



Research Findings

ASTHMA

Buteyko Institute of Breathing & Health Incorporated: Synopsis of Asthma Research Findings

Summary

Recent medical research findings on asthma have led to advice from medical authorities on bronchodilators changing significantly, from comments that they are safe, to concern regarding the safety of high dose and/or high frequency usage. There is now growing concern in medical literature about even regular use of conventional doses of bronchodilators. Glucocorticosteroid usage is also under question.

Time trends in asthma mortality, observed chronologically, show a disturbing pattern between the introduction of asthma medications and the epidemiological data on rising asthma mortality and morbidity. Today, there is a growing concern about whether control of asthma may deteriorate with the regular use of the long-acting inhaled bronchodilators.

The implications of recent research of the management of asthma are far reaching. Physiological studies show a common connection between over-breathing (hyper-ventilation) and low carbon dioxide CO₂ (hypocapnia) and asthma. Carbondioxide, as a natural bronchodilator, is protective against bronchospasm. The level of CO₂ can be influenced by breathing exercises and breathing control is shown to improve asthma.

Findings and discussion from an Australian medical clinical trial of the Buteyko (Breathing Reconditioning) Method for asthma management highlight that all subjects with asthma showed hyperventilation and hypocapnia. results indicate that there is a reduction in the need for asthma medication. Lung function did not deteriorate with the reduction in medications and quality of life improved.

The Buteyko Method was developed by Russian Medical scientist Konstantin P. Buteyko. His studies identified hyperventilation as a major causal factor in asthma. Through breathing techniques the Buteyko Method reduces hyperventilation and reconditions the breathing centre to normalise the breathing pattern. Respiratory congestion and bronchospasm respond positively, from the nose and sinuses to the lung. An average 80-90% reduction in bronchodilator medication is consistently reported by Buteyko Method patients.

Buteyko patients are instructed to follow National Asthma Campaign guidelines which advocate the use of bronchodilators on an as needed basis and preventative medication as prescribed by their doctor.

Concluding observations: Asthma Medication requires continued critical review. A very significant proportion of asthma sufferers over-breathe at rest and this is a critical contributory factor in asthma. The Buteyko Method is a natural, safe and effective means of normalising over-breathing patterns. facts on breathing physiology must be shared by all health professionals. Referral for breathing therapy is recommended to qualified Buteyko Method Practitioners.

There is an absolute necessity to find a safe alternative to bronchodilators and therefore minimise their usage. In the management of asthma, The Buteyko Method offers a safe and effective alternative to asthma medications alone.

This Synopsis of Asthma Research Findings was distributed as a draft for comment to Asthma Australia, the National Asthma Campaign, Assoc Prof C Mitchell, President of the Thoracic Society of Aust and NZ, the NHMRC, Dr S Bowler, Chief Researcher of the Buteyko Method in Australia, The Asthma Foundation of Vic, and The Royal College of Nursing. Comments received were considered in the preparation of this document. Dr Simon Bowler commented that β_2 agonists may be deleterious in asthma but this is not yet a proven fact. The possibility that they are implicated in the prevalence of asthma is a cause for concern and warrants detailed, further investigation. As regards the Buteyko Method, he believes it assisted participants in the Brisbane study, and that there is a prima facie case for the efficacy of Buteyko breathing and further investigation is justified.

Prepared by Tess Graham on behalf of the
Buteyko Institute of Breathing and Health Incorporated
ISBN 0-646-35246-6 © BIBH
PO BOX 3983 MANUKA, ACT 2603 PHONE 1800 638444
Internet Address: Web Site www.buteyko.com.au

Facts on Asthma Medications

Advice from medical authorities on bronchodilators has changed significantly in the past from comments on their absolute safety, to concern regarding the safety of high dose and/or high frequency usage. There is now a growing body of literature which implicates even regular use of conventional doses^{1,2,3} as impairing control of asthma. As little as 200ug salbutamol (2 puffs) a day for one week has been shown to have adverse effect of tolerance to the bronchoprotective effect of salbutamol². 800ug a day of salbutamol has been shown to have the adverse effect of significant increase in airway responsiveness to allergen². No longer is it "misuse" of bronchodilators that is implicated, but almost any regular use of these drugs. Nonetheless these substances are available in Australia without prescription in contrast to many other countries.

