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Guideline for the management of chronic obstructive pulmonary disease--2011 update. Abdool-Gaffar MS, Ambaram A, Ainslie GM, Bolliger CT, Feldman C, Geffen L, Irusen EM, Joubert J, Lalloo UG, Mabaso TT, Nyamande K, O'Brien J, Otto W, Raine R, Richards G, Smith C, Stickells D, Venter A, Visser S, Wong M; COPD Working Group. Abdool-Gaffar MS, et al. S Afr Med J. 2011 Jan;101(1 Pt 2):63-73. S Afr Med J. 2011. PMID: 21526617 1. © 2015 Global Initiative for Chronic Obstructive Lung Disease GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE (GOLD): TEACHING SLIDE SET January 2015 This slide set is restricted for academic and educational purposes only. Use of the slide set, or of individual slides, for commercial or promotional purposes requires approval from GOLD. 2. lobal Initiative for Chronic bstructive ung isease G O L D © 2015 Global Initiative for Chronic Obstructive Lung Disease 3. GOLD Structure GOLD Board of Directors Marc Decramer, MD – Chair Science Committee Claus Vogelmeier, MD - Chair Dissemination/Implementation Committee Jean Bourbeau, MD – Chair M. Victorina López, MD – Vice Chair © 2015 Global Initiative for Chronic Obstructive Lung Disease 4. GOLD Board of Directors: 2015 A. Agusti, Spain J. Bourbeau, Canada B. Celli, US R. C. Chen, PRC G. Criner, US P. Frith, Australia D. Halpin, UK P. Jones, UK V. Lopez Varela, Uruguay M. Nishimura, Japan C. Vogelmeier, Germany © 2015 Global Initiative for Chronic Obstructive Lung Disease M. Decramer, Chair, Belgium 5. GOLD Science Committee - 2015 Alvar Agusti, MD Antonio Anzueto, MD Leonardo Fabbri, MD Paul Jones, MD Fernando Martinez, MD Nicolas Roche, MD Roberto Rodriguez-Roisin, MD Don Sin, MD Dave Singh, MD Robert Stockley, MD Jørgen Vestbo, MD Jadwiga A. Wedzicha, MD © 2015 Global Initiative for Chronic Obstructive Lung Disease Claus Vogelmeier, MD, Chair 6. Evidence Category Sources of Evidence A Randomized controlled trials (RCTs). Rich body of data B Randomized controlled trials (RCTs). Limited body of data C Nonrandomized trials Observational studies. D Panel consensus judgment Description of Levels of Evidence © 2015 Global Initiative for Chronic Obstructive Lung Disease 7. GOLD Structure GOLD Board of Directors Marc Decramer, MD – Chair Science Committee Claus Vogelmeier, MD - Chair Dissemination/Implementation Committee Jean Bourbeau, MD – Chair M. Victorina López, MD – Vice Chair GOLD National Leaders - GNL © 2015 Global Initiative for Chronic Obstructive Lung Disease 10. lobal Initiative for Chronic bstructive ung isease G O L D © 2015 Global Initiative for Chronic Obstructive Lung Disease 11. GOLD Objectives Increase awareness of COPD among health professionals, health authorities, and the general public Improve diagnosis, management and prevention Decrease morbidity and mortality Stimulate research © 2015 Global Initiative for Chronic Obstructive Lung Disease 12. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 13. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 14. Global Strategy for Diagnosis, Management and Prevention of COPD Definition of COPD COPD, a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. Exacerbations and comorbidities contribute to the overall severity in individual patients. © 2015 Global Initiative for Chronic Obstructive Lung Disease 15. Global Strategy for Diagnosis, Management and Prevention of COPD Mechanisms Underlying Airflow Limitation in COPD Small Airways Disease • Airway inflammation • Airway fibrosis, luminal plugs • Increased airway resistance Parenchymal Destruction • Loss of alveolar attachments • Decrease of elastic recoil AIRFLOW LIMITATION © 2015 Global Initiative for Chronic Obstructive Lung Disease 16. Global Strategy for Diagnosis, Management and Prevention of COPD Burden of COPD COPD is a leading cause of morbidity and mortality worldwide. The burden of COPD is projected to increase in coming decades due to continued exposure to COPD risk factors and the aging of the world's population. COPD is associated with significant economic burden. © 2015 Global Initiative for Chronic Obstructive Lung Disease 17. Global Strategy for Diagnosis, Management and Prevention of COPD Risk Factors for COPD Lung growth and development Gender Age Respiratory infections Socioeconomic status Asthma/Bronchial hyperreactivity Chronic Bronchitis Genes Exposure to particles Tobacco smoke Occupational dusts, organic and inorganic Indoor air pollution from heating and cooking with biomass in poorly ventilated dwellings Outdoor air pollution © 2015 Global Initiative for Chronic Obstructive Lung Disease 18. Global Strategy for Diagnosis, Management and Prevention of COPD Risk Factors for COPD Genes Infections Socio-economic status Aging Populations © 2015 Global Initiative for Chronic Obstructive Lung Disease 19. