Factors that Influence General Practitioner Diagnostic Decision-Making and a Comparison with Other Stakeholders

By

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Abstract

Background

An analysis of Accident Compensation Corporation claims shows "inconsistent and inadequate diagnoses" by health care providers. Diagnostic performance is a result of two independent parameters, namely discrimination (accuracy) and decision (bias). Bias is related to the medical practitioner's perception of the costs and benefits of making one choice over another. Bias may be statistical, sociological, political, biological or psychological in nature. This study investigated the factors that potentially bias diagnostic decision-making by general practitioners and the subjective value placed on these factors by different stakeholder groups in society.

Methods

Phase 1 of the study used focus groups of standard setters for general practitioners to identify factors that influenced diagnostic decision-making in general practice. These factors were evaluated for importance and desirability using standard Delphi methodology and Rasch analysis. Phase 2 of the study evaluated the importance and desirability of the factors identified in Phase 1 for influencing decision making as judged by significant health care stakeholder groups in New Zealand. Participant response was via questionnaire analysed by the Rasch Model.

Results

Thirty-nine factors were identified that potentially biased diagnostic decision-making in general practice. The measurements of, particularly, desirability have high

reproducibility across stakeholder groups and high positive loading for the first principal component consistent with construct validity. No stakeholder group identifies factors consistent with Bayes' theorem of diagnostic reasoning as being the only desirable influence on diagnosis. There is considerable categorical homogeneity between the stakeholder groups GP, GPACC, P, RACCSLT and RACCSST.

Conclusions

The findings of this and other studies challenge the current biomedical paradigm, indicating a less than Bayesian approach to medical decision-making. A social constructivist model, incorporating non-Bayesian factors into the definition of "illness" versus "disease", may be more representative of reality. A social constructivist model of medicine is incompatible with the current legislatory and administrative framework within which the Accident Compensation Corporation and a number of other medical organisations operate.

Dedication

To Hugh, Freyia (born 2002)**, Lachlan** (born 2003)**,**
and "Aunty" Lola

With much love

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List of Abbreviations

Abbreviation	Full Name
ACC	Accident Compensation Corporation
ACCMA	ACC Medical Advisors
ACCSMT	ACC Senior Management Team
ALS	Amyotrophic Lateral Sclerosis
CI	Confidence interval
CM	Case Manager
DIPOCCMED	Medical Practitioners who have graduated with a postgraduate Diploma of Occupational Medicine, University of Auckland
DRSL	Dispute Resolution Services Limited
Drs	Doctors
DSM	Diagnostic and Statistical Manual
DTC	Direct to consumer marketing
EBM	Evidence-Based Medicine
FHSAA	(UK) Family Health Services Appeal Authority
GP	General Practitioner
GPACC	General Practitioner -ACC
GPSS	General Practitioner – Standard Setters
GROP	Getting rid of Patients
HDC	Health and Disability Commissioner
HMO	Health Maintenance Organisation
IPA	Independent Practitioners Association

JAMA	Journal of the American Medical Association
JNC V	The V^{th} (5^{th}) Joint National Committee
MAPWRGPI	Ministerial Advisory Panel on Work-related Gradual Process Disease or Infection
MOH	Ministry of Health
MP	Members Health Committee, NZ House of Representatives
NHCS	National Health Care System
NZ	New Zealand
OCCMED	Occupational Medicine Physicians
OR	Odds ratio
P	Patient
RACCSLT	Recipients of ACC Services – Long term
RACSST	Recipients of ACC Services – Short term
RACP	Royal Australasian College of Physicians
SDT	Signal Detection Theory
UK	United Kingdom

1. Introduction

"If an angel were sent by God to drive out of the temple of science all those people [in it for reasons other than their love of truth] it would become embarrassingly empty."

(Albert Einstein, quoted in Society for Social Responsibility in Science newsletter, 1953, p.8) – from "The myth of clinical judgement" (Biklen, 1988)

New Zealand has a unique system of accident compensation, which provides personal injury cover for all its citizens, residents and temporary visitors from overseas. In return, those injured do not have the right to sue for personal injury other than for exemplary damages, i.e. there is a prohibition of tort liability.

Legislative control of accident compensation in New Zealand is through the Injury Prevention, Rehabilitation and Compensation Act 2001. The Accident Compensation Corporation (ACC) is a Crown entity which administers the scheme in accordance with the Act. Key responsibilities of the ACC are to determine whether claims for injury are covered by the scheme and to provide entitlements to those who are eligible. Entitlements for people who are eligible can be significant. The ACC assists with the costs of treatment as well as other rehabilitation and support services e.g. vocational re-training and home help. In addition, ACC provides weekly compensation for lost earnings and lump sum or independence allowances as regular payments for cases of permanent impairment.

For the financial year ending 30 June 2005 the total claims cost (both rehabilitation and compensation expenditure) was $(NZ) 2,734.8 million. In addition, the ACC claims liability was estimated at $11,384 million. The ACC claims liability is an estimate of

the total amount of future claims payments for all past injuries (projected future cost of existing claimants). The latter figure excludes ACC's expected investment returns. During the 2004-2005 financial year, ACC paid for 2.3 million GP visits (Accident Compensation Corporation, 2005).

In order to make a claim, applicants attend an approved treatment provider, usually a General Practitioner (GP) for evaluation. Initial information relating to the claim is collected using an ACC 45 Injury Claim Form. This form requires the approved treatment provider to enter a diagnosis (usually in the form of a numeric code) and the patient to provide a description of how the injury occurred. The information gathered is assessed and, in most cases, forms the basis of a decision as to the applicant's eligibility for entitlement.

An analysis of ACC claims shows "inconsistent and inadequate diagnoses" by health care providers (Gorman, 1997a, 1997b; Gorman, Jarvie, & Robinson, 1999). This finding has significant implications for both the applicant and for the nation given the importance of the diagnosis in determining eligibility for the compensation scheme. The implications for the nation financially can be appreciated in terms of the ACC's yearly total claims cost and the claim liability.

The effects of a misdiagnosis on the applicant can include loss of employment (both in the short and long term), limitation of employment options and a negative impact on health due to a worsened illness belief (The Royal Australasian College of Physicians, 2001). There is evidence of adverse social consequences for the applicant and for the applicant's family and friends (Centre for Research on Work, 2002). Morbidity can

also be worsened by compensation (The Royal Australasian College of Physicians, 2001). Inadequate treatment may follow from inadequate diagnosis. Such individual effects are also clearly significant for the nation as a whole – financially and socially.

As in other countries, management of medical error has increasingly been targeted as an area for improvement in New Zealand. The application of a systems and non-punitive approach to error management has been encouraged (Cacciabue, 2004; Reason, 1991, 1997; Runciman et al., 1993; Wagenaar, Hudson, & Reason, 1990). Traditional investigation of error has focused on the individual and occurs in the context of investigation following an adverse event. The most likely reason for focus on the individual is that it is his/her actions which can, and often do, have immediate and profound adverse consequences. A systems approach, however, views active failures as consequences rather than causes of adverse events. That is, a systems approach asks us to step back from the individual error and violation and examine the factors which lead to or induced the error or violation. Therefore, in this approach, medical error management in the context of ACC claims is not possible without a detailed understanding of the underlying factors that underpin diagnostic performance in this setting.

1.1 Diagnostic Performance

Signal Detection Theory (SDT) provides an analytical framework within which choice performance can be interpreted. McNichol calls it a, "theory about the way in which choices are made" (McNicol, 1972).

Choice (in this case, diagnostic) performance is a result of two independent parameters, discrimination (accuracy) and decision (bias). Accuracy, within the context of SDT, is defined as the ability to discriminate between alternative states – or alternative diagnoses in this setting. This ability is believed to result from a number of factors, including training and experience. Independent of the ability to discriminate between options, a medical practitioner will also be influenced by factors which bias towards choosing one diagnostic alternative over another. Bias is related to the medical practitioner's perception of the costs and benefits of making one choice over another. Bias-related factors may be statistical, sociological, political, biological or psychological in nature.

At present there appear to be a number of assumptions on which error prevention strategies are based. Much pre-event interventional resource is focussed on very tightly targeted, context-specific training and education – for example, diagnostic guidelines. Training and education to provide knowledge or raise awareness is an appropriate intervention to rectify knowledge-based mistakes where the diagnostic error involves accuracy. However, this intervention is not appropriate when addressing other kinds of errors. If the diagnostic error occurs in the context of bias then education is likely to be ineffective. Education will not address the underlying factors leading to the diagnostic error in this case because these failures do not arise through a lack of knowledge and/or lack of awareness.

Take, for example, a GP who documents a work-related gradual process carpal tunnel syndrome on the ACC 45 Injury Claim Form. Subsequent investigation by an occupational medicine physician finds little evidence to support work-relatedness, the

work tasks involved not having been shown to cause carpal tunnel syndrome, and the individual having significant non-work-related risk factors (diabetes and obesity) and bilateral carpal involvement.

Education via diagnostic guidelines will improve diagnostic performance in this case if the GP lacks awareness of work and non-work-related risk factors for carpal tunnel syndrome and the evidence-based approach to determining causality. However, diagnostic guidelines will not improve diagnostic performance if the GP has documented a diagnosis which entitles the applicant to assistance under the accident compensation scheme because he or she believes that this is the only way in which the applicant will receive appropriate and timely medical treatment from the public health system.

In research relating to error events in aircraft maintenance, knowledge-based mistakes accounted for 13.1% of all events studied (Hobbs & Williamson, 2003). An analysis of all traumatic work-related fatalities in Australia between 1982 and 1984 (Freyer, Williamson, & Cairns, 1997) also indicated that knowledge-based errors were uncommon, accounting for only 4% of events. While extrapolation from one context to another can be problematic, it is not unreasonable on the basis of available evidence to suggest that knowledge-based mistakes are unlikely to be the most dominant form of medical error and that perhaps a disproportionate resource is allocated to their remedy.

GPs exist within a system consisting of a number of stakeholder groups with different values and expectations from government level through to the patient (Char, 2002; Dyson, 2002; New Zealand Government, 2003). Often these differences lead to

disagreements. In 1999 Dispute Resolution Services Limited (DRSL) was established to provide an independent dispute resolution service within the prescribed statutory framework of ACC legislation. In the 2005 Annual Report, ACC documents 4,699 claimant reviews and 671 District Court claimant appeals for 2004-2005. The percentages that were either favourable to ACC or withdrawn by the claimant were 78% and 82%, respectively (Accident Compensation Corporation, 2005). Worryingly, there is medical evidence to suggest that dispute in the context of a compensation decision is directly detrimental to health (The Royal Australasian College of Physicians, 2001).

Bassett, Iyer and Kazanjian (2000, p. 524) argue that

> [t]o understand the origin and significance of clinical standards requires, in turn, an understanding of professional attitudes and beliefs, of institutionalized structures and routines, and of community context.

This constitutes the underlying rationale of this study. In discussing defensive medicine in the context of obstetric care they write, "[d]efensive medicine as a complex social product will require an equally complex social solution" (p. 534).

Pellegrino (1993) underscores this complexity in his article "Societal duty and moral complicity: the physician's dilemma of divided loyalty". The thrust of his argument is that medical practitioners should gain an understanding of the points at which "…law, social convention, medical ethics, and expediency converge" (p. 388). Increasingly the medical practitioner has a role in not only the wellbeing of each individual patient but in the attainment of important societal goals. His view is that medical practitioners cannot distance themselves from public policy because: not to participate at all is to deprive

society and a large group of persons of the potential benefits of medical knowledge; to participate without moral questioning is to subvert conscience as well as medical ethics to legal and political purpose. Neither alternative is defensible in democratic societies. Such societies are impelled to use reliable medical expertise to meet certain social needs while at the same time protecting the human and personal rights of their citizens. (p. 388).

However, an understanding of the values of medical practitioners alone is insufficient to guide public policy-making. Ward Edwards makes a number of noteworthy points in his discussion of measurement for social decision-making (W. Edwards, 1977). Public policy, he argues, should be based on values. Ideally, the public institution responsible for the design and implementation of public policy evaluates the weight that "the public" places on various issues prior to formulation of any given policy. That is, the values represented should be public values, in the sense that they should reflect some kind of social consensus or, at least, an aggregation of individual views. In a democracy, individuals are entitled to disagree about values and to have these disagreements respected and considered in public decision-making. How this occurs is the thrust of Edwards' paper. The fundamental idea is that:

> …..arguments over public policy typically turn out to hinge on disagreements about values normally, such disagreements are fought out in the context of specific decisions, over and over again at enormous social cost each time another decision must be made (p. 249)

Objective means of making explicit the values of stakeholders should be used to guide pre-policy formulation negotiation, whilst taking into account individual differences in

values and relevant expertise, as well as any feasibility problems. The process of showing how and to what extent stakeholder values differ can frequently, in itself, reduce the extent of such differences. Such a process:

> … permits regulatory or administrative agencies and other public decision-making organizations to shift their attention from specific actions to the values these actions serve and to the decision-making mechanisms that implement these values. By explicitly negotiating about, agreeing on, and (if appropriate) publicizing a set of values, a decision-making organization can, in effect, inform those affected by its decisions about its ground rules. This can often remove the uncertainty inherent in planning and can often eliminate the need for costly, time-consuming, case-by-case adversary or negotiating proceedings. Thus, explicit social policies can be defined and implemented with more efficiency and less ambiguity. Moreover, such policies can easily be changed in response to new circumstances of changing value systems, and information about such changes can be easily, efficiently, and explicitly disseminated, greatly easing the task of implementing policy change (p. 250).

Knowledge of how external factors can influence diagnostic outcome can lead to more effective and efficient legislation and public policy formulation (Litaker, Koroukian, & Love, 2005).

1.2 Factors that may Bias Doctors

Medical schools traditionally teach students that the diagnosis of disease is founded on three essential components. These are, in descending order, the history, the examination findings and the results of any investigations undertaken. More recently,

with the advent of what is often referred to as a "prescriptive" model of medicine, this clinical information is viewed in the context of the probability of the disease and a statistical diagnostic decision is undertaken. This approach is also referred to as Bayes' theorem for diagnostic reasoning. The post-test probability of disease (that on which a diagnosis should be based) is a function of the pre-test probability and the strength of the evidence, measured by the likelihood ratio (Elstein & Schwarz, 2002). Medical school curricula therefore traditionally focus on teaching students the necessary skills involved in eliciting clinical information and recognising presentations and prevalence of disease.

However, a contrary viewpoint is the "descriptive" one whereby the practice of medicine is viewed as a social construct and, as such, there will be non-medical influences on medical decision-making – that is, variability in decision-making is not entirely accounted for by strictly rational Bayesian inference (the common prescriptive model for medical decision-making) (McKinlay, Potter, & Feldman, 1996).

It is clear from the relevant medical literature, which comprises mostly observational studies, that medical practitioners are influenced by factors beyond the confines of the purely biomedical. Nevertheless, it is equally clear that few studies are methodologically sound enough to withstand rigorous scrutiny because of confounding variables, questionnaire-based study design, or simulated cases rather than actual clinical cases.

One aspect of medical practice that has been intensively examined for factors that influence doctors is prescribing behaviour. While this concerns treatment rather than

diagnosis, there is little to suggest that the same influencing factors would not apply in each context. In fact Davis, Yee & Millar (1994, p. 367) offer the opinion that "[p]rescribing exemplifies in general practice the wider issues raised in the literature on medical practice variation".

Following his study of 94 general practitioners and the factors which influenced their decision whether or not to prescribe, Bradley concluded,

> [t]he results of this study support earlier work on the influence of social factors on prescribing decisions and shows that this influence affects the entire range of clinical problems. (Bradley, 1992, p. 454)

In a 1997 editorial for the British Medical Journal, Greenhalgh and Gill (1997, p. 1483) wrote:

> …the act of issuing a prescription is … open to biomedical, historical, psychosocial, and commercial influences, no aspect of which can be singled out as the 'cause' of non-rational prescribing. The search should continue for methods to measure the interplay of these disparate factors on the decision to prescribe.

This need to address the "structural, social, and symbolic forces that promote non-scientific prescribing practices amongst community physicians" was acknowledged by social scientists almost 20 years ago (Schwartz, Soumerai, & Avorn, 1989, p. 577).

Perhaps Howie's study reported in the British Medical Journal in 1976 (Howie), despite its methodological limitations, is the most illustrative of the influence of non-medical

factors on decision-making. Howie asked 1000 GPs (593 usable respondents) about whether or not they would prescribe antibiotics in a number of different clinical situations. The only differences in clinical information provided were in patient social and psychological history. Parts of his Table 1 (p. 1063) are reproduced below.

Table 1.1 Relationship of Antibiotic Prescribing by 593 Doctors toVariations in Psychological/Social History in Patients with Matched Physical Symptoms and Signs of Respiratory Illness (from Howie, 1976, p. 1063)

Psychological/Social History A		**Psychological/Social History B**		
Details	**% doctors prescribing antibiotic**	**Details**	**% doctors prescribing antibiotic**	**P value**
Son (age 12) of newly appointed district medical officer	16	Son (age 12) of newly appointed district hospital consultant surgeon	24	<0.05
Child (age 14) of local postman	42	Child (age 14) of postman who lives at furthest distant point of practice	57	<0.01
University student (age 18)	23	University student (age 18) due to sit degree examinations next week	69	<0.01
Mother (age 28) of four children; all children are now of school age	30	Mother (age 28) of four children; two youngest are 18-month-old twins with which she is barely managing to cope	51	<0.01
School teacher (age 30)	40	School teacher (age 30), interview for promotion due in 48 hrs time	67	<0.01
Elder child (age 6) of two; parents both work in husband's joinery firm	36	Elder child (age 6) of two; parents both work in husband's joinery firm. Younger child in hospital with pneumonia	78	<0.01
Mother (age 35) of teenage sons	22	Mother (age 35) of teenage sons due to go abroad on holiday next weekend	61	<0.01

No literature review could hope to adequately address all the issues relating to factors that influence diagnostic decision-making. The literature is enormous, which is in itself thought-provoking, but often tenuous The methodology frequently has limitations – including secondary data analysis (for example, medical records), written case vignettes (simulated rather than actual performance), small sample size, and confounded analysis (for a review see for example, (J. A. Clark, Potter, & McKinlay, 1991). Therefore, this

review of the literature is somewhat personal and selective – the aim being to tantalise the reader with some key and/or interesting issues described in the literature which are rarely, if ever, raised in the context of current medical education.

As will become apparent from the methodology of the research undertaken for this thesis, the Introductory section has been organised in terms of the influencing factors identified by New Zealand general practitioners during focus group sessions.

1.2.1 Clinical Diagnosis

A Bayesian-type model of clinical decision-making assumes that evidence in the form of symptoms (history), signs (examination) and diagnostic tests is presented to a medical practitioner, who associates this evidence with the *a priori* probability that a particular diagnosis may present and arrives at a diagnosis.

Platt (1947) claimed that in the majority of patients history alone should determine the diagnosis. This theory was tested by Hampton et al (Hampton, Harrison, Mitchell, Prichard, & Seymour, 1975), who asked physicians in a medical outpatient clinic to record the diagnosis (three differential diagnoses were allowed, each with a confidence score, or a diagnosis of "unknown") for 80 patients after history, again after physical examination and, lastly, after receiving the results of any investigations. The physician was required to rank any investigations ordered as essential, desirable or routine.

In only six cases was the initial diagnosis changed as the result of findings from physical examination. Seven diagnoses were changed as the result of investigations. In

fifty five patients the physical examination did not change the physician's confidence in the diagnosis. In nineteen patients, physical examination increased confidence and in the remaining six patients it decreased confidence in the diagnosis.

Of the 160 "essential" investigations, 40% were abnormal. Of the 116 "desirable" investigations, 26% were abnormal and, of the 202 considered "routine", only 10% were abnormal. Among the different physicians the highest yield of abnormal investigations was 34% of the total requested and the lowest was 11%. Interestingly, they found that the physician's confidence in the diagnosis was not reflected in the use of investigations. In the 41 patients where the physician had made a confident diagnosis an average of 5.5 investigations was ordered (21% of which were abnormal). In the 23 cases where the physician was not confident, an average of 5.5 investigations was also ordered (31% of which were abnormal). The conclusions of this study focussed on the need to improve skills in communication and history-taking at the undergraduate level.

This study and its findings were essentially duplicated by Sandler (Sandler, 1980) in a subsequent two-year study of 630 outpatients. Sandler further clarified that history was the major determining factor in the diagnosis of cardiovascular, neurological, respiratory and "miscellaneous" disease. History was least helpful in diagnosing alimentary disease. Examination was most helpful in diagnosing respiratory disease and least helpful in alimentary problems. For investigations, the overall incidence of positive blood or urine tests was less than 5%, and when considered in relation to the primary condition for which the patient was referred, these were of diagnostic value in even less.

Similarly, Ma, Rush, Godfrey & Gaddis (2003) found that while arterial blood gas (ABG) sampling was widely considered to be essential in the initial diagnostic evaluation of patients with suspected diabetic ketoacidosis, of 200 cases studied, the diagnosis was changed by results of ABGs in only two cases (1%; 95% CI=0.3% to 3.6%), altered treatment in only seven cases (3.5%; 95% CI=1.7%-7.1%) and changed final patient disposition in only two cases (1%; 95% CI=0.3%-3.6%).

1.2.2 Patient History

Interestingly, while history would appear to be considered the most important source of information for making diagnoses, very little sound research exists on its reliability or accuracy in this context.

In one study, nineteen medical students and twelve expert clinicians were provided with a head and shoulders photograph of a patient (Brooks, Leblanc, & Norman, 2000). The majority of photographs were taken from medical textbooks and each photograph showed clear clinical signs, for example, a butterfly rash characteristic of lupus erythematosus. Patient histories consistent with the diagnosis under investigation were devised by other, non-participant, physicians. The investigators attempted to achieve situations whereby the history and the photograph would contribute about equally to the diagnosis. Diagnostic accuracy is shown graphically in the results and was in the order of 20% for expert physicians and 10% for students when both groups were provided with a history alone. Diagnostic accuracy increased significantly when the history was presented alongside the photograph by 41% for experts and by 30% for students. When the investigators provided a history, photograph, and described the visible feature

shown in the photograph (for example, a butterfly rash) the diagnostic accuracy rose by a further 19% in experts and by 20% for students.

De Dombal (1989), discussing the need for computer-aided decision support in clinical medicine, describes a study undertaken by Gill et al in 1973 (1973) – "one fifth of doctors' questions were phrased so vaguely that three observers could not understand what question had been asked! One-sixth of patients' answers were so vague that the observers could not agree whether the patient had said yes or no!" (p. 13).

1.2.3 Examination Findings

One of the earliest papers examining the clinical aspects of diagnosis was by Dr. C M Fletcher from the Pneumoconiosis Research Unit, Llandough Hospital, Cardiff (Fletcher, 1952). His astonishment at the results of his experiments is apparent in his writing:

> These then were the patients upon whom we sought to study the observer error in the physical signs of the chest and from whom I shall attempt to derive some hesitant conclusions regarding the value of certain signs in the diagnosis of emphysema. I have chosen to study signs which were mentioned by five out of six standard textbooks as being present in case of emphysema. They are: barrel chest, wide sub-costal angle, kyphosis, use of accessory muscles of respiration, impaired chest expansion, movement en bloc, generalised hyper-resonance, impaired liver dullness, impaired cardiac dullness, absent apical impulse, impaired breath sounds.
>
> I will now consider the differences between the observers in determining the presence or absence of these signs and in their final diagnosis of emphysema. Most of us assume that, except in occasional borderline cases, the signs we

> observe are present and those which we do not observe are absent. However, experiment does not support this view and great disparities become apparent.
>
> (p. 579).

He further states:

> Presumably so little attention as been given by clinicians to the problem of error in assessing physical signs, because they seldom hunt in couples of equal seniority. But it is nevertheless surprising and I know of no account in the literature of any previous experimental investigation of error in assessing physical signs in the chest.
>
> (p. 580).

And finally his conclusion:

> With regard to the clinical diagnosis of emphysema, my conclusion is that it cannot be made with any confidence (at least by a single observer) except perhaps in the most advanced cases, so that there is little hope of the clinician being able to diagnose the earlier stages. For this he must turn to the objective methods of the physiologist to help him in his perplexity.
>
> (p. 584)

Koran (1975) examined studies assessing reliability of clinical methods, data and judgements, reviewing only those in which fully trained medical practitioners independently examined the same patient within a timeframe when signs and symptoms would remain stable. He correctly identified that his analysis was hindered by the shortcomings of the studies reviewed, for example, absence of information such as level of training and experience of study participants, small sample size and unrepresentative samples of physicians,. It was however possible to offer the following tentative conclusions:

- The more diagnostic categories to consider, and the less severe an abnormality, the lower the inter-observer agreement
- The more normal subjects in the study population, the more frequent the agreement – because agreement about normality is usually greater than agreement about abnormality
- Agreement on dichotomous judgments will usually be higher than for judgments regarding continuous or qualitative variables
- Pairs of physicians with more training relevant to the test task will agree more often than pairs of physicians with less training
- Physicians will agree less when discussing qualitative information versus discussions that centre on terminology or criteria.

Sheila Gore (1981) again raised the issue of between-observer variation in assessing clinical trials, although in significantly less detail. Given the high levels of variations between and within observers, the thrust of her argument was that "[a] sign carries no information if doctors assess it differently when re-examining a patient" (p. 40). The issue of reproducibility of clinical examination she believes is inadequately understood and addressed in the clinical trial literature.

In 1990, Gjørup, Hendriksen, Bugge & Jensen (1990) studied three physicians' assessments of the presence or absence of basic physical signs in 201 patients and whether or not these patients appeared to be ill. Kappa values (where in perfect agreement, kappa = +1, and in expected chance agreement, kappa = 0) ranged from 0.09 (elevated body temperature) to 0.88 (impaired consciousness). Kappa values for overall assessment of "generally unwell in appearance" were 0.57, 0.64 and 0.52.

Jarløv (2000) extensively studied observer variation in the diagnosis of thyroid disorders. When medical practitioners had both access to patient history and the opportunity to perform an overall clinical examination, inter-observer Kappa values were in the range of 0.54-0.65, but rose to 0.88-0.93 when the medical practitioners were provided with the results of basic thyroid function tests. Interestingly, scintigraphy and ultrasound added little to the level of agreement concerning functional thyroid status. Clinical estimation of the size and morphology of the thyroid gland showed considerable inter-observer variation, with Kappa values in the range of 0.15-0.70. Corresponding intra-observer values were in the range of 0.02-0.89. These data, as well as that from other studies, were used to provide medical practitioners with a greater understanding of the limitations of clinical diagnosis of goitre. The Jarløv article formed part of a series of similar articles discussed below.

Starting in 1992 (Sackett, 1992), the Journal of the American Medical Association published a series of articles entitled "The Rational Clinical Examination" addressing precision and accuracy issues in history-taking and physical examination for a number of significant medical conditions. Interestingly, many of these articles challenged some of the traditional symptoms and signs used for diagnostic purposes. For example, a review of carpal tunnel syndrome concluded that nocturnal paresthesias, Phalen and Tinel signs, thenar atrophy and two-point vibratory and monofilament sensory testing have "little or no diagnostic value" (D'Arcy & McGee, 2000, p. 3110). Other papers sought to highlight factors affecting accuracy and variation in examination. One example was blood pressure measurement which provided evidence that using too narrow a cuff (a well recognised source of error) resulted in a -8 to +10 mmHg

difference in the magnitude of systolic blood pressure recorded, and simultaneously reported a study indicating that only 25% of primary care physicians owned a large size blood pressure cuff (Reeves, 1995).

Numerous psychological studies have indicated that perception is influenced by context. There are some studies in the literature which, not unexpectedly, indicate that these psychological principles hold true for diagnostic decision-making.

In a paper aptly entitled "Believing is Seeing", LeBlanc, Brooks & Norman (2002) showed that the diagnosis reached was strongly related to the diagnosis suggested. Participants were provided with a head-and-shoulders photograph of a patient with classic features of disease, after which they read a brief history and were provided with a suggested diagnosis which was either correct or incorrect. When the correct diagnosis was suggested, the participants decided more often in favour of the correct diagnosis than when an incorrect diagnosis was provided (77.2% versus 8.8%, $F_{(1,36)} = 239.36$, MSE = 0.160, $p<.05$). Similarly, the participants more often decided on an incorrect diagnosis when one was suggested to them than when the correct diagnosis was provided (65.8% versus 9.8%, $F_{(1,36)} = 238.89$, MSE = 0.140, $p<.05$). This finding is consistent with the results of an earlier study by the same investigators showing that diagnostic decisions were strongly in favour of initial diagnostic suggestions (LeBlanc, Norman, & Brooks, 2001). However, another more unexpected finding of their second study was that diagnostic suggestion also had a strong influence on interpretation of the clinical signs seen in the photographs. For example, normal tanned skin was misinterpreted as jaundice if a diagnosis of liver cancer was suggested, despite the

sclerae clearly being white. Similarly, the parotid swelling of mumps was diagnosed as a "moon face" if Cushing's disease was suggested as the diagnosis.

The interpretation of physical signs occurs early in the patient encounter and appears robust to reinterpretation (LeBlanc, Norman, & Brooks, 2001). Although earlier work was done using medical students and resident doctors, more recent research suggests that diagnostic suggestion is also a powerful influence in more senior clinicians (LeBlanc, Dore, Norman, & Brooks, 2004).

Given increasing understanding about the qualitative aspects of clinical examination its role is best summarised by Fitzgerald (1990), who wrote "…it is imperative to scrupulously re-examine the role of the physical examination in modern diagnosis. Only in this way will we be able to preserve and expand the best of physical diagnosis and discard the remainder as historical remnants of an earlier, albeit, simpler, time" (p. 381).

1.2.4 Results of Investigations

Context not only influences perception of clinical signs but it also influences interpretation of investigations. Berbaum et al. (1986) found that knowledge of clinical information significantly improved perception when viewing chest x-rays, rather than simply improving decision-making. In a study on detection of fractures (Berbaum et al., 1988), Berbaum found that supplying clinical information resulted in X-ray interpretation that was significantly more accurate than interpretations where no clinical

clues were available to the radiologist – that is, there was a significant improvement in the true positive rate without an accompanying increase in the false alarm rate.

There is, however, a danger in interpreting tests in the context of tentative pre-determination of the diagnosis. Put another way, a medical practitioner must make two independent decisions. First, is the test positive or negative? Second, does the person have the disease or not? If the decisions are not made independently, bias can affect the accuracy of the test (Ranshohoff & Feinstein, 1978; Swets, 1996). Bias can occur in the work-up of a patient. If a test comes through as negative, additional tests may not be ordered, causing a diagnosis to be missed – resulting in under diagnosis. Bias can also occur after the diagnosis is established if post-diagnosis tests are interpreted in light of that diagnosis.

Interestingly, the issue of bias in interpretation of test results was not addressed in a study on errors made by emergency physicians when interpreting radiographs (Espinosa & Nolan, 2000). Reliability modelling was used to determine the reliability and safety of the error management system used in the study. The key strategy was that all emergency department x-rays were initially read by the emergency physician and were later re-read by the radiologist. The reliability model was based on six assumptions, one of which was that "the radiologist's interpretation was not influenced by the emergency physician's interpretation" (p. 740). This assumption does not appear to be supported by the psychological literature addressing bias in decision-making.

A similar study was also undertaken to examine the influence of an arterial blood gas (ABG) test on the management decisions of emergency physicians of patients with

suspected diabetic ketoacidosis. In this previously discussed study (Ma, Rush, Godfrey, & Gaddis, 2003), emergency physicians were asked to indicate their planned patient management before and after receiving ABG results. The authors' conclusion was that ABG results rarely influenced emergency physicians' decisions on diagnosis, treatment or disposition of these patients. While a number of limitations in study methodology were discussed by the authors, the issue of bias associated with changing a prior course of action after receiving a test result was not canvassed. This, and the Espinosa study, serve to highlight the lack of cross-disciplinary knowledge that is apparent in much of the biomedical literature.

1.2.5 Patient Advocacy

"In every house where I come, I will enter only for the good of my patients"

(Hippocratic Oath)

> The Medical Practitioner, as a member of an honourable profession, has responsibilities to many people but paramount is concern for each patient's welfare. This is the **golden rule** of medical practice. (Cole, 1995, p. 4) (emphasis in original)

"…health professionals face growing pressure to serve ends that fit awkwardly with the ideal of fidelity to patients" (Bloche, 1999, p. 269).

With the advent of the role of doctor as 'gatekeeper' of patient access to clinical services, including the New Zealand system of accident compensation, the primary role of doctor as a patient advocate has come into question.

In a US study which posed six clinical scenarios to consultant physicians to determine willingness to deceive a third-party payer, 75% described themselves as patient advocates but simultaneously tried to 'follow the rules' controlling access to medical treatment whenever they could. Fifty-seven per cent admitted to deception to obtain medical care for a patient when denied authorisation by a third-party provider. Patient advocacy outweighed 'rule following' when the rules were seen to compromise patient care (V. G. Freeman, Rathore, Weinfurt, Schulman, & Sulmasy, 1999).

Willingness to lie was associated with the severity of the patient's condition (V. G. Freeman, Rathore, Weinfurt, Schulman, & Sulmasy, 1999; Macready, 1997). The more clinically severe the condition, the higher the sanctioning of deception by physicians to achieve indicated medical care.

Novack et al (1989) asked physicians to rank factors they considered to justify their use of deception. The first factor was "the benefits for the patient outweigh the potential costs or harm"; 84% of respondents chose this as their first or second justification). Then, in descending order of choice, came the value of the patient's privacy and confidentiality (44%), possible harm to others that may be at risk (32%), moral convictions regarding deception (26%), possible legal ramifications (8%) and obligation to society (5%).

The US Courts have made it clear where doctors' loyalties should lie – undivided loyalty and vigorous patient advocacy (for a review see (Packer, 1996)). Packer writes,

> A health care provider may testify that he exercised his best medical judgment and gave no consideration to any financial motives in his care and treatment of

> the plaintiff. In another circumstance, a theoretically valid defence may be for a physician to acknowledge that he provided a lesser degree of care to the patient, although still complying with at least minimum standards of care, than he ordinarily would have but for financial constraints. However, this defence will likely not have much jury appeal (p. 5).

Associate-Professor Graber (Departments of Emergency Medicine and Family Medicine, University of Iowa) is of the view that falsifying a diagnosis to facilitate a patient's admission to hospital is "entirely justifiable and even ethical" at times (Graber, 2001). His basis for such a stance is that the medical system is fundamentally unjust – the poor, for example, being denied access to the level of health care available to the wealthy. Justice therefore demands that doctors take whatever steps they deem necessary to obtain adequate care for vulnerable patients.

On the other hand, Pimple (Director of Teaching Research Ethics Programs, Indiana University 2001), while accepting that physicians have a fiduciary duty to their patients, argues that lying in itself creates injustice – disadvantaging patients of doctors who opt to 'play by the rules'. Capozzi and Rhodes agree (2004). They argue that lying may benefit an individual but is to the detriment of the greater good. Their suggestion is to report only the patient's version to the third party ("… an honest report of the description of the injury as presented by the patient", p. 188) thereby assisting the patient in achieving the goal of treatment covered by a third party but not collaborating in deception In keeping with the thrust of this argument, Freeman et al. (1999, p. 2270) write, "[r]efusal to initiate a social dialogue regarding the appropriate balance between medical and economic considerations places medicine at risk of becoming a practice of equal parts patient care and subterfuge".

1.2.6 Legislative Requirements

"A doctor like any other citizen must abide by the laws of NZ or otherwise face charges of a criminal offence"

(Cole, 1995, p. 103)

The purpose of formulating a diagnosis has traditionally been to assist with treatment selection and predicting prognosis. However, medical diagnosis is being used increasingly for non-therapeutic purposes, with potentially significant legal ramifications.

ACC legislation is a case in point where diagnosis routinely affects entitlement and cover decisions. In a recent Medical Practitioners' Disciplinary Tribunal hearing, Dr. *S* was disciplined for failure "to recognise the ACC requirement for acceptance that a complaint merits cover is the 'balance of probabilities' and that the Accident Compensation Act does not require absolute proof" (*Decision No: 306/03/115C in the matter of the Medical Practioners Act 1995 and in the matter of a charge laid by Complaints Assessment Committee pursuant to Section 93(1)(b) of the Act against S medical practitioner of xx*, 2004). This viewpoint appears to differ from that expressed by Dr. Ian St George, Medical Advisor to the Medical Council of New Zealand who writes in a discussion on ACC certification "…the diagnosis is a professional judgement for the doctor, and he would have been wrong to sign a document he believed to be false and misleading" (St George, 2004, p. 185).

The presence of a diagnosable psychiatric condition is of increasing importance in criminal litigation. Perhaps one of the greatest debates concerning the influence of the law on medical diagnosis has been over the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM). Schacht, in his article "DSM-II and the politics of truth" (Schacht, 1985, p. 520) wrote "DSM-II is both a tool for the production of scientific knowledge and an instrument of rhetoric, social organisation, and power distribution".

Noah (1999) discusses the extent to which legal pressures influence the labelling of disease and its diagnosis. His concern is that distortion of the definition and identification of illness has important (although largely unexplored) individual, societal and financial consequences. Both clinical research and patient care may suffer as a consequence.

> What does it mean to be ill? It depends in part on whom you ask. Physicians, historian, philosophers, and sociologists have struggled to answer this important question. It also depends on why you want to know. The traditional response would emphasize therapeutic purposes, in which case the medical model of disease made perfect sense. If, however, non-therapeutic motives underlie the question, then the range of possible answers might proliferate and depart substantially from the medical model. Legal institutions, by looking to medical professionals for answers to non-therapeutic questions about disease, have failed to appreciate these distinctions.
>
> (p. 306)

1.2.7 Administrative Requirements

In a study (Werner, Alexander, Fagerlin, & Ubel, 2002) examining the "hassle factor", it was hypothesised that the more arduous the appeals process, the more likely physicians would be to misrepresent clinical information to third parties. In this study, most respondents (77%) chose to appeal rather than accept (12%) a restriction on medically necessary health care. However, 11% of respondents were prepared to misrepresent the situation with fictitious symptoms. Detailed analysis showed that physicians were more likely to misrepresent patient symptoms when the appeals process became more difficult, the amount of time required for appealing increased, and the likelihood of the appeal being successful decreased. The willingness of a physician to misrepresent clinical information was directly proportional to the severity of the patient's condition.

"Concomitantly, the inexorable forces and constraints of escalating office overhead, tort liability, bureaucratic red tape, and managed competition hang like a sword of Damocles over the head of the practising dermatologist" wrote Dr Grant-Kels, discussing issues confronting medicine (1993, p. 231) .

In 2001 Dr Simon Fradd, Deputy Chairman of the British Medical Association's GP committee was reported to have told his members to boycott the form-filling needed to comply with national strategies for cancer, heart disease and care of older people. The basis for his advice was the need to reduce time spent on administrative requirements and re-focus on clinical tasks. "When patients are ill, they want to be able to see their doctors, not to find that their GP is having to undertake administrative tasks to satisfy a

government that has steadfastly refused to listen" Fradd was quoted as stating (Carvel, 2001).

Siddartha Dutta, a final year medical student in London (venting in the student BMJ), underscores this point further, commenting "Why so much paper pushing? ... the idea is that forms make our jobs easier. They bring uniformity, clarity and comprehensiveness to the workplace. Although this may be true, ticking boxes is taking the humanity out of decision-making. Forms leave no room for creativity or for 'thinking outside the box'" (Dutta, 2004, p. 347).

1.2.8 Evidence-Based Medicine (EBM)

"Unfortunately, the real universe is not always about cosy certainties like guidelines, needs-based planning, and easy solutions, but is a chaotic, complex, non-linear system where human frailties and feeling, complex social rituals, and expectations direct many interventions".

(Kernick, 2000, p. 325)

Access to evidence-based data is crucial to support the practice of evidence-based medicine. In a GP survey done in New South Wales in 1999, 43% of 311 respondents had access to the Internet at home or at work, but only 14% were "on line" at the workplace. Twenty-two per cent of respondents had heard of the Cochrane Library, but only 6% had access to it and 4% had ever used it (Young & Ward, 1999).

Worryingly, of 168 New Zealand GPs surveyed (Eberhart-Phillips et al., 2000), only 36% reported having Internet access at work, which is presumably the site of most

diagnostic decision-making. A similar study in 2001 (Kerse, Arroll, Lloyd, Young, & Ward, 2001) indicated that only 40% of New Zealand GPs had Internet access at their practice, although 56% reported using the Internet at some stage in relation to patient care. Female GPs were less likely to use the Internet than their male counterparts, and Internet use decreased with advancing age. Practice size, location, and membership of an IPA (Independent Practitioners' Association) were not found to be independent predictors of Internet use for patient purposes. While 42% of GPs in this study were aware of the Cochrane Library, only 15% had ever used it.

A more recent study of access to sources of clinical information asked a randomised sample of members of the Royal New Zealand College of General Practitioners to rank preferentially their regularly used sources (Cullen, 2002). Textbooks were the preferred source of information, followed by specialists and colleagues, and articles in their own journal collections. The Internet (for example, MEDLINE) as a source of clinical information was only ranked as first preference by 4 of the 136 respondents to this question – very slightly ahead of medical libraries. Fifty-three per cent of respondents were using the Internet to seek information relating to diagnosis. Twenty-nine per cent of respondents had used information obtained from the Internet to change or confirm a diagnosis.

Sweeney, Macauley & Gray (1998) raise the issue of personal significance in the context of evidence-based medicine. Personal significance relates to what the 'evidence' means to the patient and determines how the patient will receive and evaluate information provided to them by the doctor. Their point is that while it is now accepted that medical practitioners can be influenced by factors other than statistical

and clinical significance, Medicine still lacks the understanding that patients are similarly influenced. Recognising personal significance is a challenge for those eager to endorse evidence-based medicine as it requires recognition of the necessary modification of mathematical modelling to fit with the health beliefs and attitudes of the patient.

1.2.9 The GP's Personal Clinical Experience

In a study of motivations for non-scientific drug prescribing, 26% of 141 physicians interviewed reported clinical experience as their reason for prescribing counter to the scientific literature (Schwartz, Soumerai, & Avorn, 1989). These researchers discuss the different ideas that practising physicians may have compared with their academic counterparts about what constitutes clinical proof. They also stress the need to consider prescribing practices as being only partly scientific in nature, and that socioeconomic and cultural factors need to be taken into account. "Thus, far from being completely 'irrational', some prescribing practices may indeed be rational solutions to the situation faced by the prescribing doctor – a situation which is only partly scientific, and partly socioeconomic and cultural" (p. 581).

Investigating why GPs do not consistently prescribe on the basis of scientific evidence, Freeman and Sweeney (2001) found that the doctors studied, albeit a relatively homogenous group, were very influenced by their experience of hospital medicine as students or junior doctors. Their personal clinical experience partially dictated the manner and extent to which they accepted and implemented evidence-based data. One

doctor appeared to sum up the group belief "We are influenced at least as much, if not more, by the experiences of the individual patients as we are by the evidence" (page 1102). Population-derived information could be overruled if the doctor had experienced a contradictory individual patient event.

Given that individual medical practitioners are likely to have had different clinical experiences and training, members of medical teams are likely to hold unique problem-relevant information. Larson, Christensen, Franz & Abbott (1998) canvassed this issue in the context of medical decision-making. Their study involved two hypothetical medical cases where team members were provided with information available to all team members (shared information) and information that was unique to individual team members (unshared information). Their findings were consistent with those of previous studies showing that unshared information very infrequently contributed to group discussion (for example, see (Larson, Christensen, Abbott, & Franz, 1996; Stasser, Taylor, & Hanna, 1989). The assumed benefit of team decision-making is that it provides the opportunity for unique knowledge to be used by the group to make a more informed choice than would be made by a single person. However, this does not appear to work effectively in actual group clinical decision-making. When unshared information was pooled, the accuracy of diagnostic decision-making was increased. When shared and unshared information was pooled, bias was affected but not accuracy. That is, diagnoses were biased towards disease implicated by shared information than towards diseases implicated by unshared information.

Lori Bakken (2002) did an interesting study of the role of experience and context in learning to diagnose Lyme disease. She found that physicians frame their clinical

interaction with the patient on the basis of the environment – the patient, the physical setting, and the presence of a family member. They then define the patient's symptoms as familiar or unfamiliar relative to their memory bank of experiences. Unfortunately, for diagnostic accuracy, what is seen as familiar or unfamiliar biases the diagnoses. For example, if a physician sees more patients with non-Lyme disease with similar symptoms than he/she sees with Lyme disease, the diagnostic bias is towards missing a diagnosis of Lyme disease. In addition, errors are rarely detected by the physician who made the original diagnosis, that is, the learning loop favours the familiar.

1.2.10 The Characteristics of the GP (personality, life experiences, values, beliefs)

A study by Birbeck et al. (2004) showed some evidence for clinicians with high test reliance scores and higher anxiety for uncertainty scores ordering more diagnostic tests than those clinicians with lower scores. Other attitudes tested, including cost consciousness, intolerance for ambiguity (Dewar, 1994; Kassirer, 1989), risk-taking and annoyance with utilisation review were found to be associated with diagnostic test ordering.

McKinlay & Lin (2002) used professional actors (one enacting polymyalgia rheumatica and the other depression) on videotape to simulate medical encounters between doctor and patient. Participant doctors were asked to identify the most likely diagnosis, how certain they were of the accuracy of the diagnosis, and what tests they would order. The results showed that for patient attributes, their age, race, gender and socioeconomic status had no influence on the clinical performance measures studied. However, physician attributes did have an effect. In the polymyalgia rheumatica experiment,

there was a strong association between medical speciality, age and test ordering. In older physicians, medical speciality did not affect test ordering. However, younger physicians in family practice showed much higher test ordering (average 5.75 tests) compared to young internists (average 3.56 tests). In the depression experiment, there was an interactive effect of physician age and patient gender. Older physicians were more likely to diagnose depression in females and younger physicians were more likely to diagnose depression in males, suggesting a cohort effect of changes in medical training. In summary, contrary to a Bayesian viewpoint, physician characteristics (which are assumed to be non-relevant) had a statistically significant effect on decision-making while patient characteristics (which are deemed essential) did not influence decision-making.

In a study of the potential influence of non-medical factors on the use of diagnostic x-ray by physicians, Childs and Hunter (1972) found that physician characteristics were a major factor accounting for variation in x-ray use. These included ownership or control of x-ray equipment, the physician's speciality and the number of years since graduation from medical school.

Kalf and Spruijt-Metz (1996) tested the hypothesis that specialist training contributed to variation in diagnostic practice. Using a number of clinical vignettes, they showed that across specialities there were shared elements that appeared to guide the ranking of facts and diagnoses, as well as the linking of facts to diagnoses. For example, across specialties somatic facts were ranked more important than facts belonging to other categories – for instance cognition-related facts. The investigators attributed these shared elements to general, conventional medical training. However, specialists

differed markedly in what facts they deemed as salient and in the diagnoses they reached. Psychiatrists deemed cognitive facts more salient, internists focussed on somatic facts, while geriatricians selected functional facts. In terms of diagnoses, psychiatrists chose cognition-based diagnoses more frequently, internists chose somatic diagnoses, and geriatricians chose diagnoses in the toxicological category more often than the other specialists. The investigators concluded that "medical specialisation frames the direction of inherently pluriform diagnostic practices" (p. 710). They argue that a greater understanding of diagnostic pluriformity has implications for choice of specialist, obtaining second opinions, and health policy formulation.

Freeman and Sweeney's study of factors influencing GPs to implement EBM (2001) similarly highlighted the influence of a doctor's life experiences. "My grandfather died when he was shocked" recalled one participant, discussing anticoagulation in atrial fibrillation, "so I reach for a decent dose of warfarin and digoxin no hesitation at all" (p. 1101).

In a study of the relative importance of physician characteristics versus situational factors on the quality of patient care, Rhee (1977) found that the direct independent effect of physicians' internal characteristics (in this case degree of specialisation, type of medical school attended and time in practice) could only explain 2% of the variance found in comparing level of compliance with medical norms for the provision of care for specific conditions (used as a measure of physician performance). The external setting, for example, solo or group practice, and type of hospital, explained 9.5% of the total variance.

1.2.11 Medico-legal Issues

There are a number of definitions of 'defensive medicine' although most are in keeping with the following statements. Defensive medicine is "when doctors order tests, procedures, or visits, or avoid high-risk patients or procedures primarily (but not necessarily solely) to reduce their exposure to malpractice liability". (The Office of Technology Assessment, US Congress quoted in Anderson, 1999, p. 2399). Anderson goes on to say, "[t]he basis of the choice need not be conscious and the practice is not necessarily without benefit to the patient" (p. 2399). Anderson argues that medicine has incorporated legal and community standards (that are not based on scientific evidence) to the extent that all clinical judgments are influenced by the risk of a malpractice suit. As a result, the "norms" against which specific instances of medical practice are judged may be increasingly removed from practice that would be dictated solely by medical evidence. That is, legal risk issues may be embedded into what constitutes 'indicated practice' at any one time. His argument is that medicine should recognise and evaluate such changes to medical practice accepting an increasingly liability-sensitive context.

Articles on defensive medicine are numerous and differ in perspective – often depending on whether the author takes a legal (K. Clark, 2002), medical (Gray, 2004; Sedgley, 2002), economic (Zuckerman, 1984) or ethical (Pellegrino, 1993) view. The actual extent and cost of defensive medicine remains controversial, with different studies having different findings. This diversity of views may partially reflect the lack of publicly available data about the frequency of claims and associated aspects of claims, such as outcomes of adversarial proceedings. There are also methodological considerations. Given a hypothesised lack of conscious intent regarding practice change towards a more defensive approach, self-reporting may not reflect reality. Hall

(1989) suggested that fee-for-service incentives may sometimes encourage over treatment while masquerading as defensive medical practice.

In a questionnaire-based general practice study sampling from the United Kingdom Medical Defence Union membership, (Summerton, 1995), 98% of GPs reported having made some practice changes as the result of fear of patient complaint. The strongest association between change and fear of complaint was for practice behaviour defined as negative, such as increased diagnostic testing and increased referrals. There was a strong positive correlation between negative defensive practices and worry about being sued (OR = 3.52, 95% CI 2.03-6.13). Summerton's study shows a much higher level of such practice change than other studies which have reported figures in the order of 42% (American Medical Association Centre for Health Policy Research, 1985) and 20%-55% varying on the hypothetical scenario presented (Glassman, Rolph, Peterson, Bradley, & Kravitz, 1996).

Summerton repeated this study in 1999 (Summerton, 2000) finding that GPs were more likely to undertake diagnostic testing (OR =1.55 [1.10-2.18]), refer patients (OR =1.51 [1.07-2.15]), and avoid the treatment of certain conditions (OR =1.45 [1.04-2.01]), reportedly to pre-empt possible patient complaint.

Birbeck et al. (2004) found that greater concerns about malpractice risk were associated with more diagnostic test ordering in four clinical scenarios that they presented to neurologists – an OR of 1.42 (1.08-1.86), $p<0.05$, in a scenario where seizure was a possible differential diagnosis. A key finding of this study was that the responding neurologists had a falsely high perception of malpractice risk, estimating that on

average 8 per 100 of their colleagues would be sued in their state in the next year, whereas American Medical Association data indicated that the highest annual litigation risk was for obstetricians at 1.49 per 100.

From the literature, it would appear that one of the most common defensive practices relates to the ordering of diagnostic tests. However, as pointed out by de Ville (1998), distinguishing defensive motivation from other influencing factors may not be possible. He notes that codes of medical ethics recognise that medical practitioners have a responsibility to self, as well as to patients and society as a whole. Self-protection can therefore be a legitimate consideration in decision-making – the issue lies in the extent of its role in each specific case.

1.2.12 The Health and Disability Commissioner

The primary roles of the New Zealand Health and Disability Commissioner Act 1994 are to promote and protect the rights of health and disability consumers, and to facilitate the fair, simple, speedy and efficient resolution of complaints. (Health and Disability Commissioner Act, 1994; The Health and Disability Commissioner)

Similarly, the purpose of the United Kingdom's Family Health Services Appeal Authority (FHSAA) is to improve healthcare delivery by ensuring prompt, fair and reasoned resolution of disputes within the National Health Service (Family Health Services Appeal Authority (Special Health Authority)).

Summerton's 1995 study of UK GPs indicated a high positive correlation between adoption of negative defensive practices and worry about a malpractice complaint being lodged with the FHSAA (OR=5.56; 95% CI 2.80-11.21).

Dr. Wayne Cunningham (2004) researched the attitudes of NZ doctors towards complaints and the disciplinary process in a questionnaire-based study, the results of which indicated that doctors in this country support the right of society to complain about them. However, there was divergence of opinion regarding the efficacy of the complaints process. Indicating on a Likert scale their disagreement or agreement with a number of attitudinal statements, only 11% of respondents agreed that "most complaints against doctors are warranted". Only 35.3% of respondents agreed that "most complainants are 'normal people'". Only 43.3% agreed that "within the process, doctors are judged by appropriate standards". These findings indicate that our present complaints system may be adversely influencing standards of health care in this country.

In a similar study, Tapper, Malcolm & Frizelle (2004) reviewed surgeons' experiences of complaints to the Health and Disability Commissioner. Consistent with the Cunningham report, these researchers found that the "complaints process (of past regimes) was perceived as a negative, disempowering, and damaging process for both medical practitioner and patient" (Conclusion, para. 1).

The validity of some of these viewpoints was challenged by the Health and Disability Commissioner who, commenting on the attitudes of Cunningham's respondents, wrote "like children asked if they like Brussels sprouts, most doctors in the survey did not view the complaint as a 'good thing'" (Paterson, 2004, para. 6).

1.2.13 Implications of the Diagnosis for the Wider Community

Certain diagnoses are likely to have considerable implications for the wider community, for example those leading to prescription of antibiotics, increased use of which is associated with increased risk of bacterial resistance. Making a diagnosis of a compensable medical condition which increases the ACC fiscal burden is another example.

There is evidence suggesting that there are other influences on diagnostic decision-making which outweigh those concerned with consideration of the impact on the wider community. Most of the relevant research has been in the area of doctors' prescribing habits.

In 1997, the Journal of the American Medical Association published a study of the influence of the Fifth Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure (JNC *V*) on prescribing patterns. The results of the study indicated that the recommendations of the JNC *V* had very little impact on prescribing patterns – in fact, the drugs recommended as first choice agents decreased in use over the study period (Siegel & Lopez, 1997). The investigators attributed the prescribing patterns seen in their study to direct-to-consumer (DTC) marketing by pharmaceutical companies. Their conclusion is that DTC marketing has a negative impact on public health by incurring drug costs to the public that exceed their benefits (Hollon, 1999).

Morreim (1991) discusses the implications for the community when the "system is gamed". While an individual patient may benefit when a medical practitioner fudges

clinical records or resorts to flagrant dishonesty, the overall "justness" of distribution or health care resources is compromised in a healthcare system where resources are scarce. The physician today is always placed in conflict, argues Rochaix (1998), on the grounds "all that can be done" at an individual level implies fewer resources at the population level.

