

# Referral and consultation in asthma and COPD: an exploration of pulmonologists' views

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## ABSTRACT

**Background:** The burden of asthma and chronic obstructive pulmonary disease (COPD) on national healthcare systems is expected to increase substantially in future years. Referral guidelines for general practitioners (GPs) and pulmonologists may lead to more efficient use of healthcare facilities. We explored the prevailing views of pulmonologists regarding referral and once-only consultation in asthma and COPD, and compared these views with recently published transmural referral guidelines for GPs and pulmonologists.

**Methods:** Cross-sectional multiple case study. Twenty-nine Dutch pulmonologists working at non-university hospitals or specialised chest clinics participated in group discussion sessions.

**Results:** The outcome of the discussions and recently published referral guidelines for GPs and pulmonologists showed considerable similarity, but also some marked discrepancies. During the discussions, the main points of disagreement among the pulmonologists were: 1) should GPs or pulmonologists add long-acting  $\beta_2$ -agonists to asthma treatment regimens; 2) should the current cut-off point 'predicted FEV<sub>1</sub> <50%' for referral of COPD patients be increased to 60 or 70%; and 3) should an annual exacerbation rate of two episodes a year be used as an undifferentiated referral criterion for COPD patients? For asthma, proposed back-referral (i.e. from pulmonologist to GP) criteria rested on: required dose of inhaled steroids, persistent need for long-acting  $\beta_2$ -agonists, duration of clinical stability and persistence of airway obstruction. Back-referral criteria for COPD rested on age, blood-gas abnormalities and ventilatory limitations. Primary care

monitoring facilities and 'shared-care' constructions were considered to be facilitating conditions for back-referral.

**Conclusions:** This explorative study provided insights into how pulmonologists visualise a rational referral policy for patients with asthma or COPD. These insights can be taken into consideration in future revisions of referral and back-referral guidelines for GPs and pulmonologists.

## INTRODUCTION

Over the next few years, it is expected that a sharp increase will occur in the incidence and prevalence of asthma and chronic obstructive pulmonary disease (COPD) in many Western countries.<sup>1-4</sup> Consequently, patients with these chronic pulmonary diseases will make steadily increasing demands on healthcare services. General practitioners (GPs) and pulmonologists will soon become aware of this, owing to the increasing time investment in these categories of patients. One of the major challenges for the near future is to achieve efficient use of available care facilities for asthma and COPD patients. Adequate referral policies from the GP to pulmonologist and back-referral to the GP form an inextricable part of this challenge. Although the theme 'referral in asthma and COPD' has been receiving increasing attention in the literature over the past few years and various guidelines have been put forward that contain concrete referral criteria,<sup>5-9</sup> no research has been performed into the effectiveness of (alternative) referral policies for the two diseases. Nevertheless it is

reasonable to assume that if GPs follow an efficient referral policy, then superfluous specialist care will be prevented, while patients who do require specialist care will receive it all the sooner. If, at the same time, pulmonologists endeavour to refer patients back to their GPs as soon as they consider it medically justified, then optimal use will be made of their valuable time. Guidelines that dictate when referral is indicated contribute to more effective care. However, incorrect guidelines or recommendations that are poorly linked with daily practice can have an unfavourable effect.<sup>10</sup> Therefore, the Dutch professional organisations of GPs and pulmonologists recently developed two transmural 'agreements', in which concrete recommendations are made about referral and back-referral of patients with asthma and COPD.<sup>11,12</sup> As there is very little evidence-based information on which to base concrete referral criteria, these agreements (developed in the light of empirical findings and expert consensus) are the highest attainable at the present time. In the development of guidelines, it is of decisive importance to have intimate knowledge of daily practice; experts are often inclined to make too little allowance for this. In addition, it is important to be able to anticipate how new guidelines will be accepted by the workforce.<sup>13</sup> A series of postgraduate courses enabled us to study the views of pulmonologists, regarding referral, back-referral and once-only consultation in asthma and COPD. The aim of the study was to make an inventory of prevailing views within this professional group and to compare these views to the expert consensus recently reached in the national transmural agreements for asthma and COPD.<sup>11,12</sup>

## METHODS

Between March 1999 and April 2000, four group discussion sessions were held with pulmonologists working at non-university hospitals or specialised chest clinics in four different regions of the Netherlands, to make an inventory of prevailing views on 'referral' and 'back-referral' of patients with asthma or COPD. Pulmonologists acting as regional contact persons were approached to evaluate the level of interest in postgraduate courses in this field. Participants in the four discussion groups were representatives from partnerships in the regions concerned. A total of 29 pulmonologists from 18 partnerships (approximately 10% of all registered pulmonologists active in the Netherlands) took part. In each discussion group one GP with a special interest in asthma and COPD was present to explain the guidelines issued by the Dutch College of General Practitioners (NHG),<sup>7-9</sup> and the utility and applicability of these guidelines in daily practice. Prior to each discussion session, the pulmonologists were asked to fill in a short questionnaire on personal characteristics, their own criteria for back-referral of asthma and COPD patients, and local working agreements with GPs.

