

Why Non-Pharmacological Prescribing of Antibiotics?

A Phenomenological Investigation
into the Rationale behind it
from the GP's perspective

Pétur Pétursson

Master of Public Health
Essay

MPH 2005:6



NHV
Nordic School
of Public Health



norden

Nordic Council of Ministers

Why Non-Pharmacological Prescribing of Antibiotics? A Phenomenological Investigation into the Rationale behind it from the GP's perspective.

© Nordiska högskolan för folkhälsovetenskap

ISSN 1104-5701

ISBN 91-7997-091-5

**Pétur Pétursson family practitioner
The Primary Health Care Centre in Akureyri
IS-600 Akureyri, Iceland**

Why Non-Pharmacological Prescribing of Antibiotics?

**A Phenomenological Investigation into the Rationale behind it
from the GP's perspective**

A Master of Public Health Essay

Supervisors:

Guðjón Magnússon, Director, WHO, Copenhagen

Sigríður Halldórsdóttir, Professor at the University of Akureyri

The Nordic School of Public Health
Gothenburg 2004



Master of Public Health

– Essay –

Title and subtitle of the essay Why Non-Pharmacological Prescribing of Antibiotics? - A Phenomenological Investigation into the Rationale behind it from the GP's perspective				
Author Pétur Pétursson				
Author's position and address General Practitioner and Medical Chief, Primary Health Care Centre of Akureyri, IS-600 Akureyri, Iceland				
Date of approval January 26, 2005		Supervisor NHV/External Guðjón Magnússon/Sigríður Halldórsdóttir		
No of pages 51	Language – essay English	Language – abstract English/Swedish	ISSN-no 1104-5701	ISBN-no 91-7997-091-5

Abstract

BACKGROUND: Concern has increased worldwide with regard to the over-prescribing of antibiotics, as well as the fact that more bacteria strains are developing resistance to antibiotics. According to research, a great deal of this use is for what has been called “non-pharmacological” reasons. The reduction of unnecessary antibiotic use and exploration of the reasons for “irrational prescribing” has become a public health priority.

OBJECTIVE: To study the reasons cited by Icelandic general practitioners for their “non-pharmacological” prescribing of antibiotics.

DESIGN: A qualitative interview-study with research dialogues guided by the Vancouver School of doing phenomenology.

SETTING: General practice.

PARTICIPANTS: 16 general practitioners: 11 in the maximum variety sample and 5 in the theoretical sample.

RESULTS: The most important reasons for prescribing antibiotics in situations with low pharmacological indications (non-pharmacological prescribing) were an unstable doctor-patient relationship due to lack of continuity of care, patient pressure in a stress-loaded society, the doctor's personal characteristics, particularly zeal and readiness to serve, and finally, the insecurity and uncertainty of the doctor who falls back upon the prescription as a coping strategy in a difficult situation.

CONCLUSION: The causes of non-pharmacological prescribing of antibiotics are highly varied, and relational factors in the interplay between the doctor and the patient are often a key factor. Therefore, it is of great importance for the general practitioner to know the patient and to become better equipped to resist patient pressure, in order to avoid the need to use the prescription as a coping strategy. Continuity of medical care and a stable doctor-patient relationship may be seen as the core concepts in this study and the most important task for the GPs is to promote the patients' trust.

Key words

General practitioners, antibiotics, prescription habits, non- pharmacological prescribing, qualitative research, phenomenology, coping.



Master of Public Health

– Uppsats –

Uppsatsens titel och undertitel Varför ”icke-farmakologisk förskrivning av antibiotika?” – Fenomenologisk undersökning av allmänläkares attityder och åsikter				
Författare Pétur Pétursson				
Författarens befattning och adress Distriktsöverläkare, Vårdcentralen Akureyri, IS 600 Akureyri, Island				
Datum då uppsatsen godkändes 26 januari 2005			Handledare NHV/extern Guðjón Magnússon/Sigríður Halldórsdóttir	
Antal sidor 51	Språk – uppsats engelska	Språk – sammanfattning engelska/svenska	ISSN-nummer 1104-5701	ISBN-nummer 91-7997-091-5

Sammanfattning

BAKGRUND: Problemen med överförskrivning av antibiotika har ökat över hela världen. En stor del av antibiotikaanvändningen verkar vara föranledd av icke-farmakologiska skäl. Onödig antibiotikaförskrivning borde minskas och orsakerna bakom icke-farmakologisk förskrivning kartläggas.

SYFTE: Att kartlägga orsakerna bakom isländska läkares icke-farmakologiska antibiotikaförskrivning

METOD: Kvalitativ undersökning enligt Vancouverskolans metodik för fenomenologisk forskning med djupintervjuer av 16 isländska allmänläkare, elva slumpmässigt utvalda och fem handplockade med tanke på deras speciella erfarenheter.

RESULTAT: De viktigaste orsakerna till mindre nödvändig antibiotikaförskrivning (icke-farmakologisk förskrivning) var bristande patient-läkar-kontakt på grund av dålig kontinuitet, press och påverkan från patienter i en stressad samhällssituation, läkarens personliga egenskaper; framför allt tjänstvillighet och önskan att hjälpa samt slutligen läkarens osäkerhet och oro vilken leder till antibiotikaförskrivning i svåra patientsituationer.

SLUTSATS: Orsakerna till icke-farmakologisk antibiotikaförskrivning är många. Olika känslomässiga faktorer i samspelet mellan patient och läkare spelar en stor roll. Därför är det viktigt för allmänläkaren att känna sin patient väl och att stå emot press från patientens sida för att således undvika att använda antibiotikareceptet som en bemästringsstrategi. God kontinuitet i vården och bra läkar-patientkontakt är huvudkategorier i denna undersökning. Allmänläkarens viktigaste uppgift är att främja patientens tillit.

Nyckelord

Allmänläkare, antibiotika, förskrivningsvanor, icke-farmakologisk förskrivning, kvalitativ forskning, fenomenologi, bemästring.

Table of contents

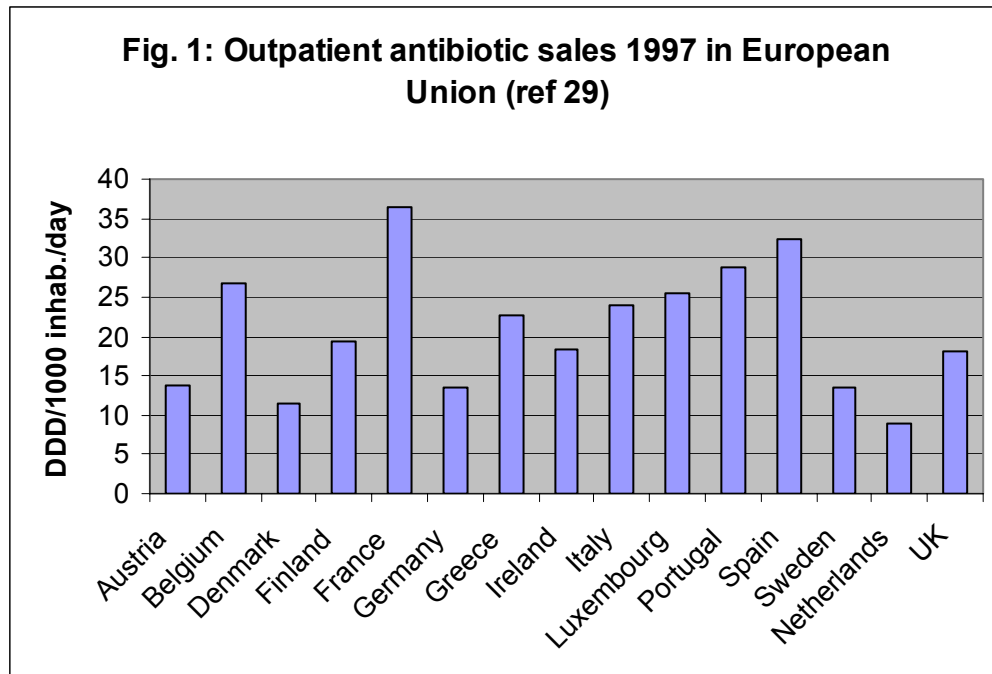
Abstract	1
Table of contents	3
Introduction	5
Material and methods of the interview-study	12
Ethics	13
Results	13
1. Factors that are conducive to non-pharmacological prescriptions for antibiotics	14
1.1 Physician's insecurity, uncertainty or anxiety	
1.2 Pressure from patients and their families	
1.3 Work pressure and fatigue	
1.4 Physician's personal character	
1.5 Organisational factors	
2. Factors that decrease the likelihood of non-pharmacological prescriptions for antibiotics	17
2.1 Stable doctor-patient relationship	
2.2 The physician's strong professional self-image	
2.3 Good working conditions	
2.4 Education	
2.5 Fears of side-effects and resistance	
2.6 Patient costs	
Discussion	20
Nomenclature and values	
Strengths and weaknesses	
The results of the study	
Current evidence	
Urgent tasks	
Conclusion	24
Acknowledgements	24
List of references	25
Figures 3 and 4	29
Appendix I - Interview guide	31
Appendix II - Can the use of general practitioners' non-pharmacological reasons for prescribing antibiotics be a coping strategy? – A literature review	33

Introduction

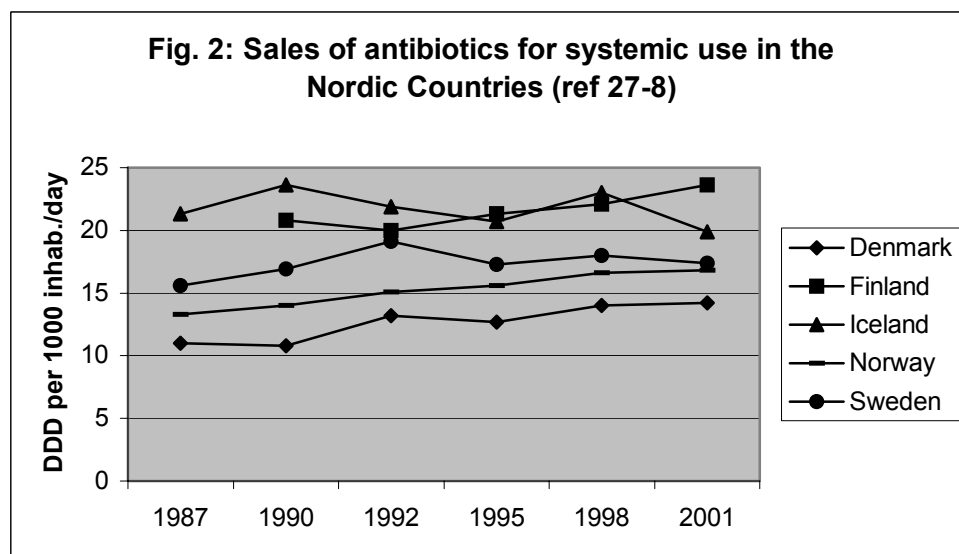
Antibiotics are among those pharmaceuticals that have been most useful for the improvement of public health since early last century, when the usage of antibiotics began. The options for medical science to defeat contagious diseases caused by bacteria have altered significantly because of antibiotics and many lives have been spared in that manner. It has been known for a long time that the use of these pharmaceuticals can involve great risks. Allergies and other side effects of antibiotics are well known, as is the growth of resistant strains and harmful environmental effects in addition to the cost of these often expensive drugs.¹ Strains of *Mycobacterium tuberculosis* that are multidrug resistant are found around the world in countries such as USA, Spain, India, Nepal, Bolivia and the Baltic states.²⁻⁴ Strains of *Streptococcus A* that are resistant to erythromycin⁵⁻⁶ have become widespread, in addition to strains of *Streptococcus pneumoniae* that are resistant to most antibiotics are becoming ever more common.⁷⁻⁹ The introduction of a multiresistant clone of this bacteria from Spain to Iceland in the late 1980s is well documented and was a clear example of the potential danger of the spreading of resistant strains between countries.⁹ There are reports on multidrug resistant *Salmonella typhi*,¹⁰ methicillin (and multidrug) resistant *Staphylococcus aureus* (MRSA), vancomycin insensitive MRSA (VISA),¹¹ and vancomycin resistant enterococci (VRE).¹² The problem is undoubtedly increasing: for example, penicillin resistant meningococci are emerging, and antiviral resistant HIV emerge even during treatment.¹³ Widespread resistance to commonly used, affordable antimicrobial agents in South Asia has made the treatment of infections such as pneumonia, dysentery, typhoid, malaria, neonatal sepsis, urinary tract infections and tuberculosis challenging in resource limited environments.¹⁴⁻¹⁵ For example, most pneumococci and *H influenzae* in South Asia are now resistant to cotrimoxazole, and fluoroquinolone resistance in *Salmonella* is rapidly increasing.¹⁶⁻¹⁷ Many factors underlie increased antibiotic use and misuse in developing countries.^{15,17} Infectious diseases are much more common in these countries and appropriate laboratory facilities are rarely available or affordable, leading to empirical use of antibiotics for a wide range of illnesses. Antibiotics are freely available over the counter in South Asia, and self-medication is common. Antibiotic misuse by unskilled practitioners is well known. Valid arguments have proven a connection between misuse of antibiotics and resistance.^{5-6,18-20} The following shows that misuse of antibiotics is widely spread:

- Research has proven that results of treatments with antibiotics for common diseases such as bronchitis and otitis media acuta are no better than with a placebo, contrary to doctors' common opinion.^{19,21-26}
- Comparative research of different countries shows a disparity in the use of antibiotics that cannot be explained by the difference in incidence of infectious diseases, neither between regions nor periods of time.^{24,27-29} (Fig. 1)
- Comparison of frequency of antibiotic prescriptions shows a difference between doctors which is not explained by variation in infectious diseases.^{19,30-33}
- Information about increases in resistance of bacteria where antibiotics are widely used and where broad spectrum antibiotics are used indicates a growing problem which needs to be faced and the necessary action taken.^{5,19,34-35}
- Antibiotics are mostly frequently used from birth to six years of age, and during this period the risk of developing resistance is the highest.¹⁹

Indications of a possible relationship between breast cancer and the use of antibiotics have appeared in the last years, but still the causality is uncertain.³⁵



It is clear that the inappropriate use of antibiotics can become a misfortune for the people of the world and therefore public health reasons recommend that these issues should be explored in depth and appropriate action taken.³⁴ The prescriptions of antibiotics in Iceland have been higher in the past few decades than in most of the other Nordic countries, even though the incidence of infectious diseases, national health status, the economy and health care do not seem to differ. (Fig. 2)



It is therefore obvious, that the inappropriate use of antibiotics is a serious public health problem in Iceland as in other countries. The author did a research of his own prescription habits in the years 1984-1992.³⁶ The research was a comparison of own prescription frequency in an isolated seaside village in Iceland, where he worked alone, and his prescription habits at a large health care centre in an urban area, with more than 10 GPs, a few years later. This research indicated that in the years of 1984 to 1986 the author reduced the number of his prescriptions of antibiotics from 82.9 to 63.8 per 1000 contacts ($p < 0.001$) in his solo practice. In the group practice the number increased from 82.6 in 1988 to 90.5 in 1992 (NS). There was an increase in the workload during the study periods, especially the latter, with a looser affiliation to the patient group. The incidence of respiratory diseases seemed to be in accordance with the frequency of prescriptions. This evolution occurred in spite of his growing knowledge and experience and much better laboratory facilities. The conclusions were that in affluent societies many family physicians should be able to reduce their number of prescriptions of antibiotics to some extent, if they are interested in doing so and have a well-established relationship with their patients. A computer-based quality control is essential for that purpose, because the expectations of the patients, the surroundings of the doctor, and his work environment determine to a great extent his antibiotic prescribing habits. Because of the above study, interest was aroused in doing research into the components that are most influential to the physician's decision-making, when he prescribes an antibiotic. Therefore the aim of this study is to explore the reasons cited by Icelandic general practitioners for their "non-pharmacological" prescribing of antibiotics. Before my own results are presented, I will describe what I felt was notable about this subject in the medical literature, especially regarding stress factors, that could have upsetting effects on the handling of evidence based medicine.

