

Research paper

Variation in examination and treatment offers to patients with allergic diseases in general practice

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ABSTRACT

Background Knowledge about practice characteristics associated with the spectrum of examination and treatment offered in general practice are important for organisational planning. We aimed to analyse physician and practice characteristics associated with examination and treatment offered in general practice to patients with allergic diseases, and to evaluate guideline compliance with respect to anaphylaxis emergency treatment kits.

Design A questionnaire-based survey among general practitioners (GPs) about examination and treatment procedures offered in the surgery to patients with allergic disorders.

Setting General practice in Denmark.

Results In 2005, 895 (64.3%) of 1391 randomly selected general practitioners (GPs) participated in

this survey. The extent of treatment offered and the involvement of staff were strongly associated with having a nurse on the practice team. Guideline recommendations for preparedness for anaphylactic shock in connection with allergy vaccine therapy were not fully implemented.

Conclusion General practice is substantially involved in the examination and treatment of patients with allergic diseases. There is room for further involvement of staff members and implementation of more procedures in general practice for patients with allergic diseases.

Keywords: allergy, advanced nursing role, general practice, immunotherapy, organisation, physician's practice patterns

How this fits in with quality in primary care

What do we know?

To meet future challenges, knowledge about practice characteristics associated with the spectrum of examination and treatment offered in general practice is important for organisational planning.

What does this paper add?

Large variations exist in examination and treatment offered to patients with allergic diseases with respect to referral to other specialties and involvement of staff in general practice. The extent of offers and involvement of staff is associated with practice characteristics such as having a nurse on the practice team. Guidelines for emergency kits are not fully implemented. This questionnaire-based survey indicates that there is room for further involvement of staff members and implementation of more procedures.

Introduction

The demand for primary care services has increased in developed countries due to ageing populations, rising patient expectations and reforms that shift care from hospitals to the community. At the same time, there is a shortage of general practitioners (GPs) in many countries and regions. Studies suggest that for many purposes appropriately trained nurses can provide certain types of care equally as well as doctors.^{1–3} The expectation is that substitution of doctors by nurses for specific examination, treatment and control procedures can reduce physician workload.^{4,5} Whether time-consuming procedures are performed by GPs or staff members within the practice or the patients are referred to specialists may, however, be influenced by economic and personal as well as structural factors.^{6,7} The literature is sparse but knowledge about contributory conditions is very important for organisational planning and implementation of strategies meeting future challenges.

The prevalence of asthma and allergic disorders in the population is high and patients with such symptoms frequently attend general practice for symptom control, diagnostics and prevention. These procedures are, however, offered in some but not all GP surgeries. In Denmark, allergy vaccine therapy (allergen immunotherapy) has previously been a task for an allergy specialist, but is increasingly performed within general practice. Both GPs and staff members under direct supervision may perform this kind of therapy. It is a well-known procedure with rare but serious adverse effects, i.e. anaphylactic shock. Based on several cases of anaphylactic shock caused by specific immunotherapy for grass pollen the Danish National Board of Health in 2004 sent instructions about emergency preparedness in relation to allergy vaccine to all GPs.⁸ Lack of adherence to this guideline may have serious consequences,⁹ but compliance has not been evaluated.

The aim of this paper is therefore: 1) to analyse physician and practice characteristics associated with examination and treatment offers to patients with allergic diseases in general practice, and 2) to evaluate guideline compliance with respect to anaphylaxis emergency treatment kits.

Methods

By the end of 2005, 1391 of 3616 GPs randomly selected from the membership list of the Danish Medical Association were invited to complete the questionnaire survey, *Prevention for patients with asthma and allergy in general practice*. The four-page questionnaire was sent by mail. One reminder was mailed

after two weeks. The questionnaire was developed by trained researchers from Audit Project Odense¹⁰ and the National Board of Health. A pilot test among 15 GPs resulted in minor amendments to the questionnaire.

The physicians were asked about their practice: number of physicians (single-handed if only one specialised GP), number of staff members, education of staff, number of patients listed, surgery facilities, anaphylaxis emergency kits available and examination and treatment procedures offered within the practice. For each of 15 listed procedures they were asked if these were performed in the surgery and by whom (themselves, other GPs and/or practice staff). They furthermore responded to questions on whether they had adrenaline, a ventilation bag, oxygen, suction, and/or a treatment protocol for anaphylaxis emergency, and if the kit items were easily accessible in one place or not. Questions about continuing medical education and working relationships with other specialties were included too, but are not reported on here. The four-page questionnaire included 18 items. Approval from the local ethics committee was not required.