To ensure that a number of previously determined issues would be dealt with during the course of the discussions, two standardised cases were developed: one for asthma (see *table 1*) and one for COPD. Step by step, a specific part of the initial case description was modified using a standard set of overhead sheets. In this semi-structured manner, two of the authors (F. Smeenk and C. van Weel) were able to bring various issues under discussion that play a role in referral and back-referral in asthma and COPD. Criteria from the general practice guidelines were incorporated into the discussions. The asthma case was always discussed first, followed by the COPD case. This approach was tested and modified in a pilot discussion session held with pulmonologists working in the Nijmegen region. With the pulmonologists' consent, the discussions were recorded on audiotape. After the recordings had been typed out, two of the authors (T. Schermer and F. Smeenk) independently extracted conclusions from the discussions and classified them per theme. The themes for

**Table 1**

*Asthma case used to structure group discussion sessions*

### INITIAL CASE DESCRIPTION

A 24-year-old non-smoking female cashier with a history of childhood asthma and atopic rash consults a GP. Renewed onset of respiratory symptoms (intermittent dyspnoea attacks, max. once a week) at age 20. Adequate symptom relief on salbutamol on an as-needed basis.  
*Should a GP refer this patient to a pulmonologist?*

### FIRST MODIFICATION

Additional diagnostic information is available: FEV<sub>1</sub> 2.56 l (73% of predicted value), FEV<sub>1</sub> reversibility after salbutamol 20% of predicted value, allergic response to house dust mite and pollen.  
*Should a GP refer this patient to a pulmonologist?*

### SECOND MODIFICATION

Frequency of respiratory symptoms increases from once a week to daily and symptoms are more severe. Salbutamol is needed every day.  
*Should a GP refer this patient to a pulmonologist?*

### THIRD MODIFICATION

Respiratory symptoms and salbutamol use are less frequent (once a week) with addition of budesonide 400 µg twice a day. Tapering off the budesonide dose is unsuccessful.  
*Should a GP refer this patient to a pulmonologist?*

### SUBSEQUENT MODIFICATIONS COVER THE FOLLOWING ISSUES

Persistent or deteriorating airway obstruction

(High) dose of inhaled corticosteroids

Addition of a long-acting β<sub>2</sub>-agonist

Rapid deterioration of asthma condition

Frequent asthma exacerbations

Current smoking

Food allergy

Occupational exposure

asthma were medication and treatment targets, titration of the dose of inhaled corticosteroids, diagnosis and monitoring, and asthma exacerbations. The themes for COPD were lung function, exacerbations, treatment options, and diagnosis. Spirometry in general practice was considered as a separate theme. The results section describes the content of the discussions held in one or more of the sessions. The most important conclusions about referral and once-only consultation are summarised in tables. Explicit mention is made of all divergent views that became apparent during the discussion sessions. For the sake of simplicity, 'he' (read: he or she) is used in the text to refer to GPs, pulmonologists and patients.

## RESULTS

### Characteristics of the pulmonologists

All 29 pulmonologists were working at non-university hospitals or specialised chest clinics (28 men, one woman; mean age  $46 \pm 5.2$  years; mean time since specialist qualification  $14 \pm 6.7$  years). All indicated that they were

familiar with the asthma and COPD guidelines issued by the Dutch College of General Practitioners. The pulmonologists estimated that on average, formal back-referral to general practice occurred in 51% (range 15 to 82%) of their asthma and COPD patients. *Table 2* presents the criteria used for back-referral, subdivided into 'global' and 'specific' criteria. Existing arrangements with GPs regarding the reason for referral and consultation were once-only consultation to determine diagnosis (38%), assistance with spirometry interpretation (20%), shared-care (20%) and local protocol for referral/back-referral (7%).

### Issues on referral and consultation in asthma

#### Medication and treatment targets

Referral by GP to pulmonologist: In the case of intermittent or mild asthma with (reversible) airway obstruction, GPs have sufficient means at their disposal to initiate treatment. If the treatment does not lead directly to visible improvement, a GP should not be too hasty in referring the patient to a pulmonologist: a minimum evaluation period of six months was recommended. If the *a priori* set treatment targets (*table 3*) are not reached within this period, then the GP can

**Table 2**

*Global and specific criteria used by participating pulmonologists (n=29) to refer asthma and COPD patients back to general practice care*

ASTHMA		COPD	
GLOBAL CRITERIA	SPECIFIC CRITERIA	GLOBAL CRITERIA	SPECIFIC CRITERIA
Stable asthma condition (13, 45%)	PC <sub>20</sub> >8 mg/ml (4, 7%)	Stable COPD condition (13, 45%)	FEV <sub>1</sub> >60% of predicted value and clinically stable (2, 7%)
Lung function parameters (7, 25%)	Stable lung function >1 year (4, 7%)	Lung function parameters (7, 25%)	FEV <sub>1</sub> /VC >50% of predicted value (2, 7%)
Well-regulated medication use (4, 14%)		Competence of GP in question (2, 7%)	
Competence of the GP in question (2, 7%)			

