Doxofylline is a promising methylxanthine derivative for the treatment of chronic reversible asthma. Many experimental studies have shown that doxofylline is endowed with a remarkable bronchodilator activity with less extra-respiratory effects than theophylline in asthma. A double-blind, randomized, placebo-controlled, three phase, multicentre clinical trial was carried out in 22 centers of United States between doxofylline 400 mg t.i.d. (high dose), doxofylline 200 mg t.i.d. (low dose), theophylline 250 mg t.i.d. (active control) or placebo. It was one week, single-blind, placebo run-in treatment for phase 1; a 12-week, double-blind, active-treatment for phase 2; and a 1-week, single-blind, placebo run-out treatment for phase 3. Three hundred and forty six patients with reversible obstructive airways disease were enrolled in the study. The mean age of the study population was 35.5±17 years and 51% was women. Among the 346 patients 88 were assigned to doxofylline 400 mg t.i.d., 86 to theophylline 250 mg t.i.d. (active control) or placebo. It was one week, single-blind, placebo run-in treatment for phase 1; a 12-week, double-blind, active-treatment for phase 2; and a 1-week, single-blind, placebo run-out treatment for phase 3. Three hundred and forty six patients with reversible obstructive airways disease were enrolled in the study. The mean age of the study population was 35.5±17 years and 51% was women. Among the 346 patients 88 were assigned to doxofylline 400 mg t.i.d., 86 to theophylline 250 mg t.i.d., 83 to doxofylline 200 mg t.i.d., and 89 to the placebo group. Patients were permitted to use inhaled albuterol in case of exacerbation of asthma. At the screening visit, they had to have a forced expiratory volume in 1 second (FEV1) within 50% to 80% of the predicted FEV1 according to their age and height. Patients were excluded from participating in the study in case of serious concomitant cardiovascular, renal, hepatic or metabolic diseases. Patients who had taken drugs known to affect theophylline clearance were also considered non-eligible. Pulmonary function tests (PFTs) were performed bi-weekly. Patients kept records of peak flow meter (PFM) measurements, asthma attack rate and albuterol use. The primary efficacy variable, which was identified in the protocol, was FEV1. The secondary efficacy PFT variables were forced vital capacity (FVC), peak expiratory flow rate (PEFR) and forced expiratory flow during the middle half of the FVC (FEF25-75%). Baseline pulmonary function tests (PFTs) were performed at the end of the placebo run-in phase. Patients who still had an FEV1 that was 50% to 80% of the predicted value were given their first dose of double-blind medication, and the PFTs were repeated 2 hours later. Patients returned for subsequent PFTs at 14-day intervals during the active-treatment period and the end of the placebo run-out period. Changes in FEV1 2 hours after the administration of treatments versus baseline exhibited statistically significant differences between doxofylline 400 mg t.i.d. and placebo and between theophylline and placebo. Similar differences were monitored on the other variables (FVC, PEFR, FEF25-75%). Asthma attack rate and use of albuterol decreased remarkably with doxofylline 400 t.i.d group. Adverse events occurred in a greater proportion of patients in the theophylline (63%) group. Gastro-intestinal adverse events were more common with theophylline than with doxofylline. Doxofylline has exhibited two characteristics that may expand its usefulness in the clinical setting. First, it produces improvements in airflow obstruction with a reduction in the prevalence of asthma attacks. Second, it has a favorable tolerability profile that suggests that this drug might be of particular benefit in selected groups of asthmatic patients, especially those with GIT intolerance to theophylline. Doxofylline seems to offer a promising alternative to theophylline therapy in the management of patients with chronic reversible asthma.
Study Finds Asthma Patients are Often Misdiagnosed

Asthma is a chronic illness affecting bronchial tubes. It affects hundreds of millions of people worldwide, and tens of millions of people in the United States alone. However, new Canadian research lead by Dr. Shawn Aaron suggests that a significant number of asthma cases may be falsely diagnosed. Furthermore, the vast majority of those whose asthma was not confirmed by this study stopped taking their medication and were able to live safely without it for a year. This study was published in The Journal of the American Medical Association. For this study researcher examined 613 patients who were selected randomly from 10 Canadian cities between January 2012 and February 2016. Aaron team re-evaluated the participants to see if they could confirm current asthma. They used a home peak flow meter (PFT), spirometry, and serial bronchial challenge tests to monitor the symptoms. Researchers ruled out asthma in 203 of the 613 patients, which makes up 33.1 percent of the entire sample. Of these, 12 study participants had other serious cardiorespiratory illnesses that might have been incorrectly diagnosed as asthma. Additionally, 80 percent of the misdiagnosed patients had been taking asthma medication, and 35 percent of them had been doing so daily. Patients who were deemed to be asthma-free showed no signs of acute worsening of asthma symptoms and no evidence of reversible airflow obstruction or bronchial hyper-responsiveness, even after they stopped taking the medication. The participants were also examined by a study pulmonologist. Of the patients whose asthma was not confirmed, 28 percent had no respiratory condition whatsoever, while the majority had minor issues, such as allergies or heartburn. The team followed up on the 203 patients for 12 months. During this time, they gradually reduced the medication of the patients who were taking it daily over four study visits. Over 90 percent of the misdiagnosed patients were able to safely stop taking the medications for a year. Dr. Shawn Aaron said, "It is impossible to say how many of these patients were originally misdiagnosed with asthma, and how many have asthma that is no longer active. What we do know is that they were all able to stop taking medication that they did not need - medication that is expensive and can have side effects.