A literature review

The reviewer started with a search for relevant journal articles published 1988-2003 in the following databases: *Medline* (by Pub Med and Ovid), *PsycInfo*, *Cinahl*, *ERIC* and *Social Services Abstracts*. The keywords and core concepts used were *family physicians*, **and** *antibiotics*, **and** *coping*, **or** *psychological adaptation*, **or** *occupational stress*, **or** *psychological stress*, **or** *physicians' role*, **or** *physician-patient relations*, **or** *uncertainty*, **or** *patient pressure* **and** *prescriptions*. The search in *Medline* was the most successful and gave these results with some overlapping:

Antibiotics & family physicians & physician-patient relations = **8 articles**

Antibiotics & physician-patient relations & uncertainty = **6 articles**

Antibiotics & physician-patient relations & prescriptions = **17 articles**

These articles focused far better on the study subject than other combinations, but those mentioned below gave results too:

Family physicians & physicians role & coping = **12 articles**

Physicians role & coping & physician-patient relations = **17 articles**

Physicians role & prescriptions & psychological stress = **1 article**

Family physicians & prescriptions & psychological stress = **2 articles**

Family physicians & physician-patient relations & coping = **12 articles**

Other databases did not provide additional studies suitable for this review with the exception of one paper (II/ *ERIC*). There was nothing to be found about doctor's stress

and antibiotics, but much about antibiotics and discomfort, which the reviewer regards as meaning roughly the same.

The inclusion criteria for articles in this literature study were:

- The article should have been published in a scientifically respected medical or sociological journal.
- The article should present and deal with original research on general practitioners' (family physicians) prescription habits for non-pharmacological ("irrelevant") use of antibiotics.
- The article should deal with research into physician-patient relations and possible stressors in the encounter.
- The articles should represent studies in different settings in several countries.
- The articles should represent different study methods.

The exclusion criteria were:

- The article was not published in a language comprehensible to the author of this study (Icelandic, English, Danish, Norwegian, Swedish).
- The article was published in a journal not accessible by conventional means.

Eighteen articles fulfilled these criteria and several others were discovered in *references, related articles* or by searching for other articles written by outstanding researchers in this field. To widen the horizon for my own study, I selected the 6 articles I rated best suited for my purpose as they expose different aspects of the issue I was studying.³⁷⁻⁴² These articles were the most solid I could find on the issue of the connection between GPs' relationship with their patients and non-pharmacological prescribing. All of them presented studies of good quality and all of them were published in eminent medical journals that use external referees for all submitted articles before deciding on publishing. Until now, articles on qualitative research of medical doctors, their feelings, thoughts and decision-making have been rather infrequent in medical literature.

Overview of the scientific articles and results

I.	Kumar S, Little P, Britten N.
	Nationality - England
	Method - Qualitative GT
	Number - 40 GPs
	Core concepts - Pressure, Antibiotics, Prescriptions, GPs
	Published - BMJ 2003
The aim was to understand why GPs prescribe antibiotics for some cases of sore throat and to explore the factors that influence their prescribing. • GPs manage their uncertainty by prescribing an antibiotic or take throat swabs. • Some GPs often bear in mind past experience of their patients misfortune which influence their decisions and make them annoyed and uncertain. • Very experienced GPs described how they could switch from acting as infrequent to frequent prescribers of antibiotics in different contexts, e.g. when they felt under pressure or were running late as duty doctors. • GPs think their holistic duty to preserve the doctor-patient relationship is more important than rational prescribing.	

II. Björnsdóttir I, Hansen EH.	
Nationality	- Icelandic
Method	- Qualitative GT & observative
Number	- 10 GPs
Core concepts	- Antibiotics, Prescriptions, GPs, Uncertainty
Published	- Eur J Gen Pract 2002
The aim was to understand GPs' perceived reasons for prescribing and their decision-making when deciding whether or not to prescribe antibiotics.	
• Non-clinical factors seem at least as important as clinical ones in decision-making regarding antibiotic prescribing. • The GPs' primary purpose is to help the patient to maintain the level of daily life activities as planned. • Another goal is to make the patient depart and, if the doctor lacks time, resources or is too tired to convince the patient an antibiotic prescription is the solution. • The third goal is to respect the patients' autonomy and let him decide about the prescription. • Most doctors describe experience of uncertainty in the diagnostic process of infections and therefore tend to treat if in doubt.	
III. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF.	
Nationality	- USA
Method	- Qualitative multimeth. comparative case study
Number	- 298 encounters
Core concepts	- P-P relations, Antibiotics, Prescriptions
Published	- J Fam Pract 2001
The aim was to identify those aspects of physician-patient communication that influence physicians to prescribe antibiotics for respiratory infections and measure unnecessary use.	
• Patients strongly influence the antibiotic prescribing of physicians by using a number of different behaviours. • According to CDC guidelines 80 % of antibiotic prescriptions observed were unnecessary from the biomedical point of view. • The doctors are poorly equipped to resist patient pressures and therefore the patients play a powerful role in the interaction, which is only to an uncertain degree controlled by the doctor.	
IV. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N.	
Nationality	- Wales
Method	- Qualitative
Number	- 21 GPs, 17 pat.
Core concepts	- GPs, P-P relations, Antibiotics
Published	- BMJ 1998
The aim was to better understand reasons for antibiotics being prescribed for sore throats despite well known evidence that they are generally of little help.	
• The doctors felt trying to change patients' beliefs and expectations in the consultation was often time consuming and inappreciative. • The doctors thought that antibiotic prescriptions could have an important impact on the therapeutic power of the doctor-patient relationship. • The doctors' rather usual explanations for non-pharmacological antibiotic prescriptions were pressure of time, not having the energy to resist demand, fear of medicolegal problems if the patient deteriorated, and being perceived as having done nothing for patients. • A third of the patients expected antibiotics and all of them but one got a prescription. • The patients thought GPs attempted to sense patients' flexibility and prescribe antibiotics as soon as they perceived resistance to non-antibiotic approach.	

V.	Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ.
Nationality	- England
Method	- Quantitative questionnaire study
Number	- 228 GPs
Core concepts	- P-P relations, Antibiotics, Prescriptions
Published	- Fam Pract 1996
The aim of this study was to explore whether a variety of pressures highlighted by what were at that time recent developments in primary care were actually felt as concerns by GPs and to determine whether GPs' perception of these pressures appeared to influence their prescribing decisions.	
• 63.3 % of the doctors had sometimes felt guilty when prescribing for non-pharmacological reason. • 56.6 % felt sometimes using a prescription to finish a consultation was the only way to get through a busy clinic. • 52 % felt that judicious prescription for a non-pharmacological reason was a useful method of coping with routine stresses of general practice.	
VI.	Bradley CP.
Nationality	- England
Method	- Qualitative critical-incident method
Number	- 168 GPs
Core concepts	- P-P relations, Antibiotics, Uncertainty
Published	- Br J Gen Pract 1992
The aim was to explore whether doctors experience discomfort when making decisions about prescribing and to determine (a) if the discomfort is related to particular drugs or to particular patient characteristics, such as morbidity and (b) the reasons why the doctors made the decisions they did and why they felt uncomfortable.	
• 70 % of the doctors remembered instances where the decision process for an antibiotic prescription caused them some discomfort. • Of the diseases involved, respiratory infections scored highest in 37% of cases. • 44 % of doctors reported discomfort when they felt they were prescribing to preserve the doctor-patient relationship. • The doctors felt a need to do something; a need to give something; a need to convey compassion; a need to respond to suffering; and a need not to convey to the patient any feeling of rejection. • A fifth of the group mentioned uncertainty about the diagnosis as a source of discomfort related to prescribing, even though investigation was possible. • A fourth of the group mentioned uncertainty about the management of clinical problems and some felt discomfort using prescriptions for non-pharmacological reasons, e.g. to finish a consultation. • Half of the group mentioned lack of time as a source and a fifth mentioned particular times of the day or the week that caused more discomfort. • 29 % of the group felt their prescribing was influenced by a dramatic episode in their medical career, e.g. a missed diagnosis or an adverse drug reaction. • The doctors often wished to live by internal rules associated with their role perception and when such a rule was broken they felt discomfort.	

Discussion

These six papers I appraised as the best ones for my purpose to elucidate the GPs' difficult decision process clearly show how demanding the GP's every day situation can be, because of the magnitude of tasks, exacting time schedules, patient pressure and claims as well as the large number of difficult decisions they have to make (cognitive dissonance). The articles deal with the decision process and related stressors. Doctors' occupational stress is a well-known reality although not related to GPs' antibiotic prescriptions, and doctors' stress related illnesses and problems are fairly well documented.⁴³⁻⁴⁴ It is interesting to focus on the stressful events in the decision making process and the coping strategies most commonly applied. The reason for studying GPs

was the fact that 80-90 % of the antibiotic consumption is outside of hospitals and most of those prescriptions are by GPs. The framing of the services, traditions, staff issues, education and well-being of GPs differs considerably in various countries. In England the tempo of consultations is considerably higher than in the Nordic countries and the patients' demands presumably differ too. These circumstances should be allowed for in interpreting the results of the cited studies, but most of the studies usable for the purpose of the review originated in Great Britain. It would have been preferable to have more studies that used quantitative methods but I did not succeed in finding any usable quantitative studies on doctors' coping at work. Only paper V presents a quantitative study but paper VI partly uses quantitative methods. Interviews with doctors can reveal their general attitude, but as shown in article II that attitude often does not translate into practice. Therefore paper III yields an important result because of the study design (a qualitative multimethod comparative observational case study) and in articles I and IV in paper V there are certain comparisons of general and case-specific attitudes, which also are accounted for, in paper V without confirming consistence in results.

The results clearly show that the decision process of antibiotic prescriptions is often very complicated and non-pharmacological (non-clinical) reasons are sometimes seemingly important. Grouped by disease classification, encounters for respiratory infections are usually the most frequent in general practice and of the two thirds in study III, which consulted for respiratory infections and received an antibiotic prescription, 80 % were given an unnecessary prescription according to CDC guidelines. Nearly all the GPs asked considered antibiotic use too extensive.

The researchers concluded that most patients got what they wanted and the doctors were poorly equipped to resist patient pressure, which very often is appreciable. On the other hand, the GPs wanted to live up to their own ambitions and not to be undervalued by their patients. Therefore their professional pride is easily lacerated and most of the reasons for non-clinical prescribing can act as stressors. There is a good reason to deduce that the word *discomfort* is used in the articles as a synonym for stress.

After this survey, the conclusion might be that the act of prescribing antibiotics can in some cases be a coping strategy for the medical doctor. This strategy is used to solve miscellaneous discomfort, uncertainty, pressure and stress in the decision process. This style of coping is very unfortunate because it simultaneously often induces discomfort by injuring the professional pride and does not harmonise with evidence-based medicine, which medical students and doctors are taught to apply. Unnecessary antibiotic use has several obvious shortcomings, e.g. cost, adverse effects, resistance, and consumption of time. Yet it should not be totally condemned because the holistic approach is very important in patient care. Evidence based medicine, however, represents the biomedical approach, which seemingly is not suitable for counteracting the effect of stress and stress problems in our communities. On the other hand, the non-clinical use of antibiotics is an excellent example of medicalisation.⁴⁵

The aim of the study

Thus the decision-making process of the consultation is very intricate, and a great variety of explanations for non-pharmacological prescribing are available. The aim of

my own study was to explore the reasons given by Icelandic general practitioners for their non-pharmacological prescribing of antibiotics. This study is the basis for this thesis, which I now will describe.

Material and methods of the interview-study

The Vancouver school of doing phenomenology⁴⁶ guided the methodological approach of the study, particularly in the sampling and the collection and analysis of data. It is an interpretation of phenomenological constructivist/interpretivist philosophy and a unique blend of description, interpretation, explication and construction, which has proved to be a methodology that can lead to systematic explication of human experiences and is aimed at increasing the greater social good. There are seven basic stages of the research process in the Vancouver school: silence, reflection, identification, selection, interpretation, construction and verification. This research process involves e.g. entering the stage of reflection again and again throughout the research process. This method is in some respects similar to the Grounded Theory method, although the participants normally have a more active role in the former and therefore can break the interviewer's monopoly of interpretation.

The research process of the Vancouver school of doing phenomenology is also portrayed as 12 basic steps, where verification is the key element. These are:

- *Selecting dialogue partners.* Choosing informants or co-researchers; the sample.
- *First, there is a silence,* before entering a dialogue; an interview.
- *Participating in a dialogue.* The way of data collection is quite the same as by the Grounded Theory method.
- *Sharpened awareness of words.* The beginning of data analysis.
- *Beginning consideration of essences.* The process of coding begins after the audiotaped interview has been transcribed verbatim. This is the analytic process through which **concepts** (the building blocks of a theory) are identified and their properties (characteristics of a category, the delineation of it which defines and gives it meaning) and dimensions (the range along which general properties of a category vary, giving specification to a category and variation to the theory) are discovered in data.
- *Constructing the essential structure of the phenomenon for each case.* That is an individual case construction.
- *Verifying the single case construction with the informant (co-researcher).*
- *Constructing the essential structure of the phenomenon from all the cases.* Metasynthesis of all the different case constructions consists of carrying out the steps of *theory building by conceptualising* – defining categories and developing categories in terms of their properties and dimensions – and then later relating categories through *hypotheses* or statements of relationships.
- *Comparing the essential structure with the data.* That requires reviewing of the coding and repeating comparisons with the data.
- *Identifying the over-riding theme, which describes the phenomenon.* This step is in a way comparable to choosing a central category according to the Grounded Theory method but not in the same inflexible way.

- *Verifying the essential structure or findings with some of the research participants (informants).*
- *Writing up the findings.*

This methodology of qualitative research was assumed to be a convenient tool in seeking answers to the study questions. In total, 16 Icelandic general practitioners in the period of year 2000 to 2003 were selected from different locations. Most of the interviewees (informants, co-researchers) had experience in both rural and urban settings. In their selection it was endeavoured to avoid asymmetrical power of the interview and by using the method of the Vancouver school of doing phenomenology, the researcher had the opportunity to diminish his own monopoly of interpretation. All but three had specialist qualifications in family medicine, from five different countries. Three of them were women. The age distribution was from 32 to 67 years. First the author conducted face-to-face, open-ended interviews with a maximum variety sample of 11 general practitioners using an interview guide. These were randomly chosen on various occasions. Thereafter the author interviewed a theoretical sample of five GPs, this selection being guided by the emerging analysis because of the informants' different characteristics and qualities. These interviews had much looser support from the interview guide. All the informants were encouraged to speak freely and support their responses with examples from their own clinical practice and policy. All dialogues were audiotaped and transcribed verbatim, and constant comparative analysis was used to interpret the data. Each dialogue was examined line by line to identify concepts and main categories. Data collection and analysis were iterative, with new data used to access the integrity of the developing analysis. Every informant had an opportunity to comment on the researcher's analysis of his/her dialogue, and to discuss the matter further. Finally three participants gave their opinion on the analytical results of the whole body of material, and were all in agreement with it.

Ethics

The National Bioethics Committee of Iceland and The Data Protection Authority of Iceland accepted the research protocol. Absolute secrecy covers the informants (co-researchers) and the study material and no one can identify the individuals but the researcher and his secretary.