1.2.14 The Clinical Setting (rural v urban, private v public, after hours v normal hours)

The frequency of use of EBM has been found to be influenced by clinical setting (A. C. Freeman & Sweeny, 2001). Discussing the use of anticoagulants in atrial fibrillation, one GP observed "It's not a minor bleed if your patient is 30 miles from the nearest transfusion service" (p. 1102). GPs without regular nursing staff to assist with blood tests had a similar lack of enthusiasm for implementing evidence-based guidelines regarding anticoagulation. Participants in this study also noted the greater difficulties associated with implementing EBM in general practice in comparison with the specialist setting. The general feeling was that specialists lived outside of the "real life" of general practice.

There is some evidence that patient demographics change with the clinical setting. One study undertaken in central Sydney (Constantino et al., 1991) indicated that patients referred to public hospitals from 24 hour medical centres were younger, better educated and visited the doctor less than often than patients referred from the more traditional sole and partnership practices. Many patients in this study had multiple GPs, with 32% having more than one GP and some as many as four. Although not canvassed in this

trial, the possibility that limited patient contact with multiple GPs had a negative impact on diagnostic accuracy cannot be excluded.

Giving medical advice by telephone out of hours is increasingly common in primary care. There is some evidence that clinical criteria alone do not govern the nature of the doctor's response to these calls. For example, a study of requests for general practice consultations out of hours in north west England showed that patients were less likely to see the doctor on call in person the further they lived from the primary care centre and the more socio-economically deprived they were. Rural dwelling had no significant effect on if and where the patient was seen in person. Patients calling between midnight and 8 am were also less likely to be seen in person, as were those who called on a weekend rather than a weekday (Munro, Maheswaran, & Pearson, 2003).

There are few relevant data in the literature for assessment of the quality of diagnosis or medical care provided by telephone. A 1992 survey of British GPs showed that many expressed unease with this form of care, particularly if they did not know the patient (Hallam, 1992). The relative accuracy of advice or clinical outcomes has not been studied with regard to telephone versus face-to-face consultation (Leibowitz, Day, & Dunt, 2003), but multiple studies indicate reduced patient satisfaction with telephone consultation. Much of this dissatisfaction relates to patient concern that the doctor could not make an accurate diagnosis without seeing them - see, for example, Payne, Shipman, & Dale, 2001.

Dawson assessed physician judgment in different clinical settings (Dawson, 1993). As is well established, he found that physicians were poor at accurate estimate of

probabilities. Interestingly however, he found that the degree of accuracy altered with clinical setting. He hypothesises that this may be due to the representativeness of the heuristics used by the physician to simplify their decision-making. Some 'rules of thumb' will not be appropriate or representative of the clinical setting in which they are being applied.

Rhee (1977) did an interesting study of 454 physicians who discharged 2,517 patients from 22 short-term general hospitals in Hawaii in 1968. In this study physician performance was based on medical norms for the provision of care including explicit diagnostic criteria. Training (medical school attended, time in practice, type of ambulatory care setting worked in) and degree of hospital organisation were positively associated with performance. The results are presented below in descending order of quality of patient care:

- Highly trained physicians in highly organised hospitals
- Physicians with less training in highly organised hospitals
- Highly trained physicians in less organised hospitals
- Physicians with less training in less organised hospitals.

This study indicated very clearly that the work setting independently exercised greater influence over clinical performance than did physician training.

1.2.15 Time Available for the Consultation

Studies indicate that the likelihood of physicians misrepresenting clinical information to third parties may be linked to time constraints.

A random mail survey of 1124 practising physicians was done in 1998 with a 64% response rate. Thirty-nine per cent of respondents reported that they manipulated third party reimbursement rules with a frequency ranging from "sometimes" to "very often". Strategies included exaggerating the severity of the patient's condition, changing the official diagnosis, and reporting false signs or symptoms. Perception of time pressure during a consultation were positively associated with a decision to manipulate reimbursement rules (Wynia, Cummins, VanGeest, & Wilson, 2000).

Moreover, a study by Werner, Alexander, Fagerlin & Ubel (2002) indicated that the more time physicians needed to spend on a third party's decision on behalf of a patient, the more likely the physician was to misrepresent the patient's condition. Nine per cent of the respondents in this study were willing to misrepresent when the appeals process took ten minutes, compared with 14% when the process took sixty minutes.

There is very little in the medical literature concerning the relationship, if any, between duration of consultation and the accuracy of any diagnosis made. However, the issue of a speed-accuracy "trade-off" may be of significance. The sequential comparison approach (Busemeyer, 1985) suggests that this trade-off depends on the initial preference state of the observer in addition to the discriminability between alternatives. Busemeyer suggests that when there is a difficulty discriminating between diagnoses, any initial bias will hinder the decision-making process. This process will therefore take longer and the decision accuracy will decrease with a decrease in decision time – compared with the position where the decision-maker begins with a neutral state of preference.

Busemeyer's model also suggests that, when there is no initial bias or preference state, decisions are made by computing a comparison value for each alternative. This value is compared with a criterion and the first alternative that exceeds the criterion is chosen. When rapid decisions are required the criterion is lax; where there is little time pressure, the criterion becomes increasingly strict.

A survey of doctors by Linzer et al. (2000) found that 2,326 respondents felt time pressure in all settings. Significantly more family physicians in Health Maintenance Organizations (HMOs) felt they needed more time to see new patients than family physicians in small group practices (83% vs 54%, respectively, $p<0.05$). While this time pressure impacted negatively on both job and patient satisfaction it is unclear if time pressure negatively affects quality of care or diagnostic accuracy.

The number of patients needing to be seen is often quoted as a reason for shortened consultation. Interestingly, one study of 902 patients found that there was no statistically significant difference in consultation length between busy and light periods of the working day (Al-Faris, Al-Dayel, & Ashton, 1994).

1.2.16 External Feedback from Medical Sources (for example, IPA)

Solomon, Hashimoto, Daltroy, & Liang (1998) reviewed the published literature on interventions aimed at improving physician's testing practices, citing forty-nine studies that compared diagnostic testing practices in both intervention and control groups. Their review indicated that interventions targeted at knowledge, for example continuing education meetings, were common but weak. Even when consensus guidelines were

produced, uptake of the recommendations was ineffective. However, when these educational initiatives were coupled with strategies providing feedback, for example, utilisation audits, these multidimensional interventions were effective. Audits alone were variably effective at inducing behavioural change. Highly effective in inducing behavioural change was blocking inappropriate test orders or the laboratory defaulting to evidence-based practice when physician orders deviated from this. Importantly, the authors noted that without continuous assessment, while an intervention might induce an early behavioural change, the changes appeared to be temporary and returned to baseline. In one study (Dowling, Alfonsi, Brown, & Culpepper, 1989), return to baseline was noted after approximately five months. Solomon et al. mention that behavioural modification to date has focussed on quality improvement programmes rather than research. They conclude that while methodological flaws hamper any drawing of categorical conclusions, effective change needs to be addressed in the form of multidimensional interventions that encapsulate what has been learned in the fields of psychology and sociology.

1.2.17 Potential Ramifications of Diagnosis (eg compensation)

It is clear from the literature on "gaming the system" and falsification of medical information that the potential ramification of the diagnosis does influence the diagnostic decision-making process (discussed in detail elsewhere). This "gaming" is thought to be largely driven by the doctor's role as "gatekeeper" – that is, the doctor makes diagnostic decisions that determine which applicants receive a third party's benefits. A diagnosis can bring a variety of benefits – cash payments, access to health care,

exemption from certain duties (eg: jury service, military service) and privileges (such as medical certification to fly, access to disabled parking spaces).

Often complicating these decisions is that the patient does not present voluntarily because the consultation with the doctor is initiated by a third party. That introduces the concept of malingering where the patient him/herself voluntarily produces and presents false or grossly exaggerated symptoms with an ulterior motive, for example, gaining compensation. Stone (1979, p. 240) notes that as a result "it is reasonable to assume that physicians in the certifying role give relatively less weight to information provided by the patients that is not objectively verifiable than do physicians in a straightforward clinical role". Stone does not provide any references for this statement and a literature search on this issue failed to yield any further relevant information.

Thomas Scheff wrote an interesting article in 1963. His hypothesis was while doctors believe that medical diagnosis is neutral, they actually follow a decision rule that states "When in doubt, diagnose illness". This, says Scheff, is to avoid a Type 1 error (that is, it is better to have a false alarm than a miss) – and this is particularly so when there is any uncertainty. Unfortunately, very little follow-up research has been conducted into this topic.

In their review of medical fitness of pilots to fly, Scott and Gorman (2001) suggested that in some circumstances the general goal of avoiding a Type 1 error can be reversed. A doctor would be reluctant to certify unfitness to fly given the significant negative ramifications for a pilot's career. In this case the bias is towards avoiding a Type 2

error – especially when the doctor viewed his or her primary role as being an advocate for the pilot.

1.2.18 Marketing/Media

Studies indicate that direct-to-consumer advertising by the pharmaceutical industry can manipulate patients into exerting pressure on medical practitioners to prescribe accordingly. Thus, marketing can influence diagnostic decision-making.

The Mayo Clinic National Conference on Medicine and the Media 2002 (Lantz & Lanier, 2002) importantly highlighted that journalists consider themselves to be primarily reporters rather than educators. However, the public expects reporting to have an educational component. The article discussed a recent Gallup Poll indicating that almost half of Americans had asked their medical practitioners specific questions "as a direct result of something they read or saw in the media or on the Internet" (p. 1308). The same poll also indicated that, in terms of trust, the public rated television lowest, with the Internet rating slightly higher. Doctors were the most highly respected source of information, ahead of books and the "nurse at the doctor's office". According to this report, television was the most commonly accessed media source of health and medical information for Americans.

Seventy-five per cent of 2256 American adults surveyed by the National Health Council said they either paid a "moderate" amount or a "great deal" of attention to medical news in the media. Fifty-eight per cent of those surveyed had changed their behaviour or taken some kind of action as a result of media information. Forty-five per cent of

respondents said that discussions with their doctor following media information had enhanced their relationship with their health practitioner (Johnson, 1998).

Medical news in the lay press has certainly been shown to have a significant effect on drug sales, for example the steep increase in fluoxetine sales after a Newsweek review. Similarly, lay reporting of demands from gay activists in the early 1990s influenced the decision of the National Institutes of Health to release zidovudine (AZT) before the completion of appropriate clinical trials. Media coverage also influences research funding prioritisation (Nelkin, 1996).

Ray Moynihan has created some controversy in writing about the marketing of disease by drug companies, for example Pfizer's promotion of female sexual dysfunction (FSD). He notes that scientific disagreement about the extent and nature of FSD is downplayed in the marketing of FSD and its potential for treatment by Pfizer (which also manufactures sildenafil (Viagra) (Moynihan, 2005). Forty-three per cent of women are now estimated to suffer from this condition according to Moynihan. "Suddenly, many women's preference to curl up with a good book rather than get excited about their paunchy middle-aged partner's Viagra erection constituted symptoms of a disease" (O'Hare, 2005, p. 33). So pervasive is the drug company's influence, that it is almost "impossible to tell what is medicine and what is marketing" (ibid p. 33)

The first systematic review (Gilbody, Wilson, & Watt, 2005) to assess the impact of direct-to-consumer marketing has shown it to be associated with increased prescribing of advertised products, increased pressure from patients for doctors to prescribe, and

diminished doctor confidence in prescribing. No evidence of health benefit was found – although the authors admit that this issue had not been examined in detail by any of the relevant studies. One trial (Mintzes et al., 2002) included in this review showed that patients who requested a specific direct-to-consumer advertised drug were 16 times more likely to receive it than those who did not request a specific drug (OR 16.9, 95% CI 7.5-38.2). At the time of writing, direct-to-consumer marketing is only permitted in the US and New Zealand.

1.2.19 Personal Circumstances of the Patient (eg : socioeconomic status)

The issue of socioeconomic status has, and continues to be, well researched in terms of health status and propensity to develop disease. However, less frequently studied is the effect of socioeconomic status on diagnostic decision-making.

Psychiatrists and psychologists consistently assess patients in lower socioeconomic groups are being more "pathological" than those in higher socioeconomic groups see for example, (Hollinghead & Redlich, 1958; Levy & Kahn, 1970; Schmidt & Hancey, 1978)

Nazareth and King's study of GP decision-making in diagnosis of lower urinary tract infections in women (Nazareth & King, 1993) indicated that correct prediction of urine analysis following presenting consultation was significantly associated with socioeconomic status of the patient (chi squared=4.15, $p<0.04$; difference in proportions=0.25, 95% CI 0.01-0.48). GPs were five times more likely to make an accurate prediction of the results in patients of social class 1 and 2 (defined as high and

lower grade professionals respectively). This influence by social class was independent of the doctor's knowledge of the patient, which was the only other independent predictor of accuracy of prediction.

A recent study reported in the Journal of Epidemiology and Community Health (Richards, McConnachie, Morrison, Murray, & Watt, 2000) found no difference in social group (based on gender and deprivation index) proportions receiving a provisional diagnosis from a GP of coronary heart disease – although people with chest pain from socio-economically deprived areas were more likely to present to a medical practitioner complaining of symptoms than those from affluent areas.

Epstein, Taylor, & Seage (1985) studied both patient and doctor characteristics involved in echocardiography used to evaluate known but undiagnosed cardiac problems. Patient-doctor agreement on symptoms, test results, treatment and prognosis was used as a marker of effective communication. There was a significant association found between lower socioeconomic status, as determined by occupation or insurance coverage, and ineffective communication, taking in account physician training and practice characteristics.

1.2.20 Patient characteristics

Epidemiological studies have identified patient age, gender, race and socioeconomic status as risk factors for development of certain diseases. Accordingly, from a prescriptive viewpoint of medicine, these patient characteristics should influence diagnostic decision-making. However, research indicates that patient attributes that

have been epidemiologically linked to disease do not appear to influence diagnostic decision-making (McKinlay & Lin, 2002). This correlates with research showing that prevalence data are not well used by medical practitioners.

In contrast, patient attributes (which in a Bayesian model should not influence diagnostic decision-making) do appear to influence the diagnostic process (J. M. Eisenberg, 1979; McKinlay & Lin, 2002).

Stein (1986) raises the interesting point that physicians bring both "illness" and "disease" models to any clinical encounter. The "physician's view of the 'illness'" can prevent him or her from identifying the "disease" (p. 225). Stein's view is that there are two groups of patients ("trolls" and "sick people") and a physician's emotional reaction to each group can colour (if not override) medical practice. "Trolls" are those patients who, while they may have a disease, are held responsible in some way for the control of the disease. "Trolls are unforgiven (and unforgivable) for refusing to relinquish their symptoms, for they are seen as people who 'could' control themselves if they 'really wanted to' or 'tried harder'" (p. 225). "Sick People" on the other hand are viewed as having a bone fide disease which is beyond their control. The emotional reaction of the doctor to the patient influences what the doctor will be able to observe and elicit from the patient during the diagnostic decision-making process. Stein discusses the prevalence of these "brands" in medicine and the general accepting attitude most health professionals exhibit to labels such as 'fith syndrome', 'gomer' and the influence that comes from categorising some patients as justified in adopting a sick role and others as not justified.

GPs involved in a study by Steinmetz and Tabenkin (2001) rated as 'difficult' those patients who were "violent, aggressive or verbally abusive; who had unsolved repeated complaints, and/or a 'shopping list' of complaints; were always complaining, never satisfied, demanding, boundary-busting; or given to exploiting the doctor or being uncooperative". One strategy to cope with such patients (rated sixth most commonly used out of twelve strategies described) was "referral to various consultants, laboratory and simulated tests, alternative medicine, mental health services" (p. 497). The participants were clear that they subject such difficult patients to more examinations and testing than necessary. They were also ready to admit that their own characteristics were important in aiding or hindering the patient encounter. These physician characteristics were identified as personal anxieties, being a pressured type of person, having an overly critical and judgmental character, the need to be loved constantly by their patients, having a defensive personality, and being overly nice.

Freeman and Sweeney (2001) found that patient's life experiences could influence the GPs implementation of EBM. "Well he's a farmer, so every time he calls the vet he gets antibiotics"(p. 1101) stated one GP discussing how patients could influence clinical decisions.

Limited research is available on gender differences in diagnoses, and is from the 1970s. McCranie, Horowitz, & Martin (1978) provided GPs with a number of clinical vignettes. There was no difference in initial diagnosis or in the expectations of the doctors as to what additional testing might reveal. There was no tendency to suspect psychogenic versus organic causes according to patient gender. However, Bernstein and Kane (1981), in a similar set of clinical vignettes, found that physicians were more

likely to consider emotional reasons, make a psychosomatic diagnosis and expect the patient to be demanding when the patient was a woman. Interesting, when a male patient expressed an emotional component the diagnosis given was more likely to be psychosomatic than organic (for conditions where the likelihood of cause was equally divided between psychological and organic).

Howitt and Armstrong (1999) found that patient willingness to take a risk influenced the ability of a GP to implement evidence-based medicine. Interestingly, GPs commented that the advent of "patient-centred" medicine (whereby patients take an active role in decision-making) has the potential to have a negative impact on implementation of evidence-based medicine while simultaneously having a positive influence on the ethics of patient management. That is, there is evidence that patients will chose options for themselves that are at odds with evidence-based data and the options that might otherwise have been chosen by the doctor acting alone. Patient autonomy is accepted as rightly superseding evidence-based practice when the latter conflicts with a patient's wishes.

1.2.21 Patient Expectations

Increasing attention is being paid to understanding patient expectations. An often explored hypothesis is that doctors and patients have different perceptions of wellness and illness (Suarez-Almazor, Conner-Spady, Kendall, Russell, & Skeith, 2000) Therefore, in an era of joint decision-making between patient and doctor, information must be obtained from one another so that congruent decisions can be made. Research has indicated significant differences between patient and physician ratings for pain

(Suarez-Almazor, Conner-Spady, Kendall, Russell, & Skeith, 2000), overall health (Suarez-Almazor, Conner-Spady, Kendall, Russell, & Skeith, 2000), quality of life (Slevin, Plant, Lynch, Drinkwater, & Gregory, 1988), anxiety (Slevin, Plant, Lynch, Drinkwater, & Gregory, 1988) and depression (Slevin, Plant, Lynch, Drinkwater, & Gregory, 1988) The available evidence suggests that an undesirably high level of discordance between patients' self-ratings of health and the ratings of health care providers (Sprangers & Aaronson, 1992).

One paper by Hamm, Hicks, & Bemben (1996) found that 65% of patients arriving at a physician's office with respiratory symptoms expected antibiotics. 56% of those subsequently diagnosed with a viral infection expected treatment with antibiotics prior to diagnosis (that is, the patient expectation did not accurately reflect an underlying condition warranting antibiotic prescription). There was a highly significant association between the doctor's judgment regarding the patient's expectations and the prescription of antibiotics (chi square = 22.7, df = 4, $p<.001$). Doctors prescribed antibiotics for 77% of patients whom they believed to be expecting them. However, they only prescribed antibiotics for 29% of patients whom they believed not to be expecting them. Not unexpectedly, only 8% cited patient expectation of an antibiotic as their reason for prescribing one.

This study found that factors influencing whether or not patients were prescribed antibiotics were the diagnosis, the patient's expectation and the physician's belief that the patient expected antibiotics. Each factor had an independent role in influencing the prescribing decision. However, no significant correlation was found between doctor perception of patient expectation and actual patient expectation. In 25% of cases, the

physician's assessment of the patient's expectation was inaccurate and in a further 26% the physician was unclear on the patient's expectations. These findings suggest that physicians accede more to their perception of patient expectations rather than to actual patient expectations, and are consistent with the results of a number of other studies (Butler, Rollnick, Pill, Maggs-Rapport, & Stott, 1998; Cockburn & Pit, 1997; Macfarlane, Homes, Macfarlane, & Britten, 1997).

One study (Butler, Rollnick, Pill, Maggs-Rapport, & Stott, 1998) found that doctors were aware that antibiotics had limited efficacy in the treatment of viral illness, but would often prescribe them inappropriately because of " … time pressure, wanting to do something active and signal sympathy, medicolegal concerns, and fear of losing patients to other doctors" (p. 641). In a similar vein, Jackson and Kroenke (2001) found that 98% of patients presenting to a general medicine walk-in clinic in Washington DC had at least one pre-visit expectation including a diagnosis in 81% of cases, a prescription (60%), a diagnostic test (54%) and a subspeciality referral (45%).

1.2.22 Need to Justify a Course of Action

The seminal article on this issue is still that by Howie (1972), who explored the differences between the practice of medicine in the hospital and in the community. The received wisdom is that the practice of medicine proceeds from symptoms/signs/investigations to diagnosis then treatment. However

> … the relative rarity of fully developed hospital illness in general practice, the frequency with which patients present to the family doctor, symptoms and signs which do not fit established hospital diagnostic patterns, the pressure of work

> and the need to use hospital services sparingly, all conspire to force the general practitioner to bypass the confident diagnosis and….[adopt] symptomatic treatment. (p. 311)

However, he writes

> [the doctor's] training, and the deep need to conform to it, require him at least to rationalise this action … with a diagnostic label interposed. This label will tend to be a justification of treatment, rather than the reason for it. (p. 311).

Howie goes on to describe a study which examined the relationship between information, diagnosis and treatment in 502 patients with respiratory illness. The conventional symptom-sign complex → treatment route accounted for the described illness to treatment pathway in 93% of patients. In only 77% of patients was the route symptom-sign complex → diagnosis → treatment an equivalent explanation. Similar conclusions were noted in a more recent study of antibiotic use for cough in general practice (Coenen, Van Royen, Vermeire, Hermann, & Denekens, 2000) and another on initiation of treatment in ophthalmology (Braun, Kramsall, & Grabner, 1989). In both these latter studies treatment appeared to precede diagnosis.

1.2.23 Patient Pressure on Doctors

In a study of 141 physicians identified by Medicaid as being moderate to high prescribers, pressure from the patient was the most common reason given (by 46%) for non-scientific prescribing (Schwartz, Soumerai, & Avorn, 1989). Similarly, in a comparison of physicians who 'game the [third party] system' with those who rarely or never did, a request from the patient to deceive insurers was the second most motivating

factor found (OR 2.44; 95% CI 1.72-3.45) (Wynia, Cummins, VanGeest, & Wilson, 2000).

Stevenson, Greenfield, Jones, Nayak, & Bradley (1999, p. 255), noted that the findings in their study of GPs perceptions of patient influence on prescribing suggest "[p]atient demand for prescriptions may not only be overestimated but also perpetuated by GPs' belief in its existence and a wish to maintain a good doctor-patient relationship".

Tracy, Dantas, Moineddin, & Upshur (2003) found that Canadian GPs were overwhelmingly in favour of evidence-based medicine, with 90% of respondents agreeing that the practice of EBM improves patient care and 88% agreeing that research findings were useful in day-to-day patient management. However, this study also found that despite the positive attitude of GPs to EBM, patients were significantly more likely to receive tests if they wondered about, requested or demanded the test. Therefore, patient pressure had a profound impact on diagnostic decision-making, resulting in GP decisions that were potentially not evidence-based.

Although patient demands appear to affect medical decision-making, Menikoff (1998, p. 1094) argues that

> the fact of the patient's unilateral request should have absolutely no bearing on the physician's legal obligations. If the appropriate medical standard of care does not otherwise require the physician to offer the care, then the physician cannot be compelled to provide the care merely because the patient asked for it, whether or not it is reasonable to want that care.

Menikoff discusses cases where there is an acknowledged "standard of care", for example, the national age threshold is forty years of age or older for routine mammography screening - should a woman, with no known risk factors for development of breast cancer but nervous about the possibility of breast cancer be referred for mammography if she requests this at the age of thirty-nine? At this time, medical practitioners are still endorsed by society as "gatekeepers" to medical services. Examples of this role include classes of medications which can only be dispensed on prescription or diagnostic tests which can only be ordered by a medical practitioner. While a patient may believe that a certain medication is necessary, their ability to obtain the medication may be curtailed by a medical practitioner refusing to prescribe it – that is, it is accepted that there is a paternalistic approach to the provision of health care – with limitations set by various agencies including medical practitioners who decide on best practice standards.

However, another study (Bremberg, Nilstun, Kovac, & Zwitter, 2003) indicated that a minority of GPs would grant a healthy patient's demand for an X-ray that was not medically justifiable. Similarly, a minority would grant a seriously unwell patient's demand for non-medically justifiable immunotherapy. GPs who would grant such demands were motivated by a respect for patient self-determination and the desire to maintain a good patient-doctor relationship.

There is evidence that direct-to-consumer marketing increases the number of patients who demand specific prescription drugs (see for example, (Cohen, 1988; Committee on Drugs, 1991). One study (Bell, Wilkes, & Kravitz, 1999) canvassed the views of patients on refusal of doctors to meet an advertisement-motivated request for drugs. In

this random telephone survey of 329 Sacramento adults, 46% reported that they would be disappointed, 25% of respondents would try and change their doctor's minds, 24% would likely try prescription shopping and 15% would consider changing doctor in the event of denial of a requested prescription.

Interestingly, some articles discussed pressure of a different kind. One described pressure from the tobacco industry (Neuman, Bitton, & Glantz, 2005) to influence the content of DSM-III. Analysis of previously secret documentation clearly indicates that the tobacco industry was deeply unhappy with the inclusion of tobacco dependence in the DSM-III. While they were ultimately unsuccessful in having it removed, a paper by Neuman et al. discuss the pressure the tobacco industry brought to bear on the American Psychological Association (APA) appointed Task Force on Nomenclature and Statistics – including public statements, private lobbying and legal action.

Another study (Homan & Caston, 1987) considered the potential contribution of inter-organisational pressure when investigating whether diagnosticians felt coerced by their referral sources to alter diagnoses. For example, when funding priorities shift to "chronic patients" in the context of mental health, is there pressure to identify patients who are "chronic"? The investigators were interested in why referrals to both schools and youth justice received far fewer severe psychiatric diagnoses than adult court and health agency referrals. Their results indicated that there was a significant influence on the diagnostic process that was independent of the true differences in the mental status of patients coming from the variety of referral sources studied. Inter-organisational pressures accounted for between 2% and 6% of the variance in the diagnostic process.

> Clients who come from referring organisations that value relatively more severe labels than other organizations are more likely to get labelled, and, in getting labelled, to be given a severe label. By contrast, clients from referring organizations that value relatively mild labels not only are less likely to be labelled, but are less likely to be labelled severely, if labelled at all. (p. 194)

1.2.24 Desire to Please the Patient

The acknowledgment of a desire to please has not been specifically investigated in the literature but is sometimes referred to indirectly. "Humouring the patient" by prescription of drugs which the prescribing physicians acknowledged were pharmacologically ineffective was seen by 24% of physicians in a US study as "harmless and effective" (Schwartz, Soumerai, & Avorn, 1989, p. 579).

1.2.25 GPs Perception of the state of the NHS

There is very little in the medical literature specifically addressing this issue. However, it is raised by a number of authors who see two specific situations where doctors are most likely to 'game the system'. The first involves poor and uninsured patients, where the expectation is that they will not obtain care without resorting to deception. The second is where patients are apparently not receiving the care to which they are entitled, for example, when an insurer uses a variety of tactics to avoid or delay care being obtained (Grumet, 1989).

Davis, Gribben, Lee, & McAvoy (1994) assessed the impact of a new subsidy regime on GPs in New Zealand finding that while the subsidy changes had been implemented in favour of poorer people, there was no corresponding redistribution of medical care

consumed seen six months after the introduction of the changes. Contrary to the expectation of the implementers of these subsidy changes, use of health services declined "markedly and indiscriminantly for all groups" (p. 123). Data on prescribing habits and investigations ordered showed no clear pattern. If nothing else, this study highlights the need to consider other influences on decision-making when implementing health reform.

Along similar lines, Kerry Jacobs (1994) discussed the results of changes to the model of organisational control in New Zealand health care. The thrust of the argument is that bureaucratic controls of the sort used in the business sector do not work in healthcare mainly because of the uncertainty inherent in medical practice. Jacobs also highlighted the conflict of interest that exists between the role of patient advocacy and that of being an agent for the management of a healthcare organisation. Clinical participation in managerial decision-making was introduced in Canterbury, New Zealand in the early 1990s in an effort to bridge the gap between management and clinicians. Rather than softening their attitude towards management, the model of clinical participation used actually galvanised their antagonism. Jacobs notes that, in the cases studied, doctors chose their colleagues' positions rather than management's "illustrating a tendency to adopt clan in preference to a hierarchy" (p. 167).

1.2.26 Technological Tools (eg computer prompts)

There is increasing interest in using technological tools to assist with clinical decision-making (Bates & Gawande, 2003). Hillson, Connelly, & Liu (1995) evaluated the effect of computer-assisted interpretation of electocardiograms on accuracy of interpretation in

a general practice setting. The forty participants were randomly allocated to receive a clinical vignette accompanied by either an ECG or an ECG with computer-assisted test interpretation data (CATI). Time spent on reading the ECGs was decreased by 25% in the group provided with CATI. CATI had no effect on the doctors' confidence in their diagnoses. Overall, the physicians' first-reported diagnoses agreed with CATI in 43.3% of instances. Agreement was higher for doctors provided with CATI (52.2%) in comparison to those doctors who did not receive CATI (33.7%) even after controlling for other variables ($p<0.0001$). Only 23% of the doctors' first diagnoses agreed with the eventual clinical diagnosis, although doctors who received CATI were twice as likely to arrive at the correct diagnosis compared with those who did not. Importantly, for two case vignettes (Wolff-Parkinson-White syndrome and pericarditis) without CATI, the correct diagnosis was not made except by one doctor in the case of pericarditis. The authors commented on the risks of being lulled into a false sense of security by CATI – which can in itself give erroneous interpretations.

The conclusions of a systematic review of papers published between 1992 and 1998 (Hunt, Haynes, Hanna, & Smith, 1998) showed that computer-based clinical decision-making support systems enhanced clinical performance with regard to drug dosing, preventive care (for example, reminders about a test or a vaccination) and other aspects of medical care (eg: test ordering, management of diabetes). There was no convincing improvement found for diagnostic decision-making. The authors of this review commented on the increase in quality of the articles published over the duration of their study. Their findings were very similar to those of an earlier systematic review of papers published between 1974 and 1983 (Hillson, Connelly, & Liu, 1995; Johnston,

Langton, Haynes, & Mathieu, 1994) which again are mainly negative towards computerised aids in diagnostic decision-making.

Interestingly, a very recent study (Kralewski, Dowd, Heaton, & Kaissi, 2005) found that computer-based information systems did not influence drug error rates *per se* but were associated with doctors providing fewer prescriptions. Due to the latter effect, there was an overall reduction in drug errors. The authors offer two potential explanations for the study's findings. First, the computer information results in the doctor being better informed about costs and benefits of the medication and therefore not prescribing as often. Second, the computer information may be leading to more accurate diagnoses - diagnoses where drug treatment is not indicated.

While the studies described above illustrate some of the merits of decision-support tools, consideration of the associated risks has been limited. Such as system can introduce error in a number of ways, including inaccurate information entry by the user, incorrect knowledge rules or faulty programme logic. There has also been scant research on the impact of any changes in physician performance on overall patient outcomes (Hornberger & Goldstein, 2000). A number of papers (see for example, (Ridderikhoff & van Herk, 1997) report factors such as ease of use and time as being impediments to wider implementation of computer-based decision support. Two issues are underscored in this research. Firstly, Rousseau, McColl, Newton, Grimshaw and Eccles (2003, p. 317) comment that

> clinicans seemed least happy when prompted in areas that they would not usually tackle or could not tackle because of external barriers. Any strategy for

change in behaviour that prompts in such areas is likely to generate feelings of dissonance.

Secondly, Wayne (2001) accurately notes that diagnostic software packages require the input of diagnostician-detected features. "The problem", writes Wayne (p. 86) "is that symptoms that are consistent with a focal diagnosis are more likely to be detected than are symptoms consistent with non-focal diagnosis".

There is some evidence that patient decision-making aids lead to improved quality of decisions. Their value has been the subject of a Cochrane Review which found that decision aids performed better than usual care in term of greater knowledge (evidence-based information on the condition and treatment options), more realistic patient expectations, lower decisional conflict, increasing proportion of patients active in decision-making, fewer people remaining undecided after counselling, and more consistency between a patient's values and the option that is finally chosen (O'Connor, Llewellyn-Thomas, & Flood, 2004). Interestingly, patient decision aids did not have a positive effect on patient satisfaction with decision-making, patient anxiety or health outcomes (O'Connor et al., 2003).

A recent survey of general practices in New Zealand (Didham, Martin, Wood, & Harrison, 2004) showed that 99.9% of 938 GP respondents reported having at least one computer on site and using a computerised patient management system.

1.2.27 Knowledge of Local Conditions (for example, local disease prevalence)

> First, all clinicians, irrespective of experience, appear to have problems quantifying probability or risk of disease, and, while there may be exceptions, this difficulty is independent of the clinical circumstances. (I. A. Scott, 2004, p. 439)

A GP receiving a report stating that a patient has tested positive for a particular condition is a common daily scenario in clinical practice, whether in the form of a blood test, biopsy or radiology report. Specifically, the GP needs to know the degree to which the positive result actually predicts the diagnosis? The predictive value of a positive test result, or positive predictive value, is based on the performance characteristics of the test undertaken and the prevalence (number of persons in a community affected by a condition at any given point in time) of the diagnosis. Therefore, an understanding of local disease prevalence is critical in accurate diagnostic decision-making. Unfortunately, recent studies suggest that medical practitioners are inadequately skilled at estimating the likelihood of disease (Attia et al., 2004; Ghosh, Ghosh, & Erwin, 2004; Gigerenzer, 2003), with some authors suggesting that prevalence data are completely ignored (Wallsten, 1981).

Several articles (Dawson, 1993; Dawson & Arkes, 1987) have reviewed factors contributing to cognitive bias when estimating probability – all of which have been well described in the psychology literature, for example, the 'availability heuristic' whereby people erroneously equate the ease of remembering situations with the probability that these situations will occur. Unfortunately, our own or memorable situations tend to be more available than the experiences of others or less memorable events. There is also

'ego bias' whereby people may warp probability estimates in a self-serving way, for example, people in general have a tendency to underestimate their own mortality and morbidity risk. An associated factor is the greater confidence experts have in their own judgments compared with novices although the accuracy rate between them is rarely different. Value-induced bias can also influence estimates of probability – negativity associated with adverse outcomes alters the estimate of its likelihood of occurrence.

One paper (Cahan, Gilon, Manor, & Paltiel, 2003) is particularly important in terms of ACC – where many believe doctors are asked to make a judgement on 'the balance of probabilities'. Cahan et al. studied the phenomenon of "subadditivity" in 125 doctors. Subadditivity occurs when the sum of the probabilities for alternatives exceeds 1.0. The mean age of participants was 40±8.1 years, and mean length of clinical experience was 12 ±8.9 years. The total probability of the differential diagnoses ranged between 44% and 290% (mean 137 ± 54). Sixty-five per cent of subjects exhibited subadditivity, with a total probability of greater than 1.0. Only 15% provided answers summing up to 100%. Age, professional experience, gender, main working location, status, or field of specialisation was not associated with the frequency or magnitude of subadditivity.

Yet more worrying are the results of a study by Poses, Cebul, & Wigton (1995) who provided clinicians with intervention designed to improve probabilistic diagnostic judgements and measured treatment decisions before and after this intervention alongside a control group with no such intervention. Doctors in the intervention group were much more accurate in their assessments of the probability of streptococcal pharyngitis. Before intervention, prevalence of this condition in the study population was 5.4% although it was erroneously estimated by the doctors to be (on average) 31%.

After the intervention, the disease prevalence of the study population was 7.6% with the doctors' estimation averaging 11%. However, despite marked improvement in estimating probability of disease, there was no change in the number of patients prescribed antibiotics before and after intervention (34.5% and 40% respectively).

1.2.28 Funder of Consultation

"Objective studies of the full consequences of different systems of paying the doctor may help to guide this evolution towards more desirable goals" (Roemer, 1962, p. 14).

> The pilots fund the system, such that their interests are often paramount and there has been a consequent discounting of the obligation of the system to other risk acceptors. The end result tends to be primary pilot advocacy. (J. Scott & Gorman, 2001, p. 45)

While there is certainly a widespread belief that method of payment may affect clinical behaviour, a recent systematic review (Gosden et al., 2005) evaluating the impact of different methods of payment found only four studies that met the inclusion criteria (randomised trials, controlled before and after studies and interrupted time series analyse of interventions comparing the impact of captiation, salary, fee for service and mixed systems of payment on primary physician satisfaction with working environment; cost and quantity of care; type and pattern of care; equity of care; and patient health status and satisfaction). This low number of acceptable studies indicates the paucity of substantive research in this area. However, the review did show evidence that method of payment does influence primary health care physicians' behaviour. Fee-for-service results in more primary care consults, visits to specialists

and diagnostic and therapeutic services, and a generally a higher quality of primary health care service than salary or capitation systems.

One study (Kao, Green, Zaslavsky, Koplan, & Cleary, 1998) indicated that while most patients trusted their physicians, patients who with fee-for-service medical practitioners practitioners demonstrated higher levels of trust than salary, capitated or managed care patients.

It is also worthy of note that a recent systematic review (Lexchin, Bero, Djulbegovic, & Clark, 2003) showed that research funded by drug companies was more likely to produce results favourable the company's product than research sponsored by other agencies. This finding could not be attributed to the quality of pharmaceutical company-sponsored trial methodology. Possible explanations put forward by the authors included publication bias (unfavourable data would not be put forward for publication) and use of inappropriate comparative agents. Importantly, this research shows quite clearly that funding can produce systematic bias.

1.2.29 Business Considerations

"Grubby business considerations seem sacrilegious when the physician 'holds your life in his hands"

(Orient, 1982, para. 5)

> If I'm not able to have them understand where I'm coming from um then there is risk of them being alienated and um I guess the reality of it is they might leave

> the practice and that's a potential…a potential loss for me financially. Um there is a tendency to want to keep on side with…with patients in the practice.
> Quote from "Donald" a New Zealand doctor from (Williams, 2002, p. 106)

The findings of a recent study by Birbeck et al. (2004) of non-clinical influences on decisions to order neurology tests were equivocal with regard to potential fiscal incentives. Although neurologists with a financial interest in a neuroimaging facility was generally not associated with increased test ordering in this study, other research has found higher test ordering rates when the physician has a financial interest in the testing service. One of the most often quoted papers is by Hillman et al. (1990) who studied 65,517 episodes of outpatient care by 6419 physicians. Depending on the clinical situation, physicians with a financial stake in an imaging centre, referred their patients 4.0 to 4.5 times more frequently for imaging than physicians referring to an independent radiologist ($p<0.0001$). Self-referring physicians also charged more for their services ($p<0.001$). The tentative conclusion of this paper was that " … from our results it is not possible to determine which group of physicians uses imaging more appropriately" (p. 1604).

Several other American studies (see for example, (Office of Inspector General, 1989)) linked self-referral to a variety of negative consequences, including excessive treatment. In response to this US research the American Medical Association Council on Ethical and Judicial Affairs published its policy (American Medical Association; Council on Ethical and Judicial Affairs American Medical Association, 1992) on self-referral, making it clear that self-referral was not always appropriate. At the same time, the US Congress passed legislation commonly referred to as the "Stark Laws" and "Anti-

kickback" (42 USCS § 1395nn(2004)) which regulated self-referral and physician ownership of medical facilities.

Morreim (1991) raises the issue of whether 'gaming the system' simply reflects economic pragmatism, suggesting that it should be regarded as just a more obvious and convenient method to secure a resource, rather than being the only remaining option. Furthermore, Moreim questions the meaning of "fidelity" in our increasingly cost-constrained healthcare environment. One view is that a doctor is "required to do everything that they believe may benefit each patient without regard to costs or other societal considerations" (Levinsky, 1984, p. 1573), although this presumably falls short of paying for treatment from their own pocket. This practice, as Morreim writes would appear to be untenable with the new economics of medicine and accounts to some extent for the resort to 'gaming'.

1.2.30 External Incentives (eg: rewards by a drug company)

Managed care organisations may use financial incentives to alter medical practice – for example, financially rewarding practitioners with lower referral rates. The relationship between medical practitioners and pharmaceutical companies remains controversial because of the potential consequences of such a relationship. The debate essentially focusses on whether or not these companies influence the behaviour of medical practitioners and, if so, for better or worse? This ongoing controversy has been described as "… long-standing, fractious, and painfully public." (Chren, 1999, p. 182).

Pharmaceutical company incentives include gifts (ranging from free stationery, meals and entertainment, to international travel and accommodation), continuing medical education (ranging from written literature to sponsorship of scientific meetings) and sponsorship of research. There is increasing evidence that such incentives have a negative impact on medical practitioner behaviour including non-rational prescribing (Watkins et al., 2003; Wazana 2000, Watkins 2003). Outcomes of sponsored research more likely to be favourable to the sponsor than independent studies (Lexchin, Bero, Djulbegovic, & Clark, 2003). Almost comically, a study of US resident medical officers found that 61% of those surveyed were confident that they were not influenced by the marketing efforts of pharmaceutical companies although only 16% only were equally confident in the ability of their peers to remain independent (Blumentahal, 2004).

There is a dearth of both medical and lay literature on payment by a patient for a particular diagnosis. An article published in the New York Times several years ago (Gross, 2002) refer to a number of psychologists who allegedly had been approached by parents and teenagers seeking a diagnosis enabling extension of time to undertake tests determining entrance to college. The article ends

> Dr. Luck and Dr. Mattis say they gently explain to such families that they do not churn out diagnoses for anyone who can pay. Yes, they will fight for a child who they believe has been unfairly denied services at school or handle an appeal with the testing service - but only after an evaluation documents a real problem…. "We give them our data and sometimes they will not hear it," Dr. Luck said. "So they get angry and go to someone else until they get what they want."

In terms of influencing clinical decision-making behaviour, financial incentives from a managed care organisation, for example, have been shown to change generic behaviour rather than behaviour in specific clinical situations. Hillman (1991) discusses rules versus incentives for influencing physician behaviour. Doctors, he believes, probably prefer "rules" or diagnostic algorithms. When an organisation provides incentives to alter decision-making, a doctor must weigh the costs and benefits on a case-by-case basis. Consciously or unconsciously, this may result in divided loyalties. When an organisation introduces a clinical rule, physicians see the rationing debate as being beyond their control, so conflicting loyalties only have the potential to arise when a patient falls outside of the parameters set by the rule.

A meta-analysis of 128 studies of the impact of extrinsic rewards on intrinsic motivation (Deci, Koestner, & Ryan, 1999) has provided strong evidence that tangible rewards have a substantially negative effect on intrinsic motivation. External incentives forestall self-regulation, impair self-determination and damage self-esteem. This effect is more pronounced in creative tasks than in technical ones, and may explain why people focused on the more technical aspects of medical care are more likely to support external incentives than those who actually practise the 'art of medicine' (Marshall & Harrison, 2005). The available evidence therefore suggests that complex diagnostic processes should not be linked to financial rewards. Of further interest is a study by Sulmasy, Bloche, Mitchell, & Hadley (2000) reporting that only 17% of respondents to a cross-sector telephone survey of physicians in the US considered that it was ethical to use financial incentives to reduce tests, treatments and referrals ordered by doctors for their patients.

1.2.31 Expectations of Fellow Medical Professionals

Surprisingly, there is little written about the influence of the doctor's interaction with members of his/her profession on diagnostic decision-making. Freidson (see for example, (Freidson, 1973) wrote a number of articles in the 1970s in which he discussed two types of medical practitioner – one who responded mainly to the desires of his/her client (client-dependent) and another who responded primarily to the influence from his/her peers (colleague-dependent).

In 1959 Coleman, Menzel, & Katz (Coleman, Menzel, & Katz, 1959) studied the social processes involved in the adoption of a new drug. The authors examined the way in which a new medication found its way into the prescribing habits of a given GP. Using the term "innovator" to describe the physician who adopts change earlier, the authors comment "It appears that the innovator is less characterized by his speciality than by voluntary activities like attendance at meetings and reading journals that bring him into closer contact with events in the profession" (p. 5). In this study, they found that doctors who shared offices with one or more colleagues adopted the new drug, on average, 2.3 months sooner than did doctors in solo practice. They suggested two possible reasons for this observation. The first was that close professional contact keeps a doctor more informed than would otherwise be the case, so that the burden of acquisition of new knowledge is shared. The second was that acceptance of a new concept has potentially dangerous implications. Group support could address this uncertainty to some extent, so the same authors went on to explore the integration of doctors within the wider community network. The results showed that doctors with more social and professional networks introduced the new drug approximately 4 months earlier than their more isolated colleagues. They also showed that these disparities in

adoption of new drugs was not due to personality differences between physicians but was a result of the networks themselves, with a snowballing effect of uptake seen amongst the integrated doctors and a constant (albeit delayed) rate of uptake among the isolated doctors. However, this networking influence only lasted for approximately six months. Thereafter, doctors who introduced the new drug into their practice no longer relied on personal relationships with other doctors for information and guidance. Again, uncertainty was seen by the authors as the likely reason for this behaviour. In the early months, doctors were more uncertain about the drug, required greater social support and validation, and relied more heavily on the opinions of colleagues. The investigators went on to ask about both clear-cut and ambiguous situations involving other forms of medication. Pairs of matched doctors were found to be more alike in the drugs they prescribed for uncertain conditions than those conditions which were clear-cut. This reflects the need for collegial support where authoritative objective evidence is scant.

Shortell (1973) did a study of referral patterns in private practice, the results of which may be relevant to peer influence on decision-making. Patterns of referral appeared to be based on a hierarchy. Status validation is maximally obtained when referral is to 'like'. Findings of referral followed that hypothesised by the authors, those being that

- High status internists referred to themselves.
- Low status internists referred most frequently to high status internists.
- Medium status internists had referral patterns which were somewhere between these two extremes.

It has been hypothesised that peer pressure affects decision-making by clinicians (see for example, (J. M. Eisenberg, 1979), particularly in group practices. Authors have found differences in peer influence and pressure amongst the specialities (Croser, 1958), with medicine being more collaborative than surgery. However, whether this is due to the speciality itself ('nurture') or self-selection into these specialities (the personality attributes of those who are attracted to a particular specialty – 'nature') is unclear.

The most recent paper on professional socialisation in medicine is by Mizrahi (1985) who reported a "Get Rid of Patients" (GROP) orientation amongst junior doctors. There was active reinforcement and support for GROP behaviour from peers who, in this context, were more important socialisers than senior staff.

1.2.32 GPs Perception -What External Health Professionals Might Think

The 'chagrin factor' was first described by Feinstein (1985). For their clinical decisions, Feinstein argues that doctors must choose between an active or a passive option, for example, whether to admit a patient to hospital or treat them at home, whether or not to give a drug. The extreme outcome of the decision may be either desirable or undesirable, and is used retrospectively to determine whether the doctor's decision was 'good' or 'bad'. 'Bad' decisions will inevitably be associated with varying degrees of mortification. Feinstein suggests that doctors choose options that are likely to result in the least chagrin to themselves where pre-diagnostic decisions are involved and to both themselves and others (including the patient) for pre-therapeutic decisions. This concept appears similar to the "prospect theory" (Kahneman, 2002; Kahneman & Tversky, 1979; Schneider & Lopes, 1986) which interprets decision-making in light of

the degree of risk and uncertainty involved. According to this theory, individuals make decisions based on whether they see outcomes as gains or losses. We tend to be risk-avoiding for outcomes associated with gains but risk-seeking when we perceive the outcome to be a loss.

Other authors have subsequently endorsed Feinstein's theory of 'chagrin' in a variety of clinical settings, including obstetrics (Brody & Thompson, 1986), carotid endarterectomy (Gibson, 2002; Matchar, 1990) and prescribing antibiotics for coughing in general practice (Coenen, Van Royen, Vermeire, Hermann, & Denekens, 2000).

1.2.33 Closeness of GP/Patient Relationship

Two suburban general practices in London were studied by Nazareth and King (1993) to identify factors influencing GP decision-making in diagnosis and treatment of lower urinary tract symptoms in women. Logistic regression analysis showed that of all factors studied only the doctors' knowledge of the patient was an independent predictor of whether the doctor diagnosed a significant urinary tract infection. Doctors were 4.5 times more likely to diagnose a significant infection when they did not know the patient well (95% CI of OR 1.4-14.5, p=0.01). Furthermore, a doctor's knowledge of the patient was one of only two factors that were independent predictors of correct prediction of urine analysis results. Doctors were four times more likely to predict correctly in patients whom they considered they knew well (95% CI of OR 1.2-13.5, p=0.02). Similarly, knowledge of the patient was one of only two independent predictors of whether or not the GP prescribed an antibiotic. A GP was twelve times

less likely to prescribe an antibiotic for patients they knew well (95% CI of OR 2.4-60, p=0.002).

There has been a randomised controlled trial reported which compared out-of-hours care provided by patients' usual GPs with that provided by commercial deputising services (Cragg et al., 1997). Deputising doctors were statistically more likely to prescribe medication and less likely to prescribe a generic item. Consequently, their prescriptions were more expensive. There was no significant difference in prescribing between deputising doctors who were principals in a local general practice and those who were not. These findings are more likely to reflect the environment of care provision (for example, less knowledge of patients) than the individual characteristics of GPs. A further study by Salisbury (1997) reported similar results, that is, doctors from a co-operative GP service prescribed for fewer patients than did their deputising counterparts. Although patients were less satisfied with out-of-hours care provided by deputising doctors, no statistically significant differences were found in patient health outcomes or subsequent use of health services between deputising doctors and patients' usual GPs (McKinley et al., 1997). Overall, "It seems likely that there will be patients and problems where personal continuity really matters and others where personal continuity is irrelevant or even harmful, but this has not been researched in detail." (Guthrie & Wyke, 2000, p. 734).

1.2.34 Diagnostic Codes

The value of diagnostic codes is indisputable. They are particularly useful for epidemiological research, and are widely used as an internal management tool in

hospitals, enabling administrators to anticipate costs and manage budget and staffing requirements more efficiently. Now diagnostic codes are coming to be used in complex ways to reimburse medical practitioners. Now that coding has moved from having a purely medical function, the question arises of whether they are influential in the diagnostic process (Noah, 1999).

There are very few studies that examine the issue of potential influence of coding on clinical decision-making. Conversely there is an abundance of literature on how to code for effective reimbursement (for example, (L. D. Eisenberg, 1999; Fillit, Geldmacher, Welter, Maslow, & Fraser, 2002; Phillips & Hillman, 2001).

In one study (Chao et al., 1998), a research nurse sat in on 3791 consultations with 138 family physicians and compared doctor-assigned codes with those the research nurse would have assigned. Billing codes were concordant for 55% of encounters with a difference in more than one code found in less than 4% of observations. Discordance was evenly distributed between under and over coding. Logistic regression analysis indicated that the strongest discriminating factor for undercoding was long consultation time. Overbilling was associated with more time spent chatting, planning treatment and providing preventative services. The investigators noted that if accuracy of coding improves, this may be mistaken by third parties as upcoding.

It is, however, clear from literature on 'gaming the system' that misrepresenting the diagnosis in coding is not unheard of. The National Health Care Anti-Fraud Association estimates that at least 3% of healthcare expenditure, equivalent to $(US)51 billion is lost to medical fraud each year (National Health Care Anti-Fraud Association).

Since 1993, the US Department of Justice has made fighting healthcare fraud one of its top priorities (United States Department of Justice, 1998).

1.2.35 Patient Advocacy Groups

A literature search failed to find any specific articles addressing the influence of patient support groups on diagnostic decision-making. However, there are some potentially relevant articles discussing the impact of Internet health information on the physician-patient relationship. Much of the information available for medical disorders on the Internet is supplied in anecdotal form by patient support/advocacy groups, particularly for conditions that are difficult to diagnose and lack an extensive evidence-base, such as fibromyalgia, chronic fatigue syndrome, depression and musculoskeletal pain. These conditions account for some of the biggest growth in disability claims (Baer, 1997). New Zealand GPs interviewed in a recent survey (Cullen, 2002) described the majority of information obtained from the Internet and brought to a consultation by a patient as coming from "…alternative and complementary medicine sources" (p. 376). These GPs also described more orthodox information from the Internet as being "too general, opinionated, anecdotal or referring to treatments not available in New Zealand" (p. 376).

A telephone survey (Murray et al., 2003) of a nationally representative sample of 3209 members of the US public, with oversampling of people in poor health, showed that of 513 people who had found information relevant to their own health, 50% had taken the information to their physician. Of these, only 29% reported taking the information to the physician to do something specific with it, for example, to order a test or arrange a

referral. These respondents were more likely to rate their ability to appraise web sites critically as excellent or very good, used the Internet frequently for finding health information, and rated their physician's care as only fair or poor. Fifteen per cent of respondents reported that their physician had "acted challenged" on being shown the information. Physicians of uninsured patients were more likely to act challenged than those of insured patients (48% vs 12%, respectively; p=0.02). Seventy-four per cent of people who asked the physician to change a decision as a result of the information, for example order a test or refer to another health professional, had at least one of their requests met.

Seventy-one per cent of cancer patients surveyed in another study reported having sought information from sources other than their physicians, with 29.4% requesting specific treatments and 6.3% declining treatments recommended by their oncologist as a result. Neither patients nor oncologists reported an adverse effect on the patient-physician relationship (Chen & Siu, 2001).

Zavestoski et al. (2004) discuss social mobilisation as an influence in the diagnostic process. Illness groups who are seen as particularly vulnerable or form a substantial portion of society can mobilise attention effectively. This attracts initially media and then political attention which, in turn, drives disease definition. This politicised experience of illness exemplifies a whole new approach to the doctor-patient relationship. Hence diagnosis can be viewed as the "sociomedical archives…. in which we find the history of action by all social actors involved in a particular health issue" (Brown, 1995, p. 40).

There are an increasing number of scientific advances/contributions funded by patient advocacy groups. The Spondylitis Association of America, for example, leveraged a substantial amount of money for a $4.5 million grant from the National Institute of Arthritis and Musculoskeletal and Skin Diseases to expedite a search for a genetic contributor to ankylosing spondylitis (Feldtkeller, Bruckel, & Khan, 2000).

1.2.36 Need to Achieve an Outcome

The House of God by Samuel Shem (1978) introduced a set of terms to describe practices that most (if not all) medical practitioners would have been familiar with. One of these was described in a highly educational (albeit amusing) article on medical slang: "Turf--To get rid of, usually by referring to another team. This may require "buffing" the patient's story to make it sound more appropriate for the patient to be admitted by somebody else" (Fox, Cahill, & Fertleman, 2002). In the context of the present thesis, this would amount to "buffing the diagnosis" to achieve an outcome.

