Faculty of Health Sciences, Department of Community Medicine

# General Practitioners' Decisions to Refer Patients to Secondary Care – Referral Rates, Reasons for Referral and Expected Medical Benefit of the Referrals

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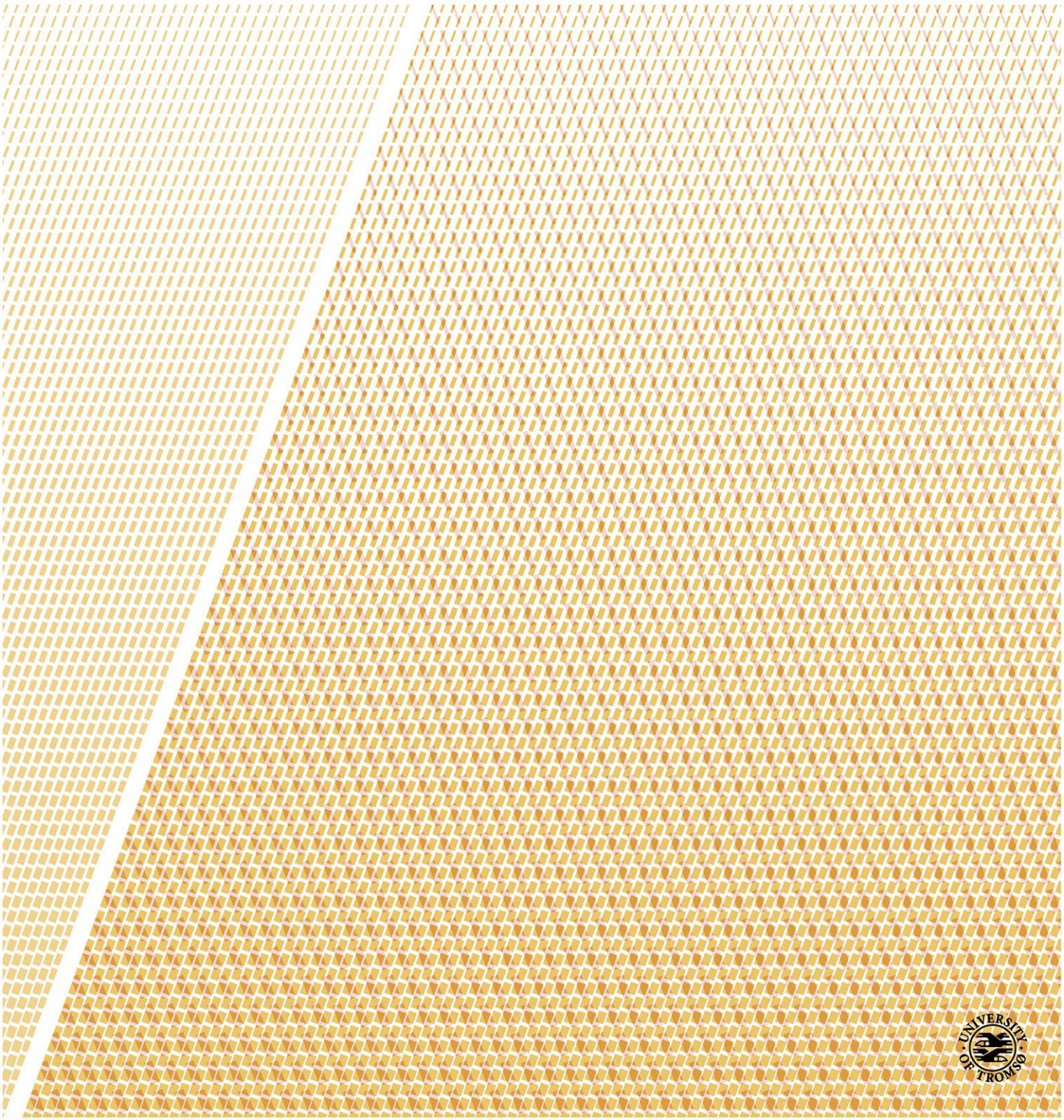
**Unni Ringberg, MD**

*A dissertation for the degree of Philosophiae Doctor – December 2014*



# General practitioners' decisions to refer patients to secondary care – referral rates, reasons for referral and expected medical benefit of the referrals

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Tromsø, December 2014

Unni

# Contents

# Summary


## Background

The referral rates of general practitioners (GPs) are an important determinant of secondary care utilisation. The considerable variation in these rates between GPs cannot be explained by patient morbidity alone. Other factors, like health care organisation, GP characteristics and patient preference play an important role, but the extent of their mutual contributions is not known.

## Aims and methods

In this thesis we aimed to study GPs' decisions to refer patients to secondary care (consultations and hospital admissions) and/or radiological examination. In a survey with a cross-sectional design, a random sample of GPs in Northern Norway completed electronic questionnaires after each consultation in a consecutive manner. We estimated and explored GPs' referral rates, reasons for referral, and GPs' expected medical benefit of referrals.

## Results

13.7% of 4350 consultations resulted in referral to secondary care and 4.2% to radiological examination, with a striking range among the GPs. Female GPs referred more frequently than male GPs. Furthermore, their referrals were more often substantiated by the reason 'to reassure the patient' and 'perceived deficient medical knowledge', but less often by 'perceived easy accessibility of specialists'. The higher the referral rates, the more frequently the GPs referred to avoid overlooking anything. The GPs expected one-quarter of their referrals to secondary care to yield little

or no medical benefit, and this was reported more often in referrals from GPs with high referral rates, referrals to private secondary care, and when the patient introduced the issue of referral.

## Conclusion

The results from the present study indicate a 50% increase in GPs' referral rates to secondary care over the last 20 years, and that GPs expected little or no medical benefit from a substantial proportion of their referrals. Parts of the variation in referral rates reflected how GPs handled professional uncertainty and patient preference.

# Sammendrag


## Bakgrunn

Fastlegenes henvisningsrater bidrar i vesentlig grad til forbruket av spesialisthelsetjenester. Den betydelige variasjonen i ratene mellom fastlegene kan ikke forklares av pasientenes sykelighet alene. Andre forhold, som organisering av helsetjenesten, karakteristika ved fastlegene og pasientenes ønsker er viktige, men vi vet ikke hvor mye deres felles bidrag er.

## Målsetting og metode

I denne avhandlingen har vi hatt som mål å studere fastlegers beslutning om å henvise pasienter til spesialisthelsetjenesten (konsultasjoner og innleggelser) og/eller til radiologiske undersøkelser. I en studie med tverrsnitt-design har et tilfeldig utvalg av fastleger i Nord-Norge fortløpende besvart elektroniske spørreskjema etter hver konsultasjon. Dette resulterte i kartlegging og utforsking av fastlegenes henvisningsrater, begrunnelser for å henvise og fastlegenes vurdering av antatt medisinsk nytte av henvisningene.

## Resultater

13.7 % av 4350 konsultasjoner resulterte i henvisning til spesialisthelsetjenesten og 4.2 % til radiologiske undersøkelser, med en markant spredning mellom legene. Kvinnelige fastleger henviste hyppigere enn mannlige leger. Henvisninger fra kvinnelige fastleger var oftere begrunnet i å ville berolige pasientene og at de hadde mangelfulle medisinske kunnskaper, men sjeldnere fordi de antok av spesialisthelsetjenesten var lett tilgjengelig. Med stigende henvisningsrater ble henvisningene i større grad begrunnet med å unngå å overse noe. Fastlegene antok at en firedel

av henvisningene til spesialisthelsetjenesten ville resultere i liten eller ingen medisinsk nytte for pasientene. Forventet liten eller ingen medisinsk nytte ble hyppigere rapportert i henvisninger fra fastleger med høye henvisningsrater, i henvisninger til privat spesialisthelsetjeneste og når pasientene først luftet spørsmålet om henvisning.

## Konklusjon

Resultatene fra denne studien indikerer en økning i fastlegenes henvisningsrate til spesialisthelsetjenesten på 50 % de siste 20 år, og fastlegene forventet liten eller ingen medisinske nytte av en betydelig del av henvisningene. Deler av variasjonen i henvisningsrater gjenspeilet fastlegenes evne til å handtere profesjonell usikkerhet og pasientenes ønske om henvisning.

# List of papers

Paper I

Ringberg U, Fleten N, Deraas TS, Hasvold T, Forde O. High referral rates to secondary care by general practitioners in Norway are associated with GPs' gender and specialist qualifications in family medicine, a study of 4350 consultations. BMC Health Serv Res 2013;13:147. DOI:10.1186/ 1472-6963-13-147.

Paper II

Ringberg U, Fleten N, Forde OH. Examining the variation in GPs' referral practice: A cross-sectional study of GPs' reasons for referral. Br J Gen Pract 2014;64(624):e426-e433. DOI:10.3399/bjgp14X680521.

Paper III

Ringberg U, Fleten N, Forde OH. GPs refer many patients to secondary care without expecting any medical benefit: a cross-sectional study of GP’s decisions for referral. Submitted to Br J Gen Pract, 26th November, 2014

# List of figures and tables

# Abbreviations

| | |
|---|---|
| CI | Confidence interval |
| EPR | Electronic patient record |
| GP | General practitioner |
| HELFO | The Norwegian Health Economics Administration (Helseøkonomiforvaltningen) |
| MD | Medical Doctor |
| MLA | Multilevel analysis |
| MUS | Medically unexplained symptoms |
| NOK | Norwegian kroner |
| OR | Odds ratio |
| PhD | Philosophiae Doctor |
| PKO | Praksiskonsultentordningen |
| r | Pearson's r |
| rho | Spearman's rho |
| UNN | University Hospital of North Norway |
| VIF | Variance inflation factor |

# 1 Background

## Why did I start to do research on referrals?

After working as a general practitioner (GP) for 10 years, I started looking for other job opportunities. Then, together with my colleague, Terese Fors, I was offered the opportunity to establish and manage '*Praksiskonsultentordningen*' (PKO) at the University Hospital of North Norway (UNN).(1;2) The PKO is a group of GPs whose task is to develop and maintain cooperation between GPs and doctors at the UNN. During my time as a GP, I collaborated often with the UNN about patients, especially in the form of referrals and in the discharge summaries I would receive. As head of the PKO at the UNN, I acquired more experience with the organisational side of the collaboration between GPs and hospitals. I learned that this collaboration was performed very differently among the doctors, and functioned with variable quality. This increased my curiosity about the collaboration between GPs and hospitals, and so here I am, exploring the referral practices of GPs. Needless to say that my professional experiences will influence my perspective on this topic.

# 2. Introduction

## Why study the decision to refer?

The publically-funded health care system in Norway offers universal coverage through the national health insurance, and one of its paramount objectives is equal access for all citizens regardless of socioeconomic status, ethnicity, or area of residence.(3) Private, voluntary health insurance coverage does exist in Norway, but accounts for less than 1% of total health care expenditure.(3) The health care system is divided into a primary and secondary (specialised) sector. Primary health care is the responsibility of the municipalities, and, in practice, is mostly covered by national health insurance. The Ministry of Health and Care Services has a direct role in secondary care. Patients attending medical doctors (MDs) are charged a small co-payment, which has an annual maximum above which out-of-pocket costs are waived.(3)

Total health care expenditure in Norway, measured as share of the Gross Domestic Product, has risen considerably, from 8.4% in 2000 to 9.7% in 2009, and has doubled between 1970 to 2013.(4;5) Utilisation of secondary care is also increasing. Hospital outpatient consultations by 1000 inhabitants increased by 9.7% from 2005 to 2009,(6) and by 5.9% from 2009 to 2013.(7) The total amount of radiological examinations did not increase much from 2002 to 2008.(8) However, there has been a shift from the use of x-rays to that of more sophisticated imaging methods such as computerised tomography and magnetic resonance imaging, which increased two-fold from 2002 to 2008.(8) In comparison, the

Norwegian population increased by only 8.2% between 2005 and 2012.(9) Furthermore, the population is generally healthy and lives longer than before.(10;11)

Given all this, what are the explanations for this rise in the utilisation of secondary care? Increased referral rates? Increased demand from patients? Increased referrals between sectors of secondary care and increased control appointments with the MDs within the secondary care?

GPs work exclusively in primary care. Ninety-four per cent work as private practitioners with capitation payment and fee-for-service reimbursement.(12) The rest are salaried practitioners, employed by the municipality.

The patient list system was established in 2001 and comprises 99% of the population. Referral from a GP is usually required to get access to secondary care. Thus GPs in Norway are expected to act as gatekeepers to secondary care, and they are responsible for assessing the medical need for such care.(13)

The referral decision is a composite trade-off between different concerns, such as patient needs, expected medical benefit, costs, and patient preference.(14;15) The referral decision should be medically based, but is influenced by several non-medical factors.(16;17)

The patient has a right to participate in the referral decision(18), a position that has changed as a result of an

increased focus on patient autonomy and user involvement, which is meant to counteract the previous paternalistic style of health care provision.(19) Consequently, GPs' referral decisions have probably been affected. For example, a study in 2003 revealed that 'doctors generally perceived themselves as less concerned with the gatekeeper role under the new list system. They felt it more important to provide better services and keep patients satisfied'.(20) Therefore, although the gatekeeper role is in its nature a rationing function, GPs may feel obliged to refer, because of perceived patient expectations and pressure.(21-23) On the other hand, a population-based study found an association between continuity of GP care and reduced utilisation of secondary care,(24) and research over the last 30 years has established that referral rates vary considerably between GPs, which may threaten the principle of equal access to health care.(25;26)

There are four basic groups of factors that seem to influence GPs' referral decisions(26):
GP characteristics: personality, knowledge, and interests; relationship with patients and colleagues; personal knowledge of consultants; and tolerance of uncertainty.
Patient characteristics: socio-demographic characteristics; expectations; needs and values; pressure for referral; and preferences.
Case-specific factors: type of condition; perceived seriousness.
Health care characteristics: waiting lists; practice organisation; proximity to hospital.

