First International Primary Care Respiratory Conference
Cambridge, June 2000

The GPIAG Annual Conference in June attracted many abstracts from around the world. In this issue we publish 25 selected abstracts; a separate conference report (*Prim. Care Respir. J.* 2000; 9(2)(Suppl.) S1-28) includes a further 17 papers and reports.

A01 The impact of asthma on primary care groups (PCGs)

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The recent reorganisation of primary care and creation of PCGs has not been accompanied by asthma data, especially in relation to cost, which are applicable at local level. Generating data of this sort demonstrates an ongoing need for asthma to be a local priority issue, highlighting continuing inequalities in asthma care and patchy provision of initiatives, such as self-management programmes, which may have a positive benefit on overall costs.

We have modelled a standardised PCG, Providence PCG, serving a population of exactly 100,000. Our estimates are based on a UK population of 59 million, where 1.5 million children and 1.9 million adults have asthma. The statistical evidence from which notional data on Providence PCG have been extrapolated is featured in *The National Asthma Audit 1999/2000*, published by the National Asthma Campaign.

Modelling reveals that Providence PCG serves 6109 people with asthma, including 2929 children. A total of 4250 patients consult the PCG about their asthma every year. The combined cost of GP and practice nurse consultations for asthma in Providence PCG is £85,000 per year, and the annual cost of prescriptions for asthma exceeds £1 million.

We believe that these data confirm that the increasing prevalence of asthma will have a significant impact on PCG budgets and resources. Good management of asthma by PCGs, in partnership with patients, can reduce this burden. Asthma should feature as a high priority on the PCG agenda. ■

A02 School asthma policies: Where are we now? Summary results from a National Asthma Campaign postal survey of Local Education Authorities, teachers, children with asthma and their parents

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Affecting one in seven children in the UK, asthma is the most common longterm medical condition that teachers must manage in their classrooms. Critical issues that need to be addressed include immediate access to inhalers, school absences, disturbed sleep, emergency procedures, and preparation for sports activities. In 1996, after extensive campaigning by the National Asthma Campaign and other charities, the Department of Education and Employment and the Department of Health jointly produced the good practice guide *Supporting Pupils with Medical Needs*. This guidance encouraged Local Education Authorities (LEAs) and schools to develop policies for children with conditions such as asthma, diabetes, epilepsy and anaphylaxis. Three years later, the National Asthma Campaign surveyed children with asthma, their parents, teachers, and LEAs through posted questionnaires to see whether school conditions had improved.

Respondents reported that: 30% of children with asthma did not have immediate access to their inhaler; 32% of parents were uncomfortable with the asthma knowledge of their child's teacher; only 39% of teacher received training on asthma; and 42% of Local Education Authorities did not have an asthma policy. There was also wide variation in guidance provided by Local Education Authorities to schools to support children with asthma. Launched in September 1999, the National Asthma Campaign's Danger Zone report highlights key findings and offers solutions to make schools safer for children with asthma. ■

A03 Post-marketing surveillance of eformoterol in general practice

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Background: Eformoterol, a long acting selective β$_2$-agonist for reversible airways obstruction, (including nocturnal asthma and preventing exercise-induced bronchospasm) in patients requiring longterm regular bronchodilator therapy, was introduced in January 1996. It is not recommended for those aged <18 years. It has rapid onset of action (1–3 minutes) and long duration (12 hours). The safety of this drug was monitored in patients who were amongst the first to be prescribed eformoterol by general practitioners in England.
Methods: In Prescription-Event Monitoring studies exposure data are obtained from dispensed prescriptions, (issued between January 1996 and March 1998) and outcome data from postal questionnaires sent to the GP who initially prescribed eformoterol. Event rates were expressed as number of first reports of an event/1000 patient months of exposure (ID).
Results: 6693 questionnaires were returned, of these 5777 contained clinical data. 2535 (44%) patients were male; mean age (standard deviation) 55 (19) years and 3212 (56%) were female mean age 51 (19) years. 258 patients were aged <18 years. The age was not recorded for 717 (12%) patients. The most frequent adverse events given as the reason for stopping treatment and also reported as suspected ADRs (excluding unspecified side effects) were tremor, palpitations and cramp. These events were

amongst the events with the highest rate in the first month of treatment (tremor 5.5; palpitations 4.5; cramp 4.3). The only other events with event rates >4/1000 in the first month were, headache/migraine (5.7); nausea/vomiting (4.9); and dizziness (4.1). 30 women took eformoterol during the first trimester of pregnancy, two in the second and one during the third. **Conclusion:** No previously unrecognised adverse events associated with the use of eformoterol, were detected during its initial use in general practice including during pregnancy and in those aged <18 years. ■

