Appropriate Treatment of COPD

Background

The Global Initiative of Obstructive Lung Disease (GOLD) was released in 2001 to increase awareness and improve treatment of COPD. In addition, the American Thoracic Society (ATS) and European Respiratory Society (ERS) published the standards for the diagnosis and treatment of patients with COPD position paper in 2004 in accordance with the GOLD initiative but with additional, more specific recommendations.

GOLD Initiative Key Points

- **Diagnosis of COPD should be confirmed by spirometry**
- **Pharmacotherapy is used to decrease symptoms and complications; no drugs have been shown to modify long-term decline in lung function.**
- **Bronchodilators ($ß_2$-agonists, anticholinergics, and theophylline) are central in treatment on an as-needed or regular basis**
- **Regular use of inhaled steroids should only be used in those with a documented spirometric response or an FEV1 < 50% predicted and that have repeated exacerbations requiring antibiotics or oral glucocorticoids**
- **When inhaled steroid therapy is thought to be ineffective, a trial of withdrawing treatment is reasonable; if exacerbation occurs therapy can be reinstituted**
- ***Nebulized therapy is more expensive and should be avoided in stable patients unless it has been shown to be better than conventional dose therapy***

The Gold Report classifies COPD into four stages depending on severity. The characteristics and recommended therapy at each stage are shown in the Table 1 below.

TABLE 1: THERAPY AT EACH STAGE OF COPD

Stage	Characteristics	Recommended Treatment
0: At risk	Chronic symptoms (cough, sputum) Exposure to risk factors Normal spirometry	Avoidance of risk factors Influenza vaccination (these measures are recommended at all stages)
I: Mild	$FEV_1/FVC < 70\%$ $FEV_1 \geq 80\%$ predicted With or without symptoms	Short-acting bronchodilator when needed
II: Moderate	IIA $FEV_1/FVC < 70\%$ $50\% \leq FEV_1 < 80$ With or without symptoms	Regular treatment with one or more bronchodilators Rehabilitation Inhaled glucocorticosteroids if significant symptoms and lung function response
	IIB $FEV_1/FVC < 70\%$ $30\% \leq FEV_1 > 50\%$ With or without symptoms	Regular treatment with one or more bronchodilators Rehabilitation Inhaled glucocorticosteroids if significant symptoms and lung function response or if repeated exacerbations
III: Severe	$FEV_1/FVC < 70\%$ $FEV_1 < 30\%$ predicted or presence of respiratory failure or right heart failure	Regular treatment with one or more bronchodilators Rehabilitation Inhaled glucocorticosteroids if significant symptoms and lung function response or if repeated exacerbations Long-term oxygen therapy if respiratory failure

Smoking cessation is the single most effective way to reduce the risk of developing COPD and slow its progression. It is recommended that every tobacco user be offered tobacco dependence treatment at every visit. Although Idaho Medicaid does **not** cover nicotine replacement (Nicorette®, Nicotrol®, or Nicoderm®), generic bupropion tablets are a covered option with a written prescription. A notation regarding smoking cessation is **not** required. In addition, the state sponsors a quitting program available at http://idahoquitnet.com/ or by calling 1-800-QUIT-NOW.

TABLE 2: COST COMPARISON OF COMMONLY PRESCRIBED DRUGS FOR COPD

Agent	Common Daily Dose	Estimated Cost*#
$ß_2$-agonists		
Albuterol Inhaler (Proventil®)†	180 mcg inh qid	$10.99
Albuterol Neb. Solution (Proventil®)†	2.5 mg neb qid	$94.95
Formoterol Capsules(Foradil Aerolizer®)†‡	12 mcg inh bid	$108.17
Levalbuterol Inhaler (Xopenex HFA®)‡	90 mcg inh qid	$48.99
Levalbuterol Neb. Solution (Xopenex®)‡	0.63 mg neb qid	$354.20
Metaproterenol Inhaler (Alupent®)‡	1.3 mg inh q 4h	$72.18
Metaproterenol Neb. Solution (Alupent®)	0.2 ml 5% neb q 4h	$75.96
Pirbuterol Inhaler (Maxair Autohaler®)‡	200 mcg inh qid	$94.76
Salmeterol Inhaler (Serevent Diskus®)†‡	50 mcg inh bid	$104.18
Anticholinergics		
Ipratropium Inhaler (Atrovent®)	36 mcg inh qid	$37.99
Ipratropium Neb Solution (Atrovent®)	500 mcg neb qid	$59.95
Tiotropium Capsules (Spiriva HandiHaler®)‡	18 mcg inh qd	$129.55
Inhaled Steroids		
Beclomethasone Inhaler (Qvar®)	80 mcg inh bid	$73.57
Budesonide Inhaler (Pulmicort Turbuhaler®)†‡	200 mcg inh bid	$152.56
Budesonide Neb. Suspension (Pulmicort Respules®)†‡	0.25 mg neb bid	$298.70
Flunisolide Inhaler (Aerobid®)‡	500 mcg inh bid	$77.55
Fluticasone Inhaler (Flovent HFA®)†‡	110 mcg inh bid	$97.48
Triamcinolone Inhaler (Azmacort®)‡	200 mcg inh qid	$105.99
Combination Products		
Albuterol/Ipratropium Aerosol (Combivent®)†‡	120/21 mcg inh qid	$91.99
Albuterol/Ipratropium Neb. Solution (DuoNeb®)†‡	3/0.5 mg neb qid	$247.46
Fluticasone/Salmeterol Inhaler (Advair Diskus®)†‡	250/50 mcg inh bid	$151.99

*Cost based on 30 day supply of generic agent (if available) www.drugstore.com (5/2006)
#Additional 30 day cost for nebulizer equipment is approximately $36.50
†Idaho Medicaid preferred drug
‡Brand name only, no generic available

Conclusions

Diagnosis of COPD should be confirmed by spirometry. Approach to management should be a step-wise increase in treatment depending on severity. Regular use of inhaled glucocorticoids should only be used in patients with moderate-severe COPD that have a significant response in lung function. Nebulized therapy is inappropriate in stable patients unless it has been shown to be better than inhaler therapy.

References

- Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. *Am J Respir Crit Care Med.* 2001;163:1256-76.
- Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper. *Eur Respir J.* 2004;23:932-46.