

# A North London Pilot Survey to Assess the Need for a Medical Device in Diagnosing Chronic Rhinosinusitis in Primary Care

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## Abstract

**Introduction and Objectives:** A pilot study to evaluate the need for a medical device in primary care to help diagnose chronic rhinosinusitis (CRS) from other causes of nasal obstruction. Significant delays in the diagnosis and treatment of CRS in UK secondary care cause long-term detrimental effects on the patient.

**Method:** A questionnaire-based survey was conducted at a General Practitioner (GP) General Update course in November 2017 attended by 134 GPs from North London, our major referral base. 105 questionnaires were completed: 83 in person and 22 subsequently online. Qualitative interviews were conducted with a North London focus group in order to construct the questionnaire and thematic analysis performed.

**Results:** The response rate was 78% (105/134). 56% reported diagnosing CRS as moderately difficult. 95% would invest in a medical device to help diagnose CRS from other causes of nasal obstruction. Most are unaware of the 2012 EPOS CRS guidelines for diagnosis (84%) and instead use local guidelines. Over two-thirds (69%) refer fewer than 20% of patients to secondary care and most (80%) do so within 6 months. The recurring theme following thematic analysis was the need for a nurse-led nasal blockage clinic in primary care in order to maximise adoption of such a medical device. This would better utilise GP time and improve patient satisfaction.

**Conclusion:** A medical device facilitating diagnosis of CRS could play an important role in primary care, in a nurse-led clinic setting. This would save valuable GP resources and reduce unnecessary referrals to secondary care. This study demonstrates that the majority of GPs refer their medical refractory CRS patients to secondary care in a timely fashion. However it does not explain the current delay in secondary care treatment in the UK and instead this maybe more related to patient dissatisfaction and non-compliance in their nasal blockage journey.

**Keywords:** Nasal Obstruction, Diagnosis, Assessment, General Practice

## INTRODUCTION

Nasal obstruction is a common symptom with an estimated prevalence of over 30% in the general

adult population[1]. It can be defined as a discomfort which is manifested by inadequate nasal airflow and is commonly caused by two inflammatory disorders;

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allergic rhinitis and chronic rhinosinusitis (CRS). Both have a prevalence of 25%[2] and 11%[3] respectively in Europe with non-allergic rhinitis accounting for similar levels of prevalence albeit less. Less commonly, nasal obstruction can be caused by structural disorders such as a deviated nasal septum and rarely neoplastic or granulomatous conditions. This makes nasal obstruction one of the commonest ENT presentations in general practice and one of the commonest causes for ENT referral to secondary care[4-5].

According to our recent patient end-user questionnaire on nasal obstruction[6], a significant delay in diagnosis and treatment of nasal obstruction was observed when patients were referred to secondary care with persistent nasal obstruction. The survey demonstrated that 78% of patients referred to secondary care for persistent nasal obstruction had experienced nasal obstruction for more than 1 year, and 44% for more than 5 years[6]. This delay in referral is particularly relevant to CRS whereby there is increasing evidence suggesting that delayed CRS treatment negatively affects prognosis. Patients with a longer duration of CRS prior to initiation of conservative treatment are known to have worse olfactory outcomes than those treated at an earlier stage in their disease[7]. Moreover, delayed surgical treatment of medically-refractive CRS leads to greater post-operative healthcare needs regardless of co-morbid status[8-9]. This highlights a need for more accurate and timely assessment of patients with nasal obstruction; focusing on primary care and with an emphasis on CRS where treatment delay has greater adverse effects.

The aim of this pilot study is to determine whether a novel medical device in the GP setting could improve the diagnosis of CRS from other causes of nasal obstruction, as well as to obtain a better understanding of current CRS diagnosis and management in primary care. This pilot study will help inform larger health economic and policy studies for the rest of London and the UK.

### Objectives

We aimed to establish for North London:

1. How easy/difficult GPs find diagnosing CRS.
2. How GPs diagnose and treat CRS, including whether GPs use the 2012 European position

paper on rhinosinusitis and nasal polyps (2012 EPOS) guidelines.

3. When GPs refer to secondary care.
4. If GPs are financially willing to invest in a new medical device that facilitates diagnosis of CRS, and if so, how much.

## PATIENTS AND METHODS

### Ethics Approval and Consent to Participate

Ethical approval was obtained from the London - City & East Research Ethics Committee (Reference: 15/LO/0187). The authors assert that all procedures contributing to this work comply with the ethical standards and no conflict of interest exists. For all individual participants included in the study, voluntary completion of the questionnaire implied consent.

### Study Design and Setting

The survey questionnaire was developed and informed by structured interviews with our GP focus group formed of invited GP referrers from our North London Clinical Commissioners. We conducted face-to-face interviews involving 2 GPs (one of whom has a specialist interest in ENT). Thematic analysis of the qualitative data was performed (16) and the recurring themes included;

1. The difficulties GPs have in determining the cause of nasal obstruction in the given 10-minute appointment.
2. How GPs would like to avoid referring patients to secondary care due to high costs, long waiting times for patients and patients having to take time off work.
3. GPs managing CRS patients in primary care would like to monitor treatment progress with a score/outcome, giving patients more ownership of their condition and reducing requests for further appointments.
4. A solution to meeting the challenges of an overstrained GP service would be a nurse-led clinic (such as those for hypertension or asthma) but would require a reliable medical device to diagnose the cause of nasal blockage and monitor treatment progress in particular CRS.

