

Certified Asthma Educator (AE-C®) Examination Specifications	Cognitive Level			Total
	Recall	Application	Analysis	
<b>1. THE ASTHMA CONDITION</b>	<b>9</b>	<b>18</b>	<b>3</b>	<b>30</b>
<b>A. Pathophysiology</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>10</b>
<ol style="list-style-type: none"> <li>1. Teach an individual with asthma and their family using simple language by illustrating the following with appropriate educational aids               <ol style="list-style-type: none"> <li>a. normal pulmonary anatomy and physiology</li> <li>b. alterations in lung anatomy and physiology that characterize asthma (inflammation, bronchial hyperresponsiveness, bronchial wall edema, excess mucus secretion, smooth muscle contractions)</li> <li>c. the processes occurring in the lungs during an asthma exacerbation</li> <li>d. potential long-term sequelae of airway inflammation (e.g., hyperresponsiveness, airway remodeling)</li> </ol> </li> <li>2. Explain terms used to characterize asthma (e.g., severity, control, impairment, risk)</li> <li>3. Explain how asthma severity and its control affect lung function measurements</li> <li>4. Teach an individual with asthma that asthma is a chronic airway disease with varying levels of severity and characterized by exacerbations</li> <li>5. Associate signs and symptoms of asthma with its underlying pathophysiology</li> <li>6. Compare asthma characteristics across age groups (e.g., infants, children, adults, elderly)</li> </ol>				
<b>B. Factors Contributing to Acute and Chronic Asthma</b>	<b>5</b>	<b>12</b>	<b>3</b>	<b>20</b>
<ol style="list-style-type: none"> <li>1. Describe to an individual with asthma:               <ol style="list-style-type: none"> <li>a. differences between an allergen and an irritant</li> <li>b. common triggers that provoke asthma</li> <li>c. how triggers (e.g., allergens, irritants, exercise, infections) can be distinct and synergistic for each individual with asthma</li> <li>d. the role of tobacco smoke exposure (in all forms) in the development and control of asthma</li> <li>e. the role of family history (including genetics) and environmental factors (e.g., infections, diet, exposures) in the development of asthma</li> <li>f. potential occupational risks in the development and control of asthma</li> <li>g. medications (e.g., <math>\beta</math>-blockers, non-steroidal antiinflammatory agents, anesthetics) that may exacerbate asthma</li> </ol> </li> </ol>				

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2. Explain how to identify factors (e.g., allergens, pollutants) in the environment contributing to symptoms experienced by an individual with asthma: e.g., <ul style="list-style-type: none"> <li>• home</li> <li>• school</li> <li>• work place</li> <li>• outdoors</li> </ul> 3. Identify conditions that may mimic asthma or affect asthma control: e.g., <ul style="list-style-type: none"> <li>• obesity</li> <li>• obstructive sleep apnea</li> <li>• vocal cord dysfunction</li> <li>• stress</li> <li>• depression</li> </ul> 4. Explain how specific conditions may relate to the development and control of asthma: <ol style="list-style-type: none"> <li>a. pregnancy</li> <li>b. gastroesophageal reflux disease</li> <li>c. allergic conditions (e.g., rhinitis, sinusitis, eczema)</li> <li>d. infections (e.g., sinusitis, pneumonia)</li> <li>e. COPD</li> </ol>				
<b>2. ASSESSMENT OF AN INDIVIDUAL WITH ASTHMA AND FAMILY</b>	<b>7</b>	<b>20</b>	<b>7</b>	<b>34</b>
<b>A. History from an Individual with Asthma</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>10</b>
1. Interview an individual about the pattern of current symptoms 2. Interview an individual about the impact of asthma on the quality of life, activity level, and social / functional roles for an individual with asthma 3. Interview an individual about signs and symptoms requiring medical care 4. Interview an individual about high-risk asthma signs and symptoms (e.g., past intubations, over-use of $\beta$ -agonists, "poor perceivers", frequent use of systemic corticosteroids) 5. Interview an individual about reason(s) for loss of control 6. Define an individual's asthma severity and control (e.g., impairment, risk) from available information 7. Identify the criteria for appropriate referral of an individual to an asthma specialist 8. Identify triggers (e.g., irritants, allergens) 9. Identify association of exercise with asthma symptoms				