The National Asthma Campaign also now recommends restriction of the use of nebulisers for administering bronchodilators. It advocates that for adults and children over two years old, they should only be prescribed for patients with severe, life-threatening asthma⁴. This contrasts to previous advice by pharmacists and Asthma Foundations.

Many asthma patients though managed on "Asthma Management Plans" (AMP) and under the care of asthma specialists, still need to take bronchodilators in dosages that it is now acknowledged may lead to increased broncho-responsiveness and diminished bronchoprotection. Bronchodilators (β_2 -agonists) and glucocorticosteroids can cause clinical problems, although they appear to be effective in reducing symptoms (in the short term).

There also is concern regarding the possible long-term complications from the aggressive treatment of children with high dose inhaled glucocorticosteroids⁵. Their long-term safety has not been established. Inhaled steroids are now implicated in the development of psychiatric and endocrine disorders⁶ and in eye disorders. Dr Keith Woollard⁷, AMA Federal President said that "it would do us good to remember that the standard management of asthma with regular inhaled steroids... both lack(s) evidence of truly long-term benefit and freedom from harm." The safety and effectiveness of the bronchodilator, salmeterol, now is being seriously questioned^{1,8,9}.

Time trends in asthma mortality.

The following chronology of the introduction and emerging epidemiological data on asthma medications shows a disturbing trend. The introduction of some new and different dose bronchodilators has been followed some years later by increased asthma mortality and morbidity. We should not be comforted by stable mortality figures now when morbidity is increasing and the safety of the new class of long-acting bronchodilator, salmeterol, is now beginning to be questioned. A time-lag exists between the introduction of a new drug and new emergence of epidemiological trends. With this new class "there is growing concern about whether control of asthma may deteriorate with the regular use of these agents¹⁰." There is also concern whether these drugs are implicated in cases of sudden respiratory arrest in otherwise healthy young asthmatics⁹.

Chronology

1860 asthma not regarded as a fatal disease eg. Henry Salter¹¹ said "Asthma never kills". Until the 1940's, asthma mortality was low¹²
late 1930's adrenaline introduced, mortality increases followed¹²
late 1940's isoprenaline introduced, mortality increases followed¹²
1948 suggestion that use of adrenaline spray had resulted in 5 fold increases in asthma mortality¹⁴
1960 high dose isoprenaline introduced, mortality later increased¹² 1976 fenoterol introduced into New Zealand. Asthma mortality rises to epidemic proportions in New Zealand¹³
1989 a study reported that inhaled fenoterol was associated with the epidemic of deaths in NZ¹⁵
1993 cases of sudden respiratory arrest reported in otherwise healthy young asthmatics treated with salmeterol⁸
1994 inhaled steroids associated with psychiatric and endocrine disorders⁶
1996 high dose β_2 agonists (bronchodilator) suspected of interfering with anti-inflammatory and anti-asthma effects of inhaled corticosteroids¹. Concerns raised regarding the safety of salmeterol^{1,8,10}
1996 regular use of β_2 agonist in conventional doses, as little as 2 puffs a day (200ug) may contribute to worsening asthma².
1996 inhaled steroids implicated in glaucoma and cataracts
Chronology adapted from Blauw et al¹² (1995), Pearce et al¹³ (1995) and others

Implications of Recent Research for the Management of Asthma.