Results

Continuity of medical care and a *stable doctor-patient relationship* may be seen as **core concepts** in this study; where these factors are lacking, the likelihood of prescription of antibiotics for non-pharmacological reasons is increased. We will now consider the five principal categories of such reasons. Additional six main factors, which hinder the unnecessary prescription of antibiotics, will then be discussed (see figs 3 and 4).

1. Factors that are conducive to non-pharmacological prescriptions for antibiotics (fig. 3)

The factors mentioned by the participants have been classified into several categories, such as the physician's insecurity, doubt regarding diagnosis, and anxiety about the patient's condition or the relationship with him/her, patient pressure or preference, the physician's pressure of work, lack of time and fatigue, the physician's personal character, and finally organisational factors.

1.1 Physician's insecurity, uncertainty or anxiety

Lack of continuity in medical care and **uncertainty regarding diagnosis** are factors which tend to be conducive to a physician feeling insecure. *"... if you're seeing patients... without any continuity, then... then you can't waste it... time, so you can't observe the child in a day or two, so you're responding to some insecurity factor.(5)"* All the participants were in agreement that the tasks of a general practitioner are highly varied, and that diagnoses could often be very unclear – that the criteria for diagnosis could be variable: this must be conducive to a feeling of insecurity in professionals, and foster anxiety about possible errors. This uncertainty may be concerned with the biomedical aspect of the problem, and with the relationship with the patient or his/her family. Lack of continuity tends to lead to less confidence on the patient's part, and hence the physician, instead of providing an explanation of the low risk of the ailment, resorts to a prescription, in order to calm the patient's fears and provide comfort. Most of the participants agreed that a fearful patient or family member could **transmit the fear to the physician**, who was then more likely to stray from the straight and narrow pharmacological path.: *"[PP: Is it possible that this influences the physician? That ... that it's possible to transfer fear or anxiety?] Oh, yes absolutely... absolutely. [PP: Do you have experience of this yourself?] I think I have, absolutely. You simply play along (13)."* **Fear of conflict** and **discomfort due to conflict** appear to be common among general practitioners, who will make great efforts to maintain peace with patients, especially their own. *"... I don't like to argue with people and disagree with them .. if they feel they're right in some degree, somehow I don't argue with them about it. Even if I think I'm right. So I back down by issuing a prescription, in some cases (16)."* **Lack of experience** is undoubtedly a real factor when a physician has to keep his/her head in stressful circumstances, and proven medical science is no longer at the forefront. It appears that some GPs **experience fear of losing patients, losing face (status), or coming off badly in competition**. *"... the fear that people will have the impression that they're not proper doctors unless they give them some tangible thing to prove that they have reached a conclusion on what should be done (1)."* Some participants expressed **fear of overlooking something, making a mistake, and being sued**: *"Doctors may be scared of unpopularity, if they're too tough, you see, at opposing it. Not to mention if something comes up... let's say... he didn't react correctly; he... he didn't realise, you see, what was happening. You are always a bit nervous about something rebounding on you (12)."* Some participants also stated that meeting the demands of a patient who believes in antibiotics as a solution to his/her problem may **reinforce and improve the doctor-patient relationship**, and that it was also possible to **take the middle path**, suggesting that the patient or parent keep the prescription for the time being, and not have it filled unless the patient's condition

deteriorates. This provides insight into physicians' methods of establishing patient confidence. **Lack of confidence in colleagues**, both GPs and other specialists, appears to lead physicians to prescribe antibiotics more than they would do if they had the opportunity to keep patients under observation themselves. Physicians in urban areas appeared ready to believe that if they did not prescribe the antibiotics, someone else would. The view was expressed that some GPs could hardly be trusted to keep an eye on patients, so it was not possible to wait and see.

1.2 Pressure from patients and their families

All the participants regarded this as the main reason for non-pharmacological prescribing of antibiotics. It seems to appear in the form of a clear demand or gesture, or of a patient's obvious fear. Many attributed this pressure to **overconfidence in antibiotics and misinformation**. *"...pressures the physician to prescribe antibiotics due to a certain exaggerated faith in that form of treatment (1)."* Most of the participants, however, are of the view that debate in society on side-effects and development of resistance to antibiotics has reduced this pressure somewhat. They also feel that **fear of illness** in society is an important cause of pressure, and that this has been exacerbated by general access to information, reliable and unreliable, in the media and on the Internet. Most of the participants mentioned their patients' **obsession with plans**, and their **craving for security**; the antibiotic here serves the purpose of trying to help the patient to do what he/she has planned. *"If a trip is at stake, a trip that has been booked months in advance, that may control my pen - whether or not I prescribe an antibiotic (1)."* **Consumer consciousness**, where more and more is demanded, with increasing insistence, has of course been steadily rising in society in recent decades, and physicians are more aware of this than most. Physicians also cite pressure due to people's **difficult situation on the job market**. *"There are factors, for instance, like pressure from parents whose child is ill, where neither parent feels able to stay home with the sick child (1)."* And physicians state that **discomfort lowers the patient's threshold of tolerance**. **Easy solutions are wanted**, and many people appear unprepared to take responsibility for their own lives, and choose a life without any discomfort, whatever the cost. Most of the physicians described how they tend to give way to their own impatience and the presumed wishes of patients with **persistent colds**. *"...you see, when the patient's patience is at an end, when he's been coughing for a long time, he'll get antibiotics (7)."* **Pressure due to inconsistency of word and deed** is an interesting factor, based on the one hand on people's ideas about health (knowledge and understanding), and on the other hand on their inability to live their lives in accord with what they nominally acknowledge to be so. *"...occasionally, someone gets a bit irritated, and that sometimes ends with them leaving with a prescription, and you tell them that it probably won't do any good... and I think...people get that message (8)."*

1.3 Work pressure and fatigue

All the participants mentioned the effect of work pressure and fatigue on their prescribing habits; it is primarily **lack of time** that leads the physician to lower his/her threshold of tolerance. *"Yes, it's the time factor, since you're paid per person, and in many ways it's quicker to do what people want, rather than trying to get them to understand and accept what you're saying, without getting a prescription (11)".* A

prescription may in such cases be the **quickest option and a way of surviving**. By means of the prescription the physician is bringing the consultation to a close as quickly as possible without endangering the good and peaceful relationship between doctor and patients. *“It’s a tool. The prescription is a tool to conclude the consultation, and everybody is content with the conclusion (5).”* When asked, the physicians acknowledge that they are not always at their best for work, and that this may influence their methods of work. *“Sometimes you’re not really in the right frame of mind, and you can’t get into a lot of arguments with people, and at other times you’re full of energy and enthusiasm, and explain it all to everyone, and write fewer prescriptions (8).”* A decision to issue a prescription can also be a **surrender after repeated stimuli**, an automatic defensive response by the subconsciousness. Physicians also describe cases of **giving up in face of the patient’s inability to help him/herself**, when smokers, or others who are not dealing with their health problems, are prescribed antibiotics.

1.4 The physician’s personal character

Like other hard-working people, physicians tend to have a well-developed sense of self-preservation. Most are familiar with the **focus on earning more under the payment scale** – especially those who have worked on *Læknavaktin* (a medical service outside surgery hours) in the capital area. *“... and, you see, the doctor can be working under conditions where he... he is in an incentive-based system so... time is important, each consultation, how long it takes. So it’s good to prescribe antibiotics and earn another 1000 krónur (5).”* The answers to questions on **variable interpretation of symptoms** and possible auto-suggestion are also very interesting: *“Yes, it’s, it’s, you know... I’m sure it’s like I was saying, that I see redder ears on Fridays than on Mondays, I think there are... I think there are more hyperemia on the eardrum on Fridays than... you interpret the symptoms a bit differently, and you often, as I say... you’ve sometimes formed an opinion on what should be done, even before you make the examination (6).”* Some participants did not feel this was the case. **The physician’s impression that the patient wants the physician to solve the problem for him/her** is probably quite common according to foreign studies, although this view was not widespread in the present study. A physician may easily exaggerate the patient’s wishes, or be prejudiced: *“Perhaps it’s a feeling in you that you somehow... maybe it’s just a feeling that... because people have come, let’s say just to the medical service outside surgery hours, where you have to pay quite a bit just to see a doctor, so the doctor will do something... perhaps it’s that feeling that sending them home just with advice, that it’s not... somehow not acceptable (16).”* **The desire for personal freedom** is probably significant in the variable response of physicians, along with the unwillingness of many to conform to clinical guidelines. Some informants expressed a considerable antipathy towards rigid work practices, and a relaxed attitude to prescribing antibiotics. *“But general practice is just... it’s not necessarily a question of being able to stick to some paragraphs or rules (1).”* Some even saw clinical guidelines as a threat to the art of healing. A few participants were of the opinion that in the case of some colleagues sheer slothfulness could explain over-use of antibiotics. Certain specialist branches of medicine were even mentioned as examples of inadequate standards of work, and many participants admitted that perhaps they had neglected to inform their patients sufficiently. *“It’s probably more carelessness than ignorance, people don’t stick to their principles, you see, in their working methods (12).”* On occasion, physicians have witnessed their

colleagues behaving badly, and tending to defend their medically-dubious deeds. “... *on the other hand, you see, of course one has seen experienced men dealing with such cases very shabbily by writing in the journal that they found something that you're almost sure they didn't find. I must say it took me by surprise, when I started out in earnest, to see that it really was like that. That things were really handled that way, and people did that. Various people. But maybe it's just one way of surviving, so there's not much one can say, perhaps (13).*” **Service mentality** appeared very noticeable among the participants. “*It's simply the human factor, you always try to meet their expectations, and avoid problems and conflict, one is... a physician is no different from other people in that sense (5).*” Participants express great **respect for the patient's knowledge of him/herself**, along with service mentality as such. In addition, the GPs' desire to **calm the fear and anxiety of the patients** is striking, along with their efforts to **help them do what they have planned to do**. In such a case the physician is in effect providing comfort and support. A strong service mentality is not conducive to helping the physician withstand pressure from patients who are determined to have antibiotics “...*I'm sorry to say I think that those who are determined to get it, get it in the end (13).*”

1.5 Organisational factors

Some physicians were of the view that **open access to physicians** in Iceland could partly explain the extensive use of antibiotics. This is a likely explanation, if it is true that patients get, in the end, what they want. This was mentioned especially by physicians trained in Sweden, who are familiar with a system of “filtering” by nurses, who deal with the patient's initial request for assistance, and can often provide the help required. Otherwise, they will book an appointment with the physician or refer the patient elsewhere. Many of the participants attribute overuse of antibiotics **to lack of testing facilities**, as many physicians use test results to help them resist pressure from patients. Some attribute misuse of antibiotics to influence from **working methods in hospitals**, where lack of continuity of medical care may have affected the usefulness of medical expertise. There was no particular discussion of the lack of emphasis in hospitals on meaningful communication between physician and patient.

2. Factors that decrease the likelihood of non-pharmacological prescriptions for antibiotics (fig. 4)

These factors have been classified into several categories, such as a good, stable doctor-patient relationship, the physician's positive professional self-image, good working conditions, information to patients, discussion of side-effects, and finally cost factors.

2.1 Stable doctor-patient relationship

The relationship between doctor and patient appears to be of great importance to the participants, and is inseparable from the aim of **continuity in medical care**. Continuity in medical care, or the lack of it, is the factor most discussed by the physicians, and to most of them this appears to be the principal factor in achieving the good doctor-patient relationship that all wish to have. “... *I was always more and more surprised, when I*

found how much confidence people had in me, whom I'd been looking after for ten years, they... this habit, or confidence that formed, this relationship... the relationship between... a long-term relationship... you could almost tell them any sort of nonsense, and they'd believe you (14)" So continuity is of great importance, when means of improvement are considered; all the participants are in agreement that they resort more readily to the prescription when they are on duty shifts or dealing with patients other than their own, than when they see their own patients during regular surgery hours. Continuity in medical care paves the way for many more factors which can reduce unnecessary use of antibiotics. Most physicians have a stronger sense of **responsibility** vis-à-vis their own patients, and some actually say that they have **a more positive attitude** towards them. Continuity of medical care is said to have a positive influence upon **patience and tolerance for uncertainty**, for both patient and physician. In more sparsely-populated regions, it appears to be relatively easy to create a common safety-net, but this is hard to achieve in under-manned practices in urban districts. Continuity has, naturally enough, a **positive influence upon the patient's confidence** in his/her physician, and this is one aspect of the prized stable relationship. *"If I've seen someone ten times, and I say: no, I can't see any reason to use antibiotics, she may believe me better than some doctor she's never met before. And she'll be seeing me again, you see (11)."* Continuity is conducive to **professionalism** and **meaningful communication**, especially if lack of time is not an issue. Continuity of medical care **facilitates diagnosis**, and this is valuable in connection with infections. Continuity of medical care can have a **positive influence upon patients' knowledge**, and it offers the opportunity for providing information repeatedly. While a physician and patient may disagree on the necessity for antibiotics, it appears to be far easier to deal with this where medical care is continuous, as in time this always creates **opportunities for disagreements to be resolved**. One can use technology to pave the way for such continuity and create the confidence which all aim for, by offering phone contact outside surgery hours. *"... I try to make the effort, when those circumstances arise, to give the patient, you see, every opportunity to get hold of me if there's any change. Just... ring me at home, tonight, any time, it doesn't matter. Normally, they don't ring. You don't get that kind of disturbance in the town (10)."*

2.2 The physician's strong professional self-image

It emerged quite clearly from the dialogues that physicians who appeared to have **confidence in themselves** were less affected by patients' pressure or desire for antibiotics. **Experience** is of course an important factor in self-image: *"... It not so much, perhaps that one has more knowledge - on the contrary, perhaps it's a bit out-of-date - it's just experience. It helps you a lot (15)."* **Job satisfaction** and **professional pride** are other sides of the same issue, which are also important in this context: *"It works if you decide it will (4)."* The **willingness to set boundaries** also appears to have considerable weight. **Knowledge of the patient's confidence** has, of course, a great influence upon the physician's self-confidence, and increases his/her sense of security, naturally enough. The dialogues did not specifically explore the participants' views on the significance of physicians' personal freedom, professionalism or specialist knowledge. It was clear, however, that some saw clinical instructions and protocols as a threat to their personal freedom as physicians, and it appeared to be of great importance to them to maintain this freedom.

2.3 Good working conditions

Everybody wants good working conditions, so it is no surprise that the physicians mentioned this factor, when asked how over-prescribing could be reduced. Asked about desirable working conditions which would be conducive to professionalism, one participant mentioned a **limited catchment area**. *“It’s... yes, I think it’s a factor... yes, when you’re working in a reasonably-sized... yes, I mean, in a defined area (14)”*, **access to the patient’s medical records** *“that ... yes, it’s best to work in... preferably being in a place or on premises where you have access to the person’s medical records (14),”* **a reasonable time-frame for consultations**, *“and of course having... having... well, that the time-frame is all right (14)”*, and **facilities for testing** *“And having access to... of course having access to those quick tests, streptococcus tests and CRP too, though you have to interpret them cautiously... they’re not always a reliable indicator of... (14).”* A few participants mentioned that **keeping of computerised records was conducive to a logical approach** and was a check on the physician, thus improving the professional standards of the decision-making process.