A04 Global initiative in asthma care

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Asthma is a global healthcare problem. The gap between theory and practice is common to all healthcare systems and countries of the world. The use of decision support software and asthma audit materials within the UK is linked to improvement in patient outcomes. A pilot project is ongoing to assess the viability of the process to health professionals from throughout the world. Clinicians from various countries interested in improving asthma management have agreed to pilot the materials. Information from one hospital-based Portuguese clinician who completed an audit on 31 consecutive asthmatic patients seen in an outpatient department is reported. Using an electronic recording booklet he completed a questionnaire and clinical assessment on all 31 patients. 61% of the sample were aged 45–74 years. There were no patients over 74 and only 7% of the sample were below 16 years. The ratio of males to females was 1:2.44. 81% were on prophylactic medication and 32% had experienced an attack in the year previous to the audit. Routine review was high, 97% having been seen at least once during the year, 71% possessed a self-management plan. However, only 3% possessed a home peak flow meter. Although 67% had had their inhaler technique checked in the previous year only 37% had had their peak flow checked. The high incidence of attack compared with a UK general practice sample may be indicative of the severity of asthma patients seen in an outpatient clinic. The consecutive sample may also have selected more frequent users of the service and therefore more severe asthmatics. The service offered to general practitioners provides for a patient sample randomly selected from the practice asthma register. A service, incorporating a full repertoire of materials, will be developed and displayed on an Internet web site. Any process that encourages use of GINA and international guidelines to improve management should be encouraged. ■

A05 Asthma care by nurse practitioners in the USA

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Successful asthma management requires correct medication, systematic followup, patient education and self-management. Specialist training empowers health professionals to optimise care. The National Asthma and Respiratory Training Centre, in collaboration with the American Academy of Nurse Practitioners Foundation, is currently providing specialist asthma education for 202 nurse practitioners from throughout the USA. Participants will be surveyed on their level of input to asthma care before and after the course. 131 (65%) from 36 states responded to the preliminary questionnaire. Results show that participants are highly educated, 122 (93%) to Masters level, and 73 (56%) work as Family Nurse Practitioners. The majority (69 [53%]) are associated with private practice or a freestanding primary care clinic. 130 (99%) currently work with asthmatics and 119 (91%) write and sign asthma prescriptions. However, only 89 (68%) measure peak flow (PF); 82 (63%) check inhaler technique; 74 (56%) teach use of a home PF meter and diary; and 61 (47%) provide written self-management plans, on any regular basis. Many have not compiled an asthma list (90 [69%]); established follow-up procedures (56 [43%]), or evaluated their asthma management (60 [46%]). Appropriate assessment and diagnosis involves a detailed history and lung function measurement. An asthma list is required to carry out regular follow-up to monitor response, adjust treatment and reinforce education. Specialist asthma training should encourage practitioners to combine effective drug usage with a longterm preventative approach. ■

A06 A survey of children who discontinue GP asthma care

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Introduction: General practitioners are encouraged to provide structured care and to maintain registers of patients with asthma, including children. Some children fail to attend for routine follow-up and some discontinue prescribed treatment without consultation with their GP. This study investigates the asthma-related morbidity and the reasons for discontinuation of asthma care in these children in a single general practice in Gloucestershire, UK.
Methods: A postal questionnaire was sent to the parents of all children aged 15 or less with a diagnosis of asthma who had received no prescription for asthma-related medication nor consulted with an asthma-related problem in the previous 12 months.
Results: 200 children from a base population of 1306 had received a diagnosis of asthma (15.3%). Of these, 88 had received no prescribed medication or asthma follow-up in the last year (44.0% of asthmatics, 6.7% of base population). 66 questionnaires were returned (response rate 75.0%), 33.3% or respondents did not agree with the previous diagnosis of asthma, and a further 16.7% were unsure. Of these who agreed with the previous diagnosis of asthma 45.7% felt that the condition had now resolved, and a further 28.6% were unsure. 55.6% felt that their child's symptoms were now too mild to warrant treatment. Very low levels of unease about previous medication (1.5%), lack of efficacy of prescribed medication (1.5%) or use of non-prescribed remedies (9.1%) were reported. Current asthma-related morbidity was low; most respondents reported symptom frequency as 'rarely' or 'never' for cough (98.4%), wheeze (100%), chest

tightness (97%) or shortness of breath (95.4%).
Conclusions: A high proportion of children labelled as asthmatic were not receiving current treatment or follow-up for this condition, and a low level of asthma-related morbidity was found in this group. In one third of cases there was a lack of acceptance of the previously applied diagnostic label of asthma. Almost half who agreed that their child may have had asthma felt that it had now gone, and over half felt that current symptoms were too mild to warrant treatment. The majority of children not attending for asthma follow-up were not currently in need of it. ■

A07 The impact of respiratory symptoms on healthcare utilisation in children

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Introduction: This study examines the impact of respiratory symptoms on healthcare utilisation in two general practice populations. It forms part of the Wythenshawe Community Asthma Project, a longterm prospective study looking at the natural history of asthma.
Rationale: To quantify the healthcare utilisation of children with differing degrees of respiratory illness.
Method: A random sample of 713 children was selected from 2659 respondents to a postal questionnaire survey carried out in 1993, stratified into four groups according to the number of positive responses to five key questions. These groups were used to indicate the likelihood of asthma diagnosis. A search was made of practice records, covering a two year period, which included all aspects of primary and secondary care.
Results: A significant positive association was found between the number of positive responses and surgery consultations, home visits and number and cost of prescriptions. For example, general practice consultations increased from a mean of 4.96 (no positive responses) to 9.14 (four or more positive responses) per child ($p<0.001$). There was also a significant ($p=0.01$) increase in the percentage of children having a respiratory, secondary care outpatient consultation or inpatient admission as the number of positive responses increased. Of children with three or more positive responses, 8.1% ($n=31$) had no record of any contact with either primary or secondary respiratory care during the two-year period.
Conclusion: As likelihood of asthma diagnosis increased in this population more demand was made on healthcare resources in the primary and secondary sector. The questionnaire scoring system used in this study provided a useful prediction of demand for primary and secondary healthcare, which could be applied to other populations. ■