Based on the increase in utilisation of secondary care, increased patient autonomy, and possibly reduced adherence to the gatekeeper function, we wanted to study GPs' decisions to refer.

Research on decision making has been performed in many disciplines outside the medical arena: in operations management,(27) in business,(28) in psychology,(29) etc. Some of the most common methods used to explore GPs' referral practices are questionnaires,(21;30-32) audits,(33;34) interviews (individual and focus groups)(35-38) and use of vignettes,(31) whereas referral letters are often of limited suitability in this context.(39;40) We decided to construct an electronic questionnaire to obtain information on referral decisions in the clinical setting.

It is important to note that several important aspects of the referral process are not addressed in this thesis: referral appropriateness, timeliness, adequacy of the referral letter, care integration, etc.(41)

The decision to refer is important to each patient and to the health care system. There are no available Norwegian registers with information on GPs' referrals and the decision to refer, and little research has been performed in the clinical situation when the GP makes the decision. Therefore, it was interesting and important to conduct our study.

# 3 Aims of the thesis

We wanted to study GPs' decisions to refer patients to secondary care and/or radiological examination in Northern Norway, the factors that influenced these decisions, and GPs' assessment of the expected medical benefit of their referrals.

Thus, the specific aims were:

1. To assess GPs' referral rates to secondary care and/or to radiological examination in Northern Norway. To explore associations between the decision to refer and patient, GP, and health care characteristics, and who introduced the issue of referral in the consultation.
2. To study GPs' reasons for referral to secondary care. To explore associations between these reasons and patient, GP, and health care characteristics.
3. To study GPs' assessment of the expected medical benefit of their referrals to secondary care. To explore associations between expecting little or no medical benefit and patient, GP, and health care characteristics, reasons for referral, and who introduced the issue of referral in the consultation.

# 4 Material and methods

## 4.1 Study design

A cross-sectional design was chosen. Information on the GPs' referral decisions was collected from electronic questionnaires, which the GPs answered immediately after closing the electronic patient record (EPR) for each patient.

## 4.2 Study population

The population of this thesis consisted of certified MDs who were working as GPs within the patient list system in Northern Norway on October 2nd, 2008. The source of information was The Norwegian Health Economics Administration (HELFO). In Norway, information on all GPs permanently working within the list system is publically available on the HELFO website, including GPs' name, sex, name of their practices, postal address, list size, etc.(42) On October 2nd 2008, we extracted information from the HELFO website on all GPs working in Northern Norway; i.e. in the counties of Nordland, Troms and Finnmark. At this time, there were 476 permanent positions for GPs, both filled and vacant, in 172 practices in Northern Norway.

In 2008, interns were not certified MDs and were consequently excluded *a priori*. Furthermore, we excluded practices without an EPR system, or with an EPR system that was incompatible with our electronic questionnaire, practices that were vacant, and practices where any of the GPs had participated in piloting of the electronic questionnaire (Figure 1). Therefore, a priori, 24

practices (60 GPs) were excluded, leaving an eligible study population of 148 practices (388 GPs).

Information on type of EPR system in the practices was obtained from the vendors. In 2008, 'WinMed' and 'Profdoc Vision' were most frequently used and were compatible with our electronic questionnaire. The EPRs called 'Infodoc' and 'System X' were not compatible.

## 4.3 Study sample

### 4.3.1 Estimating the sample size

A power calculation indicated a need for approximately 2500 consultations in each of two subgroups to detect a 25% difference in referrals rates ($\alpha$=0.05 and $\beta$=0.8). Each GP was expected to answer 100 electronic questionnaires. Therefore, we planned to draw a sample of practices (the study sample) with about 100 GPs, which, with an expected response rate of 50%, would result in data from 5000 consultations.

### 4.3.2 Procedures of sample selection

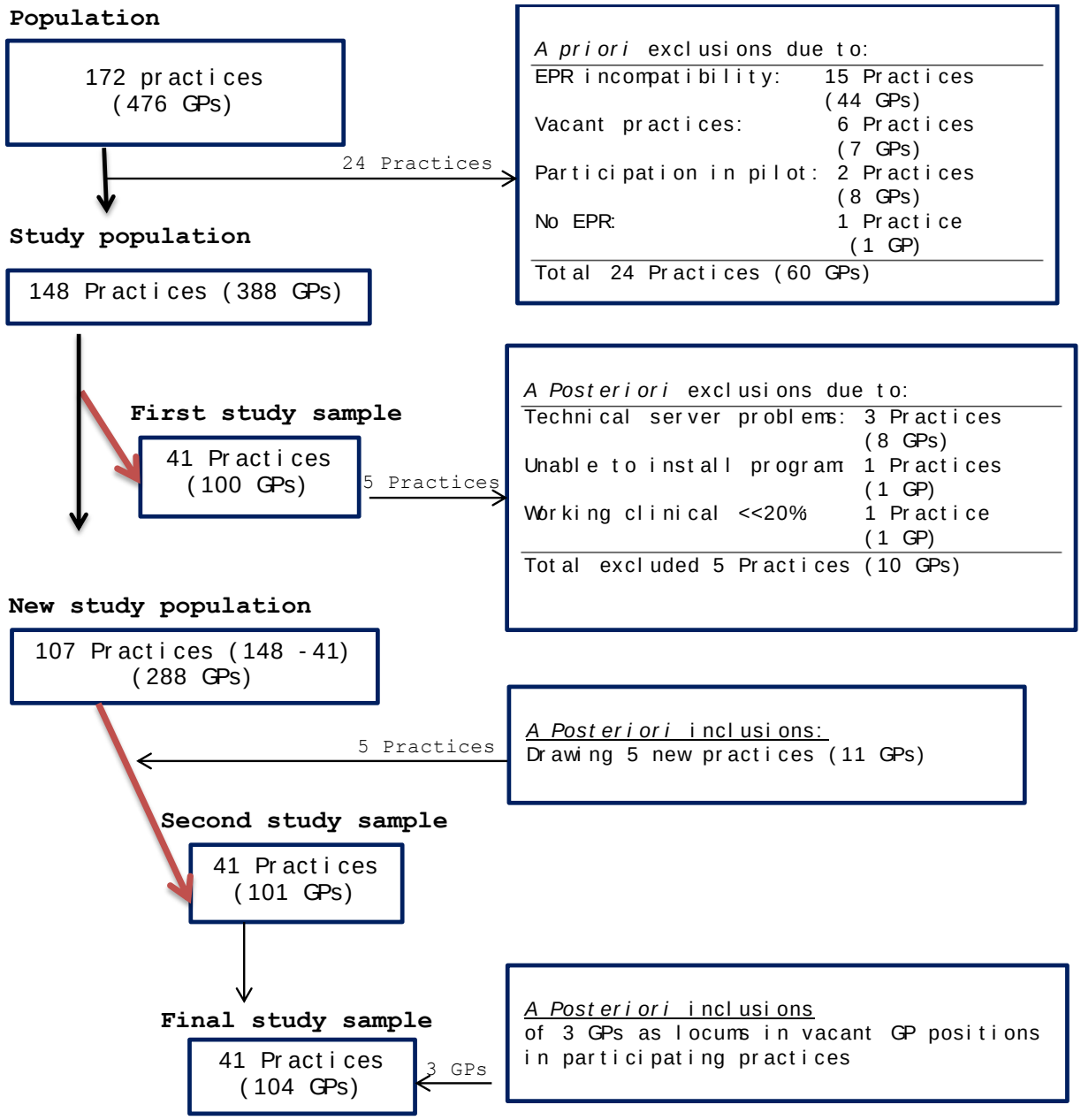
Low response rate was a concern, given the amount of work required to complete 100 questionnaires. Therefore, with the hopes of increasing the response rate, we decided to draw the study sample by practice, instead of individual GPs, and to invite all GPs in the selected practices. Random sampling techniques were employed.

From the eligible study population of 148 practices the first study sample of 41 practices was drawn (Figure 1). After having

invited these practices, we learned that three of them had remote terminal servers, which were incompatible with our electronic questionnaire. One practice was not able to install the electronic questionnaire for technical reasons. We also learned that one solo practitioner worked clinically considerably less than 20%, and therefore it would take too long for us to get his/her results. These five practices (10 GPs) were excluded *a posteriori*.

Because this was a non-differential exclusion we substituted these practices by randomly drawing five new practices from the remaining, resulting in the second study sample of 41 practises (101 GPs). Finally, after having invited these five practices, we learned that three vacant GP positions now had locums. These three GPs were also invited to participate in the survey. Consequently, the final study sample consisted of 41 practices with 104 GPs.

## Figure 1. Procedures of sample selection



## 4.4 Recruitment and data collection

### 4.4.1 Invitation

The invitation to participate in the study was sent by post November 4th 2008 to the final study sample of 41 practices (104 GPs). Altogether four documents were mailed: an 'eye catcher', the letter of invitation with the declaration of consent, the questionnaire on GP's background, and a paper version of the electronic questionnaire (Appendices 1a-f). The letter of invitation and declaration of consent were drafted according to the recommendations of the Data Protection Official for Research.(43) The initial invitation was accepted by 14 GPs (Table 1).

**Table 1. The recruitment process**

| | Recruited GPs | Non-Responders* | Residual sample of GPs |
|---|---|---|---|
| After invitation | 14 | 1 | 89 |
| After text message reminder | 0 | 1 | 88 |
| After telephone reminder | 23 | 12 | 53 |
| After two written reminders | 9 | 44 | 0 |
| Total | 46 | 58 | |

*GPs, who declined to participate or never replied

### 4.4.2 Reminders

As a GP, I know that GPs are very busy and overloaded with written invitations to provide data to all kinds of studies. Therefore, in addition to the invitation, a reminding process was devised as another means to get GPs' attention. Four reminders were performed. The first was a text message sent to the GPs' mobile phone, the second was done by telephone, and the last two were written reminders sent by post in January and April 2010,

respectively (Appendices 2a-c). The text message reminder recruited zero GPs (Table 1). I performed the telephone reminder myself. During 2009, I called each non-responding GP two to four times. Many practices only answered the telephone during certain hours, or the GPs only took calls during certain hours. The secretaries in the practices were helpful and often conveyed message to the GPs asking them to call me back, or made telephone appointments on the GPs' behalf. When I finally got in touch with the GPs, they often sighed and apologised for not answering, but said they were too busy. A few had been ill or had problems in the practice. Quite a few did accept to participate during the telephone reminder, but never delivered any data. The telephone reminder resulted in an additional 23 GPs recruited to the study (Table 1)

After the third, written reminder, one practice requested that I visit them to inform them about the study, which I did. The final reminder included a letter from one of the participating GPs who, unasked, had volunteered to do so. The third and fourth written reminders combined resulted in an additional nine GPs recruited to the study, for a total of 46 responding GPs.

Participating GPs received monetary compensation in the amount of 1500 Norwegian kroner (NOK). This amount was calculated based on the tariff used by GPs to get reimbursements. (One minute's work to answer one questionnaire was compensated by 1/30 of Tariff number 14, which in November 2008 equalled NOK 15 (450/30).

### 4.4.3 Data collection

The recruited GPs installed the programme that managed the electronic questionnaires on their local computer (called 'questionnaire programme')(Appendix 3). When all participating GPs in the practice had completed the survey, one GP transferred the data from their local server to a floppy disk where the data were stored in an encrypted form. After receiving the floppy disks, I transferred the data to the University server via the programme Microsoft Excel to Stata.

### 4.4.4 Background information on responding GPs

The GP's age was calculated as the year the GP started to participate in the survey minus his/her year of birth.
The number of years since obtaining their medical degree, since achieved specialities, and number of years of work experience was calculated the same way. We calculated the percentage of GP's list that was available to the population ('percentage of list available') from the HELFO information.

## Table 2. Background information and sources of information

| Variables | Sources of information |
|---|---|
| ***Patient*** | |
| Age and sex | Transferred directly from the EPR to the electronic questionnaire |
| ***GP*** | |
| Year of birth and sex | Questionnaire on GP background |
| Year and location where medical degree was obtained | » |
| Specialist in family medicine, and year obtained | » |
| Specialist in community medicine, and year obtained | » |
| Practice type | » |
| Clinical days per week[&] | » |
| Number of years working as GP in the present municipality | » |
| Number of years working as GP with the present population | » |
| All experience as a GP* | » |
| All experience working in hospitals** | » |
| List size | HELFO |
| Number of GPs in each practice | » |
| ***Municipality*** | |
| Municipalities hosting secondary care institutions and/or radiological services ('hosting municipalities') | Northern Norway Regional Health Authori (Helse Nord RHF: www.helse-nord.no/) |
| Population per Jan.1 2010 | Statistics Norway(20-22) |
| ***Health care system*** | |
| Travel time by car to the nearest hospital | » |

[&] number of half or whole days per week working as a clinician
* number of years and locations
** number of years, locations and medical discipline(s)

Each GP's mean number of consultations per day was calculated according to the formula: [(number of answered questionnaires + cancelled questionnaires)/(number of dates the GP answered the forms)].

