have several different inhalers, each with its own schedule and purpose, and there is little wonder why pulmonary patients are often non-compliant in using prescribed medications.

The key to optimizing the benefits of these powerful pulmonary medicines can be seen in a two-pronged approach: 1.) Making medications easier for patients to use, and 2.) Increasing the reach of effective patient education programs.

This article will present ways to successfully overcome barriers to optimal administration of inhaled medicines by explaining ways in which medication delivery can be enhanced, and how an investment in patient education will help to assure optimal medication benefits providing long-term returns.

This discussion will not address one of the primary barriers, the cost of medications, which can be enormously problematic for some people, causing them to either simply not obtain their medicines or intentionally under medicate in order to “stretch out” a prescription. Rather, this article focuses on the problems of delivery and issues of compliance once the patient has the medication in hand.

The Problem

In the August/September 2000 issue of RT magazine, RRT Peggy Walker states that according to the National Center for Health Statistics, an estimated 1.1 billion

medications were provided or prescribed during ambulatory care visits in 1992. Respiratory drugs were the fourth most commonly prescribed medications overall.

“Unfortunately, the number of prescriptions written does not appear to correlate well with the number of medications actually taken. Some studies have shown that less than 50% of prescribed respiratory medications are ever used. In one large multi-center trial, renewal rates for inhaled corticosteroids have been shown to be as low as one prescription per year.”

“One review of studies assessing compliance revealed that patients took their inhaled medication as prescribed on only 20% to 73% of days. In addition, only 46% to 59% demonstrated efficient inhalation techniques.”

Note that although there is a lack of conclusive evidence to support the role of inhaled corticosteroid in the management of COPD, an article by Sharma in the April 2004 issue of E-Medicine states, “[The use of] inhaled corticosteroids did not slow the decline in lung function but did decrease the frequency of exacerbations and improve disease-specific and health-related QOL (quality of life).” Therefore, working to make improvements in inhaled corticosteroid use is relative to a discussion about COPD medication compliance.

Another study examined the frequency and nature of the discrepancies between medications prescribed and actually taken in the outpatient clinic of an academic medical center in Boston, Massachusetts (USA). The investigators compared patients’ medical records with the actual medications that patients brought in and listed as an accurate representation of what they were taking. The study revealed that 76% of the patients surveyed were not taking their medications as prescribed.

Why?

Why the huge discrepancies between medications prescribed and what patients are actually taking? As mentioned, there have been many studies done, and they are essential in looking at this issue objectively. However, as a result of over two decades of experience working with patients in acute respiratory situations in both the emergency and in-patient environments and in developing pulmonary patient education programs, I would like to share some of the experience and understanding that I have gained.

The reasons for non-compliance of inhaled medications are many and as varied as the patients, but the *lack of understanding* about how inhaled medications work in the lungs is at the root of the problem. Here are the three most common manifestations of this lack of understanding, in commonly reoccurring situations.

“My inhalers are not ‘real’ medicine.” Because inhaled medications are inhaled and not taken as a “pill,” many patients do not consider them “real” medicine. Therefore patients believe that these medicines don’t really help that much, and it won’t hurt if they are omitted.

“They don’t help.” As found in research, corticosteroid controller medicines are enormously underused. Administering a nebulizer treatment on a patient in the ER one

evening, I questioned her about what medications were prescribed by her doctor and asked if they had been taken and provided any relief. The patient had no idea of the names of her inhalers, so I showed her a full-color poster picturing the spectrum of inhaled medications. Her answer was, “That pink one (Vanceril, a corticosteroid controller medication) doesn’t do me a bit of good when I’m having trouble.” If this dialogue is occurring almost daily in the emergency department of a small 220-bed community hospital in a relatively affluent community, it is reasonable to assume that this type of patient and family mindset is rampant among the uninformed patient population.

“They are too difficult to use.” Poor technique is another problem. Patients are often handed a prescription for inhaled respiratory medications and turned out on their own, expected somehow to magically teach themselves optimal understanding, use, and compliance.