A08 Strong evidence for smoking addiction during pregnancy and the development of childhood asthma: A new evidence-based agenda to reduce childhood asthma into the 21st Century

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With an estimated 1.5 million children in the UK (National Asthma Campaign, 1999) presently having asthma symptoms requiring medical treatment, the National Asthma Campaign's strong underlying theme for the poster, will be that a strong concerted effort is needed by both government and primary healthcare professionals alike, to address the strong medical evidence that passive smoking during pregnancy has a detrimental impact on the unborn child with there being an increased risk of childhood asthma developing. It is felt that this medical-based evidence can be taken forward as a starting point for setting an international agenda for both primary care professionals and governments to reduce this growing prevalence of childhood asthma into the 21st Century. Drawing from a recent National Asthma Campaign Literature Review on 'Smoking & Asthma', 1015 detailed international studies of medical evidence will be presented (aims, methods and conclusions) to highlight this strong causal relationship. Evidence will be taken, for instance from the research of Dezateux, 1999; Cantani, 1998; SIDRIA, 1998; Hu, 1994 and Stick, 1996. For example, one such study that will be presented is that of Hu (1994) who examines the association between maternal smoking during pregnancy and childhood asthma using questionnaire-based methodologies among 705 fifth grade public school children in Chicago. The study firmly concludes that there was a high prevalence of asthma and wheezing among the students and suggests that maternal smoking during pregnancy may increase the risk of asthma in children. ■

A09 Survey of GP asthma care in England in 1998

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Introduction: CFC-free Ventolin (Ventolin Evohaler) was launched on the English market on 18 January 1999. The Drug Safety Research Unit, at the request of the Medicines Control Agency, performed a prospective observational study to monitor this introduction.
Rationale: A large safety study that also surveyed the management of asthma by GPs in England who prescribed Ventolin MDI during 1998.
Methods: All GPs in England were asked to recruit regular users (at least two prescriptions in 1998) of Ventolin MDI. Questionnaires were sent to volunteer GPs in January 1999 asking for patient demographics, indication for prescribing, length of treatment, severity of indication, regular use of other medication for the indication, use of other MDIs, hospital admissions in 1998 and use of courses of high dose oral steroids for asthma. GPs were reimbursed administrative costs. A validation exercise for 500 patients has been performed.
Results: Response rate 88.2%, 11,132 valid patients, equal numbers by sex, median age 40 years (inter-quartile range 18–62), 14.6% aged 12 years or below, even geographical spread. Indication: asthma, 94%; COPD, 4%. Severity of asthma: mild, 47%; moderate 44%; severe, 8%. Increased severity of asthma was associated with greater duration of disease (>10 years: mild, 32%; moderate, 47%; severe, 65%); hospital admissions (0.4%, 3.7%, 22.5%); use of other regular treatment for asthma (49%, 91%, 97%); intermittent courses of oral steroids (8%, 36%, 77%) and use of other MDIs (46%, 83%, 87%).
Conclusions: The sample was representative of all asthmatic patients in England. The results suggest

that the management of asthma by GPs in England in 1998 was in line with BTS guidelines. ■

A10 What do asthmatics know about asthma?
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This study investigated how much asthmatics felt they knew about asthma and how to control it. A similar study was conducted in 1987. Current results are compared with the results of more than ten years ago.

Patients aged between 15 and 40 years were recruited in Dunedin, New Zealand, either while renewing prescriptions for asthma from their doctor, or filling them at randomly selected pharmacies. They were questioned about their knowledge of asthma.

Approximately 25% of patients did not know the difference between their reliever and preventer medication, the nature of asthma, or the action of their medication. 12% of the sample continued to smoke >10 cigarettes/day. Only 9% used their peak flow meter daily, and 54% of those who had meters used them no more than once or twice/year. This is an improvement since the previous study!

Conclusions: An unacceptable proportion of patients still did not have basic knowledge of their condition, but overall it can be said that asthmatics' knowledge of asthma and its treatment is better now than in 1987. ■