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10. Identify co-morbid conditions (e.g., sinusitis, nasal polyps, gastroesophageal reflux disease, obesity, obstructive sleep apnea) 11. Solicit information about medications and alternative and complementary therapies: e.g., <ul style="list-style-type: none"> <li>• over-the-counter</li> <li>• prescription medications</li> <li>• herbal and nutritional supplements</li> <li>• natural food products</li> <li>• physical therapies (e.g., yoga, acupuncture)</li> </ul> 12. Integrate information from the medical record into an assessment: e.g., <ul style="list-style-type: none"> <li>• family, clinical, and past medical history</li> <li>• physical examination</li> <li>• vital signs findings</li> <li>• laboratory, pulmonary function, and radiological results</li> <li>• current and past therapies</li> <li>• diagnostic interpretations of objective measures</li> </ul>				
<b>B. Physical Signs in an Individual with Asthma</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>
1. Recognize signs of an acute exacerbation (e.g., cyanosis, accessory muscle use, labored breathing, clipped speech) 2. Recognize the significance of auscultated breath sounds (e.g., crackles, wheezes, and silent chest) 3. Direct an individual to emergent care based on current presentation				
<b>C. Objective Measures</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>10</b>
1. Emphasize to an individual the importance of using objective measures to identify asthma and assess control (e.g., Asthma Control Test®, symptom monitoring) 2. Explain to an individual with asthma the importance of testing for allergies and comorbidities 3. Explain to an individual with asthma the purpose, technique, or results for <ol style="list-style-type: none"> <li>a. spirometric measures</li> <li>b. pre-bronchodilator and post-bronchodilator pulmonary function testing</li> <li>c. pulse oximetry</li> <li>d. exhaled nitric oxide</li> <li>e. in vitro specific IgE or skin prick tests</li> </ol>				

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4. Explain to an individual with asthma the purpose of bronchoprovocation (e.g., methacholine challenge, cold-air challenge, exercise challenge) 5. Assess whether an individual's peak flow or spirometric results are valid				
<b>D. Educational Needs</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>10</b>
1. Assess the knowledge and skills of an individual with asthma and his or her family regarding asthma and treatment 2. Assess adherence barriers (e.g., financial, cultural, attitudes) regarding self-assessment and self-management 3. Assess knowledge of potential and known triggers in an individual's home, school, or work environments 4. Assess readiness and ability to learn, and learning style in an individual with asthma 5. Assess coping strategies used by an individual with asthma and his or her family 6. Assess the primary source of healthcare for an individual with asthma 7. Assess how an individual with asthma is currently recognizing and acting on changes in his or her symptoms 8. Elicit goals and concerns of an individual with asthma and his or her family 9. Employ effective interviewing skills (e.g., ask open-ended questions, maintain eye contact) 10. Conduct a multidimensional assessment of an individual with asthma and his or her family: e.g., <ul style="list-style-type: none"> <li>• socioeconomic</li> <li>• psychosocial</li> <li>• health literacy level</li> <li>• culture</li> <li>• language</li> <li>• healthcare beliefs and practices</li> </ul>				