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 20. Global Strategy for Diagnosis, Management and Prevention of COPD Diagnosis and Assessment: Key Points A clinical diagnosis of COPD should be considered in any patient who has dyspnea, chronic cough or sputum production, and a history of exposure to risk factors for the disease. Spirometry is required to make the diagnosis; the presence of a post-bronchodilator FEV1/FVC < 0.70 confirms the presence of persistent airflow limitation and thus of COPD. © 2015 Global Initiative for Chronic Obstructive Lung Disease 21. Global Strategy for Diagnosis, Management and Prevention of COPD Diagnosis and Assessment: Key Points The goals of COPD assessment are to determine the severity of the disease, including the severity of airflow limitation, the impact on the patient's health status, and the risk of future events. Comorbidities occur frequently in COPD patients, and should be actively looked for and treated appropriately if present. © 2015 Global Initiative for Chronic Obstructive Lung Disease 22. SYMPTOMS chronic cough shortness of breath EXPOSURE TO RISK FACTORS tobacco occupation indoor/outdoor pollution SPIROMETRY: Required to establish diagnosis Global Strategy for Diagnosis, Management and Prevention of COPD Diagnosis of COPD è sputum © 2015 Global Initiative for Chronic Obstructive Lung Disease 23. Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of Airflow Limitation: Spirometry Spirometry should be performed after the administration of an adequate dose of a short-acting inhaled bronchodilator to minimize variability. A post-bronchodilator FEV1/FVC < 0.70 confirms the presence of airflow limitation. Where possible, values should be compared to age-related normal values to avoid overdiagnosis of COPD in the elderly. © 2015 Global Initiative for Chronic Obstructive Lung Disease 24. Spirometry: Normal Trace Showing FEV1 and FVC 1 2 3 4 5 6 1 2 3 4 Volume,liters Time, sec FVC5 1 FEV1 = 4L FVC = 5L FEV1/FVC = 0.8 © 2015 Global Initiative for Chronic Obstructive Lung Disease 26. Determine the severity of the disease, its impact on the patient's health status and the risk of future events (for example exacerbations) to guide therapy. Consider the following aspects of the disease separately: current level of patient's symptoms severity of the spirometric abnormality frequency of exacerbations presence of comorbidities. Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of COPD: Goals © 2015 Global Initiative for Chronic Obstructive Lung Disease 27. Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of COPD Assess symptoms Assess degree of airflow limitation using spirometry Assess risk of exacerbations Assess comorbidities © 2015 Global Initiative for Chronic Obstructive Lung Disease 28. The characteristic symptoms of COPD are chronic and progressive dyspnea, cough, and sputum production that can be variable from day-to-day. Dyspnea: Progressive, persistent and characteristically worse with exercise. Chronic cough: May be intermittent and may be unproductive. Chronic sputum production: COPD patients commonly cough up sputum. Global Strategy for Diagnosis, Management and Prevention of COPD Symptoms of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease 29. Assess symptoms Assess degree of airflow limitation using spirometry Assess risk of exacerbations Assess comorbidities COPD Assessment Test (CAT) or Clinical COPD Questionnaire (CCQ) or mMRC Breathlessness scale Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease 30. COPD Assessment Test (CAT): An 8-item measure of health status impairment in COPD ( ). Clinical COPD Questionnaire (CCQ): Self- administered questionnaire developed to measure clinical control in patients with COPD ( ). Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of Symptoms © 2015 Global Initiative for Chronic Obstructive Lung Disease 31. Breathlessness Measurement using the Modified British Medical Research Council (mMRC) Questionnaire: relates well to other measures of health status and predicts future mortality risk. Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of Symptoms © 2015 Global Initiative for Chronic Obstructive Lung Disease 32. Global Strategy for Diagnosis, Management and Prevention of COPD Modified MRC (mMRC)Questionnaire © 2015 Global Initiative for Chronic Obstructive Lung Disease 33. Assess symptoms Assess degree of airflow limitation using spirometry Assess risk of exacerbations Assess comorbidities Use spirometry for grading severity according to spirometry, using four grades split at 80%, 50% and 30% of predicted value Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease 34. Global Strategy for Diagnosis, Management and Prevention of COPD Classification of Severity of Airflow Limitation in COPD* In patients with FEV1/FVC < 0.70: GOLD 1: Mild FEV1 > 80% predicted GOLD 2: Moderate 50% < FEV1 < 80% predicted GOLD 3: Severe 30% < FEV1 < 50% predicted GOLD 4: Very Severe FEV1 < 30% predicted *Based on Post-Bronchodilator FEV1 © 2015 Global Initiative for Chronic Obstructive Lung Disease 35. Assess symptoms Assess degree of airflow limitation using spirometry Assess risk of exacerbations Assess comorbiditiesUse