### 4.4.5 Background information on non-responding GPs

Background information on non-responding GPs was collected from the following public sources:
Year of birth was collected from the electronic telephone book(44) and the taxation register.(45;46) Age was calculated as 2009 minus the year of birth, as most responders participated in the survey during 2009. Information on sex and list size was obtained from HELFO,(42) and information on speciality was taken from the Norwegian Medical Association.(47)

Through personal communication with Centre of Clinical Documentation and Evaluation (SKDE), Northern Norway Regional Health Authority, we got data on referral rates to hospital outpatient clinics of both responding and non-responding GPs in the years 2008 through 2010. The data was received in May 2011. From these data the GPs' mean yearly referral rates to hospital outpatient clinics by list population were calculated.

## 4.5 Electronic questionnaire on referral decisions

### 4.5.1 The questions

Several literature searches were performed to ensure that relevant topics were included in the electronic questionnaire, but no validated questionnaire template was found. On January 27th 2007, I

had a meeting with four experienced GPs working in Tromsø; two of whom had previously worked in rural areas for several years. These four GPs had a brainstorming session with me on the different reasons GPs referred patients to secondary care. A preliminary questionnaire was then discussed with three other, academic GPs.

In the final questionnaire, when having decided on referral, the GPs scored the relevance of nine predetermined reasons for referral on a four-level categorical scale, 'agreement levels', with the categories 'corresponds very well', 'corresponds fairly well', 'corresponds to a limited extent', and 'does not correspond' (Table 3 and Appendices 1e-f). In the questionnaire, the sequence of the reasons was deliberately mixed. Using the same four-level scale, the GPs were also asked to score their agreement with the phrase: 'I believe the referral will contribute considerably to a better treatment outcome and /or a shortened course of the disease', called 'expected medical benefit'.

## Table 3. Reasons for referral to secondary care and/or radiological examination

| Reasons for referral | Abbreviations |
|---|---|
| I am referring the patient because his medical condition makes it necessary | Medically necessary |
| I am referring the patient to avoid overlooking anything | To avoid overlooking anything |
| I am referring the patient to reassure him | To reassure the patient |
| I am referring the patient because I have deficient knowledge concerning the patient's current medical problem | Perceived deficient medical knowledge |
| I am referring the patient as part of a social security application | Social security application |
| I am referring the patient because his medical condition is usually taken care of by secondary health care | Common practice |
| I am referring the patient to relieve my work load | To relieve work load |
| I am referring the patient because the relevant specialist is easily accessible (short waiting list and/or closely located) | Perceived easily accessible specialist |
| I am referring the patient because he wanted to be referred | Patient preference |

### 4.5.2 The design of the electronic questionnaire

We wanted the electronic design of the questionnaire to be similar to 'Quest Back'; i.e. a questionnaire that 'forced' the GP to answer all the questions in each questionnaire. I designed the electronic questionnaire in cooperation with the company 'Mediata AS'.(48)

As part of the development process, I tested the electronic questionnaire extensively in my own practice. During the testing period almost everything that could go wrong, did go wrong. The questionnaires did not pop up between patients; the questionnaires that I requested be postponed did not pop up at the end of the

day; or the questionnaire were not stored in an encrypted form. Finally, after 1 year of extensive testing, the questionnaire functioned according to required specifications.

The electronic questionnaire was piloted by three GPs in two practices with different EPRs, as we wanted to test the technical design of the electronic questionnaire, the comprehensibility of the questions, and the appropriateness among GPs. Each of the three GPs completed 100 electronic questionnaires, and afterwards they were interviewed about the experience. No changes were made in the questionnaire as a result of the piloting.

The design of the electronic questionnaire ensured that it only took approximately 1-2 minutes to complete. This was important since the GPs were urged to answer the questionnaire after each consultation.

The design of the questionnaire was as follows:

- The questionnaire appeared on the GP's computer monitor when the GP closed the EPR for the current patient.
- The questionnaire only popped up after consultations with patients in the GPs' office; not after telephone calls or other types of contact with patients.
- There was an option to postpone answering the questionnaire, in case the GP had an emergency, or other unavoidable circumstances.
- The postponed questionnaires appeared on the monitor before closing the computer at the end of the day, to give the GPs a second opportunity to answer the questionnaire on the same

day the consultation took place. However, the GPs could shut down their EPR without answering the postponed questionnaires if they so chose.

Aborted, unanswered questionnaires were not deleted.

The questionnaire programme was very easy to install and uninstall.

The data from the completed questionnaires were stored on the GPs' local server in an encrypted form and then transferred to an external electronic device like a floppy disk or CD.

The questionnaire stopped appearing on the computer monitor once the GP had completed 100 of them.

## 4.6 Exploring and transforming the variables

### 4.6.1 Test of correlation

Independence of the covariates was tested by Pearson correlation or Spearman rank-order correlation analyses, on continuous and categorical variables, respectively. The following covariates were excluded from the analyses due to their high correlation with GP age:

- Number of years since medical degree was obtained, Pearson's r, (r)=0.97.
- Number of years working as GP in the present municipality, r=0.77.
- Number of years working as GP with the present population, r=0.72.
- Total number of years working as a GP, r=0.90.

- Number of years since obtaining speciality in family medicine, r=0.84.

Population of the municipalities was also excluded because it was highly correlated with travel time by car to the nearest hospital, r=0.67, whereas speciality in family medicine was retained even though it was highly correlated with GP age, Spearman's rho (rho)=0.65.

The reason for referral 'to avoid overlooking anything' was moderately correlated with the reason 'to reassure the patient' (rho=0.55), but it was decided not to combine them. 'Who introduced the issue of referral' and the referral reason 'patient preference' were also moderately correlated (rho=0.57), but were treated as separate covariates.

### 4.6.2 Test of collinearity

Tests for collinearity between the covariates were done by estimating the variance inflation factor (VIF). There are different opinions on how to interpret the values of VIF, but a VIF value smaller than five usually implies little collinearity. We found no collinearity.

### 4.6.3 Test of outliers

An outlier can operationally be defined as an observation that lies within a distance larger than 1.5 times the interquartile range (IQR) from the $25^{th}$ or $75^{th}$ percentile, commonly displayed in a box plot. In short, outliers are observations 'that lies in an

abnormal distance from other values in a random sample from a population'(49), and may affect the study estimates. The effect of outliers on the estimates in Papers I and III was tested by performing the regression analyses with and without the outlier. The differences in the estimates were not considered significantly different if the 95% confidence interval (CI) of the estimates overlapped. We found no significantly different differences of the estimates.

### 4.6.4 Recoding of variables

The number of consultations per GP per day was dichotomised, as some of the days the GPs worked clinically were not full working days. We dichotomised this variable by splitting it at the median value of ten consultations per day, (i.e. <10 and ≥10 consultations per day).

The variable 'number of GPs in the practice' was dichotomised into 1 and ≥ 2 GPs, as there were few GPs in some of the subgroups. Country where medical degree was obtained was dichotomised as degree obtained in Norway and degree obtained outside Norway.

The variable 'referrals to secondary care' was constructed as the sum of referrals to hospital outpatient services, hospital admissions, public rural medical centres, specialists in private practice and other specialists. The variable 'referrals to radiological examination' was constructed as the sum of referrals to radiology examination, regardless of whether the exam took place in the public or private sector.

In Paper I, the continuous variables 'travel time by car to nearest hospital' and 'GP age' were converted to ordinal variables with three levels. In the same paper, patient's age was converted to an ordinal variable with five levels. This was done because there was a non-linear, n-formed association between these three covariates and the outcome variable.

The reasons for referral were dichotomised in one set of analyses as described in Table 4 of Paper II. 'Expected medical benefit' and the reasons for referral were dichotomised as described in Paper III.

### 4.6.5 Exclusion of variables

Speciality in community medicine was excluded in the analyses because only three GPs reported to have obtained it. The reasons for referral 'social security application' and 'to relieve workload' were also dropped from analyses because some of the levels of scores contained fewer than four observations.

## 4.7 Statistical analyses

The main procedures are described in the following. A few other elements not described in the papers are also mentioned.

The 44 GPs that completed the survey provided data from 4350 consultations. All analyses were carried out using Stata, version 12 (Paper I) and version 13 (Papers II and III).

In Paper I, the data were retrieved from all 4350 consultations, whereas Papers II and III comprised only the 595 consultations with registered referral to secondary care. Statistical tests were done two-sided and inferred at the 0.05 significance level.

### 4.7.1 Outcome variables

The outcome variables were GPs' decision to refer patients to secondary care and/or radiological examination in Paper I, GPs' level of agreement with each of seven reasons for referral in Paper II, and agreement with 'little or no expected benefit' (the two lowest agreement levels versus the two highest) in Paper III.

### 4.7.2 Analyses

Multivariable logistic regression analyses were performed in Papers I and III, and in one set of analyses in Paper II. Referrals to secondary care or radiological examination were analysed separately in Paper I. Multivariable ordered logistic regression analyses were performed in Paper II. One analysis was done for each of the seven reasons for referral.

Multilevel analyses (MLA) allowed for clustering at the GP level, and were performed when possible, and if they were significantly better than naïve ('one level') analyses (Papers I, III and Table 4 in Paper II).

Stata provided no ordered logistic regression analysis that allowed for both MLA and testing that the assumption of proportional odds was met. Therefore, in Paper II we performed

naïve multivariable ordered logistic regression analyses with calculations of standard errors that allowed for clustering at the GP level.

In this ordered logistic analysis only one odds ratio (OR) was calculated per analysis if the assumption of proportional odds was met.(50) The calculated OR was interpreted as the OR between the sum of the three higher levels (i.e. 2+3+4) versus the lowest level of agreement (i.e. 1), which is the same as the OR between the sum of levels 3+4 versus 1+2, and likewise, between 4 versus 1+2+3. Testing that the assumption of the proportional odds was met was done by the two Stata commands 'Omodel test' and 'Brant'.(50) The assumption was considered met when confirmed by either one of these two tests. If the assumption of proportional odds was not met, the command 'Gologit2' was used,(51) (Paper II).

### 4.7.3 Constructing the models

In Papers I and III the models were made by backwards removal of covariates with p-values larger than 0.15. In Paper II, it was decided to try to create the same model for all seven included reasons for referral; backwards removal of covariates was only done when this was necessary to get statistical significant models.

The following variables were considered relevant and included before any backwards removal was performed:

- In all papers: patient age, patient sex, GP age, GP sex, speciality in family medicine, and travel time by car to nearest hospital

- In Papers I and II: practice type (private practice or salaried employment) and country where medical degree was obtained
- In Papers I and III: the statement 'who introduced the issue of referral'
- In Papers II and III: GPs' referral rate
- Only in Paper I: solo practice, consultations per day, clinical days per week, list size, percentage of list available, and hosting municipalities
- Only in Paper III: referral to somatic or psychiatric secondary care, referral to private or public secondary care, and the seven reasons for referral

Model fit was tested by the Likelihood ratio test to check that removing the variables did not lead to a poorer-fitting model.

### 4.7.4 Interaction

Interaction is generally checked statistically by adding an interaction term, also called a product term, to the final model.(52) Testing for interaction was done in all three papers and is described in detail in Papers II and III.

## 4.8 Ethics

This survey did not collect person-sensitive information on GPs' or patients' health or illnesses and was in essence a study of decisions, not persons. In Norway, data on GP characteristics collected from open sources is not considered in the same manner as health-related or medical data, but as 'personal data', and as

such it is only subject to notification to The Data Protection Official for Research, which was done (reference number 17817). Furthermore, we were informed that the Regional Committee for Medical and Health Research Ethics considers that research on health services does not to fall under the Act on Medical and Health Research.(53)

# 5 Results - summery of papers

## 5.1 Paper I: High referral rates to secondary care by general practitioners in Norway are associated with GPs' gender and specialist qualifications in family medicine, a study of 4350 consultations

Of 4350 patients, 550 (12.6%) were referred to somatic secondary care, 45 (1.1%) to psychiatric secondary care, and one patient to both types of care (Table 4). None were referred to an institution treating substance abuse. Almost 90% of referrals to secondary care were to outpatient services: about 70% to hospital outpatient services and 20% to the private sector. Of the 735 referrals, 181 (24.6%) were to radiological examination; of these 41 were simultaneously referred to secondary care.

**Table 4. Distribution of referrals to specialist health care according to type of care, n=595 consultations**

| | All referrals | | Referred to somatic care | | Referred to psychiatric care | |
|---|---|---|---|---|---|---|
| | n | % of 595 | n | % of 550 | n | % of 46[¤] |
| Hospital admissions | 63 | 10.6 | 58 | 10.6 | 5 | 10.9 |
| Hospital outpatient services | 414 | 69.6 | 382 | 69.5 | 34 | 73.9 |
| Specialists in private practice | 110 | 18.5 | 104 | 18.9 | 6 | 13.0 |
| Other specialist care[ǂ] | 24 | 4.0 | 21 | 3.8 | 3 | 6.5 |
| Sum referrals | 611[']  | 102,7 | 565[Δ] | 102,8 | 48[θ] | 104.3 |

[¤]One patient was referred to both somatic and psychiatric care
[ǂ]Other secondary care specialist and rural psychiatric centres/outpatient services
[']16 patients were referred to more than one section of specialist care
[Δ]15 patients were referred to more than one section of somatic specialist care
[θ]2 patients were referred to more than one section of psychiatric specialist care

The mean referral rate to secondary care was 13.7% (per 100 consultations), ranging from 4% to 28% (IQR 9%-16%) among the GPs. Female GPs and salaried GPs referred more often than their counterparts (adjusted (a) OR=1.25 and aOR=1.36, respectively), 95% CIs are displayed in the papers. Specialists in family medicine referred more seldom than their counterparts (aOR=0.76).

The mean referral rate to radiological examination was 4.2%, ranging from 0.0% to 12.9% (IQR 2%-6%) among the GPs. Salaried GPs, specialists in family medicine, and GPs with a medical degree from Norway referred more often than their counterparts (aOR=2.0, aOR=1.93 and aOR=1.73, respectively).

