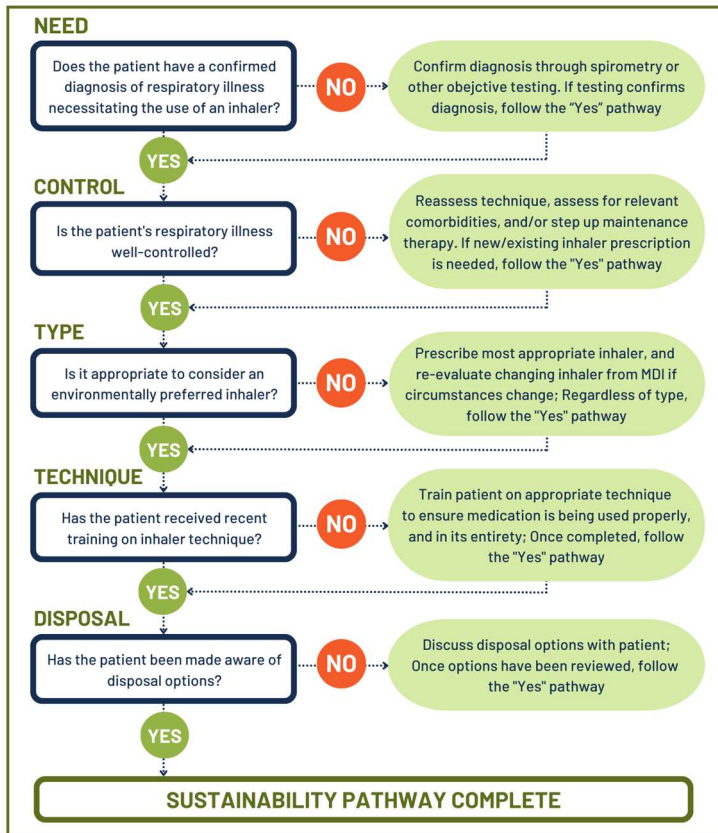


# Considerations for Climate Conscious Prescribing



## CONSIDERATIONS FOR PRESCRIBING

Accurate diagnosis of asthma and COPD requires confirmatory testing to avoid unnecessary inhaler prescribing.<sup>1,2</sup>

- > Long-term inhalers are often prescribed for asthma and COPD without confirmation of diagnosis.<sup>1</sup>
- > 44% of Canadians who receive a diagnostic label of asthma have never had spirometry testing. Up to 67% of Canadians with COPD, chronic bronchitis, and emphysema have had no spirometry.<sup>3,4</sup>
- > When the diagnosis is not confirmed, there is potential patient harm due to missed alternative diagnoses, unnecessary medication costs and side effects, and patients believing they have a chronic illness.<sup>5-9</sup>
- > Not all wheezes are due to asthma: In a large Canadian study, 33% of patients who had received a diagnosis of asthma from their physician in the last 5 years did not have asthma when assessed objectively with lung function tests. However, 79% of these non-asthmatic patients were in fact using asthma medications.<sup>6</sup>
- > There is no evidence of benefit for SABA, ICS, or ICS/LABA in "post-viral cough" for adults.<sup>29</sup>

Patients' expectations for duration of cough do not match the reality: the average duration of cough from a viral upper respiratory illness is 18 days, though patients only expect it to last 5 to 7 days.<sup>10</sup>

## Diagnosing Asthma

- > Guidelines uniformly recommend objective testing to establish asthma diagnosis. Cough, wheeze, or dyspnea can be caused by other conditions.<sup>11-13</sup>
- > The best time to perform spirometry is when the patient is symptomatic. Spirometry can generally be performed in children 6+ years of age.<sup>1,2,13,14</sup>
- > "Don't initiate medications for asthma (e.g., inhalers, leukotriene receptor antagonists, or other) in patients ≥ 6 years old who have not had confirmation of reversible airflow limitation with spirometry, and in its absence, a positive methacholine or exercise challenge test, or sufficient peak expiratory flow variability." Choosing Wisely Canada Recommendation<sup>2</sup>
- > Other lung function tests, such as plethysmography (i.e. lung volumes) and diffusion capacity testing are not required when asthma is suspected.<sup>1</sup>

## Diagnosing COPD

- > Not all shortness of breath, chronic cough, and sputum are COPD. Guidelines uniformly recommend objective testing to establish a COPD diagnosis.<sup>1,2,15</sup>
- > A diagnosis of COPD should be considered in any patient who has dyspnea, chronic cough, and/or sputum production and an appropriate history of exposure to noxious stimuli. Spirometry demonstrating a postbronchodilator FEV1/FVC < 70% (or less than the lower limit of normal, if available) is required to make a definitive diagnosis." Choosing Wisely Canada Recommendation<sup>2</sup>

## Questions to consider

- Under what initial circumstances was this inhaler was prescribed?
- Does my patient have a confirmed diagnosis? If not, can I refer my patient for objective testing?
- Is my patient's current medication working for them?
- Is my patient experiencing an acute airways exacerbation?

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# Considerations for Climate Conscious Prescribing

## CONSIDERATIONS FOR SWITCHING

Switching must occur with patient involvement.

