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ORIGINAL ARTICLE

Use of office spirometers in Flemish general practice: results of a telephone survey

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ABSTRACT: ***Use of office spirometers in Flemish general practice: results of a telephone survey. N. Boffin, V. Van der Stighelen, D. Paulus, P. Van Royen.***

Background. **While office spirometry is seen as potentially useful and feasible in general practice, little is known about its use in Flemish general practice. Our aim was to describe the use of spirometers by Flemish GPs, characteristics of their spirometry practice, training needs and preferences, and attitudes towards office spirometry.**

Methods. **A telephone survey was set up in a random sample of Flemish GPs. Interviews were carried out by a GP researcher using a structured piloted questionnaire.**

Results. **197 out of 243 eligible GPs (81%) were interviewed. Most GPs (66%) had never used an office spirometer, 17.3% were using one and 16.7% stopped using one. Time constraints (54%) and insufficient knowledge and skills (27%) were the main reasons for not using an office spirometer (any longer). GPs particularly used their spirometer to diagnose COPD and asthma, and less frequently in follow-up. GPs (67.9%), especially current users (91.2%), considered spirometry as a GP task. Spirometry training should be provided (86%) and spirometry by GPs should be reimbursed (79.5%). More information on spirometry would be very useful (62.3%), with a marked preference for training in small groups (86.8%).**

Conclusion. **Although office spirometry is not widespread in Flemish general practice, GPs show an undoubted interest in it. They need educational and financial support to overcome prevailing barriers in establishing office spirometry on a routine basis.**

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Introduction

Chronic obstructive pulmonary disease (COPD) and asthma are recognised as major worldwide public health problems and consequently guidelines were developed for their diagnosis, management and prevention. These guidelines emphasise the importance of spirometric lung function testing in addition to history taking and physical examination for accurate diagnosis and assessment of disease severity in both asthma and COPD [1-6].

The role of GPs in the detection and management of asthma and COPD is pivotal: they are the first health service provider most patients with respiratory symptoms consult. In this context, spirometry is seen as a potentially useful and feasible tool in general practice [7]. A recent study in Flemish general practice showed its feasibility provided that the GPs are instructed and trained in the use of a so-called hand-held spirometer [8]. However, this test is currently not reimbursed by the national health insurance system if it is performed by a GP. At the time of the research, no data was available on the possession and use of office spirometers in Belgian general practice.

Our objectives were to describe spirometry equipment and use of spirometers by Flemish GPs, characteristics of spirometry practice, training needs and preferences, and attitudes towards spirometry in general practice. A similar survey was set up use in the French speaking part of the country. The results will be used for a discussion about the potential reimbursement of examinations in general practice and for the development of a new training course for GPs.

Methods

Three hundred GPs were selected at random from the database of the Scientific Society of Flemish GPs (n=6535). One to three weeks before the interview the GPs received a short, straightforward letter announcing the telephone interview and explaining that the survey aimed to describe the use of spirometry by GPs in the diagnosis and follow-up of asthma and COPD. All telephone interviews were carried out by a GP researcher (VVdS) between November 2003 and January 2004. At least three attempts were made to complete an interview with every sampled GP. Efforts were made to trace new addresses and telephone

numbers if the telephone call was not answered or the GP no longer resided at the given address. GPs who postponed the interview more than three times were considered as refusals. The structured telephone questionnaire was developed by discussion between the authors and piloted among 15 GPs to ensure its acceptability and comprehension. Interview data was analysed with SPSS 12.0. Differences in proportions were tested using the Pearson's Chi-Square statistic and one way ANOVA for continuous variables.

Results

Response

57 out of 300 contacted persons were no GPs or were no longer active in general practice. Of the 243 remaining persons, 16 were untraceable and 30 GPs refused an interview. As a result, 197 out of 243 eligible GPs (81%) participated in the survey. Responders were representative for the Flemish GP population for practice setting (21% group practices). Women GPs were slightly under-represented (25% versus 31%, chi-square = 3.28, d.f. = 1, P = 0.04) together with more recently graduated GPs (1985 versus 1983, one-way ANOVA F = 6,41, d.f. = 1, P = 0.011).

Use of office spirometer

Table 1 shows that a vast majority of Flemish GPs (66%) had never or almost never used an office spirometer. At the time of the interview, less than one in five GPs used an office spirometer (17.3%) and a similar proportion of GPs stopped using it (16.7%). Age of the GP and practice setting were not related with having a spirometer and using it. GPs were not using their office spirometer (any longer) because the time it takes overruns the routine consultation time (53.7%), and because of a lack of knowledge and skills (26.8%). Among those owing an office spirometer and not using it (any more), 77.5% had considered using it. Most GPs (65.8%) obtained their office spirometer from a pharmaceutical company. At the time of the interview, a peak flow meter was used by 69.6% of all GPs and by 71.8% of those not using a spirometer (Chi square = 3,65, p = 0.047).