The issue of referral was introduced in 23% of all the consultations; by the GPs in 70.6% of these and by the patients in 29.4%. The issue was introduced in 31.3% of the consultations of high referrers (referral rates in top quartile), and 66.8% of these patients were referred. Among low referrers (lowest quartile), the referral issue was introduced significantly less frequently, in only 18.0%, of which only 43.4% were actually referred.

## 5.2 Paper II: Examining the variation in GPs' referral practice: a cross-sectional study of GPs' reasons for referral

The reasons for referral (as the sum of the two highest agreement levels) were given as 'medically necessary' in 93.0% of the referrals, 'patient preference' in 43.7%, 'to avoid overlooking anything' in 27.5%, 'perceived deficient medical knowledge' in

21.2%, ‘to reassure the patient’ in 14.6%, and ‘perceived easily accessible specialist’ in 12.9% of cases.

The higher the referral rates, the more frequently the reason ‘to avoid overlooking anything’ was cited (aOR=1.06, per 1% increase in referral rate; when comparing the three highest agreement levels with the lowest). Female GPs referred ‘to reassure the patient’ and due to ‘perceived deficient medical knowledge’ more often than male GPs (aOR=1.97 and aOR=2.22, respectively). However, ‘perceived easily accessible specialist’ was less frequently given as a reason for referral by female GPs compared with male GPs (aOR=0.29).

When male GPs considered their referrals to be less medically necessary, they more frequently referred due to ‘perceived deficient medical knowledge’, ‘to reassure the patient’ and due to ‘patient preference’ (aOR=4.06, aOR=13.44, and aOR=3.28, respectively), which did not apply to female GPs.

## 5.3 Paper III: GPs refer many patients to secondary care without expecting any medical benefit: a cross-sectional study of GP’s decisions for referral

GPs expected one-quarter of their referrals to yield little or no medical benefit (IQR 11.1%-37.5%). GPs with referral rates in the top quartile expected twice the proportion of referrals to provide little or no medical benefit compared with GPs with referral rates in the lowest quartile (36.1% versus 18.6%; aOR=1.08, per 1%

increase in referral rate). Among referrals to private secondary care, 40.9% were of little or no expected medical benefit versus 24.1% of referrals to public secondary care (aOR=2.27). When patients introduced the issue of referral, the share of referrals with little or no expected medical benefit was higher compared to when the issue was raised by GPs (36% versus 23.6%, aOR=2.44). GPs older than the mean age of 45 years assumed their referrals to have little or no expected medical benefit more often than their younger colleagues (35.8% versus 19.5%, aOR=1.52, per 10-year increase in age).

There was significant interaction between GP sex and the referral reason 'to reassure the patient' on expected medical benefit. Overall, male GPs did not refer 'to reassure the patient' as often as did female GPs (12% versus 19%, respectively, data not shown). However, when male GPs did refer 'to reassure the patient', they often classified these referrals as having little or no expected medical benefit (aOR=5.61), which did not apply to female GPs.

# 6. Discussion of methodology

*Bias* is the result of systematic errors in the design or conduct of a study. These errors often yield observed study results that tend to be different from the true results.(54) There are essentially two types of bias: selection bias and information bias.

*Selection bias* is present when individuals have different probabilities of being included in the study sample according to relevant study characteristics, the exposure, and the outcome of interest.(54) *Information bias* results from a systematic tendency for individuals to give skewed information and thereby to be erroneously placed in different exposure or outcome categories, that is, misclassification.(54)

Both types of bias may influence the internal and external validity of a study. *Internal validity* concerns whether the study provides a valid estimate of what it claims to estimate. *External validity* concerns whether the results from the study can be generalised to the study population or other populations.

Finally, *content validity* addresses the match between test questions and the content or subject area they are intended to assess.

There are two main aspects of bias that might threaten the conclusions of the present study: 1) the possibility of selection bias, i.e. whether the included GPs are representative of the

population of GPs in Northern Norway; and 2) the possibility of information bias, i.e. the trustworthiness of the GPs' responses.(55;56) Either of these types of bias might have occurred due to flaws in the methodology used to select study participants, due to non-participation, or due to flaws in the procedures for gathering relevant exposure/outcome information or differential measurement errors. Therefore, we will discuss the main possible threats to the present study and some other methodological issues throughout the different parts of the research process as they were described in Section 4.

## 6.1 Study design

As stated in 4.1 we used a cross-sectional design. However, as it took 2 years to include the GPs and collect the data, one might argue that the resulting design is not a cross-sectional one. Nevertheless, it is our opinion that the important issue is whether this longer time span threatens the representativeness of the participating GPs and their answers, and there is no reason to believe that the cooperation between levels of care or GPs' clinical and referral practice changed during this 2-year period.

It also would have been possible to use a longitudinal study design, in which follow-up information would have been collected on patients through secondary care and back to the GPs. In this manner, we might have collected information on the results of the referrals with regard to treatment and outcome. However, this would have implied far more time, more resources, and more, complicated legal challenges, and we did not have the resources to

accomplish such an endeavour within the framework of a Philosophiae Doctor (PhD) project.

## 6.2 Study population

### 6.2.1 Population

The study population of this survey was GPs working in Northern Norway, where there is a positive association between the mean referral rates of GPs in municipalities and the utilisation of hospital outpatient services in those same municipalities.(57) According to a national report, the utilisation of secondary care in Northern Norway is not substantially different from than in the rest of the country.(58) We therefore believe our study is fairly representative of GPs' referral practice in Norway.

The HELFO list included only GPs with permanent positions in the municipalities, either as private practitioners or as salaried practitioners. By using practice as the unit when drawing the sample, we were able to include locums in the sample, diminishing selection bias in this aspect.

### 6.2.2 Exclusion criteria

There is no reason to believe that the type of EPR, the exclusive use of paper records, type of server solution, failure to install the electronic questionnaire programme, participating in the pilot, or working clinically considerably less than 20% is associated with GPs' referral practice. Hence, we believe the exclusion criteria did not create selection bias.

## 6.3 Study sample

Drawing whole practices for the study sample made it easier to perform technical tasks such as installing/uninstalling the questionnaire programme and transferring the data, as it could be done once per practice. This strategy might have affected the distribution of GPs in the sample, but this was probably not the case since the recruited GPs were more comparable to source population of GPs (Section 6.4.1).

## 6.4 Recruitment and background information

### 6.4.1 Recruitment

The study invitation consisted of a considerable pile of paper; the paper version of the questionnaire alone consisted of 10 pages. As stated in Section 4.4.1, one reason for this large amount of paper was the extensive recommendations by the Data Protection Official for Research, though we concede that the amount of paper might have reduced the response rate.(59)

Moreover, low response rates in surveys of GPs are common.(60;61) According to a British study, the odds of being a non-responder increased significantly by years since qualification and by not being a member of the Royal College of General Practitioners.(62) Furthermore, important reasons for low response rates in surveys among GPs are lack of time and perceived unimportance of the survey.(63) Topics that are interesting to the target population increase the response rate.(64)

The topic of referring patients to secondary care is probably of varying interest to GPs in Norway. Indeed, given their challenging gatekeeper function, GPs might have found the topic unpleasant, which could have caused reluctance to participate, lowered the response rate, and produced selection bias.

According to a recent systematic review there are several strategies to increase response rates among GPs: the use of incentives, monetary or nonmonetary, a call from a peer, personalised packages, sequential mixed modes, and social media.(65)

GPs in private practice who participated in our study might have experienced a reduction in income equal to the reimbursement of approximately one patient per day in order to answer the electronic questionnaires. We therefore believe that the monetary compensation we offered might have reduced selection bias.(66) The fact that I was not an outsider, but a peer who may have been known to some of the GPs, presumably increased the response rate.

In order not to induce selection bias, the reminding process must treat all GPs equally. This was not easy to achieve fully because the organisation of the practices was diverse, and the secretarial service varied. One practice invited me to visit them to give more information about the study. However, it is not plausible that this visit induced selection bias in our results. Furthermore, the study sample was randomly drawn, which may have reduced this effect.

Still, the response rate of 42% raises the concern of selection bias. Although empirical assessments over the past decade have concluded that the response rate of a survey may not be as strongly associated with the quality or representativeness of the survey as had been generally believed (67), it was very important to describe the non-responders. The responders were more like the population of GPs in Northern Norway than the non-responders with regard to most background variables (Table 1 in Paper I). The calculated yearly referral rates per list population to hospital outpatient clinics were 25.6% among non-responders and 23.4% among responders (Section 4.4.5). This indicates that the responders' yearly referral rates to outpatient clinics were actually lower than that of the non-responders. Therefore, our analyses are more likely to produce type 2 than type 1 errors.

Furthermore, the response rate would obviously have been even lower if we had not invested the time and effort to recruit more GPs. The GPs that were included later were probably more similar to non-responders, and thus including them most likely increased the representativeness of the study sample.(67)

Altogether, we conclude that we used ample resources and several strategies to increase the response rate, hence diminishing selection bias. With regard to background variables, the responders were more comparable to the population of GPs, which suggests fairly good representativeness of the recruited GPs.

### 6.4.2 Background information on the patients

Information on patients' morbidity and medical need was not collected, neither as reasons for the consultation nor as specific medical reasons for referral. In order to describe morbidity, we would need the referral diagnosis and information on illness severity and the patient's function. Given our study design, the GPs would have to provide this information in a very short time span, which most likely would have resulted in inaccurate information. It might have been possible to get access to the referral letter with another study design, but in our experience, the quality of referral letters varies too much to provide valid information, as has also been documented by others.(68) Given our study design and the resources available, it was not realistic to obtain information on the patients' medical need and medical benefit from the referrals, the GPs' EPR, or specialists' journals. This may be considered a limitation of our study.

## 6.5 How to study referral decisions

### 6.5.1 The electronic questionnaire

In order to collect information on GPs' referral decisions and to elucidate their motives and the expected benefit of the referrals, it was important to reflect on some methodological issues: When we obtained the referral information from the GPs, would they indeed report truthfully if they referred, and give their complete reasons for referring? How aware would they be of their reasons?

As stated before, in order to reduce recall bias and post-hoc rationalisation, we decided to construct an electronic

questionnaire that allowed the GPs to complete the questionnaire immediately after each consultation. Since we did not find any validated questionnaire templates, we constructed the questionnaire ourselves.

The referral process is complex. As stated before, the decision to refer should ideally be based on the patient's medical condition, needs, and an assessment of the optimal level of health care. The patient should be referred at the right time considering the adequate pre-referral diagnostics and management, and after an appropriate process that also takes the patient's preferences into account.(15) Because of this ideal we anticipated that some GPs would perceive some of our constructed reasons sensitive; may be all except 'medically necessary' and 'common practice'. In their review, Tourangeau and Yan divided sensitive topics into three dimensions: intrusive, threat of disclosure, and social undesirability.(56) In our survey, the predetermined reasons for referral could be sensitive due to social undesirability in a professional context. For example, some GPs might not be fully aware of all their reasons for referral. If they held the opinion that patients should be referred according to medical need, but actually frequently agreed to refer to reassure their patients, they might end up under-reporting this particular reason for referral.

There is ample empirical evidence that responders systematically over-report socially desirable behaviours and attitudes and systematically under-report socially undesirable ones.(55) In the introduction of the questionnaire, it was emphasised that several

factors contribute to GPs' decisions to refer patients to secondary care. The GPs were urged to give their assessment based only on the current consultation; not what they might think most GPs meant when writing a given reason for referral, or what they thought was professionally or politically correct (Appendices 1e-f).

According to the literature, responders tend to be more willing to report sensitive information when the questionnaires are self-administered than administered by an interviewer.(56) And we did use a self-administered questionnaire. Furthermore, in order to reduce opportunistic scoring we deliberately mixed the reasons for referral. Nevertheless, there is probably some over-reporting in the scoring of 'medically necessary'. Indeed, we think our finding that 93% of the referrals were scored as medically necessary was surprisingly high.(69) One way to find out if there is under- or over-reporting would be to contrast the different reasons for referral to detect possible inconsistencies between the answers. Table 4 in Paper II describes quite consistent answering when comparing the scoring for 'medically necessary' versus 'to reassure the patient' and 'patient preference'. As described in this paper, there was significant interaction between GP sex and dichotomised scores for medical necessity on the reasons 'to reassure the patient' and 'perceived deficient medical knowledge'.

The wording in the questionnaire is of course important to reduce the chances of misinterpretation. To minimise this problem, we discussed the wording with academic GPs and performed a pilot. The pilot revealed that the questions were easy to understand and the

reasons were easy to score. Thus, we conclude that the content validity of the questionnaire was satisfactory.

We anticipated that the GPs would be able to determine their reasons for referral as well as the expected medical benefit of the referral, and that they would give their degree of agreement. Therefore, the categorical scale was designed with an even number of levels; no neutral response option was offered.(70) In marketing literature the issue of whether or not to offer a neutral midpoint has been disputed for decades.(71) The advantages with even numbers are that the respondents are forced to choose and it eliminates possible misinterpretations of a neutral midpoint. However, possible disadvantages are that especially ambivalent GPs might become frustrated and give inaccurate responses.(70) According to the literature, the effect of having no neutral midpoint on the distribution of scores may be positive, negative, or indifferent.(71) The piloting GPs found the statements easy to score and told us there was no need for a neutral possibility.

### 6.5.2 Design of the electronic questionnaire

An advantage with the electronic design of the questionnaire was that it eliminated missing items.