Associate-Professor Mark Graber argued that lying (or "buffing") is sometimes in the patient's best interests. "When a physician thinks that a patient needs hospital admission, it may be necessary to falsify a diagnosis to facilitate the admission" (Graber, 2001, p. 220). In one study (Wynia, Cummins, VanGeest, & Wilson, 2000) the reason most often given by a physician manipulating third party rules for a patient (compared with those who never or rarely gamed the system) was the need to provide high-quality care (OR 3.67; 95% CI, 2.54-5.29). Whether this practice is in the interests

of the patient or for the doctor (fear of uncertainty, minimising medico-legal risk) is debatable (Bogardus, Geist, & Bradley, 2004).

Finkelstein (2000) sees doctors gaming the system as either noble advocates for their patients or as medical rebels within an incomprehensible health care system. Moreover, Morreim's article entitled "Gaming the system. Dodging the rules, ruling the dodgers" (Morreim, 1991) opens with the following tale:

> Pauline Stafford had lung cancer. Before surgery, Mrs Stafford was referred for computed tomography to determine whether the cancer had yet metastasized to her brain. Her insurance did not cover screening procedures, however, and would reject the claim if "rule out brain tumour" were written in the space marked "diagnosis". And so the physician directed his office staff to write "brain tumour", even though the test showed she had no tumour. When Pauline subsequently received in the mail a statement of her insurance benefits she saw the entry under "diagnosis" and concluded the worst. Two days later, after preparing her husband's dinner and typing out his daily business agenda, Stafford hanged herself, (p. 443).

In his article, Morreim puts the case for and against 'gaming' the system. As he puts it, where there is evidence or a perception that the third party is 'gaming the patient' (for example by placing considerable administrative hurdles between the patient and payment) doctors may feel justified in 'gaming the system'. Gaming, he writes, "...is not only easily available…it is sorely tempting, because it seems to offer escape from an impossible situation by allowing physicians to secure indirectly what they no longer control directly. The physician still manages to extract the hospital admission or the costlier therapy, despite third parties' refusals or reluctance" (p. 444). However, as exemplified by the case of Pauline Stafford, there are hazards associated with gaming

the system – namely acting contrary to the basic tenets of ethical medical practice – nonmaleficence, truth and justice.

1.2.37 Fear of Uncertainty

Diagnostics is practised in a "sea of uncertainty" (Andersen & Mooney, 1990). A diagnosis is a hypothesis about a patient's medical condition, rather than a fact. A diagnosis is derived from observations (from the history, examination and results of investigations) by use of inference. Medical practitioners gather information that favours or does not favour competing hypotheses (differential diagnoses) until a point is reached where the level of uncertainty is such that the medical practitioner has sufficient confidence to select one hypothesis over others (definitive diagnosis).

One argument is that the level of confidence required should vary depending on circumstances (Kassirer, 1989). For example, when therapy is highly effective and low in risk to the patient, the level of diagnostic uncertainty a medical practitioner should tolerate may be justifiably higher than when the therapy is not very efficacious and carries a risk of significant morbidity. Kassirer argues that, it is, in part, a medical practitioner's "stubborn quest for diagnostic certainty" that drives excessive testing.

Kalf and Spruijt-Metz (1996) attribute diagnostic uncertainty to a number of characteristics of medicine:

- "the stochastic nature of biological systems which leads to probabilistic knowledge
- the incompleteness of medical knowledge

- the limits of human cognition
- the fact that medicine takes its knowledge from diverse scientific domains, adhering to diverse paradigms and speaking in diverse discourses
- the epistemological questions which have been raised regarding the truth of medical knowledge
- possible conflicts between the internal, purported ethically neutral goal of science (knowledge) with the external, ethically charged goals of medical performance (to cure, care and comfort)" (p. 705-706)

They undertook a study of speciality and variation in diagnostic practice. The study used clinical vignettes and the doctors (psychiatrists, geriatricians and internists) were asked to select facts they considered important in reaching a diagnosis and then to proffer a diagnosis in each case. The results were probably unsurprising. The type of fact chosen as important in building a diagnosis was specialty-specific. Specialists differed systematically in the diagnoses they reached for each scenario. The authors believe that these systematic differences between specialist groups are a clear manifestation of the uncertainty inherent in medicine. Given this, they say that "… there are no objective criteria for the designation of the 'best' diagnosis for a particular case" (p. 710).

This raises important issues which are canvassed further by Zavestoski et al. (2004) in a paper on patient activism and the struggle for diagnosis. Just as doctors dislike uncertainty and turn "unorganised illness" (signs and symptoms) into an "organised illness" (diagnosis) patients also dislike such uncertainty. Diagnosis provides legitimisation and opens the gate to service provision. The more complex the

presentation (for example, Gulf War illness or chronic fatigue syndrome) the more conflict there is between doctor and patient in resolving the diagnostic uncertainty. Patient activism, Zavestoski hypothesises, is about resolving uncertainty by proving they are sick. Patients may self-diagnose and then seek out specialists based on that self-diagnosis. Given Kalf's findings (Kalf & Spruijt-Metz, 1996) described above the specialist chosen will shape the diagnostic outcome.

A qualitative decision analysis (Coenen, Van Royen, Vermeire, Hermann, & Denekens) found that eventually the clinical decision-making process stems from diagnostic (un)certainty at the GP level. The less the certainty of diagnosis and treatment, the more influential non-medical factors became in decision-making, more unnecessary prescriptions for antibiotics were provided. Schwartz et al. (1989) also reaffirmed that giving a drug implies that the doctor knows how to conquer the problem. The act of prescribing simultaneously relieves the anxiety associated with uncertainty for both doctor and patient.

1.2.38 Context in which the Diagnosis is Made (eg: ACC vs non ACC)

The context in which a diagnosis is made has been hypothesised to influence the diagnosis reached. Kiesler and Simpkins (1992) examined Hospital Discharge Surveys (HDS) conducted by the National Centre for Health Statistics from 1980 and 1985. In 1982 significant changes had been made to legislation relating to psychiatric inpatient care, whereby the Tax Equity and Fiscal Responsibility Act offered incentives to hospitals to reduce the costs and lengths of inpatient admissions. In 1983 the Medicare Prospective Payment System was established, and provided fixed payments for inpatient

care depending on diagnosis. Between 1980 and 1985 there was a significant shift in the diagnoses recorded. There was a substantial increase in affective disorders and a concomitant decrease in depressive neurosis, neurotic depression and depressive disorder not otherwise classified. In 1985 the average length of inpatient stay for affective disorders was 15.94 days. In 1980 the average inpatient stay for neurotic depression was 10.29 days and for depressive disorder not otherwise classified was 9.73 days. The authors concede that changes in clinical focus or changes in transitioning from DSM-II to DSM-III may explain the changes in diagnostic case mix. However, the explanation thought most likely to explain the shift was "gaming the system". The editorial of the same issue of General Hospital Psychiatry (Wells, 1992) reinforced the need to examine all potential causes for the shifts in diagnoses investigated by Kiesler and Simpkins, while acknowledging that some upcoding had almost certainly occurred.

There is certainly some evidence to suggest that healthy outcomes may be adversely affected by compensation, when other factors are taken into account. There is the classic article by Schrader et al. (1996) reporting the incidence of whiplash injury in Lithuania which is a virtually compensation-free environment. Their conclusion was that " … a large number of reported cases of late whiplash syndrome are caused by expectation of disability and attribution of pre-existing symptoms to the neck trauma" (p. 1211). Cassidy et al. (2000) studied whiplash claims before and after the introduction of a no-fault insurance system in Saskatchewan, Canada. Their results indicated a 28% reduction in incidence of claims for whiplash and the median time for closure of claims was reduced by more than 200 days after the change to a no-fault system. This was in spite of increases in the number of vehicle-damage claims and kilometres driven over the study period. They concluded that "… the type of insurance

system has a profound effect on the frequency and duration of whiplash claims …" (p. 1185). In a similar vein, Atlas et al. (2000) studied the effect of compensation on patients with a herniated lumbar disc. "Even after adjustment for the initial treatment of the sciatica and for other clinical factors, patients who had been receiving Workers' Compensation at baseline were more likely to be receiving disability benefits and were less likely to report relief from symptoms and improvement in quality of life at the time of the four-year follow-up than patients who had not been receiving Workers' Compensation at baseline" (p. 4). Gorman and Scott (2003) discuss similar findings in an epidemic of limb pain in telephonists in New Zealand, commenting that

> … GPs in New Zealand often select a statutorily (Accident Compensation Corporation) compatible diagnosis to bypass the public health system and achieve higher levels of financial support for their patients" (p. 76).

1.2.39 Whether or not Treatment is Available for the Diagnosed Condition

Only two articles (Cashman, 1999; Gelinas, 1999) were found that addressed this topic directly. Both were on the diagnostic delay accompanying amyotrophic lateral sclerosis (ALS). Also known as "Lou Gehrig's disease", ALS is a progressive neurodegenerative disease in which motor neurons eventually die, and muscle control is lost. Throughout the disease the mind of the patient remains unaffected. Clearly this is a disease with a particularly unpleasant course and prognosis for which there has been no treatment available until recently. Both authors (one from Canada and the other from the US) discuss the reluctance of medical practitioners to both diagnose and inform the patient of the diagnosis. Both authors put forward similar hypotheses to explain what is often a significant delay (usually 16 to 18 months) between the onset of symptoms and

confirmation of diagnosis. Primarily, they believe there is a reluctance to diagnose a condition with no treatment and poor prognosis, so doctors will wait until they have "100% certainty" before giving the diagnosis, and will often seek second opinions from their colleagues before doing so. Because ALS is uncommon, uncertainty may also contribute to a lack of conviction to give the diagnosis.

1.3 The Way Forwards

It should be apparent from the above that it is unlikely that medical practitioners can make diagnostic decisions in value-free ways. Values pose a problem when error management is viewed in terms of technical rational decision-making. Values are not dichotomous. There are no simple right or wrong values.

In his book "Values-based decision-making of the caring professions", Seedhouse (2005) recounts a well-known anecdote in

> which a policeman comes across a drunk, on his knees, searching for something under a lamppost. He tells the officer he lost his keys 'over there', pointing in to the darkness. 'In that case why are you looking for them over here?' the policeman asks. The drunk replies, 'Because the light is so much better here'. (p. xviii).

Aviation is increasingly seen by health care as a high reliability industry to be emulated in the quest for improving patient safety (Amalberti, Auroy, Berwick, & Barash, 2005; Australian Council for Safety and Quality in Health Care, 2004; Byers & White, 2004; Kohn, Corrigan, & Donaldson, 2000; Public Policy Office, 2000). The hypothesis is

that health care can effectively adapt and implement safety technologies and systems used by aviation to reduce preventable patient harm. Few however have raised the potential problem of looking for the "keys"in this bright light.

> While undoubtedly many of the lessons learned in aviation will have counterparts in medicine, trying to directly apply one industry's practices to the other risks both the application of unwarranted elements as well as the omission of aspects specific to medical practice. In the larger picture this risks both ineffectiveness and subsequent backlash when such programs are shown to be minimally ineffective (Musson & Helmreich, 2004, p. 32)

Diagnosis is integral to the theory and practice of medicine. There is no values-based equivalent in aviation. If in fact diagosis is a matter of the "politics of definitions" (Conrad & Schneider, 1992, p. 22) then the following is a small step towards shining light on the politics before rushing to implement the solutions – because, as Seedhouse points out (ibid, p. 134):

> The values and reasoning of health professionals have an effect on the success of health care interventions. The values and reasoning of patients have an effect on the success of health care interventions. The greater the disharmony between health professionals and patient values the less successful health care interventions are.

2. Defining the Factors that influence General Practitioner Diagnostic Decision-Making (Phase 1)

2.1 Background

Before describing the procedure for Phase 1 of this study, a brief description is given of three techniques that were employed. These were (1) focus groups, (2) the Delphi Method, and (3) Rasch analysis.

2.1.1 Focus Groups

Focus groups are an extension of the focused interview – a research technique developed to investigate human subjective experiences. First described by Merton and Kendall (1946), the focused interview could be used for several purposes, including formulation of hypotheses that could subsequently be submitted for systematic testing (Gibbs, 1997; Kitzinger, 1995). The term focus group has many definitions in the literature, but the one which best describes its key features is that of Powell et al (Powell & Single, 1996, p. 499) who define it as "a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research".

Because the main purpose of the focus group is to gather information about participants' subjective experiences, for example, attitudes and beliefs, guidance and direction by the researcher is kept to a minimum.

> A defect of the interview for the purposes of fact-finding in scientific research, then, is that the questioner takes the lead. That is, the subject plays a more or less passive role. Information or points of view of the highest value may not be disclosed because the direction given the interview by the questioner leads away from them. In short, data obtained from an interview are as likely to embody the preconceived ideas of the interviewer as the attitudes of the subject interviewed. (SA Rice (ed) Methods in Social Science Chicago: University of Chicago Press 1931 p 561 as quoted in (Merton & Kendall, 1946)

That is, the researcher using focus groups must enable the participants to take the initiative in the discussion. Group interaction through asking questions and commenting on others' points of view is a significant part of the methodology. A focus group should not only allow comment on what people think, but also how and why they think that way (Kitzinger, 1995). Ideally the group size should be between four and ten participants (Kitzinger, 1995; MacIntosh, 1993). Sessions usually last between one and two hours (Gibbs, 1997).

2.1.2 The Delphi Method

There are a number of definitions of the Delphi Method although all highlight its usefulness as a means of assessing group opinion.

> Delphi may be characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem. (Linstone & Turoff, 1975a, p. 3)

"The Delphi survey is a group facilitation technique, which is an iterative multistage process, designed to transform opinion into group consensus" (Hasson, Keeney, & McKenna, 2000, p. 1008)

Delphi methodology has been used in a wide variety of contexts. In this case, it was used to identify and then prioritise factors that influence GP decision-making. Clearly, such an investigation does not lend itself to precise analytical techniques and relies on subjective and hopefully collective judgements.

The use of rating scales and scaling procedures are controversial in the psychological research community (see, for example, the array of letters discussing Dr. Linda Bartoshuk's concerns about rating scales in The Monitor, a publication of the American Psychological Association during 2000). At its simplest level, the debate is about "measurement" in the psychological sciences and the difficulties associated with the study of individual judgement. In ending his article entitled "The relativism of absolute judgements", with the following quote from Mark Twain, Professor Allen Parducci (Parducci, 1968) summarised one of the inherent problems of psychological research:

"What a wee little part of a person's life are his acts and his words! His real life is led in his head, and is known to none but himself" (p. 90)

Joel Michell, when discussing the definition of measurement in psychology compared with that in the quantitative sciences, is strongly critical of the widespread belief in the psychological sciences that "… measurement consists entirely in making numerical

assignments to things according to some rule …" (Michell, 1997, p. 360) In addition, ordinal data are treated as if they were interval-level data. Accordingly, data are often obtained from responses to, for example, Likert scales, and statistically analysed with results presented as measures of central tendency. Treating data obtained from rating scales in this way is underpinned by two central assumptions. The first is that each item measured contributes equally to the overall construct of interest. The second is that an equal interval scale exists, that is, the distance between each scale category is uniform with and across items being measured. Neither assumption is necessarily true (Myers & Winters, 2002; Wang, Yu, Wang, & Huang, 1999). However, the practice of treating ordinal data as if it were interval is widespread. The actual consequences of regarding or disregarding these two assumptions are unclear, but have long been a matter of debate.

2.1.3 Rasch Analysis

The Rasch model postulates that

> … the probability of endorsing a statement is a logistic function of the difference between two independent quantities: the strength of the respondent's attitude and the location of the statement on the attitude continuum" (Irwin & Irwin, 2004, p. 109).

Rasch analysis (see for example, (Bond & Fox, 2001) therefore allows calculation of a measure relating to the respondents and another measure relating to the items under study on a unidimensional scale. The units of the scale are log-odds ratio or logits. In

this study, the key respondent factor is “tendency to endorse” and the key item factor is either importance or desirability.

As is common in Rasch analysis, the scale used in this study was calibrated such that the average item importance or desirability arbitrarily was zero. One advantage of Rasch scaling is that it enables meaningful comparisons between different groups undertaking the same questionnaire.

There are three main assumptions made by researchers who use the Likert method to compare individuals and/or groups. The first assumption is that all test items are considered manifestations of the same underlying constructs and enables the researcher to sum resultant scores in a linear manner. The second assumption is that all test items contribute equally to the measure of the construct under investigation, that is, all test items should be given equal weighting during analysis. The third assumption is that an equal interval scale exists whereby the distance between each scale point is the same both within and across test items.

Rasch analysis specifically addresses each one of these assumptions, ensuring rigorous measurement of the construct under study before analysis is undertaken.

2.2 Methods

2.2.1 Objectives

Phase 1 of this study had several objectives. The first was to identify factors that influenced GP diagnostic decision-making. The second was to create and use a valid questionnaire to evaluate how important and how desirable each factor was in terms of influence. The third was to use standard Delphi methodology (Linstone & Turoff, 1975b) to evaluate how important and how desirable each factor was in terms of influence, in the opinion of a group of experts responsible for setting GP standards in New Zealand. The latter data could then be used as a reference point when evaluating the responses of other stakeholder groups involved in the provision of health care in New Zealand. The fourth was to identify what additional information may be obtained by a Rasch analysis of the data.

2.2.2 Ethics

The study protocol was considered in advance by The University of Auckland Human Subjects Ethics Committee and the Investigator was advised in writing that ethics approval was not required for Phase 1 of the study.

2.2.3 Participants

Expert groups responsible for setting GP standards in New Zealand were identified. There are a number of groups in this country that arguably influence GP standards;

however many are biased, either legislatively or otherwise, towards a particular viewpoint. For example, the purpose of the Health and Disability Commissioner Act 1994 is, "… to promote and protect the rights of health and disability *consumers*…" [emphasis added]. Academic organisations were identified by the investigator as being the least biased "standard setters" so participants were selected from these groups.

There were five academic organisations in New Zealand identified as providing GP undergraduate and/or postgraduate education and professional development. These were the Department of General Practice, Wellington School of Medicine and Health Sciences, University of Otago; the Department of General Practice, Dunedin School of Medicine, University of Otago; the Department of General Practice, Christchurch School of Medicine and Health Sciences, University of Otago; the Department of General Practice and Primary Health Care, University of Auckland; and The Royal New Zealand College of General Practitioners. All five organisations participated in the study.

Heads of Department were asked to select a minimum of four senior members of their department to participate in the study. It was essential that those members were currently in clinical practice and preferable (but not essential) that there was a reasonable gender balance and a mix of rural/city practice familiarity.

2.2.4 Procedure

2.2.4.1 Focus Group Meetings

The researcher met with three of the five groups of identified experts. Because of time constraints it was not possible for a meeting to be held with The Royal New Zealand College of General Practitioners or the Department of General Practice, Christchurch School of Medicine.

Background information was sent in advance of the meetings. The meetings lasted between 1.5 and 2 hours. The focus group with practitioners from the Department of General Practice, Dunedin School of Medicine had six participants. Four participants each formed the focus groups from the Department of General Practice and Primary Health Care, University of Auckland and the Department of General Practice, Wellington School of Medicine and Health Sciences.

The characteristics of the 14 participants were as follows: 10 were male, 4 were female; 13 were in current clinical practice (one participant had recently ceased practice to finish a full-time postgraduate degree); 11 were in urban practice, 3 were in rural practice; 4 were aged 40-44, 2 were aged 45- 49, 4 were aged 50-54 and 4 were aged 55-59.

The purpose of these meetings was for experts to identify factors that they believed influenced GP diagnostic decision-making. The investigator did not participate in the discussion once the purpose of each meeting had been clarified.

The lists of influencing factors obtained from each meeting was examined for overlapping concepts and repetitions, and a composite list embracing the intent of all the expert groups consulted was compiled. From this, an electronic questionnaire for Round 1 of the Delphi process was constructed.

2.2.4.2 Delphi Round 1

Copies of the questionnaire along with study instructions and background information were sent by email to twenty-three experts identified by either the Heads of Department or the President of the Royal New Zealand College of General Practitioners.

The questionnaire contained thirty-nine factors identified by the focus groups as influencing GP diagnostic decision-making. A version of this questionnaire can be seen in Appendix A.

The experts were asked to rate importance and desirability for each factor using a seven-point numeric scale, anchored by "not at all important" and "very important", and "not at all desirable" and "very desirable". "Not at all important" or "not at all desirable" was represented by number 1 and "very important" and "very desirable" by number 7 on the scale. Experts were also free to provide comment on each factor.

Despite both an email and a telephone reminder, only twelve Round 1 responses were received, that is, the response rate was 52%).

Characteristics of the twelve respondents (where data was provided by the respondent): six were male, six were female; eleven were in current clinical practice, one participant had recently ceased practice to finish a full time post-graduate degree; 5/8 were in urban practice, 3/8 were in rural practice; 3/8 were aged 40-44, 1/8 was aged 45-49, 3/8 were aged 50-54 and 1/8 were aged 55-59. Two participants were from the Department of General Practice and Primary Health Care, University of Auckland; three from the Department of General Practice, Wellington School of Medicine and Health Sciences; three were from the Department of General Practice, Dunedin School of Medicine; two were from the Department of General Practice, Christchurch School of Medicine and Health Sciences; and two were from The Royal New Zealand College of General Practitioners.

2.2.4.3 Delphi Round 2

In accordance with standard Delphi methodology, the experts who had responded to Round 1 were asked to re-rate each influencing factor and again provide comment if they wished. Following on from comments made in Round 1, several areas were clarified and one new factor was added. The latter was a question seeking to explore further the influence of potential ramifications of the diagnosis. There were thus two questions addressing this factor. The first read:

> Potential ramifications of the diagnosis (for example: ineligibility for compensation). Please answer this question thinking of all possible scenarios, that is, not only compensation but also situations such as a patient with potential multiple sclerosis and balancing early but potentially wrong diagnosis.

The second read:

> Potential ramifications (implications) of the diagnosis. Please answer this question specifically based on whether or not the diagnosis the GP makes would affect the eligibility of the patient for Accident Compensation Corporation (ACC).

Clarifications and alterations were clearly identified by different coloured font. Experts were provided with their original Round 1 rating as well as the group mean rating for each item.

Only eleven Round 2 responses were received. The non-responder was female, from an urban practice background, and from the Department of General Practice, Dunedin School of Medicine.

Considerable effort and time was required to elicit completed Round 2 responses, indicating sample fatigue. Given this, the investigator anticipated that the costs of undertaking a further Delphi round were likely to be considerably higher than any benefits obtained, so Round 3 was not undertaken.

2.3 General Analysis

A Rasch analysis was done using the software package WINSTEPS® Version 3.55 (Linacre & Wright, 2000) . The method adopted was the rating-scale version of the Rasch model (Andrich, 1978) where the ratings given to each item are not assumed to be equally spaced, but all items share the same structure.

Statistical analysis was undertaken with different versions of SAS® depending on date of analysis (SAS Institute Inc).

2.4 Results

Compilation of data obtained from the focus group meetings identified thirty-nine factors that influenced GP diagnostic decision-making. In no particular order, these were:

- History given by the patient
- Examination findings
- Results of investigations/tests
- Patient advocacy (including the GP as protector of a patients' interests, guardian of patients' rights and go-between on behalf of patients and others)
- Legal requirements (for example, Acts of Parliament including the Health Act 1956, Medical Practitioners Act 1995 and the Injury Prevention, Rehabilitation, and Compensation Act 2001).
- Administrative requirements (for example, the ACC gradual process claim forms)
- Evidence-based medicine
- Personal clinical experience
- GP characteristics (for example, his/her personality, life experiences, values and beliefs)
- Medico-legal issues (for example, the likelihood of a patient making a complaint against the GP)

- The Health and Disability Commissioner (whose role is to promote and protect the rights of health and disability consumers, and to facilitate the fair, simple, speedy and efficient resolution of complaints)
- Potential implications for the wider community of the diagnosis (for example, does the diagnosis create a precedent that will impact on the health system by perhaps increasing costs? Does the diagnosis create a precedent that will impact on other patients by perhaps excluding a group from ACC cover?)
- Clinical setting (for example, rural versus urban, private versus public, after-hours versus normal work hours)
- Time available for the consultation
- External feedback from a medical source (for example, peers or a medical professional group) to the GP
- Other potential effects of the diagnosis on the patient (examples, the patient will not have ACC cover; a serious and treatable disease can be diagnosed but diagnosis is only 80% certain in the early stages of the disease and telling the patient will cause them significant worry).
- Marketing/media (for example, advertisements about a medical condition/treatment in a medical journal).
- Personal circumstances of the patient (for example, the patient's home situation and/or financial position)
- Patient characteristics (for example, his/her personality, life experiences, values, beliefs)
- Patient expectations
- GP's need to justify a course of action
- Pressure put on the GP by a patient that the GP considers to be reasonable

- Pressure put on the GP by a patient that the GP considers to be unreasonable
- GP's desire to please the patient
- GP's perception of the state of the national health care system
- Technological tools (for example, computer programmes to aid in determining the diagnosis)
- GP's knowledge of local conditions (for example, local disease prevalence)
- Who is paying (funder) for the consultation (for example, the patient or a third party)
- Business considerations
- External incentives (for example, rewards from a drug company for using/prescribing its product)
- Expectations of GPs by external medical professionals
- GP's perception of what other external health professionals might think
- Closeness of the GP-patient relationship (for example, a long-standing, regular patient versus one who consults the GP infrequently).
- Diagnostic categories (for example, ACC READ codes used to classify medical conditions)
- Patient advocacy/support groups
- Need to achieve an outcome (for example, have a patient admitted to hospital or reviewed by a specialist in a timely fashion)
- Fear of uncertainty
- Context in which the diagnosis is made (for example, a consultation about an ACC-related problem versus a consultation about a non-ACC-related problem)
- Whether or not treatment is available for the diagnosed condition

2.4.1 Standard Delphi Methodology Analysis

Tables 2.1 and 2.2 list the summed mean ratings for the group of GP standard setters. Also included is information on whether or not stability of response was achieved (including degree of stability achieved) and whether or not consensus was achieved (including degree of consensus achieved). Information on the medians, and upper and lower quartiles can be found at Appendix D (Table D-1 and D-2).

2.4.1.1 Stability of Response

Stability of response is an important, albeit often unreported, consideration in the analysis of Delphi responses. There may be situations (for example, bimodal distributions of opinion) where consensus may not be possible. Whether or not further rounds of Delphi may be productive can be established by measuring the stability of respondents' opinion distribution curves over successive rounds. The assessment of stable non-consensual distributions should be of equal interest in assessing opinion as the assessment of stable consensual distributions.

In this study, measurement of group stability of opinion between the two rounds of Delphi was assessed by the method described by Scheibe, Skutsch & Schofer (1975) and is reported in Tables 2.1 and 2.2. The absolute differences in the histograms are calculated for two successive rounds and then summed to show total units of change. Net person changes are then calculated by dividing the total units of change by 2 (since any one participant's change of opinion is reflected in the histogram differences by two units of change). Finally, the percentage change is calculated by dividing the net person changes by the number of participants. In this method, a 15% change level is accepted

as representing a stage of equilibrium. The higher the percentage change, the less stable is the group's position.

Table 2.1 Summed Mean Ratings of Importance, Stability, Degree of Stability, Consensus and Strength of Consensus.

Influencing factor	Mean rating (importance)	Stability	Degree of stability	Consensus	Strength of consensus
History	6.8	Yes	9.1	Yes	**
Examination findings	6.2	Yes	9.1	Yes	*
GP's personal clinical experience	5.5	Yes	9.1	Yes	*
GP's knowledge of local conditions	5.4		18.2	Yes	**
Results of investigations	5.3	Possibly Yes	13.6-18.2		
Evidence-based medicine	5.2	Yes	9.1		
Characteristics of the GP	4.8		22.7		
Need to achieve an outcome	4.4		31.8-36.4		
Patient expectations	4.2		36.4		
Patient advocacy	4.0		22.7-27.3		
Medico-legal issues	4.0		36.4		
Characteristics of the patient	4.0		27.3		
Reasonable patient pressure	4.0		27.3		
Closeness of GP/patient relationship	4.0	Possibly Yes	13.6-18.2		
Time available for the consultation	4.0		18.2		
External feedback from a medical source	3.9		18.2		
Potential ramifications of the diagnosis	3.9	Yes	0.0		
The clinical setting	3.6		27.3		
Need to justify a course of action	3.6		18.2		
Personal circumstances of the patient	3.5		36.4		
Expectations of external medical professionals	3.5		22.7		
The Health and Disability Commissioner	3.1		18.2		
Potential implications for the wider community	3.1		50-54.5		
Context in which the diagnosis is made	3.1		18.2		
Administrative requirements	3.0		27.3		
Unreasonable patient pressure	3.0		36.4		
GP's desire to please the patient	3.0		27.3		
Diagnostic algorithms/categories/protocols	3.0		18.2		
Fear of uncertainty	2.9		36.4		
Whether or not treatment is available for the diagnosed condition	2.9		27.3		
GP's perception of what other external health professionals may think	2.8		36.4		
GP's perception of the state of the national health care system	2.6		27.3		
Marketing /media	2.6		18.2		
Legal requirements	2.6		27.3		
Patient advocacy/support groups	2.5		36.4	Yes	*
Technological tools	2.3		27.3		
Who is funding the consultation	1.7	Yes	9.1	Yes	*
Business considerations	1.6		18.2	Yes	**
External incentives	1.1	Yes	9.1	Yes	**

- *consensus
- ** strong consensus

Table 2.2. Summed Mean Ratings of Desirability, Stability, Degree of Stability, Consensus and Strength of Consensus.

Influencing factor	Mean rating (desirability)	Stability	Degree of stability	Consensus	Strength of consensus
History	6.6	Yes	0.0	Yes	**
Examination findings	6.2		27.3	Yes	*
Evidence-based medicine	6.2	Yes	9.1	Yes	*
GP's knowledge of local conditions	5.7	Yes	9.1	Yes	*
Results of investigations	5.5		18.2		
GP's personal clinical experience	5.2		27.3		
External feedback from a medical source	4.3		36.4		
Technological tools	3.8		31.8-36.4	Yes	*
Potential implications for the wider community	3.6		27.3		
Patient advocacy	3.6	Possibly yes	13.6-18.2		
Characteristics of the GP	3.5		18.2		
Characteristics of the patient	3.5		45.5		
Patient expectations	3.4		18.2		
Need to achieve an outcome	3.3		22.7-27.3		
Closeness of GP/patient relationship	3.1		40.9-45.5		
Medico-legal issues	2.8	Yes	9.1		
Expectations of external medical professionals	2.8		36.4		
Diagnostic algorithms/categories/protocols	2.8		27.3		
Legal requirements	2.6		45.5		
Need to justify a course of action	2.4		31.8-36.4		
Reasonable patient pressure	2.4		36.4		
Personal circumstances of the patient	2.3		22.7-27.3		
The Health and Disability Commissioner	2.3		27.3		
Potential ramifications of the diagnosis	2.3		18.2		
GP's perception of what other external health professionals may think	2.1		18.2		
Administrative requirements	1.9		18.2	Yes	*
The clinical setting	1.9		18.2		
Time available for the consultation	1.9		18.2		
Patient advocacy/support groups	1.9		36.4-40.9	Yes	*
Marketing /media	1.6	Possibly yes	13.6-18.2	Yes	**
GP's desire to please the patient	1.6		36.4	Yes	*
Fear of uncertainty	1.6		22.7-27.3	Yes	**
Whether or not treatment is available for the diagnosed condition	1.6	Possibly yes	13.6-18.2	Yes	*
Unreasonable patient pressure	1.4		18.2	Yes	**
Who is funding the consultation	1.3		18.2	Yes	**
Context in which the diagnosis is made	1.3	Yes	4.5-9.1	Yes	*
GP's perception of the state of the national health care system	1.2		27.3	Yes	**
Business considerations	1.2	Yes	9.1	Yes	**
External incentives	1.0	Yes	9.1	Yes	**

Round 1 responses for the study participant who dropped out between Rounds 1 and 2 were eliminated from the analysis of stability. Similarly, factors which were not responded to by one (no factor had more than one non-response) of the remaining participants could not be analysed accurately. Stability was therefore represented as a range, with the lowest number representing the respondent as having maintained his/her previous rating and the highest number representing a change of rating.

Of interest are the factors which show high group stability but where no consensus has been reached, indicating fixed disagreement. The importance of evidence-based medicine and potential ramifications of the diagnosis as well as the desirability of medico-legal issues are examples of these. Change in response is perhaps best described visually. Figures 2.1 to 2.156 depict the histograms for each influencing factor on each successive Delphi round.

2.4.1.2 Consensus

In most Delphi analyses, consensus is assumed to have been reached when a certain percentage of responses fall within a prescribed range. Neither the proportion nor the range has been defined in the Delphi literature (Hasson, Keeney, & McKenna, 2000).

For this study, consensus was defined as being where all responses fell within a three-point range at Round 2. If all responses fell within a two-point range (or less) then this was defined as strong consensus. Responses falling outside of a three-point range constituted disagreement. This is consistent with other interpretations of agreement and disagreement (see for example, (Brook et al., 1986).

Some factors showing consensus at Round 2 were highly unstable indicating that the group had gone from a state of disagreement to a state of agreement between Round 1 and Round 2. Examples of this are the importance of patient advocacy/support groups and the desirability of examination findings as influencing factors. These are also shown graphically in Figures 2.145 and 2.146. Whether or not consensus would be maintained over a third Delphi round is unknown.

Figures 2.1-2.8 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.1

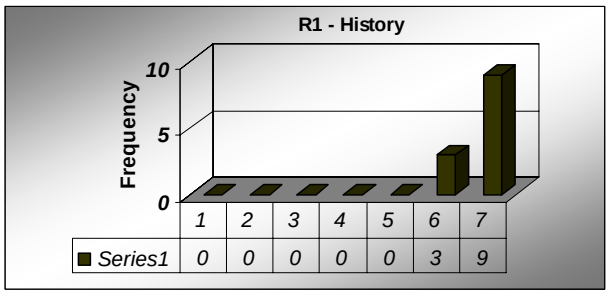


Fig 2.2

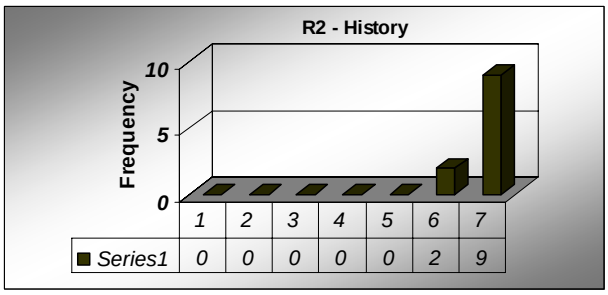


Fig 2.3

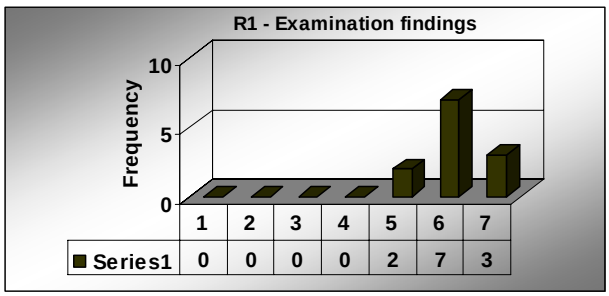


Fig 2.4

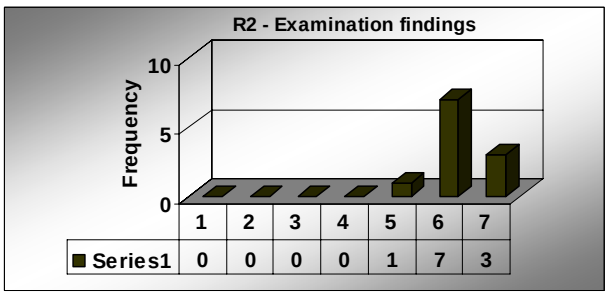


Fig 2.5

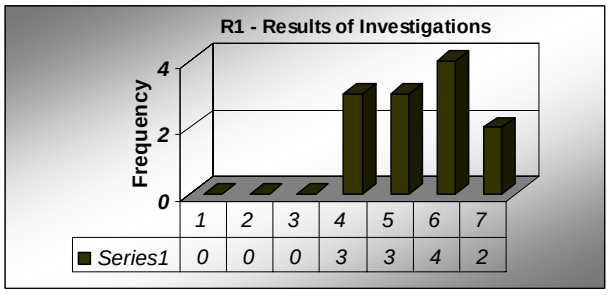


Fig 2.6

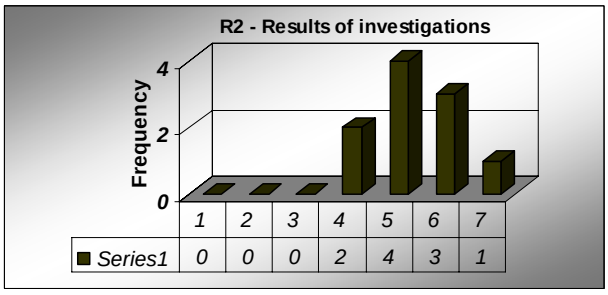


Fig 2.7

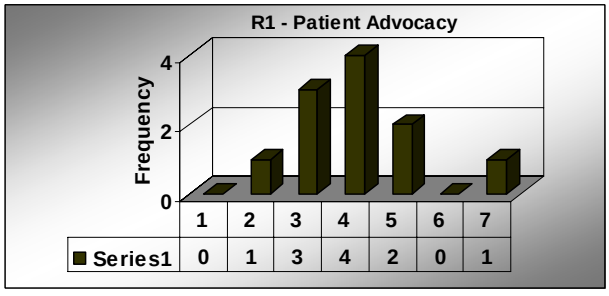
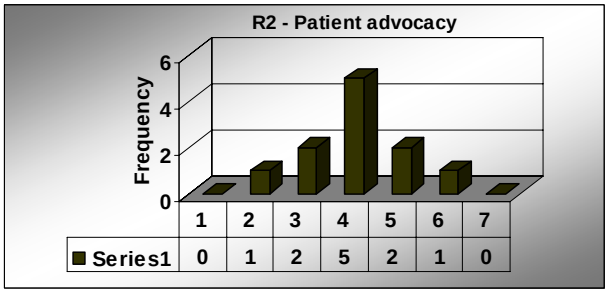


Fig 2.8



Figures 2.9-2.16 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.9

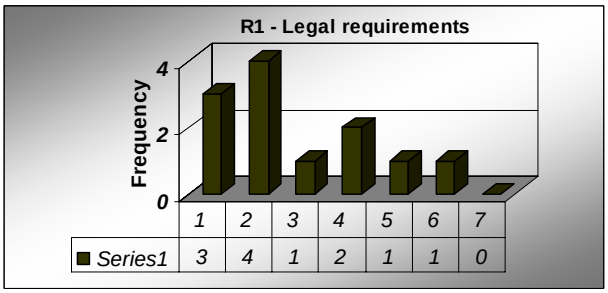


Fig 2.10

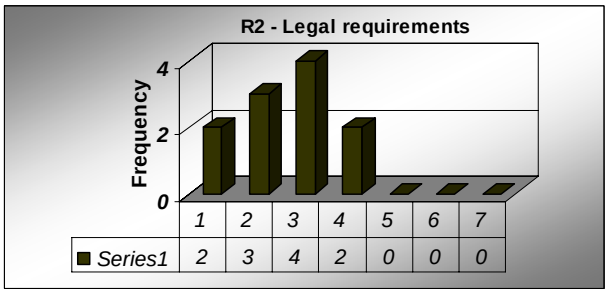


Fig 2.11

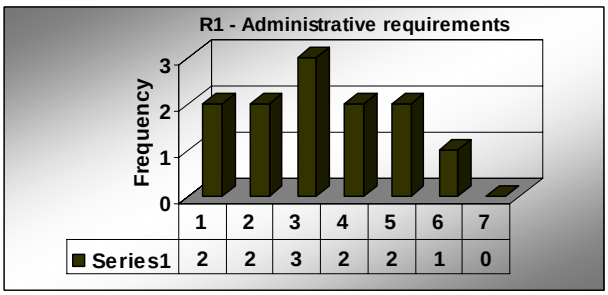


Fig 2.12

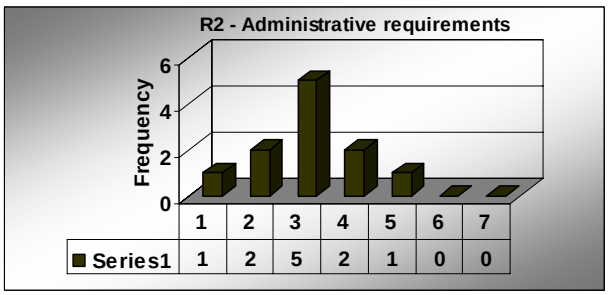


Fig 2.13

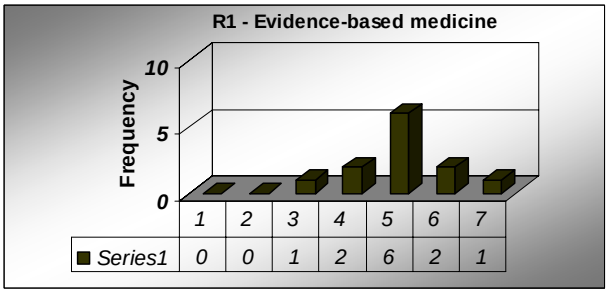


Fig 2.14

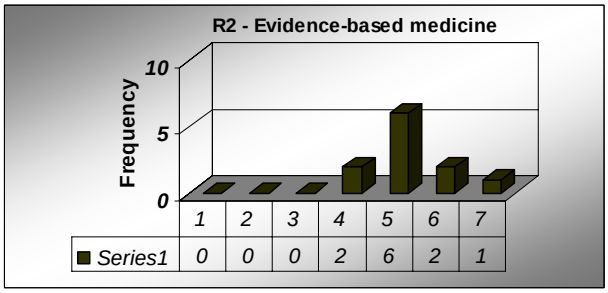


Fig 2.15

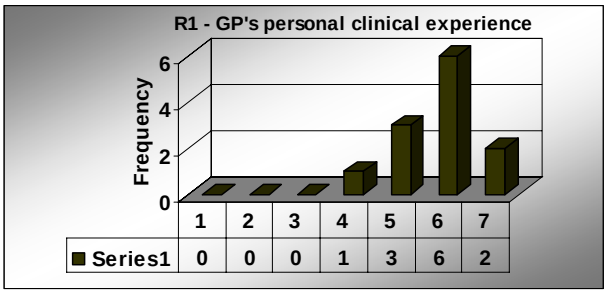
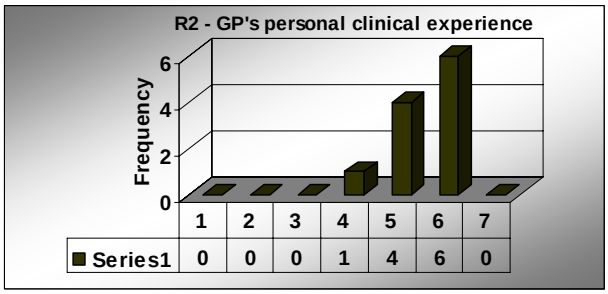


Fig 2.16



Figures 2.17-2.24 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.17

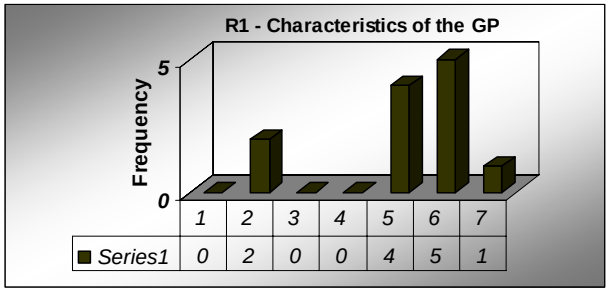


Fig 2.18

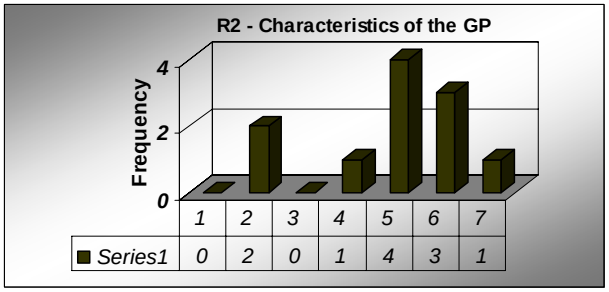


Fig 2.19

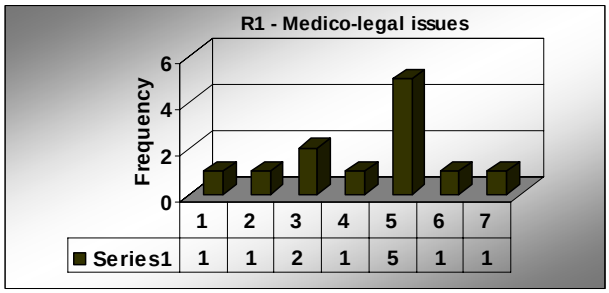


Fig 2.20

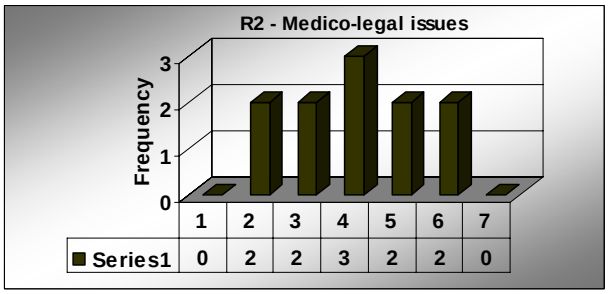


Fig 2.21

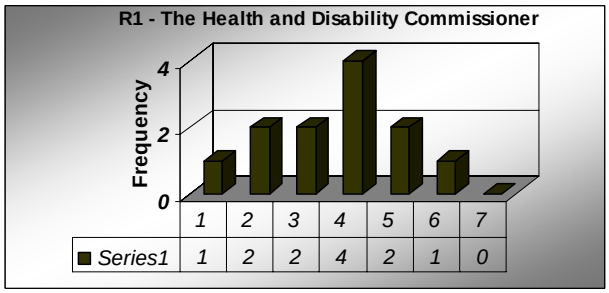
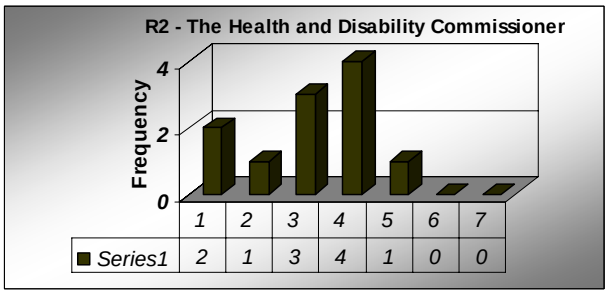


Fig 2.22



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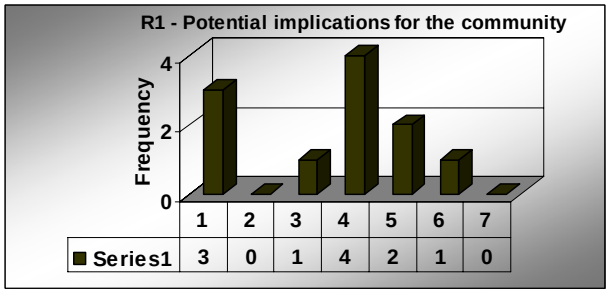
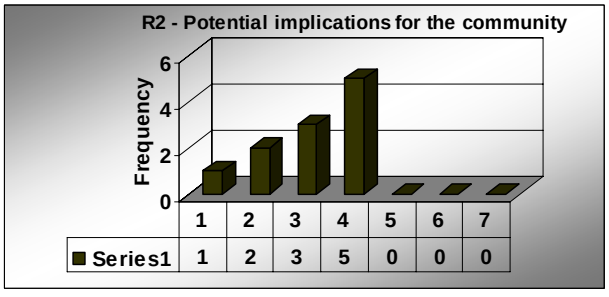
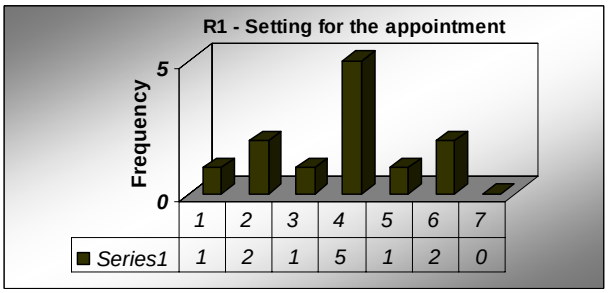


Fig 2.24



Figures 2.25-2.32 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.25



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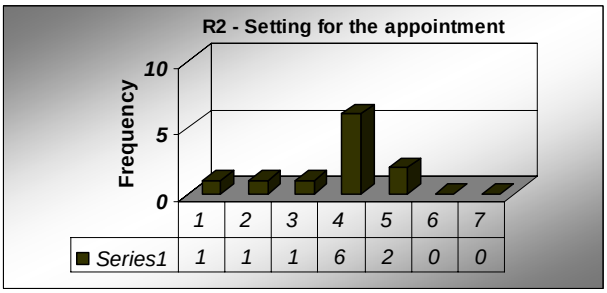

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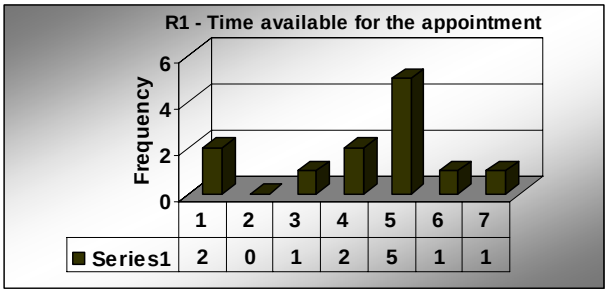


Fig 2.28

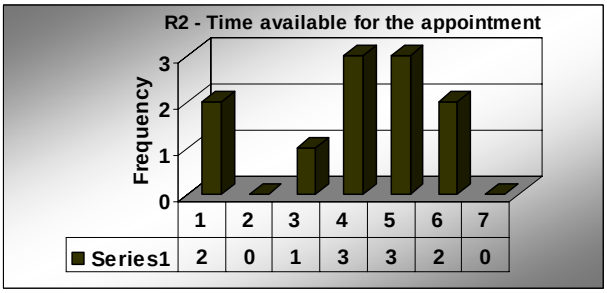


Fig 2.29

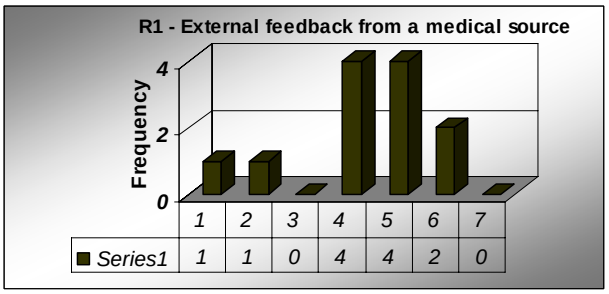


Fig 2.30

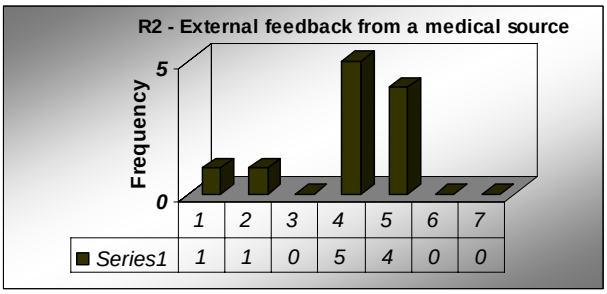


Fig 2.31

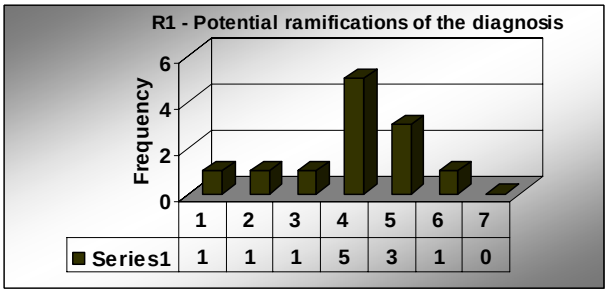
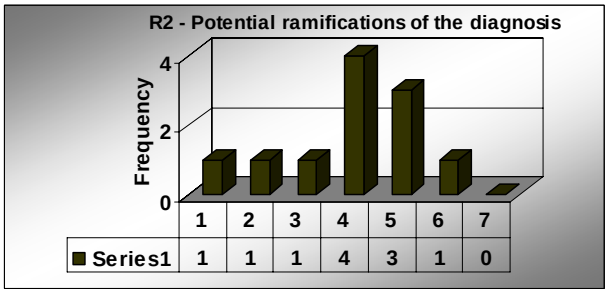


Fig 2.32



Figures 2.33-2.40 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.33

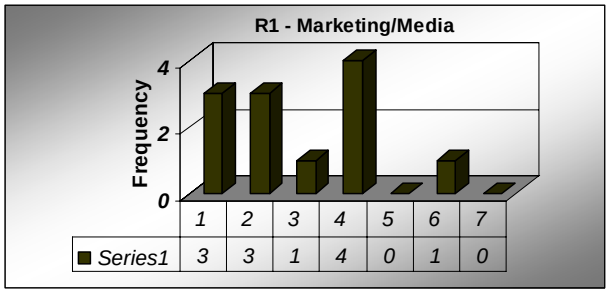
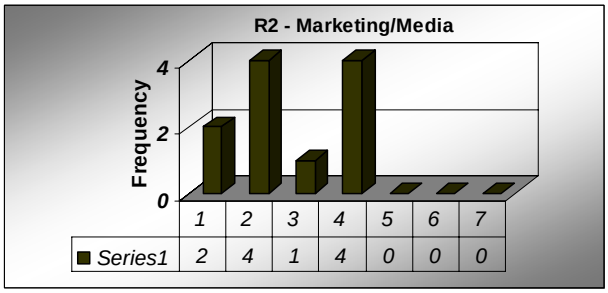


Fig 2.34



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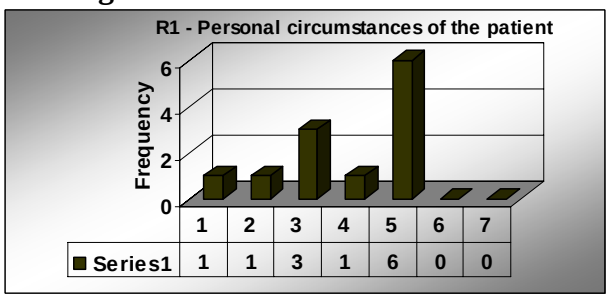
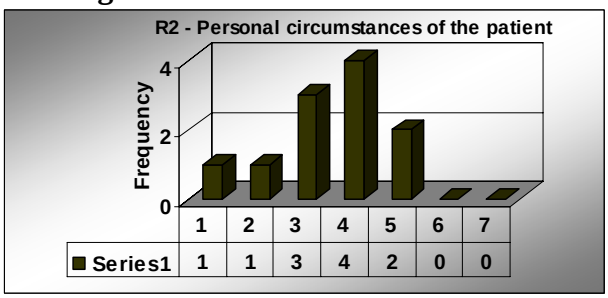