Characteristics of current use, problems and advantages of office spirometry as perceived by current users

GP users (n = 34) were asked how frequently they use their spirometer in 10 new and 10 follow-up patients presenting with COPD and asthma symptoms respectively. They particularly used their spirometer to substantiate the diagnosis of COPD (mean 5.3 of 10 cases, range 9, SD 3.0) and asthma (mean 4.2 on 10 cases, range 9, SD 2.8) in suspected cases. Use of spirometry in follow-up of asthma patients (mean 3.9 on 10 cases, range 10, SD 3.1) and COPD patients (mean 3.2 on 10 cases, range 10, SD 2.8) occurred less frequently. GP users considered FEV_1 (Forced Expiratory Volume in 1 second) (79.4%) and (F)VC (Forced Vital Capacity) together with FEV_1 (67.6%) and less often reversibility (17.6%). Shortage of time (61.8%) and scheduling spirometry in the available consultation time (47.1%) were major problems in office spirometry, compared to ease of use (11.8%) and interpreting results (17.6%). The major advantages of office spirometry were accuracy of diagnosis (55.9%) and treatment (41.2%).

Attitudes towards spirometry in general practice

Four statements on office spirometry in general practice, were presented to all respondents (table 1). GPs, especially current spirometry users (67.9% versus 91.2%, chi-square = 10.87, d.f. = 3, P = 0.01), definitely considered spirometry as one of the GP tasks. GPs also agreed that training should be provided to GPs ready to perform spirometry (86%) and spirometry by GPs should be reimbursed (79.5%). A minority agreed upon the need for centres where GPs can manage spirometric tests themselves (21.8%).

Training needs and preferences

Table 1 shows that 35.4% of all GPs and 70.6% of the current users followed some educational session on spirometry (chi-square = 10.2, d.f. = 1, P = 0.00). Most educational sessions (71.2%) were followed between 2000 and 2002 and organised by a vendor of spirometers (64.1%). While interpretation of curves (88.4%) and instructions for use (82.9%) were largely dealt with, this was less the case with guidelines on spirometry (52.2%).

According to a large number of GPs (62.3%), both users and not-users, more information on spirometry would be (very) useful. Education and training should include interpretation of curves (96.7%), guidelines on spirometry (84.3%) and instructions for use (76.3%). There was a marked preference for information by training in small groups (86.8%) compared to audiovisual training aids (36.4%).

Discussion

This survey shows that 38% of the Flemish GPs have an office spirometer at their disposal, substantially less than the 67% (personal communication by Y. Engels, 2005) that is currently assessed in Dutch general practice with the practice visit method VIP [9]. A telephone survey in North Staffordshire found that 18 of 84 general practices (21.4%) possessed a spirometer although only 10 of them (12%) used it [10]. A mail survey of Pennsylvanian physicians showed that 15% of primary care physicians with a spirometer in their office never used it [11]. A recent survey of Welsh GPs learned that 82% of the practices had a spirometer and 70% used it [12].

There is a wide agreement that the diagnostic approach of GPs to COPD and asthma is non-com-

Questionnaire

Q1. Do you have a spirometer in your practice? (yes/no, never had one/no but had one)
- IF "NEVER HAD ONE": Have you ever considered using one?(yes/no/do not know)
- IF "NO BUT HAD ONE": Did you ever use it? (yes/no)
  - IF "YES":
    - How often? (less than 10 times/10 times or more)
    - When was last time? (less than 12 months ago/12 months ago or longer)
  - IF "NO":
    - Why not? (no need because…/time constraints, that is…./lack of knowledge and skills/no reimbursement/another reason)
    - Did you ever consider using it? (yes/ no/ do not know)

SKIP TO Q7 IF NO SPIROMETER IN PRACTICE

Q2. Do you use your spirometer? (yes/no I stopped using it/no I (almost) never use it)
- IF "NO":
  - Why not? (open answer)
  - Have you ever considered using it? (yes/no/do not know)
  - Did you buy it or was it given to you? (bought it/received it from company/else/do not know)

SKIP TO Q7 IF NO USE OF SPIROMETER

Q3. Did you buy it or was it given to you? (bought it/received it from company/else/do not know)

Q4. For every 10 patients you treat with:
a) suspected COPD; or
b) suspected asthma
how many times do you use your spirometer for diagnosis?
For every 10 patients you treat with:
a) COPD; or
b) asthma
how many times do you use your spirometer for follow up?