Research over the last three decades has established these general facts on asthma:

- Hyperventilation and hypocapnia (low carbon dioxide CO₂) are common in asthma^{16,17,18,19}
- Hypocapnia is the rule in asthma until respiratory failure sets in¹⁹
- Hypocapnia can lead to stimulation of mast cells to release histamine³⁴
- CO₂ is a bronchodilator and is protective against bronchospasm^{20,21}
- Asthma improves with breathing control, through breathing exercise^{16,22,23} and through application of continuous airways pressure²⁴ (CPAP reduces hyperventilation while applied²⁵)
- Forced Expiratory Volume (FEV₁) tests should not be seen as the definitive measure of the asthma condition. They are used to measure airway obstruction, however the FEV₁ tests themselves are known to cause bronchospasm, making results that rely on them biased and ambiguous²⁶. This is especially the case for subjects with a long history of asthma. Stage of illness and past management is critical to interpretation of FEV₁ findings²⁷.
- Notable subjective and functional improvement in asthma can occur in patients on steroid and sodium cromoglycate treatment without necessarily changing FEV₁^{28,29,30}.

Findings and discussion from the Australian clinical trial of the Buteyko Method for asthma management (Brisbane 1995) 16&31

The Asthma Foundations of Australia funded the Brisbane Buteyko study which tested Professor Konstantin Buteyko's theory which attributes hyperventilation as major causal factor in asthma. Buteyko's theory states that hyperventilation and alveolar hypocapnia (low CO₂) characterise people with asthma. CO₂ is a bronchodilator^{20,21} and deficiency can lead to bronchospasm. (This knowledge was not completely novel. Asthma had been treated as early as 1932 by Herxheimer³³ with 5% CO₂) Hyperventilation can increase allergen intake, inflame, irritate and sensitise the lungs. The Buteyko Method through breathing techniques, reduces hyperventilation and reconditions the breathing centre to normalise the breathing pattern. This significantly reduces the requirement for asthma medication. In a prospective double blind placebo controlled study the Buteyko Method was compared with conventional management of asthma.

- All subjects had asthma and showed hyperventilation
- All subjects had asthma and showed hypocapnia (low CO₂)
- Buteyko subjects reduced their hyperventilation by an average 31% in their minute volume at twelve weeks. There was no significant change in the control group.
- There was a correlation between the relative reduction in need of bronchodilators and the proportionate reduction in minute volumes in Buteyko subjects: that is, the subjects' need for bronchodilator was related to the **volume** of air they breathed.
- The subjects had average asthma duration of 23 years (range 3-60 years) and an average age of 47 years. They were relatively old and chronic with respect to most asthma studies.
- In the initial 12 weeks of the study neither group had a significant change in the FEV₁ lung function. They maintained on average the previous personal best lung function. In the Buteyko group this occurred along with an average 49% reduction in steroids and 90% reduction in their need for bronchodilators. The control group continued to require all their medication. The FEV₁ test relates to the number of years of asthma. Therefore, with subjects who have suffered asthma for up to 60 years, dramatic improvements in lung pathology can not be expected in just 12 weeks. The tendency of the FEV₁ test itself to provoke the bronchospasm²⁶ is related to the years of asthma.
- The Buteyko group significantly improved their quality of life compared to the control group. Buteyko subjects experienced a 71% reduction in symptoms. The control group had no significant change in asthma symptoms.

In the management of asthma, The Buteyko Method offers a safe and effective alternative to asthma medications alone.

Other Research on the Buteyko Method

Similar findings to the Brisbane (1995) study, on the effectiveness of the Buteyko Method were found by the analysis of other groups of patients with asthma:

- Pilot study, Mater Hospital Brisbane 1993, of similar program where 50% of subjects reported significant reductions in symptoms and over 75% reported needing less medication.
- Data from Buteyko workshop, Adelaide February 1994 and Buteyko workshop, Melbourne, May 1994 were analysed by Assoc Professor Charles Mitchell who on 10th of October 1994 advised that 75% of participants reported that asthma symptoms occurred less frequently, and 90% had been able to reduce their medication.
- Study at Leningrad Institute of Pulmonology, 1968: 95% of patients improved. (patients had a range of conditions besides asthma)
- Study at the First Moscow Medical Institute of E.M. Sechenov, by Buteyko KP and Genina VA, 1981: reduction in symptoms and medication in all subjects with asthma.

