

# Impact of CFC to HFA Inhalers

- The Food and Drug Administration (FDA) issued a final regulation on March 31st, 2005 that requires the phase out of all CFC albuterol metered-dose inhalers by December 31, 2008.**
  - True
  - False
- Excessive exposure to solar radiation is associated with adverse health effects, including:**
  - Skin cancer
  - Cataracts
  - Arthritis
  - Asthma
  - Only A and B
- CFC (chlorofluorocarbons) that are used in solvents and propellants are gradually broken down by strong ultraviolet light in the stratosphere, where they release chlorine atoms that then deplete ozone. The global environmental problem of stratospheric ozone depletion culminated in the Montreal Protocol, an international agreement to regulate and reduce production of ozone-depleting substances.**
  - True
  - False
- Which of the following statements is false?**
  - 191 countries have now ratified the Montreal Protocol
  - The overall usage of CFCs has been dramatically reduced because of the Montreal Protocol
  - Each year, countries party to the Montreal Protocol decide how much CFCs they need for “essential use”
  - Almost all the CFCs in inhalers are released into the environment upon exhalation
  - EPA’s estimates the value of a “fully implemented” Montreal Protocol to be \$100 million between 1990 and 2165.
- In establishing a December 31, 2008 phase out of CFC-based inhalers, the FDA used the following criteria:**
  - At least two non-CFC products with the same active drug would be on the market for the same indication
  - Supplies and production capacity for non-CFC products will exist by December 31, 2008 at levels sufficient to meet patient needs;
  - Adequate U.S. post marketing use data are available for the non-CFC product
  - All of the above
- The pharmacist can play a key role in helping patients understand the differences between CFC and HFA inhalers. Some important point to convey include:**
  - Any dosage differences
  - Difference in spray characteristics
  - Cost considerations in choosing products
  - Generic availability and interchangeability between all HFA products
  - A, B, C
- Albuterol MDI’s are often used as “rescue” inhalers to treat bronchospasms with acute asthma and allergies. Because of this “life savings” aspect of this therapy, seamless conversion of patients from CFC-MDI’s to HFA MDI’s is even more important.**
  - True
  - False
- Pharmacists can play a number of roles in optimal management of patients with asthma and allergies. Which of the following is not one?**
  - Educating patients about their disease state
  - Counseling patients on the roles of their medications
  - Teaching patients skills necessary to manage their medication use
  - Converting patients from HFA to CFC inhalers
  - Monitoring medication therapy and encouraging adherence
- Which of the following statements about asthma is false?**
  - The prevalence of asthma has declined in the US during the past 2 decades
  - Close to 20 million Americans had asthma in 2003, or about 1 in 15 people
  - Close to 1.9 million emergency room visits were attributed to asthma in 2002
  - In 2003, asthma accounted for an estimated 12.8 million lost school days in children and 24.5 million lost work days in adults
  - Asthma ranks within the top ten prevalent conditions causing limitation of activity and costs our nation \$16.1 billion in health care costs annually
- COPD refers to two lung diseases, chronic bronchitis and emphysema, that are characterized by obstruction to airflow that interferes with normal breathing.**
  - True
  - False
- Which of the following statements about COPD is false?**
  - It is the fourth leading cause of death in America, claiming the lives of over 120,000 Americans in 2002
  - In 2004, the cost to the nation for COPD was approximately \$37.2 billion
  - Smoking is not a significant contributor to COPD deaths
  - Risk factors for COPD include air pollution, second-hand smoke, history of childhood respiratory infections, and heredity
  - Occupational exposure to certain industrial pollutants increases the odds for COPD
- Pharmacists can play key roles in the management of patients with COPD, including:**
  - Helping patients understand the importance of smoking cessation
  - Offering smoking cessation programs or referring patients to those offered in the community
  - Teaching patients proper inhalation techniques since inhalation therapy is a cornerstone of treatment
  - All of the above.

**13. Which of the following is not among the technological advances in MDI inhalers?**

- a. better dosing consistency
- b. more temperature sensitivity
- c. optimal dose release during inhalation
- d. longer shelf life

**14. Which of the following is false when comparing HFA inhalers to CFC inhalers?**

- a. Have a softer spray
- b. Use a higher spray volume
- c. May be more costly
- d. Have a higher spray temperature
- e. Are more consistent in dose delivery from empty canisters

**15. Key counseling messages for pharmacists to patients on converting from CFC to HFA inhalers include:**

- a. HFA sprays tend to have a slightly different taste and are softer and warmer than CFC inhalers.
- b. Priming instructions as some HFA formulations will require different priming than their CFC counterparts.
- c. The HFA and CFC formulations for each inhaler and drug are comparable in efficacy and safety.
- d. HFA is an inert propellant that does not interact with the active ingredient in inhalers or cause any other side effects.
- e. If their medication seems to become less effective or if asthma worsens, pharmacists should instruct patients to seek immediate medical attention
- f. All of the above

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