The electronic design was also important in another respect: In order to calculate a correct referral rate, it was essential to obtain a correct denominator. Consequently, it was crucial that the GPs completed the questionnaires consecutively and they were urged to do so. On the other hand, different clinical situations,

such as medical emergencies or other interruptions, might have kept GPs from completing a form immediately after the consultation. Therefore, the electronic questionnaire was designed to allow GPs to complete the questionnaires later. When the questionnaires appeared on the screen at the end of the day, the GPs would still remember if a referral was executed and probably also remember their reasons for referral. Two hundred thirty-eight questionnaires were not completed: a mean of 5.4 questionnaires per GP. If as much as 25% of these had been referred, the resulting overall referral rate (to both outpatient clinic/hospitalisation and radiological examination) would have increased to 17.3%, which still is within the 95% CI of the calculated total referral rate (16.9%, 95%CI 15.78-18.01). We therefore have no reason to believe that these missing questionnaires threatened our main results.

## 6.6 Confounding

Confounding refers to a situation in which a non-causal association between a given exposure and an outcome is observed as a result of the influence of a third variable, called a confounding variable.(72) One can control for confounding in cross-sectional studies by stratification or adjustments in multivariable analyses.(52) We did perform multivariable analyses in order to control for confounding in all papers.

## 6.7 Interaction

Interaction refers to a situation where the magnitude of the association between an independent variable and an outcome variable is different in subgroups of a population.(73) Interaction was tested for in all papers. It was found and is discussed in Papers II and III, and we refer the reader to these papers.

## 6.8 Other statistical considerations

### 6.8.1 Dichotomising of ordinal variables

The outcome variable 'little or no expected medical benefit' and the reasons for referral were dichotomised (Paper III) with the split at the median. This was done because we believed the description of the categories of the four-level scale stimulated the GPs to assess binary benefit of the referrals and binary agreement with the reasons. Furthermore, if we had added the reasons for referral to the models as ordinal variables in the form of dummy variables, we would have had to compare each of three levels of scores with a chosen baseline, which was not what we wanted.

We checked and found that the associations between the outcome variable 'little or no expected medical benefit' and the reasons for referral as ordinal outcomes and dichotomous variables were very much the same.

### 6.8.2 Adjusted distributions

In Paper II, we decided that a table showing the distribution of nine covariates by the seven reasons for referral would be very complex. We therefore presented a table (Table 3) with some multivariable-adjusted distributions, resulting from the regression analyses.

## 6.9 Conclusions

We conclude that the construction, conduct, and responses to the electronic questionnaire show little evidence of information bias. We conclude that that the recruited GPs are more comparable with the population of GPs than the non-responders. There were no major flaws in the design and conduct of the study that might have created major selection bias. Therefore, we believe that our study has reasonable internal and external validity.

# 7 Discussion of main results

The main findings are discussed in the respective papers. The discussion below elaborates on relevant aspects of the main findings.

## 7.1 GPs referral rates to secondary care are increasing

In the present survey the mean referral rate to secondary care was 13.7%, indicating an increase of about 5.6 percentage points, or 71%, over the last 15-25 years in Norway.(74;75) The mean referral rate to radiological examination was 4.2%, which also represents an increase.(76) Referral rates are increasing in most western countries.(77-81) Furthermore, there is ample evidence of wide variation in referral rates among GPs.(26;82) Morbidity only explains about 30% of this variation, and patients' age and sex explains about 5%.(83)

The GPs' gatekeeper role is challenging, and the increasing referral rates suggest a poorer gatekeeping function by the GPs.(37;84) But the complete reasons for the increasing referral rates are complex and not fully understood.(85) Some aspects are mentioned in the following.

The bio-psychosocial model for understanding illness was proposed in 1977.(86) But still, 'the biological, psychological, social and spiritual components of illness are seldom managed as an integrated whole in medical practice'.(87) The biomedical model is still thriving and is often the basis for referral decisions. Moreover, the increasing potential and availability of

biotechnical means of investigation may contribute to increasing referral rates.

The biomedical model and medicalization also influence the public, which results in patients seeking care from GPs in order to be referred, a request many GPs find difficult to turn down.(23;37;84) Medicalization also contributes to the increase in health care costs.(88) At the same time, more treatment options are available, and more elderly and seriously ill patients are being treated now than ever before. Health authorities and the public are also more aware of problems that can arise due to delayed diagnosis of diseases such as cancer.(89)

The variation in referral rates for specific medical procedures, for instance gastroscopy, is disturbing. GP practices with low referral rates for gastroscopy may put patients at risk of worse outcomes.(90) In comparison, there is less, but growing attentiveness to over-diagnosis.(91;92) In the 2012 International Health Policy Survey by the Commonwealth Fund, 62% of Dutch GPs indicated that patients received too much health care.(93) The same study revealed that 31% of Norwegian GPs shared this opinion.(93) In another survey, doctors in the United States reported that unnecessary tests and procedures were a serious concern.(94) Consequently, the GPs have to balance demand for referral, fear of delaying or missing serious diagnoses, and the possibility of over-diagnosis.

There are many possible consequences of the increasing referral rates. The probable over-investigation may increase waiting lists

and secondary care costs,(95) and resources may be relocated from those who are more severely ill. Other possible adverse consequences may be reduced continuity of care, delayed diagnosis or treatment, or duplication of testing and polypharmacy.(41) Many diagnostic technologies have a high sensitivity, but lower specificity and may result in over-diagnosis, for example because of incidental findings that often turn out to be benign.(96;97) The possibility of over-diagnosis may lead to unnecessary treatment, both surgical and medical.(91)

An increased mean referral rate does not tell us anything about the appropriateness of the referrals. To judge whether a referral is appropriate one also needs data on the outcome. Nevertheless, our finding that GPs with referral rates in the highest quartile expected their referrals to provide little or no medical benefit twice as often as low referrers may be an indication of less appropriate referrals among high referrers (Paper III).

## 7.2 Sex differences in GPs' referral practice

In our survey, we observed that female GPs referred more frequently than male GPs, which has been reported by others.(98-100) Female GPs also substantiated their referrals differently. They referred more often to reassure patients and due to perceived deficient medical knowledge in all types of referrals. Male GPs, on the other hand, referred to reassure the patients more often when they considered the referrals to be less medically necessary or to have little or no expected medical benefit.

The different use of the reason ‘to reassure the patient’ may suggest a sex difference with regard to accepted referral practice. Perhaps the male GPs considered reassuring the patient a less accepted reason for referral. Therefore, they only used it when they did not believe in the medical benefit of the referral, but referred only to reassure. The female GPs might consider referring to reassure the patient a more accepted reason; which may also indicate a sex difference in values and communication style.

There is probably a difference between the sexes in how they relate to the concerns of their patient.(101) This is in line with a meta-analysis by Roter et al. who reported that ‘Female physicians engage in communication that more broadly relates to the larger life context of patients' conditions by addressing psychosocial issues through related questioning and counselling, greater use of emotional talk, more positive talk, and more active enlistment of patient input. When taken together, these elements comprise a pattern that can be broadly considered "patient-centred" interviewing.’(102) Higher female sensitivity towards patients’ concerns and wishes may also result in increased acquiescence and higher referral rates.

The female GPs referred more frequently due to perceived deficient medical knowledge than their male colleagues. This is in line with others who reported that female physicians are less clinically confident and under-report their skills or knowledge.(103-105) Although studies on physicians’ objective competence have not revealed notable sex difference(106), the self-perception of less

medical knowledge may lead to higher referral rates and may be associated with an intolerance for uncertainty among female GPs.

## 7.3 Medical and professional uncertainty

In the survey, we found a positive association between GPs' referral rates and referring to avoid overlooking anything. One-third of the referrals from high referrers was substantiated by the reason 'to avoid overlooking anything', compared to only one-tenth of referrals from low referrers. The results revealed a presumably reduced tolerance for medical uncertainty among high referrers.

Risk and uncertainty are a part of life, and medical uncertainty is inherent in clinical practice. Physicians, and people in general, have varying degrees of acceptance of and tolerance for uncertainty, which contributes to variability in clinical practice,(107) and may result in inequity in the delivery of care. Medical education and practice emphasise medical knowledge and, to a lesser extent, how to deal with the limits or lack of knowledge.(108) MDs, perhaps especially young doctors, are learning to be afraid of uncertainty.(92) Physicians obviously want to diagnose and treat based on evidence, but many have insufficient coping strategies when faced with medical uncertainty. Indeed, the problem is not the uncertainty, but how the physicians deal with it.(109)

Overall, female GPs in our survey referred more often 'to reassure the patients', while referrals from male GPs were more often substantiated by the reason 'to reassure the patient' when the GPs

assessed the referrals as medically unnecessary (Section 7.2). The GPs probably assumed that a negative result would decrease the patients' worry or resolve their symptoms. However, a systematic review and meta-analyses by Rolfe et al. displayed "no overall effect of diagnostic tests", for example endoscopy, "on illness worry".(110)

There are several consequences of the inadequate handling of uncertainty. The increased biotechnical testing (76) and inclination to refer (26;100;111-113) cause increased health care costs. It may also lead to over-diagnosis and over-treatment (91;114), with possible side effects and unnecessary anxiety for patients. The biomedical way of handling patients also leads to the referral of patients that should have been treated in other, more appropriate ways, e.g. those with so-called unexplained symptoms.(115-117)

## 7.4 Medical benefit of referrals

In this study, we found that one out of four referrals was expected to yield little or no medical benefit, and that expected little or no medical benefit was reported more often among high referrers, in referrals to private secondary care, and when the patient introduced the issue of referral.

Our statement of medical benefit included the mention that medically beneficial referrals should contribute considerably to a better treatment outcome and/or a shortened course of the disease. We believe this statement covers the most important purpose of referring patients to secondary care.

According to Norwegian law, 'the patient is entitled to receive necessary health care from the specialist health service. This right only applies if the patient can be expected to benefit from the health care, and the costs are reasonable in relation to the effect of the measure.'(13) Furthermore, in accordance with Norwegian law, a patient is entitled to be referred to secondary care in order to get a re-evaluation of a diagnosis or a management plan, but only once per medical condition.(118) Our definition also includes the latter situation.

There are other benefits besides the medical ones, for example patient satisfaction. However, referring on demand simply to satisfy the patient is not good practice. It is important to elicit the patients' ideas, concerns, and expectations, and to involve the patient in the decision-making process.(119) Nevertheless, physicians have an ethical duty to avoid doing harm, e.g. the side-effect of investigations, and they are not obligated to provide unnecessary or inappropriate care. They must also balance the needs of individuals with those of society, such as the need to control health care costs.(120)

Wammes et al. found that 'more than half (of the GPs) indicated that it takes a lot of time and effort to convince a patient that additional investigation is not beneficial, and that this fact further increased the number of referrals.(84) In our survey, the GPs expected little or no medical benefit more frequently when the patients introduced the issue of referral. Hence, the GPs probably referred on demand. Physicians need strategies for dealing with

patients' requests for medically inappropriate tests and treatments.(120) Paterniti et al. found that 'the standardised patients reported significantly higher visit satisfaction when the physician used a patient perspective-based strategy to deny their request for antidepressants'.(120) Furthermore, according to a systematic review, it is probable that in order to increase self-management in patients with nonspecific pain conditions, cognitive reassurance (providing explanations and education) improves their outcomes immediately after the consultation and at follow-up.(121) Consequently, GPs should practice these communication skills to reduce inappropriate referrals.

The GPs in our survey expected less medical benefit when they referred to private secondary care. This is noteworthy, since there is pro-rich inequity in the use of private secondary health care in Norway.(122;123)

# 8. Conclusions

The present finding of increased mean referral rate to secondary care corresponds with the increased utilisation of outpatient secondary care in Norway. The wide range of referral rates is in line with literature and challenges the basic principle of equal access to health care.

GPs in our study expected one-quarter of their referrals to yield little or no medical benefit. Little or no expected medical benefit was reported more often among high referrers, in referrals to private secondary care, and when the patient introduced the issue of referral, which indicates an unwarranted variation in the appropriateness of the referrals.

Compared with male GPs, female GPs referred more often 'to reassure the patient' and due to 'perceived deficient medical knowledge'. This indicates a higher female intolerance for uncertainty and may reflect consideration and acquiescence towards the patients.

Furthermore, the higher the referral rates, the more frequently the GPs referred 'to avoid overlooking anything'. This suggests that the high referrers performed rationing decisions to a lesser extent and were consequently less effective gatekeepers.

The Ministry of Health and Care services and other health authorities should not exclusively focus on waiting time or the number of people waiting to receive secondary care. They should

also consider why people are referred. The recent report by the Public Committee on prioritising in health services recommended the systematic collection of information on the cost and benefit of referrals.(124) It is promising that the committee also recommended the development of schemes to monitor, assess, and possibly reduce inappropriate variation in referral practice.

# 9 Further perspectives

## 9.1 Improving the appropriateness of referrals

Referral rates to secondary care are increasing in Norway and worldwide. The GPs in our study expected a substantial share of their referrals to yield little or no medical benefit. Published studies have documented inappropriate referrals as both over-referrals and under-referrals.(41) Future research should focus on how to improve the appropriateness of referrals. Faulkner et al. and Akbari et al. found a few studies, with varying quality, on referral improvement.(125;126) Akbari et al. concluded that effective strategies included dissemination of guidelines with structured referral sheets and involvement of consultants in educational activities. 'In-house' second opinions and other intermediate primary care-based alternatives to outpatient referral also appeared promising.(126)

With regard to referral guidelines, Mehrotra et al. proposed that guidelines should focus on high-volume referrals, because only a few conditions account for substantial share of all visits to specialists.(41;127) In a recent review, Blank et al. concluded that in order to manage the demand for secondary care services the whole system needs to be addressed, not primary care alone.(128) However, they found that some interventions may be successful: GP peer review and feedback/training within the practices, specialist consultation before referral, electronic referral intervention, and different community provision of specialists.