What is the Buteyko Method?

The Buteyko Method was developed by medical scientist Konstantin P Buteyko from the 1950's in Russia.

On Buteyko programs, patients learn to recognise their overbreathing pattern. through breathing exercises they retrain and recondition their breathing to normal levels with a correct balance of the respiratory muscles. The program includes education about the effects of lifestyle and behaviour on breathing. The causes of hyperventilation, whether obvious or hidden, are addressed.

buteyko patients are instructed to follow National Asthma Campaign medication guidelines as described in the Asthma, a management Handbook. These advocate the use of bronchodilators on an as needed basis and preventative medication as prescribed by the doctor. The onset of asthma symptoms may be avoided or controlled by applying the Buteyko method. Exacerbations of asthma should be treated in accordance with the client's asthma management plan and in consultation with the doctor.

In the Brisbane Trial, the Buteyko Method achieved a significant reduction in asthma symptoms and an average 80-90% reduction in the need for bronchodilators. This was achieved without deterioration in lung function.

Buteyko techniques are effective in unblocking and chronically blocked noses and in restoring nasal breathing. As with other therapies results depend on access to a qualified Buteyko Practitioner and subsequent compliance and application of the principles in daily living.

Conclusion

Studies have shown that:

- o asthma medication management requires continual, critical review
- o a very significant proportion of asthma sufferers, overbreathe (hyperventilate) at rest
- o exercise and stress may further increase the ventilation rate
- o overbreathing can irritate and sensitise the airways in genetically susceptible individuals
- o lasting and profound improvement in asthma follows reduction in overbreathing
- o the Buteyko method is effective in reducing overbreathing (hyperventilation)
- o lung function is not compromised by use of the Buteyko Method
- o need for bronchodilators reduces by an average of 80-90% by use of the Buteyko Method
- o use of Buteyko Method is more effective in relief of asthma symptoms and improving quality of life than is drug therapy alone
- o conventional medical management did not further improve asthma in a group of 20 subjects in the research project
- o anti-inflammatory drugs are not fully effective in eliminating asthma symptoms
- o patients applying the Buteyko method experience many fewer symptoms and can significantly reduce steroid medication

Consequently the following facts must be shared by health professional with their patients:

- o hyperventilation and hypocapnia (low CO₂) are common in asthma
- o low CO₂ is detrimental to health
- o CO₂ is a naturally occurring bronchodilator
- o diagnostic testing of CO₂ and minute volume is recommended for all asthmatics when stable
- o breathing retraining by qualified Buteyko Practitioners is recommended for those with hyperventilation & hypocapnia

People with asthma begin to improve immediately after attending one hour lectures on the Buteyko method. Recognition of their overbreathing, and awareness of the harm caused by it can be immediately beneficial. Correct breathing has profound benefits to general and specific health.