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<b>3. ASTHMA MANAGEMENT</b>	<b>13</b>	<b>32</b>	<b>26</b>	<b>71</b>
<b>A. Medications and Delivery Devices</b>	<b>5</b>	<b>16</b>	<b>4</b>	<b>25</b>
<ol style="list-style-type: none"> <li>1. Explain how medications are prescribed based on asthma severity and control</li> <li>2. Discuss asthma medications: <ol style="list-style-type: none"> <li>a. mechanism of action (e.g., <math>\beta</math> agonist, leukotriene modifier, muscarinic antagonist, immunomodulating biologicals)</li> <li>b. role in therapy (e.g., quick relief, long-term control)</li> <li>c. side effects, drug interactions, and safety (e.g., <math>\beta</math> agonist overuse, inhaled vs. systemic corticosteroids)</li> <li>d. administration route, dose, frequency, and duration</li> <li>e. relative efficacy</li> </ol> </li> <li>3. Dispel misconceptions (e.g., inhaled corticosteroids vs. anabolic steroids) about asthma medications</li> <li>4. Demonstrate correct techniques for inhaled delivery devices: e.g., <ul style="list-style-type: none"> <li>• MDI</li> <li>• DPI</li> <li>• soft-mist inhaler</li> <li>• nebulizers</li> <li>• valved holding chambers</li> </ul> <ol style="list-style-type: none"> <li>a. assembly</li> <li>b. administration</li> <li>c. cleaning</li> <li>d. replacement or refilling</li> <li>e. troubleshooting</li> </ol> </li> <li>5. Assess whether an individual with asthma correctly demonstrates techniques for inhaled delivery devices: e.g., <ul style="list-style-type: none"> <li>• MDI</li> <li>• DPI</li> <li>• soft-mist inhaler</li> <li>• nebulizers</li> <li>• valved holding chambers</li> </ul> <ol style="list-style-type: none"> <li>a. assembly</li> <li>b. administration</li> <li>c. cleaning</li> <li>d. replacing or refilling</li> <li>e. troubleshooting</li> </ol> </li> </ol>				

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<ol style="list-style-type: none"> <li>6. Recommend devices to optimize inhaled medication delivery for an individual with asthma (e.g., elderly, child, disabled)</li> <li>7. Summarize potential benefits and risks associated with alternative therapies and over-the-counter medications</li> <li>8. Emphasize importance of taking medications as prescribed when alternative and over-the-counter medications are available</li> <li>9. Discuss the purpose of               <ol style="list-style-type: none"> <li>a. controlling atopic diseases (e.g., immunotherapy, immunomodulating biologicals, intranasal therapies)</li> <li>b. preventive immunizations (e.g., influenza vaccination, pneumococcal vaccination)</li> <li>c. treatment of comorbid conditions</li> <li>d. smoking cessation medications</li> </ol> </li> </ol>				
<b>B. Behavioral and Environmental Modifications</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>14</b>
<ol style="list-style-type: none"> <li>1. Recommend strategies to address           <ol style="list-style-type: none"> <li>a. the management of exercise-induced asthma</li> <li>b. psychosocial factors (e.g., stress, anxiety, depression)</li> <li>c. social support and family factors</li> <li>d. economic issues</li> <li>e. drug abuse</li> <li>f. active smoking</li> <li>g. adherence issues</li> </ol> </li> <li>2. Employ culturally sensitive approaches to individuals with asthma and their families</li> <li>3. Allay concerns and fears of an individual with asthma and his or her family, and dispel myths they may believe</li> <li>4. Emphasize the importance of following a comprehensive trigger avoidance plan</li> <li>5. Recommend strategies to reduce, avoid, or eliminate common triggers in homes, work places, and schools: e.g.,           <ul style="list-style-type: none"> <li>• second-hand smoke</li> <li>• other irritants</li> <li>• allergens</li> <li>• infections</li> <li>• chemical exposure</li> </ul> </li> <li>6. Discuss the effectiveness of various equipment (e.g., air cleaners, vacuum cleaners, dehumidifiers, allergen-impermeable cover)</li> <li>7. Recommend home visits to mitigate barriers to optimal asthma management</li> </ol>				