*Figures in brackets represent the number and proportion of participants that indicated the particular criterion, respectively.*

**Table 3**

*Treatment targets and indications for (once-only) consultation with a pulmonologist in adult patients with asthma, according to the national guidelines of the Dutch College of General Practitioners<sup>8</sup>*

#### TREATMENT TARGETS IN PATIENTS

No, or only minor asthma symptoms, acceptable night's rest, (nearly) normal daily activities

As few interventions as possible, minimal or no side effects of asthma medication

Prevention or timely treatment of asthma exacerbations

Achieving and preserving optimal lung function

#### INDICATIONS FOR (ONCE-ONLY) CONSULTATION WITH A PULMONOLOGIST

Persistent use of high-dose inhaled steroids without being able to taper off; treatment targets cannot be achieved on this regimen

Continuous use of high-dose inhaled steroids or moderately high dose of inhaled steroids combined with a long-acting  $\beta_2$ -agonist

increase the dose of inhaled steroids or add a long-acting  $\beta_2$ -agonist. If no progress is made during the new evaluation period with this combination therapy, then referral to the pulmonologist is indicated. The phase in which lung medication is initiated depends on the degree to which the GP decides to extend the medication himself. In one of the discussion groups, the prevailing view was that (partial) substitution of an inhaled steroid for a long-acting  $\beta_2$ -agonist should be performed by the pulmonologist, not by the GP. In any case, before deciding to administer long-acting medication, the GP should first reconsider his diagnosis of asthma. If after repeating the anamnesis and supplementary peak flow measurements there is still doubt about the accuracy of the diagnosis, then a once-only diagnostic consultation with the pulmonologist can be requested.

#### *Tapering off the dose of inhaled steroids*

Referral by GP to pulmonologist: The maintenance dose of inhaled steroids is in itself a factor that should play a role in the GP's decision as to whether or not to refer the patient. Upper dose limits of 800 to 1000  $\mu\text{g}$  of budesonide or beclomethasone, or 500  $\mu\text{g}$  of fluticasone a day, as recommended in the current Dutch GP guidelines, were considered to be acceptable referral criteria by the pulmonologists. At higher doses, the risk of systemic side effects can form an indication for referral.

Several of the pulmonologists had the impression that GPs are often reluctant to administer long-term maintenance treatment with inhaled steroids; they seem to have the tendency to prematurely taper off the dose. Once again, the factor time should play a role. If a GP decides to taper off a moderately high maintenance dose (800 to 1000  $\mu\text{g}$  a day) in a stable asthma patient, but is unable to do so over a period of two years, then the risk of long-term side effects can form an indication for referral. Most pulmonologists were of the opinion that if the GP is certain of the diagnosis and has excluded all possible trigger factors, he can first add a long-acting  $\beta_2$ -agonist and then subsequently try to taper off the dose. If it still proves impossible to reduce the dose of steroids, then a once-only consultation with the pulmonologist can be requested to check whether any trigger factors have been missed. Several of the discussions revealed that owing to the fact that referral information from the GP does not always offer sufficient footing, it might not be possible to gain an adequate overview during a once-only consultation.

Back-referral from pulmonologist to GP: During consultation with an asthma patient, the pulmonologist provides further confirmation of the diagnosis and treatment, and establishes the minimum required maintenance dose of medication. On the basis of the histamine threshold, he evaluates whether the inhaled steroid dose can be tapered off. In the majority of cases, it is possible to refer the patient back

to the GP with clear treatment instructions and recommendations for frequency-of-monitoring visits. Adaptation of a medication regime by the pulmonologist should always include a period of intensive spirometry or peak flow measurements which, in principle, the GP can undertake. When a patient in the care of a pulmonologist has become clinically stable on an 800 to 1000  $\mu\text{g}$  daily dose of inhaled steroids, he can normally be referred back to his GP. Even at higher doses, back-referral does not need to be a problem if the patient has been stable for some time. In only one of the discussion groups was the term 'stable' further specified as: normal lung function and very few respiratory symptoms, while the steroid dose is clearly based on the minimum required dose. The main reasons mentioned by the pulmonologists for not referring asthma patients back to the GP are given in *table 4*. If a patient is using an inhaled steroid dose of more than 800 to 1000  $\mu\text{g}$  a day (with or without addition of a long-acting  $\beta_2$ -agonist) the pulmonologist can decide to monitor the patient himself. However, cooperation with the GP in the form of a shared-care construction is also possible, although structured communication between the pulmonologist and GP is essential in this situation.