Data analysis

Performance rates were defined as the proportion of physicians where the different examination and treatment procedures were carried out in their surgery. By definition 'performed in their surgery' could be by themselves, physician colleagues or staff members. Due to local agreement among GPs in the centre of Copenhagen most of their laboratory tests were performed in an affiliated laboratory but classified as 'in the surgery'. For comparison, performance rates were estimated for different groups of doctors.

The extent of regional shortage of GPs was classified as high in seven out of 16 counties (Storstrøms, Vestsjællands, Sønderjyllands, Ribe, Viborg, Ringkøbing and Nordjyllands counties).

The unit of analysis was the single participant, i.e. the individual GP. Owing to anonymity, data from GPs working in the same practice were not linked. Confidence intervals were estimated at a 95% level. Stata 9.0 was used for all analyses.

Results

In total, 895 (64.3%) participants completed the questionnaire and were included in the study. Female physicians constituted 36.6% (34% of all GPs) and the mean age was 52.2 years. Single-handed doctors were slightly underrepresented among the participants (30% compared to 40%).

Beyond nurses the staff members included medical secretaries, auxiliary nurses, laboratory technicians and a few others. Some 61% of the GPs had a nurse within the team ($n=847$), and 89% had a separate room where staff members could carry out consultations on their own ($n=888$). Absence of a consultation room was more common among single-handed physicians compared with GPs working in group practices (19% versus 8%, $n=888$). Of the 5% without clinical staff (44/891), half were single-handed.

Referral to other specialties versus examination and treatment within general practice

Table 1 shows the proportion of physicians where specific examination and treatment methods were offered in the surgery (performance rates), and the proportion having a member of staff performing them. If services were not offered in the surgery, it was assumed that patients were referred to other specialties. The extent to which the different procedures

were offered varied from a performance rate in practice of 42% (skin prick test) to 99% (peak flow). Staff members performed between 19% (application technique) and 60% (spirometry) of the procedures (Table 1). Analysing the association between performance rates and practice/physician characteristics we observed that single-handed GPs and those without a nurse in the team reported lower performance rates of allergy vaccine therapy, peak flow monitoring, spirometry, spirometry with β_2 -stimulation and exhaustive running tests (Table 2). Physician's age was negatively associated with peak flow monitoring, spirometry and spirometry with β_2 -stimulation. Skin prick testing was more widespread among GPs with a nurse on the team, and those working in geographical areas characterised by no shortage of physicians.

Involvement of staff members in general practice

More than a fifth of physicians did not use clinical staff to perform any of the specified procedures (22.3%,

Table 1 Examination and treatment procedures for patients with allergic diseases: proportion of physicians where the different examination and treatment procedures were carried out in their surgery (performance rates), and the proportion of staff performing them

Examination/treatment method	<i>n</i>	Performance rates % (95% CI)	Performed by staff % (95% CI)
Skin prick test	868	42.4 (39.1–45.8)	24.7 (21.8–27.7)
Allergen-specific IgE blood test	877	90.5 (88.4–92.4)	58.8 (55.5–62.1)
Peak flow	889	99.2 (98.4–99.7)	50.8 (47.5–54.2)
Peak flow monitoring	853	92.5 (90.5–94.2)	36.5 (33.2–39.8)
Spirometry	889	91.2 (89.2–93.0)	60.2 (56.7–63.4)
Spirometry with β_2 stimulation	878	85.4 (82.9–87.7)	54.1 (50.7–57.4)
Exhaustive running test	851	59.7 (56.3–63.0)	32.3 (29.2–35.6)
Test of corticosteroid responsiveness	869	76.9 (73.9–79.6)	34.3 (31.1–37.6)
Motivational counselling	887	97.3 (96.0–98.3)	34.3 (31.1–37.5)
Allergy eradication	855	73.5 (70.4–76.4)	20.1 (17.5–23.0)
Smoking cessation	888	92.3 (90.4–94.0)	45.5 (42.2–48.8)
Dietary counselling for allergic patients	859	64.1 (60.8–67.4)	28.2 (25.2–31.3)
Demonstration of inhalation technique and devices	890	95.8 (94.3–97.1)	44.7 (41.4–48.1)
Demonstration of dermal application technique	799	44.3 (40.8–47.8)	19.3 (16.6–22.2)
Allergy vaccine therapy	882	68.3 (65.1–71.3)	18.8 (16.3–21.6)

$n=895$). In practices carrying out the procedures, members of staff were more frequently involved if the staff included a nurse, the physician was young or the physician was a partner in a group practice (data not shown). The largest difference was observed if the team included a nurse (a more than twofold difference).

