

**A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO
BRONCHIAL ASTHMA AVAILABLE AS FULL-TEXT (SOME FREE AND
SOME REQUIRING FULL PAYMENT**

Selection of readings made by A/Prof Goh Lee Gan

Reading 1 - SNAP

Chong PN, Tan NC, Lim TK. Impact of the Singapore National Asthma Program (SNAP) on preventor-reliever prescription ratio in polyclinics. Ann Acad Med Singapore. 2008 Feb;37(2):114-7.

URL: <http://www.annals.sg/pdf/37VolNo2Feb2008/V37N2p114.pdf> (free full text)

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ABSTRACT

INTRODUCTION: The Singapore National Asthma Program (SNAP) was launched in 2001 to address the high burden of asthma in Singapore. One component of the SNAP was directed at improving asthma control in the community by promoting preventive treatment with inhaled corticosteroids. This paper describes the program on prescription patterns of preventor and reliever medication for asthma in the polyclinics.

MATERIALS AND METHODS: We monitored the prescription pattern for asthma as the preventor-reliever (PR) drug ratio. The PR ratio was employed both as a positive feedback tool and as a key performance indicator (KPI) for the program. Individual clinics were encouraged to implement locally relevant and effective initiatives to increase the KPI and facilitate this process. The different methods included chronic care models, multidisciplinary teams, enhanced primary care clinics, pre-counselling screening, decision support tools, self-management support, a patient information system and community education.

RESULTS: In the course of the program, the case load for asthma in the polyclinics increased by 31%. During the same period, the average PR ratio increased significantly from 0.68 to 1.80 ($P < 0.001$).

CONCLUSIONS: A simple audit and positive feedback program based on PR ratios, accompanied by sustained local quality improvement cycles has been associated with a significant shift in the drug treatment of asthma away from episodic quick relief medication towards long-term daily preventive treatment with inhaled steroids in polyclinics.

Reading 2 - Quality of Asthma Care

Klomp H, Lawson JA, Cockcroft DW, Chan BT, Cascagnette P, Gander L, Jorgenson D. Examining asthma quality of care using a population-based approach. CMAJ. 2008 Apr 8;178(8):1013-21.

URL: <http://www.cmaj.ca/cgi/reprint/178/8/1013> (free full text)

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ABSTRACT

BACKGROUND: Asthma accounts for considerable burden on health care, but in most cases, asthma can be controlled. Quality-of-care indicators would aid in monitoring asthma management. We describe the quality of asthma care using a set of proposed quality indicators.

METHODS: We performed a retrospective cross-sectional study using health databases in Saskatchewan, a Canadian province with a population of about 1 million people. We assessed 6 quality-of-care indicators among people with asthma: admission to hospital because of asthma; poor asthma control (high use of short-acting beta-

agonists, admission to hospital because of asthma or death due to asthma); no inhaled corticosteroid use among patients with poor control; at least moderate inhaled corticosteroid use among patients with poor control; high inhaled corticosteroid use and use of another preventer medication among patients with poor control; and any main preventer use among patients with poor control. We calculated crude and adjusted rates with 95% confidence intervals. We tested for differences using the chi² test for proportions and generalized linear modelling techniques.

RESULTS: In 2002/03, there were 24 616 people aged 5-54 years with asthma in Saskatchewan, representing a prevalence of 3.8%. Poor symptom control was observed in 18% of patients with asthma. Among those with poor control, 37% were not dispensed any inhaled corticosteroids, and 40% received potentially inadequate doses. Among those with poor control who were dispensed high doses of inhaled corticosteroids, 26% also used another preventer medication. Hospital admissions because of asthma were highest among those aged 6-9 years and females aged 20-44 years. Males and those in adult age groups (predominantly 20-44 years) had worse quality of care for 4 indicators examined.

INTERPRETATION: Suboptimal asthma management would be improved through increased use of inhaled corticosteroids and preventer medications, and reduced reliance on short-acting beta-agonist medications as recommended by consensus guidelines.

Reading 3 - Mild Asthma

Papi A, Canonica GW, Maestrelli P, Paggiaro P, Olivieri D, Pozzi E, Crimi N, Vignola AM, Morelli P, Nicolini G, Fabbri LM; BEST Study Group. Rescue use of beclomethasone and albuterol in a single inhaler for mild asthma. *N Engl J Med.* 2007 May 17;356(20):2040-52.

URL: <http://content.nejm.org/cgi/content/abstract/356/20/2040> (payment required)

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ABSTRACT

BACKGROUND: Treatment guidelines recommend the regular use of inhaled corticosteroids for patients with mild persistent asthma. We investigated whether the symptom-driven use of a combination of beclomethasone dipropionate and albuterol (also known as salbutamol) in a single inhaler would be as effective as the regular use of inhaled beclomethasone and superior to the as-needed use of inhaled albuterol.