## 9.2 Teaching medical decision making and communication skills

Physicians receive little training or guidance on when to make referrals.(41) Graduate and postgraduate education should incorporate communication and medical decision making in the curriculum to a larger extent and focus more on how to handle professional uncertainty, which is inherent in all medical decision making. In this context, learning how to say no when necessary would be useful.(120) Shared decision making should also be included in the curriculum.(129) If carried out, these practices may contribute to a decrease in unwarranted variation in clinical practice, including referral decisions.

## 9.3 Frequently referred patients

A number of patients have complaints that are poorly understood within the biomedical model. These complaints are often categorised as medically unexplained symptoms (MUS).(130;131) GPs find patients with MUS difficult to manage and frequently refer them for further physical investigations, often without believing that they actually have an undiagnosed physical illness.(116;117;132) With these patients, it is paramount to develop a psychosocial perspective for what is otherwise defined as narrowly biomedical issues.(133) According to the literature, depression, anxiety (including health anxiety), and panic disorders are common in patients with MUS who are repeatedly referred to secondary care.(134) Health anxiety is a disturbing and persistent condition.(135;136) To study this issue further, the questionnaires in the next Tromsø Study (in 2015) will include questions on health anxiety, using the Whitely-7 scale.(137) This

will allow us to explore the possible association between health anxiety and the utilisation of primary and secondary care.

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# *PAPER I*

Unni Ringberg, Nils Fleten, Trygve S Deraas, Toralf Hasvold and Olav Helge Førde.

**High referral rates to secondary care by general practitioners in Norway are associated with GPs' gender and specialist qualifications in family medicine, a study of 4350 consultations.**

*BMC Health Services Research* 2013, 13:147
PubMed: PMID 23617296

# Paper II

Unni Ringberg, Nils Fleten and Olav Helge Førde

**Examining the variation in GPs' referral practice: a cross-sectional study of GPs' reasons for referral.**

*Br J Gen Pract* 2014;64(624):e426-e433
PubMed: PMID: 24982495

# Paper III

Unni Ringberg, Nils Fleten and Olav Helge Førde

**GPs refer many patients to secondary care without expecting any medical benefit: a cross sectional study of GPs' decisions for referral**

Submitted to Br J Gen Pract 2014, 26th Nov

# Appendices

**1 Invitations and questionnaires**

a 'Eye catcher'

b Invitation with declaration of consent

c Questionnaire on GP background

d Questionnaire on GP background, English translation

e Paper version of electronic questionnaire

f Paper version of electronic questionnaire, English translation

2 **Reminders**

a Reminder January 2010

b Reminder April 2010

c Colleague recommendation, used April 2010

3 **Installation** of the questionnaire program and transfer of data to CD or floppy disk

4 **Uninstallation** of the questionnaire program

# Appendices 1a-f

**Invitations and questionnaires**

# Appendix 1a

**'Eye catcher'**

# Henvisning av pasienter til spesialisthelsetjenesten

## Invitasjon til å delta i et forskningsprosjekt

Kjære kollega, du inviteres med dette til å delta i en spørreskjemaundersøkelse om din henvisningspraksis. Du må arbeide klinisk minimum to dager per uke for å kunne delta.

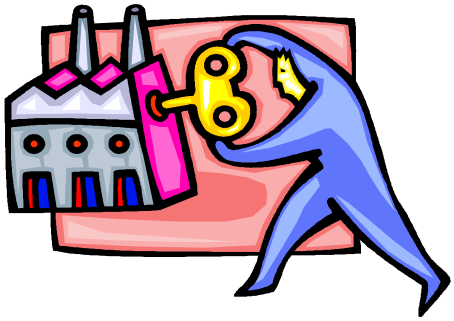
## Hvor mange pasienter henviser du til spesialisthelsetjenesten?

Hensikten med undersøkelsen er å kartlegge omfanget av alle typer henvisninger til spesialisthelsetjenesten fra 99 tilfeldig utvalgte fastleger i Nord-Norge.

## Hvorfor henviser du pasientene?

Begrunnelsene for henvisning/ikke henvisning kartlegges med fokus på bl.a. følgende: pasientens medisinske tilstand, pasientens ønske, bekymring hos pasient og lege, tilgjengelighet i spesialisthelsetjenesten og legens forventing om resultatet av henvisning.

Du er nøkkelen til om pasienten skal henvises eller ikke. Vi har for dårlig kunnskap om fastlegenes henvisningsrater og om begrunnelsene.



**Undersøkelsen vil foregå ved hjelp av spørreskjema som er elektronisk, og som automatisk kommer fram på skjermen hver gang du avslutter en pasientjournal etter gjennomført konsultasjon.** Du trenger ikke huske å utfylle skjema, og det er ingen papirer som kan rotes bort.

**Hvert skjema tar fra ½ - 2 minutter å besvare. Du honoreres med kr 15 per skjema som kompensasjon for tidsbruk**. Det er ønskelig at du besvarer 100 skjema, dvs. i 1-2 uker. Pilot gjennomført i Tromsø viser at skjema er enkelt å besvare og i liten grad forstyrrer legens kliniske arbeid.

Arbeidet er en del av mitt doktorgradsarbeid ved Institutt for samfunnsmedisin (ISM) ved Universitetet i Tromsø. Veiledere er professorene Olav Helge Førde og Toralf Hasvold.

Vennlig hilsen

Unni Ringberg
stipendiat / fastlege i Tromsø

# Appendix 1b

**Invitation with declaration of consent**

# Du ble på forrige side invitert til å delta i et forskningsprosjekt ila november/desember 08.

**Bakgrunn for studien**
Fastlegene har en viktig funksjon som bestiller av tjenester og portvakt for pasientene i forhold til spesialisthelsetjenesten. For den enkelte pasient og for spesialisthelsetjenenesten har fastlegenes henvisningspraksis vesentlig betydning. Antall henviste og hvem som henvises, har stor betydning for arbeidsdeling og samhandling mellom første - og andrelinjetjenesten. Norske myndigheter viser gjennom sin lovgivning og praksis at de har tillit til fastlegenes bestiller- og portvaktfunksjon. Det antas at legene henviser pasienter fra om lag 10 % av konsultasjonene, men vi kjenner ikke de norske tallene.

**Målsetting med studien**
Studiens tittel er "Primærlegers begrunnelse for henvisningsbehov til spesialisthelsetjenesten. En tverrsnittsstudie av enkeltbeslutninger i primærhelsetjenesten".

Målsettinga er å kartlegge omfanget av ulike typer henvisninger fra fastleger til spesialisthelsetjenesten (innleggelse, undersøkelse ved sykehuspoliklinikk/hos private spesialister og røntgenundersøkelse). Dessuten blir begrunnelser for henvisning eller ikke henvisning fra primærhelsetjenesten kartlagt. Undersøkelsen vil også kunne gi svar på hvor mange som blir henvist utenom den lokale/regionale spesialisthelsetjenesten (fritt sykehusvalg). Se vedlagt papirkopi av hovedtrekkene i spørreskjema.

En hensikt med studien er å undersøke om beslutninga om å henvise og begrunnelsene for dette varierer mye mellom grupper av fastleger med ulik praksislokalisasjon, bakgrunn og erfaring. Den enkelte lege vil ikke bli identifisert verken i analyse eller presentasjoner. Totalt blir 99 fastleger i Nord-Norge spurt om å delta i undersøkelsen. Disse 99 er trukket tilfeldig ut blant Nord-Norges 441 besatte fastlegestillinger.

**Prosjektleder/ kontaktperson og veileder**
Unni Ringberg er prosjektleder/stipendiat. Hun er mangeårig fastlege i Tromsø og har tidligere ledet praksiskonsulentordningen ved UNN. Hun er nå ansatt i deltidsstilling ved Institutt for samfunnsmedisin ved Universitetet i Tromsø for å gjøre denne studien som en del av et doktorgradsarbeid. Unni er kontaktperson. Hun treffes på mobiltelefon 90524082 og har e-postadresse unni.ringberg@ism.uit.no Veileder er professor Olav Helge Førde og biveileder er professor Toralf Hasvold ved Institutt for samfunnsmedisin ved Universitetet i Tromsø.

**Finansiering**
Prosjektet er finansiert av Institutt for samfunnsmedisin (ISM), delvis via FORSAH (Forskning på samhandling i helsevesenet).

**Gjennomføring av studie, konfidensialitet, lagring av data**
Undersøkelsen vil foregå nå høsten 2008. Jeg vil ta kontakt med deg etter ca en uke. Dersom du ikke ønsker at jeg skal ta kontakt, kan du gi beskjed om dette til meg.

**Dersom du velger å delta i studien, vil følgende skje:**

1. Du vil få tilsendt en CD i posten som enkelt installerer spørreskjemaprogrammet og et hjelpeprogram på din pc på legekontoret. Disse programmene vil ikke påvirke dine andre dataprogrammer.

Programmet gjør at et spørreskjema kommer opp på skjermen når du avslutter den elektroniske journalen for hver pasient som har vært til konsultasjon. Spørreskjemaet vil bare komme fram dersom pasientkontakten er registrert som en konsultasjon. Skjemaet vil altså ikke komme fram ved

telefonkontakter, enkel pasientkontakt, etter sykebesøk eller ved bruk av journal uten kontaktregistrering. Pilot gjennomført blant fem fastleger i Tromsø viser at skjema er enkelt å besvare og i liten grad forstyrrer legens kliniske arbeid

Det er ønskelig at du besvarer 100 skjema, dvs. for 100 pasienter. Hvor lang tid dette vil ta, avhenger selvsagt av din praksis, mellom 1-2 uker for de fleste legene. Spørreskjemaprogrammet vil være aktivt inntil du har besvart 100 skjema, da avsluttes det automatisk. Besvarelsene lagres på din lokale server i en passordbeskyttet fil.

Spørreskjemaet vil ta fra ½ til 2 minutter å besvare. Du vil bli honorert med kr 15 per besvart skjema som kompensasjon for tidsbruken.

Når registreringsperioden er over, vil du ved hjelp av et nytt dataprogram overføre de lagrede besvarelsene i kryptert form til en diskett og sende disketten i posten til meg, Unni Ringberg. Når jeg har sjekket at dataene er i orden, vil database og programfile kunne slettes på din server.

Alle programmene er enkle å installere: Du setter CD eller diskett i maskinen og svarer på spørsmålene som kommer fram (eks ja, nei, videre, avslutt).

**2.** Du vil også bli bedt om å fylle ut et registreringsskjema med spørsmål om din alder, kjønn, og noen forhold ved din yrkesbakgrunn og fastlegepraksis. Se vedlagt skjema.

Som forsker har jeg taushetsplikt. Alle opplysninger fra spørreskjemaundersøkelsen og skjema om bakgrunnsvariable vil bli behandlet konfidensielt. De lagres med løpenummer ved Institutt for samfunnsmedisin. Noen av de 99 deltakerne kan senere bli bedt om å delta i et intervju om sin henvisningspraksis. Etter prosjektslutt i desember 2013 vil alle data bli anonymisert.
Om du ønsker det, kan du få analysen av dine svar, henvisningsrate og begrunnelsene for dine henvisninger / ikke henvisninger.

Prosjektet er godkjent av Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneneste. Prosjektet er ikke fremleggingspliktig for Regional etiske komité.

*Dersom du ønsker å delta, ber jeg om at du signere på at du samtykker, se side 3, og returnere samtykkeerklæringen i vedlagte frankerte konvolutt. Deltakelsen er selvsagt frivillig, og du kan trekke samtykket tilbake på hvilket som helst tidspunkt uten å oppgi noen grunn.*
Data om og fra de som trekker seg, vil bli slettet.

Jeg vil ta kontakt med deg om ca en uke per sms eller telefon. Dersom du lurer på noe, kan du ringe meg på mobil 90524082 eller sende e-post til unni.ringberg@ism.uit.no.

Takk for at du tok deg tid til å lese dette.

Vennlig hilsen

Unni Ringberg
Stipendiat / fastlege i Tromsø
Institutt for samfunnsmedisin, Universitetet i Tromsø, 9037 Tromsø

**Samtykke**

Jeg har mottatt ovenstående skriftlige informasjon og er villig til å delta i studien ”Primærlegers begrunnelse for henvisningsbehov. En tverrsnittsstudie av enkeltbeslutninger i primærhelsetjenesten.”

Sted/dato ……..…….

Signatur …….