#### *Diagnosis and monitoring*

Referral by GP to pulmonologist: In the majority of cases, the GP can make the diagnosis of asthma himself using peak flow measurements. Spirometry in patients with suspected asthma only has additional value when previously conducted peak flow measurements have shown that the patient has reversible airway obstruction or day-night variability. In asthma patients who have very few respiratory symptoms but show persistent airway obstruction, despite adequate treatment with inhaled steroids, there seems to be an indication for referral. Stipulations for referral are that the obstruction must in principle be fully reversible and there must be an obvious discrepancy between lung function and respiratory symptoms. Relatively young patients with persistent airway obstruction that does not subside after a 'diagnostic' course of oral steroids should be referred to the pulmonologist for further testing. Other reasons mentioned for referral are given in *table 4*.

Back-referral by pulmonologist to GP: The discussions showed that pulmonologists do not tend to refer patients back to general practice on the basis of hard evidence alone. The feeling that the pulmonary condition is stable plays a more important role. When the pulmonologist refers the patient back, he expects the patient to be monitored by his GP in accordance with the current asthma guidelines for GPs. It therefore depends on the GP in question whether the pulmonologist refers the patient back or not, especially in patients whose monitoring is of an urgent nature.

**Table 4**

Summary of statements concerning referral and once-only consultation in asthma, derived from four discussion sessions with non-university pulmonologists (n=29)

	DESCRIPTION OF STATEMENT	NO. MEETINGS IN WHICH ITEM CAME UP <sup>5</sup>	PRO/CON <sup>*</sup>
<b>Situations in which GPs should consider (once-only) consultation with a pulmonologist</b>			
Consider referral if:	Attempts to taper off a high dose of inhaled steroids (>800-1000 µg budesonide or beclomethasone, >500 µg fluticasone) are unsuccessful after two years	4	(4/0)
	(Partial) substitution of inhaled steroids by a long-acting β <sub>2</sub> -agonist is considered	4	(1/3)
	Poor medication compliance, ill-advised lifestyle or other patient-centred causes for recurrent exacerbations despite sufficient attention from the GP	4	(4/0)
	Persistent asthma symptoms coinciding with normal lung function, despite otherwise adequate treatment with inhaled steroids	3	(3/0)
	≥3 asthma exacerbations a year, each requiring treatment with oral prednisolone, without an identified trigger for the high exacerbation rate	3	(3/0)
	No clinical improvement is observed six months after adjustment of the asthma medication regime	2	(2/0)
Consider once-only consultation if:	Persistent diagnostic uncertainty, even after repeating medical history taking, elimination of all possible trigger factors and additional peak flow monitoring	4	(4/0)
	Doubt about the feasibility of tapering off inhaled steroids	4	(4/0)
	Persistent airway obstruction after a diagnostic prednisolone course at relatively young age	3	(3/0)
	Drastic allergen avoidance measures are inevitable	2	(2/0)
<b>Situations in which pulmonologists should consider back-referral to a GP</b>			
Consider referring back if:	A patient has been clinically stable <sup>#</sup> for 1.5 to 2 years on a low to moderately high dose of inhaled steroids (≤800-1000 µg budesonide/beclomethasone, ≤500 µg fluticasone)	3	3/0
	A patient has been clinically stable <sup>#</sup> for 1.5 to 2 years on a high dose of inhaled steroids (>800-1000 µg budesonide/beclomethasone, >500 µg fluticasone), with or without a long-acting β <sub>2</sub> -agonist, provided that the GP supervises the monitoring schedule, or a solid shared-care construction is available	3	3/0
	None of the following are applicable: Persistent necessity for the combination high-dose inhaled steroid + long-acting β <sub>2</sub> -agonist Persistent airway obstruction Asthma-related hospital admission <1.5 to 2 years ago	1	1/0

Statements are ranked by the number of meetings in which each particular issue was discussed. <sup>5</sup> Minimum 1, maximum 4; <sup>\*</sup> PRO=prevailing view during session in favour of statement; CON=prevailing view during session against statement; <sup>#</sup> in one session specified as 'normal lung function, few respiratory symptoms and inhaled steroids adjusted to the lowest possible effective dose'.

### Asthma exacerbations

Referral by GP to pulmonologist: If an asthma patient is undergoing optimal monitoring by the GP but suffers three or more exacerbations a year that require prednisolone, then referral to a pulmonologist is indicated. In cases with a clear explanation for the recurrent exacerbations, referral does not seem to be so worthwhile. If the GP is unable to identify the triggering factor in a patient with recurrent exacerbations, then referral is indicated. Two of the discussion sessions revealed that some of the pulmonologists felt that particularly patients with persistent symptoms were referred to them relatively quickly, whereas patients

who needed several courses of prednisolone a year but expressed very few respiratory symptoms were not referred until the prednisolone became less effective. Several pulmonologists suggested that GPs are sometimes too premature with administering courses of prednisolone, without first attempting to identify the underlying cause of the exacerbation. If there is no relevant improvement or persistent deterioration occurs while a patient is receiving optimally regulated maintenance treatment, then the GP should not wait too long before referring the patient to a pulmonologist.