METHODS: We conducted a 6-month, double-blind, double-dummy, randomized, parallel-group trial. After a 4-week run-in, patients with mild asthma were randomly assigned to receive one of four inhaled treatments: placebo twice daily plus 250 microg of beclomethasone and 100 microg of albuterol in a single inhaler as needed (as-needed combination therapy); placebo twice daily plus 100 microg of albuterol as needed (as-needed albuterol therapy); 250 microg of beclomethasone twice daily and 100 microg of albuterol as needed (regular beclomethasone therapy); or 250 microg of beclomethasone and 100 microg of albuterol in a single inhaler twice daily plus 100 microg of albuterol as needed (regular combination therapy). The primary outcome was the morning peak expiratory flow rate.

RESULTS: In 455 patients with mild asthma who had a forced expiratory volume in 1 second of 2.96 liters (88.36% of the predicted value), the morning peak expiratory flow rate during the last 2 weeks of the 6-month treatment was higher ($P=0.04$) and the number of exacerbations during the 6-month treatment was lower ($P=0.002$) in the as-needed combination therapy group than in the as-needed albuterol therapy group, but the values in the as-needed combination therapy group were not significantly different from those in the groups receiving regular beclomethasone therapy or regular combination therapy. The cumulative dose of inhaled beclomethasone was lower in the as-needed combination therapy group than in the groups receiving regular beclomethasone therapy or regular combination therapy ($P<0.001$ for both comparisons).

CONCLUSIONS: In patients with mild asthma, the symptom-driven use of inhaled beclomethasone (250 microg) and albuterol (100 microg) in a single inhaler is as effective as regular use of inhaled beclomethasone (250 microg twice daily) and is associated with a lower 6-month cumulative dose of the inhaled corticosteroid.

Reading 4 - Mild Persistent Asthma

American Lung Association Asthma Clinical Research Centers, Peters SP, Anthonisen N, Castro M, Holbrook JT, Irvin CG, Smith LJ, Wise RA. Randomized comparison of strategies for reducing treatment in mild persistent asthma. *N Engl J Med.* 2007 May 17;356(20):2027-39.

URL: <http://content.nejm.org.libproxy1.nus.edu.sg/cgi/content/abstract/356/20/2027> (payment required)

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ABSTRACT

BACKGROUND: Treatment guidelines recommend the use of inhaled corticosteroids in patients with asthma who have persistent symptoms and the “stepping down” of therapy to the minimum needed to maintain control of asthma. Whether patients with asthma that is well controlled with the use of inhaled corticosteroids twice daily can receive a step-down treatment with once-daily montelukast (our primary hypothesis) or once-daily fluticasone propionate plus salmeterol (our secondary hypothesis) has not yet been determined.

METHODS: We randomly assigned 500 patients with asthma that was well controlled by inhaled fluticasone (100 microg twice daily) to receive continued fluticasone (100 microg twice daily) (169 patients), montelukast (5 or 10 mg each night) (166 patients), or fluticasone (100 microg) plus salmeterol (50 microg) each night (165 patients). Treatment was administered for 16 weeks in a double-blind manner. The primary outcome was the time to treatment failure.

RESULTS: Approximately 20% of patients assigned to receive continued fluticasone or switched to treatment with fluticasone plus salmeterol had treatment failure, as compared with 30.3% of subjects switched to montelukast. The hazard ratio for both comparisons was 1.6 (95% confidence interval, 1.1 to 2.6; P=0.03). The percentage of days on which patients were free of asthma symptoms (78.7 to 85.8%) was similar across the three groups.

CONCLUSIONS: Patients with asthma that is well controlled with the use of twice-daily inhaled fluticasone can be switched to once-daily fluticasone plus salmeterol without increased rates of treatment failure. A switch to montelukast results in an increased rate of treatment failure and decreased asthma control; however, patients taking montelukast remained free of symptoms on 78.7% of treatment days.

Reading 5 - Telephone based asthma management for previously admitted patients

Donald KJ, McBurney H, Teichtahl H, Irving L. A pilot study of telephone based asthma management. *Aust Fam Physician*. 2008 Mar;37(3):170-3.

URL: <http://www.racgp.org.au/afp/200803/22984> (free full text)

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ABSTRACT

BACKGROUND: Self management programs have been advocated for adults who have recently been admitted to hospital or have recently attended an emergency department because of asthma. A new telephone based approach has already been trialled for the management of a number of other chronic conditions. This study sought to determine the effect of a telephone based asthma management program for adults with asthma.