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In addition, the questionnaire was further reviewed and condensed with more focus on the need for a medical device as opposed to epidemiology of nasal obstruction or CRS which has already been explored.

As a pilot survey, the questionnaire was then distributed amongst North London GPs attending a GP General Update course at the British Medical Association House. The questionnaire was also available online for those unable to complete on the day. In both cases, no financial incentive was offered and details such as the grade, name of practice or working contract of the GPs were not obtained.

### Study Protocol

The questionnaire consisted of 11 questions with a variety of question types, including multiple-choice, Likert, dichotomous, short-answer and long-answer formats.

All responses were anonymised and analysis was performed using Excel (version 15.33, Microsoft Office, Redmond, USA) and GraphPad Prism (version 6, GraphPad Software, LaJolla, USA). Statistical significance was attributed when  $p < 0.05$ . Responses to multiple-choice and dichotomous questions were analysed according to the options given, whilst Likert scale questions were summarised using the median. Responses to open-ended questions were analysed by coding categories based on the most commonly given answers. Unless stated otherwise, results are given as mean  $\pm$  standard deviation.

## RESULTS AND ANALYSIS

134 questionnaires were distributed, of which 105 were returned (78% response rate). The response rate for individual questions in returned questionnaires was  $90\% \pm 8\%$ .

Diagnosing the underlying cause of nasal obstruction was rated as moderately difficult for the majority of GPs and 56% rated this at 4-6 on a scale of 10 (1 being 'very easy', 10 being 'very difficult'). 4% rated this as 'very easy', with no respondents rating this as 'very difficult'.

95% of GPs would invest in a medical device to aid in the diagnosis of CRS from the other causes of nasal obstruction. 40% would be willing to spend up to £50 on such a device, 40% would be willing to spend between £50 and £100 and 15% would be willing to

spend £100 or more. Less than 5% of GPs would not be willing to invest in such a medical device.

Almost all GPs diagnose CRS using history and examination (87%) and a small minority use history alone (11%). 76% of GPs provided example questions which they would ask when assessing nasal obstruction. Of these, 19% asked about symptom duration, 29% 'nasal congestion/obstruction', 39% 'nasal drip/discharge/runny nose' and 28% 'facial pain/headache'. Eleven percent asked about 'anosmia/ (loss of) smell'. 38 GPs (36%) specified what signs they would look for on examination. Of these, the most common sign specified was 'nasal polyps' (34, 90%). Only 10 (26%) would check for 'turbinates' and 9 (24%) would check for 'septal deviation'. 84 out of 103 GPs (82%) who responded stated that they would, or sometimes would check for symptoms of CRS in asthmatic patients.

With regard to management of CRS, 79% would prescribe 'nasal steroids', 30% would prescribe 'antihistamines' and 25% would prescribe 'nasal douching/saline washout/saline irrigation'. 7% stated that they would treat patients with a course of antibiotics. As expected, the majority of GPs (84%) would refer a patient to secondary care due to the failure of treatment. Other reasons include the presence of polyps on examination (24%) and patients being persistent or unhappy with treatment in primary care (11%). 4% said they would not refer their patients to secondary care at all. Of those GPs in our cohort who referred patients, 29% did so within 3 months, 51% at 6 months, 8% at 9 months and the remaining 12% at 1 year or more. 69% percent would refer  $\leq 20\%$  of patients with CRS to secondary care.

More than 90% of GPs have never used the 2012 EPOS guidelines, most commonly because they were unfamiliar with them. This included those that had never heard of 2012 EPOS guidelines (84%) and those that chose not to use them (7%). Only 3 GPs reported using these guidelines frequently in their practice.

## DISCUSSION

### Main Findings

In this survey, a moderate difficulty in diagnosing nasal obstruction was demonstrated by the majority of our GP respondents. A potential reason for this perceived diagnostic difficulty is the lack of specialist

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equipment and resources available in primary care; unlike in the management of hypertension or asthma whereby medical devices aid management. Additional diagnostic devices outside the realms of a full history and examination are not used in primary care, and 95% of our GPs would invest in a medical device to help diagnose the cause of nasal obstruction.

A recent audit of ENT referrals to secondary care concluded that the major reason for referral was to enable extended examination and appropriate investigations to determine a diagnosis and prognosis [10]; even though at least the former could be done by GPs (as recommended by NICE guidelines)[11]. This implies a need to reduce unwarranted secondary care referrals, which is corroborated by findings from our pilot study and national epidemiology statistics. In primary care, approximately 20% of CRS cases are referred to secondary care and yet less than a third of these referred cases require surgery[12].

