Client: HMSA: PQSR 2007

Measure Title: ICS WITH CONCOMITANT THEOPHYLLINE USE

Disease State: Asthma

Indicator Classification: Disease Management

Strength of Recommendation: B

Clinical Intent: Ensure that all members identified as taking theophylline medication for their asthma are also on an inhaled corticosteroid as a first line agent.

Physician Specialties: Refer to PQSR 2007 Specialty Matrix

Clinical Rationale: Disease Burden

- Approximately 30.8 million persons in the United States were diagnosed with asthma in 2002.[1]
- As a result, there were about 13.9 million outpatient asthma visits to private physician offices and hospital outpatient departments, 1.9 million emergency department (ED) visits, and over 4000 deaths.[2]

Reason for Indicated Intervention or Treatment

- According to the National Asthma Education and Prevention Program Guidelines on the Diagnosis and Management of Asthma, taking inhaled corticosteroids (in conjunction with long acting beta-2-agonists) is currently the most potent and effective long-term control method of treating asthma for patients with moderate persistent and severe persistent disease.[3]
- Appropriate pharmacologic therapy can reverse the airway inflammation characteristic of asthma and prevent or reduce asthma exacerbations.[3]

Evidence supporting Intervention or Treatment

Evidence that ICS is preferred treatment

- Randomized, controlled trials have shown that inhaled corticosteroid use in patients with persistent asthma, when compared to placebo or beta-2-agonists, results in improved pre-brochodilator FEV1, reduced oral steroid and supplemental short-acting beta-2-agonist use, and decreased airway responsiveness, asthma symptom scores, and hospitalizations.[4-20]
- While methylxanthines (e.g. Theophylline) can be used in conjunction with inhaled corticosteroids, data suggests that the primary role of methylxanthines in asthma treatment should be limited to complementary usage with inhaled corticosteroids or for patients who cannot tolerate long-acting beta2-agonists or who are unable to use a metered dose inhaler properly.[4-6]

Evidence that theophylline should be reserved for adjunct therapy

- Although theophylline has immunomodulatory, anti-inflammatory and bronchoprotective effects that may contribute to its efficacy as an anti-asthma drug, its narrow therapeutic index prevent it from being the recommended first line treatment.[7]
- ICS combined with theophylline resulted in control asthma, improved
• For patients with moderate to severe asthma, the bronchodilating effect of the association salmeterol–theophylline can be greater than that exerted by each agent used alone.[9]
• Studies suggest that addition of theophylline to ICS treatment improves pulmonary function and asthma symptoms.[10]
• Addition of leukotriene modifiers or theophylline to ICS treatment appears to be equivalent to doubling the dose of ICS.[11]

Clinical Recommendations
• The National Asthma Education and Prevention Program (NAEPP), an expert panel convened by the National Heart, Lung and Blood Institute (NHLBI), in its 2002 update of the Guidelines for the Diagnosis and Management of Asthma, recommends that inhaled corticosteroids be used as first-line therapy in all patients older than 5 years with persistent asthma.[3] Theophylline alone is not a first line agent for the treatment of mild intermittent, mild persistent, moderate persistent or severe persistent asthma.[6]
• For patients poorly controlled with inhaled corticosteroid use, the NAEPP recommends the addition of a beta-2-agonist to ICS over the addition of theophylline. The addition of theophylline results in improved outcomes, but the evidence is not as substantial.[3]
• The Global Initiative for Asthma (GINA), also published by NHLBI in its 2005 updated guidelines again writes that “inhaled glucocorticosteroids are at present the most effective controller medications” and that these medicines are the preferred first line agents. Addition of other complimentary medications such as beta2-agonists is recommended for moderate or severe asthma, and theophylline, leukotriene modifiers or oral beta2-agonists are alternative to long acting inhaled beta2-agonists.[12]
• The Joint Council of Allergy, Asthma and Immunology’s Practice Parameters for the Diagnosis and Treatment of Asthma suggest that “therapeutic decision analysis concerning when and how long to use specific medications should be based on the clinical severity of the patient’s asthma… For example, occasional and isolated episodes of asthma rarely require more than inhalation of a beta2-agonist. Recurrent seasonal asthma with daily symptoms, might require beta-agonists, inhaled corticosteroids, theophylline and/or cromolyn.”[13]
• The Institute for Clinical Systems Improvement 2005 Update “Diagnosis and Outpatient Management of Asthma” makes similar recommendations, with inhaled corticosteroids being the preferred first line option for mild and moderate asthma, and a combination of inhaled corticosteroids and other agents, such as theophylline as combination therapy in severe asthma.[14]