Long-Term Once-Daily Tiotropium Maintains Efficacy in Patients with Symptomatic Asthma

Parasympathetic neurons utilize the neurotransmitter acetylcholine to modulate and constrict airway smooth muscles at the muscarinic acetylcholine receptor. Inhaled agents that antagonize the muscarinic (M) acetylcholine receptor, particularly airway M3 receptors, have increasing data supporting use in persistent asthma. Use of inhaled long-acting muscarinic antagonists (LAMA) in asthma is explored. One inhaled LAMA (tiotropium) at a low dose has gained US FDA approval for marketing and use in the maintenance therapy of asthma patients with persistent symptoms. Tiotropium is approved for maintenance symptomatic asthma patients despite the use of inhaled corticosteroids (ICS), leukotriene receptor antagonists (LTRA) and/or long-acting beta2 agonists (LABA). Several studies have demonstrated that inhaled tiotropium reduces bronchospasm brought on by a methacholine challenge test (MCT) in asthmatic patients. A 52-weeks, phase III, randomized, double-blind, placebo-controlled, parallel group study was conducted in Japan regarding the long-term efficacy and safety of tiotropium (5 μg or 2.5 μg) compared with placebo in patients whose asthma was not being adequately controlled by ICS with or without a LABA. Five hundred and fifteen patients were enrolled in the study from 54 centers in Japan but after screening 285 patients were eligible for the study. The majority of the patients were female (61.8%). Eligible patients were randomized 2:2:1 to once-daily tiotropium 5 μg (n=114), tiotropium 2.5 μg (n=114) or placebo (n=57) for 52 weeks added on to ICS±LABA. Overall, 21 patients (7.4%) prematurely discontinued trial medication and 264 patients completed the study. Patients were followed up for an additional 3 weeks following completion of the randomized treatment period and in every 4 weeks during the treatment period to record adverse events (AEs) and drug accountability. Primary objective of this trial was to evaluate the long-term safety of tiotropium. Secondary efficacy end points were measured by forced expiratory volume in 1 second (FEV1) response, forced vital capacity (FVC) response and peak expiratory flow rate (PEFR) response. Median treatment compliance was 93.7% in tiotropium group. At week 52, adjusted mean trough FEV1 and trough PEFR responses were significantly higher with tiotropium 5 μg (but not 2.5 μg) versus placebo. Serious AEs were less frequent with tiotropium 5 μg (n = 4; 3.5%) or tiotropium 2.5 μg (n = 4; 3.5%) than with placebo (n = 9; 15.8%). Compared with placebo, tiotropium provided long-term efficacy by improving lung functions, reducing the risk of asthma exacerbations and asthma worsening. Once-daily dosing of tiotropium add-on to ICS±LABA may provide a beneficial treatment option for patients with severe asthma who remain symptomatic.
Lung Function Tests to Diagnose COPD can Help Patients and Reduce Health Care Costs

Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide and affects more than 10% of adults. Patients with COPD will get benefit if pulmonary function test are used more consistently to diagnose this condition, according to a new study published in the Canadian Medical Association Journal. Testing airflow with pulmonary function testing is a key tool in diagnosing COPD, but it is underused, with only 30% to 50% of people with physician-diagnosed COPD undergoing testing. Researchers looked at data for 68,898 patients diagnosed with COPD between 2005 and 2012, including 16,798 patients with newly diagnosed COPD. Only 41% had received pulmonary function testing, and these patients were more likely to be younger, have seen a specialist and have a primary care physician who followed clinical guidelines for COPD. They were also less likely to have comorbidities. Dr. Andrea Gershon, co-author of the study said, "Given low rates of testing, these findings point to an opportunity to improve patient outcomes, reduce health services use and decrease health care costs by increasing rates of testing for suspected COPD." The researchers also found that patients who underwent lung function testing as a diagnostic tool were 10.4% less likely to be hospitalized for COPD or to die of any cause compared with patients who did not undergo testing when other differences between these groups were controlled for. "Our results support the commonly held understanding that pulmonary function testing is key to the accurate diagnosis and quality care of people with COPD," said the authors. They suggest that using this testing more frequently to diagnosis suspected cases of COPD can improve patient outcomes, promote better use of health care services and cut costs.