Although the current GP guidelines recommend that an asthma patient should be referred to a pulmonologist in the case of two or more exacerbations a year, it seems to be difficult – if not impossible – in practice to establish a general absolute cut-off point. The specific circumstances of the patient and the existence of a possible explanation for a high exacerbation rate are strong determinants. In addition, the degree to which the asthma patient himself is responsible for ‘aggravating’ his asthma can play a role in the GP’s decision whether or not to refer the patient.

**Back-referral by pulmonologist to GP:** If a patient has recently suffered an acute severe asthma attack, it is advisable for him to remain under the care of the pulmonologist for a fairly long time. An evaluation period of 18 to 24 months was mentioned as a rule of thumb in several of the discussion groups, irrespective of whether the patient has become clinically stable on a maintenance dose of inhaled steroids. After the evaluation period the pulmonologist can consider referring the patient back to the GP. If he decides to refer the patient back, he should preferably give the most concrete possible advice about the further management policy.

Conclusions regarding referral and consultation in asthma are summarised in *table 4*.

#### Issues on referral and consultation in COPD

##### *Lung function, exacerbations and treatment options*

**Referral by GP to pulmonologist:** In all discussion groups the pulmonologists made it clear that when making a referral decision, GPs should not only take the Dutch GP guidelines (*table 5*) into consideration, but also the respiratory symptoms and possible discrepancies between these symptoms and clinical presentation. In the GP guidelines, the lung function criteria for referral are an FEV<sub>1</sub> <50% of the predicted value and/or an FEV<sub>1</sub> <1.5 litres. An

important point of discussion in relation to these criteria was that a COPD patient who has not (yet) dropped under these cut-off levels will develop problems at some stage, which will persist for the rest of his life. If the GP does not establish any relevant baseline values for lung function, then the pulmonologist should be given the opportunity to do that for him.

The pulmonologists held the view that COPD patients with moderate to severe airway obstruction, but a discrepancy between respiratory symptoms and clinical presentation, should always be referred. Although there is evidence in the literature that the prognosis deteriorates when lung function falls below the above-mentioned FEV<sub>1</sub> cut-off levels, it is not clear whether earlier referral has any additional value. However, owing to the fact that, depending on the specific circumstances, multiple problems can be expected in patients with moderate to severe airway obstruction in a relatively early stage of the disease, earlier referral is desirable, for instance at FEV<sub>1</sub> <60% of the predicted value. In any case, GPs must be encouraged not to wait until the FEV<sub>1</sub> has fallen below 50% before they refer a COPD patient. A possible disadvantage of lowering the referral limit is the considerable increase in burden on specialist care. Furthermore, the pulmonologists agreed that GPs should not base their referral decision only on FEV<sub>1</sub> values. FEV<sub>1</sub> alone is not sufficient to characterise a COPD patient, although in practice, this is all the GPs have to go on. Discussions on the role of exacerbations revealed that in the case of frequent exacerbations (i.e. two or more exacerbations a year), there are two arguments in favour of referral by the GP: evaluation of the causal factors and the risk of side effects from frequent prednisolone courses.

Bronchial hyperresponsiveness in COPD patients not only forms a prognostic factor, it can also be used to identify the (relatively small) group of COPD patients that also have

**Table 5**

*Treatment targets and indications in patients with COPD for (once-only) consultation with a pulmonologist, according to the national guidelines of the Dutch College of General Practitioners<sup>9</sup>*

#### TREATMENT TARGETS IN PATIENTS WITH COPD

*Short term:* reduce respiratory symptoms, improve exercise tolerance, improve lung function and prevent exacerbations

*Long term:* decelerate progressive lung function decline and postpone or prevent complications and disability

#### INDICATIONS FOR CONSULTATION WITH A PULMONOLOGIST

Severe COPD (FEV<sub>1</sub> <50% of predicted value or <1.5 l) despite optimal treatment

Persistent uncertainty about whether COPD is complicated by chronic heart failure

COPD at a relatively young age (<50 years)

Severe progressive FEV<sub>1</sub> decline (>100 ml/year) despite treatment with inhaled steroids

Frequent exacerbations despite treatment with N-acetylcysteine

Possible indication for oxygen treatment, maintenance treatment with antibiotics or theophylline, pulmonary rehabilitation

features of asthma. With changing insights into the role of inhaled steroids in COPD it remains to be seen whether in the future, GPs should also consider the degree of bronchial hyperresponsiveness in their decision to prescribe inhaled steroids. As pulmonologists are better able to distinguish between subgroups than the GP, some patients might not receive maximum benefit from the existing treatment options during the years that are lost prior to referral. In two of the sessions, discussion arose about whether pulmonologists have more means at their disposal than GPs to help COPD patients quit smoking. Perhaps pulmonologists in their capacity as medical specialists have greater authority in the patient's view, but in principle, the GP should be able to achieve the same results.