Delivery and Accessory Devices

Many patients with arthritis find that hand dexterity is significantly limited. Unless they live with a family member or friend willing to assist, or reside in a care facility with professional help available to dispense the medicine when needed, patients, no matter how much they desire to be compliant, are often times simply physically unable to take their inhaled medications.

The MDI-Ease, distributed by Boehringer/Ingleheim, Inc., has helped greatly in this regard, involving the whole hand (rather than two fingers) squeezing the device to activate the dose. However, in some cases, patients with limited fine motor skills struggle to insert the canister into the device, making its use problematic.

DPI (dry powder inhaler) devices, although a great advance for most patients, can be difficult for those with arthritis or limited vision. The number display telling how many activations are left in the disc-type inhaler are very helpful, and patients appreciate them, but they are small. Also, the small lever used to release the powder is not always easy to operate. The turbuhaler, by Astra Zeneca, with its larger twist-turn bottom, seems to be easier for many patients to use.

Spacers and holding chambers have been proven to be very helpful in increasing the deposition of inhaled medications. A study by Wilkes, Fink, and Dhand at Loyola University in Hines, Illinois (USA), showed “compared with the MDI alone, all of the accessory devices reduced aerosol MMAD (mass median aerodynamic diameter) and increased lung-throat ratio. This study used both spacers (toilet paper roll, Ellipse, Optihaler, Myst Assist) and holding chambers (Aerochamber, Optichamber, Aerosol Cloud Enhancer, Medispacer, and Inspirease). Thus, in this case, the “something is better than nothing” rule applies.

In spite of the benefits, there is a huge *under* prescribing of these devices. Patients entering pulmonary rehabilitation or asthma education programs, when questioned about spacer/holding chamber use, fall into three categories: 1) They have never heard

of or seen one, saying that they are sure that if the device was worth using, their physician would have told them about it, 2) They have one, but don't use it because they were given one by their physician and told that usage is "up to them" because "it may or may not help," and 3) They have been provided one by their respiratory therapist or pulmonary physician's office, given a demonstration of how it works, been required to perform a return demonstration, use it regularly, and feel that it really helps "get more in."

When speaking to physicians about prescribing spacers and holding chambers, it is often found that there are preconceived notions about patient non-compliance. "They don't want to be bothered with that extra stuff," or "They don't take it when they should anyway; they're not going to go through an additional step." Again, with education, demonstration, and return demonstration, it has been found that compliance can increase dramatically, even in the most unlikely patients. (This is by no means intended to be an indictment of physicians who are already more than overwhelmed by patient load and imposed bureaucratic demands. The lack of effective mass patient education is a flaw in the medical system, which needs to be addressed.)

Methods of Monitoring Compliance

Compliance monitoring tools range from very simple, such as the handwritten diary, to high-tech options such as telemonitoring, Internet, and electronic monitoring. Early studies have indicated that many of these newer methods, although useful and somewhat more interesting for the patient to use, can be unreliable. Further development will no doubt play a significant role in tracking use.

Patients in the pulmonary rehab and asthma education programs at Beaufort Memorial Hospital, Beaufort, South Carolina (USA) are given a diary. Joyce Massaros, RRT, a respiratory therapist with the program says, "Not only does the diary give us vital feedback on their symptoms, but promotes patient adherence as well. *Education and follow-up are very important to this process. The patient needs to understand the use and purpose of every medication and the importance of monitoring their effectiveness.*"

Of course there are limitations to self-reporting. Research data has indicated that self-reports tend to be unreliable. A study by Van Grunsven et al compared patient diaries with dry-powder inhalers (DPIs) returned for refills. Whereas the diaries indicated more than 95% compliance with the prescribed medication, the actual DPI used indicated a mean overall individual compliance rate of 72%.

Even so, along with education, some degree of accountability, and higher expectations, this is a much better compliance rate when compared with the 50% cited at the outset of this article.