2.4 Education

Participants expressed a certain optimism that education might be one of the measures which could be applied, in order to reduce over-prescribing. Education includes information aimed on the one hand at physicians, and on the other hand aimed at the public. Among the physicians, the opinion was widespread that it might prove effective to advise and inform the public, while they attached less importance to trying to influence physicians. Most of the participants were of the view that **media coverage** some years ago of the association between antibiotic use and the development of resistant strains had had considerable influence in society, so that pressure from parents for antibiotics to be prescribed for their children had declined. They also mentioned the value of teaching of **health in schools**, while most felt it was important that the physician give him/herself time to **provide information to patients**, as this would have an effect in the long term. No physician expressed the view that more education or scholarly discussion of antibiotics was required within the profession. Some looked favourably, however, on **clinical guidelines**, while others were negative. All took a positive attitude towards **antibiotic prescription monitoring**, which is feasible where computerised records are kept. *“You have to take stock now and then, you see. So I think it would be excellent. To see where you stand in comparison with the average (16).”* Apparently, the participants feel that physicians know enough about these matters, but that they are not well-prepared for meeting pressure from patients, who appear to receive, in the end, what they want.

2.5 Fears of side-effects and resistance

Most of the participants were of the view that public debate on these matters had considerably reduced the demand for antibiotics, and also influenced physicians. At any rate, it is credible that advice on these issues is more easily grasped by the public and by physicians, than the fact that colds and fevers rarely involve bacterial infection.

2.6 Patient costs

In spite of the fact that the decline in antibiotic use which occurred in Iceland in the early 1990s coincided in time more closely with rising antibiotic costs than with the debate on resistant strains, there was little discussion of costs, and questions were rarely asked about the cost factor. None of the physicians mentioned raising prices as a possible measure to counteract over-prescribing, and it is clear that physicians are reluctant to impose unnecessary expenses on their patients. *“... it’s important to us doctors, because we’re reluctant to prescribe antibiotics that cost thousands of krónur, unless we think it’s absolutely necessary (10).”*

Discussion

Nomenclature and values

In medical debate, the use of antibiotics in cases where there is no evidence of bacterial infection is often discussed in a critical manner, using terms, which entail a certain judgement such as “non-pharmacological,” “irrational” or “non-medical.” In this context one should recall the traditional objectives of medicine: to cure, relieve suffering and provide comfort.

In order to *cure*, we apply the biomedical methods of medical science, in providing *comfort* we apply a communications technique based on confidence and confidentiality, and in order to *relieve suffering* we must apply both methods. Decisions, which appear to be irrational or non-medical from a biomedical viewpoint, may indeed be rational and medical in the process of winning trust and confidence. Combining these methods pragmatically for the benefit of the patient is an important part of the art of healing. Thus we must redefine these terms, and recognise the good sense on which a decision may be based, that appears irrational and non-medical by biomedical standards. The author has thus opted to use the term *non-pharmacological*, which is more-or-less neutral and also generally accepted.

Strengths and weaknesses

As the Vancouver School of doing phenomenology⁴⁶ provides for mutual exchange of views during the research process, the findings were discussed with a number of the participants, who were thus in the role of co-researchers. By using this method the researcher got an opportunity to diminish his own monopoly of interpretation and diminish the risk of asymmetrical power of the interview. All of interviewees (co-researchers) confirmed the author’s findings and conclusions and were of the view that the findings had a basis in the quotations from the interviews. This increases the validity of the study. The findings of this study are consistent with other studies made of this process³⁷⁻⁴⁴ as I presented in the literature review. This is a complementary subject that is very important to discuss and research. Icelandic conditions have rarely been discussed up to now and this research is a desirable complement to prior knowledge on the subject. The researcher recognizes the subject well, both through own research and more than 25 years of work as a general practitioner. He has a good position to rate the credibility of the informants, whom he knew personally in most cases. In some of the

interviews honesty and self-criticism came forth, that is rarely manifest among doctors in the open field, and this indeed constitutes one of the main strengths of the research.

The main weakness is the small size of the sample, which is partly compensated by the review of the literature. In qualitative research there is a risk that the researcher could unknowingly have an effect on the informant's report by showing more interest to some answers and less to others. The researcher tried to prevent this by letting the people interviewed read the interview so they could add what they felt was appropriate. The researcher's own opinion on the research subject did change during the research.

The results of the study

According to the findings above, the principal causes of non-pharmacological use of antibiotics are the lack of a stable doctor-patient relationship due to lack of continuity in medical care, pressure from patients in a stressful society, physicians' work pressure, the physician's own personality, particularly the earnings incentive and service mentality, and, last but not least, the lack of confidence and uncertainty of the physician, who uses the antibiotic prescription as a coping strategy in an uncomfortable situation. In the nature of the matter, if any of the factors that militate against unnecessary prescribing of antibiotics, discussed above, are not present, this is conducive to more non-pharmacological use. What is new in this study are the frank descriptions given by the participants of the many forms of fear and uncertainty that occur during the decision-making process. Physicians experience a variety of stimuli, which they may have difficulty in resisting, and hence the conclusion that issuing an antibiotic prescription is sometimes a coping strategy, is entirely applicable. Variable interpretation of symptoms (autosuggestion) is a sensitive issue, but not susceptible to proof. The participants appeared remarkably willing to discuss their own personal characteristics, which play a part. They acknowledged that their desire to earn more could have an influence, especially when working under pressure and with limited time. It was interesting to hear the physicians discuss their service mentality, or even zeal. It was of course not possible to assess the physicians' communication skills in these dialogues, but this is undoubtedly an important factor. This study indicates that the interaction of GPs and their patients in Iceland is similar to that in neighbouring countries, and that this interaction includes factors, which require further attention. Nobody else than the physician him/herself is better equipped to judge the importance of building confidence and strengthening the doctor-patient relationship, and soothing the patient's fears at the time of interaction. Evidence-based biomedicine may in some cases take second place to this important goal.

In discussions of patient pressure, mention was often made of an important factor in the consumer society, the consumers' "rights," which also extend to interaction with the health service. The government has encouraged this rights-consciousness through various declarations and legislation on patients' rights and that is all well and good. The other side of the coin, however, is the way in which the pursuit of such "rights" contributes to the deprofessionalisation of the medical profession, which along with its proletarianisation⁴⁷ is a major cause of physicians' discontentment at work, and shortage of general practitioners. Regarding this subject it should be borne in mind that non-pharmacological usage of antibiotics is apparently a kind of medicalisation that seems to be growing in affluent countries. Because of increased use of drugs in most

drug groups there lies a potential danger of rising use of antibiotics, even though this has decreased to a large extent far and wide. This substantiates the theory that there is a public health problem that is important to study and to react to.

What prevents physicians from making decisions in accord with evidence based medicine? Of course there must be some human factors, of an emotional nature, which are not aired much in public. In all probability the explanation lies in the interaction between the physician and the patient, rather than with either party alone. Hence the “patient pressure” theory is not entirely credible, except as a partial explanation. It is of utmost importance to study patient pressure to a greater extent even though many studies have proven its existence.⁴⁸⁻⁴⁹ There is evidence indicating that doctors overestimate patients’ eagerness for getting antibiotics or drugs at all.⁴⁰ Doctors must extend their knowledge and proficiency as well as improve communication with the patients so that they know what the patients in fact want.

Those factors which militate against non-pharmacological prescribing may be divided into several categories, such as a good, stable relationship between doctor and patient, the physician’s good professional self-image, good working conditions, good patient and public education and discussion of side-effects, and, finally, the cost factor. When a strategy is to be made for rational prescribing these facts must be considered.

Current evidence

My results have a good consistency to the results summarized in the literature review. The non-pharmacological reasons mentioned for antibiotic prescribing were *uncertainty* about the exact diagnosis or treatment,^{37-8,41} *concern* about the time schedule (time pressure, workload),^{37-8,40} *worries* because of past experience of patients’ misfortune owing to infections,³⁷ *concern* about not having the energy to resist demand,⁴⁰ *fear* of medicolegal problems if the patient deteriorated,⁴⁰ *fear* of being perceived as having done nothing for patients⁴⁰ and *worries* about endangering the therapeutic effect of the doctor-patient relationship.⁴⁰ Most GPs thought their holistic duty was to *preserve the doctor-patient relationship* and it was more important than rational prescribing.³⁷⁻⁸ The doctors felt a need to *do something*,⁴² *to give something*,⁴² *to convey compassion*,⁴² *to respond to suffering*,⁴² *not to convey to the patient any feeling of rejection*⁴² and a *need to help patients to maintain their level of daily activities*.³⁸ The doctors rationalised their non-pharmacological antibiotic prescribing by finding appropriate symptoms to record, by stressing the existence of the patients’ chronic diseases, their history of previous infections and the desire to cover the patient just in case.³⁹

Some authors have sought to explain the fact that three-quarters of patients going to see a doctor return with a prescription,⁴⁹ and one of the explanations is that the prescription is a powerful symbol and both the doctor and the patient are fulfilling their social roles.⁵⁰ Others highlight the idea that the prescription may act as focus for a conflict which is intrinsic to the doctor-patient relationship, and its issue may result in its resolution.⁵¹ Hall⁵² offers a theory of social exchange, with a model in which both parties are under an obligation to give and receive gifts. The prescription is the doctor’s gift, which he is obliged to give, and refusing to give is the same as refusing to accept. It has been shown that the presentation of a specific affirmative recommendation for treatment is less likely to engender parent resistance to a non-antibiotic treatment

recommendation than a recommendation against particular treatment even if the doctor later offers a recommendation for particular treatment.⁵³

Urgent tasks

The common underlying theme in all the conclusions is the importance of continuous medical care and mutual trust between doctor and patient in order to be able to make rational decisions. A lack of this will without doubt increase the risk of misuse of drugs and medicalisation. An increased supply of all kinds of special care that public funds subsidize with little control must put a dent in the trustful relationship between doctor and patient. Iceland is one of many countries that have not interfered in the development of these matters. Something must be done. Health authorities must accomplish a change in regulation that could lead to a better continuity of care. In that context it is critical to understand the wishes and demands of the people, so the people see an interest in the changes and receive them with open arms. In the complex interaction between doctor and patient it is not always possible to use evidence based medicine, one needs to reach a mutual conclusion where everyone involved is satisfied if the goal is to build a long term relationship with the patient and stimulate his/her motivation. As a result, one cannot judge the non-pharmacological antibiotic treatment. Doctors should rather try to be more concerned about the patients' way of thinking as well as their expectations to be able to better understand and to improve their way of risk evaluation. Some research, however, indicates that physicians tend to think lightly of their clients expectations.^{40,48-9,54-5} With regular and elaborate information to the public through the media, it is possible to decrease unrealistic expectations towards antibiotics as well as to increase the understanding of side effects and the risk of forming drug resistance to strains of bacteria. The role of the health authorities should be to support such actions economically and to change regulations so that they lead to a better continuity in medical care for the benefit of the public. This would also improve doctors' other prescription habits if they could monitor their own habits and compare similar subjects with their colleagues. Health authorities and doctors' associations could assist by providing useful data-technology as well as mentors. It is also important that doctors converse about these matters and decide on work rules in small groups, but clinical guidelines from health authorities often fail to achieve any success.⁵⁶ Such working methods have in fact accomplished a great deal.⁵⁷⁻⁶¹ It has been shown that educational models can be used to improve prescribing.⁶² It also has been shown that interventions to promote patient-centred care in clinical consultations may lead to significant increases in the patient-centredness of the consultation process and patient satisfaction with care.⁶³ These results support the opinion that the best way to promote quality of care is to improve the doctor-patient relationship because it is the foundation and core of general practice and is used by the general practitioner both for the purpose of analysis and treatment.⁶⁴⁻⁵ All diagnostic work becomes easier if we are well acquainted with the patient and his situation and for this to happen a solid relationship is required so that the patient or his relative trusts the doctor, speaks candidly and provides the necessary information. The same applies when choosing the treatment that best suits the patient. Here it is important to be well aware of the patient's situation and understand his attitude to his problem and the treatment. This can only be achieved through a dependable doctor-patient relationship. And when it comes to implementing the treatment, this relationship matters once more. The success of the treatment depends on

the patient trusting the doctor, his judgement and good will, for trusting someone reduces tension and aids recovery. This is a well-established truth that need not be elaborated on. All my respondents realised this and strongly emphasised the crucial importance of building up a robust doctor-patient relationship. The same appears to apply to many of the participants in the six research projects referred to in the literature review. It is of the utmost urgency, therefore, that doctors should develop an understanding of the best way for all parties to develop this relationship and how it can be damaged. This could help prevent the application of quick methods of short-lived benefit which result in diverse undesirable side effects. Doctors have to learn how to resist alleged patient pressure, and at the same time preserve, and preferably encourage, the doctor-patient relationship. Therefore, further research on this topic is needed.

Conclusion

The striking factors are, on the one hand, the vital importance of a stable bond and continuity, and on the other, the strong influence of the patient as consumer. As it must be desirable to reduce antibiotic use where no bacterial infection exists, it appears to be important to help physicians resist the pressure described above. This is best achieved by research and debate on the issue, by each physician taking personal stock and knowing him/herself better, and by improved understanding of the interaction of physician and patient during a consultation, taking account of the three objectives of medicine: to cure, relieve suffering, and provide comfort. Only then will physicians seek to develop other means of relieving suffering and providing comfort than by prescribing medications. Various organisational changes are also required, aiming towards greater continuity of medical care. Education and information aimed at the public are also likely to yield benefits. This experience of antibiotic use can undoubtedly be applied to the use of drugs of other kinds. Therefore further research is needed on the influence of patient pressure on doctors' decisions; the doctors coping methods; and methods of risk evaluation among doctors and patients.

Acknowledgements

The author gratefully acknowledges inspiration, help, critique and support from his 16 informants, his wife and secretary Margrét Kristjánsdóttir, his supervisors Director Guðjón Magnússon and Professor Sigríður Halldórsdóttir, and his GP colleagues Linn Getz and Professor Jóhann Ágúst Sigurðsson. The author also is grateful for the stimulating academic atmosphere in The Nordic School of Public Health in Gothenburg. This study was financed by a grant from the Research Fund of the Icelandic College of Family Physicians.