Source
Health Benchmarks, Inc., Persistent asthma definition modified from HEDIS 2007.

Denominator
Continuously enrolled members ages 5 - 56 years as of the end of the measurement year, who had at least one prescription for theophylline during the measurement year, and who had evidence of persistent asthma (mild to severe) during the measurement year.
Relevant Billing Codes:

ICD-9 diagnosis code(s): 493.xx

CPT code(s): 99201-99205, 99211-99220, 99221-99223, 99231-99233, 99238, 99239, 99241-99245, 99251-99255, 99261-99263, 99281-99285, 99291, 99341-99345, 99347-99350, 99382-99386, 99392-99396, 99401-99404, 99411, 99412, 99420, 99429, 99499


Denominator Exclusion

Members who were diagnosed with emphysema, chronic obstructive pulmonary disease (COPD), ocular hypertension or open angle glaucoma at any time prior to the end of the measurement year. Members who were maintained on systemic corticosteroids for at least 180 days during the measurement year.

Relevant Billing Codes:

ICD-9 diagnosis code(s): 365.04, 365.1x, 491.20, 491.21, 492.x, 496.xx, 506.4, 518.1, 518.2

Numerator

Members who had at least one prescription for an inhaled corticosteroid (ICS) during the measurement year.

Interpretation of Score

High score implies better performance

Physician Attribution

Score all physicians (in the selected specialties) who saw the member during the measurement year.

References

1 *Indicator Classification* (Adapted from Health Plan Employer Data Information Set (HEDIS®) technical specifications)

**Diagnosis**

Measures applicable to patients receiving diagnostic workups for a symptom or condition that delineate appropriate laboratory or radiological testing to be performed (e.g. evaluation of thyroid nodule; pregnancy test in patients with vaginal bleeding or abdominal pain).

**Effectiveness of Care**

**Prevention**

Measures applicable to asymptomatic individuals that are designed to prevent the onset of the targeted condition (e.g. immunizations).

**Screening**

Measures applicable to asymptomatic patients who have risk factors or preclinical disease, but in whom the condition has not become clinically apparent (e.g. pap smears; screening for elevated blood pressure).

**Disease Management**

Measures applicable to individuals diagnosed with a condition that are part of the treatment or management of the condition (e.g. cholesterol reduction in patients with diabetes; radiation therapy following breast conserving surgery; appropriate follow-up after acute event).

**Medication Monitoring**

Measures applicable to patients taking medications with narrow therapeutic windows and/or potential preventable significant side effects or adverse reactions (e.g. thyroid stimulating hormone (TSH) testing after levothyroxine dose change; hepatic enzyme monitoring for patients using antimycotic pharmacotherapy).

**Medication Adherence**

Measures applicable to patients taking medications for chronic conditions that are designed to assess patient adherence to medication (e.g. adherence to lipid lowering medication).

**Utilization**

Measures applicable to patients receiving treatment for a symptom or condition that advocate appropriate utilization of laboratory and pharmaceutical resources (e.g. conservative use of imaging for low back pain; inappropriate use of antibiotics for viral upper respiratory infection).
**FIGURE 2.** Algorithm for determining the strength of a recommendation based on a body of evidence (applies to clinical recommendations regarding diagnosis, treatment, prevention, or screening). While this algorithm provides a general guideline, authors and editors may adjust the strength of recommendation based on the benefits, harms, and costs of the intervention being recommended. (USPSTF = U.S. Preventive Services Task Force)