The Promise of Patient Education

The most successful patient compliance comes down to this: patient education made so simple and convincingly logical, that there is little reason for a patient or his or her family to *not* follow the prescribed instructions, or attempt to follow them at least, until episodes have stabilized and it is time to consider a step-down approach. There *are* ways to explain basic lung function to patients so they are able to understand how the lungs work, how controller and reliever medications differ, and why it is essential to work in partnership with one's physician in order to comply with a successful disease management plan. *It can be done.* We know from experience that one-on-one education, even if only a few minutes are invested, can produce significant benefits. It can, as well, greatly improve compliance even in more uneducated patients who are fully entrenched in haphazard rescue-medication methods. When, after 5-10 minutes spent on education, patients and families say, "Thank you. After all this time (months -- or in many cases years -- of struggling in confusion), this is the first time anybody has ever explained this. Now I understand it. It makes sense to me." And most commonly heard, "Why doesn't my doctor tell me these things?"

"In a study by Bartlett et al of Baltimore, Maryland (USA), appropriate use of MDIs by inner city, lower socio-economic group asthmatic children was 28.6% at the outset. After four weeks of individualized home-based intervention by trained nurses, appropriate use of MDI therapy was found in 54.1% of these children. Whether this encouraging increase in adherence persisted, after the visit by nurses was discontinued, remains to be seen."

Although this article's primary focus is on COPD, it is important at this point to make a distinction between the nature of asthma and COPD. Asthma is more episodic in nature, with time between flare-ups allowing many younger patients to function relatively normally. COPD, especially in advanced stages, being chronic in nature and presenting severe limitations in activities of daily living, places patients in an even more receptive mode for education.

How Do We Make This Happen?

Now, of course it would be impossible to go into the home to educate every COPD patient. So, how then, within limitations of time and money, can effective education be provided to the COPD patient?

There is a system already in place to provide COPD patients with the educational basis to comply with prescribed inhaled medications as well as work with them in other ways to encourage optimal health in spite of their limitations. Pulmonary Rehabilitation programs provide excellent education, professional and peer support, and exercise conditioning to people with even severe disease. In 1974, the American College of Chest Physicians (ACCP) Committee on Pulmonary Rehabilitation adopted the following: "Pulmonary rehabilitation may be defined as an art of medical practice wherein an individually tailored, multidisciplinary program is formulated which through accurate diagnosis, therapy, emotional support, and education, stabilizes or reverses

both the physio- and psychopathology of pulmonary diseases and attempts to return the patient to the highest possible functional capacity allowed.”

Pulmonary Rehabilitation (PR) consists of a six-to-twelve weeklong monitored outpatient program practicing exercise, education, and emotional support for people with COPD.

A positive relationship between the patient and the PR staff allows for ways to identify barriers to compliance and also affords time to implement lasting strategies to improve adherence.

Studies have shown that Pulmonary Rehab leads to clinically significant improvements in exercise tolerance, quality of life, and reductions in COPD-related morbidity, as well as reductions in hospital admissions and the need for oral steroids. In spite of its success, however, Pulmonary Rehab remains vastly under utilized.

Recommendations

- Improve ease of MDI and DPI use for patients with limited dexterity.
- Install more easily read counting features on all inhaled medications.
- Continue production of videos / DVDs demonstrating very simple respiratory anatomy and physiology, making these materials more widely available to physician offices, hospitals, Better Breathers’ groups, and Pulmonary Rehab programs.
- Increase support of patient referrals to pulmonary rehabilitation programs.
- Increase involvement of health educators in the pharmaceutical industry. Those experienced in the respiratory field are well equipped to advise on the development and implementation of programs.

Summary

Development, chemistry, engineering, user-friendly product design, and distribution are all vital components in the success of powerful inhaled pulmonary medications. But the pharmaceutical industry must also continue to work on methods of integrating technology with the human element, thereby improving the level of compliance.

Pulmonary Rehabilitation must be more fully utilized, allowing more health educators to work with COPD patients, gaining their trust, educating them on the how’s, why’s, and when’s of inhaled medications use. Then, and only then, will we be closer to

achieving an acceptable level of patient compliance and adherence to an effective management plan.

Can an expanded education program be cost effective? Can we afford to do it? Given the cost of wasted medications, and the cost of acute care -- the cost of an average hospitalization for acute exacerbation of COPD is \$7,000 and one course of Pulmonary Rehab is considerably less than this -- can we afford not to?

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