Appropriate Utilization of Inhaled Corticosteroid can Save Money in COPD Treatment

A study was published in the journal of Hospital Pharmacy November 2016 issue regarding the inappropriate use of corticosteroid in case of chronic obstructive pulmonary disease (COPD). The aim of the study was to determine the frequency of inappropriate corticosteroid (ICS) therapy when it is prescribed concurrently with systemic corticosteroids and also to identify cost-savings potential in the setting of COPD exacerbations. Patients admitted to 1 of 8 hospital locations utilizing an integrated electronic health record within the health system for COPD exacerbations treated with systemic corticosteroids. Endpoints assessed included number of ICS, with or without LABA, respiratory medications potentially wasted due to overlap therapy with systemic corticosteroids, as well as overall cost attributed to drug product, administration products, and respiratory therapy labor cost from potentially inappropriate overlap therapy. One hundred forty-two nebulized budesonide vials were wasted along with 43 ICS or ICS/LABA inhalers. A total cost of $8,152.75 was attributed to drug product, administration products, and labor cost. Extrapolating to the 10,710 admissions identified, there would potentially be 20,551 wasted budesonide vials and 6,223 wasted ICS or ICS/LABA inhalers, resulting in an estimated annual cost savings of $1,180,090.03 for the health system. Additionally, length of stay was shorter in the group not receiving overlap therapy compared to the group receiving overlap therapy (6.8 ± 3.3 days vs 7.3 ± 4.8 days; P = 0.54). Significant cost savings could be accomplished through intervention and appropriate utilization of ICS or ICS/LABA therapy in patients admitted for COPD exacerbations treated with systemic corticosteroids.
Body Height is a Significant Risk Factor for Emphysema in COPD Patient

Body height is a significant risk factor for emphysema in chronic obstructive pulmonary disease (COPD), according to a recently published study. Emphysema is a phenotypic component of COPD which is associated with impairment of lung function and poor prognosis. In humans, lung size is directly proportional to body height. The present study was conducted to examine the association between emphysema and body height in COPD patients. The study involved 726 patients with COPD. Computed tomography (CT) was used as a reference standard for diagnosis of emphysema. Univariate analysis was done to check the differences between individuals with and without emphysema. Multiple factors like age, sex, body height, body mass index, pack-years of smoking and forced expiratory volume in one second (FEV1) were used as significant predictors for the risk of emphysema. The overall prevalence of emphysema was 52%. The emphysemic patients were significantly taller and thinner than the non-emphysemic patients. The diffusing capacity of the lung for carbon monoxide (DLCO) was remarkably lower in patients with emphysema than in those without \(P < 0.001\). The prevalence of emphysema rose linearly with every 10 cm increase in body height. The odds of emphysema increased along every 1 cm increase in body height. There were no differences in odds of emphysema between males and females.

Low Serum Concentration of Vitamin Causes Recurrent Respiratory Tract Infections in Children

A recent study of China has proved children with low serum concentrations of vitamins A, D, and E are at an increased risk of recurrent respiratory tract infections (RRTIs). This study was conducted to determine whether the serum concentrations of vitamin A, D, and E would be linked to RRTIs in children. The study recruited 1200 children (age group; 0.5-14 years) from Northern China. Of these, 600 had RRTIs and formed the symptomatic group (RRTI group). The remaining 600 healthy children were enrolled in the study as controls (control group). The serum levels of vitamins A and E were determined using high performance liquid chromatography (HPLC), and the serum 25-hydroxycholecalciferol \([25(OH)D]\) levels were evaluated using HPLC-MS/MS. Significantly lower serum levels of vitamins A and E, and of 25(OH)D were evident in the RRTI group as compared to the control group. As per a conditional logistic regression analysis and the receiver-operating characteristic curve, the insufficiency or deficiency of vitamins A, D, and E had a positive correlation with RRTI occurrence \(P < 0.05\).

Early Warning Saliva Test Could Predict Imminent Flare Ups of Chronic Lung Disease

A new saliva test could help predict future flare ups of chronic lung disease, allowing earlier treatment that could save lives — according to a new research presented at the British Thoracic Society Winter Meeting. The study analyzed, on a weekly basis, the level of three biomarkers - substances in the body which indicate inflammation - taken from the saliva of 55 people with established chronic lung disease. This data was matched with patients’ daily assessment of their own symptoms. Patients were monitored whilst stable through to the period leading to, and during a flare up, and also in their recovery period. All three biomarkers in the saliva could distinguish between a stable period where patients did not report severe symptoms and when they reported a problematic flare up of symptoms. Critically the level of one of the key biomarkers remained raised after the flare up, which could indicate that they may be at risk of repeated worsenings of their condition. Given this finding, the researchers believe the study could also help identify those people with COPD who are more at risk of a repeated flare up or re-exacerbation of their lung condition, allowing health professionals to plan the most effective treatment strategies. Dr Neil Patel, one of the researcher of this study said, “Chronic lung disease is a major health and economic burden on society and the national health service (NHS). Our research is exciting as it could represent a major step forward in the development of new home monitoring techniques for patients to keep track of their lung disease. Critically, it could provide an ‘early warning sign’ of an imminent worsening of their lung condition, triggering early interventions that could save lives”.

Finding a way for Inhaled asthma medicine (MDIs) can be an important advancement for effective MDI inhalation