METHODS: Adults with one or more previous admissions for asthma to either or both of two tertiary hospitals between 1 May 2001 and 30 November 2003 were invited to participate. All participants received one face-to-face session with an asthma educator. Participants were randomised to intervention (six telephone calls over 6 months) or control (usual care) groups. Measures of health care utilisation and morbidity were collected weekly for 12 months.

RESULTS: Seventy-one adults (54 females) with a mean age of 36.2 years were recruited to the study. Twenty hospital re-admissions were recorded for the control group and one for the intervention group at 12 months. Re-admission was significantly associated with allocation to control group ($p=0.05$). The control group was significantly more likely to report being woken by asthma on more than half the nights of the week ($p=0.03$).

DISCUSSION: Telephone based self management intervention results in clinically important reductions in hospital re-admission in adults previously hospitalised with asthma

Reading 6 - Older people with asthma

Cousens NE, Goeman DP, Douglass JA, Jenkins CR. The needs of older people with asthma. *Aust Fam Physician*. 2007 Sep;36(9):729-31.

URL: <http://www.racgp.org.au/afp/200709/18551> (free full text)

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ABSTRACT

BACKGROUND: Asthma is prevalent among elderly Australians but is often misdiagnosed and undertreated. Asthma presents with the same clinical features in the elderly as in the younger population.

OBJECTIVE: This article identifies current knowledge about the needs of elderly people with asthma, as well as the knowledge gaps currently existing in this area of health care.

DISCUSSION: A significant proportion of elderly people with asthma go undiagnosed. Elderly patients under-report symptoms and attribute breathlessness to age and other comorbidities. Other difficulties include impaired perception of asthma severity, poor medication adherence, physical disability, cognitive dysfunction, and a passive self management approach. These all contribute to poorer asthma outcomes among the elderly. The management of asthma among the elderly is likely to improve if specific needs are addressed with tailored educational interventions and appropriate care.

Reading 7 - Bronchial Thermoplasty

Cox G, Thomson NC, Rubin AS, Niven RM, Corris PA, Siersted HC, Olivenstein R, Pavord ID, McCormack D, Chaudhuri R, Miller JD, Laviolette M; AIR Trial Study Group. Asthma control during the year after bronchial thermoplasty. *N Engl J Med.* 2007 Mar 29;356(13):1327-37.

URL: <http://content.nejm.org/cgi/content/abstract/356/13/1327> (payment required)

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ABSTRACT

BACKGROUND: Bronchial thermoplasty is a bronchoscopic procedure to reduce the mass of airway smooth muscle and attenuate bronchoconstriction. We examined the effect of bronchial thermoplasty on the control of moderate or severe persistent asthma.

METHODS: We randomly assigned 112 subjects who had been treated with inhaled corticosteroids and long-acting beta2-adrenergic agonists (LABA) and in whom asthma control was impaired when the LABA were withdrawn to either bronchial thermoplasty or a control group. The primary outcome was the frequency of mild exacerbations, calculated during three scheduled 2-week periods of abstinence from LABA at 3, 6, and 12 months. Airflow, airway responsiveness, asthma symptoms, the number of symptom-free days, use of rescue medication, and scores on the Asthma Quality of Life Questionnaire (AQLQ) and the Asthma Control Questionnaire (ACQ) were also assessed.

RESULTS: The mean rate of mild exacerbations, as compared with baseline, was reduced in the bronchial-thermoplasty group but was unchanged in the control group (change in frequency per subject per week, -0.16 ± 0.37 vs. 0.04 ± 0.29 ; $P=0.005$). At 12 months, there were significantly greater improvements in the bronchial-thermoplasty group than in the control group in the morning peak expiratory flow (39.3 ± 48.7 vs. 8.5 ± 44.2 liters per minute), scores on the AQLQ (1.3 ± 1.0 vs. 0.6 ± 1.1) and ACQ (reduction, 1.2 ± 1.0 vs. 0.5 ± 1.0), the percentage of symptom-free days (40.6 ± 39.7 vs. 17.0 ± 37.9), and symptom scores (reduction, 1.9 ± 2.1 vs. 0.7 ± 2.5) while fewer puffs of rescue medication were required. Values for airway responsiveness and forced expiratory volume in 1 second did not differ significantly between the two groups. Adverse events immediately after treatment were more common in the bronchial-thermoplasty group than in the control group but were similar during the period from 6 weeks to 12 months after treatment.

CONCLUSIONS: Bronchial thermoplasty in subjects with moderate or severe asthma results in an improvement in asthma control.

