

Inhalation Instruction Guidelines for Educators & Clinicians, CPT 94664

In-Check Dial™

- Set the resistance for the appropriate device
- Install the one-way filter (arrow pointing toward the patient)
- Set up the simulation; “Imagine that you are at home getting ready to breathe your medication into your lungs. Show me exactly what you do to fill your lungs with [medicine name]. (Prop - Use a trainer device, such as the Trainhaler™ or placebo MDI attached to a spacer to help the patient visualize what is being simulated.)
- Hand the In-Check DIAL™ to the patient saying “Seal your lips around the end of the mouthpiece. Lift your chin to open your airway, aiming the In Check Dial up towards the top of the facing wall. Suck air through this device in the same way you would breathe in to suck medicine out of your [name of medicine device]. (**Reminder** – You might need to say. “This is NOT your peak flow meter. Don’t blow into this tube. Think of this like a big straw. You are going to suck air through this tube in the same way that you would breathe your medicine into your lungs at home.)
- Watch for the following patient behaviors:
 - 1) Exhales gently and completely for several seconds to empty the lungs (This effort increases the volume of air that can be inhaled and increases the amount of aerosol medication deposited into peripheral, small airways where asthma hits hardest)
 - 2) Inhales at a steady inspiratory flow rate (IFR) at or near the recommended rate of 30 LPM for MDIs and 60 LPM for DPIs (EPR3); the red disk marks only the peak inspiratory flow rate, so observe the white disk for variability in IFR (acceleration, deceleration, end spikes, etc.). The white disks marks instantaneous IFR and allows an estimation of the inspiratory time (IFT) by observing time the marker is not at zero
 - 3) Holds breath for 5-10 seconds (time is limited by patient comfort and capacity)
- Coach the patient to improve their effort for each step above (1-3)
- **Provide a “target time” to guide the person’s effort at breathing in at the correct speed. Target time in seconds for MDIs is 2 times the FEV1. Target time for DPIs in seconds equals FEV1 in liters. (If FEV1=2 L and the person is using an MDI, say “it should take you 4 seconds to fill your lungs with your medication”.)**
- Repeat until IFR and IFT are optimal and reproducible (MDI=25-35 LPM, DPI=55-65 for the calculated target time)
- Document initial effort (eg. 120 LPM for one second) and final attained flow and time (30-35 LPM for 4 seconds), document that this effort was or was not reproducible
- Recheck at each visit (work toward the EPR3 recommendation of 30 LPM for MDIs (p. 250) and 60 LPM for DPIs (p. 249)

MDI

- Use a VHC (good idea for bronchodilators, essential for inhaled corticosteroids)
- Insert MDI into the VHC and shake the medication gently several times if indicated (Do NOT shake Qvar, Atrovent or Alvesco)
- Common error is excessive IFR with very brief inspiratory time (results in oropharyngeal deposition with minimal lung deposition; aerosol travels too fast in a straight line)

Valved holding chamber (VHC) or “spacer”

- Might require coating in diluted dish detergent once a month to block static build-up (not required for VHCs with static-free designation on the label)
- Might have a flow signal that sounds off if IFR exceeds 60 LPM – twice the recommended IFR (**Reminder** – ask the patient “If you hear a whistle, what does that

- mean?” Answer is “slow down. Keep breathing, but slow down.”) Remind the person of their target time and encourage watching a clock with a second hand or count “One 1000, two 1000...”
- An In-Check Dial™ looks a little like a spacer, so this is a natural simulation for most patients. Say “Imagine that you are at home getting ready to take your [medicine name]. You hook up your MDI to your spacer. Now show me how you breathe your medication into your lungs.”

VHC with Mask

- Infants are going to be passive participants. The goal is to have the parent observe the exhalation valve (nose valve), if this is a device feature, to be sure that the infant takes six breaths after each actuation of the MDI. Otherwise the rise and fall of the chest/abdomen will be the indicator for breaths. Toddlers are more likely to tolerate the mask if the parent counts out loud for the required 6 breaths (One, Two, Three, Four, Five, Six – clap and applaud NOW). This works! Really! Counting distracts and amuses most infants.
- Preschool children will usually respond to the following instructions after the mask is in place. “OK. Blow out ALL your air, like you are blowing out candles on a cake [or similar instructions].” Next, actuate the MDI and say, “**Breathe in, breathe in, breathe in...** Now **hold it, hold it, hold it.** Good work!” If the effort is not great just keep the mask in place and repeat this sequence one or more times to clear the drug from the chamber. By three or four years of age most young children can learn to intentionally empty their lungs, take a slow breath to fill their lungs with medication and then hold their breath a few seconds.
- Recommend “rinse and spit, then brush your teeth” after inhaled corticosteroids (ICS). For infants, toddlers and others unable to perform good oral care, wipe face with moist cloth and provide food or beverage after ICS doses to remove drug from face and throat.

DPI

- Common errors – either insufficient IFR (leading to settling of the drug in the mouth and upper airway – aerosol “sedimentation”) or excessive IFR with short IFT leading to over-acceleration of drug, keeping it from making the many turns required to arrive in the lower airways – this results in aerosol “impaction”
- Coach for 60 LPM using a target inspiratory time equal to their FEV1 (or 2-3 seconds), **use correct resistance setting on the In-Check Dial.** (For Twisthaler™ and Flexhaler™ resistance is very close to the Turbuhaler™ setting.)
- Some patients don’t like the feel of the lactose that ends up on the back of their throat. Recommend that they take a sip of water first to moisten the throat.
- Recommend “rinse and spit, then brush your teeth” after inhaled corticosteroids (ICS). If unable, eating or drinking will help remove drug from throat.

Nebulizer with Mask for Infants, Toddlers and Pre-schoolers

- Without a mask most of the intended dose will be lost; blow-by technique not effective for infants and young children; USE A MASK!!! (EPR3, p. 251)
- **Reminder** – Ask the parent – “Will your child leave the mask in place for the treatments?” Also ask – “Is the time and effort required for these treatments doable for your household?” “Can you afford this medication?” If not consider MDI by VHC with mask. This approach cuts drug administration time from 10 minutes several times a day to one minute and eliminates the need for a machine. This might make the family more portable and adherent to the ICS dosing plan.