References

- Downes S, article from airways, summarised in: The beta agonist debate-new insights. The Asthma Welfarer 1995, (vi), Vol 29: 1,3
- Bhagat, R et al. Salbutamol-induced increased airway responsiveness to allergen and reduced protection versus methacholine: Dose response. J Allergy Clin Immunol 1996;Volume Number 1, Part 1.
- Searce M, Taylor D, Print C et al. Regular inhaled salbutamol may exacerbate bronchial inflammation in patients with mild asthma. Thorax 1993;48:1060
- Asthma management handbook 1993; National Asthma Campaign, Melbourne, Vic
- O'Donnell S (1996) The drug therapy of asthma- what are the outstanding questions? Paper presented at National Asthma Conference Brisbane, Oct 1996
- Australian Adverse Reactions Bulletin. August 1994
- Woollard K. Australian Medicine 1997. Feb 3:5
- Serevent long-acting inhaler for asthma, Medical Sciences Bulletin, June 1994; Pharmaceutical Information Associates, Ltd.
- Clark CE et al. Respir Med 1993; 87:227-228
- New England Journal of Medicine, quoted in The Asthma Welfarer 1995, Vol 29: 1,3
- Salter, H. Asthma, its pathology and treatment, Churchill London 1860 P135
- Blauw G, Westendorp R, Asthma deaths in New Zealand: whodunnit? Lancet 1995;345:2-3
- Pearce N, Beasley R, Crane J, et al. End of the New Zealand asthma mortality epidemic. Lancet 1995;345:41-44
- Benson R, Perlman F. Clinical effects of epinephrine by inhalation. J Allergy 1948; 19:129-140
- Crane J, Pearce N, Flatt A et al. Prescribed fenoterol and death from asthma in New Zealand, 1981-1983: a case control study. Lancet 1989;1:917-22
- Bowler S, Green A, Mitchell C, Graham T. Buteyko breathing in asthma: a controlled trial. Mater hospital, South Brisbane, Qld. 1996 (paper available from Dr S Bowler, Mater Hospital, Sth Brisbane Qld 4101)
- Tobin, MJ et al. Breathing Patterns, 2. Diseased Subjects. Chest, 1983; 84:287-294
- Hornbrey, J. et al. CO₂ response & patterns of breathing in patients with symptomatic hyperventilation compared to asthmatic and normal subjects, European Respiratory Journal, 1988;1:846-852
- Clarke, PS. Asthmatic hyperventilation and emotion, Australian Family Physician. 1980; Vol 9, October
- Donnelly P. Exercise induced asthma: the protective role of CO₂ during swimming. Lancet 1991; 337, 179-180
- Van den Elshout F, van Herwaarden J, Folgering H. Effects of hypercapnia and hypocapnia on respiratory resistance in normal and asthmatic subjects. 1991; Thorax, 46:28-32
- Jain S, Talukdar B. Evaluation of yoga therapy programme for patients of bronchial asthma. Singapore Med J 1993; 34:306-308
- Hibbert G, Pilbury D. Demonstration and treatment of hyperventilation causing asthma. British Journal of Psychiatry 1998; 53:687-689
- Chan C, Woolcock A, Sullivan C. Nocturnal asthma: role of snoring and obstructive sleep apnea. Am Rev Respir Dis 1989;137:1502-4
- Naughton M, Bernard D, Rutherford R, Bradley T. Effect of continuous positive airway pressure on central sleep apnea and nocturnal PCO₂ in heart failure. Am J Respir Crit Care Med 1994; 1509: 1598-1604.
- Gayraud P, Orehak J, grimaud C, Charpin J. Bronchoconstrictor effects of a deep inspiration in patients with asthma Am Rev respir Dis, 1975; 111: 433-439
- Selroos O et al. Effect of early vs late intervention with inhaled corticosteroids in asthma. Chest 1988; 108: 1228-1234
- Woolcock, AJ and Read, J. Improvement in asthma not reflected in Forced Expiratory Volume. The Lancet, 1965, 2, 1323
- Lane, D.J. Changes in blood gas tensions and functional residual capacity in chronic asthmatics treated with disodium cromoglycate. British Medical Journal, 1969, 4, 710-712
- Clarke, PS. Effect of disodium cromoglycate on exacerbations of asthma produced by hyperventilation. British Medical Journal, 1971; 1, 317-319
- Graham T. Self management of asthma through normalisation of breathing. The role of breathing therapy. 1996. Paper distributed to delegates at National Asthma Conference, Brisbane Oct 1996. Available through Asthma Foundation of Qld or from the author, Ph:1800 638444
- Mitchell C, Bowler S, and Buteyko (Aust) Agreement for Buteyko Trial, Nov 1994
- Herxheimer, H.G. The management of bronchial asthma. London 1952
- Perera J. The hazards of heavy breathing. New Scientist, Dec 1988