Back-referral by pulmonologist to GP: Pulmonologists should include the factor (advanced) age in their decision about whether or not to refer COPD patients back to general practice. Otherwise there is the risk that the outpatient clinic will 'fill up' with elderly COPD patients. If these elderly patients can manage on their regular maintenance treatment supplemented with a course of prednisolone now and again, then the pulmonologist has little more to offer than the GP. However, it is better for patients with gas transfer abnormalities to remain under the care of the pulmonologist, although a shared-care construction can also be considered, in which the GP monitors the patient and specially trained COPD nurses provide assistance. If the pulmonologist refers a patient on oral theophylline back to his GP, then it is important that he realises that the GP guidelines do not contain any recommendations about this treatment. Therefore his advice should include clear instructions. If the pulmonologist has tried in vain to stop the theophylline, this should also be mentioned explicitly in the back-referral letter.

#### Diagnosis

Referral by GP to pulmonologist: Although the GP himself can refer a patient for supplementary tests (e.g. chest X-ray), referral to a pulmonologist might be worthwhile to exclude malignancy or to 'map' the patient's status on the basis of carbon monoxide diffusion capacity, blood gasses, respiratory mechanics and ergometry. In every COPD patient with moderately severe airway obstruction ( $FEV_1$  50 to 70% of the predicted value) the GP should consider referral for a once-only (diagnostic) consultation. The pulmonologist can map the patient's lung function more extensively and evaluate unfavourable prognostic factors. When they refer a patient just for spirometry and the accompanying interpretation of the pulmonologist, GPs also expect to receive concrete information about the diagnosis and advice about treatment. As the pulmonologist only sees the spirometry test results and not the patient himself, this is not an ideal

situation. Within the discussion groups the participants clearly expressed preference for 'evaluation mapping' by the pulmonologist in such circumstances, in which he personally sees the patient (at least) once.

Back-referral by pulmonologist to GP: A COPD patient cannot be referred back to the GP on the basis of lung function criteria alone. It is important for the pulmonologist to gain insight into the impact of COPD on the patient's daily functioning so that he can give the GP more detailed advice about treatment. In the case of moderately to severely disturbed diffusion capacity, continuation of regular monitoring by the pulmonologist takes preference over referral back to the GP. Although the spirometry and ventilatory parameters might be borderline normal, these patients are approaching the level of permanent invalidity. In patients with ventilatory limitations, hypoxaemia and/or hypercapnia on exertion, it is preferable for the pulmonologist to continue seeing the patient for checkups. If the patient is subjectively and objectively stable and the pulmonologist considers it possible to transfer the checkups to the GP, then he can refer the patient back. The pulmonologist can, for example, advise the GP to refer the patient to a lung function laboratory for periodical supplementary testing.

Conclusions regarding referral and consultation in COPD are summarised in *table 6*, see page 78.

## DISCUSSION

The results of this explorative study sketch a useful profile of the views of Dutch pulmonologists regarding the wide-sweeping theme: referral and consultation in asthma and COPD. Although previous research has shown that questionnaires can be used to make such inventories,<sup>14,15</sup> it has also become clear that they are unable to map nuances. The present qualitative study design offered the opportunity to explore the major issues and discussion points surrounding this complex theme in fairly great detail. However, it is possible that the selection of regions influenced the findings: our survey did not include all the separate regions of the Netherlands. If regionally determined variations exist in referral and back-referral policies and views, then this may have affected the direction of the results. In addition, the discussions, despite uniform structuring by means of the standardised case descriptions on an overhead sheet, were kept fairly open. It is therefore possible that not all prevailing views were expressed, as certain topics received less attention.

One of the most important findings in this study was that broadly speaking, Dutch pulmonologists approved

**Table 6**

Summary of statements concerning referral and once-only consultation in COPD, derived from four discussion sessions with non-university pulmonologists (n=29)

	DESCRIPTION OF STATEMENT	NO. MEETINGS IN WHICH ITEM CAME UP <sup>5</sup>	PRO/CON* PRO/CON*
<b>Situations in which GPs should consider (once-only) consultation with a pulmonologist</b>			
Consider referral if:	FEV <sub>1</sub> <50% of predicted value or FEV <sub>1</sub> <1.5 l	4	3/1 <sup>§</sup>
	FEV <sub>1</sub> value ≥50% of predicted value or FEV <sub>1</sub> ≥1.5 l, but persistent respiratory symptoms or a discrepancy between symptoms and the clinical profile	4	4/0
	≥2 exacerbations a year, in order to evaluate causal factors and assess the risk of side effects due to frequent prescription of prednisolone courses	3	1/2 <sup>#</sup>
Consider once-only consultation if:	FEV <sub>1</sub> is 50 to 70% of predicted value, in order to enable the pulmonologist to map relevant baseline parameters (e.g. TL <sub>CO</sub> , blood gasses)	3	3/0
	The GP anticipates that the probability of successful smoking cessation may be higher when supervised by a pulmonologist	2	2/0
	Determine whether treatment with inhaled steroids is appropriate, based on measurement of bronchial hyperresponsiveness	2	2/0
<b>Situations in which pulmonologists should consider back-referral to a GP</b>			
Consider referring back if:	None of the following are applicable: Presence of moderate to severe gas transfer abnormalities (except when a high-quality shared-care construction is guaranteed) Presence of ventilatory limitations Presence of hypoxaemia and/or hypercapnia	2	2/0
	An elderly patient is managing sufficiently well on the established maintenance treatment and an occasional oral prednisolone course	1	1/0