Q5. What parameters do you consider in spirometry? (FEV_1/(F)VC/Tiffenau index/ reversibility/else/do not know)

Q6a. Do you feel the following issues are problematic to you or not:
a) shortage of time to perform spirometry;
b) scheduling test in routine consultation time;
c) ease of use d) interpreting test results?
(no/ more or less/yes/don't know)

Q6b. What are the major advantages of office spirometry in your view? (less referrals/accuracy of referrals/ accuracy of diagnosis/ accuracy of treatment/better motivation of patient for smoking cessation/do not know/else)

Q7. Do you use a peak flow meter? (yes/no/do not know)

Q8. To what degree do you agree with these statements:
a) spirometry is a GP task;
b) spirometry by GPs should be reimbursed;
c) training should be provided to GPs ready to perform spirometry;
d) centres should be set up for management of spirometry by GPs
(disagrees completely/rather disagrees/no agreement no disagreement/rather agrees/ agrees completely/do not know)

Q9. Have you followed continuing education session(s) on spirometry?
IF YES: What year? Who organised it? What subjects were dealt with a) practical instructions for use b) interpretation of curves c) guidelines on spirometry (yes/more or less/no/do not know)? Did the continuing education fulfil your expectations (not at all/rather not/more or less/rather well/completely/do not know)?

Q10. Would more information on spirometry be useful to you or not? (not useful/rather useless/more or less/rather useful/very useful/do not know)?

Q11. What subjects should be treated in the education and training programmes a) practical instructions for use b) interpretation of curves c) guidelines on spirometry (yes/more or less/no/do not know)? Other subjects?

Q12. In what way would you like to receive the information (training in small groups/ audiovisual training/else). IF PREFERENCE FOR AUDIOVISUAL TRAINING: What specific medium (no specific preference/video/ CD-ROM/internet)

Table 1. - Main results

	N	% (N item response)
GPs using an office spirometer	34	17.3 (197)
GPs not using an office spirometer	163	82.7 (197)
GPs having stopped using an office spirometer	33	16.7 (163)
GPs having (almost) never used an office spirometer	130	66.0 (163)
GPs having an office spirometer in practice	75	38.1 (197)
GPs having an office spirometer, not using it (any longer)	41	54.6 (72)
GPs having an office spirometer, not using it (any longer), considering (re)using it	31	77.5 (40)
GPs using a peak flow meter	133	69.6 (191)
Spirometer users agreeing that …		
training should be provided for GPs willing to uptake spirometry	27	79.4 (34)
spirometry by GPs should be reimbursed	28	82.4 (34)
spirometry is a task of the GP	31	91.2 (34)
centres for management of spirometry by GPs should be set up	6	17.6 (34)
GPs agreeing that …		
training should be provided for GPs willing to uptake spirometry	166	86.0 (193)
spirometry by GPs should be reimbursed	151	79.5 (190)
spirometry is a task of the GP	129	67.9 (190)
centres for management of spirometry by GPs should be set up	42	21.8 (193)
GPs having had CME (continuing medical education) on spirometry	69	35.4 (195)
Current users having had CME on spirometry	24	70.6 (34)
GPs having had CME on…		
interpretation of curves	61	88.4 (69)
instructions for use	58	82.9 (70)
spirometry guidelines	36	52.2 (69)
GPs finding future CME on spirometry useful	121	62.3 (194)
GPs finding future CME should include…		
interpretation of curves	116	96.7 (120)
spirometry guidelines	102	85.7 (119)
instructions for use	90	76.3 (118)

pliant with the use of spirometry as put forward by guidelines. A recent survey among Belgian physicians found that only 45% of the COPD diagnoses in general practice were based on spirometry and only 28% of these COPD cases are based on a test performed by the GP himself [13]. However, the poor response rate (15%) could have produced a bias towards overrepresentation of spirometer users. Nevertheless these figures correspond well with the results of our telephone survey, showing that the GPs used their office spirometer at the most in five of ten eligible patients. Since 45.3% of the Flemish GPs did not buy the device but obtained it from a commercial distributor, the high percentage of non-use (54.7%) is not surprising. Yet the frequent use of the peak flow meter indicates that GPs perceive the benefits of assessing lung function. The weakness of our survey is the absence of data on GP referrals for pulmonary function testing by spirometry in specialist settings. We only asked for the frequency of use of the office spirometer in the diagnosis and follow-up of asthma and COPD cases. For this reason the prevalence of spirometry in eligible cases should be considered with care.