In addition, the results from our pilot study do not conform directly with the findings of a recent study which compared CRS treatment strategies of GPs with ENT specialists[13]. This study found that GPs felt confident in recognising CRS with the exception of assessing nasal polyps. In contrast, ENT specialists felt that the diagnostic abilities in primary care were poor due to limited ENT training and lack of available diagnostic tests or equipment which resulted in misdiagnosis of CRS.

Hence, we propose a novel medical device that complements history and clinical examination in diagnosing nasal obstruction. This will result in early targeted treatment in the community. Where primary care fails to improve the patient's symptoms, these individuals can be referred in a more appropriate and timely fashion to receive early secondary care input. This will ultimately improve prognosis for all nasal obstruction patients. This is clearly cost-efficient in reducing unnecessary referrals to secondary care and devoting more resources for the treatment of refractory CRS patients.

This medical device could be used in a nurse-led clinic within the GP setting; similar to the idea of automated blood pressure and peak expiratory flow rate devices for hypertension and asthma respectively. This cost saving measure would reduce the demand on GP services.

Equally, a patient-friendly device that facilitates a better understanding of their CRS diagnosis and treatment progress, would empower the patient to take ownership of their health condition. Current evidence shows that less than 15% of CRS patients comply with medication in primary care[12]. In our recent patient survey we also demonstrated that the majority remain dissatisfied with their nasal obstruction workup and consequently do not understand their disease[6]. Through better evaluation and understanding of their nasal blockage, patients would demonstrate improved medication compliance, and be more likely to seek earlier specialist intervention if medication fails.

We acknowledge that improved education and communication with GPs are vital in ameliorating this problem. Our study supports the idea that a nurse-led clinic using a medical device for nasal blockage could greatly improve the management of nasal blockage in primary care. The device would also complement diagnosis in secondary care alongside nasendoscopy and imaging. The value of such a device lies in sieving out patients who have CRS from other causes of nasal blockage, akin to a screening programme. Our study demonstrates that a device costing around £50 would be acceptable by the majority of GP respondents.

Regarding treatment of CRS in the community, guidelines produced by ENTUK and Royal College of Surgeons England recommend that patients are compliant with a trial of medical therapy for at least 12 weeks, only then to refer to secondary care if there is no improvement[14]. Based on our results, it seems that most GPs adhere to this criterion (83%). They are also relatively good at referring early, with 29% doing so at 3 months or less and 51% at 6 months (thereby 80% within 6 months or less). However, as mentioned, only a third actually require surgery, raising the question as to whether the secondary care referral rate could be reduced if the diagnosis process in primary care were improved. Interestingly, the 2012 EPOS CRS guidelines for primary care recommended a lower threshold of 4 weeks of failed treatment before referral to secondary care [4]. Only 16% of our respondents had heard of EPOS guidelines for the management of CRS which is not surprising given the lack of time and resource available. Instead, the majority of GPs are appropriately consulting local guidelines that are in keeping with national recommendations.

### **STRENGTHS AND LIMITATIONS**

This study has a relatively good response rate of 78% and a good mean completion rate of 90±8%. As a pilot study, responses were obtained only from GPs across North London, hence creating a potential selection bias as a result of not including the wider GP community. However, this was deliberate as we intended to focus on GPs who referred patients to our tertiary referral centre, and importantly referred the patients who we originally surveyed in the patient end user questionnaire[6]. Another limitation is the inherent recall bias and ability to distinguish between what GPs report and what they do in practice is difficult; hence we focused more on future need. The survey itself underwent an internal validation process through structured interviews with only 2 representatives from this GP group. In retrospect, it could have been validated through a larger national representative of GPs or an ENT national body.

This study focused only on CRS alone, and lacked specific enquiry into allergic and non-allergic rhinitis. This is because CRS patients represent the majority of our referral base, and the cross-section of patients surveyed in our original patient end-user study[6]. Allergic and non-allergic rhinitis patients are often referred directly to our medical rhinology colleagues. However, we acknowledge that dual pathologies can co-exist in patients with nasal obstruction[15].

### **CONCLUSION**

This pilot study has shown that diagnosing the cause of nasal obstruction was shown to be moderately difficult and 95% of our GPs would invest in a medical device to help determine the diagnosis of CRS from other causes of nasal obstruction. We believe this would not only reduce unnecessary referrals to secondary care just for diagnosis, but also help to sieve out CRS patients who should be referred once primary care measures are ineffective. This would save resources overall, even more so if used in a nurse-led clinic, and allow CRS patients who require intervention in secondary care to receive it in a timely fashion to avoid their prognosis being adversely affected. We conclude that a novel medical device which facilitates diagnosis of CRS could have an important role in the primary care setting. Finally, this pilot study does not answer why

significant delays currently exist in the diagnosis and treatment of nasal obstruction at the secondary care level. Instead, this may be more related to patient dissatisfaction, lack of disease education and non-compliance in their nasal blockage journey.

### **List of Abbreviations**

CRS – Chronic Rhinosinusitis

EPOS – European position paper on rhinosinusitis and nasal polyps 2012

GPs- General Practitioners

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