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<b>C. Asthma Self-Management Education Plan</b>	<b>3</b>	<b>4</b>	<b>12</b>	<b>19</b>
<ol style="list-style-type: none"> <li>1. Create an individualized self-management education plan</li> <li>2. Tailor the plan to the individual's goals and concerns</li> <li>3. Tailor the plan to the individual's educational needs assessment (e.g., learning style, health literacy, culture)</li> <li>4. Tailor the plan to the individual's asthma severity</li> <li>5. Tailor the plan to the individual's age</li> <li>6. Select educational material for an individual while considering needs assessment results and the education plan</li> <li>7. Coach an individual with asthma how to effectively communicate as a partner in his or her care with healthcare providers, caregivers, and asthma educator</li> <li>8. Review an individual's decision-making skills and confidence for               <ol style="list-style-type: none"> <li>a. using asthma medications</li> <li>b. managing worsening asthma</li> <li>c. seeking care</li> </ol> </li> <li>9. Reinforce the importance of self-management strategies in asthma control</li> <li>10. Reinforce the importance of routine follow-up care</li> <li>11. Indicate how team members should track and document progress and mastery of self-management actions</li> </ol>				
<b>D. Written Asthma Action Plan</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>10</b>
<ol style="list-style-type: none"> <li>1. Create an individualized, written asthma action plan that addresses               <ol style="list-style-type: none"> <li>a. daily management (e.g., medications, environmental control, self-monitoring)</li> <li>b. recognition of worsening asthma</li> <li>c. control of worsening asthma and appropriate follow-up care</li> </ol> </li> <li>2. Review written asthma action plan with clinician and other team members</li> <li>3. Clarify a clinician's instructions for an individual with asthma</li> <li>4. Encourage integration of the written asthma action plan into childcare, home, workplace, and / or school</li> <li>5. Instruct an individual with asthma to assess control using symptoms and peak expiratory flows</li> <li>6. Review an individual's decision-making skills and confidence for implementing his or her written asthma action plan</li> <li>7. Demonstrate use of peak expiratory flow equipment with return demonstration</li> </ol>				

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<b>E. Periodic Reevaluation of the Written Asthma Action Plan</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>
1. Reassess the level of asthma control 2. Review decision-making criteria with an individual with asthma and his or her family, particularly looking for what he or she can do differently 3. Reassess adherence to the written asthma action plan 4. Revise an asthma management plan after regular reassessment based on individual goals, expectations, and outcomes 5. Use monitoring tools to assist in reevaluation of asthma control: symptoms diaries and checklists 6. Use monitoring tools to assist in reevaluation of asthma control: peak expiratory flow results 7. Establish a personal best and revise zones 8. Coordinate follow-up care at each visit to check skill in self-monitoring and self-management				
<b>4. ORGANIZATIONAL ISSUES</b>	<b>5</b>	<b>8</b>	<b>2</b>	<b>15</b>
<b>A. Needs Assessment</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>
1. Identify outcome indicators 2. Obtain information (e.g., methods, data sources) about the asthma population and healthcare providers 3. Use findings to make recommendations				
<b>B. Program Development</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>
1. Identify program resources (e.g., funding, facilities, personnel) 2. Prioritize program features based on resources and characteristics of the target population (e.g., asthma severity, risk factors) 3. Compare evidence-based solutions to program needs 4. Create goals of program and specific objectives to meet those goals 5. Select teaching methods and settings that will best meet objectives for the target population 6. Critique educational materials for cost, readability, accuracy, specificity, illustrations, and source credibility				
<b>C. Program Implementation</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>
1. Ensure safety and privacy of individuals with asthma (e.g., HIPAA, FERPA, OSHA, infection control) 2. Maintain a program database 3. Coordinate training for program staff				



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<b>D. Program Evaluation</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
1. Select validated program evaluation tools 2. Assess program processes: e.g., <ul style="list-style-type: none"> <li>• adherence (e.g., attendance, diary completion) of participant</li> <li>• the influence of the program on participants' knowledge, skills, or attitudes (e.g., confidence, outcome expectations)</li> <li>• procedure and task implementation</li> </ul> 3. Assess program outcomes: e.g., <ul style="list-style-type: none"> <li>• key outcomes (e.g., quality-of-life, functional status, asthma control, healthcare utilization, participant satisfaction)</li> <li>• measures for key program outcomes</li> <li>• program effectiveness</li> </ul> 4. Use findings to assess program impact and need for modifications				
<b>E. Professional Partnerships</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>
1. Identify community resources that may be beneficial to the needs of individuals with asthma 2. Organize family support / education activities 3. Collaborate with other providers and between systems 4. Provide education and technical assistance to <ul style="list-style-type: none"> <li>• third-party payers</li> <li>• community and health care professionals</li> <li>• work sites</li> <li>• schools</li> <li>• faith-based groups</li> </ul>				
<b>Total</b>	<b>34</b>	<b>78</b>	<b>38</b>	<b>150</b>