List of references

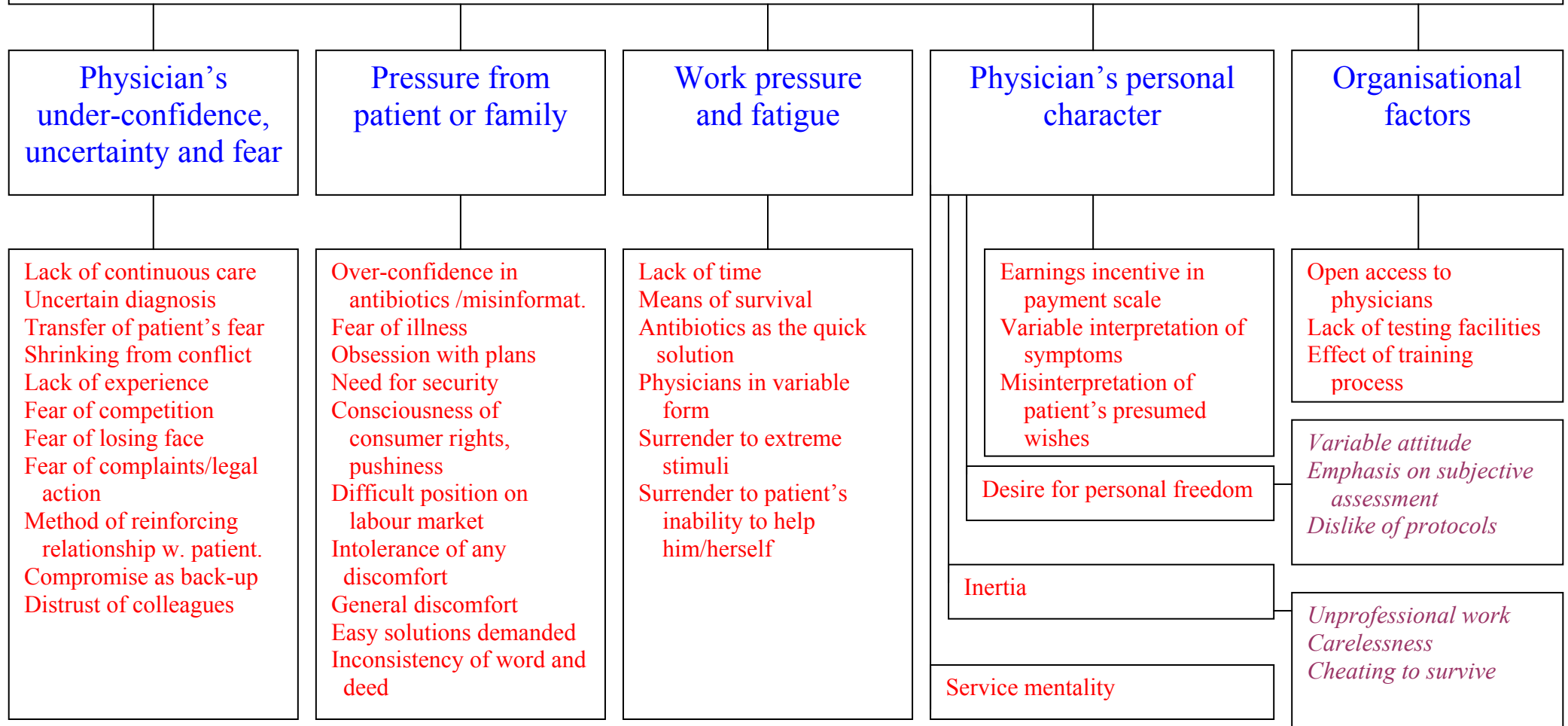
1. Hart CA. Antibiotic resistance: an increasing problem? *BMJ* 1998;316:1255-1256
2. Cohn DL, Bustreo F, Raviglione MC. Drug-resistant tuberculosis: review of the worldwide situation and the WHO/IUATLD Global Surveillance Project. *Clin Infect Dis* 1997;24(Suppl 1):121-30.
3. Cox H, Hargreaves S, Ismailov G. Effect of multidrug resistance on global tuberculosis control. *Lancet*. 2003 Nov 29;362:1858-9.
4. Rutqvist A, Boman G, Ekdahl K, Hoffner S, Julander I, Larsson LO, Ridell M. Tuberkulos åter ett hot. *Läkartidningen* 2000;97:5606-10,
5. Seppälä H, Nissinen A, Jarvinen H, Huovinen S, Henriksson T et al: Resistance to erythromycin in group A streptococci. *N Engl J Med* 1992;326:292-7.
6. Bergman M, Huikko S, Pihlajamäki M, Laippala P, Palva E, Huovinen P, Seppälä H; Finnish Study Group for Antimicrobial Resistance (FiRe Network). Effect of macrolide consumption on erythromycin resistance in *Streptococcus pyogenes* in Finland in 1997-2001. *Clin Infect Dis* 2004 May 1;38:1251-6.
7. Appelbaum PC. Antimicrobial resistance in *Streptococcus pneumoniae*: an overview. *Clin Infect Dis* 1992;15:77-83.
8. Sahm DF, Jones ME, Hickey ML, Diakun DR, Mani SV, Thornsberry C. Resistance surveillance of *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* isolated in Asia and Europe, 1997-1998. *J Antimicrob Chemother* 2000 Apr;45:457-66.
9. Soares S, Kristinsson KG, Musser JM, Tomasz A. Evidence for the introduction of a multidrug resistant clone of serotype 6B *Streptococcus pneumoniae* from Spain to Iceland in the late 1980s. *J Infect Dis* 1993;168:158-163.
10. Mirza S, Beeching NJ, Hart CA. Multi-drug resistant typhoid: a global problem. *J Med Microbiol* 1996;44:317-319
11. Hiramatsu K, Aritaka N, Hanaki H, Kawasaki S, Hosoda Y, Hori S, et al. Dissemination in Japanese hospitals of strains of *Staphylococcus aureus* heterogeneously resistant to vancomycin. *Lancet* 1997;350:1670-1673
12. Uttley AHC, George RC, Naidoo J, Woodford N, Johnson AP, Collins CH, et al. High level vancomycin-resistant enterococci causing hospital infection. *Epidemiol Infect* 1989;103:173-181
13. Loveday C, Kaye S, Tennant-Flowers M, Semple M, Ayliffe U, Weller IVD, et al. HIV-1 RNA serum load and resistant viral serotypes during early zidovudine therapy. *Lancet* 1995;345:820-829
14. Qazi SA. Antibiotic strategies for developing countries: experience with acute respiratory tract infections in Pakistan. *Clin Infect Dis* 1999;28:214-8.
15. Shears P. Antibiotic resistance in the tropics. Epidemiology and surveillance of antimicrobial resistance in the tropics. *Trans R Soc Trop Med Hyg* 2001;95:127-30.
16. Zaidi AK, Hasan R, Bhutta ZA. Typhoid fever. *N Engl J Med* 2003;348:1182-4.
17. Okeke IN, Lamikanra A, Edelman R. Socioeconomic and behavioral factors leading to acquired bacterial resistance to antibiotics in developing countries. *Emerg Infect Dis* 1999;5:18-27.
18. Mölstad S, Arvidsson E, Eliasson I, Hovelius B, Kamme C, Schalen C. Production of betalactamase by respiratory tract bacteria in children: relationship to antibiotic use. *Scand J Prim Health Care* 1992;10:16-20.

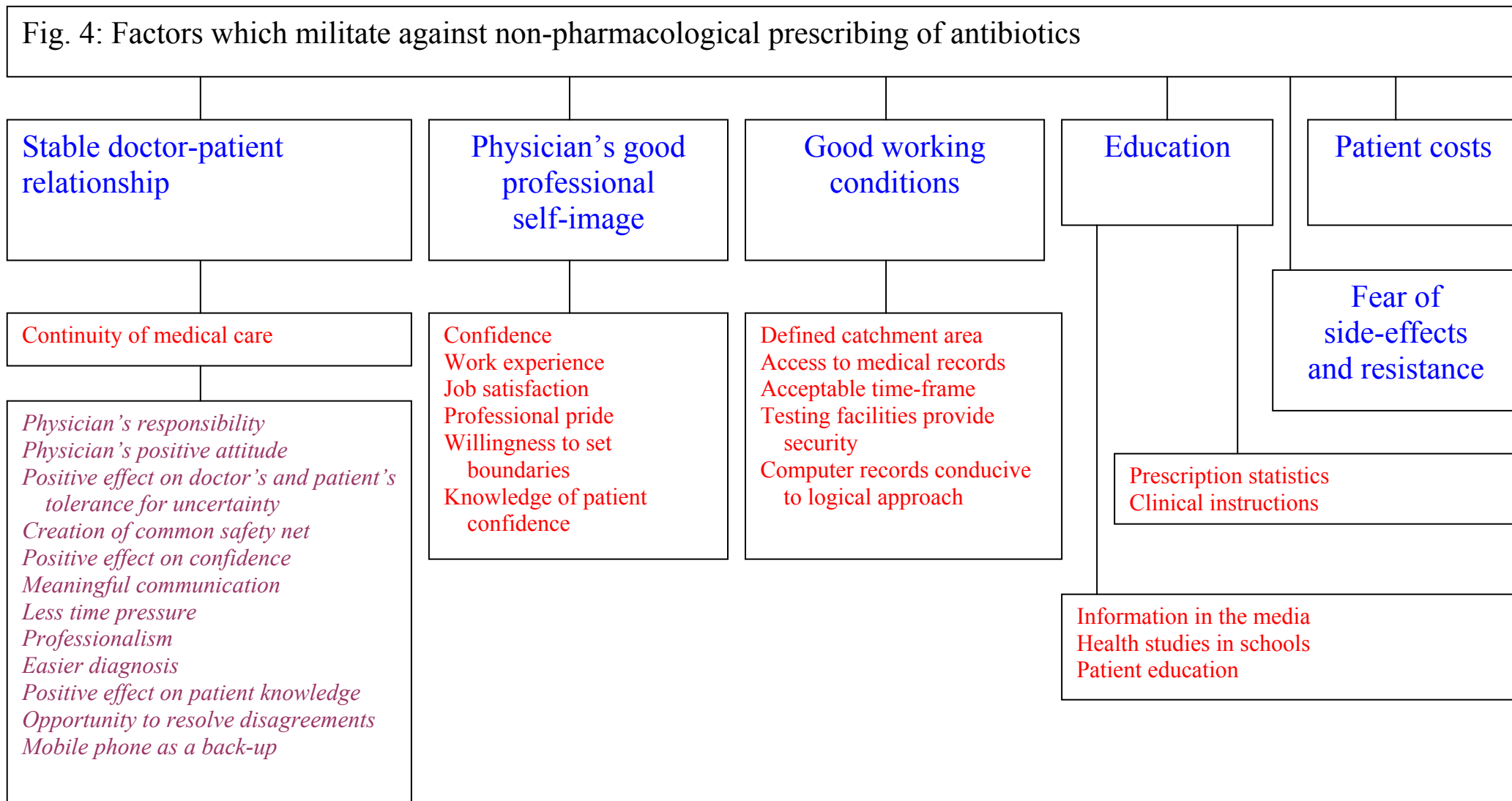
19. Arason VA, Kristinsson KG, Sigurdsson JA, Stefansdottir G, Mölstað S, Gudmundsson S. Do antimicrobials increase the carriage rate of penicillin resistant pneumococci in children? Cross sectional prevalence study. *BMJ* 1996;313:397-91.
20. García-Rey C, Aguilar L, Baquero F, Casal J, Dal-Ré R. Importance of Local Variations in Antibiotic Consumption and Geographical Differences of Erythromycin and Penicillin Resistance in *Streptococcus pneumoniae*. *J Clin Microbiol* 2002;40:159-164.
21. Little P, Williamson I, Warner G, Gould C, Gantley M, Kinmonth AL. Open randomised trial of prescribing strategies in managing sore throat. *BMJ* 1997;314:722-7.
22. Del Mar C, Glasziou P, Hayem M. Are antibiotics indicated as initial treatment for children with acute otitis media? A meta-analysis. *BMJ* 1997;314:1526-9.
23. Stalman W, van Essen GA, van der Graaf Y, de Melker RA. Maxillary sinusitis in adults: an evaluation of placebo-controlled double-blind trials. *Fam Pract* 1997;14:124-9.
24. McCaig L, Hughes JM. Trend in antimicrobial drug prescribing among office-based physicians in the United States. *JAMA* 1995;273:214-9.
25. Fahey T, Stocks N, Thomas T. Quantitative systematic review of randomised controlled trials comparing antibiotic with placebo for acute cough in adults. *BMJ* 1998;316:906-10.
26. Little P, Gould C, Moore M, Warner G, Dunleavy J, Williamson I. Predictors of poor outcome and benefits from antibiotics in children with acute otitis media: pragmatic randomised trial. *BMJ* 2002;325:22-8.
27. Publications of the Nordic Council on Medicines. Uppsala 1982, 1996.
28. Health Statistics in the Nordic Countries 2000. NOMESCO, Copenhagen 2002.
29. Cars O, Mölstað S, Melander A. Variation in antibiotic use in the European Union. *Lancet* 2001;357:1851-3.
30. Cars H, Håkansson A. To prescribe -- or not to prescribe -- antibiotics. District physicians' habits vary greatly, and are difficult to change. *Scand J Prim Health Care* 1995;13:3-7.
31. Oddsson Á, Jónsson H, Magnússon G, Sigurðsson JÁ. Ávísanir á sýklalyf. (Antibiotic prescriptions) *Læknablaðið* 1989;75:91-4.
32. Cars H, Håkansson A. Prescriptions of antibiotics for children. Prescribing habits of district, hospital and private physicians. *Scand J Prim Health Care* 1997;15:22-5.
33. McIsaac WJ, Goel V. Sore throat management practices of Canadian family physicians. *Fam Pract* 1997;14:34-9.
34. Wise R, Hart T, Cars O, et al. Antimicrobial resistance is a major threat to public health. *BMJ* 1998;317:609-10.
35. Velicer CM, Heckbert SR, Lampe JW, Potter JD, Robertson CA, Taplin SH. Antibiotic Use in Relation to the Risk of Breast Cancer. *JAMA* 2004;291:827-35.
36. Pétursson P. What determines a family doctor's prescribing habits for antibiotics? - A comparative study on doctor's own behaviour in two different settings. *Scand J Prim Health Care* 1996;14:196-202.
37. Kumar S, Little P, Britten N. Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *BMJ* 2003;326:138-143.
38. Björnsdóttir I, Hansen EH. Intentions, strategies and uncertainty inherent in antibiotic prescribing. *Eur J Gen Pract* 2002;8:18-24.

39. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF. Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. *J Fam Pract* 2001;50:853-8.
40. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N. Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *BMJ* 1998;317:637-42.
41. Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ. Pressures on the general practitioner and decisions to prescribe. *Fam Pract* 1996;13:432-8.
42. Bradley CP. Factors which influence the decision whether or not to prescribe: the dilemma facing general practitioners. *Br J Gen Pract* 1992;42:454-8. [The same study also is published as: Bradley CP. Uncomfortable prescribing decisions: a critical incident study. *BMJ* 1992;304:294-6.]
43. Sutherland VJ, Cooper CL. Identifying distress among general practitioners: predictors of psychological ill-health and job dissatisfaction. *Soc Sci Med* 1993;37:575-81.
44. Bakker BB, Schaufeli WB, Sixma HJ, Bosveld W, van Dierendonck D. Patient demands, lack of reciprocity, and burnout: a five-year longitudinal study among general practitioners. *J Organiz Behav* 2000;21:425-41.
45. Moynihan R, Smith R. Too much medicine? Almost certainly. *BMJ* 2002;324:859-60.
46. Halldórsdóttir S. The Vancouver School of Doing Phenomenology. In Fridlund B and Hildingh C (Eds.), *Qualitative Methods in the Service of Health*. Lund: Studentlitteratur, 2000, pp. 47-81.
47. Weiss M, Fitzpatrick R. Challenges to medicine: the case of prescribing. *Sociology of Health & Illness* 1997;19:297-327.
48. Little P, Dorward M, Warner G, Stephens K, Senior J, Moore M. Importance of patient pressure and perceived pressure and perceived medical need for investigations, referral, and prescribing in primary care: nested observational study. *BMJ* 2004;328:444-6.
49. Little P, Dorward M, Warner G, Moore M, Stephens K, Senior J, et al. Randomised controlled trial of effect of leaflets to empower patients in consultations in primary care. *BMJ* 2004;328:441-4.
50. Bradley CP. Factors which influence the decision whether or not to prescribe: the dilemma facing general practitioners. *Br J Gen Pract* 1992;42:454-8.
51. Bradley CP. Decision making and prescribing patterns – a literature review. *Family Practice* 1991;8:276-78
52. Hall D. Prescribing as a social exchange. In: Mapes REA (ed) *Prescribing practice and drugs usage*. London: Croom Helm, 1980, pp 39-57.
53. Stivers T. Non-antibiotic treatment recommendations: delivery formats and implications for parent resistance. *Soc Sci Med* 2005;60:949-64.
54. Cockburn J, Pit S. Prescribing behaviour in clinical practice: patients' expectations and doctors' perceptions of patients' expectations - a questionnaire study. *BMJ* 1997;315: 520-3.
55. Britten N, Jenkins L, Barber N, Bradley C, Stevenson F. Developing a measure for the appropriateness of prescribing in general practice. *Qual Saf Health Care* 2003;12: 246-50.