# Appendix 1c

**Questionnaire on GP background**

## Informasjon om fastlegen

Vennligst fyll ut i kolonnen til høyre. Ved for liten plass, kan du bruke baksiden av arket.

| | | | |
|---|---|---|---|
| 1 | Fødselsår? | | |
| 2 | Kjønn?<br>Sett kryss for aktuelt alternativ | Mann □ | Kvinne □ |
| 3 | Cand. med. Når? | Årstall: | |
| 4 | Cand. med. Hvor? | Utdanningssted: | |
| 5 | Spesialist i allmennmedisin?<br>Sett kryss for aktuelt alternativ | Ja □ | Nei □ |
| 6 | Spesialist i allmennmedisin. Når? | Årstall: | |
| 7 | Spesialist i samfunnsmedisin?<br>Sett kryss for aktuelt alternativ | Ja □ | Nei □ |
| 8 | Spesialist i samfunnsmedisin. Når? | Årstall: | |
| 9 | Har du fast lønn eller driver du privatpraksis med basistilskudd?<br>Sett kryss for aktuelt alternativ | Fastlønnet □ | Privatpraksis □ |
| 10 | Antall hele og evt. halve dager per uke du vanligvis arbeider klinisk, dvs. med pasienter? | | |
| 11 | Antall år du har jobbet som allmennlege i nåværende kommune?<br>(Ett år teller som helt år selv om du har hatt deltidsstilling.) | | |
| 12 | Antall år du har jobbet som allmennlege med nåværende pasientpopulasjon?<br>(Ett år teller som helt år selv om du har hatt deltidsstilling.) | | |
| 13 | All arbeidserfaring i allmennmedisin?<br>Tidsrom (årstall) og steder/land.<br>Ikke ta med turnustjeneste<br>Bruk evt. baksiden av arket. | | |
| 14 | Arbeidserfaring som sykehuslege?<br>Tidsrom (årstall), steder / land og fagområde<br>Ikke ta med turnustjeneste.<br>Bruk evt. baksiden av arket. | | |
| 15 | Kan jeg eventuelt kontakte deg seinere for å be om et intervju? | Ja □ | Nei □ |

# Appendix 1d

**Questionnaire on GP background**

**English translation**

## Information on the general practitioner (GP)

Please complete the questionnaire. You may use the back of the sheet if needed.

| | | | |
|---|---|---|---|
| 1 | Year of birth? | | |
| 2 | Sex? Please, check | Male | Female |
| 3 | Medical Degree. When? | Year: | |
| 4 | Medical Degree. Where? | Place of medical education: | |
| 5 | Specialist in family medicine? Please, check | Yes | No |
| 6 | Specialist in family medicine. When? | Year: | |
| 7 | Specialist in community medicine? Please, check | Yes | No |
| 8 | Specialist in community medicine. When? | Year: | |
| 9 | Are you on a fixed salary or in private practice? Please, check | Fixed salary | Private practice □ |
| 10 | Please, state the number of whole or half days per week that you usually work clinically, i.e. with patients? | | |
| 11 | Please, state the number of years you have worked as a GP under the list system in the present municipality? (One year counts as a whole year even if you are working part time.) | | |
| 12 | Please, state the number of years you have worked as a GP with the present population of patients? (One year counts as a whole year even if you are working part time.) | | |
| 13 | Please, state all working experience as a GP? Number of years and places/countries. (Please, do not include your internship) You may use the back of the sheet. | | |
| 14 | Please, state all working experience working as a MD in hospitals? Number of years, places/countries and medical discipline (Please, do not include your internship) You may use the back of the sheet. | | |
| 15 | May I contact you later and possibly ask to interview you? | Yes | No |

# Appendix 1e

**Paper version of**

**electronic questionnaire**

**Papirversjon av elektronisk spørreskjema**

(Alt som står med rødt og i parentes skal ikke vises i det endelig spørreskjema.)
(Side 1.)

**Fastlegens begrunnelse for å henvise pasienten til spesialisthelsetjenesten**

Med spesialisthelsetjenesten menes her de helsetjenester som ikke hører til kommunens ansvar. Tjenesten omfatter alle typer sykehus, og institusjoner innen det psykiske helsevernet samt en rekke andre spesialiserte institusjoner og privatpraktiserende spesialister.

Det er ofte flere forhold som avgjør om fastlegen henviser en pasient til spesialisthelsetjenesten: pasientens medisinske tilstand, pasientens ønske, usikkerhet hos legen og pasienten, helsetjenestens organisering osv. Alle disse begrunnelsene er legitime og vanlige.

På de neste sidene er det en liste med de vanligste begrunnelsene og noen andre utsagn som jeg ber deg ta stilling til.

**Jeg ønsker å få dine vurderinger knyttet til denne konsultasjonen og ikke hva du tror leger generelt mener eller hva du tror er faglig eller politisk korrekt.**

**Jeg ber deg derfor stoppe opp og tenke igjennom hva som er dine begrunnelser for den beslutning du tar for denne pasienten på bakgrunn av alle undersøkelser foretatt på legekontoret i dag.**

Pasienten er omtalt som ”han”.

| | Sett bare ett kryss | |
|---|---|---|
| Blir pasienten henvist spesialisthelsetjenesten etter denne konsultasjonen? | Ja ☐ | Nei ☐ |

(Videre: svar

| | | Neste pop up |
|---|---|---|
| Svaralternativ 1 | Ja | Side 3 |
| Svaralternativ 2 | Nei | Side 2 |

(Side 2 som Pop-up etter å ha svart ”Nei” på første spørsmål på side 1)

**Du henviser ikke denne pasienten til spesialisthelsetjenesten**

Ble en eventuell henvisning luftet under konsultasjonen?

**Sett bare ett kryss**

Ja ☐ Nei ☐

(Videre:

| | | Neste pop up |
|---|---|---|
| Svaralternativ 1 | Ja | Side 3 |
| Svaralternativ 2 | Nei | Side 4 |

(Side 3 som Pop-up etter å ha svart
”ja” på spørsmålet på side 1 eller
”ja” på spørsmålet på side 2)

**Henvisning ble luftet/bestemt under konsultasjonen**

Hvem tok først opp problemstillingen?

**Sett bare ett kryss**

Pasienten ☐ Legen ☐

(Videre:

| | Spørsmål s 1 | Neste pop up |
|---|---|---|
| Svaralternativ 1 | Ja | Side 5 |
| Svaralternativ 2 | Nei | Side 4 |

(Side 4 som Pop-up etter å ha svart
"Nei" på første spørsmål på side 1 og
svart på side 2 og evt. side 3)

**Du henviser ikke denne pasienten til spesialisthelsetjenesten**

Nedenfor ser du en liste med de vanligste begrunnelsene for ikke å henvise en pasient og noen andre utsagn.

**Du skal sette ett kryss på hver linje slik at du viser i hvor stor grad hver begrunnelse / utsagn nedenfor passer / ikke passer for deg etter akkurat denne pasienten.**

Pasienten er omtalt som "han".

| | Passer svært godt | Passer ganske godt | Passer i liten grad | Passer ikke |
|---|---|---|---|---|
| | **Sett bare ett kryss per linje** | | | |
| Pasientens medisinske tilstand gjør at jeg utreder / behandler han | ☐ | ☐ | ☐ | ☐ |
| Jeg utreder / behandler pasienten fordi det er for lang ventetid hos aktuell spesialist | ☐ | ☐ | ☐ | ☐ |
| Jeg utreder / behandler pasienten fordi hans medisinske tilstand er noe fastleger vanligvis tar seg av | ☐ | ☐ | ☐ | ☐ |
| Jeg utreder / behandler / følger opp pasienten i første omgang. Henvisning kan bli aktuelt senere | ☐ | ☐ | ☐ | ☐ |
| Pasienten er allerede henvist spesialisthelsetjenesten for den aktuelle tilstand og følges nå opp av meg i ventetiden | ☐ | ☐ | ☐ | ☐ |
| Pasienten følges opp for den aktuelle tilstand både av meg og i spesialisthelsetjenesten | ☐ | ☐ | ☐ | ☐ |
| Pasienten ønsker henvisning | ☐ | ☐ | ☐ | ☐ |

(Avslutning)

(Side 5 som Pop-up etter å ha svart "Ja" på spørsmål på side 1 og svart på side 3)

**Du henviser denne pasienten til spesialisthelsetjenesten**

**Hvem henviser du til?**

**Du kan sette flere kryss**

Spesialist på sykehuspoliklinikk…….…….. ☐

Spesialist på sykehusavdeling (innleggelse) ....…..…….. ☐

Spesialist på distriktsmedisinsk senter / ambulant sykehuspoliklinikk……. ☐

Privatpraktiserende spesialist ...…….…….…….. ☐

Radiologisk avdeling på sykehus…...……... ☐

Privat radiologisk institutt ……...…… ☐

Annen spesialisthelsetjeneste ……. ☐

Blir pasienten henvist til spesialisthelsetjeneste utenfor Helse-Nord?……. Ja ☐ Nei ☐

(Videre: Side 6)

**Du henviser denne pasienten til spesialisthelsetjenesten**

**Hvilken del av spesialisthelsetjenesten henviser du pasienten til?**

**Du kan sette flere kryss**

Somatisk avdeling / poliklinikk /spesialist……..... ☐

Psykiatrisk avdeling / poliklinikk /spesialist ……...…. ☐

Institusjon / poliklinikk for rusbehandling ..……. ☐

(Videre: Side 7)

(Side 7 som Pop-up etter side 6)

**Du henviser denne pasienten til spesialisthelsetjenesten**

Ble bruk av ordningen med fritt sykehusvalg *luftet* under konsultasjonen?

**Sett bare ett kryss**

Ja ☐ Nei ☐

(Videre:

| | | Neste pop up |
|---|---|---|
| Svaralternativ 1 | Ja | Side 8 |
| Svaralternativ 2 | Nei | Side 10 |

(Side 8 som Pop-up etter side 6 etter å ha svart ”ja” på første spørsmål side 7)

**Bruk av ordningen med fritt sykehusvalg ble *luftet* under konsultasjonen**

Hvem tok først opp problemstillingen?

**Sett bare ett kryss**

| Pasienten | Legen |
| --- | --- |
| ☐ | ☐ |

(Videre: Side 9)

(Side 9 som Pop-up etter side 8)

**Bruk av ordningen med fritt sykehusvalg ble luftet under konsultasjonen**

Ble ordningen med fritt sykehusvalg *benyttet*?

**Sett bare ett kryss**

Ja ☐ Nei ☐

(Videre: Side 10)

(Side 10 som Pop-up etter side 9)

**Du henviser denne pasienten til spesialisthelsetjenesten**

Det er ofte flere forhold som avgjør om fastlegen henviser en pasient til spesialisthelsetjenesten: pasientens medisinske tilstand, pasientens eget ønske, usikkerhet hos legen og pasienten, helsetjenestens organisering osv. Alle disse begrunnelsene er legitime og vanlige.

Nedenfor ser du en liste med de vanligste begrunnelsene for å henvise en pasient og noen andre utsagn.

**Du skal sette ett kryss på hver linje slik at du viser i hvor stor grad hver begrunnelse / utsagn nedenfor passer / ikke passer for deg etter akkurat denne pasienten.**

Pasienten er omtalt som "han".

| | Passer svært godt | Passer ganske godt | Passer i liten grad | Passer ikke |
|---|---|---|---|---|
| | **Sett bare ett kryss per linje** | | | |
| Jeg henviser pasienten fordi hans medisinske tilstand gjør det nødvendig | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten for at jeg ikke skal overse noe | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten for å berolige han | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten fordi jeg ikke kan nok om denne tilstanden / problemstillingen | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten som ledd i arbeid med trygdesak | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten fordi hans medisinske tilstand er noe spesialisthelsetjenesten vanligvis tar seg av | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasienten for å lette mitt arbeidspress | ☐ | ☐ | ☐ | ☐ |
| Jeg henviser pasientens fordi aktuell spesialist er lett tilgjengelig (kort ventetid og/eller geografisk nært) | ☐ | ☐ | ☐ | ☐ |
| Jeg henvises pasienten fordi han ønsker det | ☐ | ☐ | ☐ | ☐ |
| Jeg tror henvisningen vil bidra vesentlig til et bedre behandlingsresultat og/eller forkortet sykdomsforløp | ☐ | ☐ | ☐ | ☐ |

(Avslutning)

# Appendix 1f

**Paper version of**

**electronic questionnaire**

**English translation**

**Paper version of the electronic questionnaire**

(What is written in red ink or in parenthesis is not to be displayed in the electronic questionnaire.)
(Page 1)

**The GP's reasons for referring the patient to secondary care**

In this questionnaire secondary care includes the health services that are not the responsibility of the local municipality. Secondary care includes all kinds of hospitals, institutions within mental secondary care and also several other specialized institutions and private practising specialists.

Quite often several factors contribute to the GP's decision of referring a patient to secondary care: the medical situation for the patient, the patient's preferences, the GP's or the patient's uncertainty, health care organization etc. All of these reasons are legitimate and common.

On the next pages I ask you to consider some common reasons for referral and also reply to some other statements.

**I ask you to give <u>your own</u> assessments related to the present consultation and not what you might think other GPs mean in general or what you might think is professionally or politically correct.**

**Therefore, I ask you to pause and reflect on what are <u>your</u> reasons for the decision you are making on behalf of this patient after all investigations are completed in your surgery today.**

The patient is referred to as "he"**.**

| | **Please, check only one** | |
|---|---|---|
| Are you referring the patient to secondary care after this consultation? | Yes | No |
| | ☐ | ☐ |

(Continuation:

| | | Next pop up |
|---|---|---|
| Alternative 1 | Yes | Page 3 |
| Alternative 2 | No | Page 2 |

(Page 2: Pop-up after having answered “No” to the first question on page 1)

**You are not referring this patient to secondary care**

| | **Please, check only one** | |
|---|---|---|
| Was the issue of a possible referral introduced in the consultation? | Yes ☐ | No ☐ |

(Continuation:

| | | Next pop up |
|---|---|---|
| Alternative 1 | Yes | Page 3 |
| Alternative 2 | No | Page 4 |

(Page 3: Pop-up after having answered
”yes” to the question on page 1 or
”yes” to the questions on page 2)

**The issue of a possible referral was introduced and/or you decided to refer the patient in the course of the present consultation**

Who introduced the issue of a possible referral?

**Please, check only one**

The patient ☐ The GP ☐

(Continuation:

| | The question on page 1 | Next pop-up |
|---|---|---|
| Alternative 1 | Yes | Page 5 |
| Alternative 2 | No | Page 4 |

(Page 4: Pop-up after answering "No" to the first question on page 1 and having given an answer to the question on page 2 and possibly page 3)

**You are not referring this patient to secondary care**

Below is displayed a list of the most common reasons for not referring a patient and some other statements.