A11 Conversion to CFC-free beclomethasone metered dose inhalers – The patients' perspective
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Introduction: In the UK the process of converting patients to CFC-free metered dose inhalers (MDIs) has started. For salbutamol there are few differences between the inhalers, and no dose adjusting is required. For beclomethasone, the most widely used steroid inhaler, the issues are more complex. The only available preparation, Qvar, has a smaller particle size and is released more slowly. There is better lung deposition, especially to smaller airways: it is stated that Qvar is equally effective at half the dose. Many practices therefore are converting patients to Qvar.
Rationale: This audit seeks to establish the patients perceptions on the effect of being changed from older preparations to CFC-free beclomethasone MDIs.
Methods: All patients taking Qvar were identified by computer search of prescribing data. They had been changed to CFC-free opportunistically at an appointment with the doctor and respiratory trained practice nurse. Those who had been established for more than two weeks and were taking the treatment regularly were included. A telephone interview asked if they had any problems with the new devices, about changes in their asthma control, their use of reliever medication, the ease of use and the taste.
Results: 46 patients were included in the study. Only four registered any problems: inhaler technique in three and one seriously disliked the taste. 15% wished for more information. The mean dose of beclomethasone was 41% after conversion to Qvar. Some patients reduced the dose of beclomethasone by up to 80% due to confusion between the number of puffs and different strengths of the MDIs, but there was no association between % reduction of dose and symptom control or use of relievers medication.
Conclusions: Changing patients opportunistically in primary care to CFC free beclomethasone MDIs was not associated with major problems. The importance of clear communication about dosage is emphasised. ■

A12 Integrated approach to chronic obstructive pulmonary disease management in primary care
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Introduction: Following the 1997 publication of the British Thoracic Society (BTS) guidelines on chronic obstructive pulmonary disease (COPD) we devised a three step diagnostic and assessment service at our three partner practice with a population of 8000 patients.
Rationale: The aims of the plan being to obtain an accurate diagnosis via spirometry pre and post-bronchodilator, optimise lung function, avoid unnecessary use of medication and target smokers for formal smoking cessation advice.
Results: Of the 175 patients seen so far 23 (13%) have been identified as mild COPD (FEV_1 60–80% of predicted), 56 (32%) as moderate COPD (FEV_1 40–59% of predicted), 23 (13%) severe COPD (FEV_1 <40% of predicted), 40 (22%) asthma, 26 (14%) normal lung function and 7 (4%) with restrictive lung function. Smoking history taken from the 175 patients revealed 100 ex-smokers, 44 current smokers and 31 who had never smoked.
Conclusion: Having obtained an accurate diagnosis and severity of COPD we hope that the subsequent management can be optimised as per BTS guidelines and the current smokers can be targeted for formal smoking cessation advice. ■

A13 Quality review of asthma websites
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Introduction: The Internet is increasingly used by patients and healthcare professionals as a source of information about asthma. There are 329,160 (any language) or 120,447 (English) websites where 'asthma' is mentioned in the title, 4765 (3587 English) with a domain name specifying asthma, and 709,350 (219,483 English) asthma patient websites (Alta Vista September 1998). There is a need to review which sites are accurate, useful and of quality to help guide patients and professionals.
Method: A 'top 16' sites were selected which were English language, linked to other sites and frequently listed by USA or UK search engines under the topics 'asthma education', 'research' and 'information'. A multidisciplinary group of professionals reviewed each site using OMNI guidelines modified to include useful facilities such as 'downloads' or 'interactive'.
Results: The general standard of sites was good with some rated as 'outstanding' with a comprehensive range of patient and professional support materials.

Some sites could benefit from improvement to layout, frequency of updating and ease of links to other sites.
Conclusion: Patients and healthcare professionals should work together to review, accredit and recommend good Internet sites. ■

A14 Patients' goals in asthma

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Introduction: There is a movement towards 'concordance' i.e. shared goals in medicine taking. However, little is known of the goals of people with asthma.
Method: Two semi-structured interview surveys. The first study is a semi-structured interview survey of 23 adults with asthma from a single general practice in Glasgow. The second is a semi-structured interview survey of 48 adults with asthma from eight practices in Tayside.
Results: A hypothetical model of the route to behavioural change described by people with asthma has been constructed. If people are aware that asthma affects their life they may be motivated to change their asthma management. They may set goals and achieve behavioural change. However, there are barriers to behavioural change at all points along the route.
Conclusion: Although some are motivated to change their behaviour, there are many difficulties encountered by people with asthma on the route to behavioural change. ■

A15 Third National Epidemiological Survey: Trends in asthma morbidity and asthma management in australian primary school children

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Introduction: The National Asthma Campaign (NAC), a coalition of Australian asthma care stakeholders formed in 1990, conducts mass media initiatives to increase asthma awareness and contributes to clinician education. Serial epidemiological surveys were conducted across Australia to monitor its effects.
Methods: Three surveys were conducted of primary school children aged 5–12 in six major centres, with random samples of 8753 children in 1990, 10,106 in 1993, and 11,762 in 1998. Response rates were 84%, 84%, 64%. Parents reported on their children's asthma symptoms, diagnosis, medication and management.
Results: Rates of asthma symptoms were similar across surveys, with 29–30% of children reporting lifetime wheeze, and 17–21% wheeze in the previous year. In those with probable asthma (diagnosed asthma or frequent symptoms), reported more often in 1993 (23.2%) than in 1990 or 1998 (20.7%, 19.5%), use of regular reliever bronchodilator declined over time (78%, 74%, 57%) and preventer medication increased in 1993, but declined in 1998 (32%, 41%, 36%). Having lung function measured by a physician in the previous year declined ($p<0.01$) to 1990 levels (28%, 38%, 26%), as did owning a peak flow meter (15%, 27%, 13%: $p<0.001$ compared to 1993). Having a written asthma action plan increased (17%, 22%, 27%; χ^2 trend=289, $p<0.0001$).
Conclusions: Use of written asthma action plans has increased, although Australian children seem to be using peak flow meters and having their lung function assessed less often than in 1993. Trends in medication use suggest less bronchodilator medication, with maintained higher levels of preventer medication than a decade earlier.