Fig 2.36



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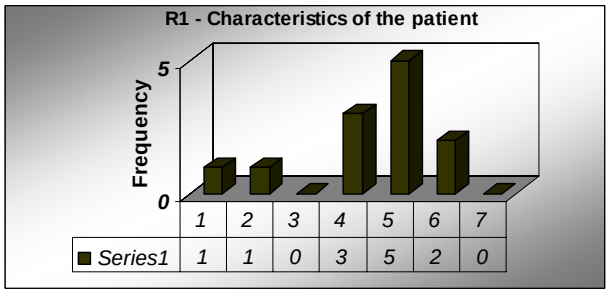


Fig 2.38

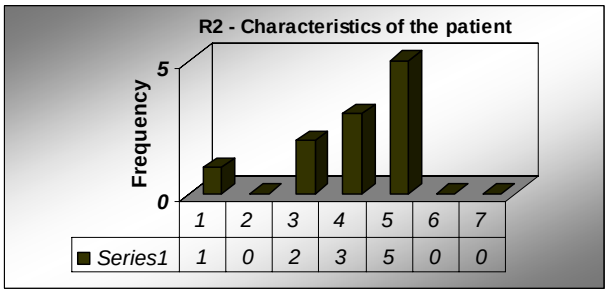


Fig 2.39

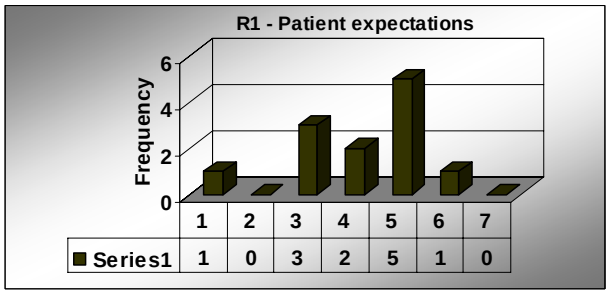
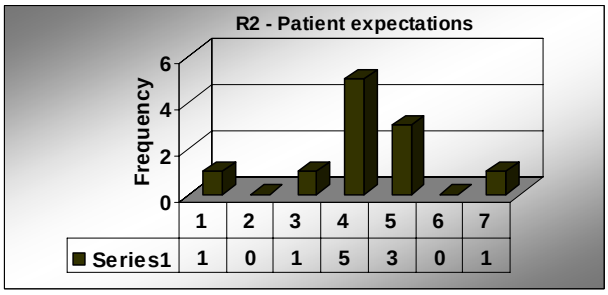


Fig 2.40



Figures 2.41-2.48 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.41

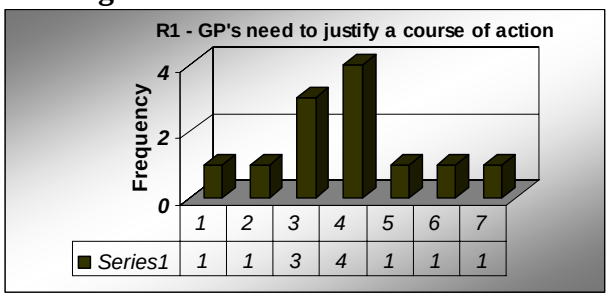


Fig 2.342

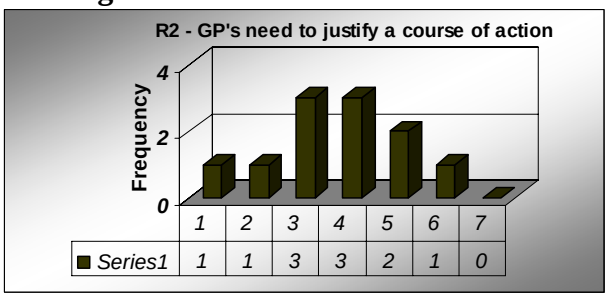


Fig 2.43

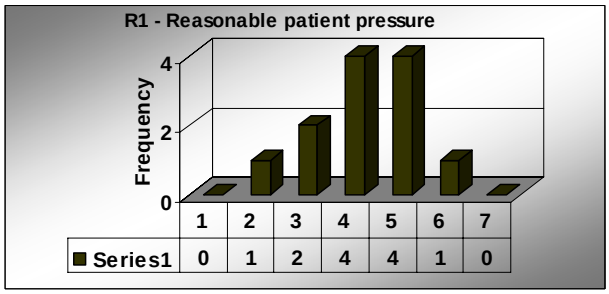


Fig 2.44

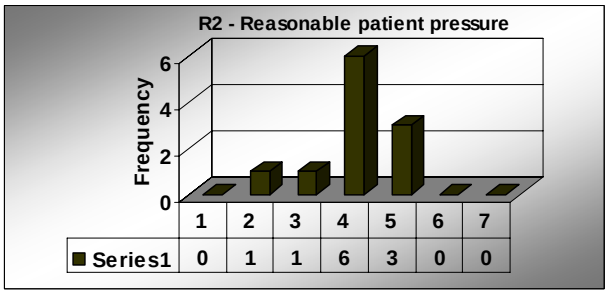


Fig 2.45

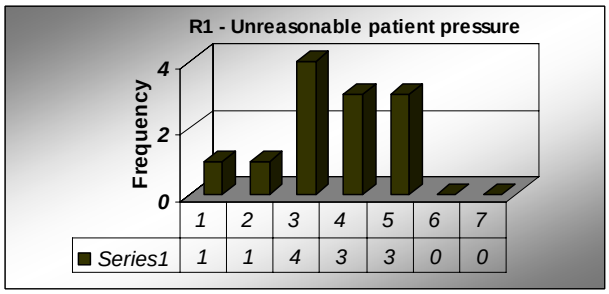


Fig 2.46

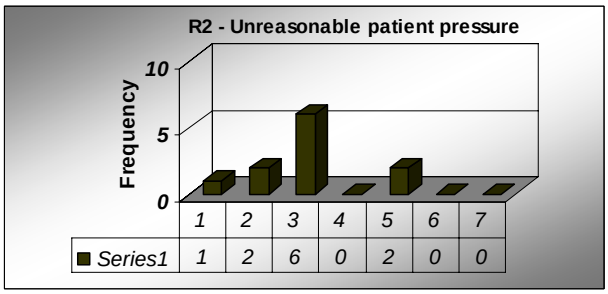


Fig 2.47

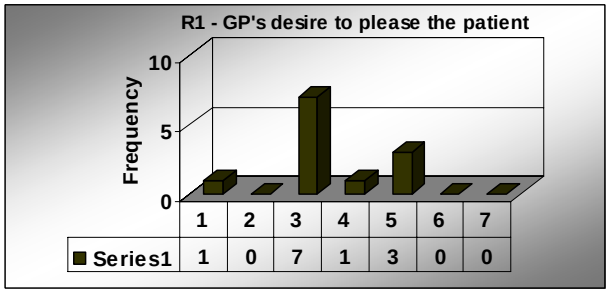
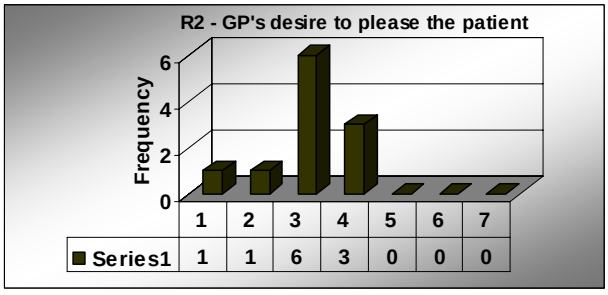


Fig 2.48



Figures 2.49-2.56 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.49

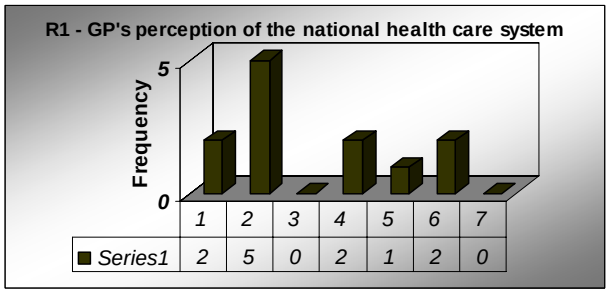


Fig 2.50

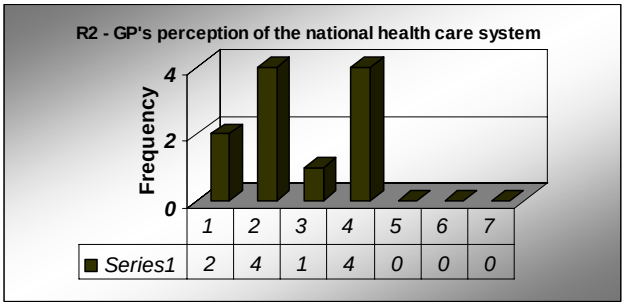


Fig 2.51

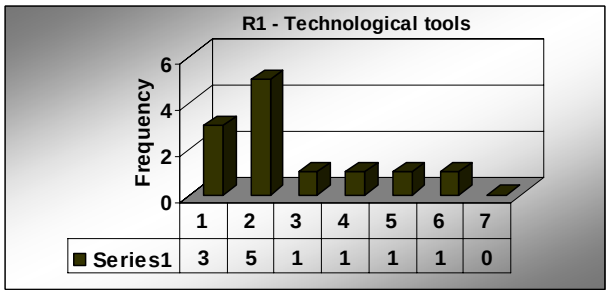


Fig 2.52

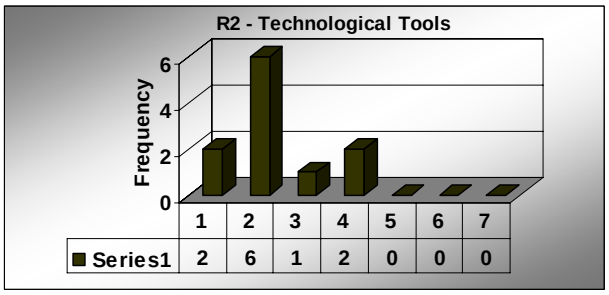


Fig 2.53

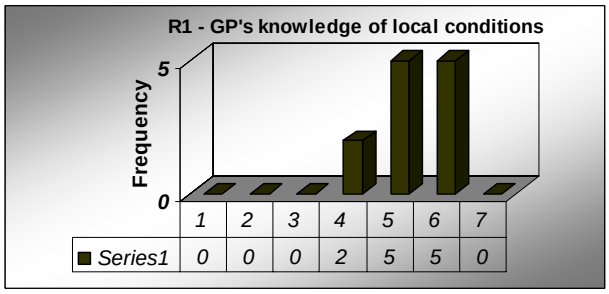


Fig 2.54

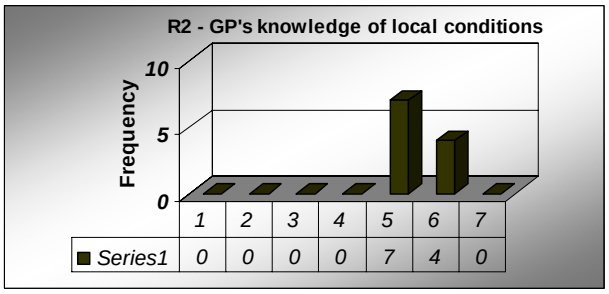


Fig 2.55

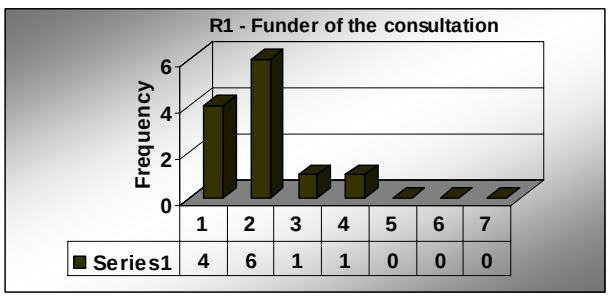
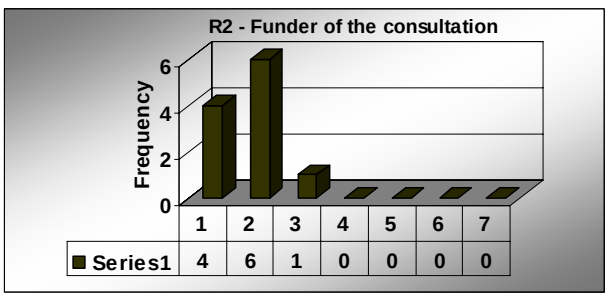


Fig 2.56



Figures 2.57-2.64 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.57

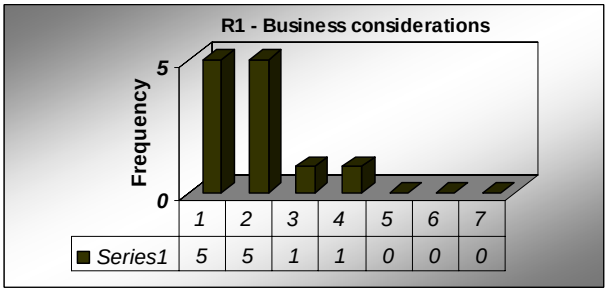


Fig 2.58

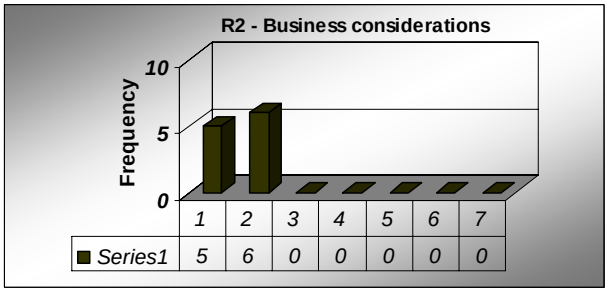


Fig 2.59

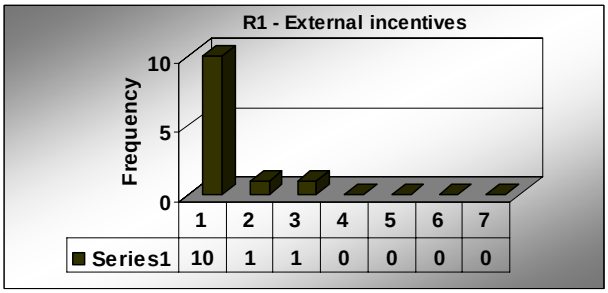


Fig 2.60

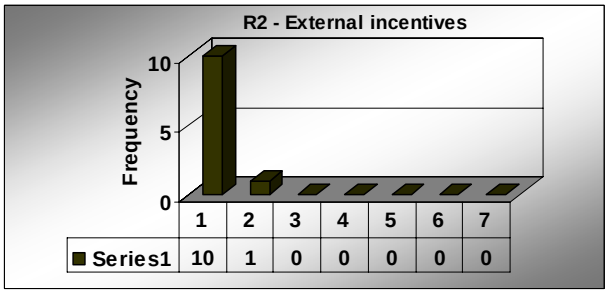


Fig 2.61

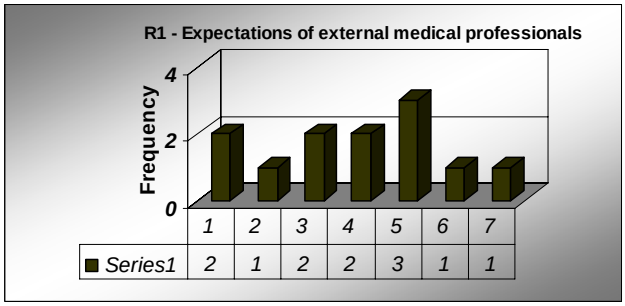


Fig 2.62

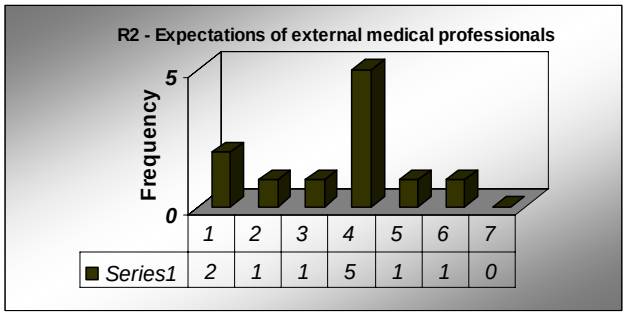


Fig 2.63

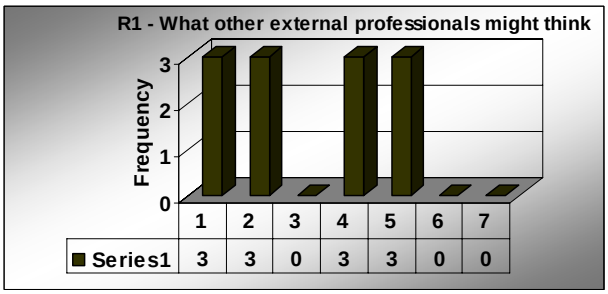
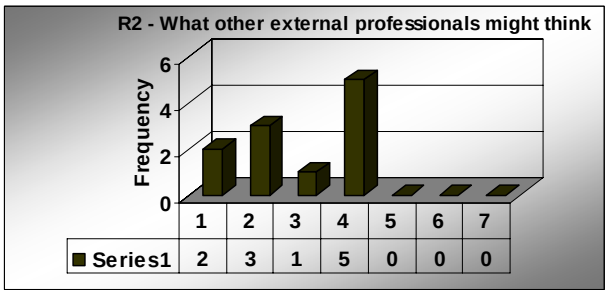


Fig 2.64



Figures 2.65-2.72 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.65

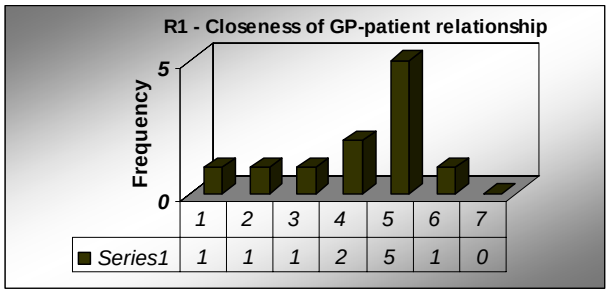


Fig 2.66

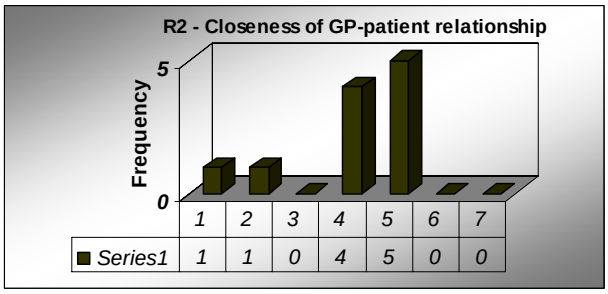


Fig 2.67

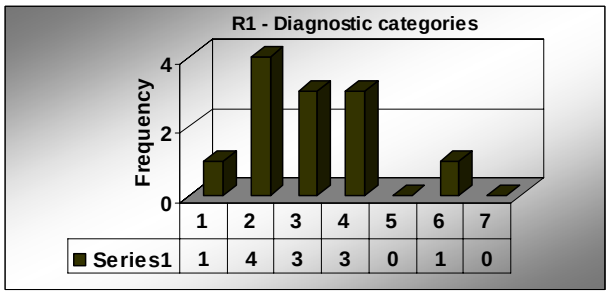


Fig 2.68

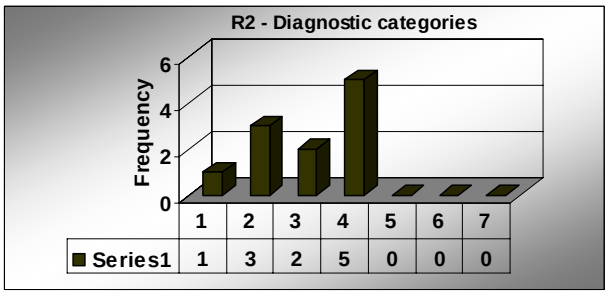


Fig 2.69

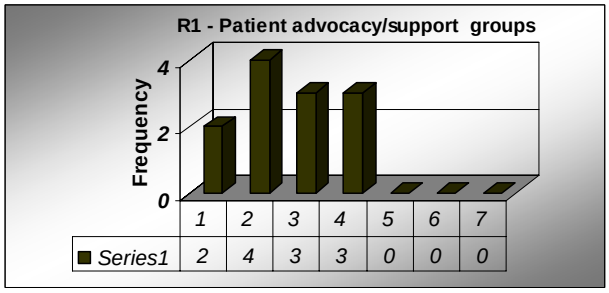


Fig 2.70

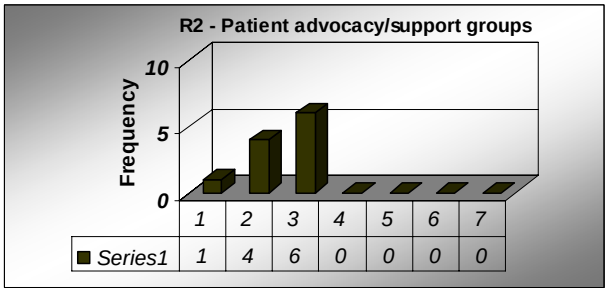


Fig 2.71

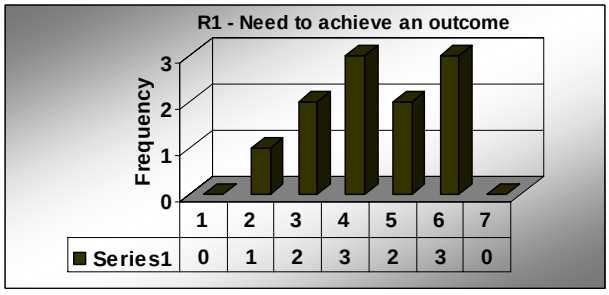
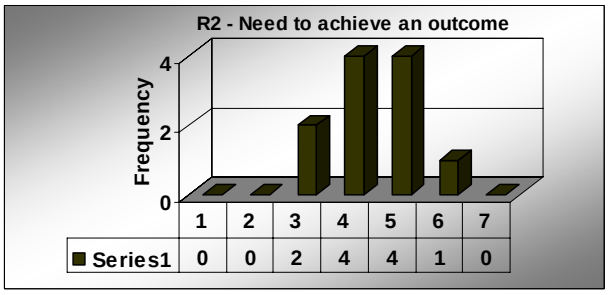


Fig 2.72



Figures 2.73-2.78 Histograms of important influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.73

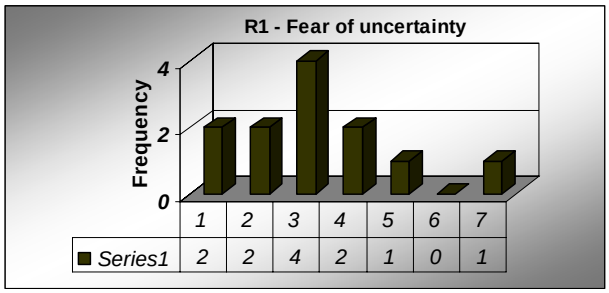


Fig 2.74

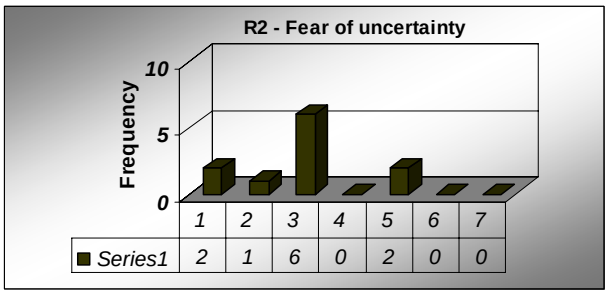


Fig 2.75

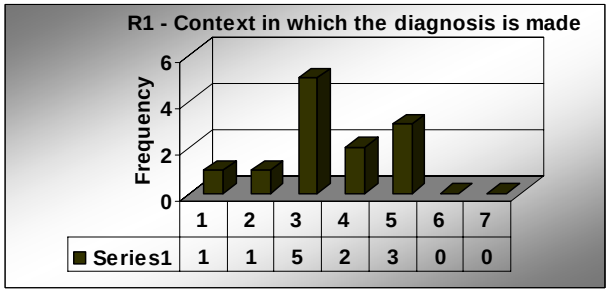
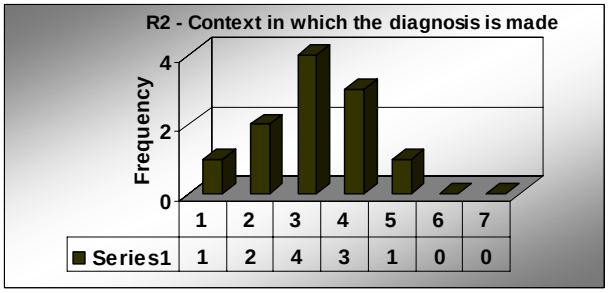


Fig 2.76



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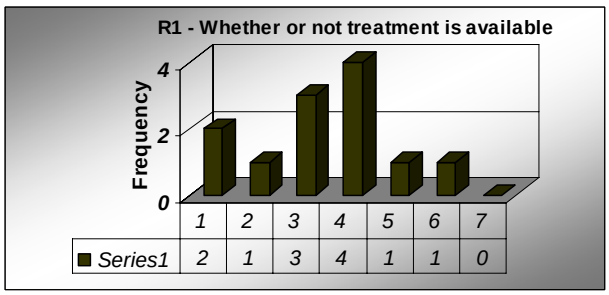
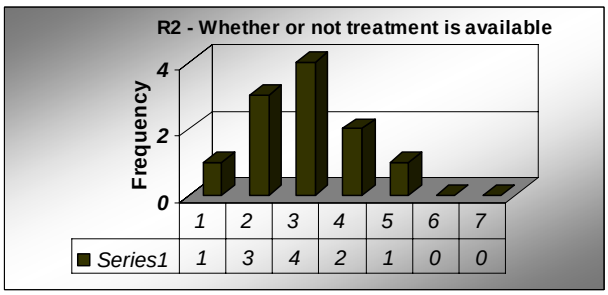


Fig 2.78



Figures 2.79-2.86 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.79

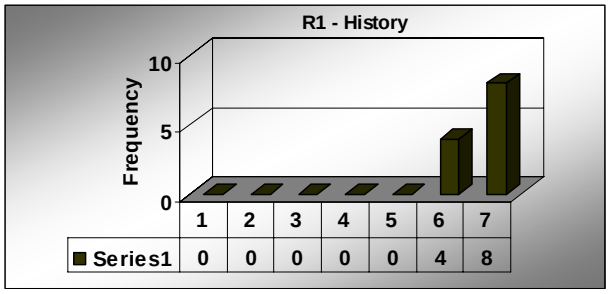
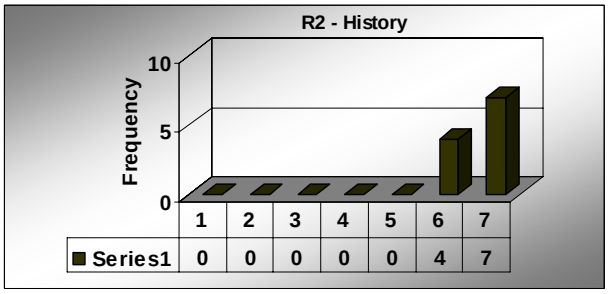


Fig 2.80



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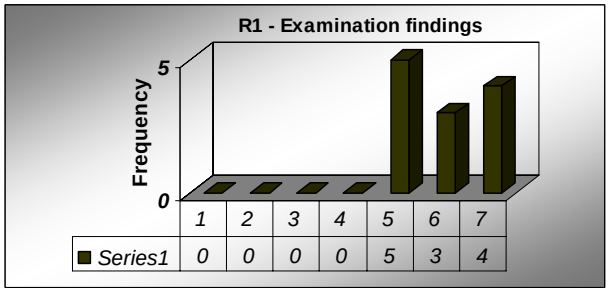


Fig 2.82

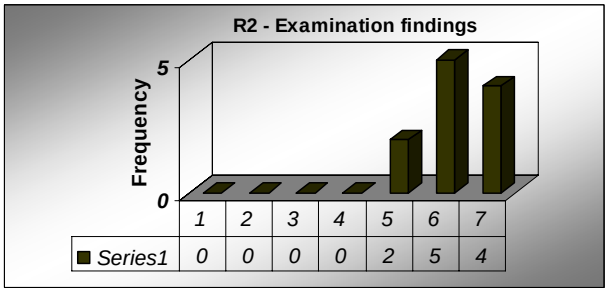


Fig 2.83

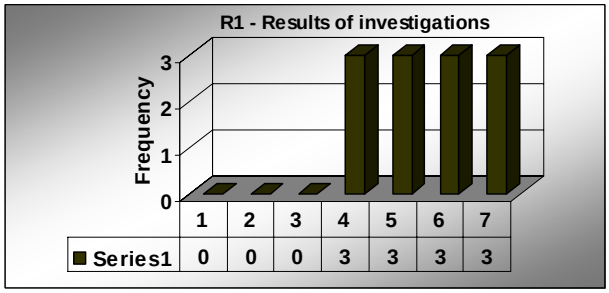


Fig 2.84

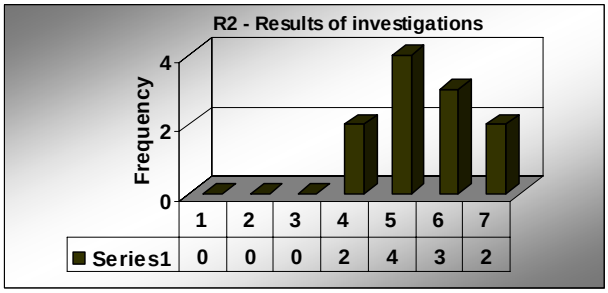


Fig 2.85

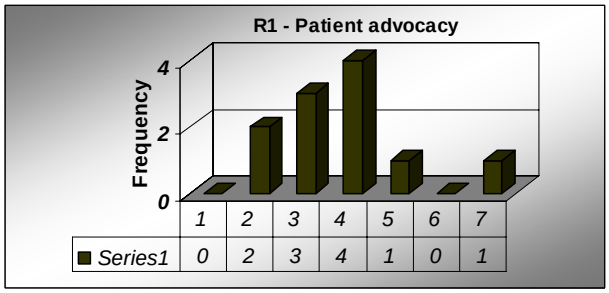
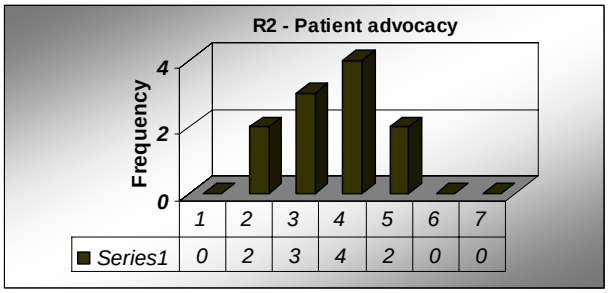


Fig 2.86



Figures 2.87-2.94 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.87

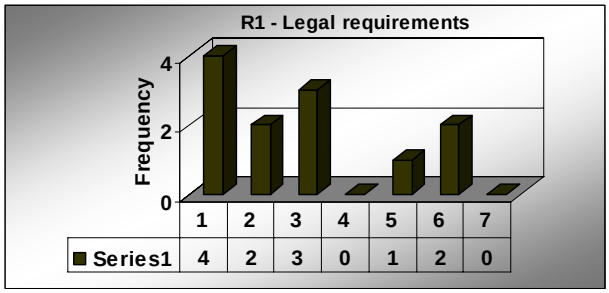


Fig 2.88

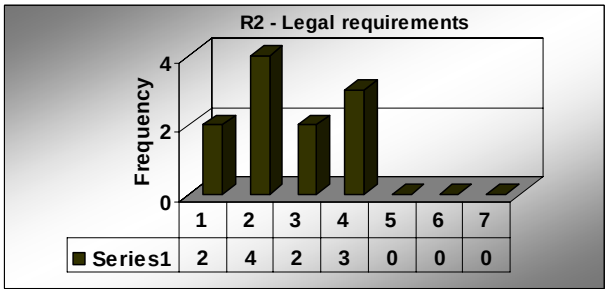


Fig 2.89

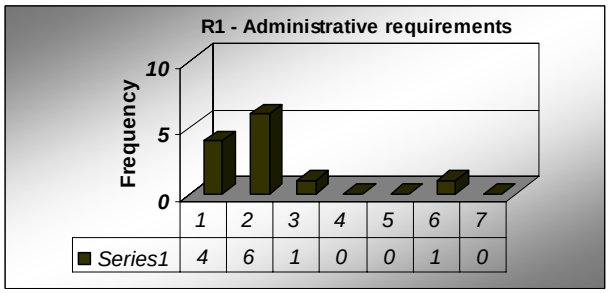


Fig 2.90

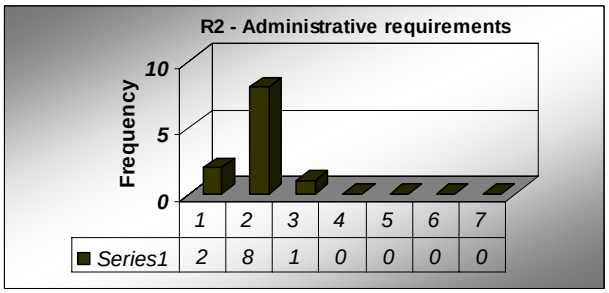


Fig 2.91

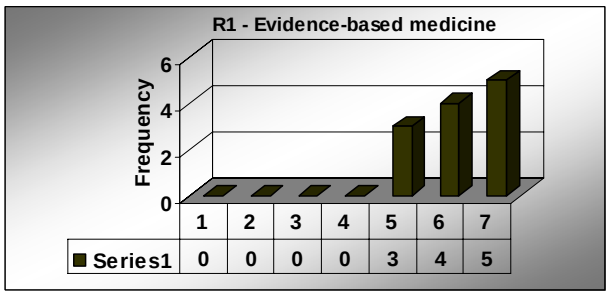


Fig 2.92

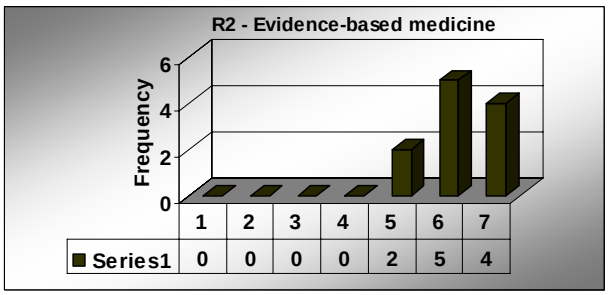


Fig 2.93

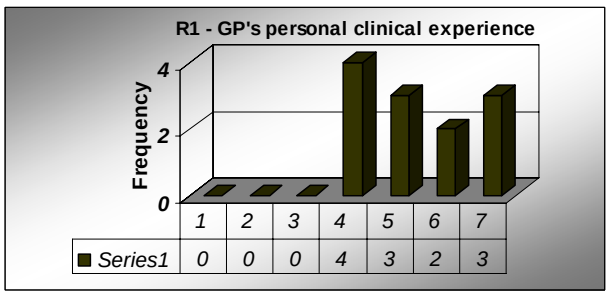
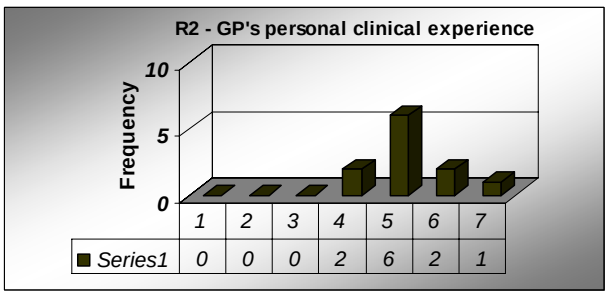


Fig 2.94



Figures 2.95-2.102 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.95

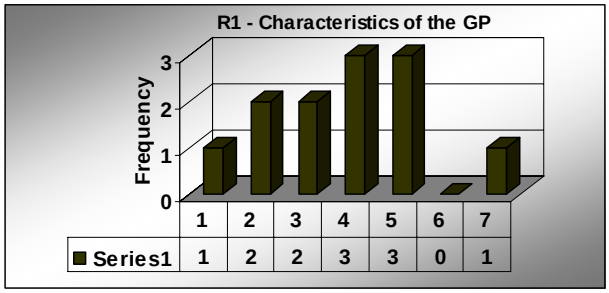


Fig 2.96

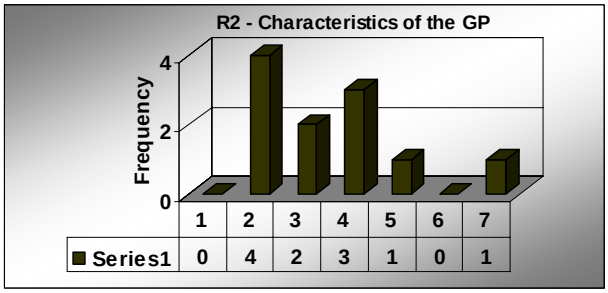


Fig 2.97

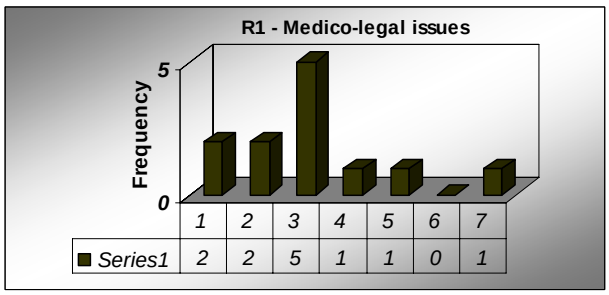


Fig 2.98

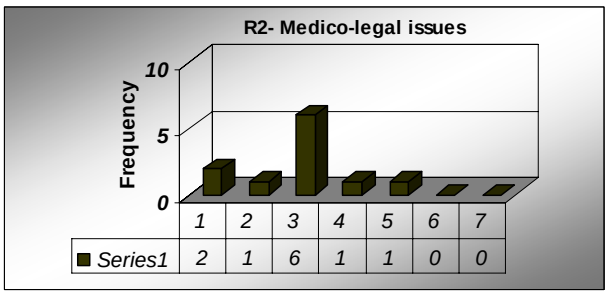


Fig 2.99

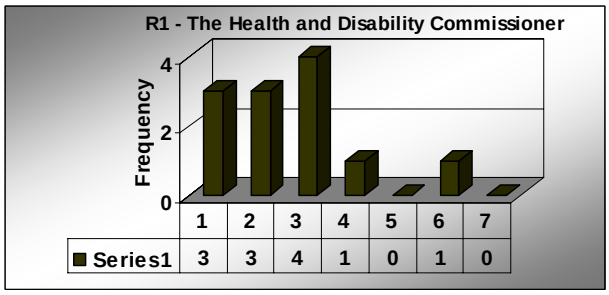


Fig 2.100

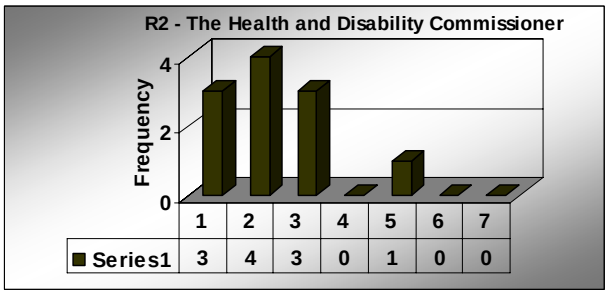


Fig 2.101

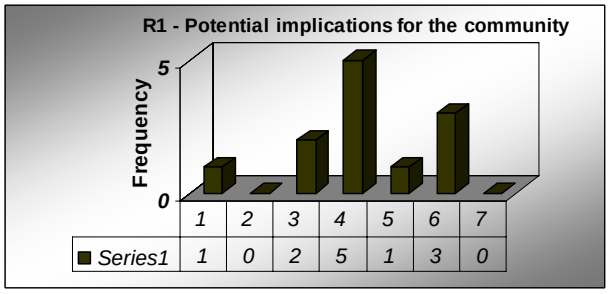
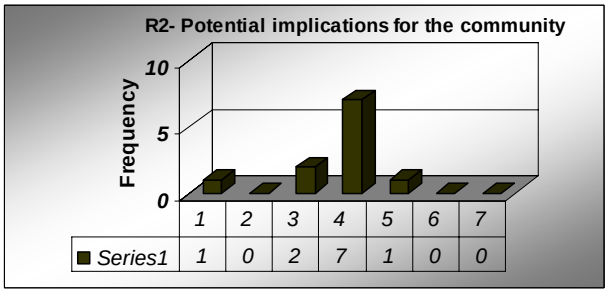


Fig 2.102



Figures 2.103-2.110 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.103

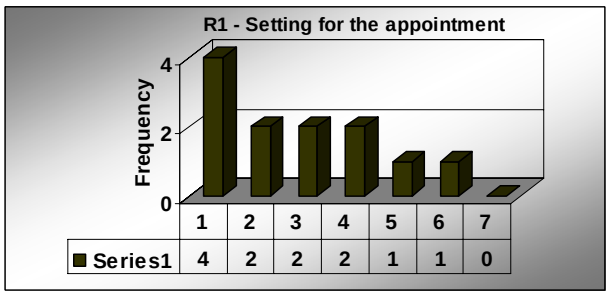


Fig 2.104

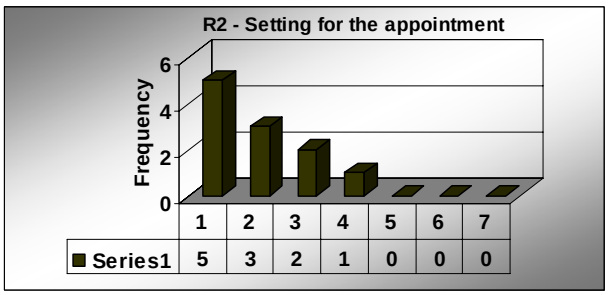


Fig 2.105

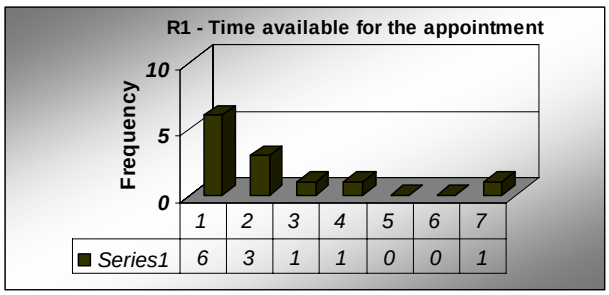


Fig 2.106

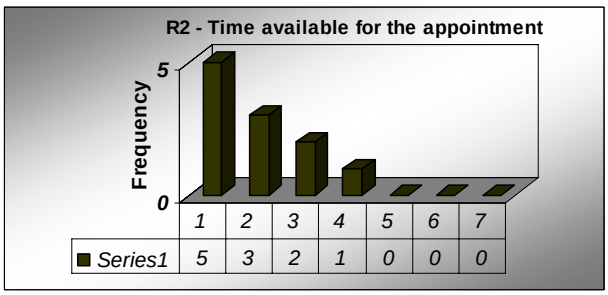


Fig 2.107

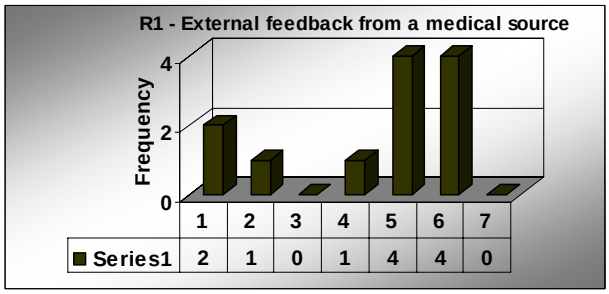


Fig 2.108

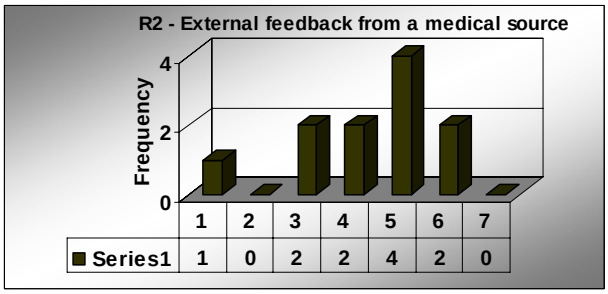


Fig 2.109

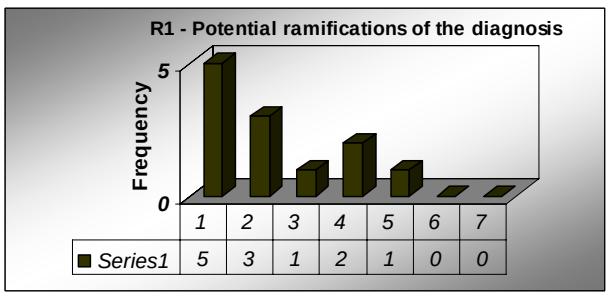
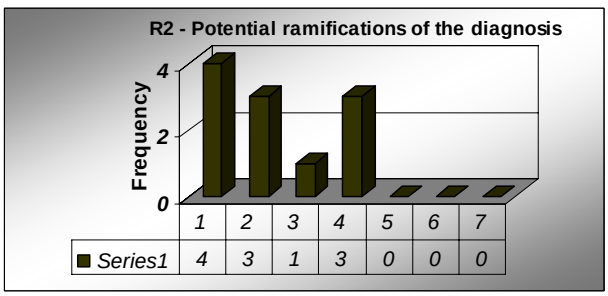


Fig 2.110



Figures 2.111-2.118 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.111

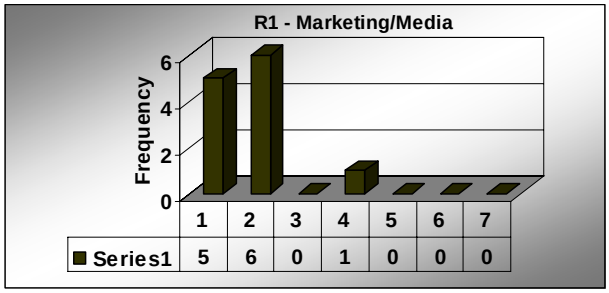


Fig 2.112

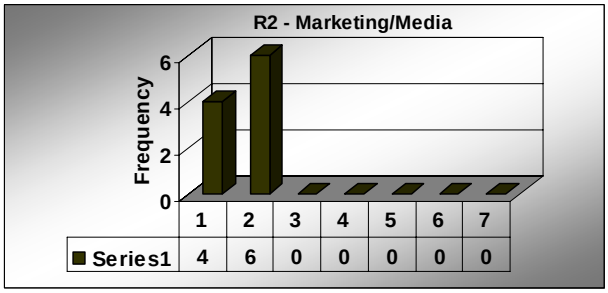


Fig 2.113

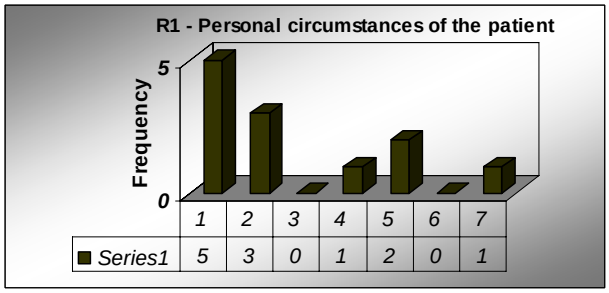


Fig 2.114

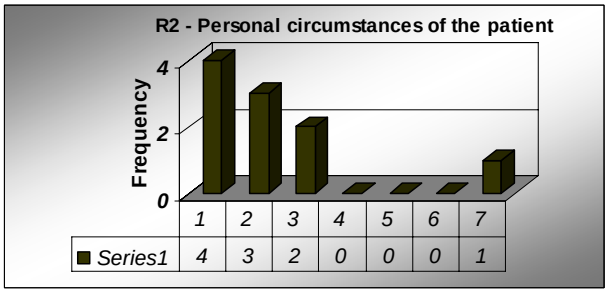


Fig 2.115

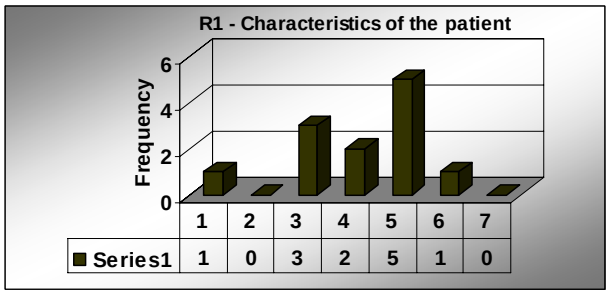


Fig 2.116

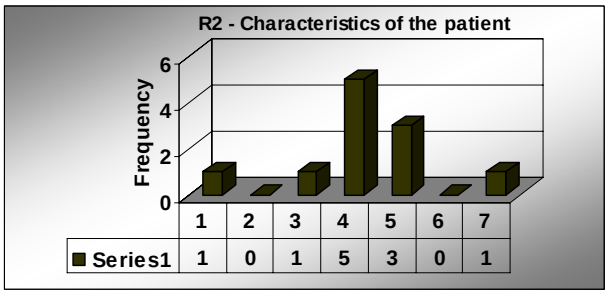


Fig 2.117

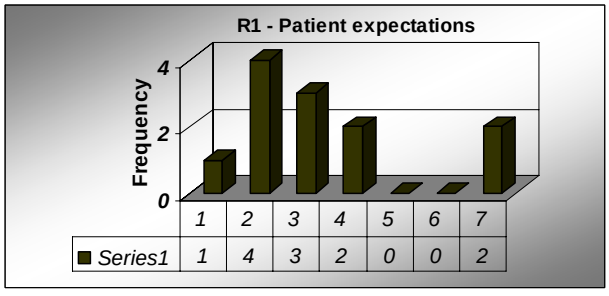
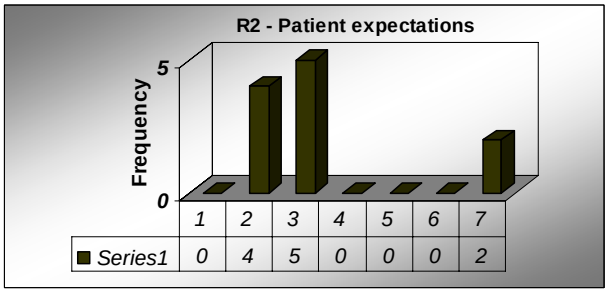


Fig 2.118



Figures 2.119-2.126 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.119

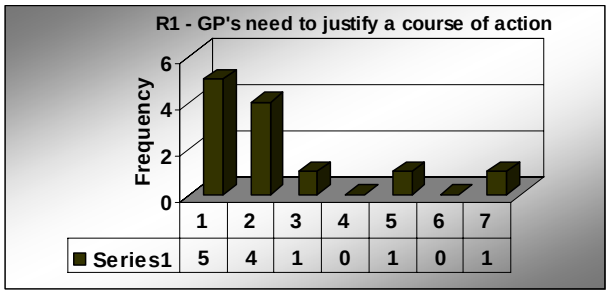


Fig 2.120

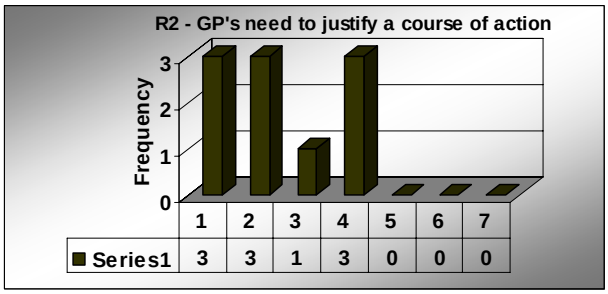


Fig 2.121

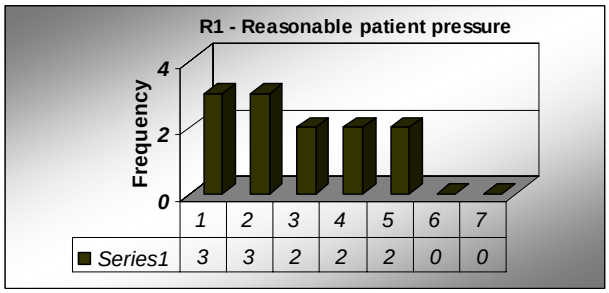


Fig 2.122

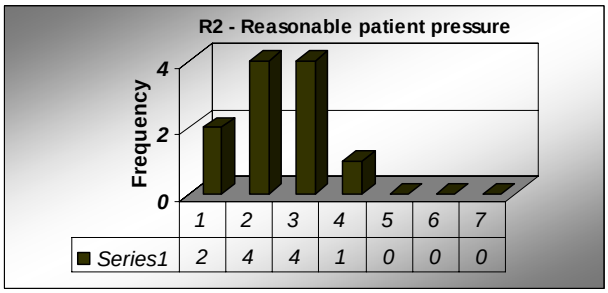


Fig 2.123

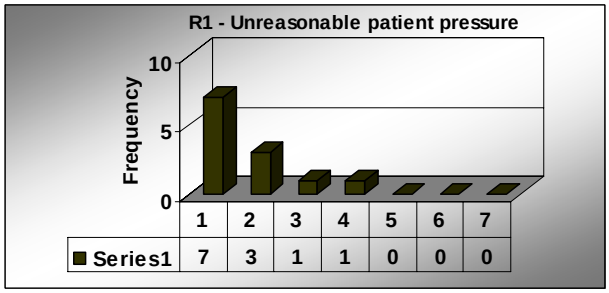
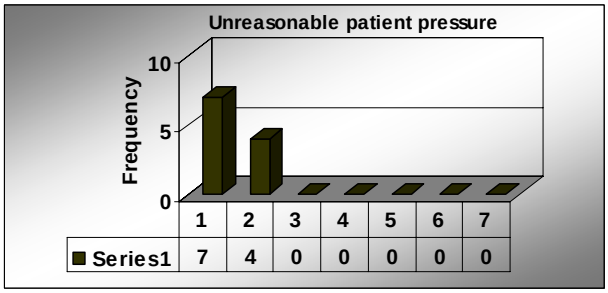


Fig 2.124



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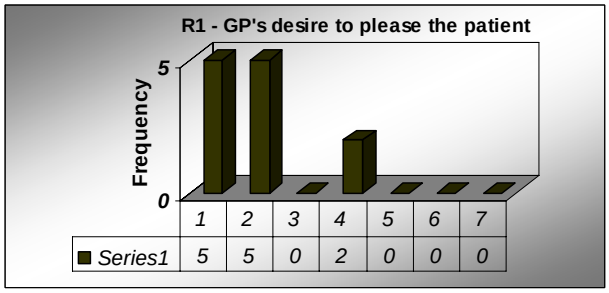
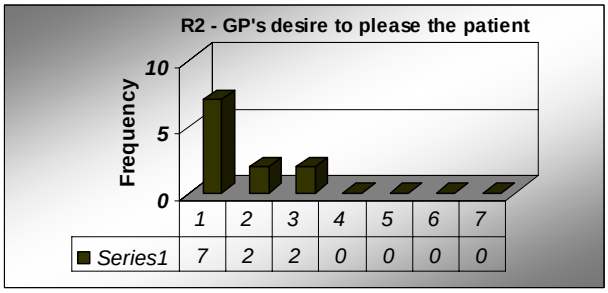
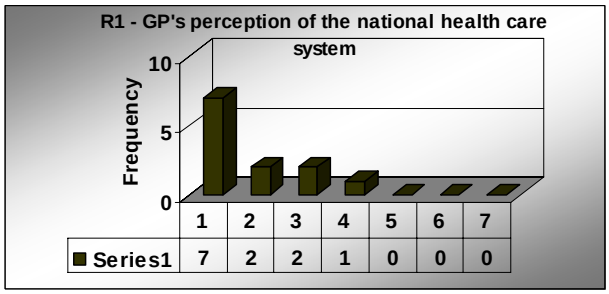