history of exacerbations and spirometry. Two exacerbations or more within the last year or an FEV1 < 50 % of predicted value are indicators of high risk. Hospitalization for a COPD exacerbation associated with increased risk of death. Global Strategy for Diagnosis, Management and Prevention of COPD Assessment of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease 36. Global Strategy for Diagnosis, Management and Prevention of COPD Assess Risk of Exacerbations To assess risk of exacerbations use history of exacerbations and spirometry: Two or more exacerbations within the last year or an FEV1 < 50 % of predicted value are indicators of high risk. One or more hospitalizations for COPD exacerbation should be considered high risk. © 2015 Global Initiative for Chronic Obstructive Lung Disease 37. Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD Assess symptoms Assess degree of airflow limitation using spirometry Assess risk of exacerbations Combine these assessments for the purpose of improving management of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease 38. Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease Risk (GOLDClassificationofAirflowLimitation)) Risk (Exacerbationhistory) ≥ 2 or > 1 leading to hospital admission 1 (not leading to hospital admission) 0 Symptoms (C) (D) (A) (B) CAT < 10 4 3 2 1 CAT > 10 Breathlessness mMRC 0–1 mMRC > 2 39. Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD (C) (D) (A) (B) CAT < 10 CAT > 10 Symptoms If CAT < 10 or mMRC 0-1: Less Symptoms/breathlessness (A or C) If CAT > 10 or mMRC > 2: More Symptoms/breathlessness (B or D) Assess symptoms first © 2015 Global Initiative for Chronic Obstructive Lung Disease Breathlessness mMRC 0–1 mMRC > 2 40. Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD Risk (GOLDClassificationofAirflowLimitation) Risk (Exacerbationhistory) (C) (D) (A) (B) 4 3 2 1 CAT < 10 CAT > 10 Symptoms If GOLD 3 or 4 or ≥ 2 exacerbations per year or > 1 leading to hospital admission: High Risk (C or D) If GOLD 1 or 2 and only 0 or 1 exacerbations per year (not leading to hospital admission): Low Risk (A or B) Assess risk of exacerbations next © 2015 Global Initiative for Chronic Obstructive Lung DiseaseBreathlessness mMRC 0–1 mMRC > 2 ≥ 2 or > 1 leading to hospital admission 1 (not leading to hospital admission) 0 41. Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD © 2015 Global Initiative for Chronic Obstructive Lung Disease Risk (GOLDClassificationofAirflowLimitation)) Risk (Exacerbationhistory) ≥ 2 or > 1 leading to hospital admission 1 (not leading to hospital admission) 0 Symptoms (C) (D) (A) (B) CAT < 10 4 3 2 1 CAT > 10 Breathlessness mMRC 0–1 mMRC > 2 42. Patient Characteristic Spirometric Classification Exacerbations per year CAT mMRC A Low Risk Less Symptoms GOLD 1-2 ≤ 1 < 10 0-1 B Low Risk More Symptoms GOLD 1-2 ≤ 1 > 10 > 2 C High Risk Less Symptoms GOLD 3-4 > 2 < 10 0-1 D High Risk More Symptoms GOLD 3-4 > 2 > 10 > 2 Global Strategy for Diagnosis, Management and Prevention of COPD Combined Assessment of COPD When assessing risk, choose the highest risk according to GOLD grade or exacerbation history. One or more hospitalizations for COPD exacerbations should be considered high risk.) © 2015 Global Initiative for Chronic Obstructive Lung Disease 43. Global Strategy for Diagnosis, Management and Prevention of COPD Assess COPD Comorbidities COPD patients are at increased risk for: • Cardiovascular diseases • Osteoporosis • Respiratory infections • Anxiety and Depression • Diabetes • Lung cancer • Bronchiectasis These comorbid conditions may influence mortality and hospitalizations and should be looked for routinely, and treated appropriately. © 2015 Global Initiative for Chronic Obstructive Lung Disease 44. Global Strategy for Diagnosis, Management and Prevention of COPD Differential Diagnosis: COPD and Asthma COPD • Onset in mid-life • Symptoms slowly progressive • Long smoking history ASTHMA • Onset early in life (often childhood) • Symptoms vary from day to day • Symptoms worse at night/early morning • Allergy, rhinitis, and/or eczema also present • Family history of asthma © 2015 Global Initiative for Chronic Obstructive Lung Disease 45. Global Strategy for Diagnosis, Management and Prevention of COPD Additional Investigations Chest X-ray: Seldom diagnostic but valuable to exclude alternative diagnoses and establish presence of significant comorbidities. Lung Volumes and Diffusing Capacity: Help to characterize severity, but not essential to patient management. Oximetry and Arterial Blood Gases: Pulse oximetry can be used to evaluate a patient's oxygen saturation and need for supplemental oxygen therapy. Alpha-1 Antitrypsin Deficiency Screening: Perform when COPD develops in patients of Caucasian descent under 45 years or with a strong family history of COPD. © 2015 Global Initiative for Chronic Obstructive Lung Disease 46. Exercise Testing: Objectively measured exercise impairment, assessed by a reduction in self-paced walking distance (such as the 6 min walking test) or during incremental exercise testing in a laboratory, is a powerful indicator of health status impairment and predictor of prognosis. Composite Scores: Several variables (FEV1, exercise tolerance assessed by walking distance or peak oxygen consumption, weight loss and reduction in the arterial oxygen tension) identify patients at increased risk for mortality. Global Strategy for Diagnosis, Management and Prevention of COPD Additional Investigations © 2015 Global Initiative for Chronic Obstructive Lung Disease 47. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 48. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Key Points Smoking cessation has the greatest capacity to influence the natural history of COPD. Health care providers should encourage all patients who smoke to quit. Pharmacotherapy and nicotine replacement reliably increase long-term smoking abstinence rates. All COPD patients benefit from regular physical activity and should repeatedly be encouraged to remain active. © 2015 Global Initiative for Chronic Obstructive Lung Disease 49. Appropriate pharmacologic therapy can reduce COPD symptoms, reduce the frequency and severity of exacerbations, and improve health status and exercise tolerance. None of the existing medications for COPD has been shown conclusively to modify the long-term decline in lung function. Influenza and pneumococcal vaccination should be offered depending on local guidelines. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 50. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Smoking Cessation Counseling delivered by physicians and other health professionals significantly increases quit rates over self- initiated strategies. Even a brief (3-minute) period of counseling to urge a smoker to quit results in smoking quit rates of 5-10%. Nicotine replacement therapy (nicotine gum, inhaler, nasal spray, transdermal patch, sublingual tablet, or lozenge) as well as pharmacotherapy with varenicline, bupropion, and nortriptyline reliably increases long- term smoking abstinence rates and are significantly more effective than placebo. © 2015 Global Initiative for Chronic Obstructive Lung Disease 51. Brief Strategies to Help the Patient Willing to Quit Smoking • ASK Systematically identify all tobacco users at every visit • ADVISE Strongly urge all tobacco users to quit • ASSESS Determine willingness to make a quit attempt • ASSIST Aid the patient in quitting • ARRANGE Schedule follow-up contact. © 2015 Global Initiative for Chronic Obstructive Lung Disease 52. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Risk Reduction Encourage comprehensive tobacco-control policies with clear, consistent, and repeated nonsmoking messages. Emphasize primary prevention, best achieved by elimination or reduction of exposures in the workplace. Secondary prevention, achieved through surveillance and early detection, is also important. Reduce or avoid indoor air pollution from biomass fuel, burned for cooking and heating in poorly ventilated dwellings. Advise patients to monitor public announcements of air quality and, depending on the severity of their disease, avoid vigorous exercise outdoors or stay indoors during pollution episodes. © 2015 Global Initiative for Chronic Obstructive Lung Disease 53. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: COPD Medications Beta2-agonists Short-acting beta2-agonists Long-acting beta2-agonists Anticholinergics Short-acting anticholinergics Long-acting anticholinergics Combination short-acting beta2-agonists + anticholinergic in one inhaler Combination long-acting beta2-agonist + anticholinergic in one inhaler Methylxanthines Inhaled corticosteroids Combination long-acting beta2-agonists + corticosteroids in one inhaler Systemic corticosteroids Phosphodiesterase-4 inhibitors © 2015 Global Initiative for Chronic Obstructive Lung Disease 54. Bronchodilator medications are central to the symptomatic management of COPD. Bronchodilators are prescribed on an as-needed or on a regular basis to prevent or reduce symptoms. The principal bronchodilator treatments are beta2- agonists, anticholinergics, theophylline or combination therapy. The choice of treatment depends on the availability of medications and each patient's individual response in terms of symptom relief and side effects.. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Bronchodilators © 2015 Global Initiative for Chronic Obstructive Lung Disease 55. Long-acting inhaled bronchodilators are convenient and more effective for symptom relief than short-acting bronchodilators. Long-acting inhaled bronchodilators reduce exacerbations and related hospitalizations and improve symptoms and health status. Combining bronchodilators of different pharmacological classes may improve efficacy and decrease the risk of side effects compared to increasing the dose of a single bronchodilator. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Bronchodilators © 2015 Global Initiative for Chronic Obstructive Lung Disease 56. Regular treatment with inhaled corticosteroids improves symptoms, lung function and quality of life and reduces frequency of exacerbations for COPD patients with an FEV1 < 60% predicted. Inhaled corticosteroid therapy is associated with an increased risk of pneumonia. Withdrawal from treatment with inhaled corticosteroids may lead to exacerbations in some patients. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Inhaled Corticosteroids © 2015 Global Initiative for Chronic Obstructive Lung Disease 57. An inhaled corticosteroid combined with a long-acting beta2-agonist is more effective than the individual components in improving lung function and health status and reducing exacerbations in moderate to very severe COPD. Combination therapy is associated with an increased risk of pneumonia. Addition of a long-acting beta2-agonist/inhaled glucorticosteroid combination to an anticholinergic (tiotropium) appears to provide additional benefits. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Combination Therapy © 2015 Global Initiative for Chronic Obstructive Lung Disease 58. Chronic treatment with systemic corticosteroids should be avoided because of an unfavorable benefit-to- risk ratio. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Systemic Corticosteroids © 2015 Global Initiative for Chronic Obstructive Lung Disease 59. In patients with severe and very severe COPD (GOLD 3 and 4) and a history of exacerbations and chronic bronchitis, the phospodiesterase-4 inhibitor, roflumilast, reduces exacerbations treated with oral glucocorticosteroids. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Phosphodiesterase-4 Inhibitors © 2015 Global Initiative for Chronic Obstructive Lung Disease 60. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Theophylline Theophylline is less effective and less well tolerated than inhaled long-acting bronchodilators and is not recommended if those drugs are available and affordable. There is evidence for a modest bronchodilator effect and some symptomatic benefit compared with placebo in stable COPD. Addition of theophylline to salmeterol produces a greater increase in FEV1 and breathlessness than salmeterol alone. Low dose theophylline reduces exacerbations but does not improve post-bronchodilator lung function. © 2015 Global Initiative for Chronic Obstructive Lung Disease 61. Influenza vaccines can reduce serious illness. Pneumococcal polysaccharide vaccine is recommended for COPD patients 65 years and older and for COPD patients younger than age 65 with an FEV1 < 40% predicted. The use of antibiotics, other than for treating infectious exacerbations of COPD and other bacterial infections, is currently not indicated. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Other Pharmacologic Treatments © 2015 Global Initiative for Chronic Obstructive Lung Disease 62. Alpha-1 antitrypsin augmentation therapy: not recommended for patients with COPD that is unrelated to the genetic deficiency. Mucolytics: Patients with viscous sputum may benefit from mucolytics; overall benefits are very small. Antitussives: Not recommended. Vasodilators: Nitric oxide is contraindicated in stable COPD. The use of endothelium-modulating agents for the treatment of pulmonary hypertension associated with COPD is not recommended. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Other Pharmacologic Treatments © 2015 Global Initiative for Chronic Obstructive Lung Disease 63. All COPD patients benefit from exercise training programs with improvements in exercise tolerance and symptoms of dyspnea and fatigue. Although an effective pulmonary rehabilitation program is 6 weeks, the longer the program continues, the more effective the results. If exercise training is maintained at home, the patient's health status remains above pre- rehabilitation levels. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Rehabilitation © 2015 Global Initiative for Chronic Obstructive Lung Disease 64. Oxygen Therapy: The long-term administration of oxygen (> 15 hours per day) to patients with chronic respiratory failure has been shown to increase survival in patients with severe, resting hypoxemia. Ventilatory Support: Combination of noninvasive ventilation (NIV) with long-term oxygen therapy may be of some use in a selected subset of patients, particularly in those with pronounced daytime hypercapnia. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Other Treatments © 2015 Global Initiative for Chronic Obstructive Lung Disease 65. Lung volume reduction surgery (LVRS) is more efficacious than medical therapy among patients with upper-lobe predominant emphysema and low exercise capacity. LVRS is costly relative to health-care programs not including surgery. In appropriately selected patients with very severe COPD, lung transplantation has been shown to improve quality of life and functional capacity. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Surgical Treatments © 2015 Global Initiative for Chronic Obstructive Lung Disease 66. Palliative Care, End-of-life Care, Hospice Care: Communication with advanced COPD patients about end-of-life care and advance care planning gives patients and their families the opportunity to make informed decisions. Global Strategy for Diagnosis, Management and Prevention of COPD Therapeutic Options: Other Treatments © 2015 Global Initiative for Chronic Obstructive Lung Disease 67. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 68. Identification and reduction of exposure to risk factors are important steps in prevention and treatment. Individualized assessment of symptoms, airflow limitation, and future risk of exacerbations should be incorporated into the management strategy. All COPD patients benefit from rehabilitation and maintenance of physical activity. Pharmacologic therapy is used to reduce symptoms, reduce frequency and severity of exacerbations, and improve health status and exercise tolerance. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 69. Long-acting formulations of beta2-agonists and anticholinergics are preferred over short-acting formulations. Based on efficacy and side effects, inhaled bronchodilators are preferred over oral bronchodilators. Long-term treatment with inhaled corticosteroids added to long-acting bronchodilators is recommended for patients with high risk of exacerbations. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 70. Long-term monotherapy with oral or inhaled corticosteroids is not recommended in COPD. The phospodiesterase-4 inhibitor roflumilast may be useful to reduce exacerbations for patients with FEV1 < 50% of predicted, chronic bronchitis, and frequent exacerbations. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 71. Relieve symptoms Improve exercise tolerance Improve health status Prevent disease progression Prevent and treat exacerbations Reduce mortality Reduce symptoms Reduce risk Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Goals of Therapy © 2015 Global Initiative for Chronic Obstructive Lung Disease 72. Avoidance of risk factors - smoking cessation - reduction of indoor pollution - reduction of occupational exposure Influenza vaccination Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: All COPD Patients © 2015 Global Initiative for Chronic Obstructive Lung Disease 73. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Non-pharmacologic Patient Group Essential Recommended Depending on local guidelines A Smoking cessation (can include pharmacologic treatment) Physical activity Flu vaccination Pneumococcal vaccination B, C, D Smoking cessation (can include pharmacologic treatment) Pulmonary rehabilitation Physical activity Flu vaccination Pneumococcal vaccination © 2015 Global Initiative for Chronic Obstructive Lung Disease 74. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Pharmacologic Therapy (Medications in each box are mentioned in alphabetical order, and therefore not necessarily in order of preference.) Patient Recommended First choice Alternative choice Other Possible Treatments A SAMA prn or SABA prn LAMA or LABA or SABA and SAMA Theophylline B LAMA or LABA LAMA and LABA SABA and/or SAMA Theophylline C ICS + LABA or LAMA LAMA and LABA or LAMA and PDE4-inh. or LABA and PDE4-inh. SABA and/or SAMA Theophylline D ICS + LABA and/or LAMA ICS + LABA and LAMA or ICS+LABA and PDE4-inh. or LAMA and LABA or LAMA and PDE4-inh. Carbocysteine N-acetylcysteine SABA and/or SAMA Theophylline 75. Exacerbationsperyear 0 CAT < 10 mMRC 0-1 GOLD 4 CAT > 10 mMRC > 2 GOLD 3 GOLD 2 GOLD 1 SAMA prn or SABA prn LABA or LAMA ICS + LABA or LAMA Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Pharmacologic Therapy RECOMMENDED FIRST CHOICE A B DC ICS + LABA and/or LAMA © 2015 Global Initiative for Chronic Obstructive Lung Disease 2 or more or > 1 leading to hospital admission 1 (not leading to hospital admission) 76. Exacerbationsperyear 0 CAT < 10 mMRC 0-1 GOLD 4 CAT > 10 mMRC > 2 GOLD 3 GOLD 2 GOLD 1 Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Pharmacologic Therapy ALTERNATIVE CHOICE A B DC © 2014 Global Initiative for Chronic Obstructive Lung Disease 2 or more or > 1 leading to hospital admission 1 (not leading to hospital admission) LAMA and LABA or LAMA and PDE4-inh or LABA and PDE4-inh ICS + LABA and LAMA or ICS + LABA and PDE4-inh or LAMA and LABA or LAMA and PDE4-inh. LAMA or LABA or SABA and SAMA LAMA and LABA 77. Exacerbationsperyear 0 CAT < 10 mMRC 0-1 GOLD 4 CAT > 10 mMRC > 2 GOLD 3 GOLD 2 GOLD 1 Global Strategy for Diagnosis, Management and Prevention of COPD Manage Stable COPD: Pharmacologic Therapy OTHER POSSIBLE TREATMENTS A B DC © 2015 Global Initiative for Chronic Obstructive Lung Disease 2 or more or > 1 leading to hospital admission 1 (not leading to hospital admission) SABA and/or SAMA Theophylline Carbocysteine N-acetylcysteine SABA and/or SAMA Theophylline Theophylline SABA and/or SAMA Theophylline 78. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 79. An exacerbation of COPD is: “an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day- to-day variations and leads to a change in medication.” Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations © 2015 Global Initiative for Chronic Obstructive Lung Disease 80. The most common causes of COPD exacerbations are viral upper respiratory tract infections and infection of the tracheobronchial tree. Diagnosis relies exclusively on the clinical presentation of the patient complaining of an acute change of symptoms that is beyond normal day-to- day variation. The goal of treatment is to minimize the impact of the current exacerbation and to prevent the development of subsequent exacerbations. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 81. Short-acting inhaled beta2-agonists with or without short-acting anticholinergics are usually the preferred bronchodilators for treatment of an exacerbation. Systemic corticosteroids and antibiotics can shorten recovery time, improve lung function (FEV1) and arterial hypoxemia (PaO2), and reduce the risk of early relapse, treatment failure, and length of hospital stay. COPD exacerbations can often be prevented. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Key Points © 2015 Global Initiative for Chronic Obstructive Lung Disease 82. Impact on symptoms and lung function Negative impact on quality of life Consequences Of COPD Exacerbations Increased economic costs Accelerated lung function decline Increased Mortality EXACERBATIONS © 2015 Global Initiative for Chronic Obstructive Lung Disease 83. Arterial blood gas measurements (in hospital): PaO2 < 8.0 kPa with or without PaCO2 > 6.7 kPa when breathing room air indicates respiratory failure. Chest radiographs: useful to exclude alternative diagnoses. ECG: may aid in the diagnosis of coexisting cardiac problems. Whole blood count: identify polycythemia, anemia or bleeding. Purulent sputum during an exacerbation: indication to begin empirical antibiotic treatment. Biochemical tests: detect electrolyte disturbances, diabetes, and poor nutrition. Spirometric tests: not recommended during an exacerbation. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Assessments © 2015 Global Initiative for Chronic Obstructive Lung Disease 84. Oxygen: titrate to improve the patient's hypoxemia with a target saturation of 88-92%. Bronchodilators: Short-acting inhaled beta2-agonists with or without short-acting anticholinergics are preferred. Systemic Corticosteroids: Shorten recovery time, improve lung function (FEV1) and arterial hypoxemia (PaO2), and reduce the risk of early relapse, treatment failure, and length of hospital stay. A dose of 40 mg prednisone per day for 5 days is recommended . Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Treatment Options © 2015 Global Initiative for Chronic Obstructive Lung Disease 85. Oxygen: titrate to improve the patient's hypoxemia with a target saturation of 88-92%. Bronchodilators: Short-acting inhaled beta2-agonists with or without short-acting anticholinergics are preferred. Systemic Corticosteroids: Shorten recovery time, improve lung function (FEV1) and arterial hypoxemia (PaO2), and reduce the risk of early relapse, treatment failure, and length of hospital stay. A dose of 40 mg prednisone per day for 5 days is recommended. Nebulized magnesium as an adjuvent to salbutamol treatment in the setting of acute exacerbations of COPD has no effect on FEV1. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Treatment Options © 2015 Global Initiative for Chronic Obstructive Lung Disease 86. Antibiotics should be given to patients with: Three cardinal symptoms: increased dyspnea, increased sputum volume, and increased sputum purulence. Who require mechanical ventilation. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Treatment Options © 2015 Global Initiative for Chronic Obstructive Lung Disease 87. Noninvasive ventilation (NIV) for patients hospitalized for acute exacerbations of COPD: Improves respiratory acidosis, decreases respiratory rate, severity of dyspnea, complications and length of hospital stay. Decreases mortality and needs for intubation. GOLD Revision 2011 Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Treatment Options © 2015 Global Initiative for Chronic Obstructive Lung Disease 88. Marked increase in intensity of symptoms Severe underlying COPD Onset of new physical signs Failure of an exacerbation to respond to initial medical management Presence of serious comorbidities Frequent exacerbations Older age Insufficient home support Global Strategy for Diagnosis, Management and Prevention of COPD Manage Exacerbations: Indications for Hospital Admission © 2015 Global Initiative for Chronic Obstructive Lung Disease 89. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 90. COPD often coexists with other diseases (comorbidities) that may have a significant impact on prognosis. In general, presence of comorbidities should not alter COPD treatment and comorbidities should be treated as if the patient did not have COPD. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Comorbidities © 2015 Global Initiative for Chronic Obstructive Lung Disease 91. Cardiovascular disease (including ischemic heart disease, heart failure, atrial fibrillation, and hypertension) is a major comorbidity in COPD and probably both the most frequent and most important disease coexisting with COPD. Benefits of cardioselective beta-blocker treatment in heart failure outweigh potential risk even in patients with severe COPD. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Comorbidities © 2015 Global Initiative for Chronic Obstructive Lung Disease 92. Osteoporosis and anxiety/depression: often under- diagnosed and associated with poor health status and prognosis. Lung cancer: frequent in patients with COPD; the most frequent cause of death in patients with mild COPD. Serious infections: respiratory infections are especially frequent. Metabolic syndrome and manifest diabetes: more frequent in COPD and the latter is likely to impact on prognosis. Global Strategy for Diagnosis, Management and Prevention of COPD Manage Comorbidities © 2015 Global Initiative for Chronic Obstructive Lung Disease 93. Global Strategy for Diagnosis, Management and Prevention of COPD, 2015: Chapters Definition and Overview Diagnosis and Assessment Therapeutic Options Manage Stable COPD Manage Exacerbations Manage Comorbidities Asthma COPD Overlap Syndrome (ACOS) Updated 2015 © 2015 Global Initiative for Chronic Obstructive Lung Disease 94. This chapter was prepared by members of the GOLD and GINA Science Committees. It appears in GOLD 2015 as an Appendix. It appears in GINA 2014 as chapter 5. The following slides are part of a “teaching slide set” produced by GINA. Other slides from this set can be found on the GINA website: www.ginasthma.org Global Strategy for Diagnosis, Management and Prevention of COPD ASTHMA COPD OVERLAP SYNDROME © 2015 Global Initiative for Chronic Obstructive Lung Disease 95. © Global Initiative for Asthma Definitions Asthma Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation. [GINA 2014] COPD COPD is a common preventable and treatable disease, characterized by persistent airflow limitation that is usually progressive and associated with enhanced chronic inflammatory responses in the airways and the lungs to noxious particles or gases. Exacerbations and comorbidities contribute to the overall severity in individual patients. [GOLD 2015] Asthma-COPD overlap syndrome (ACOS) [a description] Asthma-COPD overlap syndrome (ACOS) is characterized by persistent airflow limitation with several features usually associated with asthma and several features usually associated with COPD. ACOS is therefore identified by the features that it shares with both asthma and COPD. GINA 2014, Box 5-1 96. © Global Initiative for Asthma Usual features of asthma, COPD and ACOS GINA 2014, Box 5-2A (1/3) Feature Asthma COPD ACOS Pattern of respiratory symptoms Symptoms vary over time (day to day, or over longer period), often limiting activity. Often triggered by exercise, emotions including laughter, dust, or exposure to allergens Chronic usually continuous symptoms, particularly during exercise, with 'better' and 'worse' days Respiratory symptoms including exertional dyspnea are persistent, but variability may be prominent Lung function Current and/or historical variable airflow limitation, e.g. BD reversibility, AHR FEV1 may be improved by therapy, but post-BD FEV1/FVC 40 years Usually ≥40 years, but may have had symptoms as child/early adult 97. © Global Initiative for Asthma Usual features of asthma, COPD and ACOS (continued) Feature Asthma COPD ACOS Past history or family history Many patients have allergies and a personal history of asthma in childhood and/or family history of asthma History of exposure to noxious particles or gases (mainly tobacco smoking or biomass fuels) Frequently a history of doctor-diagnosed asthma (current or previous), allergies, family history of asthma, and/or a history of noxious exposures - Time course Often improves spontaneously or with treatment, but may result in fixed airflow limitation Generally slowly progressive over years despite treatment Symptoms are partly but significantly reduced by treatment. Progression is usual and treatment needs are high. Chest X-ray- Usually normal Severe hyperinflation and other changes of COPD Similar to COPD Exacerbations Exacerbations occur, but risk can be substantially reduced by treatment Exacerbations can be reduced by treatment. If present, comorbidities contribute to impairment Exacerbations may be more common than in COPD but are reduced by treatment. Comorbidities can contribute to impairment. GINA 2014, Box 5-2A (2/3) 98. © Global Initiative for Asthma Features that (when present) favor asthma or COPD GINA 2014, Box 5-2B (3/3) Feature Favors asthma Favors COPD Age of onset qBefore age 20 years qAfter age 40 years Lung function qRecord of variable airflow limitation (spirometry, peak flow) qNormal between symptoms qRecord of persistent airflow limitation (post-BD FEV1/FVC