These data point to the need for ongoing community-wide education through the NAC. ■

A16 The 3+ Visit Plan for asthma care and education: A general practice innovation in proactive care

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Introduction: Cost savings to the health system can be considerable if emergency treatment and hospitalisations for asthma are reduced by proactive care.[1] The NAC's GPs' Asthma Group (GPAG) developed a resource to encourage GPs to initiate planned asthma care and education. The 3+ Visit Plan enlists asthma patients to a programme of three or more visits solely for asthma.
Methods: In 1998 a pilot study was conducted in two Divisions of General Practice: Western Sydney, NSW, (urban) and Port Pirie, SA, (rural).[2] Eight GPs and 54 asthma patients were involved with 42 (78%) interviewed, 29 face-to-face and 13 by phone. Of the 42 interviewed, 20 (48%) were 0–12 years old, 6 (14%) were 13-20, 14 (33%) were 21-60 and 2 (5%) were over 61 years of age. Methodologies included a patient questionnaire, qualitative interviews with patients and GPs, and the project officer's project diary.
Results: 88% of patients were happy to have a block of visits specifically for asthma, and 67% felt that the Plan gave them greater confidence in the treatment provided by their GP. The Plan was well accepted by participating GPs, but 100% had difficulty introducing the concept to patients.
Conclusions: The 3+ Visit Plan can be an effective strategy, although not every asthma patient is suitable. It was particularly effective for children and the elderly in this study. Patients enrolled in the Plan adopted better self-management practices. However, reactive care is the norm accepted by patients and GPs; the principle of proactive care needs to be reinforced through education. ■

References

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A17 The cost-effectiveness of early treatment with fluticasone propionate 250 mg twice daily in subjects with obstructive airway disease detected by a two-stage screening programme

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Background: No studies are available on the cost-effectiveness of early treatment with inhaled corticosteroids in patients with obstructive airway disease. Early intervention with inhaled corticosteroids as a secondary prevention measure is appealing from a theoretical and health-economic perspective.
Methods: In a two-stage detection programme, consisting of a single screening and subsequent quarterly monitoring, subjects with objective signs of obstructive airway disease were selected from a random sample of the general population. Subjects (n=82) were enrolled in a randomised, double-blind, placebo-controlled trial if they fulfilled the criteria for persistent airway obstruction (FEV_1<predicted - 2 SD), bronchial hypperresponsiveness (PC20<2 mg/ml and reversibility >15%) or a rapid decline in lung function (FEV_1 > 80 ml/yr and (PC20 <8 mg/ml and reversibility >10%). Subjects were randomly assigned to receive fluticasone propionate 250 µg b.i.d. or placebo b.i.d. via pMDI for a period of one year. The main outcome measures were post-bronchodilator FEV_1, QUALY and direct medical cost. Secondary outcome measures were pre-bronchodilator FEV_1, PC20, disease-specific health-related quality of life (chronic respiratory questionnaire or CRQ), symptom-free days, episode-free days, exacerbations and direct cost. Subgroup analysis was performed, based on reversibility of obstruction.
Results: Repeated measurement analysis revealed a significant gain in post-bronchilator FEV_1 (98 ml/yr.; p=0.01) and in pre-bronchilator FEV_1 (105 ml/yr; p<0.01) in favour of fluticasone propionate. The number of QUALYs gained was 2.7 per 100 treated patients (p=0.17). There was a significant and clinically relevant improvement in dyspnoea (CRQ) due to early treatment (p<0.03). Besides the additional cost for fluticasone propionate, early treatment was consistently associated with lower healthcare utilisation and lower indirect cost. The incremental cost-effectiveness was NGL 27,074 (US$13,016) per QUALY for early treatment alone and NGL 70,556 (US$33,921) per QUALY for the combination of early detection and treatment. The incremental cost of achieving a clinically relevant difference in dyspnoea was NLG 3481 (US$1674) per subject. Treatment with fluticasone did not lead to differences in lung function and QUALYs between subjects with reversible and fixed obstruction, but subjects with reversible obstruction showed a marked improvement in PC20 (approximately 1.4 doubling dose; p=0.03), whereas subjects with fixed obstruction did not.
Interpretation: Early intervention with fluticasone propionate in patients with obstructive airway disease resulted in relevant and significant health gains at relatively low financial cost. ■

A18 Self-managed asthma education diminishes the risk of underestimating information needs of asthma patients