Fig 2.126



Figures 2.127-2.134 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.127



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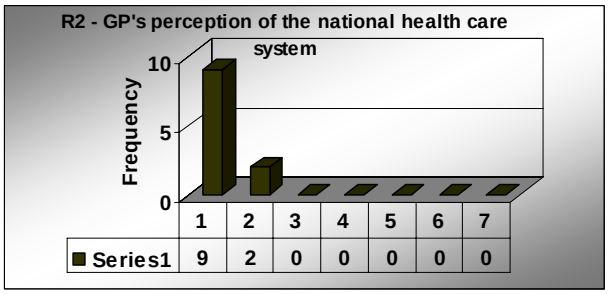

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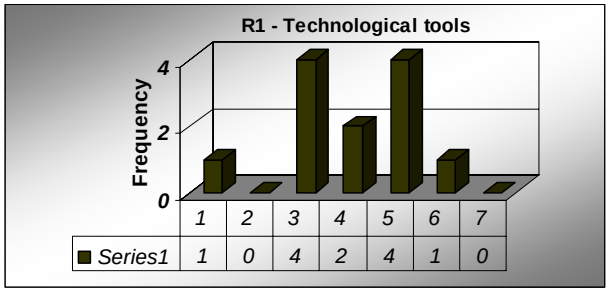

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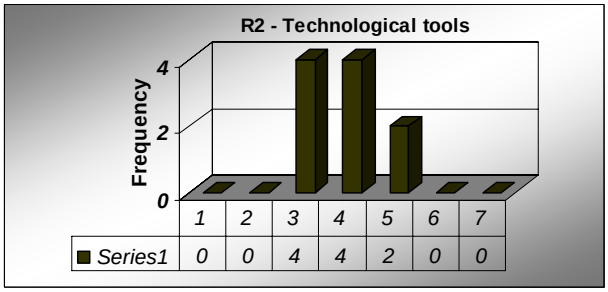

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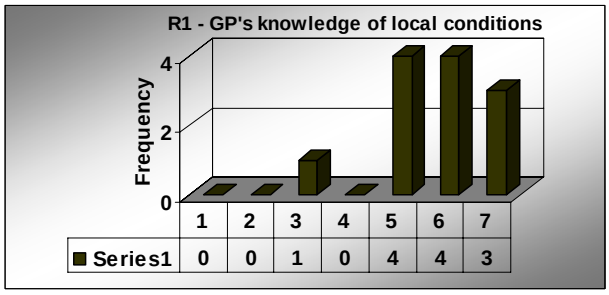

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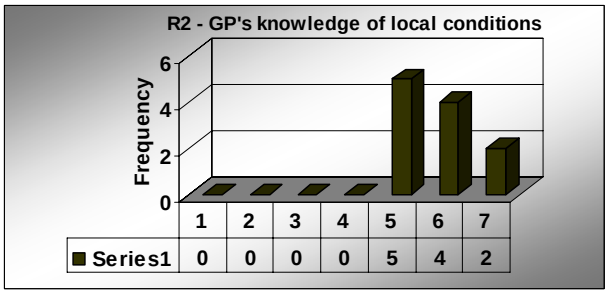

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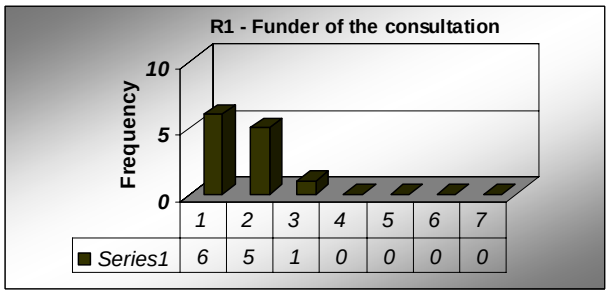

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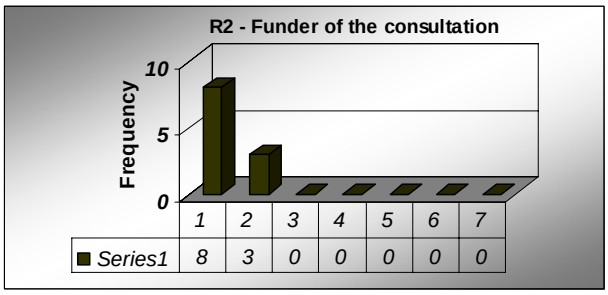
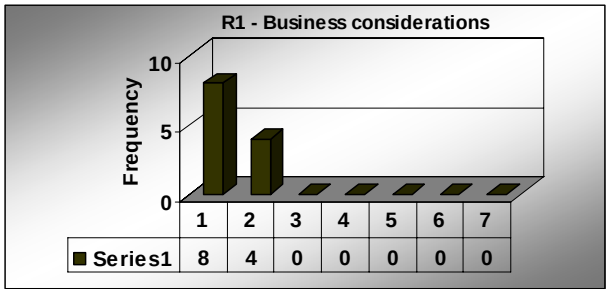


Figures 2.135-2.142 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.135



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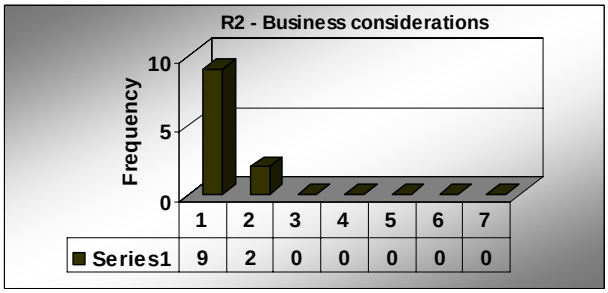

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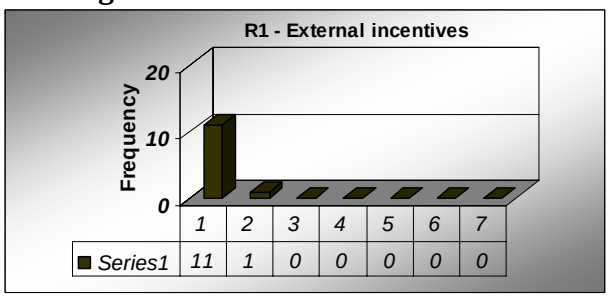
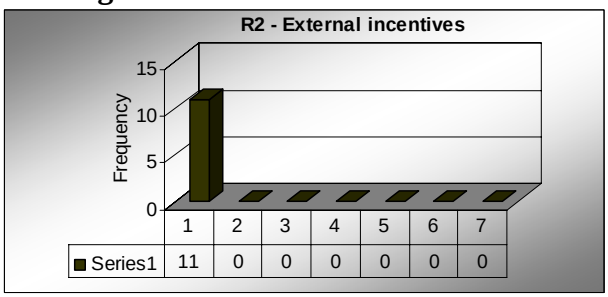


Fig 2.138



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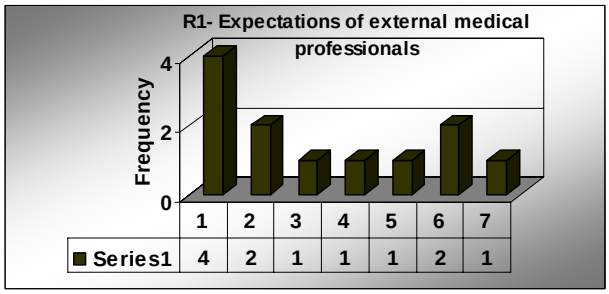

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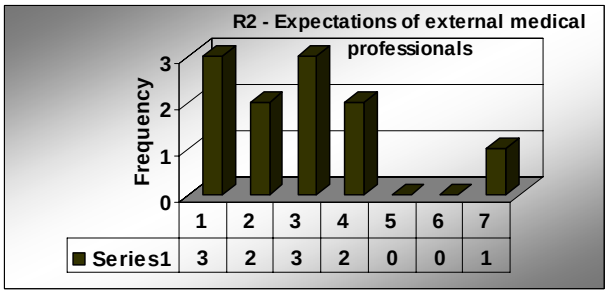

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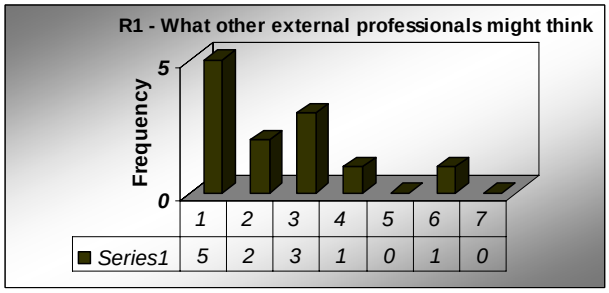

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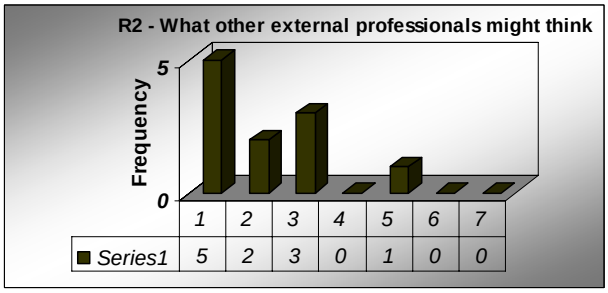
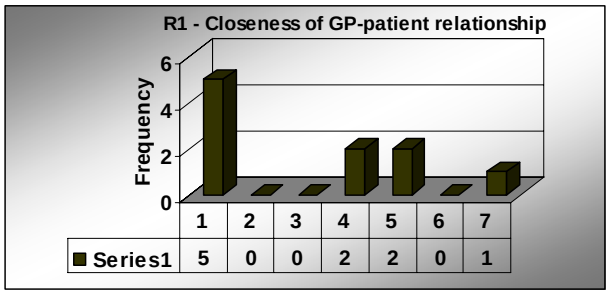


Figures 2.143-2.150 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.143



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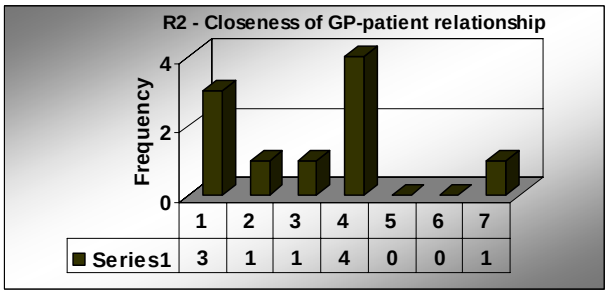

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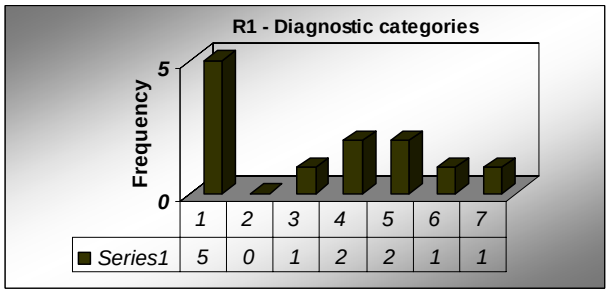


Fig 2.146

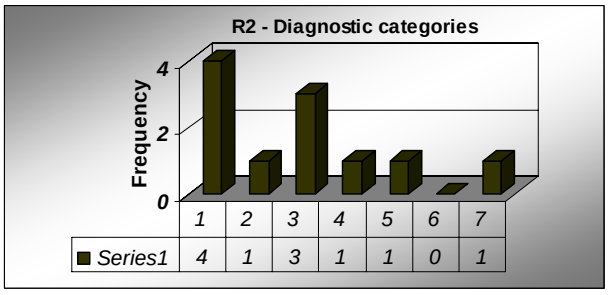


Fig 2.147

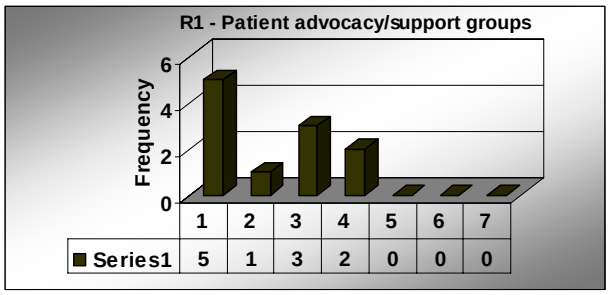
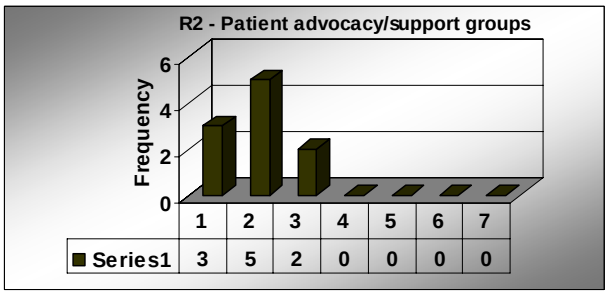


Fig 2.148



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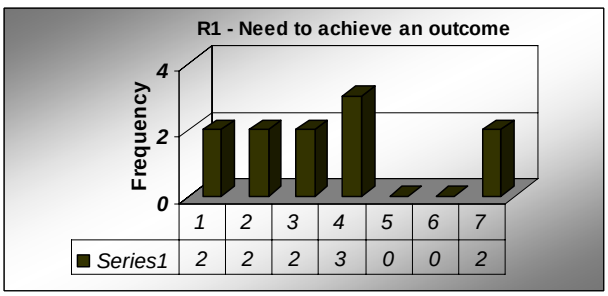
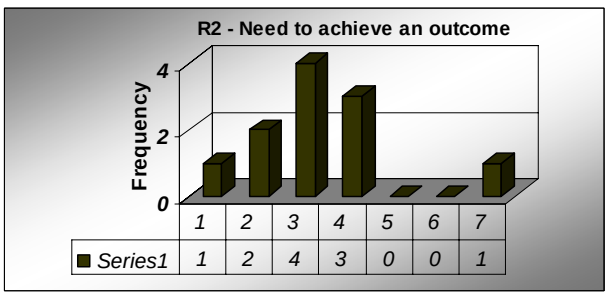


Fig 2.150



Figures 2.151-2.156 Histograms of desirable influencing factors (factor indicated in graph title) for Delphi Round 1 (R1) and Delphi Round 2 (R2). The x-axis shows the frequency for each of the seven ratings.

Fig 2.151

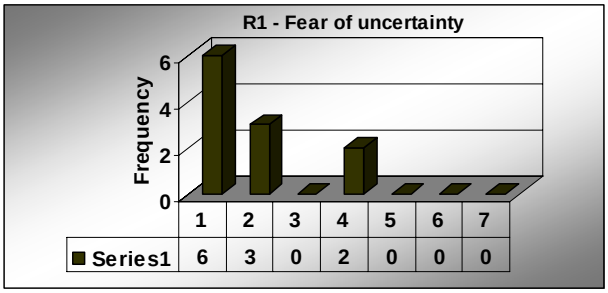
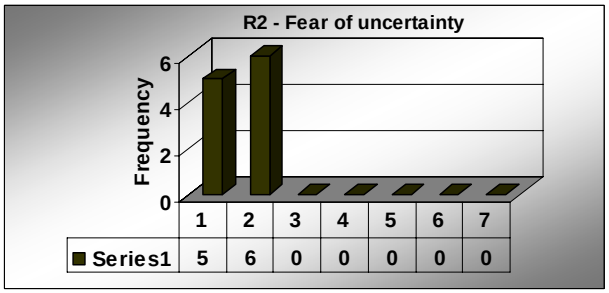


Fig 2.152



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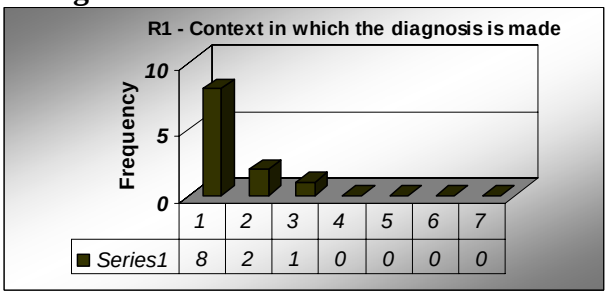


Fig 2.154

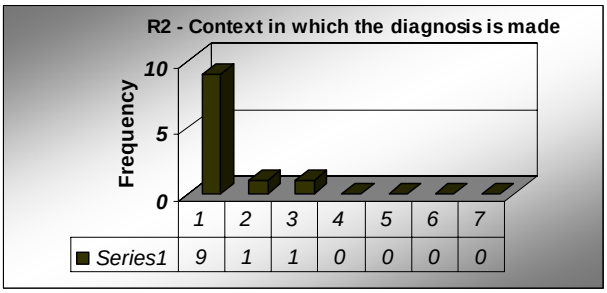


Fig 2.155

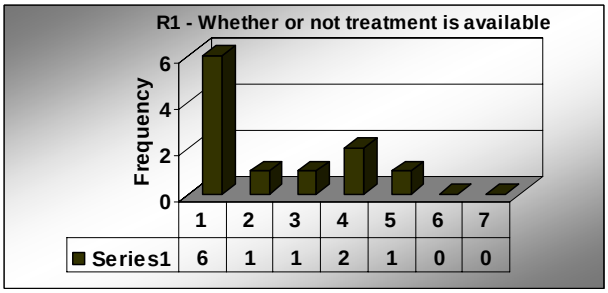
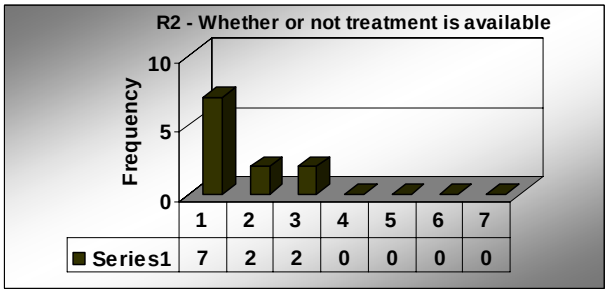


Fig 2.156



2.4.2 Rasch Analysis

2.4.2.1 Dimensionality of the questionnaire

The questionnaire used in this study was designed to assess the respondents' attitudes to one of two single underlying constructs: (1) How important various factors were in influencing GP diagnostic decision-making and (2) How desirable these factors were. When data are collected from attitude questionnaires it is often assumed that each item measured contributes in a meaningful way to the construct being investigated, that is, the questionnaire measures a single dimension. The dimensionality of the questionnaires used in this study was determined by principal components analysis.

In terms of importance, the Rasch measure explained 88.6% of the variance in ratings, with the unexplained variance measured by the next component being 2.8%. In terms of desirability, the Rasch measure explained 86.2% of the variance in the ratings. The unexplained variance measured by the next component was 4%. These findings indicate that the questionnaire was close to the Rasch model concept of the perfect "one attribute at a time" measurement (Bond & Fox, 2001, p. 27). While the constructs have been labelled by the Investigator "importance" and "desirability" it can be inferred but not proved that the one attribute measured is represented by the label.

2.4.2.2 Spacing of the ratings

There are a number of methods which can be used to express the thresholds or cut-points for response categories on Likert attitude scales (see for example, (Masters &

Wright, 1997). To test the common assumption that ratings are equally spaced, the third method described by Masters and Wright was used. In this method, cumulative ogives give the probability of responding greater or equal to each one of the available categories (for example, ≥1, ≥2 etc). The threshold value is set where the cumulative probabilities equal 0.5. For example, in Table 2.3 the logit value of -2.77 is the threshold at which a Likert rating of 1 is equally probable as a Likert rating of 2 or above. The logit value of 3.70 is the threshold at which a Likert rating of below 6 is as equally probable as a Likert rating of 7. As can be seen from Tables 2.3 and 2.4, it is clear that the thresholds are not spread equidistantly. It is also clear that it is easier to move between categories when rating desirability, than when rating importance of influencing factors.

Table 2.3 Fifty per cent cumulative probabilities for ratings of importance

Likert category (importance)	**1**	**2**	**3**	**4**	**5**	**6**	**7**
50% cumulative probability (logits)		-2.77	-1.70	-1.00	0.15	1.62	3.70

Table 2.4 Fifty per cent cumulative probabilities for ratings of desirability

Likert category (desirability)	**1**	**2**	**3**	**4**	**5**	**6**	**7**
50% cumulative probability (logits)		-1.97	-0.96	-0.27	0.38	1.02	1.81

2.4.2.3 Location of the factors on the attitude continuum

The following figures (Fig 2.145 and 2.146) show the distribution of people and factors although, in this case, the only areas of interest are the location of the factors on the attitude continuum (the Y axis measured in logits). The factors are laid out vertically in the right hand column with the least important or desirable factors at the top (the hardest to endorse) and the most important or desirable factors (the easiest to endorse) at the bottom.

Each person is indicated by an 'x'. 'M' represents the location of the mean measure for persons on the left and factors on the right. 'S' markers are placed at one standard deviation away from the mean and 'T' markers are placed two SDs away.

The position of each factor on the continuum is shown in Figure 2.157 for importance and in Figure 2.158 for desirability.

Figure 2.157 GPSS Map of Importance Factors

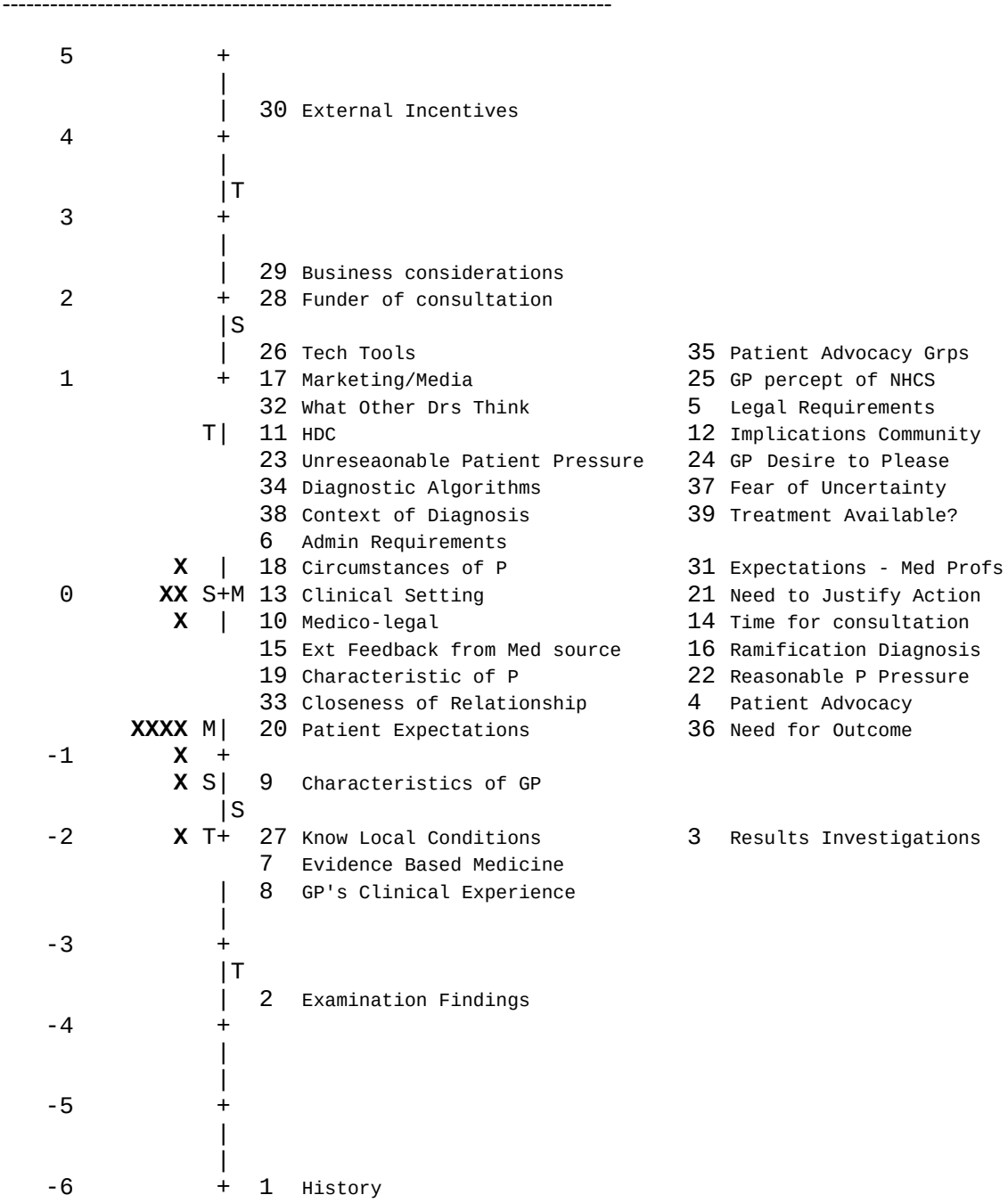
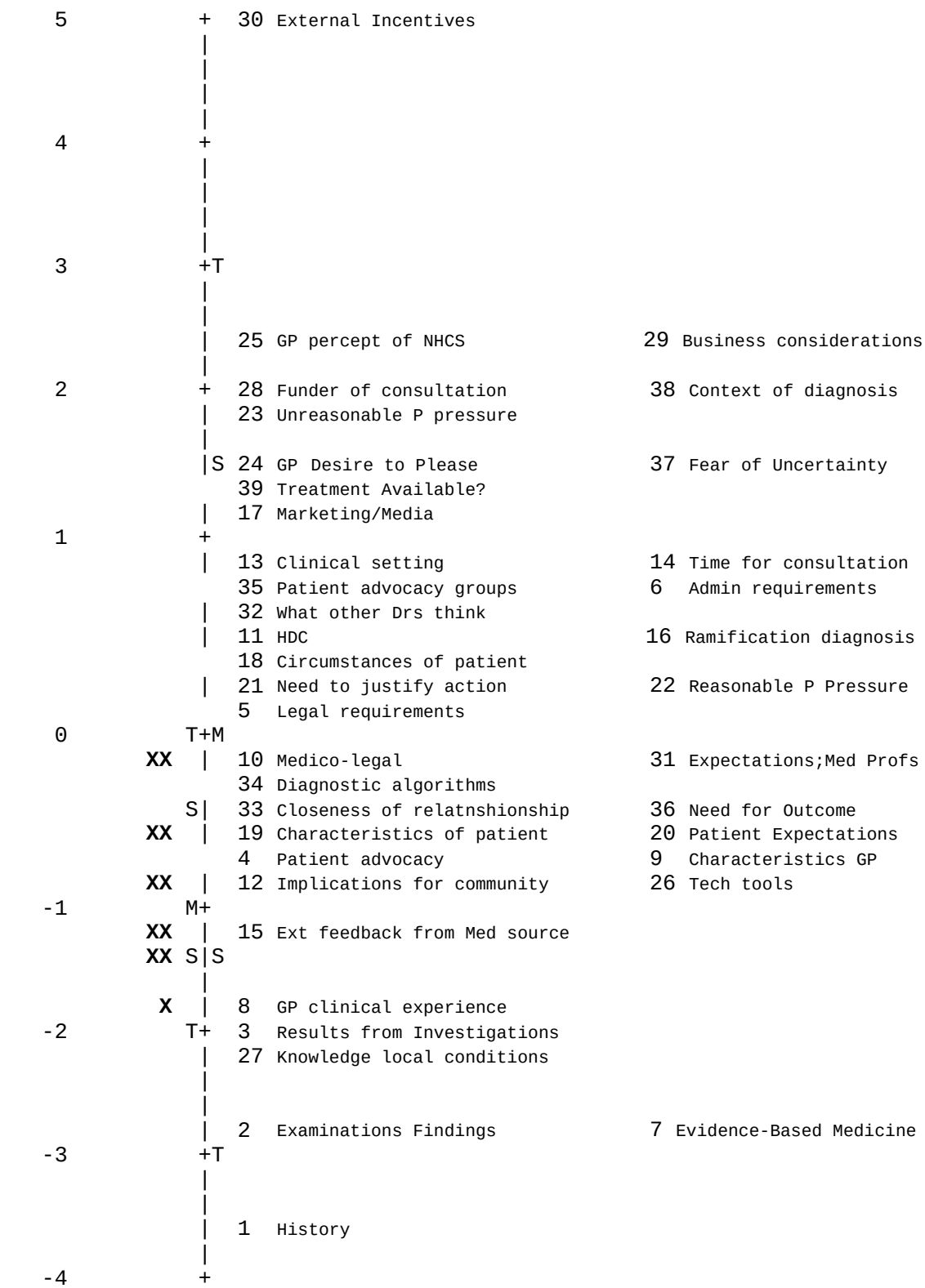


Figure 2.158 GPSS Map of Desirability Factors



As can be seen visually, Rasch analysis of the data provides additional interval-level information. Standard analysis provides only the ordinal relationship between the influencing factors.

The most important factor in influencing diagnostic decision-making is history, followed by examination findings, followed by the GP's personal clinical experience. However, as can be seen in Figure 2.157, the difference between history and examination findings is 2.22 logits compared with 1.43 logits between examination findings and GP's knowledge of local conditions. History would appear to be a much more important influencing factor than would be expected from knowledge of its ordinal position alone. Similarly, external incentives are seen as being much less important than business considerations, with a distance of 1.89 logits separating these factors.

History is seen as the most desirable influencing factor (Figure 2.158). However, it is not as desirable as it is important, according to the difference in ratings (-5.95 logits for importance versus -3.56 logits for desirability). This indicates that the standard setters see a need to reduce the emphasis on history as an influencing factor while maintaining its ordinal position. Comparing this difference of 2.39 logits with that of evidence-based medicine, EBM moves from being the sixth most important influencing factor to the second most desirable factor, despite representing only a 0.91 logit change.

At the other end of the importance and desirability ordinal scale, factors such as external incentives, business considerations, and who is funding the consultation show very little logit mismatch.

Both the importance and desirability questionnaires are marked by a very broad span of 10.3 and 7.97 logits, respectively, indicating a quite marked "black and white" view of the factors at either extreme.

2.4.2.4 Ramifications of Diagnosis

As discussed in the methodology, an additional question was inserted prior to Round 2 to assess any differences in response specifically relating to the potential ramifications of the diagnosis in a generic versus an ACC-specific context.

In terms of importance ratings, when the generic question was considered the logit score obtained was -0.18. When the ACC-specific ramifications were considered, the logit score was 0.01. That is, ACC-specific ramifications were considered less important an influence than generic ramifications.

In terms of desirability, the generic question scored 0.34 while the ACC-specific question scored 0.39. This indicates that ramifications of a diagnosis (whether generic or ACC-specific) are not considered to be a desirable influence on diagnostic decision-making.

2.5 Summary of findings

1. More influencing factors are deemed to be undesirable and/or unimportant than important and/or desirable.
2. There is greater agreement about "desirability" than about "importance".
3. There is greater agreement about what should not influence diagnostic decision making than about what should.
4. Very few factors are deemed to be desirable in influencing diagnostic decision-making.

2.6 Discussion and Implications

Given that a Bayesian model of clinical decision-making is widely advocated in medicine, it is noteworthy that this group of standard setters could so readily identify thirty-nine factors that influence GP diagnostic decision-making. The factors identified are not unexpected because they reflect influences that most people are exposed to in everyday life – what others think of us, what we think of others, legality, need to achieve an outcome and so forth. That these factors can be identified serves to support the surprisingly controversial notion that it is not possible to divorce the practice of medicine from the society in which it is practiced (Gorman & Scott, 2003). Interestingly, while a prescriptive view of diagnostic decision-making appears invalidated by the responses obtained in this study, the factors on which a prescriptive view of medicine relies (clinical information and probability of disease) are rated as both highly important and highly desirable. This suggests that the participants do not necessarily reject outright a Bayesian model of decision-making. This apparent dissonance might be explained by Elstein (2000, p. S136):

> All theories and models are simplifications of reality. They abstract particular features in order to provide a reasonably coherent account of how things work and to guide action. That is precisely why they are useful. Models are no reality however, and theory is not practice.

While it may not be possible to separate medicine from society, it may still be possible to establish explicit expectations about the desirability of some of these factors influencing medical practice. Interestingly, judgements of the desirability, or otherwise, of influences occurs in the setting of the Medical Practitioners Disciplinary Tribunal.

For example, on 7 October 2003, the Complaints Assessment Committee of the New Zealand Medical Practitioners Disciplinary Tribunal laid a charge of professional misconduct against Dr S alleging amongst other things, that Dr S had

> … refused to accept the diagnosis of leptospirosis (which is an occupational illness and therefore covered by the Accident Compensation Act) made at xx Hospital during the in-patient stay of A ..

and

> … failed to recognise the ACC requirement for acceptance that a complaint merits cover is the "balance of probabilities" and that the Accident Compensation Act does not require absolute proof.

The Tribunal found both these particulars proved.

One of the issues discussed in the case was that while patient A had clinical symptoms and signs compatible with the diagnosis of leptospirosis, the other ESR criteria for the diagnosis of leptospirosis had not yet been met at the time Dr S undertook his diagnostic decision. This decision appears outwardly to suggest that it is highly desirable (if not necessary) for a doctor to be influenced by the law and the context in which the diagnosis is made, irrespective of whether or not there is conflict between legal and medical standards. This decision is clearly at odds with the beliefs of the 'standard setter' group which participated in this study – who found legal requirements difficult to endorse as a desirable influencing factor.

In terms of legislative requirements (for example, Acts of Parliament including the Injury Prevention, Rehabilitation and Compensation Act 2001), the mean rating of desirability of such requirements was 2.6 (minimum rating of 1 and maximum rating of 4). The logit score was 0.10, indicating that it was difficult for the standard setters to endorse this as a desirable influencing factor.

Similarly, in terms of "the context in which the diagnosis is made (for example, an appointment about an ACC problem versus an appointment about a non-ACC problem)" the mean rating was 1.3 (with a minimum rating of 1 and a maximum rating of 3) and a logit score of 2.08. This factor was very difficult for the standard setters to endorse as a desirable influence on diagnostic decision-making.

This apparent disparity between the results of the present study and the aforementioned findings of the Disciplinary Tribunal are of concern. At least for this sample of standard setters, the Bolam standard ([Bolam v Friern Hospital Management Committee [1957] 1 WLR 582) does not seem to have been met. In essence, the Bolam test is that a doctor is not guilty of negligence if he/she acts in accordance with a responsible body of peers, accepting that there may be some differences of opinion between professionals.

There has been increasing criticism of the Bolam test in recent times (see for example, (Samanta & Samanta, 2003), with suggestions that the Bolam test "fails to draw a distinction between 'what is done' and 'what ought to be done'" (p. 444) and that it allows the standard in law to be set subjectively by medical practitioners themselves. Accordingly, there is now a move towards adopting a standard known as Bolitho, whereby "the court has to be satisfied that the exponents of the body of opinion relied upon can demonstrate that such opinion has a logical basis" (Bolitho v City &Hackney Health Authority [1997] 4 All ER 771). Perhaps one of the most interesting findings of Phase 1 of this study, in the context of legal standards, is the breadth of opinion amongst the group of standard setters. As can be seen in Figure 2.88 the standard setters Likert ratings extend from 1 through 4.

2.6.1 Response Rate

The relatively low number of participants in this study as well as the response rate of 52% clearly raises some concerns over the reliability (Frisbie, 1988; Traub & Rowley, 1991) of the results obtained. Of concern is the reproducibility of the results – that is,

would the same results be obtained on subsequent measurements or if the questionnaire was provided to a larger sample with a higher number of respondents. The Rasch method provides a measure known as the item reliability index, which indicates the replicability of item placements (in this case influencing factors) if these same items were given to another group of people with comparable ability levels. The estimate is based on the same concept as Cronbach's alpha, that is, on the percentage of observed response variance that is reproducible.

In terms of the rating of importance, the item reliability index was 0.94. This means that an estimated 94% of the observed variance in the results obtained can be regarded as true variance, with the remaining 6% attributable to measurement error. Put another way, the results obtained could be expected to correlate 0.94 with the results from a parallel measure of the same underlying construct. In terms of the rating of desirability, the item reliability index was 0.93.

2.6.2 Number of Delphi Rounds

Reaching consensus or reaching a state of stability with continued group disagreement is the endpoint of the Delphi methodology. As with most aspects of a Delphi study, specific information concerning the desirable number of Delphi rounds is not readily available in the literature. Clearly, researchers using the technique do not want to stop until meaningful data are available. However, as widely acknowledged in the literature (see for example, (Hasson, Keeney, & McKenna, 2000)) Delphi requires considerable expenditure of resource on the part of both investigators and participants. Accordingly, sample fatigue is an important consideration. This study stopped at two rounds, which

is consistent with recent Delphi literature indicating that two rounds are generally sufficient (Lang, Everett, McGowen, & Bennard, 2000; McKenna, Keeney, & Bradley, 2004).

3. Assessing subjective ratings by stakeholder groups of factors that influence General Practitioner diagnostic decision-making (Phase 2)

3.1 Objective

The objective of this part of the study (Phase 2) was to assess the importance and desirability ratings of factors previously identified by significant New Zealand health care groups as having an influence on diagnostic decision-making.

3.2 Methods

3.2.1 Ethics

The study protocol was approved in advance by the University of Auckland Human Participants Ethics Committee (Reference 2003/Q/033).

3.2.2 Participants

Significant stakeholder groups in the provision of New Zealand health care (including the New Zealand system of accident compensation) were identified by the investigator in November 2003, as shown in Table 3.1 Each potential participant was mailed background information, a questionnaire (based on Phase 1 of this study) and a pre-paid return envelope. Details of the selection of potential participants follows.

Table 3.1 Significant stakeholder groups in the provision of New Zealand health care

Government organisations	Ministry of Health **(MOH)**	Ministerial Advisory Panel on Work-Related Gradual Process Disease or Infection **(MAPWRGPI)**	Members Health Committee, NZ House of Representatives (**MP**)	
Accident Compensation Corporation	ACC Medical Advisors **(ACCMA)**	ACC Senior Management Team **(ACCSMT)**	ACC Case Managers **(ACCCM)**	Dispute Resolution Services Limited Reviewers **(DRSL)**
Medical Practitioners	General Practitioners (**GP,GPACC**)	GP Standard Setters **(GPSS)**	Occupational Medicine Physicians **(OCCMED)**	Medical practitioners who have graduated from The University of Auckland with a postgraduate qualification in Occupational Medcine **(DIPOCCMED)**
Individuals	Recipients of ACC Services **(RACCS)**	Patients **(P)**		

3.2.2.1 Ministerial Advisory Panel on Work-Related Gradual Process, Disease or Infection (MAPWRGP)

This is a group that provides independent advice to the Minister for ACC on issues relating specifically to work-related gradual process, disease or infection.

"The Panel on Work-Related Gradual Process, Disease or Infection provides opportunities for occupational health and safety experts to provide independent advice

in an area where advances in medical knowledge are constantly challenging current assumptions and which requires continuous scrutiny."(Dyson, 2003)

"The establishment of these advisory groups is a further move towards ensuring the ACC scheme is fair, and is seen to be fair, for all of those associated with it."(Dyson, 2003)

The panel consists of seven members, all of whom were invited to participate in the study. Questionnaires for each panelist were forwarded to Dr David Collins, Queen's Counsel and chairperson of the panel by the Investigator. Dr. Collins distributed them to each member, along with his recommendation that they participate in the study.

3.2.2.2 ACC Senior Management Team (ACCSMT)

Twelve senior managers were identified by ACC and invited to participate in the study. Questionnaires were forwarded to them by ACC staff to preserve their anonymity.

3.2.2.3 ACC Case Managers (ACCCM)

ACC identified 423 case managers in its employ, all of whom were invited to participate. Again, questionnaires were forwarded to them by ACC staff to preserve anonymity.

3.2.2.4 ACC Medical Advisors (ACCMA)

ACC identified thirty-seven medical advisors working for ACC in branches, contact centres and specialist units, all of whom were invited to participate and questionnaires forwarded by ACC staff to preserve anonymity of the participants.

3.2.2.5 General Practitioners (GP)

As of 1 November 2003 the ACC database of medical providers listed 4055 GPs, (including 504 assigned by ACC into a rural subcategory). One thousand three hundred and ninety-seven GPs identified as locums or part-time medical practitioners, thiry-seven ACC Medical Advisors and seventy-three GPs with a Diploma of Occupational Medicine were excluded, leaving a potential participant pool of 2548 GPs. New Zealand Medical Council statistics for 2002 show that there were 2917 doctors practising as GPs during that year so it is clear that the ACC database is not identical to that held by the New Zealand Medical Council although the details on which they differ are unclear to the investigator.

A random number was generated in SAS (SAS v 9.1, SAS Institute Inc) for each potential participant and the database sorted by that random number into two groups of 1500 general practitioners – those answering the question in an ACC context (GPACC) and those not (GP). Questionnaires were sent by ACC staff to preserve anonymity of the participants.

3.2.2.6 Recipients of ACC Services (RACCS)

There were 41,913 active entitlement ACC claims on record on 1 November 2003, 41,559 of which were for people aged between 18 and 70. Of this latter group, 21,490 were identified as long-term claimants - that is, ≥ 12 months since starting cover (RACCSLT); 20,069 were identified as short-term claimants – that is, ≤ 12 months since starting cover (RACCSST).

The following criteria (see Table 3.2) were used to exclude potential participants from the pool. These exclusions were made on the basis of practicality in some instances (for example, serious head injury precluding active participation in questionnaire-based research or a claim relating to a fatality). The majority were pre-requisite exclusions identified by ACC as a condition of access to the database.

Table 3.2 Criteria used to Exclude Potential Participants from the Pool

	Long-term claimants	Short-term claimants
Total participant pool	21,490	20,069
Medical misadventure	462	205
Fatal claim	1164	159
Person deceased	1162	159
Sensitive claim	452	446
Remote care claimant	31	62
Serious injury	301	19
Sampled since January 2002	10,401	5518
Fraud indicated	40	5
Aggressive claimant	98	9
Serious head injury	4	0
Potential participants excluded by multiple criteria	4312	370
Total exclusions	17,265	6793

Following exclusions, the total potential participant pool was 4,225 for long-term claimants and 13,276 for short-term claimants.

A random number was generated in SAS (SAS v 9.02, SAS Institute Inc) for each potential participant, after exclusions, and the database sorted by that random number. Those 1500 records with the lowest random numbers were selected from both the short-term and long-term claimant pool and questionnaires sent by ACC staff to preserve anonymity of the participants.

3.2.2.7 Dispute Resolution Services Limited (DRSL) Reviewers

Dispute Resolution Services Limited (DRSL) is a subsidiary company owned and operated by ACC. DRSL was established to manage an independent dispute resolution service as required under Part 5 – Dispute Resolution of the Injury Prevention, Rehabilitation and Compensation Act 2001. Appeals of DRSL reviewers' decisions are administered by the District Courts.

At the time of the study, DRSL employed twenty-six reviewers, all of whom were invited to participate. Questionnaires were forwarded by ACC staff to preserve anonymity of the participants.

3.2.2.8 Occupational Medicine Physicians (OCCMED)

Medical practitioners vocationally registered in Occupational Medicine were identified from an electronic version of the New Zealand Medical Register current as of 12 November 2003. The following exclusions were made: physicians whose current contact address was outside New Zealand, physicians who had been identified as ACC Medical Advisors and Professor Des Gorman (one of the supervisors of this study). The

remaining twenty-four vocationally registered occupational medicine physicians were invited to participate and questionnaires were sent to them directly by the Investigator.

3.2.2.9 Medical graduates from The University of Auckland with a postgraduate qualification in Occupational Medicine (DIPOCCMED)

The Occupational Medicine Unit in the Department of Medicine, University of Auckland, holds a database of medical practitioners who are completing a postgraduate qualification in Occupational Medicine and have consented to release of their contact details. The database was searched for those who achieved the Postgraduate Diploma in Occupational Medicine between 1996 and 2002 and those who achieved the re-named Postgraduate Diploma in Medical Science in 2003. The following exclusions were made: medical practitioners unable to be located in an electronic version of the New Zealand Medical Register current as of 12 November 2003, those with a contact address outside New Zealand, those identified as vocationally registered in occupational medicine, and those identified as ACC Medical Advisors. The remaining seventy-three medical practitioners were invited to participate and questionnaires were sent to them directly by the Investigator.

3.2.2.10 Patients (P)

An electronic version of the general New Zealand electoral roll (current as of November 2003) was used to select a random sample of people who may from time to time visit a GP. For the purposes of this study, this group will be referred to as "patients". The total number of individuals on the roll was 2,695,017. The use of this roll biases against

those who have self-identified for the Maori roll and is a limitation recognised by the Investigator.

ACC was provided with contact details for all potential participants identified by the Investigator and the electronic electoral roll. To maintain anonymity of potential participants, ACC staff excluded all potential participants identified as belonging to another stakeholder group of interest from the electronic electoral roll before returning the modified roll back to the Investigator. Two individuals for whom eligibility for entry to study was unclear (identical names and locality as individuals known to belong to another stakeholder group of interest) were also excluded.

A random number was generated in SAS (SAS v 9.02, SAS Institute Inc) for each individual and the database sorted by that random number. Those 1500 records with the lowest random numbers were selected.

Following exclusions, 1500 potential participants were selected using SAS V 9.02. All 1500 were invited to participate and questionnaires were sent to them directly from the University.

3.2.2.11 Ministry of Health (MOH)

The Investigator's liaison with the Ministry of Health was through Dr Jim Primrose, Chief Advisor General Practice, Clinical Services Directorate. Dr Primrose sent questionnaires to three people whom he considered to be appropriate participants in the study.

3.2.2.12 Members of Parliament (MP)

At the time of the study there were eleven MPs on the Health Committee, New Zealand House of Representatives. Unfortunately, this committee felt unable to participate in the research but agreed that each member could participate independently on an individual basis. Accordingly, all MPs on the committee were invited to participate and questionnaires forwarded to them directly by the Investigator.

3.2.2.13 GP Standard Setters (GPSS)

These results were taken from those obtained in Phase 1 of this study.

3.2.3 Questionnaires

The format of the questionnaire was essentially the same as that used in Phase 1 of this study (for example, refer to Appendix A). The questionnaire contained the thirty-nine factors previously identified by the focus groups as influencing GP diagnostic decision-making. Potential participants were asked to rate importance and desirability for each factor using a seven-point numeric scale, anchored by "not at all important" and "very important", and "not at all desirable" and "very desirable". "Not at all important" or "not at all desirable" was represented by number 1 and "very important" and "very desirable" by number 7 on the scale.

As well as the questionnaire, instructions and background information on the study including a participant information sheet (see Appendix B and C for examples) were sent to all

potential participants in each stakeholder group. As can be seen in the examples provided these documents were modified where necessary to accommodate potential differences in or lack of medical background between the groups.

Mail-out to all potential participants took place in November 2003.

3.2.4 Return

One hundred and fourteen unopened envelopes were returned to The University of Auckland, representing a return rate of 8.3% - irrespective of whether they had been originally forwarded to the addressee by the ACC or the Investigator herself. To preserve confidentiality about which stakeholder group the addressee belonged to, the returned envelopes were not opened. No further information is therefore available on the distribution of returned envelopes among stakeholder groups.

3.2.5 Data Entry

Data obtained from the questionnaires was entered into Excel spreadsheets by a student employed for the task. Ten percent of all entries were audited by two people, one of whom was the Investigator. Selection for audit was done by random selection (within Excel 2000) blinded to both the Investigator and data entry person until data entry was complete.

Five errors were found in total – one in the GP group, two in the RACCSLT group and two in the P group. This is an error rate of 0.36%.

3.2.6 General Analysis

A Rasch analysis was undertaken with the software package WINSTEPS® Version 3.55 (Linacre & Wright, 2000) . The method used was the rating-scale version of the Rasch model (Andrich, 1978) whereby ratings given to each item are not assumed to be equally spaced but all items share the same structure.

Statistical analysis was undertaken with SAS® (SAS v 9.1, Institute Inc).

3.3 Results

3.3.1 Participant Response Rate

Table 3.3 shows the participant response rate of each stakeholder group.

Table 3.3 Participant Response Rate for Surveyed Stakeholder Groups

Stakeholder group	Number of potential participants	Number of actual participants	Percentage responding
MAPWRGP	7	3	43
ACCSMT	12	3	25
CM	423	68	16
ACCMA	37	8	22
GPACC	1500	239	16
GP	1500	305	20
RACCSST	1500	203	14
RACCSLT	1500	278	19
DRSL	26	9	35
OCCMED	24	6	25
DIPOCCMED	73	23	32
P	1500	221	15
MOH	3	3	100
MP	11	2	18

Participation in the study was anonymous, so no demographic information is available to allow further comment on potential differences in characteristics between respondents and non-respondents.

3.3.2 Rasch Analysis

3.3.2.1 Spread

Table 3.4 shows minimum, maximum and range of importance logit values for all stakeholder groups.

Table 3.4 Minimum, maximum and range of importance logit values for all stakeholder groups.

Stakeholder group	Minimum	Maximum	Range
ACCMA	-2.12	1.78	3.90
ACCSMT	-3.34	2.28	5.62
CM	-1.08	0.57	1.65
DRSL	-2.08	0.97	3.05
GPSS	-5.95	4.35	10.3
DIPOCCMED	-2.20	1.69	3.89
GP	-3.30	1.95	5.25
GPACC	-3.06	1.79	4.85
MAAPWRGPDI	-3.36	1.58	4.94
MOH	-5.55	2.71	8.26
MP	-4.47	3.90	8.37
OCCMED	-1.24	1.03	2.27
P	-1.36	1.01	2.37
RACCSLT	-1.18	1.13	2.31
RACCSST	-1.30	1.10	2.40

Table 3.5 shows the minimum, maximum and range of desirability logit values for all stakeholder groups.

Table 3.5 Minimum, maximum and range of desirability logit values for all stakeholder groups.

Stakeholder group	Minimum	Maximum	Range
ACCMA	-3.30	2.0	5.30
ACCSMT	-10.26	6.55	16.81
CM	-2.3	1.01	3.31
DRSL	-2.79	3.46	6.25
DIPOCCMED	-2.55	1.85	4.40
GP	-3.06	1.71	4.77
GPACC	-2.77	1.72	4.49
GPSS	-3.56	4.41	7.97
MAPWRGPI	-4.15	4.90	9.05
MOH	-4.26	6.38	10.64
MP	-4.35	3.26	7.61
OCCMED	-6.24	3.54	9.78
P	-1.65	1.19	2.84
RACCSLT	-1.39	1.22	2.61
RACCSST	-1.67	1.24	2.91

As can be seen from Table 3.4 and 3.5 the range of logit values varies widely between stakeholder groups. The more negative the logit value, the easier it was for the subject to endorse that a factor is important and/or desirable. The more positive the logit value, the harder it was for the subject to endorse that a factor is important and/or desirable. The smaller the range the less discrimination the stakeholders are able to make between the factors. The ranges tend to be smaller for ratings of importance than for desirability indicating that the respondents have more strength of conviction when making judgements about the factors' desirability compared to their importance. The estimated range will be increased in stakeholder groups with low numbers of participants.

3.3.2.2 Item reliability index

The item reliability index is a measure of the reproducibility of the results obtained. As can be seen from Table 3.6, the item reliability index is higher for most stakeholder groups when judging desirability of influence. This is because there is less observed response variability when respondents judge desirability compared with importance.

Table 3.6 Item reliability index

Stakeholder group	Item reliability index Importance	Item reliability index Desirability
ACCMA	0.75	0.84
ACCSMT	0.66	0.85
CM	0.94	0.98
DRSL	0.79	0.85
DIPOCCMED	0.91	0.93
GP	1.00	1.00
GPACC	0.99	1.00
GPSS	0.94	0.93
MAPWRGPI	0.63	0.79
MOH	0.69	0.79
MP	0.55	0.60
OCCMED	0.44	0.85
P	0.99	0.99
RACCSLT	0.99	0.99
RACCSST	0.99	0.99

3.3.2.3 Principal Components Analysis

A key component of construct validity is that of uni-dimensionality - that the responses obtained from participants reflect a single underlying construct. The investigator has a theoretical construct which is then represented to participants, in this case by items on a questionnaire, and the attitude of the participants is inferred to account for their responses to the items.

The dimensionality of the questionnaires used in the study was determined by principal components analysis. As can be seen at Table 3.7 for several stakeholder groups, the questionnaire, in the context of judgment of importance of influence, is not measuring "one attribute at a time". This is not the case for the judgment of desirability, shown in Table 3.8. Principal components analysis indicates that the questionnaire, in this context, comes very close to a uni-dimensional measurement model and therefore it would be reasonable to infer that the questionnaire has high construct validity (see for example, (Messick, 1989).

(i) Importance

Table 3.7 Principal Components Analysis - Importance

Stakeholder group	Percentage of variance in ratings explained by the Rasch measure	Percentage of unexplained variance measured by the next component
ACCMA	53.8	11.6
ACCSMT	66.7	19.6
CM	46.4	12.7
DRSL	67.4	9.8
DIPOCCMED	65.9	5.5
GP	78.2	2.3
GPACC	73.3	3.1
GPSS	88.6	2.8
MAPWRGPI	62.4	24.0
MOH	66.9	21.7
MP	76.5	23.5
OCCMED	46.7	18.1
P	73.6	2.9
RACCSLT	73.3	2.7
RACCSST	74.5	2.6

(ii) Desirability

Table 3.8 Principal Components Analysis - Desirability

Stakeholder group	Percentage of variance in ratings explained by the Rasch measure	Percentage of unexplained variance measured by the next component
ACCMA	79.6	5.4
ACCSMT	92.4	3.9
CM	81.1	2.2
DRSL	87.2	3.4
DIPOCCMED	81.7	4.0
GP	84.0	1.8
GPACC	82.8	2.2
GPSS	86.2	4.0
MAPWRGPI	92.2	5.0
MOH	77.1	12.6
MP	80.0	0
OCCMED	85.6	4.9
P	79.2	2.0
RACCSLT	77.4	2.3
RACCSST	84.5	1.5

3.3.2.4 Logit values

The logit values (both importance and desirability) obtained for each stakeholder group for each influencing factor can be seen in Appendix E.

Analysis of these data allows the following conclusions to be reached.

(i) History

All stakeholder groups view this as an important influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(ii) Examination Findings

All stakeholder groups view this as an important influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(iii) Results of Investigations

All stakeholder groups view this as an important influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(iv) Patient Advocacy

The majority viewpoint (13 stakeholder groups:2 stakeholder groups – the ratio of ayes to nayes) is that this is an important influencing factor. Dissenting groups are: MOH and ACCSMT. The MOH rates patient advocacy as more unimportant in influence (logit value 1.27) in comparison with the ACCSMT.

