

So That's How You Use It: How Effective Is Education on Inhaler Use?

Patients with pulmonary disease often utilize inhaled medications, since this is often the most effective/direct route.¹ Medication via inhalation route allows for direct delivery to the lungs and airways, with often faster responses, and decreased systemic doses/effects compared with oral or intravenous routes.¹ Commonly, inhaled medications are delivered via inhalers, such as the metered-dose inhaler (MDI) or the dry powder inhaler. Inhalers are the second most common medication form in the world (the pill form being first).² For many respiratory diseases, including COPD, asthma, and cystic fibrosis, treatment guidelines have been developed to aid in their management, and these often include inhaled medications as the primary route of administration.¹ Effective use, proper inhaler technique, and the patient's adherence to prescribed therapy appear to remain important in the successful management of pulmonary disease.¹⁻⁷

Vestbo et al⁸ discussed the strong relationship between poor adherence to and technique for prescribed inhaled medications and the increased risk of hospital admission due to exacerbations. Melani et al⁶ reported in a large multi-center observational study that inhaler misuse among COPD and asthma subjects was common (even among experienced subjects), led to poor clinical control, and increased the amount of associated unscheduled health-care resources used. Ultimately, there is an associated increased in total health-care cost secondary to the non-adherence to and misuse of inhaled medications.⁴ It is estimated that 5–7 billion dollars annually are wasted due to inhaler misuse.²

In 2011, a collaborative task force was assembled between the European Respiratory Society and the International Society for Aerosols in Medicine. This collaborative task force set forth to draw up a consensus statement and recommendations to aid the pulmonary specialist when treating patients using inhaled medications.¹ In their report, Laube et al¹ discussed the role of inhaled medica-

tions, the various types/delivery devices, and recommendations for best care of pulmonary patients utilizing inhaled medications. They recognized that patients are often confused by the various devices and techniques, and that going over the device once is often not enough. In summary,

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the task force recommended that prescribers/health-care professionals caring for the patient: (1) be aware of use and the best technique to be used with the device that the patient is using; (2) train the patient on the correct inhalation maneuver for the specific inhalation device he or she is using; (3) check inhaler technique regularly; (4) preferably check inhaler technique with each visit/opportunity; (4) review the patient's adherence to plan; and (5) before switching devices/medications, ensure that the patient is involved, knows how/when to use them, and receives follow-up education.¹

In this issue of *RESPIRATORY CARE*, Shealy et al³ discussed/evaluated the effectiveness of education on MDI technique. They reported about 25% of participants had never received instruction on proper MDI technique. Of the remaining participants who reported receiving instruction, the greatest proportion received verbal communication (55%), with the second highest being demonstration (47%). Only a few participants reported that they received instruction via video (7%) or written handouts (4%). In addition, almost 25% of participants reported receiving instruction through multiple methods. One of the drawbacks to this subjective source of education is that the quality and source of the education given is unknown. This is something that we often face as respiratory therapists (RTs). You hear from a patient that he or she has received education, but what does that really mean? What education has the patient had, what was the quality, and who was the source?

How the Shealy et al³ study differs from others is that they assessed proper technique by evaluating subjective data (checking off steps) but also objective data. For objective analysis of correct/effective inhaler technique, the authors used the Aerosol Inhalation Monitor (AIM) by Vitalograph. This device measures inspiratory flow, ongoing flow, and breath-hold, which are all components to using an MDI effectively.^{3,4} When using the AIM, a green

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light indicates correct inhalation technique, whereas a red light indicates that the patient's technique is inaccurate.³ As the authors disclose, the published validity of this device was not readily available, but it has been used in previous studies⁹⁻¹¹ to show an objective analysis of whether the patient's technique was correct, instead of solely utilizing subjective data. Of the 99 subjects measured with the AIM, only 6% achieved good results. Upon analysis of the subjective data or the checkoff, Shealy et al³ concluded that only 15% of their 100 subjects successfully completed all of the steps on the checklist. Their results regarding misuse (85% subjective/94% objective) were similar to those of other studies.^{9,12,13}

Although their sample size was relatively small, the authors revealed, as others have shown, the ongoing epidemic of inhaler misuse. The epidemic is that patients who would greatly benefit from inhaled medication to treat/manage their disease are making critical errors that could affect the efficient delivery of the medication to their lungs/airways. I think where we currently fall short as health-care professionals is that often, once the box is checked off that the patient has received education on inhaler use, we are done. because simply we do not have the time (or really we are not allotted the time). The other mistake clinicians often make is we conclude that patients have been educated on medication use in the past or have had their disease for a while, and therefore do not need further follow-up or assessment.

Although inhalers/MDIs might be in appearance relatively simple devices, the proper use to ensure effective and efficient delivery of the medication to the lungs is dependent on specific steps to be properly done.² Whether it is best to subjectively check off these steps or objectively measure them to ensure that the patient is appropriately able to perform the inhaler technique may still be up for discussion. But what does seem to be best is for the patient's technique to be physically observed by a trained professional (such as an RT), and on a regular basis. As mentioned above, in the 2011 collaborative task force guidelines, repeated education from caregivers is required to ensure correct inhaler technique.¹ Takemura et al¹⁴ reported how multi-educational sessions on inhalation technique equated to good adherence and overall better quality-of-life scores. But again, this was with regular and consistent follow-up. Because inhaler misuse is so frequent, reassessment of correct technique should definitely be evaluated before considering increasing medication dosages or switching medications.^{1,13} Here are maybe a few areas where we as health-care professionals, RTs in particular, can help: (1) allot for time for education of the patient (this includes education, evaluation of technique, and follow-up on technique/proper use)² in the hospital (utilizing respiratory case managers), in the out-patient setting such as during pulmonary function testing, in the

respiratory/pulmonary clinic, and in the home care setting; (2) partner with the physician to aid in providing further education in conjunction with their office visit; and (3) provide education during pulmonary rehabilitation.

Another key is that the health-care professional who is providing the education/follow-up education be trained in the appropriate critical steps and understand how all of the various inhaler devices work.^{1,2} There have been reports of up to 67% of nurses, doctors, and RTs being unable to describe critical steps to proper inhaler use.² How can we teach someone if we don't know it ourselves? The answer to that question is why it is vital that health-care professionals, in particular those such as RTs and pharmacists, be trained and to be up to date on all of the current inhaler devices and how they function. Finally, hospital administrators and law makers need to be educated on the importance of inhaler education, proper follow-up care for patients using inhalers, and the time needed to allow for this to happen.² It should not be the norm that 85–94% (as seen by Shealy et al³) misuse their inhalers, the device that is intended to alleviate symptoms, manage pulmonary diseases, and improve their quality of life.

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