Reading 8 - Human metapneumovirus and Chlamydia pneumoniae and childhood asthma

Ong BH, Gao Q, Phoon MC, Chow VT, Tan WC, Van Bever HP. Identification of human metapneumovirus and Chlamydia pneumoniae in children with asthma and wheeze in Singapore. *Singapore Med J.* 2007 Apr;48(4):291-3.

URL: <http://smj.sma.org.sg/4804/4804a3.pdf> (free full text)

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ABSTRACT

INTRODUCTION: The aim of our study was to determine if human metapneumovirus (hMPV) and Chlamydia pneumoniae (CP) could be detected in Singaporean asthmatic children and wheezing infants during an acute asthma attack.

METHODS: The study was performed on 30 older children (mean age 9.8 years) and 30 young children (mean age 1.3 years), who were admitted with an acute exacerbation of wheezing. Nasopharyngeal aspirates were collected and tested by polymerase chain reaction for CP, and for a panel of viruses (hMPV, respiratory syncytial virus, adenovirus, influenza virus types A and B, parainfluenza virus types 1 and 3, and rhinovirus).

RESULTS: hMPV was isolated in eight out of 60 children (13.3 percent), while CP was isolated in two cases. Overall, 48/60 (80 percent) samples were positive for the presence of viruses.

CONCLUSION: In most of the children admitted because of acute wheezing, a virus could be detected. hMPV was isolated for the first time in Singapore in children who were admitted with an acute asthma attack.

Reading 9 - Mycoplasma pneumoniae and asthma

Nisar N, Guleria R, Kumar S, Chand Chawla T, Ranjan Biswas N. Mycoplasma pneumoniae and its role in asthma. *Postgrad Med J.* 2007 Feb;83(976):100-4.

URL: <http://pmj.bmj.com/cgi/content/full/83/976/100> (payment required)

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ABSTRACT

Mycoplasma pneumoniae (M pneumoniae), primarily recognised as a causative agent of community-acquired pneumonia has recently been linked to asthma. An infection with M pneumoniae may precede the onset of asthma or exacerbate asthma symptoms. Chronic infection with M pneumoniae has been suspected to play a part in some patients with asthma. The role of immunoglobulin E-related hypersensitivity and induction of T helper type 2 immune response leading to inflammatory response in M pneumoniae-infected patients with asthma have also been proposed. Use of macrolides in reducing asthma symptoms only in M pneumoniae-infected patients supports the use of macrolides in patients with asthma having M pneumoniae infection. As macrolides are both antimicrobial and anti-inflammatory drugs, the therapeutic role of their biphasic nature in reducing asthma symptoms needs further attention in clinical research.

Reading 10 - Immediate food sensitivity in Singapore

Thong BY, Cheng YK, Leong KP, Tang CY, Chng HH. Immediate food hypersensitivity among adults attending a clinical immunology/allergy centre in Singapore. *Singapore Med J.* 2007 Mar;48(3):236-40.

URL: <http://smj.sma.org.sg/4803/4803a10.pdf> (free full text)

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ABSTRACT

INTRODUCTION: The patient characteristics, clinical features and causative foods in 74 consecutive adult patients with immediate food hypersensitivity were studied.

METHODS: A retrospective review of 74 consecutive adults who presented during the study period from July 1, 1994 to April 30, 2002 was performed.

RESULTS: There were 35 male and 39 female patients, with a mean age of 36.3 +/- 10.9 (range, 19-66) years. The most common causative foods were seafood crustaceans, molluscs and bird's nest. Prawn and crab were the most commonly implicated crustacean, and limpet the commonest culprit mollusc. The main symptoms were periorbital angioedema (64.9 percent), dyspnoea/wheezing (44.6 percent) and urticaria (44.6 percent). 66 percent of the patients developed anaphylaxis. 34 (45.9 percent) had concomitant allergic rhinoconjunctivitis, asthma, eczema or combinations of these atopic diseases. Only six (8.1 percent) patients had a family history of food allergy. Skin prick tests (SPT) to commercially-prepared food allergens were positive in 22 of 36 patients (61.1 percent) tested. SPT to the fresh, cooked or canned food products were positive in 11 of 20 (55 percent) cases where the food allergen was not commercially available. Open food challenges were required for diagnosis in two patients who had negative SPT.

CONCLUSION: The most common food allergens in our patients were seafood crustaceans, molluscs and bird's nest. More than half of the patients had concomitant allergic rhinitis, asthma and/or eczema. The pattern of food allergy in Singapore differs from Caucasian populations, likely to be because of different regional dietary patterns and methods of food preparation.