The majority viewpoint (9:6) is that this is a desirable influencing factor. Dissenting groups are: OCCMED, CM, MP, ACCMA, DRSL, ACCSMT. ACCSMT find patient advocacy very undesirable as an influencing factor (logit value 1.73) in comparison with the other dissenting groups.

(v) Legal Requirements

The majority viewpoint (12:3) is that this is an unimportant influencing factor. Dissenting groups are: GPACC, RACCSLT, RACCSST.

The majority viewpoint (10:5) is that this is an undesirable influencing factor. Dissenting groups are: CM, GPACC, MP, MOH, ACCSMT. Of the dissenting groups MP (logit value -1.84) and ACCSMT (logit value -1.13) find legal requirements the most desirable.

(vi) Administrative Requirements

The majority viewpoint (11:4) is that this is an unimportant influencing factor. Dissenting groups are: DIPOCCMED, MP, MAPWRGPI and ACCSMT. MP (logit value -2.81) rate this as a very important influencing factor compared to the other dissenting groups.

The majority viewpoint (13:2) is that this is an undesirable influencing factor. Dissenting groups are: CM and DRSL

(vii) Evidence-Based Medicine

The majority viewpoint (12:3) is that this is an important influencing factor. Dissenting groups are OCCMED, MOH and ACCMA. MOH (logit value 1.27) particularly view this as an unimportant influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(viii) GP's Personal Clinical Experience

All stakeholder groups view this as an important influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(ix) Characteristics of the GP

The majority viewpoint (9:6) is that this is an important influencing factor. Dissenting groups are: P, CM, RACCS LT, RACCS ST, MP, MAPWRGPI

The majority viewpoint (9:6) is that this is an undesirable influencing factor. Dissenting groups are: GP, DIPOCCMED, GPSS, MOH, DRSL, ACCSMT.

(x) Medico-legal Issues

The majority viewpoint (9:6) is that this is an unimportant influencing factor. The dissenting groups are OCCMED, GP, GPACC, DIPOCCMED, GPSS and MOH. MOH (logit value -2.28) find this a very important influencing factor in comparison with the other stakeholder groups.

The majority viewpoint (14:1) is that this is an undesirable influencing factor.
The dissenting group is GPSS.

(xi) The Health and Disability Commissioner (HDC)

The majority viewpoint (14:1) is that this is an unimportant influencing factor.
The dissenting group is OCCMED.

The majority viewpoint (13:2) is that this is an undesirable influencing factor.
The dissenting groups are: RACCS LT, ACCSMT.

(xii) Potential Implications for the Wider Community

All stakeholder groups view this as an unimportant influencing factor.

The majority viewpoint (14:1) is that this is an undesirable influencing factor.

The dissenting group is GPSS.

(xiii) Setting for the Appointment

All stakeholder groups view this as an unimportant influencing factor.

The majority viewpoint (13:2) is that this is an undesirable influencing factor.

The dissenting groups are: MP, MOH.

(xiv) Time Available for the Consultation

All stakeholder groups view this as an important influencing factor.

The majority viewpoint (8:7) is that this is an undesirable influencing factor:

The dissenting groups are: P, CM, RACCS LT, RACCS ST, MP, ACCMA, ACCSMT.

(xv) External Feedback to the GP from a Medical Source

The majority viewpoint (14:1) is that this is an important influencing factor.

The dissenting group is MP.

The majority viewpoint (14:1) is that this is a desirable influencing factor.

The dissenting group is MAPWRGPI.

(xvi) Potential Impacts (ramifications) of the Diagnosis on the Patient

The majority viewpoint (12:3) is that this is an important influencing factor.

The dissenting groups are: MP, MOH and ACCSMT.

The majority viewpoint (8:7) is that this is a desirable influencing factor. The dissenting groups are: OCCMED, CM, GP, GPACC, GPSS, MAPWRGPI and DRSL.

(xvii) Marketing/Media

All stakeholder groups view this as an unimportant influencing factor.

All stakeholder groups view this as an undesirable influencing factor.

(xviii) Personal Circumstances of the Patient

The majority viewpoint (9:6) is that this an unimportant influencing factor. The dissenting groups are OCCMED, GP, DIPOCCMED, MOH, ACCMA, DRSL. MOH (logit value -1.81) find this a very important influencing factor.

The majority viewpoint (13:2) is that this an undesirable influencing factor.

The dissenting groups are MOH, ACCSMT.

(xix) Characteristics of the Patient

The majority viewpoint (9:6) is that this is an important influencing factor.

The dissenting groups are: P, CM, RACCS LT, RACCS ST, MP, MAPWRGPI

The majority viewpoint (9:6) is that this is an undesirable influencing factor.
The dissenting groups are: GP, GPACC, GPSS, MOH, ACCSMT.

(xx) Patient Expectations

The majority viewpoint (8:7) is that this is an unimportant influencing factor. The dissenting groups are: OCCMED, GP, DIPOCCMED, GPSS, MOH, ACCMA, ACCSMT.

The majority viewpoint (13:2) is that this is an undesirable influencing factor.
The dissenting groups are: GPSS and ACCSMT.

(xxi) GP's need to justify a course of action

The majority viewpoint (9:6) is that this is an important influencing factor. The dissenting groups are: OCCMED, GPSS, MAPWRGPI, ACCMA, DRSL, ACCSMT

The majority viewpoint (9:6) is that this is a desirable influencing factor. The dissenting groups are: GP, GPACC, GPSS, MP, MOH, MAPWRGPI. MOH (logit value 1.64) and MAPWRGPI (logit value 1.22) find this factor particularly undesirable in comparison with the other dissenting groups.

(xxii) Reasonable Pressure put on the GP by Patient

The majority viewpoint (9:6) is that this is an important influencing factor.

The dissenting groups are: P, RACCS LT, RACCS ST, MP, MAPWRGPI, ACCSMT

The majority viewpoint (14:1) is that this is an undesirable influencing factor.

The dissenting group is MP.

(xxiii) Unreasonable Pressure put on the GP by Patient

The majority viewpoint (13:2) is that this is an unimportant influencing factor.

The dissenting groups are MPs and OCCMED.

The majority viewpoint (14:1) is that this is an undesirable influencing factor.

The dissenting group is MP.

(xxiv) GP's Desire to Please the Patient

The majority viewpoint (12:3) is that this is an unimportant influencing factor.

The dissenting groups are OCCMED, MOH, ACCMA.

All stakeholder groups view this as an undesirable influencing factor.

(xxv) GP's Perception of the National Health Care System (NHCS)

All stakeholder groups view this as an unimportant influencing factor.

All stakeholder groups view this as an undesirable influencing factor.

(xxvi) Technological Tools

The majority viewpoint (11:4) is that this is an unimportant influencing factor.

The dissenting groups are P, RACCS LT, RACCS ST, MAPWRGPI.

The majority viewpoint (14:1) is that this is a desirable influencing factor.

The dissenting group is GP.

(xxvii) GP's Knowledge of Local Conditions

The majority viewpoint (14:1) is that this is an important influencing factor.

The dissenting group is OCCMED.

All stakeholder groups view this as a desirable influencing factor.

(xxviii) Who is Paying for the Appointment (Funder of Consultation)

All stakeholder groups view this as an unimportant influencing factor.

All stakeholder groups view this as an undesirable influencing factor.

(xxix) Business Considerations

The majority viewpoint (13:2) is that this is an unimportant influencing factor.

The dissenting groups are OCCMED and ACCSMT.

All stakeholder groups view this as an undesirable influencing factor.

(xxx) External Incentives

All stakeholder groups view this as an unimportant influencing factor.

All stakeholder groups view this as an undesirable influencing factor.

(xxxi) External Medical Professionals' Expectations

The majority viewpoint (14:1) is that this is an unimportant influencing factor.

The dissenting group is OCCMED.

The majority viewpoint is that this is a desirable influencing factor.

The dissenting groups are: P, RACCS LT, RACCS ST

(xxxii) GP's Perception of What Other External Health Professionals Might Think

The majority viewpoint (13:2) is that this is an unimportant influencing factor.

The dissenting groups are OCCMED and MAPWRGPI.

The majority viewpoint (11:4) is that this is an undesirable influencing factor.

The dissenting groups are OCCMED, MOH, MAPWRGPI and ACCSMT.

(xxxiii) Closeness of the GP/Patient Relationship

The majority viewpoint (8:7) is that this is an important influencing factor. MOH (logit value -1.32) and ACCSMT (logit value -1.12) view this factor as a particularly important influence in comparison to other stakeholder groups. The dissenting groups are: P, OCCMED, DIPOCCMED, RACCS LT, RACCS ST, MP, MAPWRGPI.

The majority viewpoint (9:6) is that this is a desirable influencing factor. ACCSMT (logit value -1.59) views this factor as a particularly desirable influence in comparison with other stakeholder groups. The dissenting groups are: P, OCCMED, CM, RACCS LT, RACCS ST, ACCMA.

(xxxiv) Diagnostic Categories

The majority viewpoint (13:2) is that this is an unimportant influencing factor.

The dissenting groups are: OCCMED and MAPWRGPI.

The majority viewpoint (12:3) is that this is an undesirable influencing factor.

The dissenting groups are: CM, GPSS, DRSL

(xxxv) Patient Advocacy/Support Groups

The majority viewpoint (14:1) is that this is an unimportant influencing factor.

The dissenting group is OCCMED.

All stakeholder groups view this as an undesirable influencing factor.

(xxxvi) Need to Achieve an Outcome

All stakeholder groups view this as an important influencing factor.

All stakeholder groups view this as a desirable influencing factor.

(xxxvii) Fear of Uncertainty

The majority viewpoint (11:4) is that this is an unimportant influencing factor.

The dissenting groups are: OCCMED, DIPOCCMED, ACCMA and DRSL.

The majority viewpoint (14:1) is that this is an undesirable influencing factor.

The dissenting group is MP.

(xxxviii) Context in which the Diagnosis is Made

The majority viewpoint (13:2) is that this is an unimportant influencing factor.

The dissenting groups are: OCCMED, DRSL.

All stakeholder groups view this as an undesirable influencing factor.

(xxxix) Whether or not Treatment is Available

The majority viewpoint (12:3) is that this is an unimportant influencing factor.

The dissenting groups are: P, RACCS LT, RACCS ST

The majority viewpoint (10:5) is that this is an undesirable influencing factor.

The dissenting groups are: P, RACCS LT, RACCS ST, MP, MAPWRGPI.

3.3.2.5 Congruence among Groups

One way of examining congruence of response between the stakeholder groups is to look at the factors that were rated as the five most important and desirable by each group.

(i) Importance

History, examination findings and the GP's personal clinical experience were rated amongst the five most important factors in all stakeholder groups except MPs (who did

not include examination findings) and OCCMED (who did not include examination findings or GP's clinical experience).

Eight of the fifteen stakeholder groups viewed history as the most important influencing factor. This included six of the seven stakeholder groups which comprised medical practitioners (GP, GPACC, DIPOCCMED, GPSS, MOH, ACCMA). The other two groups who rated history as most important were MP and MAPWRGPI.

CM, P, RACCS LT and RACCS ST all see investigations as the most important influencing factor.

OCCMED rated the need to achieve an outcome as most important.

DRSL rated examination findings as the most important influencing factor and ACCSMT rated evidence-based medicine equal with GP's personal clinical experience as having the most influence on diagnostic decision-making.

The majority of stakeholder groups rated external incentives as the least influential factor in diagnostic decision-making. In contrast, OCCMED rated potential implications for the wider community as least important; MAPWRGPI rated who is paying for the appointment, DRSL rated a GP's perception of what external health professionals might think as least important and ACCSMT saw patient advocacy/support groups as being least influential.

(ii) Desirability

Eight of the 15 stakeholder groups (including all seven stakeholder groups comprising medical practitioners) rated patient history as the most desirable influencing factor. The other stakeholder group viewing history as most desirable was MAPWRGPI.

P, RACCS LT and RACCS ST all considered investigations to be both the most desirable and important influencing factor.

CM and DRSL view examinations as the most desirable influencing factor while ACCSMT views evidence-based medicine as the most desirable influence.

OCCMED is the only stakeholder group which did not view external incentives as the least desirable influencing factor. The highest logit value for this group was assigned to unreasonable patient pressure.

3.3.3 Analysis of desirability and importance

Figures 3.1 to 3.15 show the logit values of desirability against the logit values for importance for each stakeholder group.

The diagonal line represents matching of importance and desirability – that is, what is currently happening matches what should ideally happen.

Factors to the left of the diagonal line indicate a mismatch where these factors are rated as having greater importance than desirability – that is, the factors which currently influence GP diagnostic decision-making more than is desirable.

Factors to the right of the diagonal line indicate a mismatch where these factors are rated as more desirable than they are currently important. These are factors which are viewed as needing to influence GP diagnostic decision-making more than they currently do.

Degree of mismatch was determined by calculating the difference between the logit values of desirability and importance for each factor. Factors that are negatively mismatched will lie on the right side of the diagonal line. The more negative the mismatch score, the more the stakeholder group judges the factor to be less influential that it should be. The converse applies to positively mismatched factors. Table 3.9 shows the minimum and maximum mismatch socres for each stakeholder group.

Impact scores were also calculated by adding the logit value of importance to the logit value of desirability for each factor - the higher the impact score, the more importance and desirability the stakeholder group judges that influencing factor to have. Impact scores can be seen at Appendix E.

Table 3.9 Minimum and Maximum Mismatch Scores for Each Stakeholder Group

Stakeholder group	Minimum	Maximum
ACCMA	-1.57	1.06
ACCSMT	-6.92	4.77
CM	-1.25	0.95
DRSL	-1.62	3.06
DIPOCCMED	-1.25	0.80
GP	-0.81	0.75
GPACC	-0.95	0.84
GPSS	-2.24	2.39
MAPWRGPI	-2.90	3.74
MOH	-4.04	3.67
MP	-2.48	2.84
OCCMED	-5.41	3.68
P	-0.29	0.26
RACCSLT	-0.25	0.26
RACCSST	-0.37	0.28

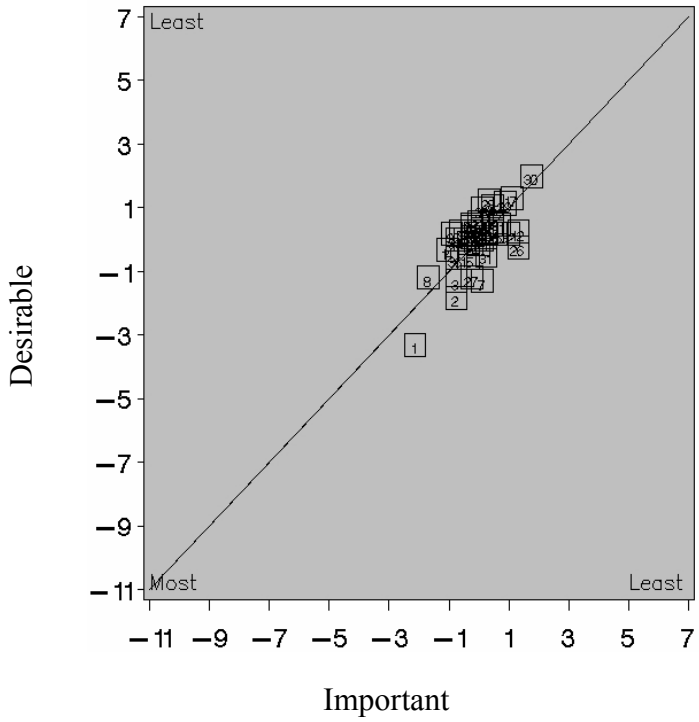
As can be seen graphically (Figures 3.1 through 3.15), the greater the mismatch, the less the alignment between importance and desirability the stakeholder groups perceive.

Table 3.10 Identification of factors represented by numerals in Importance vs Desirability graphs

Numeric Code	Factor identification for translation
1	History
2	Examination findings
3	Results of investigations
4	Patient advocacy
5	Legal requirements
6	Administrative requirements
7	Evidence-based medicine
8	GP's personal clinical experience
9	Characteristics of the GP
10	Medico-legal issues
11	The Health and Disability Commissioner
12	Potential implications for the wider community
13	Setting for the appointment
14	Time available for the consultation
15	External feedback to the GP from a medical source
16	Potential implications (ramifications) of the diagnosis on the patient
17	Marketing/media
18	Personal circumstances of the patient
19	Characteristics of the patient
20	Patient expectations
21	GP's need to justify a course of action
22	Reasonable patient pressure (put on the GP by patient)
23	Unreasonable patient pressure (put on the GP by patient)
24	GP's desire to please the patient
25	GP's perception of the national health care system
26	Technological tools
27	GP's knowledge of local conditions
28	Who is paying for the appointment (Funder of the consultation)
29	Business considerations
30	External incentives
31	Expectations of external medical professionals
32	(GP's perception of) what other external (health) professionals' (Drs) might think
33	Closeness of GP/patient relationship
34	Diagnostic categories
35	Patient advocacy/support groups
36	Need to achieve an outcome
37	Fear of uncertainty
38	Context in which the diagnosis made
39	Whether or not treatment is available

Figure 3.1 shows the plot of logit values of desirability against importance for all 39 influencing factors for the stakeholder group ACC Medical Advisors (ACCMA).

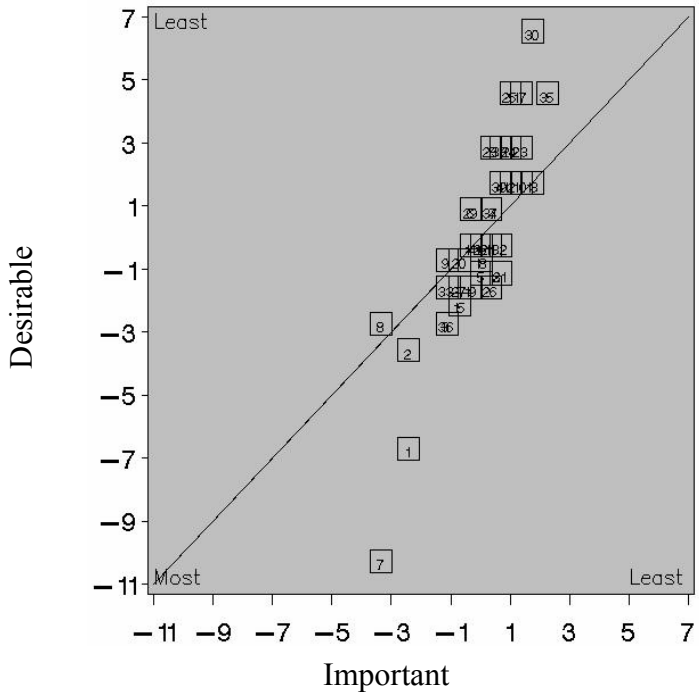
Figure 3.1 - Group: ACCMA



There are no factors which this stakeholder group perceive to be exactly aligned in terms of importance and desirability. Those that are closest to being aligned are availability of treatment, patient advocacy and legal requirements. The factors with the greatest mismatch are technological tools, evidence-based medicine and history. All of these are negatively mismatched, indicating that this stakeholder group regards these factors as less influential than they should be. The most positively mismatched factor is characteristics of the GP. The factor with the highest impact score is history – that is, it is judged by this group as the most important and desirable influencing factor.

Figure 3.2 shows a similar plot for the stakeholder group ACC SMT.

Figure 3.2 – Group: ACC SMT



Again no influencing factors are judged to be exactly aligned although the influence of patient expectations is very close (-0.02). The highest mismatch score is seen for evidence-based medicine which is seen as far less influential than it should be, followed by external incentives which are seen as far more influential than desired. This group also sees significant mismatches existing for history (-4.27), a GP's perception of the state of the national health care system (3.56) and media/marketing (3.20). The factor with the highest impact score is evidence-based medicine.

Figure 3.3 shows the plot for the CM stakeholder group. This group perceives no factors to be exactly in alignment although clearly there is very little mismatch overall. Examination findings are seen as being less influential than they should be (-1.25) as is evidence-based medicine (-1.08). The factor with the most positive mismatch is unreasonable patient pressure. Examination findings is the factor with the highest impact score.

Figure 3.3 - Group: CM

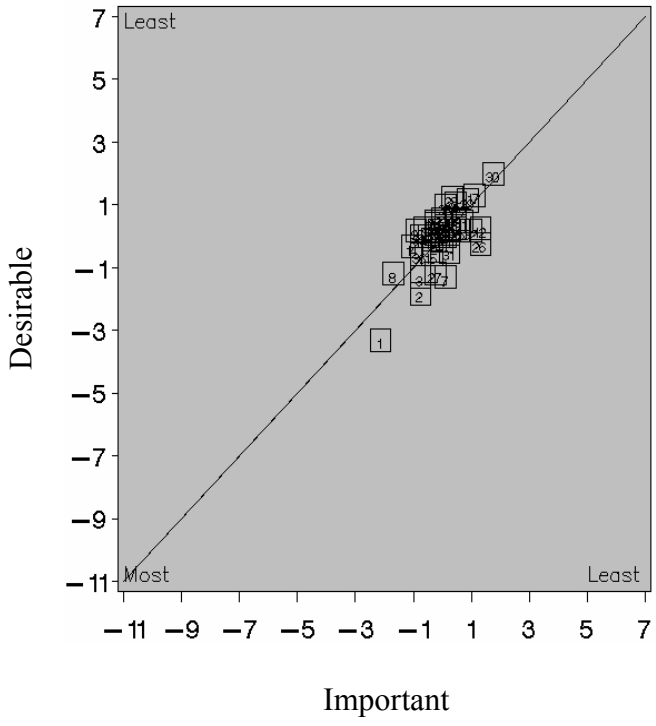


Figure 3.4 shows the plot for the long term RACCS group (RACCSLT). As can be seen best graphically, while this group rates no factor in perfect alignment, all the factors are very close to alignment. The most closely aligned factors are the GP's desire to please (-0.01) and the expectations of external medical professionals (0.01). The least closely aligned are unreasonable pressure put on a GP by a patient and fear of uncertainty (both at 0.26). The most negatively mismatched factor is the GP's clinical experience. The factor with the highest impact score is results of investigations (-2.57).

Figure 3.4 – Group: RACCSLT

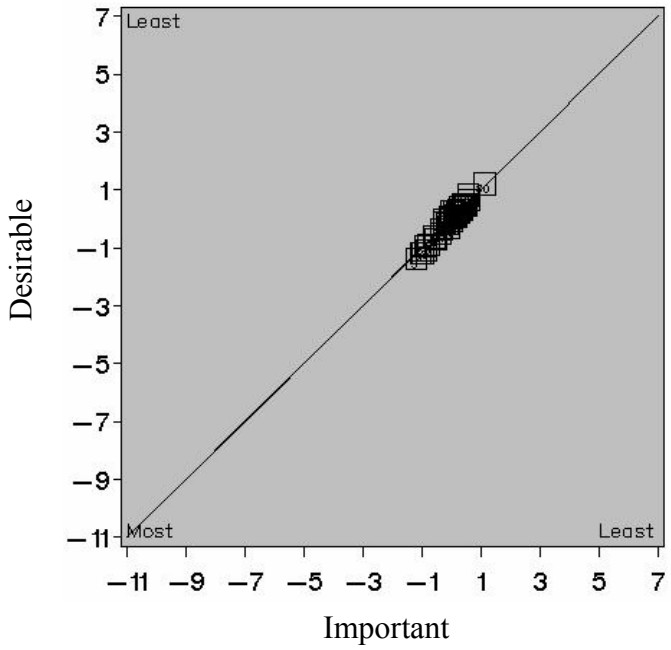
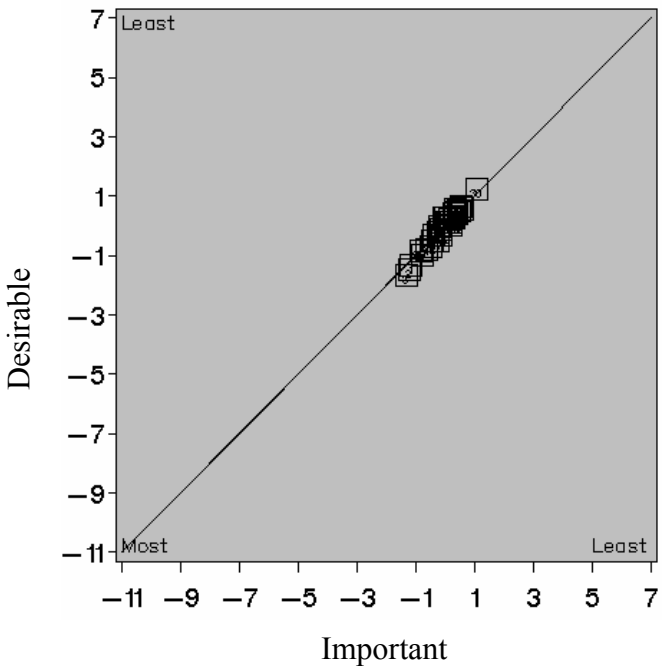


Figure 3,5 shows the plot for the short term RACCS group (RACCSST). Similar to that of the long term RACCS group, all factors are perceived as having very little mismatch between desirability and importance.

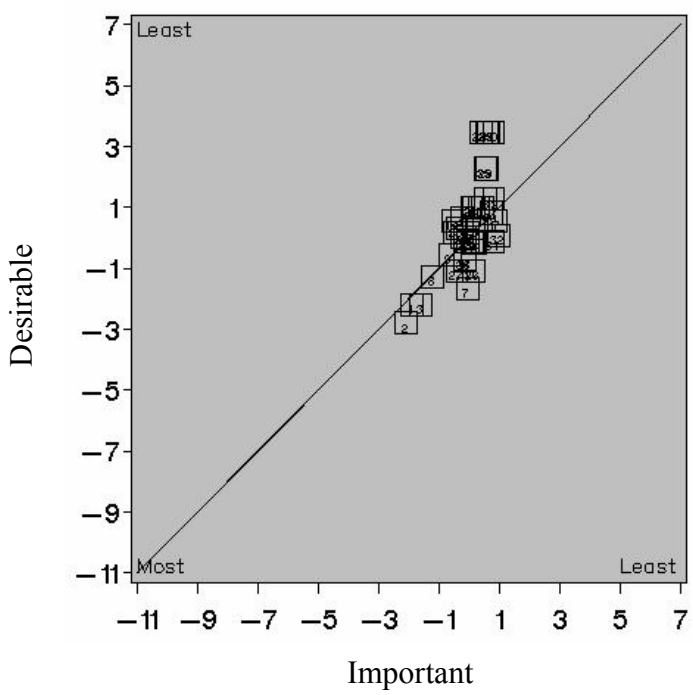
Figure 3.5 - Group: RACCSST



The results of investigations is seen as the factor with the highest amount of mismatch (-0.37) with the influence of legal requirements following (0.28). As in the long term RACCS group, results of investigations has the highest impact score (-2.97).

The plot for the stakeholder group DRSL is shown at Figure 3.6.

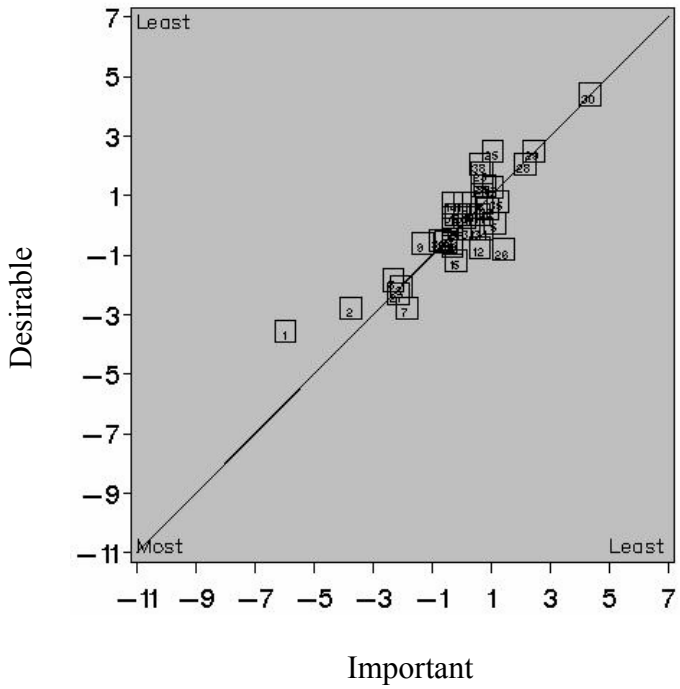
Figure 3.6 - Group: DRSL



As can be seen graphically, this stakeholder group's opinion is weighted towards the left side of the major diagonal. The factors with the highest mismatch are who is funding the consultation (3.06), the GP's perception of the state of the national health care system (2.87), unreasonable patient pressure (2.80) and external incentives (2.65). The influencing factor with the most negative mismatch score is evidence-based medicine (-1.62). The examination findings are seen as the most important and desirable influence.

The plot for the GP standard setting group (taken from the Delphi Round 2 ratings) is shown in Figure 3.7.

Figure 3.7 – Group: GPSS



The factor that is most mismatched as judged by this stakeholder group is the history obtained from the patient – where this factor should be less influential than it currently is (mismatch score of 2.39). Technological tools are seen as the most negatively mismatched factor (-2.24). History however is still seen as the overall most important and desirable factor (-9.51).

The DIPOCCMED group (Figure 3.8) does not perceive any factors to be in perfect alignment. The highest mismatch scores are negative –technological tools (-1.25) and evidence-based medicine (-1.03). Time is seen as the most positively mismatched factor (0.80). The factor with the highest impact score is history (-4.75).

Figure 3.8 – Group: DIPPOCCMED

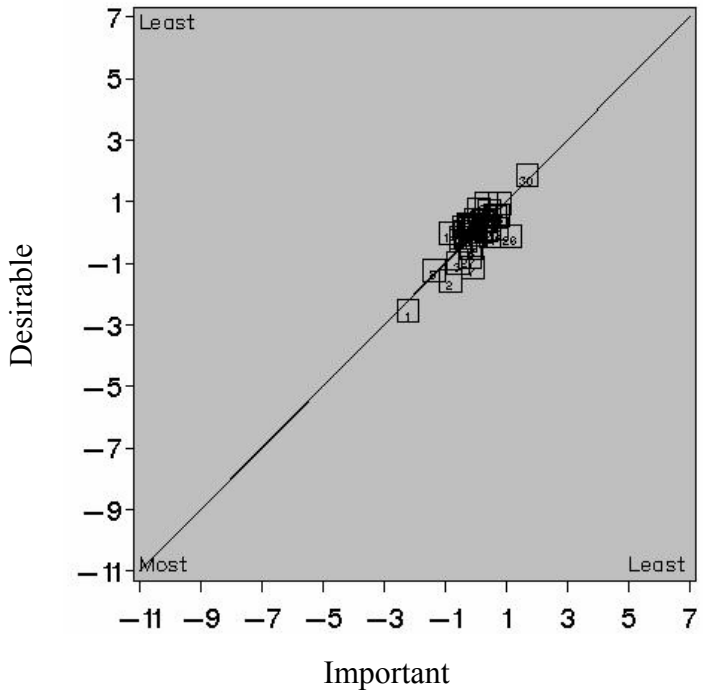


Figure 3.9 shows the plot of mean ratings of desirability against importance for all thirty-nine influencing factors for the stakeholder group GP. While no factors are exactly in alignment, this group's range of mismatch scores is narrow – best seen graphically. The factors judged to be most mismatched are technological tools (-0.81) and medico-legal issues (0.75). With an impact score of -6.36, history was identified as the most important and desirable influencing factor.

Figure 3.9 – Group: GP

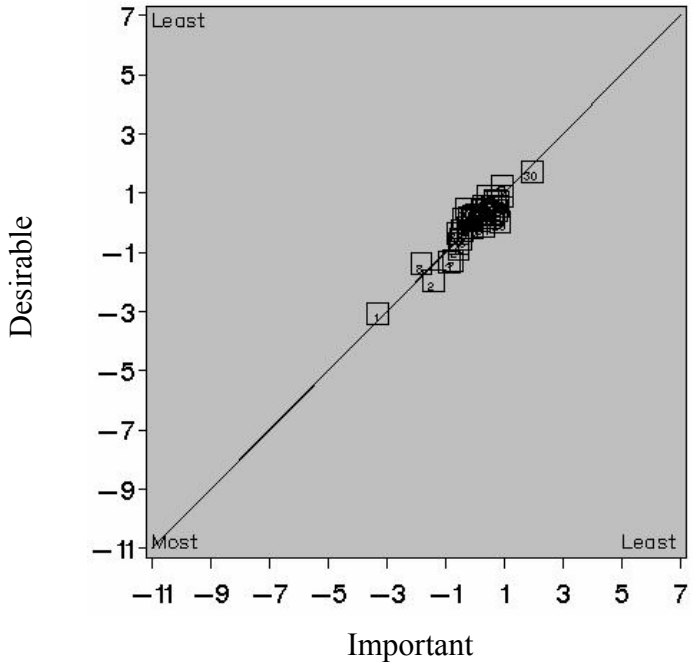
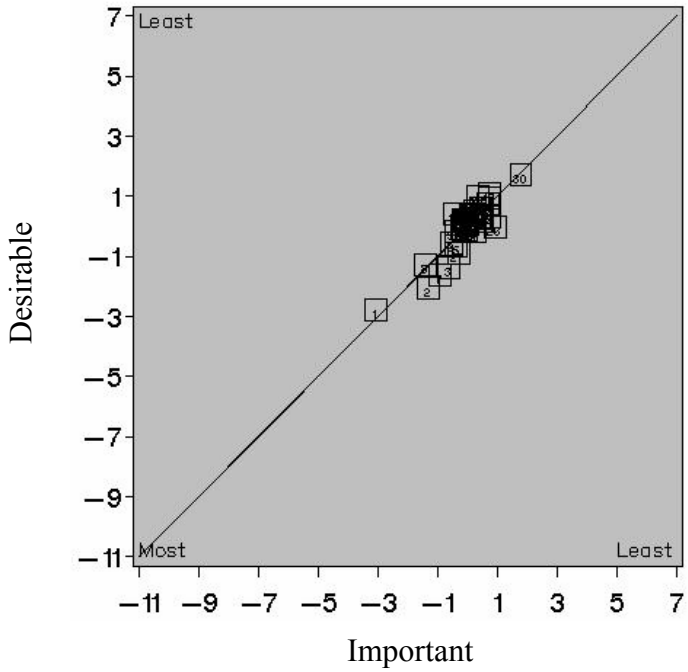


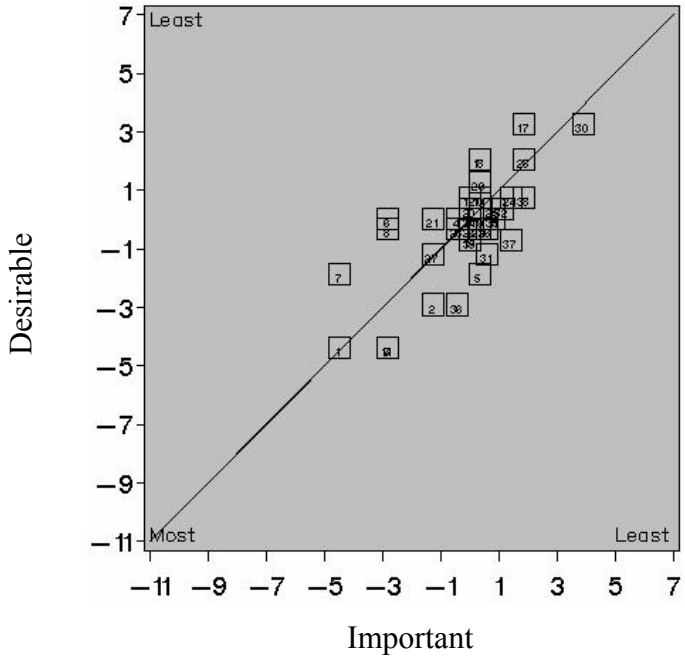
Figure 3.10 shows the plot of mean ratings of desirability against importance for all 39 influencing factors for the stakeholder group GPACC. Consistent with the GP group, no influencing factors were seen as being perfectly aligned but again the range of mismatch scores was narrow. The factors judged to be most mismatched are technological tools (-0.95) and medico-legal issues (0.84). With an impact score of -5.83, history was identified as the most important and desirable influencing factor.

Figure 3.10 – Group: GPACC



The plot for MPs is shown at Figure 3.11. This stakeholder group perceives importance and desirability to be aligned for two factors – characteristics of the GP and diagnostic categories.

Figure 3.11 – Group: MP



The two most mismatched factors were both positively mismatched – administrative requirements (2.84) and evidence-based medicine (2.63). Following were the GP's clinical experience (2.49) and the need to achieve an outcome (-2.48). History had the

highest impact score (-8.82). The second equal highest impact score was for the time available for the appointment (-7.16) and results of investigations.

The stakeholder group MAPWRGPI can be seen at Figure 3.12. The factors that they see as most mismatched are: external incentives (3.74), the results of investigations (-2.90), medico-legal issues (2.49) and time available for the consultation (2.27). History had the highest impact score at -7.51.

Figure 3.12 – Group: MAPWRGPI

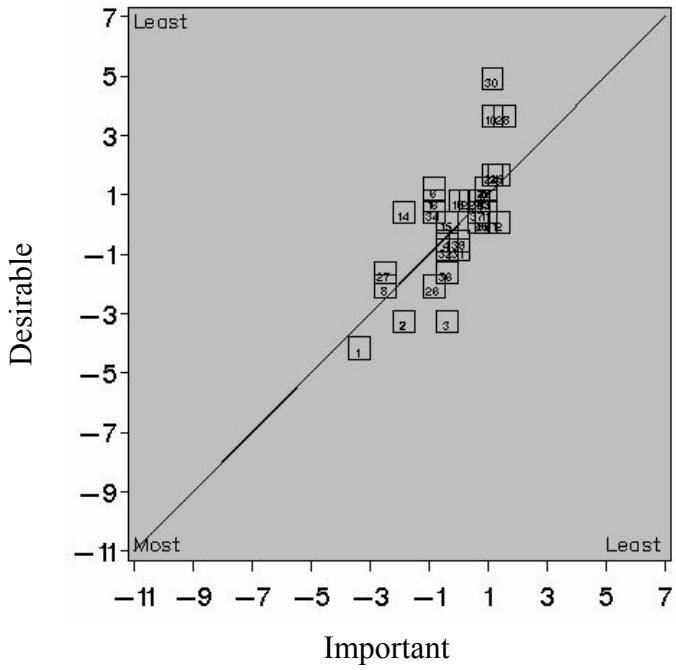
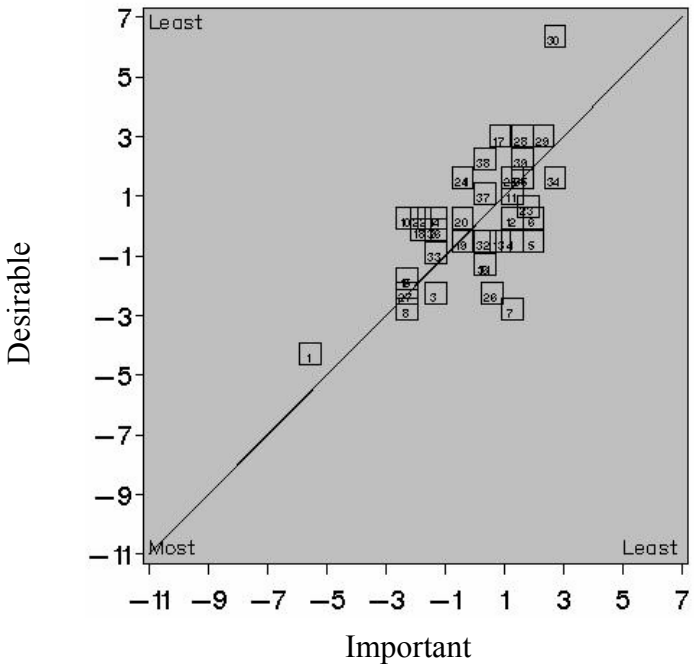


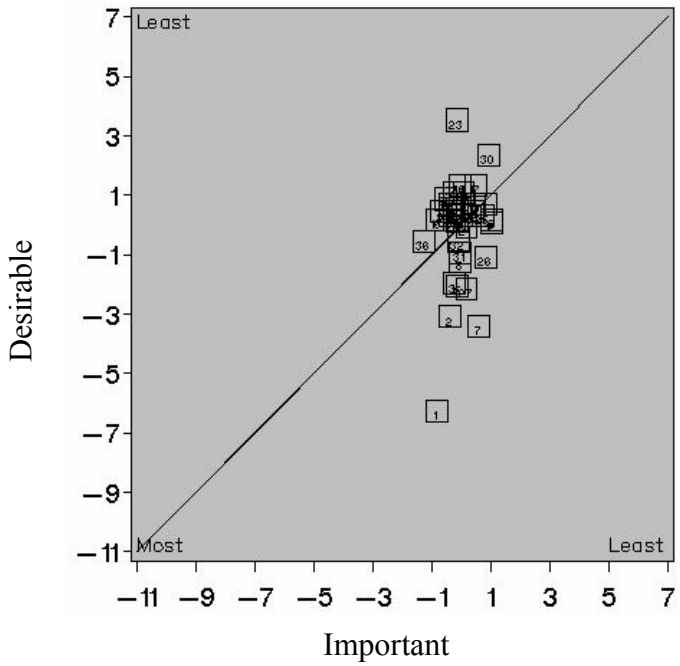
Figure 3.13 shows the plot of mean ratings of desirability against importance for all 39 influencing factors for the stakeholder group MOH. This group perceived a high degree of mismatch. In descending order these are: evidence-based medicine (-4.04), external incentives (3.67), technological tools (-2.85) and medico-legal issues (2.49). History is identified by this group as that with the highest importance and desirability (impact score of -9.81).

Figure 3.13 – Group: MOH



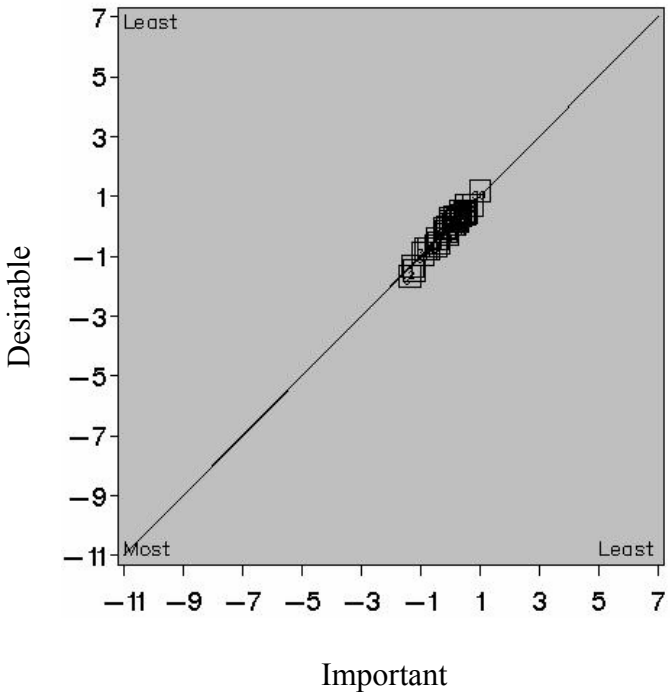
The stakeholder group OCCMED can be seen at Figure 3.14 – with weighting towards the right hand side of the major diagonal. Factors with the most mismatch are history (-5.41), evidence-base medicine (-4.01), unreasonable patient pressure (3.68) and examination findings (-2.70). The highest impact score is -7.07 and was for history obtained from the patient.

Figure 3.14 – Group: OCCMED



Patients' logit values of importance versus desirability are seen at Figure 3.15. The plot is almost superimposable on that of the RACCS groups, indicating very low levels of mismatch across all the influencing factors. Two factors are seen in alignment, that is, time available for the consultation and the GP's desire to please the patient. The factors perceived as being most mismatched are the results of investigations (-0.29), the examination findings (-0.26) and fear of uncertainty (0.26). As in the RACCS groups, the factor with the highest impact score is the results of investigations.

Figure 3.15 – Group: P

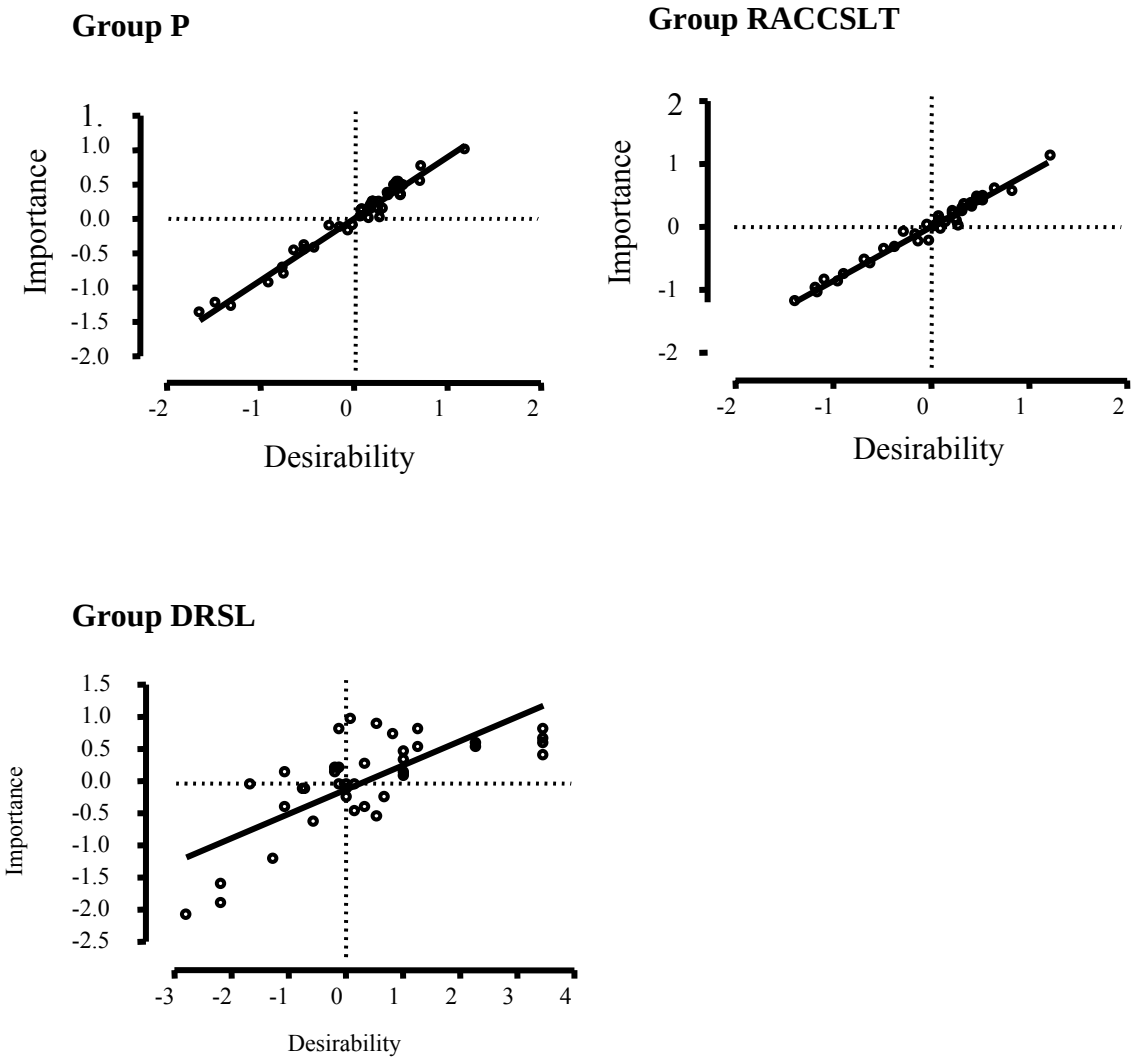


3.3.4 Model II Regression

Model II regression was used to study the relationship between desirability and importance for each stakeholder group, and assumes that both these factors are subject to the same amount of error. If there is no relationship between desirability and importance, the linear regression line will be horizontal – that is, the slope will be zero. A slope of +1 with an intercept through zero indicates perfect agreement between X and Y whereas a slope of -1 indicates perfect disagreement.

As can be seen from Figure 3.16, all slopes are positive, indicating that as desirability of a factor increases, so does its importance. This agreement between desirability and importance is highest in the following groups: P (patients), RACCSLT and RACCSST , with the 95% Confidence Intervals not including 1. Conversely, there is a large imbalance between desirability and importance for ACCSMT, DRSL, CM, OCCMED and MAPWRGP (95% Confidence Intervals excluding 1).

Figure 3.16 Model II Regressions of Groups P, RACCSLT and DRSL



3.3.5 ANOVA

In order to assess the similarities and differences between selected groups (those with the highest number of respondents) a one-way analysis of variance (ANOVA) was performed. This tested the hypothesis that the mean logit value for each factor was different for the stakeholder groups analysed. Post hoc analysis was performed using the Tukey method. The alpha level was set at $p < 0.05$.

3.3.5.1 GP and GPACC

Table 3.11 shows the results from an ANOVA between GP and GPACC stakeholder groups. Asterisks indicate where there was a significant difference in the factor mean logit values in terms of importance found on post hoc examination.

Table 3.11 ANOVA Results between GP and GPACC groups - Importance

	Mean Logit Value			
Factor	**GP**	**GPACC**	**F**	**Probability**
History	-3.30	-3.06	1.5590	0.21
Examination findings	-1.41	-1.30	1.4343	0.23
Results of investigations	-0.87	-0.62	10.3951	* 0.0013
Patient advocacy	-0.55	-0.53	0.0666	0.80
Legal requirements	0.18	-0.21	38.0106	* <0.0001
Administrative requirements	0.31	0.14	7.2246	* 0.0074
Evidence-based medicine	-0.74	-0.91	4.8086	* 0.029
GP's personal clinical experience	-1.82	-1.39	18.3190	* <0.0001
Characteristics of the GP	-0.26	-0.03	10.2885	* 0.0014
Medico-legal issues	-0.30	-0.42	2.7963	0.095
The Health and Disability Commissioner	0.25	0.09	6.3989	* 0.012
Potential implications for the wider community	0.63	0.50	4.2248	* 0.040
Setting for the appointment	0.05	0.25	9.9974	* 0.0017
Time available for the consultation	-0.36	-0.08	15.2243	* 0.00011
Feedback to the GP from a medical source	-0.47	-0.39	1.2438	0.27
Potential impacts of the diagnosis on the patient	-0.06	-0.12	0.6969	0.40
Marketing/media	0.92	0.75	5.6120	* 0.018
Personal circumstances of the patient	-0.09	0.02	2.3537	0.13
Characteristics of the patient	00.42	-0.14	15.2503	* 0.00011
Patient expectations	-0.08	0.02	1.9452	0.16
GP's need to justify a course of action	-0.18	-0.08	1.9463	0.16
Reasonable pressure put on the GP by patient	-0.11	-0.04	0.9531	0.33
Unreasonable pressure put on the GP by patient	0.46	0.37	2.0248	0.15
GP's desire to please the patient	0.30	0.27	0.2250	0.63
GP's perception of the national health care system	0.68	0.46	9.4220	* 0.0023
Technological tools	0.86	0.94	1.2447	0.27
GP's knowledge of local conditions	-0.55	-0.28	14.1914	* 0.00018
Who is paying for the appointment	0.94	0.74	7.7808	* 0.0055
Business considerations	0.78	0.69	1.5780	0.21
External incentives	1.95	1.79	2.2736	0.13
External medical professionals' expectations	0.32	0.24	1.5999	0.21
GP's perception of what external health professionals' might think	0.48	0.41	1.2249	0.27
Closeness of GP/patient relationship	-0.07	-0.04	0.1751	0.68
Diagnostic categories	0.79	0.44	23.7806	* <0.0001
Patient advocacy support groups	0.75	0.76	0.0194	0.89
Need to achieve an outcome	-0.59	-0.40	7.0181	* 0.0083
Fear of uncertainty	0.30	0.19	3.0249	0.083
Context in which the diagnosis made	0.71	0.52	7.0181	* 0.0083
Whether or not treatment is available	0.59	0.45	4.8999	* 0.027

* probability <0.05

The differences between these stakeholder groups for these factors are coherent and logical. It is not surprising that GPs see the accident compensation system as more legalistic and administratively burdensome than other aspects of clinical practice. GPs working in the ACC context modify their diagnostic decisions accordingly. They are less influenced by their clinical experience, their own characteristics or those of the patient, and local knowledge. They are more influenced by legal requirements, administrative requirements, evidence-based medicine, diagnostic categories and the Health and Disability Commissioner.

Reasons for the differences relating to other factors can only be surmised. The setting for the appointment (for example, public versus private, urban versus rural) is of less importance in the ACC setting, probably because of the more formularistic and regulated nature of the ACC system which is not easily adapted and modified.

Access to the public health system in New Zealand can be difficult and involve a long waiting time. The ACC system bypasses the public health system by using private treatment providers and may account for why GPs rate the state of the national health care system as a more important influencing factor in diagnostic decision-making when taken in the ACC context. That is, if a GP perceives the public health system to be in disarray, they may be more inclined to give a diagnosis enabling entry into the ACC system (thereby obtaining more efficient health care for the patient) than a diagnosis that they know will render the patient ineligible for ACC assistance, channelling the patient into the public system which they perceive as not to be in the patient's best interests. This may also explain the finding that GPs in the non-ACC context are more influenced by the need to achieve an outcome - as once an individual has ACC

entitlement access to health care tends to be superior to those accessing through the normal public health care system.

ACC cases are generally less diagnostically complex than non-ACC cases. Clearly, an exception to this would be cases in the ACC "tail" (that is those who have been receiving earnings-related compensation for more than 12 months) which can be extremely complex. A fall resulting in a laceration, for example, requires less time and fewer investigations to diagnose than someone presenting with headache. It is well known anecdotally that GPs are constantly looking for safe ways to minimise consultation time. Not unexpectedly, time available for the consultation and results of investigations were less influential on diagnostic decision-making in the ACC context.

GP's diagnostic decisions are more influenced by the consultation funder in an ACC context. Usually it is the patient who is paying for the consultation is clear in the clinical setting, but there are a number of initial funder possibilities in the ACC setting, for example, the employer, the ACC or a third party provider. This range of funding possibilities may explain the increase in importance of this influence in the ACC setting.

Again, the reason why GPs in the ACC context are more influenced by the potential implications for the wider community can only be hypothesised. It may be that they see ACC as a taxpayer-funded system and therefore are mindful of the fiscal consequences of decision-making. It may also reflect a desire not to establish a precedent, that is, they may be reluctant to say a medical condition is not work-related if they perceive that this may impact downstream on workers rights to compensation.

ACC is an organisation with a high media profile, regularly placing public advertisements and sending newsletters to healthcare providers. This may explain the increased influence of media in the ACC setting.