56. Gabbay J, le May A. Evidence based guidelines or collectively constructed “mindlines?” Ethnographic study of knowledge management in primary care. *BMJ* 2004;329:1013-1017.
57. McNulty CA, Kane A, Foy CJ, Sykes J, Saunders P, Cartwright KA. Primary care workshops can reduce and rationalize antibiotic prescribing. *J Antimicrob Chemother* 2000;46:493-9.
58. Melander E, Bjorgell A, Bjorgell P, Ovhd I, Mölsted S. Medical audit changes physicians' prescribing of antibiotics for respiratory tract infections. *Scand J Prim Health Care*. 1999;17:180-4.
59. Damsgaard JJ, Schaefer K, Michelsen JW, Frimodt-Moller N, Munck AP, Vach K, Kragstrup J. Antibiotic treatment of infections in general practice. Effect of audit assessed by prescriptions data from health insurance registry and physicians' own registration. *Ugeskr Laeger* 2001;163:165-8.
60. Ekedahl A, Andersson SI, Hovelius B, Mölsted S, Liedholm H, Melander A. Drug prescription attitudes and behaviour of general practitioners. Effects of a problem-oriented educational programme. *Eur J Clin Pharmacol*. 1995;47(5):381-7.
61. Friis H, Bro F, Mabeck CE, Vejlsgaard R. An information campaign--an important measure in controlling the use of antibiotics. *J Antimicrob Chemother*. 1989 Dec;24(6):993-9.
62. Lundborg CS, Wahlström R, Oke T, Tomson G, Diwan VK. Influencing prescribing for urinary tract infection and asthma in primary care in Sweden: a randomized controlled trial of an interactive educational intervention. *J Clin Epidemiol*. 1999;52(8):801-12.
63. Lewin SA, Skea ZS, Entwistle V, Zwarenstein M, Dick J. Interventions for providers to promote a patient-centred approach in clinical consultations. *Cochrane Database Syst Rev*. 2004;(3):CD003267
64. Balint M. *The Doctor, The Patient and His Illness*. London: Pitman, 1957.
65. Browne K, Freeling P. *The Doctor-Patient Relationship*. Edinburgh London and New York: Churchill Livingstone, 1976, pp. 1-13.

Fig. 3: Factors which are conducive to non-pharmacological prescribing of antibiotics





APPENDIX I

Interview guide

1. Do you think Icelanders use antibiotics to excess?
2. If you do think so, what could be the reason?
3. How can we explain why Icelandic doctors do not always follow the recommendations of evidence-based medicine in this field?
4. Can you give any example, when other motives than conviction about a bacterial infection influenced your decision to prescribe antibiotics?
5. Can you describe any events or circumstances when you felt dissatisfied after having prescribed antibiotics? *If yes*
 - a. What made you dissatisfied?
 - b. How did you document it?
6. Is it possible that you in some cases do an extra careful examination to justify a prescription for antibiotics, when you already have made your decision?
7. Did you ever use a prescription in order to finish a consultation in an easy way?
8. Can you describe your feelings when you become aware that a patient or a custodian disagrees with you?
9. Which strategies do people apply to get a prescription for antibiotics?
10. How do you feel when you are uncertain as to the diagnosis?
11. What could you do to become reconciled with yourself in the future in this field (if you aren't already)?
12. Do you ask your patients directly about their expectations or can you explore these in some way?
13. Which groups of patients are mainly used to receiving antibiotics for other reasons than overt bacterial infection?
14. How are you influenced by clinical guidelines or warnings against the use of antibiotics?
15. How often do you prescribe antibiotics after a mere telephone call and for which reasons?
16. What is the practice of your colleagues in this matter?
17. Do you prescribe antibiotics too often?
18. How can we reduce our presumed excessive use of antibiotics?

APPENDIX II

Pétur Pétursson

Can the use of general practitioners' non-pharmacological reasons for prescribing antibiotics be a coping strategy?

A literature review

To write prescriptions is easy, but to come to an understanding with people is hard.

Franz Kafka (1883-1924); A Country Doctor

Abstract

Objectives: The objective of this literature review is to examine the reasons for non-pharmacological prescribing of antibiotics and investigate whether some of them could possibly be stressors to the general practitioner in the consultation and to prove the hypothesis that the way of terminating the consultation by prescribing antibiotics can in some cases be a coping strategy for the medical doctor.

Material and methods: Six scientific medical journal articles were selected according to explicit criteria and explored with regard to the study question.

Results: The non-clinical reasons mentioned for antibiotic prescribing were *uncertainty* about exact diagnosis or treatment, *time pressure*, *workload*, *worries* because of past experience of patients' misfortune owing to infections, *fear* of medico-legal problems if the patient deteriorated, *concern* of being perceived as having done nothing for patients and *worries* about endangering the therapeutic effect of the doctor-patient relationship. Most GPs thought that their holistic duty was to preserve the *doctor-patient relationship* and that this was more important than rational prescribing.

Conclusion: The hypothesis that the act of prescribing antibiotics can in some cases be a coping strategy for the medical doctor is supported by the six studies described. This strategy is used to solve miscellaneous types of discomfort, uncertainty, pressure and stress in the decision process.

Introduction

The objective of this study is to explore the reasons for non-pharmacological prescribing of antibiotics and investigate whether some of them could possibly be stressors to the general practitioner in the encounter with the parent or patient. My hypothesis is that the act of prescribing antibiotics can in some cases be a coping strategy for the medical doctor.

Concern about resistance and over-prescribing of antibiotics, especially broad-spectrum antibiotics, has increased worldwide.¹ In recent years there has been a dramatic increase in the prevalence of antibiotic-resistant bacteria. The overall increase in antibiotic resistance has been attributed to excessive global usage of antibiotics and the spread of resistant bacteria.² The association between antibiotic use and resistance has been demonstrated.³ Because of the drug cost and cost due to antibiotic resistance, reducing unnecessary antibiotic use has become a public health priority, particularly regarding children. Therefore a better understanding of the antibiotic-prescribing practices of physicians along with insight into related factors is very important.

The consumption of antibiotics in the Nordic countries has for years been highest in Iceland and Finland, 50-60 % higher than in Denmark.⁴ The author of this review has studied his own prescription habits for antibiotics⁵ in two different settings and

observed a quite astonishing increase in his prescription rate when moving from a solo practice in a small rural district to an urban setting. In his ongoing qualitative study of general practitioners' prescription habits, his informants often describe the influence of patient pressure and uncertainty on their decision making in the consultation. In such a situation, it may be convenient to prescribe a drug to get rid of the patient. Much information exists on physicians' occupational stress and even burnout, but it seems interesting to explore the stressors in the encounter, which perhaps could influence the decision process. The aim of this literature study was to verify or disprove the hypothesis that the way of terminating the consultation by prescribing antibiotics can in some cases be a coping strategy for the medical doctor.

Definitions

According to Lazarus, **stress** is a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing.⁶ More recently Karasek, Theorell, Kobasa and others conceptualise stress as a product of the individual's capacity for self-control.⁷

According to Lazarus and Folkman, **coping** is a constantly changing cognitive and behavioural effort to manage, reduce or tolerate external and/or internal demands (or conflicts between them) that are appraised as taxing or exceeding the resources of the person.⁸ Successful coping and self-management eradicates stress, failed self-regulation results in a stress response and stress-related illness is considered a consequence of prolonged failed self-management.⁷

Methods

The reviewer started with a search for relevant journal articles in the following databases: *Medline* (by Pub Med and Ovid), *PsycInfo*, *Cinahl*, *ERIC* and *Social Services Abstracts*. The keywords and core concepts used were *family physicians*, **and** *antibiotics*, **and** *coping*, **or** *psychological adaptation*, **or** *occupational stress*, **or** *psychological stress*, **or** *physician's role*, **or** *physician-patient relations*, **or** *uncertainty*, **or** *patient pressure* **and** *prescriptions*. The search in Medline was the most successful and gave these results with some overlapping:

Antibiotics & family physicians & physician-patient relations = **8 articles**

Antibiotics & physician-patient relations & uncertainty = **6 articles**

Antibiotics & physician-patient relations & prescriptions = **17 articles**

These articles focused far better on the study subject than other combinations, but those mentioned below gave results too:

Family physicians & physicians role & coping = **12 articles**

Physicians role & coping & physician-patient relations = **17 articles**

Physicians role & prescriptions & psychological stress = **1 article**

Family physicians & prescriptions & psychological stress = **2 articles**

Family physicians & physician-patient relations & coping = **12 articles**

Other databases did not provide additional studies suitable for this review with the exception of one paper (II/ ERIC). There was nothing to find about doctor's stress and

antibiotics, but much information relating to antibiotics and discomfort, which the reviewer believes to mean roughly the same.

The inclusion criteria for articles in this study were:

- The article should have been published in a scientifically respected medical or sociological journal.
- The article should present and deal with original research on general practitioners' (family physicians) prescription habits for non-pharmacological ("irrelevant") use of antibiotics.
- The article should deal with research on physician-patient relations and possible stressors in the encounter.
- The articles should represent studies in different settings in several countries.
- The articles should represent different study methods.

The exclusion criteria were:

- The article was published in a foreign language incomprehensible to the author of this study.
- The article was published in a journal not accessible by conventional means.

Eighteen articles fulfilled these criteria and several others were discovered in *references, related articles* or by searching for other articles written by outstanding researchers in this field. For widening the horizon for my own study, I selected the 6 articles I rated best suited for my purpose as they expose different sides of the issue I was studying.⁹⁻¹⁴

Overview of the scientific articles

These journal articles were explored regarding the study question:

- I. **Kumar S, Little P, Britten N.** Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *BMJ* 2003;326:138-143.
- II. **Björnsdóttir I, Hansen EH.** Intentions, strategies and uncertainty inherent in antibiotic prescribing. *Eur J Gen Pract* 2002;8:18-24
- III. **Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF.** Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. *J Fam Pract* 2001;50:853-8.
- IV. **Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N.** Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *BMJ* 1998;317:637-42.
- V. **Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ.** Pressures on the general practitioner and decisions to prescribe. *Fam Pract* 1996;13:432-8.
- VI. **Bradley CP.** Factors which influence the decision whether or not to prescribe: the dilemma facing general practitioners. *Br J Gen Pract* 1992;42:454-8. [The same study also is published as: **Bradley CP.** Uncomfortable prescribing decisions: a critical incident study. *BMJ* 1992;304:294-6.]

	Nationality	Method	Number	Core concepts	Published
I Kumar & al. ⁹	England	Qualitative GT	40 GPs	Pressure Antibiotics Prescriptions GPs	BMJ 2003
II Björnsdóttir & al. ¹⁰	Iceland	Qualitative GT & observ.	10 GPs	Antibiotics Prescriptions GPs Uncertainty	Eur J Gen Pract 2002
III Scott & al. ¹¹	USA	Qualitative multimeth. comparative case study	298 encounters	P-P relations Antibiotics Prescriptions	J Fam Pract 2001
IV Butler & al. ¹²	Wales	Qualitative	21 GPs 17 pat.	GPs P-P relations Antibiotics	BMJ 1998
V Weiss & al. ¹³	England	Quantitative questionnaire study	228 GPs	P-P relations Antibiotics Prescriptions	Fam Pract 1996
VI Bradley ¹⁴	England	Qualitative critical-incid method	168 GPs	P-P relations Antibiotics Uncertainty	Br J Gen Pract 1992

These articles were the most solid I could find on the issue of the connection between GPs' relationship with their patients and non-pharmacological prescribing. All of them presented studies of good quality and all of them were published in eminent medical journals that use external referees for all submitted articles before deciding on publishing. Until now, articles on qualitative research of medical doctors, their feelings, thoughts and decision-making are rather infrequent in the medical literature.

Résumé and analysis of articles

I. Kumar S, Little P, Britten N. Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *BMJ* 2003;326:138-143.

This article describes a *qualitative study* of 40 *general practitioners* (GPs) in England and the *objective* was to understand why GPs prescribe antibiotics for some cases of sore throat and to explore the factors that influence their prescribing. Sore throat and respiratory infections are a very common reason for people consulting GPs and cause a great deal of all prescriptions for antibiotics, although most are viral and do not require antibiotics. The GPs' reasons for prescribing antibiotics for sore throat and the factors that influenced the decision-making were explored. The authors used Grounded Theory to guide sampling and data collection in open-ended interviews, using constant

comparative analysis to interpret the data. Questions included opinions and beliefs about antibiotic prescribing in cases of sore throat, management of patients, and awareness of research and policy on antibiotic prescribing and how these influenced clinical practice.

Results. All GPs agreed that antibiotics are unnecessary for most patients with sore throat although they sometimes used them. However, everyone stated that their own decision-making was rational and systematic. The analysis was presented in four main themes that were not mutually exclusive:

Decision-making. Everyone believed that antibiotics were beneficial to some patients depending on the severity of symptoms. In some cases the patient's appearance and the duration and severity of symptoms increased uncertainty about the causal agent and the potential for complications and *therefore the GPs managed their uncertainty by prescribing or offering to prescribe an antibiotic*. Another approach for managing uncertainty was to take throat swabs for culture and thereby delay or prevent antibiotic prescriptions and support the doctor's explanation that such symptoms could be caused by a virus. Some doctors presumed that people living in poor housing, in overcrowded conditions with poor nutrition or substance abuse could be more susceptible to bacterial infections due to impaired immune function.

Responses to external pressure to reduce antibiotic prescribing. Because of local circumstances in England, all the informants claimed to have reduced antibiotic prescribing in response to pressures from research findings, policy documents and local prescribing advisors. A group of GPs tried to stop all antibiotic prescriptions for sore throat but had to change their policy after one year because of complications (peritonsillary abscess). Some GPs often bear in mind past experiences of their patients' misfortune which influence their decisions and make them annoyed and uncertain. Very experienced GPs described how they could switch from acting as infrequent to frequent prescribers of antibiotics in different contexts, e.g. when they felt under pressure or were running late as duty doctors, when it seemed too time consuming to explain all the details about the most probable causes of sore throat. Rather few of the informants used delayed prescription, i.e. to prescribe antibiotics and recommend that the receiver wait to see if the patient did recover without taking antibiotics. This approach is described as a strategy to manage diagnostic uncertainty, to reassure the patient, to prevent reattendance, to reduce the likelihood of a patient taking the antibiotic, and to shorten the consultation time. The GPs were sceptical that prescribing penicillin for a sore throat contributed greatly to antibiotic resistance.

Maintaining doctor-patient relationships. Prescribing antibiotics for a sore throat was acknowledged as relevant but not the most important factor in maintaining the doctor-patient relationship, which GPs often consider as their holistic duty in their busy working day. Most of the informants believed that listening and effective communication were more important to the doctor-patient relationship. One GP described his discomfort at different points in the consultation: the doctor realising that his beliefs are contrary to the patient's, recognition of the difficulty in communicating evidence to influence the patient's beliefs, and the time required for explanation. By reminding themselves of their holistic duty, the GPs appear to resolve this discomfort and tension by prescribing antibiotics under the pretext that they are treating the whole patient and not only the bacteria or virus. It seemed that the GPs did not actively explore the sore throat patients' concerns or their ideas about what might happen in the

consultation but they emphasised patients' tendency to be dissatisfied and cause a confrontation if denied antibiotics without supporting this statement with examples.

Comfortable prescribing decisions. None of the informants recognised feeling uncomfortable when prescribing antibiotics for a sore throat but a few recalled uncomfortable feelings in relation to not prescribing. In some cases, consultations for a sore throat could be a welcome interlude in a busy surgery and an antibiotic prescription therefore a way to expedite the consultation and manage personal stress in busy clinical sessions.

According to these study results, GPs prescribe antibiotics by taking into account, to varying degrees, biomedical evidence, social context, policy statements, and service provision. Other factors indicated as leading to bypassing evidence were clinical experience and personal knowledge of patients.