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Introduction: Successful management of chronic diseases depends, among others, on adherence of the patient. One of the few suitable tools to increase adherence is patient education. We assumed that there may be a discrepancy between the information needed by the patient and the information given by health professionals, thus underestimating the needs of the patient. In order to provide tailor made education it is important to identify the information needs of the patient.
Methods: In the context of a self-management programme in which patient and GP shared responsibilities for the management of asthma an education program was designed. This education programme took into account the specific information needs of the patient. This was called self-managed education. A group of 104 steroid-dependant asthmatics used the education programme, 105 patients received regular care. Outcome measures were information exchanged and patient satisfaction. The extent to which the information need of the patient was encountered was expressed as the Information Exchange Score (IES).
Results: Patients in the experimental group showed a significant reduction in information need (median IES changed from 13 to 29, p=0.00, within group). Patient satisfaction score increased from 87.87 to 93.69 in this group while this remained stable (84.98 to 84.29) in the control group (p=0.00).
Conclusion: With our programme the interaction between the GP and the patient improved. The basic principles used in this programme are not disease specific. Although the contents of the education are disease specific, the concept of shared responsibilities and self management as another approach of the doctor-patient relation is not. Beneficial findings from this study may very well be applicable to other chronic conditions as well. ■

A19 Does observation of flow-volume loops improve spirometry test quality in general practice?

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The European Respiratory Society (ERS) recommends use of flow-volume loops for selection of single test manoeuvres during spirometry. Recent studies suggest that including information from flow-volume loops (e.g. steep initial inclination of expiratory leg, total inhaled volume equal to total exhaled volume) in the judgement of spirometric test quality improves lung function parameters. In this randomised-controlled cross-over study, spirometry was performed by eight experienced general practice (GP) assistants according to ERS guidelines. 47 healthy volunteers

	Unblinded condition (flow-volume loop visible)	Blinded condition (no flow-volume loop visible)	Difference	p
FEV_1 (l)	3.15 (0.91)	3.12 (0.92)	0.03 (0.14)	0.183
FVC (l)	3.97 (1.08)	3.94 (1.07)	0.03 (0.18)	0.316
FVC/FEV_1 (%)	78.90 (7.1)	78.70 (7.9)	0.29 (3.76)	0.589
PEF (l/s)	7.06 (2.17)	6.63 (2.12)	0.43 (1.18)	0.018
Repro-ducibility* (%)	1.76 (1.49)	2.34 (3.05)	-0.59 (2.87)	0.561

*difference between highest two FEV_1 values from three acceptable manoeuvres

performed spirometry twice, once with and once without the GP assistant being blinded for the flow-volume loop. We considered FVC, FEV_1, PEF (peak flow) and reproducibility of FEV_1 as outcomes. Results are given in the table [mean (SD)].

Additionally, two experienced lung function technicians judged the flow-volume loops obtained from both conditions. One technician judged the 'unblinded condition' loops superior to 'blinded condition' loops in 24 (51%) subjects (NS), the other technician in 29 (62%) subjects (p=0.012). Inter-observer agreement between the technicians was acceptable (κ=0.44).

The results imply that, next to the usual subject observation and judgement of parameters, observation of flow-volume loops during spirometry has limited added value in healthy subjects measured by GP assistants. ■

A20 Dysfunctional breathing in asthmatic patients

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Introduction: Dysfunctional breathing (DB), which includes hyperventilation syndrome (HVS) and other abnormal respiratory patterns, may cause significant morbidity, including symptoms of breathlessness and chest tightness.[1] Under-recognition and diagnostic difficulties may result in symptoms being mis-attributed by patient and physician to other illnesses. HVS has been reported in patients in respiratory specialist clinics,[1] and has been linked to asthma.[2] The Nijmegen Questionnaire has been validated as a useful tool to screen for DB,[3] with a score of >22 indicating probable DB. This study investigates the prevalence of DB related morbidity in asthmatic patients in primary care.
Methods: The Nijmegen Questionnaire was posted to all adult asthmatic patients (aged17–65) currently receiving asthma treatment in a single UK general practice of 7200 patients.
Results: 308 patients (male 131, female 182, mean age 44.1 (14.7 years) were sent questionnaires. 220 were returned (response rate 71.2%), of which 212 were suitable for analysis. 60 subjects (28.4% of all respondents) scored >22. More women (33.9%) than men (20.0%) scored >22 (p=0.03). There were no significant differences in age (45.6 ± 15.0 yrs v 47.6 ± 13.6 yrs, p=0.18) or in asthma severity by BTS treatment step (p=0.77) between those scoring >22 and those scoring less.
Conclusions: A high proportion (28.4%) of treated adult asthmatic patients in a primary care setting have symptom scores suggestive of DB. This possible co-morbidity is seen in patients of all ages and at all levels of asthma severity, and is more common in women than men. Further studies are needed to confirm the validity of this screening tool in this setting. If confirmed, the high level of co-morbidity gives scope for therapeutic intervention, and may explain the anecdotal success of the Butekyo method of treating asthma, which involves breathing retraining. ■

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A22 An observational study of montelukast in asthma