The importance of treatment availability in the ACC setting is perhaps the most difficult factor to explain. It is unlikely to reflect administrative requirements with obtaining treatment as these are not that intensive. This statistical finding may not be of clinical relevance.

Table 3.12 shows results from an ANOVA between GP and GPACC stakeholder groups where there was a significant difference in the factor mean logit values in terms of desirability found on post hoc examination.

Table 3.12 ANOVA Results between GP and GPACC groups – Desirability

	Mean Logit Value			
Factor	**GP**	**GPACC**	**F**	**Probability**
History	-3.06	-2.77	3.0365	0.082
Examination findings	-1.97	-2.05	0.5691	0.45
Results of investigations	-1.34	-1.35	0.0167	0.90
Patient advocacy	-0.71	-0.57	4.9001	* 0.027
Legal requirements	0.09	-0.08	7.2253	* 0.0074
Administrative requirements	0.54	0.43	2.3595	0.13
Evidence-based medicine	-1.29 .	-1.59	12.7750	* 0.00038
GP's personal clinical experience	-1.39	-1.26	2.2886	0.13
Characteristics of the GP	-0.17	0.02	9.0254	* 0.0028
Medico-legal issues	0.45	0.42	0.2250	0.64
The Health and Disability Commissioner	0.45	0.39	0.9000	0.34
Potential implications for the wider community	0.29	0.18	3.0251	0.083
Setting for the appointment	0.26	0.40	4.9001	* 0.027
Time available for the consultation	0.11	0.24	4.2252	* 0.040
Feedback to the GP from a medical source	-0.56	-0.63	1.2250	0.27
Potential impacts of the diagnosis on the patient	0.22	0.21	0.0250	0.87
Marketing/media	1.23	1.08	2.6718	0.10
Personal circumstances of the patient	0.17	0.10	1.2251	0.27
Characteristics of the patient	-0.26	-0.09	7.2253	* 0.0074
Patient expectations	0.06	0.12	0.9000	0.34
GP's need to justify a course of action	0.16	0.20	0.4000	0.53
Reasonable pressure put on the GP by patient	0.12	0.14	0.1000	0.75
Unreasonable pressure put on the GP by patient	0.89	1.02	2.3993	0.12
GP's desire to please the patient	0.42	0.52	2.5001	0.11
GP's perception of the national health care system	0.72	0.63	1.5801	0.21
Technological tools	0.05	-0.01	0.9000	0.34
GP's knowledge of local conditions	-0.88	-0.87	0.0195	0.89
Who is paying for the appointment	0.89	0.94	0.4162	0.52
Business considerations	0.70	0.76	0.5994	0.44
External incentives	1.71	1.72	0.0055	0.94
External medical professionals' expectations	-0.09	-0.14	0.6250	0.43
GP's perception of what external health professionals' might think	0.19	0.29	2.5001	0.11
Closeness of GP/patient relationship	-0.14	-0.11	0.2250	0.64
Diagnostic categories	0.58	0.30	15.2590	* 0.00011
Patient advocacy support groups	0.40	0.31	2.0250	0. 15
Need to achieve an outcome	-0.36	-0.15	11.0255	* 0.00096
Fear of uncertainty	0.46	0.35	3.0251	0.083
Context in which the diagnosis made	0.77	0.60	5.6345	* 0.018
Whether or not treatment is available	0.33	0.28	0.6250	0.43

* probability <0.05

These results would suggest that GPs acknowledge that ACC diagnostic decisions are undertaken on behalf of a third party and therefore the dynamics of the doctor-patient relationship differs from that in the non-ACC clinical setting. This would explain why factors such as patient advocacy and the characteristics of the GP and patient are rated as less desirable by the GPACC stakeholder group than by the GP group. While still relatively undesirable, the need for diagnostic categories appears to be accepted in the ACC setting.

That it is considered more desirable to practice evidence-based medicine in the ACC setting than outside of it is worrying and warrants further investigation. Also of concern is that the clinical setting and time available for consultation are considered more desirable influences on the diagnostic decision-making in the non-ACC setting than the ACC setting. It would be hoped that these factors' influence would be independent of operational setting. However, it is acknowledged that there is categorical agreement (desirable or not desirable) between the stakeholder groups.

In summary, the ANOVA between these two stakeholder groups highlights a number of factors where there is a statistical and likely clinical difference in values. The stakeholder groups are more aligned in judgements about desirability in comparison to judgements about importance. Many of the differences found seem logical in light of the different operational contexts.

3.3.5.2 P and RACCSLT and RACCSST

A one-way ANOVA was also used to test the hypothesis that the mean importance logit value for each factor was different in the stakeholder groups P, RACCSLT and RACCSST (see Tables 3.13 and 3.14). Post hoc examination (Tukey) revealed differences in several mean logit values.

Table 3.13 ANOVA Results between Patients (P), RACCSLT and RACCSST– Importance

	Mean Logit Values				
Factor	**P**	**RACCSLT**	**RACCSST**	**F**	**Probability**
History	-1.27	-1.04	-1.14	2.07806	0.13
Examination findings	-1.22	-0.97	-1.21	3.23085	* 0.040
Results of investigations	-1.36	-1.18	-1.30	1.14600	0.32
Patient advocacy	-0.38	-0.52	-0.44	1.58682	0.21
Legal requirements	0.01	-0.03	-0.03	0.24439	0.78
Administrative requirements	0.15	0.10	0.01	2.12377	0.12
Evidence-based medicine	-0.71	-0.75	-0.62	1.07104	0.34
GP's personal clinical experience	-0.93	-0.84	-0.76	1.30748	0.27
Characteristics of the GP	0.03	0.01	0.08	0.29441	0.75
Medico-legal issues	0.36	0.42	0.36	0.60901	0.54
The Health and Disability Commissioner	0.25	0.03	0.13	6.00284	* 0.0026
Potential implications for the wider community	0.34	0.32	0.32	0.06105	0.94
Setting for the appointment	0.25	0.25	0.16	1.17655	0.31
Time available for the consultation	-0.42	-0.32	-0.39	0.90164	0.41
Feedback to the GP from a medical source	0.46	-0.58	-0.47	1.30517	0.27
Potential impacts of the diagnosis on the patient	-0.09	-0.22	-0.20	1.91355	0.14
Marketing/media	0.34	0.42	0.34	1.08075	0.34
Personal circumstances of the patient	0.14	0.08	0.10	0.45249	0.64
Characteristics of the patient	0.20	0.25	0.28	0.70409	0.49
Patient expectations	0.38	0.36	0.32	0.39637	0.67
GP's need to justify a course of action	-0.17	-0.12	-0.15	0.26553	0.77
Reasonable pressure put on the GP by patient	0.15	0.30	0;33	4.14274	* 0.016
Unreasonable pressure put on the GP by patient	0.55	0.57	0.53	0.18991	0.83
GP's desire to please the patient	0.48	0.48	0.43	0.36312	0.70
GP's perception of the national health care system	0.49	0.43	0.43	0.54941	0.58
Technological tools	-0.10	-0.08	-0.11	0.09530	0.91
GP's knowledge of local conditions	-0.45	-0.35	-0.24	3.16565	* 0.043
Who is paying for the appointment	0.77	0.81	0.58	4.65948	* 0.0098
Business considerations	0.47	0.47	0.55	0.92574	0.40
External incentives	1.01	1.13	1.10	1.86041	0.16
External medical professionals' expectations	0.25	0.21	0.29	0.76311	0.47
GP's perception of what external health professionals' might think	0.54	0.47	0.52	0.65714	0.52
Closeness of GP/patient relationship	0.12	0.10	0.19	1.00329	0.37
Diagnostic categories	0.49	0.38	0.36	2.19120	0.11
Patient advocacy support groups	0.14	0.17	0.19	0.27312	0.76
Need to achieve an outcome	-0.80	-0.87	-0.80	0.35206	0.70
Fear of uncertainty	0.02	0.02	0.01	0.01455	0.99
Context in which the diagnosis made	0.54	0.49	0.48	0.45951	0.63
Whether or not treatment is available	-0.12	-0.23	-0.22	1.29132	0.28

* probability <0.05

Table 3.14 ANOVA Results between Patients (P), RACCSLT and RACCSST–Desirability

	Mean Logit Values				
Factor	**P**	**RACCSLT**	**RACCSST**	**F**	**Probability**
History	1.31	-1.16	-1.30	1.09312	0.36
Examination findings	-1.48	-1.18	-1.47	3.94212	* 0.020
Results of investigations	-1.65	-1.39 -	1.67	2.65464	0.071
Patient advocacy	-0.53	-0.68	-0.51	2.76271	0.064
Legal requirements	0.16	0.10	0.25	2.62787	0.073
Administrative requirements	0.31	0.26	0.26	0.38294	0.68
Evidence-based medicine	-0.76	-0.89	-0.80	1.04108	0.35
GP's personal clinical experience	-0.91	-1.09	-0.96	1.73940	0.18
Characteristics of the GP	0.07	0.03	0.14	1.41815	0.24
Medico-legal issues	0.50	0.53	0.56	0.36508	0.68
The Health and Disability Commissioner	0.20	-0.04	0.12	7.56270	* 0.00056
Potential implications for the wider community	0.37	0.42	0.44	0.56992	0.57
Setting for the appointment	0.27	0.32	0.21	1.41838	0.24
Time available for the consultation	-0.42	-0.37	-0.31	0.97184	0.38
Feedback to the GP from a medical source	-0.64	-0.62	-0.70	0.41311	0.66
Potential impacts of the diagnosis on the patient	-0.01	-0.02	-0.03	0.03575	0.96
Marketing/media	0.50	0.47	0.42	0.69191	0.50
Personal circumstances of the patient	0.18	0.15	0.12	0.38360	0.68
Characteristics of the patient	0.18	0.22	0.27	0.86543	0.42
Patient expectations	0.36	0.34	0.33	0.10162	0.90
GP's need to justify a course of action	-0.06	-0.16	-0.12	1.04582	0.35
Reasonable pressure put on the GP by patient	0.26	0.32	0.28	0.47311	0.62
Unreasonable pressure put on the GP by patient	0.71	0.83	0.65	4.07589	* 0.017
GP's desire to please the patient	0.48	0.47	0.41	0.61016	0.54
GP's perception of the national health care system	0.53	0.52	0.52	0.01540	0.98
Technological tools	-0.26	-0.28	-0.32	0.29893	0.74
GP's knowledge of local conditions	-0.53	-0.48	-0.49	0.22565	0.80
Who is paying for the appointment	0.72	0.65	0.59	1.81888	0.16
Business considerations	0.46	0.51	0.68	5.65094	* 0.0037
External incentives	1.19	1.22	1.24	0.18508	0.83
External medical professionals' expectations	0.21	0.22	0.27	0.43941	0.64
GP's perception of what external health professionals' might think	0.46	0.49	0.53	0.52162	0.59
Closeness of GP/patient relationship	0.08	0.08	0.14	0.51260	0.60
Diagnostic categories	0.43	0.41	0.49	0.77313	0.46
Patient advocacy support groups	0.09	0.08	0.03	0.43583	0.65
Need to achieve an outcome	-0.75	-0.95	-0.84	2.35046	0.096
Fear of uncertainty	0.28	0.28	0.28	0.00000	1.00000
Context in which the diagnosis made	0.48	0.53	0.51	0.31330	0.73
Whether or not treatment is available	-0.15	-0.13	-0.21	0.58064	0.56

* probability <0.05

Both claimant stakeholder groups perceive that GPs are more influenced by The Health and Disability Commissioner than did the patient group. The Annual Report of the Health and Disability Commissioner (2005) indicates that of the types of provider subject to complaint for the 2004/2005 year there were 7 complaints arising in relation to ACC out of a total of 623 complaints. (p. 26). Of 793 complaints referred to the Health and Disability Commissioner which did not fall within the Commissioner's jurisdiction only 23 were referred to ACC (p. 27). This would tend to indicate that the influence of the Commissioner is by way of guidance than by way of avoidance of complaint.

It does seem logical that patients see the GP's knowledge of local conditions as more influential that short-term claimants. Short term claimants will tend to have finite medical problems (for example, a broken bone) for which prevalence data are less relevant if they apply at all.

It also seems logical that both short and long term claimants would view who funds the consultation as more of an important influence than patients – as patients tend to always fund their own appointments.

A one-way ANOVA was also used to test the hypothesis that the mean desirability logit value for each factor was different in the stakeholder groups P, RACCS1 (long term claimants) and RACCS2 (short term claimants). Post hoc examination (Tukey) revealed differences in several mean logit values.

P can be statistically differentiated from RACCS LT in terms of examination findings but no other differentiations are possible. Given the mean logit value of RACCS ST, this is unlikely to be a clinically relevant result.

The results of the ANOVA for the The Health and Disability Commissioner factor are somewhat surprising in that both P and RACCS ST stakeholder groups do not find the influence of The Health and Disability Commissioner to be easily endorsed as desirable (both mean logit values are positive). The long-term claimant group finds this factor to be very slightly desirable as an influence on diagnostic decision-making and can be statistically differentiated from the other two groups analysed.

RACCSLT can be differentiated from RACCSST in terms of unreasonable pressure put on the GP by the patient. This would seem unlikely to have any clinical significance.

Short term ACC claimants find business considerations statistically less desirable an influence than the other two groups. Again, this finding does not have an obvious explanation. It may not be clinically significant.

In summary, these groups are essentially homogenous in terms of the importance and desirability that they place on factors that potentially influence GP diagnostic decision-making. There is widespread anecdotal evidence of a belief that claimants' attitudes and values are different from those of patients presenting in a non-ACC context and that the most significant alteration in attitude would be in people who have been recipients of ACC services for lengthy periods of time. The findings of this study would suggest that this is not the case.

3.3.5.3 GPACC and GP and P and RACCSLT and RACCSST

As would be expected from the results presented thus far, an analysis of variance between these stakeholder groups shows multiple, statistically significant differences (see Tables 3.15 and 3.16). A detailed discussion of these post hoc differences (thirty-nine factors rated for both importance and desirability by five stakeholder groups) is beyond the scope of this thesis. However, a broad overview of the findings indicates perhaps more congruence of opinion between these groups than might be anticipated from anecdote.

While there are many statistically different values expressed in terms of degree, there are far fewer categorical differences found. In judging importance of influence, all five groups were in agreement in whether the mean logit value assigned was positive (unimportant) or negative (important) for 28/39 (72%) of factors influencing diagnosis. In judging desirability, 29/39 (74%) factors showed concordance across these stakeholder groups in categorical (desirable versus non-desirable) rating.

Given the emphasis, at undergraduate level, on a prescriptive view of medicine the factors underpinning a Bayesian viewpoint were examined in detail.

(i) Importance

The ANOVA results between Patients (P), RACCSLT and RACCSST, GP and GPACC for importance are shown in Table 3.15.

Table 3.15 ANOVA Results between Patients (P), RACCSLT and RACCSST, GP and GPACC – Importance (* probability < 0.05)

	Mean Logit Values						
Factor	**P**	**RACCSLT**	**RACCSST**	**GP**	**GPACC**	**F**	**Probability**
History	-1.27	-1.04	-1.14	-3.30	-3.06	106.601	* <0.001
Examination findings	-1.22	-0.97	-1.21	-1.41	-1.30	5.454	* 0.00024
Results of investigations	-1.36	-1.18	-1.30	-0.87	-0.62	16.682	* <0.001
Patient advocacy	-0.38	-0.52	-0.44	-0.55	-0.53	1.553	0.18
Legal requirements	0.01	-0.03	-0.03	0.18	-0.21	10.204	* <0.001
Administrative requirements	0.15	0.10	0.01	0.31	0.14	6.053	* 0.00008
Evidence-based medicine	-0.71	-0.75	-0.62	-0.74	-0.91	2.825	* 0.024
GP's personal clinical experience	-0.93	-0.84	-0.76	-1.82	-1.39	43.408	* <0.001
Characteristics of the GP	0.03	0.01	0.06	-0.26	-0.03	7.907	* <0.001
Medico-legal issues	0.36	0.42	0.36	-0.30	-0.42	72.590	* <0.001
The Health and Disability Commissioner	0.25	0.03	0.13	0.25	0.09	4.955	* 0.00058
Potential implications for the wider community	0.34	0.32	0.32	0.63	0.50	10.210	* <0.001
Setting for the appointment	0.25	0.25	0.16	0.05	0.25	4.304	* 0.0018
Time available for the consultation	-0.42	-0.32	-0.39	-0.36	-0.08	6.090	* 0.00007
Feedback to the GP from a medical source	-0.46	-0.58	-0.47	-0.47	-0.39	1.547	0.19
Potential impacts of the diagnosis on the patient	-0.09	-0.22	-0.20	-0.06	-0.12	1.991	0.09
Marketing/media	0.34	0.42	0.34	0.92	0.75	31.690	* <0.001
Personal circumstances of the patient	0.14	0.08	0.10	-0.09	0.02	3.709	* 0.0052
Characteristics of the patient	0.20	0.25	0.28	-0.42	-0.14	43.215	* <0.001
Patient expectations	0.38	0.36	0.32	-0.08	0.02	20.868	* <0.001
GP's need to justify a course of action	-0.17	-0.12	-0.15	-0.18	-0.08	0.658	0.62
Reasonable pressure put on the GP by patient	0.15	0.30	0.33	-0.11	-0.4	17.343	* <0.001
Unreasonable pressure put on the GP by patient	0.55	0.57	0.53	0.46	0.37	3.214	* 0.012
GP's desire to please the patient	0.48	0.48	0.43	0.30	0.27	4.995	* 0.00054
GP's perception of the national health care system	0.49	0.43	0.43	0.68	0.46	5.396	* 0.00026
Technological tools	-0.10	-0.08	-0.11	0.86	0.94	118.318	* <0.001
GP's knowledge of local conditions	-0.45	-0.35	-0.24	-0.55	-0.28	5.738	* 0.00014
Who is paying for the appointment	0.77	0.61	0.58	0.94	0.74	9.564	* <0.001
Business considerations	0.47	0.47	0.55	0.78	0.69	8.924	* <0.001
External incentives	1.01	1.13	1.10	1.95	1.79	53.059	* <0.001
External medical professionals' expectations	0.25	0.21	0.29	0.32	0.24	1.012	0.40
GP's perception of what external health professionals' might think	0.54	0.47	0.52	0.48	0.41	1.131	0.34
Closeness of GP/patient relationship	0.12	0.10	0.19	-0.07	-0.04	5.191	* 0.00038
Diagnostic categories	0.49	0.38	0.36	0.79	0.44	14.825	* <0.001
Patient advocacy support groups	0.14	0.17	0.19	0.75	0.76	45.702	* <0.001
Need to achieve an outcome	-0.80	-0.87	-080	-0.59	-0.40	9.736	* <0.001
Fear of uncertainty	0.02	0.02	0.01	0.30	0.19	8.991	* <0.001
Context in which the diagnosis made	0.54	0.49	0.48	0.71	0.52	4.294	* 0.0019
Treatment available?	-0.12	-0.23	-0.22	0.59	0.45	67.549	* <0.001

History

P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC groups (the latter whom could not be differentiated from each other). GP/GPACC groups find history far more important an influence than claimants or patients.

Examination Findings

Long term ACC claimants (RACCSLT) were able to be statistically differentiated from both the GP and GPACC stakeholder groups although not from either the short-term claimant group or the patient group. No other groups were found to be statistically differentiable. RACCSLT judged examination findings to be of less important an influence on diagnostic decision-making than the two GP groups.

Results of Investigations

P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC groups (the latter whom could not be differentiated from each other). GP/GPACC groups find the results of investigations less important an influence than claimants or patients.

Evidence-Based Medicine

The short term claimant stakeholder group (RACCSST) was statistically different in response from the GPACC group – with the former judging evidence-based medicine to be less of an important influencing factor. No other groups could be differentiated from the others.

GP's Knowledge of Local Conditions

Of all the five groups analysed for this factor, the GP group rated GP's knowledge of local conditions as having the most important influence on diagnostic decision-making. The GP group could be differentiated from RACCLT, RACCSST and GPACC groups – all of whom rated this factor as having less importance. No other groups were found to be statistically different.

(ii) Desirability

The ANOVA results between Patients (P), RACCSLT and RACCSST, GP and GPACC for desirability are shown in Table 3.16.

Table 3.16 ANOVA Results between Patients (P), RACCSLT and RACCSST, GP and GPACC – Desirability (* probability < 0.05)

	Mean Logit Values						
Factor	**P**	**RACCSLT**	**RACCSST**	**GP**	**GPACC**	**F**	**Probability**
History	-1.31	-1.16	-1.30	-3.06	-2.77	86.884	* <0.001
Examination findings	-1.48	-1.18	-1.47	-1.97	-2.05	21.073	* <0.001
Results of investigations	-1.65	-1.39	-1.67	-1.34	-1.35	3.899	* 0.0038
Patient advocacy	-0.53	-0.68	-0.51	-0.71	-0.57	3.045	* 0.016
Legal requirements	0.16	0.10	0.25	0.09	-0.08	6.394	* 0.00004
Administrative requirements	0.31	0.26	0.26	0.54	0.43	6.973	* 0.00002
Evidence-based medicine	-0.76	-0.89	-0.80	-1.29	-1.59	30.720	* <0.001
GP's personal clinical experience	-0.91	-1.09	-0.96	-1.39	-1.26	9.110	* <0.001
Characteristics of the GP	0.07	0.03	0.14	-0.17	0.02	6.844	* 0.00002
Medico-legal issues	0.50	0.53	0.56	0.45	0.42	1.514	0.20
The Health and Disability Commissioner	0.20	-0.40	0.12	0.45	0.39	21.199	* <0.001
Potential implications for the wider community	0.37	0.42	0.44	0.29	0.18	5.310	* 0.00031
Setting for the appointment	0.27	0.32	0.21	0.26	0.40	2.330	0.054
Time available for the consultation	-0.42	-0.37	-0.31	0.11	0.24	38.017	* <0.001
Feedback to the GP from a medical source	-0.64	-0.62	-0.70	-0.56	-0.63	0.814	0.52
Potential impacts of the diagnosis on the patient	-0.01	-0.02	-0.03	0.22	0.21	7.491	* 0.00001
Marketing/media	0.50	0.47	0.42	1.23	1.08	49.252	* <0.001
Personal circumstances of the patient	0.18	0.15	0.12	0.17	0.10	0.528	0.72
Characteristics of the patient	0.18	0.22	0.27	-0.26	-0.09	26.841	* <0.001
Patient expectations	0.36	0.34	0.33	0.06	0.12	10.122	* <0.001
GP's need to justify a course of action	-0.06	-0.16	-0.12	0.16	0.20	12.296	* <0.001
Reasonable pressure put on the GP by patient	0.26	0.32	0.28	0.12	0.14	4.090	* 0.0027
Unreasonable pressure put on the GP by patient	0.71	0.83	0.65	0.89	1.02	7001	* 0.00001
GP's desire to please the patient	0.48	0.47	0.41	0.42	0.52	0.961	0.43
GP's perception of the national health care system	0.53	0.52	0.52	0.72	0.63	3.715	* 0.0052
Technological tools	-0.26	-0.28	-0.32	0.05	-0.01	12.442	* <0.001
GP's knowledge of local conditions	-0.53	-0.48	-0.49	-0.88	-0.87	15.330	* <0.001
Who is paying for the appointment	0.72	0.65	0.59	0.89	0.94	8.790	* <0.001
Business considerations	0.46	0.51	0.68	0.70	0.76	6.475	* 0.00004
External incentives	1.19	1.22	1.24	1.71	1.72	12.800	* <0.001
External medical professionals' expectations	0.21	0.22	0.27	-0.09	-0.14	17.926	* <0.001
GP's perception of what external health professionals' might think	0.46	0.49	0.53	0.19	0.29	10.763	* <0.001
Closeness of GP/patient relationship	0.08	0.08	0.14	-0.14	-0.11	7.750	* <0.001
Diagnostic categories	0.43	0.41	0.49	0.58	0.30	4.937	* 0.00060
Patient advocacy support groups	0.09	0.08	0.03	0.40	0.31	13.357	* <0.001
Need to achieve an outcome	-0.75	-0.95	-0.84	-0.36	-0.15	34.911	0.00000
Fear of uncertainty	0.28	0.28	0.28	0.46	0.35	3.363	0.0095
Context in which the diagnosis made	0.48	0.53	0.51	0.77	0.60	6.385	0.00004
Whether or not treatment is available	-0.15	-0.13	-0.21	0.33	0.28	28.143	0.00000

History

P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC groups. GP/GPACC groups find history far more desirable an influence than claimants or patients.

Examination Findings

These findings are very similar to those obtained for history. P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC groups. GP/GPACC groups find examination findings far more desirable an influence than claimants or patients.

Results of Investigations

Both short term claimants (RACCSST) and patients could be statistically differentiated from GPs (but not from each other) with results of investigations being a far more desirable influencing factor for these two groups in comparison to GPs. There was no other statistical difference found between groups analysed.

Evidence Based Medicine

P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC

groups. GP/GPACC groups find evidence-based medicine far more desirable an influence than claimants or patients.

GP's Knowledge of Local Conditions

P, RACCLT and RACCSST groups could not be statistically differentiated from each other. However, all three groups were statistically different from both GP and GPACC groups. GP/GPACC groups find knowledge of local conditions far more desirable an influence than claimants or patients.

Of key interest is where post hoc examination does not reveal differences in mean logit scores between these five stakeholder groups. The influencing factors where none of the analysed groups could be statistically differentiated in terms of importance were patient advocacy, external feedback from a medical source, potential effects of the diagnosis on the patient, GP's need to justify a course of action, expectations of external medical professionals, and a GP's perception of what external health professionals might think. These latter two factors were judged to be unimportant influences. The remainder of the factors were judged to be important influences.

Post hoc testing found that across these five stakeholder groups patient advocacy and external feedback from a medical source could not be statistically differentiated and all groups judged these factors as desirable. Medico-legal issues, personal circumstances of the patient and the GP's desire to please the patient were all seen as undesirable influences on diagnostic decision-making.

3.4 Discussion and implications

3.4.1 Response Rate

Postal questionnaires, such as were used in this study, are widely used to collect data from individuals for research purposes. Non-response however is an important potential source of bias in this type of data gathering. The degree of bias will depend on the extent of non-response and how significantly the non-responders differ from those who do respond.

A recent article (Barclay, Todd, Finlay, Grande, & Wyatt, 2002) discusses that the mean non-response rate in published studies of general practitioners is now approximately 39% - and falling. This is similar to that found by Asch, Jedrziewski & Christakis (1997) who measured mail survey response rates in 178 manuscripts published in 1991. They found a mean response rate of 60%, with published studies of physicians indicating a lower rate of 54% and a higher rate in non-physicians (68%). The actual non-response rate is likely to be less than these figures due to publication bias – studies with low response rates being less likely to be accepted for publication. The response rate to this mail survey is still well less than 39% with a mean of 18% over the two groups of GPs. This is most likely reflects the length of the questionnaire.

A number of articles has examined the characteristics of responders and non-responders (see for example, (Etter & Perneger, 1997)). These indicate that non-respondents are not necessarily a homogenous group – the assumption underlying methods developed to reduce non-response error through statistical adjustments – both within and between

stakeholder groups surveyed. Therefore, while response rates are used as a proxy in assessments of bias, this is not necessarily valid. Surveys with very low response rates may provide a representative sample of the study population while those with high response rates may not.

The Cochrane Collaboration has undertaken a systematic review of methods to increase response rates to postal questionnaires. Many of the methods found to successful increase response rates are not possible when the methodology requires anonymity – such as was the case in this study. These methods include follow up contact and personalising questionnaires and letters. Other methods were not fiscally or logistically possible in this study including providing incentives (a small amount of money with a questionnaire at least doubled the odds of response – OR 1.99, 95% CI 1.81 to 2.18), use of coloured as opposed to blue to black ink and the use of stamped return envelopes as opposed to other pre-paid return envelopes. While shorter questionnaires also increase the odds of response, the length of the questionnaire was determined by the number of influencing factors identified by the expert 'standard setter' group in Phase 1 of this study. On a more positive note, university sponsorship increases the odds of response (1.32, 1.07-1.54) as does an assurance of confidentiality (1.33, 1.24-1.42) both applicable in this case (P. Edwards et al., updated June 30, 2003).

3.4.2 Limitations of this Study

The Rasch model specifically tests that the construct under investigation is unidimensional. As can be seen from the results, this is largely true when individuals are assessing desirability but does not appear to be so valid when individuals are

assessing importance. It is certainly possible that values are more multi- than uni-dimensional in nature and a multivariate approach would have elicited additional and/or different findings. Using a method such as magnitude estimation (see for example, (Kemp, 1991)) was considered, and ultimately rejected, by the investigator. Such methods usually require trained interviewers – methodology which was fiscally and logistically beyond the confines of this study. The number of influencing factors identified by the focus groups also would have likely resulted in very few participants. Most multivariate analyses require multiple ratings of items which rapidly can become laborious to the most willing participant.

There is clearly the potential for selection bias – use of the general electoral roll being one example of that. There may be temporal bias – that is, opinion can change over time. Some influencing factors (for example, questions relating to legislation) will almost certainly not generalise beyond New Zealand. In addition, there are some groups such as MPs whose opinion is not only very important (in terms of influencing the structure under which the ACC system operates) but seems highly volatile.

While the questionnaire was developed during the first part of this study by the group of GP standard setters there was no formal piloting of the questionnaire for each stakeholder group. There is the possibility that the meanings of the individual factors are open to interpretation and that different phraseology may have elicited different ratings. There is also the possibility that people may not give true answers for a variety of reasons (error, deliberate dishonesty, self-deception).

Perhaps therefore the most debatable 'limitation' of this study is that it requires acceptance of the validity of introspection. Psychology has long debated whether or not people can reply meaningfully to any question concerning his/her thoughts. In terms of this study the question is whether or not reported behaviour/thoughts is in any way representative of everyday clinical practice.

3.4.3 General Discussion

The objectives of this study were to explore what factors influence GP diagnostic decision-making and the value both GPs and other stakeholder groups place on these factors.

The attributes of importance and desirability of influence are measurable across a wide range of stakeholder groups. It is possible to achieve values transparency – that is, it is possible to turn values into scientifically rigorous evidence.

The measurements of, particularly, desirability have high reproducibility across stakeholder groups and high positive loading for the first principal component consistent with construct validity.

There are clear differences, as well as similarities, in value judgments made by different stakeholder groups. One important finding is that the elements of a prescriptive model of medicine are rated across all stakeholder groups as highly desirable in influencing a diagnosis. However, it is equally clear that no stakeholder group identifies these elements consistent with Bayes' theorem of diagnostic reasoning as being the only desirable influence on diagnosis. This makes it highly unlikely that the trend towards

patient safety initatives based solely on a prescriptive model of medicine (for example, evidence-based practice guidelines or computerised clinical decision support systems) will significantly improve safety outcomes while other non-Baysian values are seen as highly desirable influences.

P, RACCSST and RACCSLT are statistically a very homogenous group in terms of rating both importance and desirability of influence. This finding is not in keeping with the anecdotal generic belief that ACC beneficiaries are 'different' from other patients and that these differences become more numerous and increasingly entrenched with increasing duration of claim.

GPs and GPACC are statistically more homogenous when rating desirability of influence compared to importance of influence. This finding is positive in terms of guiding future system change.

There is considerable categorical homogeneity between the stakeholder groups GP, GPACC, P, RACCSLT and RACCSST. System change (whether in the form of directive or guidelines) driven from senior government and management level that is inconsistent with the values of the patient/claimant/GP stakeholders is unlikely to be effective.

The starting point for this thesis was the "inconsistent and inadequate diagnoses" described by Gorman (ibid) in his audits of the ACC Workwise Clinic files. The description of this finding raises an interesting philosophical issue. If values underpin

many diagnostic decisions, 'adequacy' of the decisions will depend on the personal value system of the decision-maker and the recipient of the decision. It may well be that auditing by a member of another stakeholder group would have described the findings differently. Certainly, diagnostic consistency is likely to be negatively affected by value driven decision-making when relevant decisions are undertaken by members of different stakeholder groups.

Human errors are complex constructs and there are a number of classification systems. A widely accepted definition is that of James Reason who defines human error as "the failure of planned actions to achieve their desired ends – without the intervention of some unforeseeable event" (Reason, 1997, p. 71).

One difficulty with this definition, in this context, is what is meant by 'desired ends'. In a biomedical world, the intended outcome of a Bayesian-directed diagnosis has not been achieved when other non-medical influencing factors have contributed to the decision. In a non-Bayesian world, depending on individual values, correct plans are being correctly implemented.

We are therefore left with two possibilities in terms of the 'inadequate and inconsistent diagnoses' found on repeated audit of the ACC files. The first, accepting a Bayesian/prescriptive viewpoint, is that 'misdiagnoses' are attributable to lack of knowledge or mis-applied pattern matching (that is, some form of mistake). The second possibility, accepting a Bayesian/prescriptive viewpoint, is that the doctors audited deliberately deviated from accepted practice. The issue with the latter is that if a Bayesian/prescriptive viewpoint is not the 'right rule' the definition of what constitutes

a ‘diagnostic error’ willrequire modification. Rasmussen makes the point that “[t]he further away from the technical core, the greater the freedom agents have in their mode of behaviour. Consequently, the reference in terms of normal or proper behaviour for judging ‘errors’ is less certain” (Rasmussen, Nixon, & Warner, 1990, p. 454).

In order to clarify which possibility is most contributory to the findings of Professor Gorman’s audits further research will be required. Each possibility will require a different solution.

Knowledge-based mistakes will theoretically be the easiest to resolve – requiring appropriate education and training. To date this has been the focus of intervention, mainly in the form of guidelines. As discussed in the Introduction, the evidence that is form of intervention is far less successful than anticipated by its proponents is being to mount. Failure of interventions aimed at increasing knowledge would be expected if the ‘misdiagnoses’ were attributable to another underlying cause.

The second possibility however holds some hope for beneficial change in the medium term. That is, we can use an understanding of societal (and its component stakeholder groups) values to modify current ACC ‘rules’. We can keep ‘rules’ that are valued, and work on systemic solutions to modify ‘rules’ that are not valued. Rather than forcing individuals to ‘break the rules’ we can adopt organizational processes that permit that value to be expressed in a legitimate form or act to minimize the impact of undesirable influences. This would be equated to limiting the actual and perceived degrees of freedom of operation and decision-making (Rasmussen, Nixon, & Warner, 1990). Moving away from an adversarial system of dispute resolution in which health

professionals are required to align themselves with one side of the argument or the other to a system where health professionals work collegially to advise the court would be an example of this (The Royal Australasian College of Physicians, 2001). The changes made to the Civil Aviation Act in 2001 ("Civil Aviation (Medical Certification) Amendment Act", 2001), which acknowledged the potentially undesirable influence of patient advocacy and the consultation funder on assessment of medical fitness to fly is another example of change in a system based on an understanding of influence on decision-making. Perhaps more importantly, such changes requires an explicit acknowledgement by society and its component groups that values are not necessarily shared and that many factors do (rightly or wrongly) influence medical decision-making. As is almost inevitably the case, not all values can be heeded simultaneously.

A detailed discussion on the wider ramifications associated with Medicine having the 'wrong rules' is beyond the scope of this thesis. However, this possibility is a fundamental issue confronting modern medicine. Nosology is the branch of science which deals with the classification of diseases. Classically, medical practitioners identify these diseases in particular individuals (diagnosis) and then implement treatment that follows from the diagnosis. This process, these received beliefs, are what Kuhn (1970) might describe as the current medical paradigm. However this study, as well as the various studies outlined in the Introduction, presents a challenge to the biomedical paradigm – hence the emergence of a social constructivist medical model. A social constructivist model incorporates non-Bayesian factors into the definition of 'illness' versus 'disease' and treatment incorporates an acknowledgment of the various social, cultural, political factors that affect prognosis (Engel, 1988; McWhinney, 1983; Wilson, 2000). Clearly, a social constructivist model of medicine is incompatible with

the current legislatory and administrative framework under which ACC (amongst other medical organizations) operates. To shift away from a biomedical paradigm in a systematic way would require a massive re-organisation in terms of primary legislation, medical education and the current emphasis on evidence-based medical research. The results of this study however, indicate that a social constructivist view of medicine is the actual (albeit unsystematic) and preferred *modus operandi* for stakeholders at the 'sharp end' of the ACC system. The finding that a social constructivist view of medicine is also seen as desirable by those in the higher echelons of the ACC system probably highlights the tension between individually-held and organisationally-manifest values.

In terms of future research building on this study there would seem to be three vital questions to address. First, what is the prevalence of medical diagnostic error? Second, what information can be obtained from an in-depth "systems" approach investigation (including nature of the error and underlying causal/contributory factors)? Third, what are the consequences of diagnostic error? Different settings may alter the findings and this issue will need to be explored to ensure the optimal mixture of context-specific and generic interventions. All these questions need to be addressed before any scientifically and fiscally defensible decision can be made as to the need for and type of intervention necessary to improve diagnostic decision-making.

I cannot help but agree with Aberegg and Terry (2004, p. 15):

"Given the ubiquity of documented disparities in health outcomes, it is incumbent on us to expand our knowledge about medical decision-making in general and psychosocial influences on it in particular. To do this, we must begin with a candid and earnest

investigation of the psychosocial causes that physicians respond to during the medical encounter, as well as the basic cognitive processes that underlie medical decision making".

I hope that this thesis contributes to this.

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5.0 Appendices

5.1 Appendix A - Example of Questionnaire

QUESTIONNAIRE

AN ANALYSIS OF INFLUENCES ON G.P. DIAGNOSTIC DECISION-MAKING

This questionnaire is designed to seek your opinion as an ACC Medical Advisor on the importance and desirability of various factors that may influence a G.P.'s diagnostic decisions. A diagnostic decision is taken when a doctor decides on a particular diagnosis. Some examples include: "this patient has a work-related 'tennis elbow'"; "this patient has a dislocated shoulder"; "this patient has noise-induced hearing loss"; "this patient has an ear infection".

The questionnaire is divided into 2 sections.

Section 1 relates to the importance of each factor in influencing diagnostic decisions – that is, how important, in your opinion, is each factor in influencing a G.P.'s diagnostic decisions? [this question is asking your opinion of what is currently happening– 'what is']

Section 2 relates to the desirability of each factor influencing diagnostic decisions – that is, how desirable, in your opinion, is it that each factor influences a G.P.'s diagnostic decisions? [this question is asking your opinion on what should ideally happen – 'what it should be']

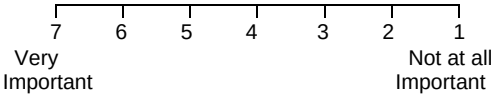
In each section you will be asked to rate the influencing factors on a 7-point scale and enter your chosen rating in the adjacent box. On this scale 1 is "not at all important" or "not at all desirable", 4 is a neutral position, and 7 is "very important" or "very desirable".

Please return your completed questionnaire to the University of Auckland in the pre-paid envelope provided.

SECTION 1: IMPORTANCE OF INFLUENCING FACTORS

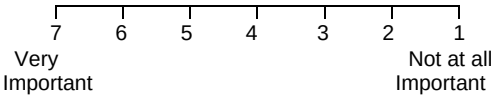
HOW IMPORTANT, IN YOUR OPINION, IS EACH FACTOR IN INFLUENCING A G.P.'S DIAGNOSTIC DECISIONS?

1. The history



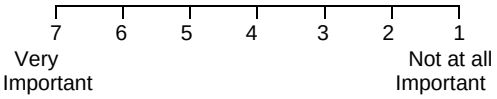
Your Rating

2. The examination findings



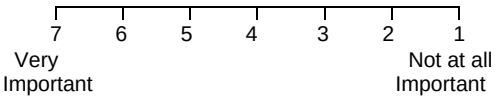
Your Rating

3. The results of investigations/tests



Your Rating

4. Patient advocacy (this includes the G.P. being the protector of a patient's interests, being a guardian of a patient's rights and acting as a go-between between the patient and others, for example, other healthcare providers)



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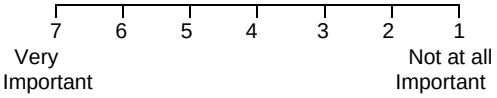
5. Legislative (legal) requirements (for example; Acts of Parliament including the Health Act 1956, Medical Practitioners Act 1995 and the Injury Prevention, Rehabilitation, and Compensation Act 2001)



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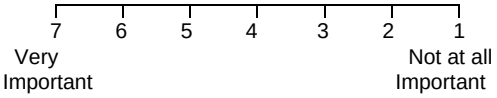
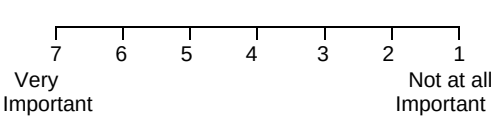
6. Administrative requirements (for example, the ACC gradual process claim form)



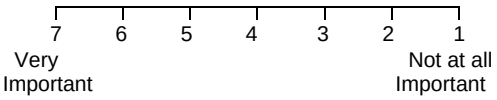
Your Rating

7. Evidence-based medicine (this is the use of the best available evidence from research in making decisions about the care of individuals)



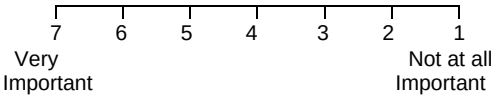
Your Rating

8. The G.P.'s personal clinical experience



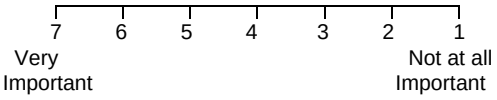
Your Rating

9. The characteristics of the G.P. (for example, his/her personality, life experiences, values, beliefs)



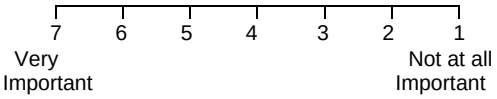
Your Rating

10. Medico-legal issues (for example, the likelihood of a patient making a complaint against the G.P.)



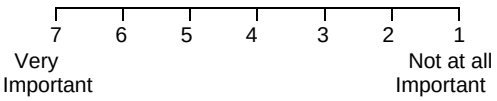
Your Rating

11. The Health and Disability Commissioner (whose role is to promote and protect the rights of health and disability consumers, and to facilitate the fair, simple, speedy, and efficient resolution of complaints)



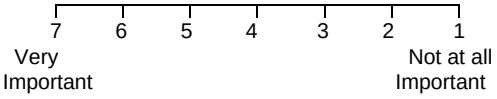
Your Rating

12. Potential implications for the wider community of the diagnosis (for example: Does the diagnosis create a precedent that will impact on the health system e.g. by increasing costs? Does the diagnosis create a precedent that will impact on other patients e.g. by excluding a group from ACC cover?)



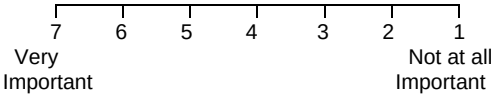
Your Rating

13. The clinical setting (for example; rural versus urban, private versus public, after-hours versus normal work hours)



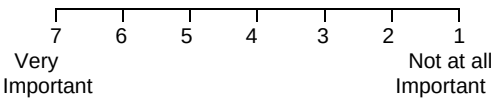
Your Rating

14. Time available for the consultation



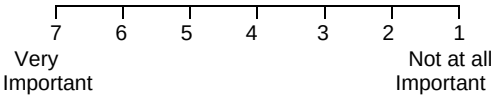
Your Rating

15. External feedback from medical source (for example; peers or medical professional group)



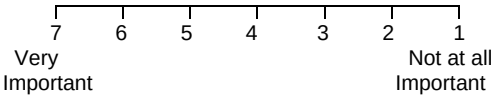
Your Rating

16. Other potential impacts of the diagnosis on the patient (examples, the patient will not have ACC cover; a serious and treatable disease can be diagnosed but diagnosis is only 80% certain in the early stages of the disease and telling the patient will cause them significant worry)



Your Rating

17. Marketing/media (for example, advertisements about a medical condition/treatment in a medical journal)



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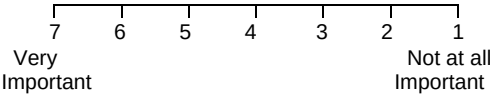
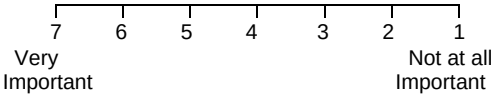
18. Personal circumstances of the patient (for example, the patient's home situation and/or financial position)



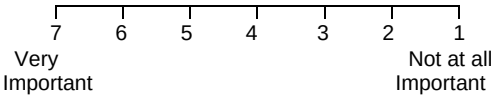
Your Rating

19. The characteristics of the patient (for example, his/her personality, life experiences, values, beliefs)



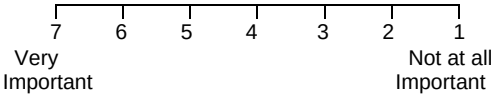
Your Rating

20. Patient expectations (for example, what the patient has anticipated the diagnosis to be)



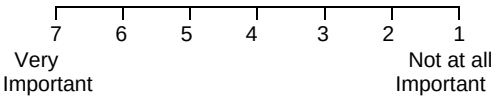
Your Rating

21. The G.P.'s need to justify a course of action (for example, justify the treatment given). This could be to anyone including the G.P. him/herself, the patient, other health professionals or an organisation such as the Health and Disability Commission



Your Rating

22. Pressure put on the G.P. by a patient (considered by G.P. to be reasonable)



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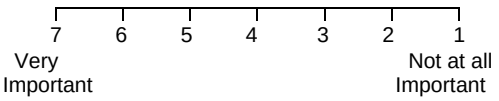
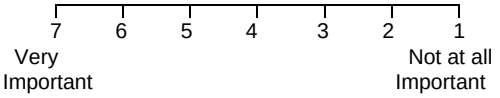
23. Pressure put on the G.P. by a patient (considered by G.P. to be unreasonable)



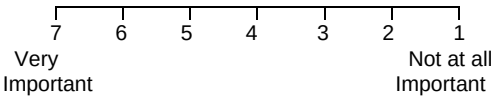
Your Rating

24. The G.P.'s desire to please the patient



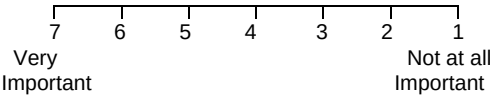
Your Rating

25. The G.P.'s perception of the state of the national health care system



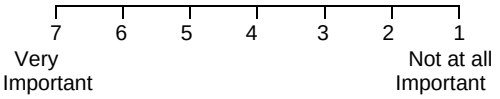
Your Rating

26. Technological tools (for example, use of computer programs to aid in determining the diagnosis)



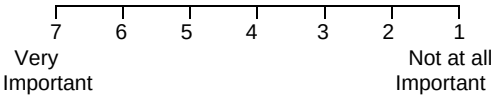
Your Rating

27. The G.P.'s knowledge of local conditions (for example, local disease prevalence)



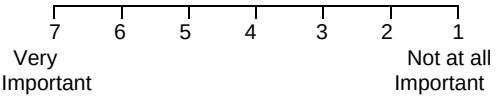
Your Rating

28. Who is paying for the consultation (for example, the patient him/herself or a third party - such as an insurance company)



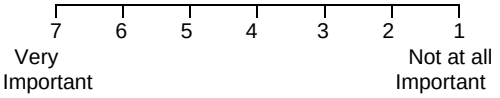
Your Rating

29. Business considerations (for example, the G.P.'s need to make a living)



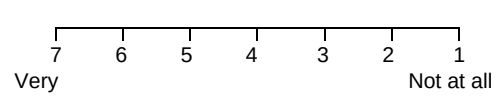
Your Rating

30. External incentives (for example, rewards by a drug company to a G.P. for using/prescribing their product)



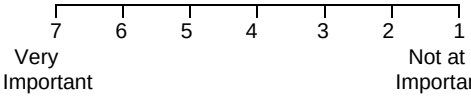
Your Rating

31. What external medical professionals expect from a G.P (for example, other doctors or a medical professional group)



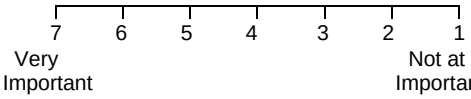
Your Rating

32. A G.P.'s perception of what other external health professionals might think



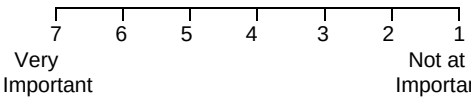
Your Rating

33. Closeness of G.P./patient relationship (for example; long standing, regular patient versus new patient or one who consults G.P. infrequently)



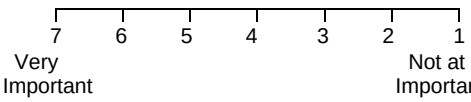
Your Rating

34. Diagnostic categories/protocols (for example, diagnostic codes used by ACC to classify medical conditions (ACC READ codes))



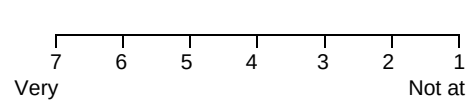
Your Rating

35. Patient advocacy/support groups (for example, Chronic Fatigue Syndrome support group or Accident Victim support group)



Your Rating

36. The need to achieve an outcome (for example, need to have patient admitted to hospital or reviewed by a medical specialist in a timely fashion)



Your Rating

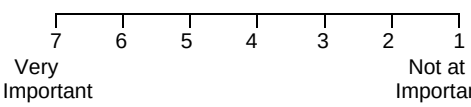
37. Fear of uncertainty (the G.P.' s fear of not being able to accurately describe the patient's condition in the context of both the doctor's and the patient's expectation that the doctor will know)

Your Rating

38. The context in which the diagnosis is made (for example, a consultation about an ACC-related problem versus a consultation about a non-ACC related problem)

Your Rating

39. Whether or not treatment is available for the diagnosed condition

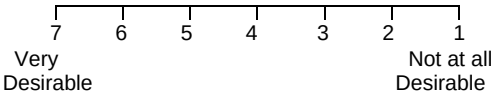


Your Rating

SECTION 2: DESIRABILITY OF INFLUENCING FACTORS

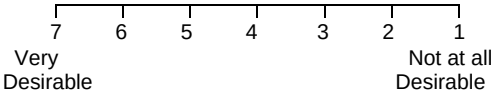
HOW DESIRABLE, IN YOUR OPINION, IS IT THAT EACH FACTOR INFLUENCES A G.P.'S DIAGNOSTIC DECISIONS?

1. The history



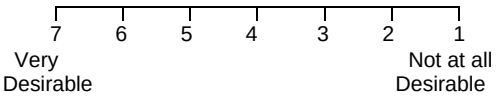
Your Rating

2. The examination findings



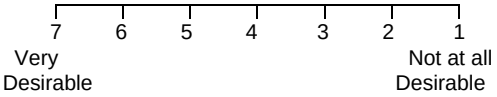
Your Rating

3. The results of investigations/tests



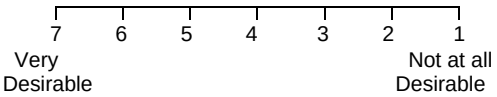
Your Rating

4. Patient advocacy (this includes the G.P. being the protector of a patient's interests, being a guardian of a patient's rights and acting as a go-between between the patient and others, for example, other healthcare providers)



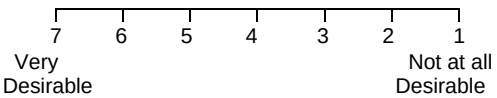
Your Rating

5. Legislative (legal) requirements (for example; Acts of Parliament including the Health Act 1956, Medical Practitioners Act 1995 and the Injury Prevention, Rehabilitation, and Compensation Act 2001)



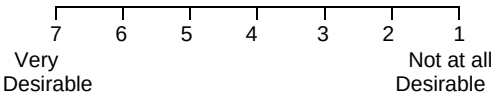
Your Rating

6. Administrative requirements (for example, ACC gradual process claim form)



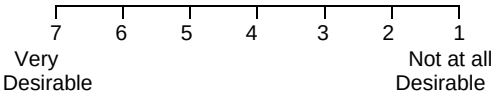
Your Rating

7. Evidence-based medicine (this is the use of the best available evidence from research in making decisions about the care of individuals)



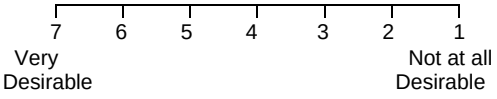
Your Rating

8. The G.P.'s personal clinical experience



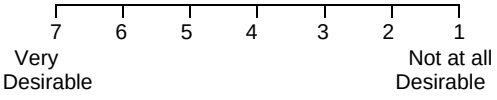
Your Rating

9. The characteristics of the G.P. (for example, his/her personality, life experiences, values, beliefs)



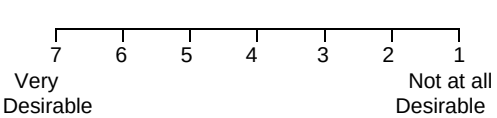
Your Rating

10. Medico-legal issues (for example, the likelihood of a patient making a complaint against the G.P.)



Your Rating

11. The Health and Disability Commissioner (whose role is to promote and protect the rights of health and disability consumers, and to facilitate the fair, simple, speedy, and efficient resolution of complaints)



Your Rating

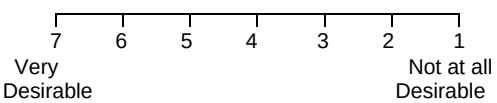
12. Potential implications for the wider community of the diagnosis (for example: Does the diagnosis create a precedent that will impact on the health system e.g. by increasing costs? Does the diagnosis create a precedent that will impact on other patients e.g. by excluding a group from ACC cover?)