**Please, check only one per row to record to what extent the reason/statement corresponds with your own assessment in relation to the present patient.**

The patient is referred to as "he"**.**

| | Corresponds very well | Corresponds fairly well | Corresponds to a limited extent | Does not correspond |
|---|---|---|---|---|
| | | **Please, check only one per row** | | |
| The patient's medical condition is the reason why I am performing the investigations/treatments | ☐ | ☐ | ☐ | ☐ |
| I am examining/treating the patient because the waiting time is too long by the relevant specialist | ☐ | ☐ | ☐ | ☐ |
| I am examining/treating the patient because his medical condition is usually taken care of by a general practitioner | ☐ | ☐ | ☐ | ☐ |
| I am examining/treating /following up the patient as a start. Referral may be relevant later on | ☐ | ☐ | ☐ | ☐ |
| The patient was already referred to secondary care for the present condition. I am following up the patient during the waiting time. | ☐ | ☐ | ☐ | ☐ |
| The patient is taken care if by me and secondary care in cooperation for the present condition | ☐ | ☐ | ☐ | ☐ |
| The patient wants to be referred | ☐ | ☐ | ☐ | ☐ |

(The end)

(Page 5: Pop-up after answering ”Yes” to question on page 1 and having given an answer to the question on page 3)

**You are referring this patient to secondary care**

**To whom are you referring the patient?**

| | **You may place more than one checkmark** |
|---|---|
| Hospital outpatient services …….……..…….. | ☐ |
| Hospital admission…….....….……..…….. | ☐ |
| Rural, public outpatient services ……. | ☐ |
| Specialist in private practice ...…….…….…….. | ☐ |
| Radiology examination, public secondary service……... | ☐ |
| Radiology examination, private institute..……...……. | ☐ |
| Other specialists ……... | ☐ |

| | Yes | No |
|---|---|---|
| Is the patient referred to secondary care outside of Northern Norway Regional Health Authority? ..…… | ☐ | ☐ |

Continued on page 6

**You are referring this patient to secondary care**

**What sector of secondary care are you referring the patient to?**

| | **You may place more than one checkmark** |
|---|---|
| Somatic hospital / outpatient clinic /private specialist…..... | ☐ |
| Mental hospital / outpatient clinic /private specialist ……... | ☐ |
| Institution /outpatient clinic treating substance abuse……. | ☐ |

Continued on page 7

(Page 7: Pop-up after page 6)

**You are referring this patient to secondary care**

| | Please, check only one | |
|---|---|---|
| Was the issue of the service of "Free Hospital Choice Norway" introduced in the course of the present consultation? | Yes ☐ | No ☐ |

(Continuation:

| | | |
|---|---|---|
| | | Next pop-up |
| Alternative 1 | Yes | Page 8 |
| Alternative 2 | No | Page 10 |

(Page 8: Pop-up after answering ”Yes” to the first question on page 7 )

**The service of “Free Hospital Choice Norway” was introduces in the course of the present consultation**

| | Please, check only one | |
|---|---|---|
| | The patient | The GP |
| Who introduced the issue of “Free Hospital Choice Norway”? | ☐ | ☐ |

Continued on page 9

(Page 9: Pop-up after page 8)

**The service "Free Hospital Choice Norway" was introduced in the course of the present consultation**

| | **Please, check only one** | |
|---|---|---|
| Was the service *utilized*? | Yes | No |
| | ☐ | ☐ |

Continued on page 10

(Page 10: Pop-up after page 9)

**You are referring this patient to secondary care**

Quite often several factors contribute to the GP's decision of referring a patient to secondary care: the medical situation for the patient, the patient's preferences, the GP's or the patient's uncertainty, health care organization etc. All of these reasons are legitimate and common.

Below is displayed a list of the most common reasons for referring a patient and some other statements.

**Please, check only one per row to record to what extent the reason/statement corresponds with your own assessment in relation to the present patient.**

The patient is referred to as "he"**.**

| | Corre-sponds very well | Corre-sponds fairly well | Corre-sponds to a limited extent | Does not corre-spond |
|---|---|---|---|---|
| | **Please, check only one per row** | | | |
| I am referring the patient because his medical condition makes it necessary | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient to avoid overlooking anything | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient to reassure him | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient because I have deficient knowledge concerning the patient's current medical problem | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient as part of a social security application | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient because his medical condition is usually taken care of by secondary health care | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient to relieve my work load | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient because the relevant specialist is easily accessible (short waiting list and/or closely located) | ☐ | ☐ | ☐ | ☐ |
| I am referring the patient because he wanted to be referred | ☐ | ☐ | ☐ | ☐ |
| I believe the referral will contribute considerably to a better treatment outcome and /or a shortened course of the disease | ☐ | ☐ | ☐ | ☐ |

The end

# Appendices 2a-c

**Reminders**

# Appendix 2a

**Reminder January 2010**

Unni Ringberg
Institutt for samfunnsmedisin
Universitetet i Tromsø
9037 Tromsø

Tromsø, 15/1-2010

Kjære kollega

Du er tidligere spurt om å kartlegge din henvisningspraksis til spesialisthelsetjenesten. Undersøkelsen er en del av mitt PhD prosjekt.

**Jeg ber deg nå pånytt om du vil delta.** Se også neste side.

41 fastleger fra Nord Norge har akseptert å være med, men bare 22 har faktisk besvart. Høyere svarprosent er svært viktig for å kunne trekke representative konklusjoner om hvor mange pasienter fastlegene henviser til spesialisthelsetjenesten, og hvorfor de gjør det.

Undersøkelsen består i at du svarer på et elektronisk spørreskjema som automatisk kommer fram etter hver pasient for 100 fortløpende konsultasjoner. De legene som har deltatt, forteller at det er lite tidkrevende å gjennomføre undersøkelsen. Det tar fra ½ til 1 minutt å besvare hvert skjema.

**Jeg ber deg uansett besvare min henvendelse i vedlagte returkonvolutt.**

**Dersom du velger å ikke delta, ber jeg deg likevel returnere utfylt bakgrunnsinformasjon om deg selv.** Denne informasjon er svært viktig for å kunne vurdere om det utvalget av leger som har deltatt, skiller seg ut fra de som ikke har deltatt.
Alle opplysninger behandles konfidensielt.

**Håper på positivt svar. Men takk uansett!**

Hilsen

Unni Ringberg
Fastlege i Tromsø / stipendiat ved ISM, Universitetet i Tromsø

# Appendix 2b

**Reminder April 2010**

Unni Ringberg
Institutt for samfunnsmedisin
Universitetet i Tromsø
9037 Tromsø

Tromsø, 15/4-2010

**Purring**

Kjære kollega

Du er tidligere spurt om å kartlegge din henvisningspraksis til spesialisthelsetjenesten. Undersøkelsen er en del av mitt PhD- / doktorgradsprosjekt.

**Jeg ber deg nå pånytt om du vil delta.** Se også neste sider.

41 fastleger fra Nord Norge har akseptert å være med, og 35 leger har besvart.
Høyere svarprosent er svært viktig for å kunne trekke representative konklusjoner om hvor mange pasienter fastlegene henviser til spesialisthelsetjenesten, og hvorfor de gjør det.

Undersøkelsen består i at du svarer på et elektronisk spørreskjema som automatisk kommer fram etter hver pasient for 100 fortløpende konsultasjoner. De legene som har deltatt, forteller at det er lite tidkrevende å gjennomføre undersøkelsen, (se brev fra Knut Holtedahl). Det tar fra ½ til 1 minutt å besvare hvert skjema.

**Jeg ber deg uansett besvare min henvendelse i vedlagte returkonvolutt.**

**Dersom du velger å ikke delta, ber jeg deg likevel returnere utfylt bakgrunnsinformasjon om deg selv.** Denne informasjon er svært viktig for å kunne vurdere om det utvalget av leger som har deltatt, skiller seg ut fra de som ikke har deltatt.
Alle opplysninger behandles konfidensielt.

**Håper på positivt svar. Men takk uansett!**

Hilsen

Unni Ringberg
Fastlege i Tromsø / stipendiat ved ISM, Universitetet i Tromsø

# Appendix 2c

**Colleague recommendation, used April 2010**

Kjære kollega

Jeg har deltatt i Unni Ringbergs spørreundersøkelse om fastlegers henvisningspraksis.
Jeg ble trukket ut som deltaker fordi jeg arbeider som fastlege en dag per uke.

Unni sender nå ut purring og håper på god oppslutning. Jeg har på eget initiativ tilbudt meg å gi en anbefaling fordi forskning i allmennpraksis er viktig, og studien har interesse for faget vårt.

Her er min egen erfaring med studien:

Det var lite arbeidskrevende å delta.
Skjemaene kom automatisk fram hver gang jeg avsluttet en pasientjournal.
Det var enkle spørsmål, og jeg brukte svært kort tid på å besvare hvert skjema.

Tromsø, 15/1-10

Knut Holtedahl
Fastlege og professor i allmennmedisin

# Appendix 3

**Installation of the questionnaire program and transfer of data to CD or floppy disk**

## Spørreskjemaundersøkelse: ”Fastlegers begrunnelse for å henvise / ikke henvise pasienter til spesialisthelsetjenesten”

## INSTALLERING / OVERFØRING AV DATA / AV-INSTALLERING

### 1. Ved prosjektstart.

**Installering av CD** med program for installering av pop-up. **CD må installeres på hver pc på hvert kontor hvor legen deltar i undersøkelsen.**

PROSEDYRE
Når prosjektet skal starte på et legekontor, legges CD’ en inn i CD-skuffen på alle aktuelle arbeidsplasser. Normalt skal da installasjonsprogrammet automatisk starte. Brukeren svarer ”Neste”, ”Installere”, ”Avslutte” på de spørsmålene som kommer fram. Om kontoret ikke har ODBC fil, vil denne også installeres, og legen må da akseptere en standard lisensavtale.

Kommer det en feilmelding eller lignende, tar du kontakt med Unni (90524082).

Etter ”Avslutte” er programmet installert og på plass, (og popup’ene vil begynne å komme når en forlater pasientjournaler etter konsultasjoner). CD’ en kan ta tas ut.

Hvis installasjonsprogrammet på CD’ en ikke starter automatisk, trykk på ”Start”, ”Kjør” (evt. ”Run”) og skriv ”K:setup” og trykk ”OK” (bytt ut K’ en med annen bokstav for aktuell CD-stasjon, kan være D etc.).

Husk at CD’ en må installeres på alle arbeidsplasser hvor det ønskes popup!

### 2. Ved prosjektslutt.

### Overføring av data /svar fra spørreskjema til diskett

Når data /svarene på spørreskjemaene skal samles inn, brukes disketten PopDisk. **Dette skal gjøres når alle legene på legesenteret er ferdig med undersøkelsen og bare på en av pc’ene hvor undersøkelsen har vært gjennomført.**

PROSEDYRE
Sett disketten inn på en av arbeidsplassene som fikk programmet installert.
Trykk ”Start”, ”Kjør” (evt.”Run”)og skriv ”A:PopDisk”, trykk ”enter”.

Da vil innsamlede data for alle legene på dette legekontoret pakkes, krypteres og kopieres til disketten, som så kan sendes til Unni i posten slik at hun kan sjekke at dataene teknisk sett er OK.

**Merk at du med denne prosedyren får dataene for alle legene på legesenteret som har vært med på undersøkelsen, slik at dette bare gjøres EN gang pr. legesenter når alle legene er ferdige med undersøkelsen, og ikke for hver lege.**

### 3. Ved prosjektslutt.

### Av-installering av spørreskjemaprogrammet

Når Unni gir deg beskjed om at dataene fra undersøkelsene som hun har mottatt på diskett er OK, skal programmet av-installeres på server. Dette må gjøres på hver arbeidsplass hvor programmet ble installert

PROSEDYRE ENDRES PGA CD
Sett disketten inn på HVER arbeidsplassene hvor popup programmet ble installert. Trykk ”Start”, velg ”Programmer” (ev ”Alle programmer”), pek på ”Popup for Henvisning”, klikk på ”Uninstall”, og dernest på ”Avinstaller” i bildet som nå dukker opp. Da kommer nok et bilde. Trykk ”Fjern” i dette bildet, og vent til popup-status er ”Ikke installert, ikke aktiv”. Trykk ”Ferdig”, og deretter ”Avslutte” i det første bildet. Da er programmet av-installert..

Lykke til!

Hilsen Unni

Postadresse: Unni Ringberg, ISM, Med. Fak, Universitetet i Tromsø, 9037 Tromsø.
Telefon: 90524082 eller kontor: 77644834

NOTAT 22/1-10
Banen for popdisk er:
Legedata / mediata/popRsjekk – fjerne eller installere

Dataene ligger på i mappene:
Legedata / Mediata / data. Filnavenen er henvisn.mdb

# Appendix 4

**Uninstallation of the questionnaire program**

**Avinstallering av programmet for spørreskjema ang henvisning (Pop-up)**

Programmet for Pop-up kan av-installeres, slik at popup'ene slutter å komme.

Du trykker "Start" (nede til venstre på skjermen),
velg "Programmer" (ev "Alle programmer"),
pek på "Popup for Henvisning",
velg "Uninstall",
dernest på "Avinstaller" i bildet som nå dukker opp.

Det kommer så nok et bilde: Trykk "Fjern" i dette bildet, og vent til popup-status er "Ikke installert, ikke aktiv". Velg "Ferdig", og deretter "Avslutte" i det første bildet.

Da er programmet avinstallert. Dette må gjøres på hver arbeidsplass hvor programmet ble installert.

Hilsen Unni Ringberg