- > Shared decision-making can lead to improved medication adherence and health outcomes for the patient.<sup>52,53</sup>
- > A forced non-medical switch in inhaler type can be associated with harm for the patient.<sup>54</sup>

### Considerations for prescribing DPIs<sup>16</sup>

- > Larger than MDI, but more portable than using MDI with spacer
- > Breath-actuated, quick, deep inhalation (2-3 sec), breath hold after
- > Less coordination required, no need to sync breathing
- > Available for most treatments
- > Sufficient inspiratory flow required
- > Need proper dose preparation and loading to achieve optimal available dose for inhalation

### Considerations for prescribing MDIs

#### Without Spacer

- > Slow, steady inhalation (4-5 sec), breath hold after
- > Need to sync breathing with release of medication

#### With Spacer

- > Slow, steady inhalation (4-5 sec) OR slow, steady breathing in & out the mouth, breath hold after
- > No need to sync breathing
- > Preferred for preschoolers

Studies evaluating the switch from MDIs to DPIs show that most patients remain on the DPI<sup>17</sup> and have no loss of asthma control.<sup>18</sup>

### When are MDI's necessary?

- > Severe COPD
- > Preschoolers
- > Frailty or other causes of limited inspirational capacity
- > Financial/drug coverage issues
- > Patient preference

To minimize carbon impact if MDIs are necessary:

- > Ensure proper MDI usage including a spacer, which improves drug delivery and can therefore reduce amount needed.<sup>19,20</sup>
- > If salbutamol is needed as reliever, consider prescribing Airomir (specific generic name) MDI

as it has ~1/3 of the carbon footprint of other salbutamol MDIs.<sup>21</sup> On these prescriptions, write "dispense as written" or "no substitutions" so it is not switched to generic salbutamol or Ventolin.

### Asthma Treatment Update

- > Asthma treatment guidelines (> age 12) have recently changed.<sup>11,12</sup> "There is new evidence in children ≥12 years of age and adults that PRN budesonide/formoterol (bud/form) decreases exacerbations in comparison to PRN SABA, with different levels of evidence in those with very mild versus mild asthma."<sup>22</sup>
- > "For safety, GINA no longer recommends treatment of asthma in adults and adolescents with Short-Acting Beta-2- Agonists (SABA) alone, without inhaled corticosteroids (ICS). There is strong evidence that SABA-only treatment, although providing short-term relief of asthma symptoms, does not protect patients from severe exacerbations, and that regular or frequent use of SABA increases the risk of exacerbations."<sup>11</sup>
- > According to 2020 SABINA studies, the use of more than 2 SABA inhalers per year (regardless of additional maintenance/controller medication [e.g. ICS]) is correlated with increased exacerbations, hospitalizations and mortality.<sup>23,24</sup>
- > Risks associated with frequent SABA use:<sup>25,26</sup>
  - Rebound hyperresponsiveness
  - Decreased broncho-protection
  - Decreased bronchodilator Response
  - Increased allergic response
  - Increased eosinophilic inflammation
  - Increased E.D. presentations
  - Increased death rate from asthma
- > ICS use is 73% lower when patients only have 1 inhaler (e.g. combined ICS/LABA).<sup>27</sup> With better asthma control (including maintenance therapy), fewer relievers are necessary because fewer exacerbations occur.<sup>11,13,14, 28</sup>

### Questions to consider

- Is my patient able to use a DPI?
- Is my patient using a spacer with an MDI? If not, would they benefit from a more portable DPI?
- How often is my patient using their SABA?

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# Considerations for Climate Conscious Prescribing

## CONSIDERATIONS FOR TEACHING

### Inhaler Technique

- Inhaler technique studies show that 12-71% of the time, they are not used correctly.<sup>30-34</sup>
- MDI administration misuse is even more common in older adults (79% conducting critical errors) and children (97% misuse).<sup>35,36</sup>
- Inhaler misuse is associated with:<sup>30,32,34,36-38</sup>
  - Increased hospitalization and E.D. visits
  - Increased need for oral steroids and antimicrobials
  - Poor disease control
  - Decreased quality of life

### MDI Technique<sup>39,40</sup>

- > Proper Technique
  - Shake inhaler before every actuation
  - Breathe out
  - Slow inhale (4-5s) with lips on inhaler while actuating medication
  - Hold breath for 10s (adults)
  - Wait >30s before next actuation
- > Common Errors
  - Lack of breath hold
  - Actuate 2x in a row
  - Inhaling too quickly
  - Not using aero chamber/spacer device
- > Many studies show that patients often use MDIs incorrectly,<sup>50</sup> with the most frequently committed critical error being failure to trigger the device and simultaneously breathe in.<sup>51</sup>

### DPI Technique<sup>30,41,42</sup>

- > Proper Technique:
  - Deploy medication/load device
  - Breathe out away from device
  - Quick & forceful inhaler (~2s) with mouth on device opening, inhaler must be upright
  - Hold breath for 10s (adults)
- > Common Errors
  - Lack of breath hold
  - Inhalation too slow/does not generate enough force

- > Studies show DPIs are easier to use, tend to have fewer inhalation errors with use, and often contain dose counters.<sup>43-47</sup>

### Questions to consider

- Is my patient using their inhaler correctly?
- Are they comfortable using the device and can they 'teach' it back to me?
- Am I periodically checking my patient's inhaler technique?

## CONSIDERATIONS FOR DISPOSING

- > Many patients cannot reliably identify when their MDI is empty. If the inhalers do not have the dose counter, the patients/carers should be make note of when the inhaler is first initiated<sup>48</sup>
- > Encourage patients to return their old inhalers to pharmacies for recycling and incineration. Compared to landfill disposal, this saves 4-18 kg CO (eq) per inhaler.<sup>49</sup> See [this link](#) for a list of pharmacies in BC, ON, MB, & PEI accepting inhalers.

### Questions to consider

- Does my patient know when their inhaler is empty?
- Do they know how and where to dispose of it when it is done?

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