Even when a spirometer is available on-site, under-use remains a problem. We found that time constraints and lack of knowledge and skills are the major barriers to the use of office spirometers. Taken the explicit recognition of learning needs and the demand for small group training, the removal of one barrier to spirometry in general practice seems fairly easy. The importance of effective training and quality assurance programmes to the provision of successful spirometry in general practice setting is emphasised in other studies [13-15]. Likewise it seems self-evident to recommend the reimbursement of spirometry by GPs, relying on its acceptance as a GP task and assuming that a financial compensation will resolve problems of time shortage. Still, a more sustainable recommendation would include the development of a reimbursement mechanism for practice assistance in Flemish general practice since spirometry typically is a task that can be provided in an efficient and effective way by trained assistants or practice nurses under supervision of the GP [17-19].

Although less than one in five Flemish GPs have yet to own an office spirometer, they show an

undoubted interest in office spirometry testing of asthma and COPD patients. They need educational and financial support to overcome prevailing barriers in establishing office spirometry on a routine basis.

References

1. Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS; GOLD Scientific Committee. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. *Am J Respir Crit Care Med* 2001; 163: 1256-76.
2. GINA Workshop Report, Global Strategy for Asthma Management and Prevention - updated April 2002 (scientific information and recommendations for asthma programs. NIH Publication No. 02-3659) http: //www.ginasthma.com/workshop.pdf
3. Ressel GW; Centers for Disease Control and Prevention; National Asthma Education and Prevention Program. NAEPP updates guidelines for the diagnosis and management of asthma. *Am Fam Physician* 2003; 68: 169-70.
4. BTS guidelines for the management of chronic obstructive pulmonary disease. The COPD Guidelines Group of the Standards of Care Committee of the BTS. *Thorax* 1997; 52 Suppl 5: S1-28.
5. Geijer RM, Thiadens HA, Smeele IJ, *et al.* [NHG-Guideline COPD and Asthma in Adults: Diagnosis]. *Huisarts Wet* 2001; 44: 107-17.
6. Kegels E, De Sutter A, Michels J, Van Peer W. [Guideline for good medical practice: Asthma in Adults]. *Huisarts Nu* 2003; 32: 275-300.
7. Schermer TR, Folgering HT, van den Boom G, Jacobs JE, van Weel C. [Role of spirometry in primary practice]. *Ned Tijdschr Geneeskd* 1999; 143: 2246-51.
8. Buffels J, Degryse J, Heyrman J, Decramer M; DIDASCO Study. Office spirometry significantly improves early detection of COPD in general practice: the DIDASCO Study. *Chest* 2004; 125: 1394-9.
9. van den Hombergh P, Grol R, van den Hoogen HJ, van den Bosch WJ. Practice visits as a tool in quality improvement: acceptance and feasibility. *Qual Health Care* 1999; 8: 167-71.
10. Dowson LJ, Yeung A, Allen MB. General practice spirometry in North Staffordshire. *Monaldi Arch Chest Dis* 1999; 54: 186-8.
11. O'Dowd L, Fife D, Tenhave T, Panettieri R. Attitudes of physicians toward objective measures of airway function in asthma. *Am J Med* 2003; 114: 391-96.
12. Bolton CE, Ionescu AA, Edwards PH, Faulkner TA, Edwards SM, Shale DJ. Attaining a correct diagnosis of COPD in general practice. *Respir Med* 2005; 99: 493-500.
13. Decramer M, Bartsch P, Pauwels R, Yernault JC. Management of COPD according to guidelines. A national survey among Belgian physicians. *Monaldi Arch Chest Dis* 2003; 59: 62-80.
14. Eaton T, Withy S; Garrett JE, Mercer J, Whitlock RM, Rea HH. Spirometry in primary care practice. The importance of quality assurance and the impact of spirometry workshops. *Chest* 1999; 116: 416-423.
15. Chavannes N, Schermer T, Akkermans R, *et al*. Impact of spirometry on GPs' diagnostic differentiation and decision-making. *Respir Med* 2004; 98: 1124-30.
16. Schermer TR, Jacobs JE, Chavannes NH, *et al*. Validity of spirometric testing in a general practice population of patients with chronic obstructive pulmonary disease (COPD). *Thorax* 2003; 58: 861-6.
17. Van Schayck CP, Loozen JM, Wagena E, Akkermans RP, Wesseling GJ. Detecting patients at a high risk of developing chronic obstructive pulmonary disease in general practice: cross sectional case finding study. *BMJ* 2002; 324 (7350): 1370.
18. Van Son L, Vrijhoef VB, Crebolder H, Van Hoef L, Beusmans G. [Support for the general practitioner. An exploration of the effect of the practice nurse on the care of asthma, COPD and diabetes patients.]. *Huisarts en Wetenschap* 2004; 47: 15-21.
19. den Otter JJ, Knitel M, Akkermans RP, van Schayck CP, Folgering HT, van Weel C. Spirometry in general practice: the performance of practice assistants scored by lung function technicians. *Br J Gen Pract* 1997; 47: 41-2.

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