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Aims: To assess the effects of adding montelukast sodium (Singulair, MSD) to existing treatment in the control of asthma.
Methods: Observational study. Patients were enrolled at the discretion of their physician, if their asthma was inadequately controlled on current treatment. Details of treatment and a symptoms-based questionnaire were completed. FEV_1 and PEF were recorded. Montelukast 10mg (5mg in children) was added to current treatment. Patients were reviewed twice over a 12 week period.
Results: Study population: n=616. The data for 132 completed patients have been analysed. Age range 2-91 years; 77% adults; 23% children 62% female. 97% of patients had moderate to severe, frequent episodic or persistent asthma, and most were taking inhaled corticosteroids and long-acting β_2-agonists. Physicians reported that 69% of patients had a moderate to substantial improvement while 29% had no improvement with montelukast. Post bronchodilator PEF increased from a mean of 331 to 362 l/min in in adults (n=64). Improvement was reported in symptoms in the past week and the past four weeks, emergency room visits to the hospital and GP, days lost from work or school, oral steroids, and overall satisfaction with preventer medication. 17% (102/616) of patients discontinued treatment and 4% (23/616) experienced side effects.
Conclusions: 69% of patients with moderate to severe asthma demonstrated a sustained and clinically relevant improvement in their asthma with the addition of montelukast to existing treatment for the 12 week period. ■

A21 Evaluating asthma care in Australian and British general practices

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Aims: To conduct a case control study comparing a nurse-run asthma clinic with traditional Australian general practice asthma care and compare these results to a similar clinic in the UK.
Methods. A case control study was conducted comparing patients attending a nurse-run asthma clinic in Kincumber, NSW with control patients in neighbouring surgeries at Saratoga and Avoca. Eighty-three patients who attended the asthma clinic were matched for age, sex and disease severity. Patient case notes were audited to determine the number of consultations with the doctor, courses of oral steroid and use of acute salbutamol nebulisations. These results were compared to a similar clinic in Aylsham, Norfolk.

Intervention: The nurse-run asthma clinics in Australia and UK were run identically. Patients using inhaled steroids were invited by their GP to a clinic conducted by an asthma nurse. The nurse spent one hour explaining the mechanism, treatments, and self-management of asthma. This was reinforced with a peak flow meter and diary card. Patients were reviewed by the nurse at 12-week intervals. Patients could consult their own doctors at any time if they wished.
Results: Practices and patients were similar in all groups, except Australian practices had a higher proportion of children (54% v 30%) and GP consultation times were longer in Australian practices (15 vs 10 minutes). In the UK clinic 1.7 courses of oral steroids were prescribed in the 6 months before the clinic versus 0.5 after (p<0.001). Australian clinic: 0.4 before 0.3 after (p=NS). Australian control 0.4 before, 0.3 after (p=NS). The percentage of patients who would like their doctors to talk more about their asthma was 70% in the UK patient group, 22% for the Australian control practice and 13% for Australian asthma clinic practice. This difference was significant (p<0.05).
Conclusions: The Australian asthma clinic failed to demonstrate appreciable advantages over well-managed GP care. Patients attending the UK asthma clinic had greater morbidity than in Australia. After attending the UK asthma clinic the patients' asthma improved to a level comparable to the Australian patients. The differences between the UK and Australia may be due to the progress general practice has made in the five years between the studies or the greater amount of time Australian GPs spend with their patients. Asthma clinics may be most appropriate where patient care is less than ideal or where doctors themselves do not feel confident in managing asthma at the level current guidelines recommend. ■

A22 Validity of peak expiratory flow (PEF) to prescreen cigarette smokers for COPD

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To improve targeting of anti-smoking interventions, British Thoracic Society (BTS) guidelines recommend that general practitioners use spirometry to identify susceptible cigarette smokers. To obtain unbiased reproducible spirometry, primary care teams must either tackle resource, training and quality issues in-house, or refer smokers to an appropriate lung function laboratory. Any technique that identifies smokers with a raised pre-test probability of COPD will improve the cost-effectiveness of referral for spirometry. Studying patients who presented after two weeks of cough, Thiadens et al (Thorax 1999) showed that low PEF predicts low FEV_1 with positive and negative predictive values (PPV, NPV) of 47% and 95% respectively. We tested this approach in 495 current smokers aged 30–59 who participated in a population-based survey. Participants with diagnosed asthma or COPD were excluded. We estimated the validity of low PEF (PEF<PEF pred 1.64 RSD) to diagnose:

1. COPD (BTS guidelines: FEV_1 pred <80%, FEV_1/FVC <70%)
2. Low FEV_1 (FEV_1<FEV_1 pred 1.64 RSD).

We measured FEV_1, FVC and PEF on a Fleish pneumotachograph which was calibrated every session, and used European Respiratory Society predicted values. Coefficients of variation for FEV_1 (between-visit, 5% sample) were 3%. In 401 smokers aged ≥40 there were 32 cases of COPD. COPD was rare in 94 smokers aged <40. PPV, NPV, sensitivity and specificity to diagnose COPD were 24%, 98%, 81% and 78% respectively. Results were the same in men and women. Validity to detect low FEV_1 was almost identical.
Conclusions: PEF can be used to pre-screen cigarette smokers (aged ≥40) before referral for spirometry. Normal PEF virtually excludes COPD. This strategy will reduce referrals for spirometry by almost three quarters, at the expense of missing one fifth of smokers with COPD. This study should be repeated with the PEF meters used in primary care. ■