Statements are ranked by the number of meetings in which each particular issue was discussed. <sup>5</sup> Minimum 1, maximum 4; \* PRO=prevailing view during session in favour of statement; CON=prevailing view during session against statement; # in two sessions, the participants were in doubt whether it is appropriate to assert one cut-off point concerning annual exacerbation rate in all patients with COPD; § in one session a cut-off point of 60% of the predicted FEV<sub>1</sub> value was proposed; TL<sub>CO</sub> = diffusing capacity for carbon monoxide.

the contents of the GP guidelines<sup>7-9</sup> and the transmural agreements published by their own, and the GPs' professional organisations.<sup>11,12</sup> However, they clearly had their own professional views about referral by GPs and subsequent back-referral. Another important conclusion is that it is reasonably easy to formulate univocal referral criteria for asthma; the literature and empiricism offer sufficient points of application for this. In contrast, this task is much more complex for COPD. According to the pulmonologists, there are so many individual, patient-related factors that can play a role in the GP's decision to refer a patient with COPD that it is very difficult to devise strict criteria. On the one hand, this situation is inconsistent with the referral limit of an FEV<sub>1</sub> <50% of the predicted value or <1.5 litre currently recommended,<sup>9,12</sup> because this cut-off point still leads to many discussions between GPs and pulmonologists. On the other hand, it is not clear whether the pulmonologists justifiably expressed concern that GPs wait until the FEV<sub>1</sub> has deteriorated to the recommended cut-off point. A possible solution was the proposal to refer all COPD patients with

an FEV<sub>1</sub> of 50 to 70% of the predicted value ('moderate obstruction') to a pulmonologist for once-only evaluation mapping of diffusion capacity, blood gasses, etc. This policy is in line with the position held by Dutch pulmonologists regarding detection of the group of COPD patients with moderate to severe bronchial hyperresponsiveness. In this way, pulmonologists can evaluate the presence of an asthma component in the cause of airway obstruction and the indication for inhaled steroid treatment.

#### Comparison with published Dutch transmural agreements

Nine months after the last discussion session was held, the Dutch professional organisations of GPs and pulmonologists published their joint transmural agreements for asthma and COPD,<sup>11,12</sup> which include detailed recommendations on referral and back-referral for GPs as well as pulmonologists. In many respects, the contents of the transmural agreements are in line with the existing asthma and COPD guidelines for GPs.<sup>7-9</sup> The outcomes of our discussion sessions and the transmural agreements showed considerable



similarity, but also some marked discrepancies. For asthma, the most notable discrepancies were:

- the issue of tapering off inhaled steroids does not come up at all in the agreement,<sup>11</sup> whereas it was a major issue in all discussion sessions;
- GPs should wait longer (i.e. six instead of three months)<sup>11</sup> after adjustment of an asthma medication regime before concluding that no clinical improvement has been achieved;
- GPs should first try to identify underlying triggers for (recurrent) asthma exacerbations before referring a patient to a pulmonologist;
- GPs should refer an asthma patient for once-only consultation in case drastic allergen avoidance measures are planned;
- pulmonologists should take longer (i.e. 18 to 24 months instead of 3 to 12 months)<sup>11</sup> before referring clinically stable asthma patients back to their GP, regardless of the maintenance dose of inhaled steroids.

The transmural COPD agreement<sup>12</sup> comprises more (and far more detailed) recommendations regarding referral and back-referral compared with the pulmonologists' views expressed during the discussion sessions. As indicated above, some notable additions were suggested: referral of patients with a predicted FEV<sub>1</sub> of 50 to 70% for once-only (diagnostic) consultation to map relevant baseline characteristics; once-only consultation of a pulmonologist to evaluate the indication for inhaled steroid treatment on the basis of bronchial hyperresponsiveness.

### Referral and efficiency of care

Although there is only one indication in the literature that a structured referral policy can result in more efficient asthma care,<sup>16</sup> we do not know which set of referral criteria leads to the most efficient care for asthma patients. No studies have been performed on COPD in this area. Therefore for the time being, guidelines for referral and consultation in asthma and COPD can be based solely on common sense and consensus. It is particularly for this reason that the findings in this study may offer useful leads for authors who are formulating or revising referral guidelines. The fact that the pulmonologists from the study regions could apparently hold different views about who should be responsible for substituting inhaled steroids for a long-acting  $\beta_2$ -agonist can in practice form a barrier against accepting asthma guidelines. Most pulmonologists agreed that an 800-1000  $\mu\text{g}$  dose of inhaled steroids was a useful referral criterion, which provides support for the current GP guidelines and transmural agreement. The additional referral criteria for GPs proposed in the discussions about asthma (see *table 4*) can be taken into consideration when devising or revising guidelines. It is possible that clear formulation of the reason for referral and clear presentation

of the question – something that was often missing according to our study participants – would contribute to more efficient care. In the literature, it is stated that in at least 15% of all referrals, the nature of the problem remains obscure.<sup>17</sup>