Allergy vaccine therapy

Allergy vaccine therapy was performed in the surgery among two-thirds of the physicians (Table 1). They were generally well prepared to treat anaphylactic shock with adrenaline and ventilation, but around one third did not have oxygen and suction (Table 3).

Discussion

A variety of diagnostic and treatment procedures for patients with allergic diseases are offered in general practice. There is, however, a large variation in referrals to other specialists and in the involvement of staff. The extent of offers and the degree of involvement of staff is strongly associated with having a nurse on the practice team. Guideline recommendations for preparedness to manage anaphylactic shock in connection with allergy vaccine therapy are not fully implemented.

In Denmark, GPs are organised in small clinics varying in size from single-handed practices consisting of only one GP to larger units with two to three or up to eight GPs. Staffs may consist of secretaries, nurses and laboratory technicians; few physicians have no staff at all. Most services are free of charge, including all examination procedures. Also free of charge are services performed by other specialists following medical

referral from GPs. It is mandatory to have a medical referral in order to see an allergy specialist. GPs are paid a basic fee per patient listed and specified fee-for-service remuneration. The skin prick tests are paid for separately in some but not all counties, which may explain some of the variation observed in performance rates.

We invited a large number of GPs randomly selected from all Danish GPs to complete the questionnaire. We achieved a high participation rate. GPs with a particular interest in allergic diseases may be over-represented, but the participants were representative of all GPs with respect to age and gender. Single-handed GPs were slightly underrepresented. Our study was not designed to explore the quality of examination and treatment procedures performed in the general practices nor the reasons why staff were involved or not. We do not know to what extent it was the GP or the staff who carried out the specific procedures in the clinic. We suggest that the observed proportions of GPs who allowed staff to perform the procedures were maximum estimates. In conclusion, the results are representative and give insight into the organisation of allergy intervention offers in general practice and associated structural and personal factors.

The guidelines produced for GPs on how to be prepared for and treat anaphylactic shock have not had their full effect.⁸ Ambulances generally have a short response time and are equipped with remedies for anaphylaxis. The number of ambulances equipped with a specialist doctor is increasing, while small emergency rooms across the country are being closed. The importance of having access to oxygen and suction should, therefore, not be neglected. It is internationally accepted that adrenaline is the most important treatment and the drug of first choice when an anaphylactic event occurs.^{11,12}

Table 3 Guideline adherence in general practice with respect to existence of anaphylaxis emergency treatment kit

	Allergy vaccine therapy performed in practice					
	Yes		No		All	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Adrenalin	602	100	280	99.6	895	99.8
Ventilation bag	601	96.8	280	92.5	894	95.4
Oxygen	589	78.3	265	35.1	866	64.4
Suction	587	76.0	268	34.3	867	62.8
Anaphylaxis emergency protocol	586	70.7	267	50.6	865	63.9
Kit items easily accessible in one place	594	94.8	275	89.5	882	93.0

The increasing workload among GPs in Denmark and other countries makes this study very topical. Our study only includes procedures in relation to patients with allergic diseases. Cautiously, however, we suggest that having a nurse on the practice team is crucial for the involvement of non-physicians in other clinical areas too.^{3,13} One solution for general practices in the future would be to shift some of the care from the physicians to the staff. Studies have shown that nurses obtain as much positive feedback from patients as do doctors, and in some cases even more.^{2,14} Precautions must, however, be taken to prevent staff creating additional needs among the patients or simply repeating some of the work performed by the GPs.^{1,4} This can be done by sufficient in-service training of the staff and a clear division of the different tasks.¹⁵ As this study showed, cramped surgery facilities can be a crucial barrier to reorganisation and a further increase in general practices' participation in the diagnosis and treatment of patients with allergic diseases.

This study shows that general practice is substantially involved in examination and treatment of patients with allergic diseases. However, there seems to be room for further involvement of staff and implementation of procedures in practices which do not undertake these procedures or refer the patients to other specialists. It is, however, crucial that different organisational models are evaluated with respect to quality, job satisfaction, patient satisfaction and safety. Qualitative studies may provide further knowledge on variation among practices and especially why the nurses made a difference.

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CONFLICTS OF INTEREST

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