A23 COPD prevalence in asymptomatic smokers – The first 100

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Introduction: In our primary care centre of 12,000 patients we attempted to evaluate the prevalence of COPD in three distinct groups of patients. The prevalence of COPD in patients >40 on respiratory medication is 32% and in those not on medication but with a history of asthma: 12%. The final group of patients at present being evaluated are the presymptomatic (i.e. those with no evident respiratory diagnosis) smokers and ex-smokers over 40 years of age.
Aim: To identify the prevalence of COPD in the first 100 smokers and ex-smokers through our assessment clinic.
Methods: Using our EMIS software we identified 752 smokers and ex-smokers from the practice population, these patients were then invited to attend for a full spirometry and reversibility testing in addition to a full medical and social history.
Results: 220 patients have been invited and 100 attended (55 males, 45 females, median age 52 years [range 41–86]).

	Total	Smokers	Ex-smokers
Total	100	62	38
M/F	43/57	26/36	17/21
Pack years	21–30	21–30	11–20
COPD	19	13	6
Mild/Mod COPD	14/5	10/3	4/2

Discussion: 19% of these patients who so far had not presented to primary care with respiratory symptoms, had already developed mild or moderate COPD. As primary care physicians it seems sensible to consider how we may identify these patients as part of our primary care services, as smoking cessation intervention in this group will have some impact on the progression of the disease. ■

A24 Adherence to an educational protocol to prevent asthma in children

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Introduction: Today, general practitioners in the Netherlands face an increasing prevalence of asthma in children. Previous research shows that performing prenatal measures such as the use of anti house-dust mite mattress covers, non-smoking, no pets at home, postponement of solid foods, and breast-feeding may prevent the development of asthma in children. However, interviews with parents indicate that it is difficult to adhere to these different preventive measures. Therefore, this study is aimed at developing and evaluating a tailor-made educational intervention that will meet the specific barriers which parents experience in performing these preventive measures.
Rationale: With a refined educational intervention that is based on needs assessment, an improvement of adherence, and consequently positive effects on morbidity, and towards health and social parameters can be expected.
Methods: Focus-group interviews were conducted involving participants of a previous project whom have already experience with such preventive measures (Phase I).
Results: Results show that parents have difficulties in removing pets, stopping smoking and telling others not to smoke in the presence of the child. Parents do need more support in giving breast-feeding and coping with social pressure towards postponement of solid foods. The housing improvement measures seem less hard to adhere to.
Conclusions: It seems important to develop a refined educational protocol that will be tailored to the specific conditions of these parents in order to enhance adherence. In Phase II, which will start July 2000, this new protocol will be evaluated in 50 newly selected parents, expecting a baby with a high risk of developing asthma. ■

A25 Implementation of guidelines for prevention of exacerbations in patients with chronic bronchitis

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Coughing is the most important reason for encounter in general practice, with an incidence of 12.1 and a prevalence of 12.9 between age 65–74. Patients not known to the general practitioner (GP) for having asthma or COPD, the diagnosis acute bronchitis is often made. In most cases the symptomatology is cough (persisting 2–4 weeks), with non-obligatory purulent sputum production of about two weeks (International Classification of Health Problems in Primary Care; ICHPPC-2 code 466). It refers to an often 'self limiting' disease with an incidence of 40–50/1000 patients/yr. In many placebo-controlled trials with antibiotics no statistical differences were found between the two groups. Still, in 60% of the episodes of acute bronchitis an antimicrobial treatment is initiated. The question is whether these prescriptions are either irrational and only to reassure the patient as well as the GP, or indeed 'evidence based'. Epidemiological studies have found that the prevalence of asthma and COPD in the open population is about 15–30%. In general practice the prevalence is only 3%. One of the reported reasons for this underpresentation of asthma or COPD is that people get accustomed to their symptoms. The prevalence of asthma and COPD in general practice has been increased significantly during the past 20 years (19 vs 31%). The major part (65%) is made up of the very mild and mild form, and not known as such by their GP ('iceberg' phenomenon). These patients have signs and symptoms of bronchial hypperresponsiveness (cough >14 days, prolonged expirium, shortness of breath). In contrast, patients with severe COPD are well known to their GPs.

Therefore, prevention of exacerbations in patients with COPD in general practice patients should focus on patients with (case finding):

1. History of smoking
2. Frequent episodes of acute bronchitis (>14 days)
3. Signs and symptoms of impairment of daily activities
4. Recurrent use of antibiotics, codeine tablets or cough syrups.

In 50% of the cases, the medical history in this patient group will lead to the diagnosis of asthma or COPD. Accordingly anti-inflammatory treatment of the airways in order to reduce the bronchial hyper-responsiveness should be the cornerstone of treatment of an acute bronchitis, and not the antimicrobial treatment for reasons of the too often alleged 'bacterial originated episodes of acute bronchitis'.

In this way, patients with recurrent episodes of acute bronchitis are moving to the tip of the 'iceberg', and become patients known to their GP with (mostly) mild asthma or COPD. Stringent smoking cessation regimen together with maintenance medication of inhaled corticosteroids and follow-up (FEV_1 and medical history) of these patients, will lead to prevention of exacerbations. ■