### GPs' diagnostic uncertainty and the value of spirometry

In one of the discussion groups it was stated that when asthma is suspected, spirometry only has supplementary value if the GP finds reversible airway obstruction or day-night variability using peak flow measurements. Because airway obstruction – or its reversibility – can be detected more effectively with spirometry than with peak flow measurements, this is doubtful. As a steadily increasing number of GPs are setting up their own spirometry facilities, the value of peak flow measurements is decreasing. However, negative findings on supplementary tests (i.e. normal peak flow, absent peak flow variability, normal spirometry), while the GP nevertheless has clinical suspicions of asthma, can form a relevant referral indication. In such a case, supplementary tests by the pulmonologist have clear additional value: if the histamine threshold is normal, then clinical asthma is almost certainly excluded and the GP can continue his search within the differential diagnosis. During the discussions, the pulmonologists laid great emphasis on the 'degree of certainty' about the diagnosis asthma. Recent studies have also shown that this should be an important point of attention for GPs. For instance, Marklund *et al.* found that GPs' diagnoses of asthma could not be confirmed by an allergologist in 34% of the patients.<sup>18</sup> In addition, 7% of the patients were found to have a combined diagnosis of asthma and COPD, which the GP had not recognised. Primary care research by Pinnock *et al.* showed that spirometric re-evaluation of COPD patients led to a different (spirometric) diagnosis in 35% of the cases.<sup>19</sup>

### Back-referral to general practice and 'shared-care'

The suggestion made to stimulate pulmonologists to refer asthma patients back to general practice once their lung function has normalised, they have few respiratory symptoms and inhaled steroids have been reduced to the lowest possible maintenance dose is of particular interest. This also applies to the exclusion criteria mentioned in the discussions, an asthma-related hospital admission less than two years previously and the persistent need for combined treatment with high-dose inhaled steroids and a long-acting  $\beta_2$ -agonist. The support that seems to exist among pulmonologists for cooperation with GPs in the form of shared-care is an extra reason to stimulate such constructions for the group of more complex asthma and COPD patients. However, the term 'more complex' should be clearly defined, because research has shown that shared-care in a large group of asthma patients as a whole did not prove to be more effective than full specialist treatment, even though the financial cost was considerably lower.<sup>20</sup>

In the discussion about when pulmonologists should refer COPD patients back to general practice, it was concluded that guidelines can only offer a certain amount of footing, because the pulmonologist's own 'feeling' must continue to play a major role. Although it is difficult to lay down hard criteria, the view that patients with moderately to severely disturbed diffusion capacity, ventilatory limitations, hypoxaemia and/or hypercapnia on exertion should remain under the care of the pulmonologist, is relevant within this framework.

#### Communication and mutual expectations by GPs and pulmonologists

Research into referral and consultation in patients with chronic respiratory diseases has received little attention in the literature. Recently, Li *et al.* performed a survey in the USA on 37 GPs to gather information on the prevailing customs, preferences and expectations when referring asthma patients.<sup>15</sup> Although the GPs who participated were not at all representative for the 'average' GP (all the respondents had affiliations with the university that conducted the survey), a striking finding in the study was that the majority of referrals to pulmonologists were written at the patient's own request. A satisfied patient and clear, applicable recommendations from the pulmonologist appeared to be the prevailing expectations of the GPs. Research in Canada by Langley *et al.* showed that the geographic distance to specialist care and the relationship between GP and specialist were important factors in the GP's decision whether or not to refer a patient.<sup>21</sup> The study concerned not only asthma and COPD patients, but referrals by GPs in general. The view expressed in the current study that pulmonologists should give clear advice about the treatment policy when referring patients back to the GP is in line with the findings in other studies. Williams *et al.* reported that pulmonologists and GPs in the USA are of the opinion that the information supplied when a patient is referred is too often inadequate or unclear.<sup>22</sup> Primary care research has shown that GPs follow referral guidelines for asthma and COPD only to a limited extent. Jans *et al.* reported that the guidelines for referral to the pulmonologist were followed by the GP in only 17% of the cases with an indication.<sup>23</sup> Doubt about the value of referral in individual cases was the most important reason for this. Studies have also shown that referral behaviour of GPs can be influenced positively, although it is not yet clear which intervention method is the most effective.<sup>24</sup>

#### CONCLUSION

This explorative study provided insight into how non-academic pulmonologists visualise a rational referral policy for asthma and COPD patients. Although the outcome of

the discussions and the recently published GP guidelines and transmural agreements showed considerable similarity, we also observed some marked discrepancies. To achieve optimal integration of published referral guidelines into daily practice the insights of this study should be taken into consideration during future revisions of referral guidelines for patients with asthma or COPD.

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