Searching for strategies to improve prescribing, the authors mentioned areas of knowledge and information that GPs needed. For example, they considered GPs to be uncertain about who benefits most from antibiotics for a sore throat and to have difficulty in distinguishing those most at risk of complications and the best way to minimise them.

Conclusion. General practitioners have reduced prescribing for sore throat in response to research and policy initiatives. Further interventions to reduce prescribing would need to improve identification of patients at risk of complications and be applicable in busy clinical situations.

II. Björnsdóttir I, Hansen EH. Intentions, strategies and uncertainty inherent in antibiotic prescribing. *Eur J Gen Pract* 2002;8:18-24

This paper describes a *qualitative, semi-structured in-depth interview study* of 10 Icelandic GPs, three of whom were observed at work. The aim of the study was to understand GPs' perceived reasons for prescribing and their decision-making when deciding whether or not to prescribe antibiotics. Data collection and analysis were performed according to the Grounded Theory methodology.

Results. Different decision-making paths regarding antibiotic prescription were identified. They center around three goals: 1) The first goal was to help the patient. The GP believes that the illness can interfere with the patient's planned activities, knows or thinks that the infection might be bacterial, and believes that antibiotics might help and will not harm. Uncertainty matters in this path. 2) The second goal was to make the patient depart. The patient does not take no for an answer and the GP lacks time, resources or is too tired to convince the patient that the infection is viral and that antibiotics will not help. The doctor deliberately deviates from biomedical rationales. 3) The third goal was to respect patient autonomy. The GP values patient autonomy higher than patient welfare at the expense of professional autonomy. Here the doctor also deviates from biomedical rationales. Some GPs seemed to mainly adhere to one path but for others the path of prescribing seemed to depend on circumstances.

Attitudes. Attitudes towards antibiotic prescribing varied from being restrictive to liberal. The main reason for liberal prescribing was concern for possible consequences of withholding necessary treatment. General attitude could be more restrictive than case-specific attitude; i.e. doctors who described themselves as restrictive could be less restrictive in the observed encounter. GPs with a general restrictive attitude also experienced difficulty in living up to it through a whole working day, due to tiredness and/or lack of time.

Uncertainty. Most of the doctors described experience of uncertainty in the diagnostic process but to a different degree. In some cases, a solid diagnostic basis was lacking. Changes in treatment recommendations could also cause uncertainty as well as complaints about side effects. Most doctors tend to treat if in doubt.

Time. Some doctors describe time pressure as a reason to prescribe when lacking time to explain.

Patient characteristics. Several personal patient characteristics were considered in the decision-making process, especially the patients' work and leisure activities. The doctor's perceptions about the patient's compliance and his expectations and pressure exerted in the consultation also played a role. Pressure was perceived when the patient had to go somewhere or do something important. Some GPs left the treatment decision to the patient. Patients considered to be prone to complain were taken less seriously than other patients.

Colleagues. The GPs generally considered their colleagues' prescription habits of lesser quality than their own.

Conclusion. Non-clinical factors seem at least as important as clinical ones in the decision-making regarding antibiotic prescribing. The GPs' primary purpose is to help the patient to maintain the level of daily life activities as planned. Intervention planners should acknowledge this.

III. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF. Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. *J Fam Pract* 2001;50:853-8.

This article describes a *multimethod comparative case study* which included *patients and more than 50 clinicians in 18 family practices in the Midwestern states of USA*. The sample was in-depth descriptive field notes made by field researchers on *298 outpatient visits* for acute respiratory tract infections. The aim of this study was to identify those aspects of the doctor-patient communication that influence doctors to prescribe antibiotics for respiratory infections and measure unnecessary use. This study explored what actually happened in the consultation, but until now most studies on this issue have described perceptions of behaviour by interview technique and focus groups. The encounters were first coded for antibiotic use or non-use and before any qualitative analysis began, the consultations during which antibiotics were prescribed were defined as appropriate or unnecessary according to guidelines from CDC (Centers for Disease Control and Prevention) by two general practitioners independently. All their disagreements were resolved by discussion but their inter-rater reliability was good. Thereafter the transcribed field notes for each outpatient were coded and discussed by a research team. Women made up 59% of the study sample and adults (16 years and

older) 64%. This study on acute respiratory tract infections was a part of a larger one, which included 1600 encounters in total.

Results. Antibiotics were prescribed in 68 % of the consultations (204/298) and according to CDC guidelines only 20 % of these were necessary (40). Adults were more likely than children to receive unnecessary antibiotics, but there was no gender difference. On analysis, multiple pressures and different types of patient behaviour that advocated for treatment with antibiotics were identified and 3 broad categories emerged:

Explicit request. This type of behaviour, when patients asked directly for antibiotics was identified in 5 % of cases. Of those who were not presumed to be in need of an antibiotic 93 % got a prescription.

Presentation of the chief complaint. In this group the patients put the pressure on the doctor during the presentation of the chief complaint without asking directly for a prescription. Four subgroups were identified:

Symptoms-only presentation. This approach was found in 5 % of cases. The patient only reported his symptoms or symptom diagnosis without putting pressure on the doctor.

Candidate diagnosis. Found in 6 % of cases. The patient directly presented his complaint by a candidate diagnosis like strep throat. Of those who were not presumed in need of an antibiotic 72 % received a prescription.

Implied candidate diagnosis. Found in 16 % of cases. The patient reported very specific symptoms that indexed a particular diagnosis. These last two groups point to a condition the patient believes to be treatable and in that way place indirect pressure on the doctor to prescribe antibiotics. Of those who were not presumed in need of an antibiotic 58 % received a prescription.

Portraying the severity of one's illness. Found in 33 % of cases. The patient vividly described the severity of the condition and the inability to get rid of the illness on his own. This portrayal was usually accompanied by some other action implying the need for a prescription, which often sounded like a cry for help. Of those who were not presumed to be in need of an antibiotic 80 % received a prescription.

Appeals to non-medical circumstances. These behaviours appeared after the problem presentation and focused on some important event.

Appealing to life-world circumstance. Found in 5 % of cases. The important event could be an examination or a trip out of town and sometimes the patients tried to use the same approach to obtain prescriptions for their children too. Of those who were not presumed to be in need of an antibiotic 88 % received a prescription.

Previous positive experience of antibiotics. Found in 13 % of cases. The patient indirectly appeals for antibiotics by stating that he received antibiotics in the past for the same symptoms as now and with success. The patients often admitted that some other doctor had prescribed antibiotics for the same illness or that some other family member had to get antibiotics for this. Of those who were not presumed to be in need of antibiotics 97 % received a prescription.

In those cases where antibiotics were clearly unnecessary, doctors often rationalised their prescribing practices by finding symptoms or assigning diagnoses to justify antibiotic use, or stressing associated chronic disease; history of previous infection; and the desire to “cover” the patient “just in case.”

The authors' opinion was that the connection between patient diagnosis and doctor's prescribing were highly complex and involved patient presentation and doctor-patient communication as much as, or more than, the doctor's diagnostic skills. The doctors are poorly equipped to resist pressures like appeals to non-medical circumstances or portraying the severity of the illness. Therefore interventions designed to increase doctors' knowledge regarding when to prescribe antibiotics had limited success. Doctors appear to be trying to give the patients what they want. Therefore the patients play a powerful role in the interaction, which is only to an uncertain degree controlled by the doctor.

Conclusion. Patients strongly influence the antibiotic prescribing of physicians by using a number of different behaviours. To decrease antibiotic use for respiratory infections, patients should be educated about the dangers and limited benefits of such use, and clinicians should consider appropriate responses to these different patient pressures to prescribe antibiotics.

IV. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N.

Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *BMJ* 1998;317:637-42.

This article presents *a qualitative study with semi-structured interviews with 21 GPs in South Wales and 17 of their patients*, who had recently consulted for sore throat or upper respiratory tract infection. The objective was to understand better the reasons for antibiotics being prescribed for sore throats despite the widespread evidence that they are generally of little help. The study was designed to explore the subjects' experience of management of the illness, patients' expectations, beliefs about antibiotic treatment for sore throats, and ideas for reducing prescribing. In the interviews with the GPs they were asked about consultations for sore throats, their current practice, changes in their practice over time, the scientific evidence, and suggestions for action. The patients were interviewed within four weeks after the consultation. They were asked about their experiences and views regarding their recent consultation and previous ones, self-care practices, consulting thresholds, expectations of the consultation, what happened, satisfaction, their attitude towards and knowledge of antibiotics, and suggestions for reducing prescribing levels. Audiotaped interviews were transcribed and coded according to qualitative methods and categories thereafter reduced to three major themes through ongoing discussions between researchers and re-reading of the transcripts: *Patients' expectations and how they are met; doctors' information needs, and empowering patients.*

Results from the interviews with GPs.

1) *General perceptions of consultations for upper respiratory tract infections*
Most of the GPs felt management decisions were potentially complex, although the diagnostic aspect of these encounters was easy and even boring. They experienced the feeling that their patients definitely wanted something to be done when consulting. The doctors generally preferred to meet patients' expectations when it appeared reasonable to do so. Most of them felt that many patients had too low a threshold for consulting. To

make the consultation short and the patient satisfied, an antibiotic prescription was advantageous although some GPs felt slightly abused. Trying to change patients' beliefs and expectations in the consultation was often perceived as time-consuming and unappreciated. Conversely, they felt it satisfying when a patient expecting a prescription for antibiotics left the consultation accepting non-medical management.

2) Attitudes to current prescribing practices

Nearly all the GPs thought that antibiotics were prescribed too often for upper respiratory tract infections; antibiotics modified the course of these infections only slightly if at all, in clinical trials. They felt, however, that this evidence was questionable and that antibiotics might help some patients. A minority mentioned bacterial resistance as a community problem, but the GP's priority ought to be the well-being of his patient and therefore it should be of no harm to prescribe narrow spectrum antibiotics, which could possibly help the patient. Almost everyone said they prescribed more than they would like to do, yet most of them believed they were on or below the average.

3) Explanations for irrational prescribing

Almost all mentioned that prescribing decisions for these conditions could have an important impact on the therapeutic power of the doctor-patient relationship and that they had increased their prescribing as their knowledge of their patients increased. Many GPs believed that if some patients did not get what they wanted, they would obtain prescriptions from another doctor and establish a better relationship with him. Some rather usual explanations for non-pharmacological antibiotic prescriptions were pressure of time, not having the energy to resist demand, fear of medico-legal problems if the patient deteriorated, and being perceived as having done nothing for patients.

4) Consequence of workload

Almost everyone presumed that prescribing antibiotics might decrease workload in the short term but also increase it in the long term, because patients would learn from their experience that antibiotics were considered helpful in repeated similar conditions.

5) Everyday practice

Many GPs recognised that although it was not possible with any certainty to differentiate between a bacterial and viral cause on clinical grounds alone, they usually prescribed antibiotics if they thought there was a good chance that the infection was bacterial. Most GPs said that they would prescribe antibiotics if the patient looked very unwell, whatever the likely infecting agent, but they also stated that they tried to explain to the patients that viruses were not responsive to antibiotics. Several remarked, however, that patients often did not understand such microbiological explanations. About half said they used delayed prescriptions.

6) Ways to reduce prescribing

The GPs most often proposed the following: national media campaigns, educational use of the Internet, nursing staff and health visitors, practice-based initiatives as leaflets and posters. Several thought that it was important to explore patients' expectations in the consultation and that taking their concerns seriously could reduce prescribing. Others stressed the value of examining the patients carefully, exploring their knowledge of possible side effects and resistant bacteria, explaining trial evidence for lack of efficacy, giving patients control by easy access for review if their condition deteriorated and the delayed prescription strategy.

Results from the interviews with patients.

1) What patients wanted

A third of patients were expecting antibiotics although some of them also were more amenable to alternative management. Only one made his expectations explicit and very few were asked for them. About two thirds said they had consulted for reassurance or they wanted pain relief. Four out of five mothers were happier to get non-antibiotic solutions for their children than for themselves.

2) *How were their needs met?*

There seemed to be a reasonable degree of agreement between patients' expectations and outcome as all but one of the third that expected antibiotics received a prescription. GPs attempted to sense patients' flexibility and prescribe antibiotics as soon as they perceived resistance to a non-antibiotic approach. Dissatisfaction was, however, related to lack of clear explanation and the feeling of being rushed in the consultation.

3) *Patients' views about antibiotics*

Most patients indicated that antibiotics were not a problem free solution to the common cold, cough, or sore throat. Several saw them as effective and as a preferred option. Explanations of the lack of effect of antibiotics against viruses did not necessarily leave the patients satisfied about not receiving an antibiotic, either because they had not necessarily wanted one or because it did not match their understanding and need for pain relief.

Conclusion. The authors' conclusions were that antibiotics were prescribed for various and complex reasons and that their symbolic effect for the doctor-patient relationship should not be underestimated. Also that those consulting techniques that make expectations explicit, preserve relationships, and facilitate acceptable management were important, and opportunities for empowering patients who were not acutely ill could be better used, and that emphasising positive aspects of non-antibiotic treatment, especially in children, could be fruitful.

V. Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ. Pressures on the general practitioner and decisions to prescribe. *Fam Pract* 1996;13:432-8.

This article presents a *quantitative questionnaire study* where 228 GPs from 151 practices in southern England filled out in the autumn 1994 a questionnaire with 20 statements to address the following themes: a) GPs' sense of burden, b) financial constraints and incentives, c) prescribing as a coping strategy; and d) patient demand. The aim of this study was to explore whether a variety of pressures highlighted by recent developments in primary care were actually felt as concerns by GPs. A secondary aim was to determine whether GPs' perception of these pressures appeared to influence their prescribing decisions by relating their answers to their prescribing behaviour using PACT data (Prescribing Analysis and Cost Information). This study did not address antibiotic prescriptions in particular.

Results. By factor analysis of the questionnaire, four questions addressed prescribing as a coping strategy. One of four questions, which were excluded because of lack of internal consistency (lack of correlation with other variables), was: "*I sometimes feel guilty when I prescribe for a non pharmacological reason.*" 65.3 % agreed, 21.1 % were neutral but 13.2 % disagreed. To the question "*Sometimes using a prescription to*

finish a consultation is the only way to get through a busy clinic” 56.6 % agreed, 11.4 % were neutral but 38.6 % disagreed. To the question *“If the patient believes a prescription will help him/her get better, it is still good medical practice to prescribe even when it is not strictly pharmacologically necessary”* 21.9 % agreed, 22.8 % were neutral but 54.9 % disagreed. To the question *“Judicious prescribing for a non-pharmacological reason is a useful method of coping with the routine stresses of general practice”* 32 % agreed, 20.6 % were neutral but 46.5 % disagreed. To the question *“It is part of my role as a GP to try to satisfy a patient’s desire for a prescription”* 7 % agreed, 9.7 % were neutral but 82.9 % disagreed. The answers were not significantly related to prescribing.

The themes GPs’ sense of burden, financial constraints and incentives, and patient demand were too locally focused and inconclusive for discussion in this review.

Conclusion. There is a continuing need to monitor and evaluate the effect of recent changes in primary care for their impact on prescribing behaviour.

VI. Bradley CP. Factors which influence the decision whether or not to prescribe: the dilemma facing general practitioners. *Br J Gen Pract* 1992;42:454-8. [The same study also is published as: **Bradley CP. Uncomfortable prescribing decisions: a critical incident study.** *BMJ* 1992;304:294-6.]

This paper presents *a qualitative study with semi-structured interviews where 68 general practitioners and five trainees in North-England* answered up to six questions about prescribing decisions that made them feel uncomfortable. The analysis was based on the critical incident technique (that focuses on respondents’ accounts of events that actually happened rather than on generalisations or opinions) and the aim of the study was to determine (a) whether the discomfort is related to particular drugs or to particular patient characteristics such as morbidity and (b) the reasons why the doctors made their decisions and why they felt uncomfortable. Prescriptions for all drugs were explored.

Results.

Drugs and conditions associated with discomfort among prescribers.

All doctors could cite discomfort associated with prescribing and often it was the decision making which was uncomfortable. They also remembered instances where they associated specific drugs and drug groups with discomfort and here *antibiotics* ranked highest in 70 % of the cases with *benzodiazepines* second with 44,3 %. *Respiratory infections* ranked highest of the diseases and conditions they associated with discomfort (unspecified 37.1 %, viral infections 11.4 %, sore throat 10.0 % and catarrh 4.3 %).

Patient factors associated with discomfort among prescribers.

35.7 % of the doctors mentioned *age* and both the elderly and children were sources of discomfort. *Ethnic origin* was related to discomfort in 7.1 % of cases due to cultural factors in presentation of the illness and also higher levels of patient expectations. A language barrier also could be a source of discomfort. *Social class* was mentioned in 12.9 % of cases, both higher and lower classes. 15.7 % of the doctors said that patients

with some extra knowledge of medical matters were more likely to cause discomfort when prescribing. 21.4 % of the doctors mentioned frequent attenders as a source of discomfort. The doctors also described problems with difficult, aggressive, demanding or manipulative patients. 44.3 % of the doctors reported that they experienced discomfort when they felt they were prescribing *to preserve the doctor-patient relationship*. Then the aim could be to avoid litigation or complaints, avoid damage to the doctor-patient relationship, avoid conflict and keep the peace. Some doctors mentioned prescribing in order to avoid other forms of critical or hostile response, incl. physical assault by a patient.

Doctor factors associated with discomfort among prescribers.

Concerns about drugs were rather usual sources of prescribing discomfort. 51.5 % mentioned side effects, 41.4 % mentioned cost, 40 % dependence, 24.3 % appropriateness/necessity, 17.1 % efficacy and 12.9 % interactions/polypharmacy. The doctors had varied *expectations of themselves*, which made it difficult for them to refuse patients a prescription no matter how inappropriate the request. They felt a need to do something; a need to give something; a need to convey compassion; a need to respond to suffering; and a need not to convey to the patient any feeling of rejection. Feelings of impotence in the face of patient suffering were also said to cause discomfort. Doctors also were disappointed with some roles patients tried to thrust on them; as the role of “shop-keeper” or of a “scribe”. The doctors often wished to live by internal rules associated with their role perception and when such a rule was broken they felt discomfort. They also mentioned personal attributes, such as lack of self-confidence and difficulties in handling uncertainty. A fifth of the group mentioned uncertainty about the diagnosis as a source of discomfort related to prescribing, even though investigation was possible. A fourth mentioned uncertainty about the management of clinical problems and some felt discomfort using prescriptions for non-pharmacological reasons e.g. to get rid of the patient. The doctors were uncomfortable about their prescribing if they felt this would make them look less competent to their peers, if it was in breach of an agreed or understood management policy or if they feared it might create work for their peers or spoil good relations with them. Half of the group mentioned lack of time as a source and a fifth mentioned particular times of the day or the week that caused more discomfort, e.g. Friday nights, Saturday mornings and the end of the day. They also mentioned discomfort being related to their own physical or mental conditions, such as feeling tired or depressed at the time of consulting. Other reasons mentioned were lack of treatment alternatives, lack of information and difficulties relating to the use of computers. 28.6 % of the group felt their prescribing was influenced by a dramatic episode in their medical career, e.g. a missed diagnosis or an adverse drug reaction.

In the discussion, the author cites Festinger, who postulated that any decision involving the choice between two or more alternatives resulted in some “cognitive dissonance”, which could possibly explain the study objects’ discomfort. Thus, the decision process in the consultation is a complex one where clinical and social considerations interact. Social influences, such as the perceived risk of damaging the doctor-patient relationship by withholding a prescription, should be considered as well as the clinical benefits and risks of therapy.

Conclusion. The author concludes that interventions to deal with social and logistic influences on the prescribing decision might be at least as effective in improving the quality of prescribing and possibly more effective than the usual appeal to rational prescribing (appropriate, safe, effective, economic). Consequently doctors need strategies to deal with uncertainty and additional training in communication skills. The findings of this study also suggest that a change in the way doctors manage time would affect prescribing decisions.

Results

I. Kumar S, Little P, Britten N.
The aim was to understand why GPs prescribe antibiotics for some cases of sore throat and to explore the factors that influence their prescribing.
• GPs manage their uncertainty by prescribing an antibiotic or taking throat swabs. • Some GPs often bear in mind past experiences of their patient's misfortune which influence their decisions and make them annoyed and uncertain. • Very experienced GPs described how they could switch from acting as infrequent to frequent prescribers of antibiotics in different contexts, e.g. when they felt under pressure or were running late as duty doctors. • GPs think their holistic duty to preserve the doctor-patient relationship is more important than rational prescribing.
II. Björnsdóttir I, Hansen EH.
The aim was to understand GPs' perceived reasons for prescribing and their decision-making when deciding whether or not to prescribe antibiotics.
• Non-clinical factors seem at least as important as clinical ones in decision-making regarding antibiotic prescribing. • The GPs' primary purpose is to help the patient to maintain the level of daily life activities as planned. Another goal is to make the patient depart and if the doctor lacks time, resources or is too tired to convince the patient, an antibiotic prescription is the solution. • The third goal is to respect the patient's autonomy and let him/her decide about the prescription. • Most doctors describe experience of uncertainty in the diagnostic process of infections and therefore tend to treat if in doubt.
III. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF.
The aim was to identify those aspects of physician-patient communication that influence physicians to prescribe antibiotics for respiratory infections and measure unnecessary use.
• Patients strongly influence the antibiotic prescribing of physicians by using a number of different behaviours. • According to CDC guidelines 80 % of antibiotic prescriptions observed were unnecessary from the biomedical point of view. • The doctors are poorly equipped to resist patient pressures and therefore the patients play a powerful role in the interaction, which is only to an uncertain degree controlled by the doctor.
IV. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N.
The aim was to better understand reasons for antibiotics being prescribed for sore throats despite well-known evidence that they are generally of little help.
• The doctors felt trying to change patients' beliefs and expectations in the consultation was often time consuming and inappreciative. • The doctors thought that antibiotic prescriptions could have an important impact on the therapeutic power of the doctor-patient relationship. • The doctors' rather usual explanations for non-pharmacological antibiotic prescriptions were pressure

of time, not having the energy to resist demand, fear of medico-legal problems if the patient deteriorated, and being perceived as having done nothing for patients. • A third of the patients expected antibiotics and all of them but one got a prescription. • The patients thought GPs attempted to sense patients' flexibility and prescribe antibiotics as soon as they perceived resistance to a non-antibiotic approach.
V. Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ.
The aim of this study was to explore whether a variety of pressures highlighted by at that time recent developments in primary care were actually felt as concerns by GPs and to determine whether GPs' perception of these pressures appeared to influence their prescribing decisions. • 63.3 % of the doctors had sometimes felt guilty when prescribing for a non-pharmacological reason. • 56.6 % felt sometimes using a prescription to finish a consultation was the only way to get through a busy clinic. • 52 % felt that judicious prescription for a non pharmacological reason was a useful method of coping with routine stresses of general practice.
VI. Bradley CP.
The aim was to explore whether doctors experience discomfort when making decisions about prescribing and to determine (a) if the discomfort is related to particular drugs or to particular patient characteristics such as morbidity and (b) the reasons why doctors made their decisions and why they felt uncomfortable. • 70 % of the doctors remembered instances where the decision process for an antibiotic prescription caused them some discomfort. • Of the diseases involved, respiratory infections scored highest in 37% of cases. • 44 % of doctors reported discomfort when they felt they were prescribing to preserve the doctor-patient relationship. • The doctors felt a need to do something; a need to give something; a need to convey compassion; a need to respond to suffering; and a need not to convey to the patient any feeling of rejection. • A fifth of the group mentioned uncertainty about the diagnosis as a source of discomfort related to prescribing, even though investigation was possible. • A fourth of the group mentioned uncertainty about the management of clinical problems and some felt discomfort using prescriptions for non-pharmacological reasons as e.g. to finish a consultation. • Half of the group mentioned lack of time as a source and a fifth mentioned particular times of the day or the week that caused more discomfort. • 29 % of the group felt their prescribing was influenced by a dramatic episode in their medical career, e.g. a missed diagnosis or an adverse drug reaction. • The doctors often wished to live by internal rules associated with their role perception and when such a rule was broken they felt discomfort.

Discussion

These six papers I appraised as the best ones for my purpose do not directly focus on doctors' occupational stress but they clearly show how demanding the GP's every day situation can be, because of the magnitude of tasks, exacting time schedules, patient pressure and claims as well as the large number of difficult decisions they have to make (cognitive dissonance). The papers concentrate more on the decision process and related stressors. Nonetheless doctors' occupational stress is a well-known reality although not related to GPs' antibiotic prescriptions, and doctors stress-related illnesses and problems are fairly well documented.¹⁵⁻¹⁶ The reviewer's focus, on the other hand, is the stressful events in the decision making process and the coping strategies most commonly

applied. The reason for studying GPs was the fact that 80-90 % of the antibiotic consumption is outside of hospitals and most of those prescriptions are by GPs. The framing of the services, traditions, staff issues, education and well being of GPs is rather different in various countries. In England the tempo of consultations is considerably higher than in the Nordic countries and the patients' demands presumably differ too. These circumstances should be allowed for in interpreting the results of the cited studies, since most of the studies usable for the purpose of the review originated in Great Britain. It would have been preferable to have more studies that used quantitative methods, but I did not succeed in finding any usable quantitative studies on doctors' coping at work. Only paper V presents a quantitative study, although paper VI partly uses quantitative methods. By interviews with doctors, their general attitude can be revealed. As was shown in article II, however, that attitude often does not translate into practice. Therefore paper III renders a very important result because of the study design (a qualitative multimethod comparative observational case study) and in articles I and IV there are certain comparisons of general and case-specific attitudes, which are also controlled for in paper V without confirming consistence in results.

The results indicate that the decision process of antibiotic prescriptions is often very complicated and non-clinical (irrational) reasons sometimes appear to be important. Grouped by disease classification, encounters for respiratory infections are usually the most frequent in general practice and of the two thirds in study III, who consulted for respiratory infections and received an antibiotic prescription, 80 % got an unnecessary prescription according to CDC guidelines. Nearly all the GPs asked considered antibiotic use too extensive.

The non-clinical reasons mentioned for antibiotic prescribing were *uncertainty* about the exact diagnosis or treatment,^{9-10,13} concern as to the time schedule (time pressure, workload),^{9-10,12} worries because of past experience of patient's misfortune owing to infections,⁹ concern about not having the energy to resist demand,¹² fear of medico-legal problems if the patient deteriorated,¹² fear of being perceived as having done nothing for patients¹² and worries about endangering the therapeutic effect of the doctor-patient relationship.¹² Most GPs thought that their holistic duty was to preserve the doctor-patient relationship and it was more important than rational prescribing.⁹⁻¹⁰ The doctors felt a need to do something,¹⁴ to give something,¹⁴ to convey compassion,¹⁴ to respond to suffering,¹⁴ not to convey to the patient any feeling of rejection,¹⁴ and a need to help patients to maintain their level of daily activities.¹⁰ The doctors rationalised their non-pharmacological antibiotic prescribing by finding appropriate symptoms to record, by stressing the existence of the patients' chronic diseases, their history of previous infections and the desire to cover the patient just in case.¹¹

The researchers concluded that most patients obtained what they wanted and that doctors were poorly equipped to resist patient pressure, which very often is appreciable. On the other hand, the GPs wanted to live up to their own ambitions and not to be devaluated by their patients. Therefore their professional pride is easily lacerated and most of the reasons for non-clinical prescribing can act as stressors. There is a good reason to deduce that the word discomfort is used in the articles as a synonym for stress.

After this survey, the conclusion might be that the act of prescribing antibiotics can in some cases be a coping strategy for the medical doctor. This strategy is used to solve miscellaneous kinds of discomfort, uncertainty, pressure and stress in the decision-making process. This style of coping is very unfortunate because it simultaneously often induces discomfort by injuring professional pride and does not harmonise with evidence-based medicine, which medical students and doctors are taught to apply. Unnecessary antibiotic use has several obvious shortcomings, e.g. cost, adverse effects, resistance, and consumption of time. Yet it should not be totally condemned because the holistic approach is very important in patient care. Evidence-based medicine, however, represents the biomedical approach, which apparently is not well-suited to counteract the effect of stress and stress problems in our communities. On the other hand, the non-clinical use of antibiotics is an excellent example of medicalisation.¹⁷

There is an overt need for more information to doctors about the essence of the clinical decision process and we need further research as to how doctors can be equipped to better resist patient pressure, cope with worries and uncertainty and simultaneously preserve a good doctor-patient relationship. The most efficient method for decreasing unnecessary antibiotic prescribing is to direct trustworthy information and advice towards the public.

References

1. World Health Organisation. Overcoming Antimicrobial Resistance. Geneva: WHO, 2000.
2. Boyce JM. Consequences of inaction: importance of infection control practices. *Clin Infect Dis* 2001;33 (Suppl. 3):133-7.
3. Arason VA, Kristinsson KG, Sigurdsson JA, Stefansdottir G, Mölstad S, Gudmundsson S. Do antimicrobials increase the carriage rate of penicillin resistant pneumococci in children? Cross sectional prevalence study. *BMJ* 1996;313:397-91.
4. Health Statistics in the Nordic Countries 2000. NOMESCO, Copenhagen 2002.
5. Pétursson P. What determines a family doctor's prescribing habits for antibiotics? A comparative study on doctor's own behaviour in two different settings. *Scand J Prim Health Care* 1996;14:196-202.
6. Lazarus RS. A cognitively oriented psychologist looks at biofeedback. *American Psychologist* 1975;30:553-61.
7. Ogden J. Health Psychology. Buckingham – Philadelphia: Open University Press, 2003.
8. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer, 1984.
9. Kumar S, Little P, Britten N. Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *BMJ* 2003;326:138-143.
10. Björnsdóttir I, Hansen EH. Intentions, strategies and uncertainty inherent in antibiotic prescribing. *Eur J Gen Pract* 2002;8:18-24.
11. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF. Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. *J Fam Pract* 2001;50:853-8.

12. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N. Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *BMJ* 1998;317:637-42.
13. Weiss MC, Fitzpatrick R, Scott DK, Goldacre MJ. Pressures on the general practitioner and decisions to prescribe. *Fam Pract* 1996;13:432-8.
14. Bradley CP. Factors which influence the decision whether or not to prescribe: the dilemma facing general practitioners. *Br J Gen Pract* 1992;42:454-8. [The same study also is published as: Bradley CP. Uncomfortable prescribing decisions: a critical incident study. *BMJ* 1992;304:294-6.]
15. Sutherland VJ, Cooper CL. Identifying distress among general practitioners: predictors of psychological ill-health and job dissatisfaction. *Soc Sci Med* 1993;37:575-81.
16. Bakker BB, Schaufeli WB, Sixma HJ, Bosveld W, van Dierendonck D. Patient demands, lack of reciprocity, and burnout: a five-year longitudinal study among general practitioners. *J Organiz Behav* 2000;21:425-41.
17. Moynihan R, Smith R. Too much medicine? Almost certainly. *BMJ* 2002;324:859-60.

Nordic School of Public Health
Box 12133, SE-402 42 Göteborg
Visiting address: Nya Varvet, Building 25
Phone: +46 (0)31 69 39 00, Fax: +46 (0)31 69 17 77
E-mail: administration@nhv.se
www.nhv.se