Your Rating

13. The clinical setting (for example; rural versus urban, private versus public, after-hours versus normal work hours)

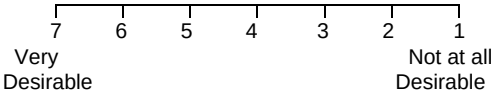
Your Rating

14. Time available for the consultation



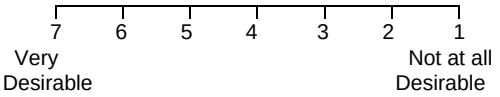
Your Rating

15. External feedback from medical source (for example, peers or medical professional group)



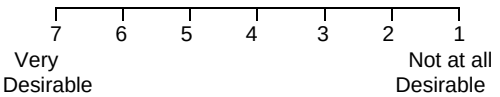
Your Rating

16. Other potential impacts of the diagnosis on the patient (examples, the patient will not have ACC cover; a serious and treatable disease can be diagnosed but diagnosis is only 80% certain in the early stages of the disease and telling the patient will cause them significant worry)



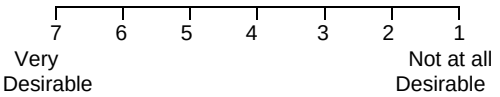
Your Rating

17. Marketing/media (for example, advertisements about a medical condition/treatment in a medical journal)



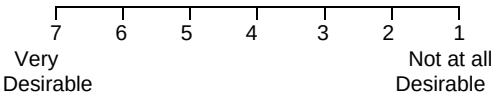
Your Rating

18. Personal circumstances of the patient (for example, the patient's home situation and/or financial position)



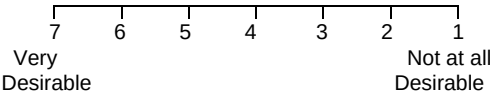
Your Rating

19. The characteristics of the patient (for example, his/her personality, life experiences, values, beliefs)



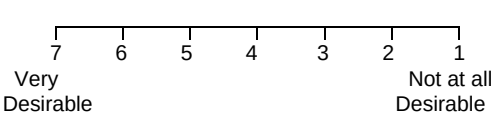
Your Rating

20. Patient expectations (for example, what the patient has anticipated the diagnosis to be)



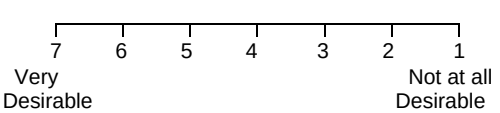
Your Rating

21. The G.P.'s need to justify a course of action (for example, justify the treatment given). This could be to anyone including the G.P. him/herself, the patient, other health professionals or an organisation such as the Health and Disability Commission



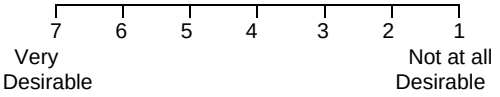
Your Rating

22. Pressure put on the G.P. by a patient (considered by G.P. to be reasonable)



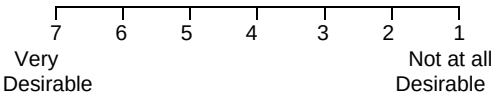
Your Rating

23. Pressure put on the G.P. by a patient (considered by G.P. to be unreasonable)



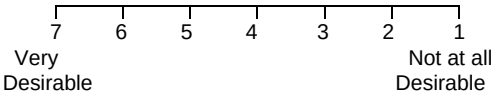
Your Rating

24. The G.P.'s desire to please the patient



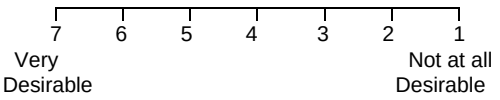
Your Rating

25. The G.P.'s perception of the state of the national health care system



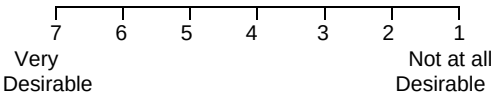
Your Rating

26. Technological tools (for example, use of computer programs to aid in determining the diagnosis)



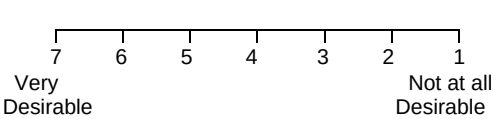
Your Rating

27. The G.P.'s knowledge of local conditions (for example, local disease prevalence)



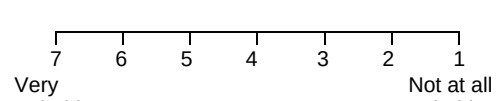
Your Rating

28. Who is paying for the consultation (for example, the patient him/herself or a third party – such as an insurance company)



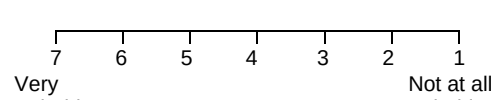
Your Rating

29. Business considerations (for example, the G.P.'s need to make a living)



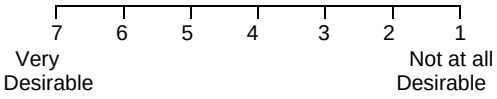
Your Rating

30. External incentives (for example, rewards by a drug company to a G.P. for using/prescribing their product)



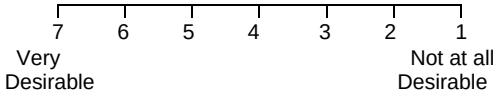
Your Rating

31. What external medical professionals expect from a G.P. (for example, other doctors or a medical professional group)



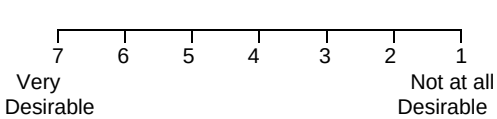
Your Rating

32. A G.P.'s perception of what other external health professionals might think



Your Rating

33. Closeness of G.P./patient relationship (for example; long standing, regular patient versus new patient or one who consults G.P. infrequently)



Your Rating

34. Diagnostic categories/protocols (for example, diagnostic codes used by ACC to classify medical conditions (ACC READ codes))

Your Rating

35. Patient advocacy/support groups (for example, Chronic Fatigue Syndrome support group or Accident Victim support group)

Your Rating

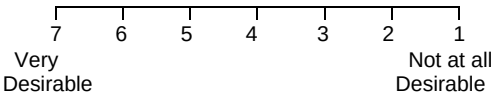
36. The need to achieve an outcome (for example, need to have patient admitted to hospital or reviewed by a medical specialist in a timely fashion)

Your Rating

37. Fear of uncertainty (the G.P.'s fear of not being able to accurately describe the patient's condition in the context of both the doctor's and the patient's expectation that the doctor will know)

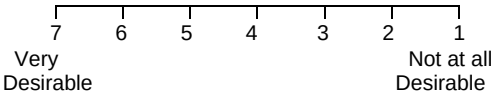
Your Rating

38. The context in which the diagnosis is made (for example, a consultation about an ACC-related problem versus a consultation about a non-ACC related problem)



Your Rating

39. Whether or not treatment is available for the diagnosed condition



Your Rating

Thank you very much for completing this questionnaire.

5.2 Appendix B – Participant Information Letter

Occupational Medicine Unit
Street/Courier Address:
151 Park Road, Grafton
Auckland
Ph: (09) 373 7599 ext 86261
Fax: (09) 308 2379

Dear Doctor

AN ANALYSIS OF INFLUENCES ON DIAGNOSTIC DECISION-MAKING

My name is Kathleen Callaghan. I am an Occupational Medicine physician. I am writing to invite you to take part in a PhD study that seeks to explore the influences on diagnostic decision-making.

The following is a bullet-point summary of the study and your participation in it. More detailed Participant Information is provided in the following pages.

- **The aim of this study is to increase understanding of some of the strengths and weaknesses of the current system of providing health care in New Zealand – with a view to increasing the effectiveness of providing this care.**
- **Doctors can be influenced by a number of factors in reaching a diagnosis. It is possible to objectively explore the nature and significance of the factors which bias doctors (in this study, G.P.s) towards one diagnostic alternative over another. The study aims to explore the importance and desirability of factors that can influence diagnostic decision-making.**
- **The factors that may influence G.P.s in reaching a diagnosis were identified (in Phase 1 of this study) by members of the RNZCGP and the Auckland and Otago University Departments of General Practice.**
- **The study method is an anonymous questionnaire (a pre-paid return envelope is provided should you choose to participate)**
- **The questionnaire takes approximately 20 minutes to complete**
- **Ethics approval has been granted by The University of Auckland Human Subjects Ethics Committee**

Yours sincerely

Kathleen Callaghan MB ChB (*Auckland*) FAFOM MSc **Occupational Medicine Specialist**	Des Gorman BSc MB ChB (*Auckland*) PhD (*Sydney*) **Professor of Medicine**	R. John Irwin BSc MB ChB (*Auckland*) PhD (*Sydney*) **Emeritus Professor of Psychology**

DETAILED PARTICIPANT INFORMATION SHEET

Hypothesis and aims

The hypothesis of this study is that diagnostic decision-making may be influenced by a number of factors. In this study, it is General Practitioner (G.P) diagnostic decision-making that is of interest – and how this is perceived by different stakeholder groups.

G.P.s exist within a system – including systems providing primary medical care or the New Zealand system of accident compensation. Each system consists of a number of stakeholder groups. There can be differences in values and expectations amongst all the stakeholders in the system (from government level to the patient). Often these differences lead to disagreements – which are fought out in the context of specific decisions, over and over again, at enormous social cost each time another decision must be made.

This study aims to explore if, how, and to what degree, stakeholder groups differ in their ideas of the importance and desirability of factors that influence diagnostic decision-making.

Phase 1 of the study

Phase 1 of this study (completed) included determining what factors may influence G.P.s in reaching a diagnosis. The groups who participated in this part of the study were:

- **Division of General Practice and Primary Health Care, Faculty of Medical and Health Sciences, University of Auckland.**
- **Department of General Practice, Wellington School of Medicine and Health Sciences, University of Otago.**
- **Department of General Practice, Dunedin School of Medicine, University of Otago.**
- **Department of General Practice, Christchurch School of Medicine and Health Sciences, University of Otago.**
- **The Royal New Zealand College of General Practitioners.**

Why G.P.s?

G.P. diagnostic decision-making was chosen to be studied as it is these diagnostic decisions that have the greatest impact on medical systems. G.P.s are usually the first medical practitioner consulted and form the most enduring doctor-patient relationship. Within a medical system, they are most likely to bear the consequences of differences in values and expectations of other stakeholder groups.

How potential participants are selected for this study

ACC has a database listing all its Medical Advisors. All doctors on this list were approached to participate – as ACC Medical Advisors are an important stakeholder group in the New Zealand system of accident compensation. The University of Auckland researchers do not know any personal details about you (the mail out was undertaken by ACC).

What participating in this study would involve

If you agree to take part in this study you will be asked to fill out a questionnaire (enclosed) that should take you approximately 20 minutes. The questionnaire asks you to rate how important and how desirable it is that certain factors influence a G.P. in reaching a diagnosis. Everything you need to know to fill out the questionnaire is provided in the questionnaire. Once you have finished, you will need to place the questionnaire in the pre-paid envelope provided and post it back to the University of Auckland.

Your participation

Your participation in this study is voluntary. If you do decide to participate in the study, please simply complete the questionnaire and return it to the University of Auckland in the pre-paid envelope provided.

Once returned you will not be able to withdraw from the study, as the questionnaire is anonymous and we would have no way of identifying your particular response.

You do not need to return anything to the University of Auckland if you chose not to participate.

Confidentiality

There is no way you can be identified from the completed questionnaire and no information that could personally identify you will be available to the researcher or to ACC. ACC will not know who responds or not.

The questionnaire you have received does have a code (see top right of the questionnaire). This allows the researcher to identify responses from different stakeholder groups and explore any differences in response between groups.

ACCMA codes for ACC Medical Advisor.

Benefits and Risks of participation

While there will be no immediate, direct benefit to you from participating in this study we believe that this research will benefit the medical profession and community at large by:

- **Increased understanding of strengths and weaknesses in current systems - with a view to systemic improvement (in terms of the effectiveness of the provision of health care)**
- **Increased understanding of potential for error in the context of diagnostic performance enabling better error management**
- **Informing clinical decision-making**
- **Informing the legislative process and public policy**
- **Providing a basis from which to continue further studies into medical decision-making**

There are no risks to you from participating in this study.

What happens to the results

It is intended that the results of this study will be presented at local meetings and at national and international conferences. The results will also be published in scientific journals. No material that could identify you personally will be used in any reports on this study.

As one of the aims of the study is to improve weaknesses in the current system of providing health care services, a copy of the results will also be sent to Governmental and professional bodies associated with the NZ health care system (Ministers of the Crown, the Ministry of Health, ACC, the NZ universities departments of General Practice, the Royal New Zealand College of General Practitioners, the Australasian Faculty of Occupational Medicine).

You can request a copy of the results of this study from the Study Coordinator. Please note there is often a substantial delay between your participation and publication of the results.

Ethical Approval

This study has received ethical approval from The University of Auckland Human Subjects Ethics Committee. Approval Reference 2003/Q/033

Study Details

This is a PhD research project undertaken through the Department of Medicine at the University of Auckland. The study is funded by a University of Auckland Health Research Scholarship and ACC have

provided a small amount of additional funding. Please feel free to contact the researchers below if you have any questions about this study or if you would like further information.

PhD Student and Study Coordinator
Dr. Kathleen Callaghan
Occupational Medicine Unit
Faculty of Medical and Health Sciences
The University of Auckland
Private Bag 92019
AUCKLAND
Telephone: 09 3737599 extn 86261

Supervisors
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5.3 Appendix C - Patient Information Sheet (Pamphlet)

Patient sheet 1

Patient sheet 2

5.4 Appendix D - Ratings for Importance and Desirability -GPSS

Table D-1: Median, upper and lower quartile ratings of importance for stakeholder group GPSS

Influencing Factor (Importance)	Median Importance	Lower quartile	Upper quartile
History	7	7	7
Examination findings	6	6	7
GP's personal clinical experience	6	5	6
GP's knowledge of local conditions	5	5	6
Results of investigations	5	5	6
Evidence-based medicine	5	5	6
Characteristics of the GP	5	4	6
Need to achieve an outcome	4	4	5
Patient expectations	4	4	5
Patient advocacy	4	3	5
Medico-legal issues	4	3	5
Characteristics of the patient	4	3	5
Reasonable patient pressure	4	4	5
Closeness of GP/patient relationship	4	4	5
Time available for the consultation	4	3	5
External feedback from a medical source	4	4	5
Potential ramifications of the diagnosis	4	3	5
The clinical setting	4	3	4
Need to justify a course of action	4	3	5
Personal circumstances of the patient	4	3	4
Expectations of external medical professionals	4	2	4
The Health and Disability Commissioner	3	2	4
Potential implications for the wider community	3	2	4
Context in which the diagnosis is made	3	2	4
Administrative requirements	3	2	4
Unreasonable patient pressure	3	2	3
GP's desire to please the patient	3	3	4
Diagnostic algorithms/categories/protocols	3	2	4
Fear of uncertainty	3	2	3
Whether or not treatment is available for the diagnosed condition	3	2	4
GP's perception of what other external health professionals may think	3	2	4
GP's perception of the state of the national health care system	2	2	4
Marketing /media	2	2	4
Legal requirements	3	2	3
Patient advocacy/support groups	3	2	3
Technological tools	2	2	3
Who is funding the consultation	2	1	2
Business considerations	2	1	2
External incentives	1	1	1

Table D-2: Median, upper and lower quartile ratings of desirability for stakeholder group GPSS

Influencing Factor (Desirability)	Median Desirability	Lower Quartile	Upper quartile
History	7	6	7
Examination findings	6	6	7
Evidence-based medicine	6	6	7
GP's knowledge of local conditions	6	5	6
Results of investigations	5	5	6
GP's personal clinical experience	5	5	6
External feedback from a medical source	5	3	5
Technological tools	4	3	4
Potential implications for the wider community	4	3	4
Patient advocacy	4	3	4
Characteristics of the GP	3	2	4
Characteristics of the patient	3	2	4
Patient expectations	3	2	3
Need to achieve an outcome	3	2	4
Closeness of GP/patient relationship	3.5	1	4
Medico-legal issues	3	2	3
Expectations of external medical professionals	3	1	4
Diagnostic algorithms/categories/protocols	3	1	4
Legal requirements	2	2	4
Need to justify a course of action	2	1	4
Reasonable patient pressure	2	2	3
Personal circumstances of the patient	2	1	3
The Health and Disability Commissioner	2	1	3
Potential ramifications of the diagnosis	2	1	4
GP's perception of what other external health professionals may think	2	1	3
Administrative requirements	2	2	2
The clinical setting	2	1	3
Time available for the consultation	2	1	3
Patient advocacy/support groups	2	1	2
Marketing /media	2	1	2
GP's desire to please the patient	1	1	2
Fear of uncertainty	2	1	2
Whether or not treatment is available for the diagnosed condition	1	1	2
Unreasonable patient pressure	1	1	2
Who is funding the consultation	1	1	2
Context in which the diagnosis is made	1	1	1
GP's perception of the state of the national health care system	1	1	1
Business considerations	1	1	1
External incentives	1	1	1

5.5 Appendix E - Mismatches between desirability and importance

Mismatches between desirability and importance

1

group=ACCMA

Item	Question	desirable	important	impact	desirable_ minus_important
9	Chars of GP	0.17	-0.89	-0.72	1.06
28	Funder	1.23	0.36	1.59	0.87
19	Chars of Patient	0.25	-0.61	-0.36	0.86
38	Context of Dx	0.97	0.13	1.10	0.84
33	Closeness of Relatnship	0.01	-0.75	-0.74	0.76
14	Time	-0.32	-1.03	-1.35	0.71
24	Desire to Please	0.48	-0.23	0.25	0.71
20	Patient Expectns	0.40	-0.23	0.17	0.63
35	Patient Advocacy Groups	1.05	0.47	1.52	0.58
23	Patient Press_UR	0.56	0.01	0.57	0.55
8	GP's Clin Exp	-1.18	-1.69	-2.87	0.51
18	Circs of Patient	0.01	-0.48	-0.47	0.49
22	Patient Press_R	0.09	-0.23	-0.14	0.32
37	Fear of Uncertainty	0.17	-0.11	0.06	0.28
10	Medico-legal	0.40	0.13	0.53	0.27
16	Ramification of Dx	-0.10	-0.35	-0.45	0.25
29	Business	1.14	0.90	2.04	0.24
30	Ext Incentives	2.00	1.78	3.78	0.22
17	Media	1.32	1.11	2.43	0.21
6	Bureaucratic	0.32	0.13	0.45	0.19
36	Need for Outcome	-0.58	-0.75	-1.33	0.17
4	Patient Advocacy	0.01	-0.11	-0.10	0.12
39	Tx Available	0.56	0.47	1.03	0.09
5	Legal	0.01	0.13	0.14	-0.12
13	Clin Setting	0.09	0.25	0.34	-0.16
21	Justify Action	-0.15	0.01	-0.14	-0.16
11	HDC	0.48	0.69	1.17	-0.21
34	Diagnostic Algorithms	0.25	0.47	0.72	-0.22
15	Ext FB Med	-0.58	-0.35	-0.93	-0.23
25	NHS	0.17	0.58	0.75	-0.41
3	Ix	-1.29	-0.75	-2.04	-0.54
31	Expectns of Drs	-0.49	0.25	-0.24	-0.74
32	What Others Think	0.17	1.01	1.18	-0.84
27	Know Local Conds	-1.18	-0.23	-1.41	-0.95
2	Exam	-1.82	-0.75	-2.57	-1.07
12	Imp for Comm of Dx	0.25	1.33	1.58	-1.08
1	History	-3.30	-2.12	-5.42	-1.18
7	EBM	-1.29	0.13	-1.16	-1.42
26	Tech Tools	-0.24	1.33	1.09	-1.57

group=ACCSMT

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	6.55	1.78	8.33	4.77
25	NHS	4.58	1.02	5.60	3.56
17	Media	4.58	1.38	5.96	3.20
28	Funder	2.84	0.37	3.21	2.47
35	Patient Advocacy Groups	4.58	2.28	6.86	2.30
38	Context of Dx	2.84	0.69	3.53	2.15
24	Desire to Please	2.84	1.02	3.86	1.82
23	Patient Press_UR	2.84	1.38	4.22	1.46
6	Bureaucratic	0.89	-0.30	0.59	1.19
29	Business	0.89	-0.30	0.59	1.19
4	Patient Advocacy	1.73	0.69	2.42	1.04
39	Tx Available	1.73	0.69	2.42	1.04
12	Imp for Comm of Dx	1.73	1.02	2.75	0.71
8	GP's Clin Exp	-2.72	-3.34	-6.06	0.62
34	Diagnostic Algorithms	0.89	0.37	1.26	0.52
37	Fear of Uncertainty	0.89	0.37	1.26	0.52
9	Chars of GP	-0.70	-1.12	-1.82	0.42
10	Medico-legal	1.73	1.38	3.11	0.35
14	Time	-0.25	-0.30	-0.55	0.05
20	Patient Expectns	-0.70	-0.68	-1.38	-0.02
13	Clin Setting	1.73	1.78	3.51	-0.05
16	Ramification of Dx	-0.25	0.05	-0.20	-0.30
22	Patient Press_R	-0.25	0.05	-0.20	-0.30
33	Closeness of Relatnship	-1.59	-1.12	-2.71	-0.47
11	HDC	-0.25	0.37	0.12	-0.62
18	Circs of Patient	-0.70	0.05	-0.65	-0.75
27	Know Local Conds	-1.59	-0.68	-2.27	-0.91
32	What Others Think	-0.25	0.69	0.44	-0.94
2	Exam	-3.57	-2.42	-5.99	-1.15
5	Legal	-1.13	0.05	-1.08	-1.18
19	Chars of Patient	-1.59	-0.30	-1.89	-1.29
15	Ext FB Med	-2.11	-0.68	-2.79	-1.43
3	Ix	-2.72	-1.12	-3.84	-1.60
36	Need for Outcome	-2.72	-1.12	-3.84	-1.60
21	Justify Action	-1.13	0.69	-0.44	-1.82
31	Expectns of Drs	-1.13	0.69	-0.44	-1.82
26	Tech Tools	-1.59	0.37	-1.22	-1.96
1	History	-6.69	-2.42	-9.11	-4.27
7	EBM	-10.26	-3.34	-13.60	-6.92

group=CM

Item	Question	desirable	important	impact	desirable_ minus_important
23	Patient Press_UR	0.99	0.04	1.03	0.95
24	Desire to Please	0.99	0.28	1.27	0.71
22	Patient Press_R	0.61	-0.01	0.60	0.62
29	Business	0.86	0.31	1.17	0.55
28	Funder	0.90	0.40	1.30	0.50
25	NHS	0.92	0.43	1.35	0.49
16	Ramification of Dx	0.17	-0.30	-0.13	0.47
30	Ext Incentives	1.01	0.57	1.58	0.44
33	Closeness of Relatnship	0.32	-0.10	0.22	0.42
20	Patient Expectns	0.69	0.27	0.96	0.42
4	Patient Advocacy	0.29	-0.12	0.17	0.41
18	Circs of Patient	0.40	0.09	0.49	0.31
10	Medico-legal	0.43	0.12	0.55	0.31
9	Chars of GP	0.28	0.03	0.31	0.25
19	Chars of Patient	0.38	0.13	0.51	0.25
38	Context of Dx	0.34	0.09	0.43	0.25
35	Patient Advocacy Groups	0.65	0.44	1.09	0.21
13	Clin Setting	0.41	0.24	0.65	0.17

group=CM (continued)

Item	Question	desirable	important	impact	desirable_ minus_important
37	Fear of Uncertainty	0.22	0.07	0.29	0.15
17	Media	0.56	0.43	0.99	0.13
21	Justify Action	-0.08	-0.13	-0.21	0.05
32	What Others Think	0.42	0.37	0.79	0.05
11	HDC	0.18	0.15	0.33	0.03
39	Tx Available	0.09	0.16	0.25	-0.07
12	Imp for Comm of Dx	0.08	0.21	0.29	-0.13
14	Time	-0.36	-0.17	-0.53	-0.19
36	Need for Outcome	-0.59	-0.39	-0.98	-0.20
31	Expectns of Drs	-0.02	0.28	0.26	-0.30
8	GP's Clin Exp	-0.78	-0.46	-1.24	-0.32
5	Legal	-0.28	0.08	-0.20	-0.36
15	Ext FB Med	-0.82	-0.39	-1.21	-0.43
6	Bureaucratic	-0.44	0.03	-0.41	-0.47
34	Diagnostic Algorithms	-0.43	0.09	-0.34	-0.52
27	Know Local Conds	-0.58	-0.04	-0.62	-0.54
26	Tech Tools	-0.40	0.21	-0.19	-0.61
1	History	-1.66	-0.98	-2.64	-0.68
3	Ix	-2.09	-1.08	-3.17	-1.01
7	EBM	-1.38	-0.30	-1.68	-1.08
2	Exam	-2.30	-1.05	-3.35	-1.25

group=DRSL

Item	Question	desirable	important	impact	desirable_ minus_important
28	Funder	3.46	0.40	3.86	3.06
25	NHS	3.46	0.59	4.05	2.87
23	Patient Press_UR	3.46	0.66	4.12	2.80
30	Ext Incentives	3.46	0.81	4.27	2.65
35	Patient Advocacy Groups	2.28	0.53	2.81	1.75
29	Business	2.28	0.59	2.87	1.69
18	Circs of Patient	0.55	-0.55	0.00	1.10
20	Patient Expectns	1.02	0.08	1.10	0.94
4	Patient Advocacy	0.68	-0.25	0.43	0.93
24	Desire to Please	1.02	0.14	1.16	0.88
13	Clin Setting	1.27	0.53	1.80	0.74
38	Context of Dx	0.34	-0.40	-0.06	0.74
10	Medico-legal	1.02	0.33	1.35	0.69
19	Chars of Patient	0.16	-0.47	-0.31	0.63
11	HDC	1.02	0.46	1.48	0.56
12	Imp for Comm of Dx	1.27	0.81	2.08	0.46
16	Ramification of Dx	0.02	-0.25	-0.23	0.27
22	Patient Press_R	0.16	-0.05	0.11	0.21
14	Time	0.02	-0.12	-0.10	0.14
39	Tx Available	0.83	0.73	1.56	0.10
5	Legal	0.34	0.27	0.61	0.07
37	Fear of Uncertainty	0.02	-0.05	-0.03	0.07
9	Chars of GP	-0.56	-0.63	-1.19	0.07
33	Closeness of Relatnship	-0.11	-0.05	-0.16	-0.06
8	GP's Clin Exp	-1.27	-1.21	-2.48	-0.06
1	History	-2.18	-1.90	-4.08	-0.28
21	Justify Action	-0.18	0.14	-0.04	-0.32
34	Diagnostic Algorithms	-0.11	0.21	0.10	-0.32
17	Media	0.55	0.89	1.44	-0.34
6	Bureaucratic	-0.18	0.21	0.03	-0.39
3	Ix	-2.18	-1.60	-3.78	-0.58
36	Need for Outcome	-0.71	-0.12	-0.83	-0.59
15	Ext FB Med	-0.75	-0.12	-0.87	-0.63
27	Know Local Conds	-1.06	-0.40	-1.46	-0.66
2	Exam	-2.79	-2.08	-4.87	-0.71
32	What Others Think	0.09	0.97	1.06	-0.88
31	Expectns of Drs	-0.11	0.81	0.70	-0.92
26	Tech Tools	-1.06	0.14	-0.92	-1.20
7	EBM	-1.67	-0.05	-1.72	-1.62

group=Delphi2

Item	Question	desirable	important	impact	desirable_ minus_important
1	History	-3.56	-5.95	-9.51	2.39
38	Context of Dx	2.08	0.62	2.70	1.46
25	NHS	2.50	1.06	3.56	1.44
14	Time	0.77	-0.30	0.47	1.07
23	Patient Press_UR	1.78	0.71	2.49	1.07
2	Exam	-2.76	-3.73	-6.49	0.97
9	Chars of GP	-0.61	-1.32	-1.93	0.71
13	Clin Setting	0.77	0.09	0.86	0.68
24	Desire to Please	1.35	0.71	2.06	0.64
22	Patient Press_R	0.27	-0.30	-0.03	0.57
16	Ramification of Dx	0.36	-0.20	0.16	0.56
37	Fear of Uncertainty	1.35	0.80	2.15	0.55
39	Tx Available	1.35	0.80	2.15	0.55
8	GP's Clin Exp	-1.83	-2.30	-4.13	0.47
36	Need for Outcome	-0.48	-0.73	-1.21	0.25
17	Media	1.29	1.06	2.35	0.23
21	Justify Action	0.28	0.09	0.37	0.19
10	Medico-legal	-0.13	-0.30	-0.43	0.17
18	Circs of Patient	0.38	0.27	0.65	0.11
30	Ext Incentives	4.41	4.35	8.76	0.06
6	Bureaucratic	0.77	0.71	1.48	0.06
29	Business	2.50	2.46	4.96	0.04
3	Ix	-2.04	-2.05	-4.09	0.01
20	Patient Expectns	-0.55	-0.51	-1.06	-0.04
28	Funder	2.08	2.14	4.22	-0.06
33	Closeness of Relatnship	-0.43	-0.30	-0.73	-0.13
27	Know Local Conds	-2.28	-2.14	-4.42	-0.14
11	HDC	0.36	0.62	0.98	-0.26
19	Chars of Patient	-0.61	-0.30	-0.91	-0.31
32	What Others Think	0.55	0.89	1.44	-0.34
4	Patient Advocacy	-0.68	-0.30	-0.98	-0.38
31	Expectns of Drs	-0.13	0.27	0.14	-0.40
35	Patient Advocacy Groups	0.82	1.24	2.06	-0.42
34	Diagnostic Algorithms	-0.13	0.71	0.58	-0.84
7	EBM	-2.76	-1.85	-4.61	-0.91

group=Delphi2 (continued)

Item	Question	desirable	important	impact	desirable_ minus_important
15	Ext FB Med	-1.18	-0.20	-1.38	-0.98
5	Legal	0.10	1.15	1.25	-1.05
12	Imp for Comm of Dx	-0.74	0.62	-0.12	-1.36
26	Tech Tools	-0.81	1.43	0.62	-2.24

---------- group=DipOCCMed ----------

Item	Question	desirable	important	impact	desirable_ minus_important
14	Time	0.00	-0.80	-0.80	0.80
23	Patient Press_UR	0.77	0.11	0.88	0.66
19	Chars of Patient	0.16	-0.40	-0.24	0.56
28	Funder	0.93	0.37	1.30	0.56
20	Patient Expectns	0.26	-0.23	0.03	0.49
22	Patient Press_R	0.23	-0.23	0.00	0.46
24	Desire to Please	0.42	0.01	0.43	0.41
10	Medico-legal	0.02	-0.34	-0.32	0.36
18	Circs of Patient	0.11	-0.20	-0.09	0.31
21	Justify Action	-0.16	-0.47	-0.63	0.31
6	Bureaucratic	0.23	-0.02	0.21	0.25
37	Fear of Uncertainty	0.14	-0.10	0.04	0.24
4	Patient Advocacy	-0.26	-0.50	-0.76	0.24
38	Context of Dx	0.70	0.46	1.16	0.24
9	Chars of GP	-0.16	-0.34	-0.50	0.18
17	Media	0.97	0.80	1.77	0.17
30	Ext Incentives	1.85	1.69	3.54	0.16
8	GP's Clin Exp	-1.21	-1.34	-2.55	0.13
25	NHS	0.39	0.26	0.65	0.13
29	Business	0.42	0.32	0.74	0.10
39	Tx Available	0.36	0.30	0.66	0.06
16	Ramification of Dx	-0.07	-0.12	-0.19	0.05
36	Need for Outcome	-0.26	-0.30	-0.56	0.04
11	HDC	0.14	0.16	0.30	-0.02
33	Closeness of Relatnship	-0.07	0.01	-0.06	-0.08
13	Clin Setting	0.54	0.64	1.18	-0.10
34	Diagnostic Algorithms	0.51	0.64	1.15	-0.13
5	Legal	0.02	0.19	0.21	-0.17
35	Patient Advocacy Groups	0.57	0.75	1.32	-0.18
32	What Others Think	0.06	0.37	0.43	-0.31
1	History	-2.55	-2.20	-4.75	-0.35
15	Ext FB Med	-0.52	-0.15	-0.67	-0.37
3	Ix	-0.96	-0.56	-1.52	-0.40
31	Expectns of Drs	-0.09	0.47	0.38	-0.56
12	Imp for Comm of Dx	0.11	0.70	0.81	-0.59
27	Know Local Conds	-0.81	-0.20	-1.01	-0.61
2	Exam	-1.56	-0.80	-2.36	-0.76
7	EBM	-1.12	-0.09	-1.21	-1.03
26	Tech Tools	-0.09	1.16	1.07	-1.25

---------- group=GP ----------

Item	Question	desirable	important	impact	desirable_ minus_important
10	Medico-legal	0.45	-0.30	0.15	0.75
14	Time	0.11	-0.36	-0.25	0.47
8	GP's Clin Exp	-1.39	-1.82	-3.21	0.43
23	Patient Press_UR	0.89	0.46	1.35	0.43
21	Justify Action	0.16	-0.18	-0.02	0.34
17	Media	1.23	0.92	2.15	0.31
16	Ramification of Dx	0.22	-0.06	0.16	0.28
18	Circs of Patient	0.17	-0.09	0.08	0.26
1	History	-3.06	-3.30	-6.36	0.24
6	Bureaucratic	0.54	0.31	0.85	0.23
22	Patient Press_R	0.12	-0.11	0.01	0.23
36	Need for Outcome	-0.36	-0.59	-0.95	0.23
13	Clin Setting	0.26	0.05	0.31	0.21
11	HDC	0.45	0.25	0.70	0.20
37	Fear of Uncertainty	0.46	0.30	0.76	0.16
19	Chars of Patient	-0.26	-0.42	-0.68	0.16
20	Patient Expectns	0.06	-0.08	-0.02	0.14
24	Desire to Please	0.42	0.30	0.72	0.12
9	Chars of GP	-0.17	-0.26	-0.43	0.09
38	Context of Dx	0.77	0.71	1.48	0.06
25	NHS	0.72	0.68	1.40	0.04
28	Funder	0.89	0.94	1.83	-0.05
33	Closeness of Relatnship	-0.14	-0.07	-0.21	-0.07
29	Business	0.70	0.78	1.48	-0.08
5	Legal	0.09	0.18	0.27	-0.09
15	Ext FB Med	-0.56	-0.47	-1.03	-0.09
4	Patient Advocacy	-0.71	-0.55	-1.26	-0.16
34	Diagnostic Algorithms	0.58	0.79	1.37	-0.21
30	Ext Incentives	1.71	1.95	3.66	-0.24
39	Tx Available	0.33	0.59	0.92	-0.26
32	What Others Think	0.19	0.48	0.67	-0.29
27	Know Local Conds	-0.88	-0.55	-1.43	-0.33
12	Imp for Comm of Dx	0.29	0.63	0.92	-0.34
35	Patient Advocacy Groups	0.40	0.75	1.15	-0.35
31	Expectns of Drs	-0.09	0.32	0.23	-0.41
3	Ix	-1.34	-0.87	-2.21	-0.47
7	EBM	-1.29	-0.74	-2.03	-0.55
2	Exam	-1.97	-1.41	-3.38	-0.56
26	Tech Tools	0.05	0.86	0.91	-0.81

---------- group=GPACC ----------

Item	Question	desirable	important	impact	desirable_ minus_important
10	Medico-legal	0.42	-0.42	0.00	0.84
23	Patient Press_UR	1.02	0.37	1.39	0.65
17	Media	1.08	0.75	1.83	0.33
16	Ramification of Dx	0.21	-0.12	0.09	0.33
14	Time	0.24	-0.08	0.16	0.32
11	HDC	0.39	0.09	0.48	0.30

Mismatches between desirability and importance

4

---------- group=GPACC (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
1	History	-2.77	-3.06	-5.83	0.29
6	Bureaucratic	0.43	0.14	0.57	0.29
21	Justify Action	0.20	-0.08	0.12	0.28
24	Desire to Please	0.52	0.27	0.79	0.25

36	Need for Outcome	-0.15	-0.40	-0.55	0.25
28	Funder	0.94	0.74	1.68	0.20
22	Patient Press_R	0.14	-0.04	0.10	0.18
25	NHS	0.63	0.46	1.09	0.17
37	Fear of Uncertainty	0.35	0.19	0.54	0.16
13	Clin Setting	0.40	0.25	0.65	0.15
5	Legal	-0.08	-0.21	-0.29	0.13
8	GP's Clin Exp	-1.26	-1.39	-2.65	0.13
20	Patient Expectns	0.12	0.02	0.14	0.10
18	Circs of Patient	0.10	0.02	0.12	0.08
38	Context of Dx	0.60	0.52	1.12	0.08
29	Business	0.76	0.69	1.45	0.07
19	Chars of Patient	-0.09	-0.14	-0.23	0.05
9	Chars of GP	0.02	-0.03	-0.01	0.05
4	Patient Advocacy	-0.57	-0.53	-1.10	-0.04
33	Closeness of Relatnship	-0.11	-0.04	-0.15	-0.07
30	Ext Incentives	1.72	1.79	3.51	-0.07
32	What Others Think	0.29	0.41	0.70	-0.12
34	Diagnostic Algorithms	0.30	0.44	0.74	-0.14
39	Tx Available	0.28	0.45	0.73	-0.17
15	Ext FB Med	-0.63	-0.39	-1.02	-0.24
12	Imp for Comm of Dx	0.18	0.50	0.68	-0.32
31	Expectns of Drs	-0.14	0.24	0.10	-0.38
35	Patient Advocacy Groups	0.31	0.76	1.07	-0.45
27	Know Local Conds	-0.87	-0.28	-1.15	-0.59
7	EBM	-1.59	-0.91	-2.50	-0.68
3	Ix	-1.35	-0.62	-1.97	-0.73
2	Exam	-2.05	-1.30	-3.35	-0.75
26	Tech Tools	-0.01	0.94	0.93	-0.95

---------- group=MAPWRGPDI ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	4.90	1.16	6.06	3.74
10	Medico-legal	3.65	1.16	4.81	2.49
14	Time	0.44	-1.83	-1.39	2.27
28	Funder	3.65	1.58	5.23	2.07
6	Bureaucratic	1.22	-0.82	0.40	2.04
16	Ramification of Dx	0.81	-0.82	-0.01	1.63
34	Diagnostic Algorithms	0.44	-0.82	-0.38	1.26
27	Know Local Conds	-1.60	-2.46	-4.06	0.86
18	Circs of Patient	0.81	0.04	0.85	0.77
19	Chars of Patient	0.81	0.04	0.85	0.77
24	Desire to Please	1.67	1.16	2.83	0.51
15	Ext FB Med	0.10	-0.37	-0.27	0.47
22	Patient Press_R	0.81	0.39	1.20	0.42
8	GP's Clin Exp	-2.07	-2.46	-4.53	0.39
25	NHS	1.67	1.37	3.04	0.30
20	Patient Expectns	1.22	0.94	2.16	0.28
21	Justify Action	1.22	0.94	2.16	0.28
29	Business	1.22	0.94	2.16	0.28
38	Context of Dx	1.22	0.94	2.16	0.28
17	Media	0.81	0.69	1.50	0.12
13	Clin Setting	0.81	0.94	1.75	-0.13
23	Patient Press_UR	0.81	0.94	1.75	-0.13
4	Patient Advocacy	-0.53	-0.37	-0.90	-0.16
37	Fear of Uncertainty	0.44	0.69	1.13	-0.25
32	What Others Think	-0.85	-0.37	-1.22	-0.48
11	HDC	0.44	0.94	1.38	-0.50
33	Closeness of Relatnship	-0.53	0.04	-0.49	-0.57
39	Tx Available	-0.53	0.04	-0.49	-0.57
9	Chars of GP	0.10	0.69	0.79	-0.59
1	History	-4.15	-3.36	-7.51	-0.79
5	Legal	0.10	0.94	1.04	-0.84
35	Patient Advocacy Groups	0.10	0.94	1.04	-0.84
31	Expectns of Drs	-0.85	0.04	-0.81	-0.89
36	Need for Outcome	-1.60	-0.37	-1.97	-1.23
26	Tech Tools	-2.07	-0.82	-2.89	-1.25
12	Imp for Comm of Dx	0.10	1.37	1.47	-1.27
2	Exam	-3.27	-1.83	-5.10	-1.44
7	EBM	-3.27	-1.83	-5.10	-1.44
3	Ix	-3.27	-0.37	-3.64	-2.90

---------- group=MOH ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	6.38	2.71	9.09	3.67
10	Medico-legal	0.26	-2.28	-2.02	2.54
17	Media	3.01	0.86	3.87	2.15
22	Patient Press_R	0.26	-1.81	-1.55	2.07
21	Justify Action	1.64	-0.40	1.24	2.04
24	Desire to Please	1.64	-0.40	1.24	2.04
38	Context of Dx	2.27	0.34	2.61	1.93
18	Circs of Patient	-0.11	-1.81	-1.92	1.70
14	Time	0.26	-1.32	-1.06	1.58
28	Funder	3.01	1.63	4.64	1.38
1	History	-4.26	-5.55	-9.81	1.29
9	Chars of GP	-0.11	-1.32	-1.43	1.21
36	Need for Outcome	-0.11	-1.32	-1.43	1.21
37	Fear of Uncertainty	1.11	0.34	1.45	0.77
29	Business	3.01	2.33	5.34	0.68
20	Patient Expectns	0.26	-0.40	-0.14	0.66
39	Tx Available	2.27	1.63	3.90	0.64
2	Exam	-1.75	-2.28	-4.03	0.53
15	Ext FB Med	-1.75	-2.28	-4.03	0.53
33	Closeness of Relatnship	-0.87	-1.32	-2.19	0.45
25	NHS	1.64	1.26	2.90	0.38
27	Know Local Conds	-2.24	-2.28	-4.52	0.04
35	Patient Advocacy Groups	1.64	1.63	3.27	0.01

Mismatches between desirability and importance

5

---------- group=MOH (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
19	Chars of Patient	-0.48	-0.40	-0.88	-0.08
11	HDC	1.11	1.27	2.38	-0.16
8	GP's Clin Exp	-2.77	-2.28	-5.05	-0.49
32	What Others Think	-0.48	0.34	-0.14	-0.82
3	Ix	-2.24	-1.32	-3.56	-0.92
12	Imp for Comm of Dx	0.26	1.27	1.53	-1.01
34	Diagnostic Algorithms	1.64	2.71	4.35	-1.07
23	Patient Press_UR	0.66	1.80	2.46	-1.14
13	Clin Setting	-0.48	0.86	0.38	-1.34
16	Ramification of Dx	-1.29	0.34	-0.95	-1.63

31	Expectns of Drs	-1.29	0.34	-0.95	-1.63
6	Bureaucratic	0.26	1.98	2.24	-1.72
4	Patient Advocacy	-0.48	1.27	0.79	-1.75
5	Legal	-0.48	1.98	1.50	-2.46
26	Tech Tools	-2.24	0.61	-1.63	-2.85
7	EBM	-2.77	1.27	-1.50	-4.04

---------- group=MP ----------

Item	Question	desirable	important	impact	desirable_ minus_important
6	Bureaucratic	0.03	-2.81	-2.78	2.84
7	EBM	-1.84	-4.47	-6.31	2.63
8	GP's Clin Exp	-0.32	-2.81	-3.13	2.49
18	Circs of Patient	2.08	0.34	2.42	1.74
17	Media	3.26	1.88	5.14	1.38
21	Justify Action	0.03	-1.26	-1.23	1.29
29	Business	1.30	0.34	1.64	0.96
12	Imp for Comm of Dx	0.78	0.03	0.81	0.75
10	Medico-legal	0.78	0.34	1.12	0.44
4	Patient Advocacy	0.03	-0.41	-0.38	0.44
20	Patient Expectns	0.39	0.03	0.42	0.36
28	Funder	2.08	1.88	3.96	0.20
1	History	-4.35	-4.47	-8.82	0.12
27	Know Local Conds	-1.17	-1.26	-2.43	0.09
23	Patient Press_UR	-0.32	-0.41	-0.73	0.09
9	Chars of GP	0.03	0.03	0.06	0.00
34	Diagnostic Algorithms	0.03	0.03	0.06	0.00
19	Chars of Patient	0.03	0.34	0.37	-0.31
26	Tech Tools	-0.32	0.03	-0.29	-0.35
25	NHS	0.39	0.85	1.24	-0.46
30	Ext Incentives	3.26	3.90	7.16	-0.64
24	Desire to Please	0.78	1.44	2.22	-0.66
22	Patient Press_R	-0.32	0.34	0.02	-0.66
15	Ext FB Med	-0.70	0.03	-0.67	-0.73
33	Closeness of Relatnship	-0.70	0.03	-0.67	-0.73
39	Tx Available	-0.70	0.03	-0.67	-0.73
32	What Others Think	0.39	1.12	1.51	-0.73
11	HDC	0.03	0.85	0.88	-0.82
35	Patient Advocacy Groups	0.03	0.85	0.88	-0.82
13	Clin Setting	-0.32	0.60	0.28	-0.92
16	Ramification of Dx	-0.32	0.60	0.28	-0.92
38	Context of Dx	0.78	1.88	2.66	-1.10
3	Ix	-4.35	-2.81	-7.16	-1.54
14	Time	-4.35	-2.81	-7.16	-1.54
2	Exam	-2.89	-1.26	-4.15	-1.63
31	Expectns of Drs	-1.17	0.60	-0.57	-1.77
37	Fear of Uncertainty	-0.70	1.44	0.74	-2.14
5	Legal	-1.84	0.34	-1.50	-2.18
36	Need for Outcome	-2.89	-0.41	-3.30	-2.48

---------- group=OccMed ----------

Item	Question	desirable	important	impact	desirable_ minus_important
23	Patient Press_UR	3.54	-0.14	3.40	3.68
30	Ext Incentives	2.34	0.93	3.27	1.41
10	Medico-legal	0.88	-0.51	0.37	1.39
24	Desire to Please	1.33	-0.03	1.30	1.36
35	Patient Advocacy Groups	1.33	-0.03	1.30	1.36
29	Business	1.08	-0.25	0.83	1.33
9	Chars of GP	0.45	-0.66	-0.21	1.11
11	HDC	0.72	-0.38	0.34	1.10
16	Ramification of Dx	0.20	-0.83	-0.63	1.03
28	Funder	1.08	0.08	1.16	1.00
18	Circs of Patient	0.58	-0.38	0.20	0.96
4	Patient Advocacy	0.45	-0.38	0.07	0.83
17	Media	1.33	0.50	1.83	0.83
20	Patient Expectns	0.58	-0.14	0.44	0.72
19	Chars of Patient	0.45	-0.25	0.20	0.70
38	Context of Dx	0.32	-0.38	-0.06	0.70
36	Need for Outcome	-0.55	-1.24	-1.79	0.69
22	Patient Press_R	0.58	-0.03	0.55	0.61
34	Diagnostic Algorithms	0.20	-0.25	-0.05	0.45
37	Fear of Uncertainty	0.20	-0.24	-0.04	0.44
14	Time	0.15	-0.14	0.01	0.29
13	Clin Setting	0.72	0.46	1.18	0.26
33	Closeness of Relatnship	0.32	0.18	0.50	0.14
39	Tx Available	0.45	0.39	0.84	0.06
6	Bureaucratic	0.72	0.83	1.55	-0.11
21	Justify Action	-0.04	0.18	0.14	-0.22
25	NHS	0.32	0.74	1.06	-0.42
32	What Others Think	-0.55	-0.10	-0.65	-0.45
5	Legal	0.20	1.03	1.23	-0.83
31	Expectns of Drs	-0.95	-0.03	-0.98	-0.92
12	Imp for Comm of Dx	0.08	1.03	1.11	-0.95
8	GP's Clin Exp	-1.22	-0.03	-1.25	-1.19
3	Ix	-1.97	-0.25	-2.22	-1.72
15	Ext FB Med	-2.03	-0.14	-2.17	-1.89
26	Tech Tools	-1.08	0.83	-0.25	-1.91
27	Know Local Conds	-2.15	0.18	-1.97	-2.33
2	Exam	-3.08	-0.38	-3.46	-2.70
7	EBM	-3.40	0.61	-2.79	-4.01
1	History	-6.24	-0.83	-7.07	-5.41

Mismatches between desirability and importance

6

---------- group=Patient ----------

Item	Question	desirable	important	impact	desirable_ minus_important
37	Fear of Uncertainty	0.28	0.02	0.30	0.26
30	Ext Incentives	1.19	1.01	2.20	0.18
6	Bureaucratic	0.31	0.15	0.46	0.16
17	Media	0.50	0.34	0.84	0.16
23	Patient Press_UR	0.71	0.55	1.26	0.16
5	Legal	0.16	0.01	0.17	0.15
10	Medico-legal	0.50	0.36	0.86	0.14
21	Justify Action	-0.06	-0.17	-0.23	0.11
22	Patient Press_R	0.26	0.15	0.41	0.11
16	Ramification of Dx	-0.01	-0.09	-0.10	0.08
36	Need for Outcome	-0.75	-0.80	-1.55	0.05
25	NHS	0.53	0.49	1.02	0.04
9	Chars of GP	0.07	0.03	0.10	0.04
18	Circs of Patient	0.18	0.14	0.32	0.04
12	Imp for Comm of Dx	0.37	0.34	0.71	0.03
8	GP's Clin Exp	-0.91	-0.93	-1.84	0.02
13	Clin Setting	0.27	0.25	0.52	0.02
14	Time	-0.42	-0.42	-0.84	0.00
24	Desire to Please	0.48	0.48	0.96	0.00

29	Business	0.46	0.47	0.93	-0.01
19	Chars of Patient	0.18	0.20	0.38	-0.02
20	Patient Expectns	0.36	0.38	0.74	-0.02
39	Tx Available	-0.15	-0.12	-0.27	-0.03
33	Closeness of Relatnship	0.08	0.12	0.20	-0.04
31	Expectns of Drs	0.21	0.25	0.46	-0.04
1	History	-1.31	-1.27	-2.58	-0.04
11	HDC	0.20	0.25	0.45	-0.05
35	Patient Advocacy Groups	0.09	0.14	0.23	-0.05
7	EBM	-0.76	-0.71	-1.47	-0.05
28	Funder	0.72	0.77	1.49	-0.05
34	Diagnostic Algorithms	0.43	0.49	0.92	-0.06
38	Context of Dx	0.48	0.54	1.02	-0.06
27	Know Local Conds	-0.53	-0.45	-0.98	-0.08
32	What Others Think	0.46	0.54	1.00	-0.08
4	Patient Advocacy	-0.53	-0.38	-0.91	-0.15
26	Tech Tools	-0.26	-0.10	-0.36	-0.16
15	Ext FB Med	-0.64	-0.46	-1.10	-0.18
2	Exam	-1.48	-1.22	-2.70	-0.26
3	Ix	-1.65	-1.36	-3.01	-0.29

---------- group=RACCS1 ----------

Item	Question	desirable	important	impact	desirable_ minus_important
23	Patient Press_UR	0.83	0.57	1.40	0.26
37	Fear of Uncertainty	0.28	0.02	0.30	0.26
16	Ramification of Dx	-0.02	-0.22	-0.24	0.20
6	Bureaucratic	0.26	0.10	0.36	0.16
5	Legal	0.10	-0.03	0.07	0.13
10	Medico-legal	0.53	0.42	0.95	0.11
39	Tx Available	-0.13	-0.23	-0.36	0.10
12	Imp for Comm of Dx	0.42	0.32	0.74	0.10
30	Ext Incentives	1.22	1.13	2.35	0.09
25	NHS	0.52	0.43	0.95	0.09
13	Clin Setting	0.32	0.25	0.57	0.07
18	Circs of Patient	0.15	0.08	0.23	0.07
17	Media	0.47	0.42	0.89	0.05
28	Funder	0.65	0.61	1.26	0.04
29	Business	0.51	0.47	0.98	0.04
38	Context of Dx	0.53	0.49	1.02	0.04
34	Diagnostic Algorithms	0.41	0.38	0.79	0.03
22	Patient Press_R	0.32	0.30	0.62	0.02
32	What Others Think	0.49	0.47	0.96	0.02
9	Chars of GP	0.03	0.01	0.04	0.02
31	Expectns of Drs	0.22	0.21	0.43	0.01
24	Desire to Please	0.47	0.48	0.95	-0.01
20	Patient Expectns	0.34	0.36	0.70	-0.02
33	Closeness of Relatnship	0.08	0.10	0.18	-0.02
19	Chars of Patient	0.22	0.25	0.47	-0.03
21	Justify Action	-0.16	-0.12	-0.28	-0.04
15	Ext FB Med	-0.62	-0.58	-1.20	-0.04
14	Time	-0.37	-0.32	-0.69	-0.05
11	HDC	-0.04	0.03	-0.01	-0.07
36	Need for Outcome	-0.95	-0.87	-1.82	-0.08
35	Patient Advocacy Groups	0.08	0.17	0.25	-0.09
1	History	-1.16	-1.04	-2.20	-0.12
27	Know Local Conds	-0.48	-0.35	-0.83	-0.13
7	EBM	-0.89	-0.75	-1.64	-0.14
4	Patient Advocacy	-0.68	-0.52	-1.20	-0.16
26	Tech Tools	-0.28	-0.08	-0.36	-0.20
2	Exam	-1.18	-0.97	-2.15	-0.21
3	Ix	-1.39	-1.18	-2.57	-0.21
8	GP's Clin Exp	-1.09	-0.84	-1.93	-0.25

---------- group=RACCS2 ----------

Item	Question	desirable	important	impact	desirable_ minus_important
5	Legal	0.25	-0.03	0.22	0.28
37	Fear of Uncertainty	0.28	0.01	0.29	0.27
6	Bureaucratic	0.26	0.01	0.27	0.25
10	Medico-legal	0.56	0.36	0.92	0.20
16	Ramification of Dx	-0.03	-0.20	-0.23	0.17
30	Ext Incentives	1.24	1.10	2.34	0.14
29	Business	0.68	0.55	1.23	0.13
34	Diagnostic Algorithms	0.49	0.36	0.85	0.13
12	Imp for Comm of Dx	0.44	0.32	0.76	0.12
23	Patient Press_UR	0.65	0.53	1.18	0.12
25	NHS	0.52	0.43	0.95	0.09
9	Chars of GP	0.14	0.06	0.20	0.08
14	Time	-0.31	-0.39	-0.70	0.08
17	Media	0.42	0.34	0.76	0.08
13	Clin Setting	0.21	0.16	0.37	0.05
38	Context of Dx	0.51	0.48	0.99	0.03
21	Justify Action	-0.12	-0.15	-0.27	0.03
18	Circs of Patient	0.12	0.10	0.22	0.02

Mismatches between desirability and importance

7

---------- group=RACCS2 (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
20	Patient Expectns	0.33	0.32	0.65	0.01
28	Funder	0.59	0.58	1.17	0.01
32	What Others Think	0.53	0.52	1.05	0.01
39	Tx Available	-0.21	-0.22	-0.43	0.01
11	HDC	0.12	0.13	0.25	-0.01
19	Chars of Patient	0.27	0.28	0.55	-0.01
31	Expectns of Drs	0.27	0.29	0.56	-0.02
24	Desire to Please	0.41	0.43	0.84	-0.02
36	Need for Outcome	-0.84	-0.80	-1.64	-0.04
22	Patient Press_R	0.28	0.33	0.61	-0.05
33	Closeness of Relatnship	0.14	0.19	0.33	-0.05
4	Patient Advocacy	-0.51	-0.44	-0.95	-0.07
35	Patient Advocacy Groups	0.03	0.19	0.22	-0.16
1	History	-1.30	-1.14	-2.44	-0.16
7	EBM	-0.80	-0.62	-1.42	-0.18
8	GP's Clin Exp	-0.96	-0.76	-1.72	-0.20
26	Tech Tools	-0.32	-0.11	-0.43	-0.21
15	Ext FB Med	-0.70	-0.47	-1.17	-0.23
27	Know Local Conds	-0.49	-0.24	-0.73	-0.25
2	Exam	-1.47	-1.21	-2.68	-0.26
3	Ix	-1.67	-1.30	-2.97	-0.37

Desirability

8

group=ACCMA

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	2.00	1.78	3.78	0.22
17	Media	1.32	1.11	2.43	0.21
28	Funder	1.23	0.36	1.59	0.87
29	Business	1.14	0.90	2.04	0.24
35	Patient Advocacy Groups	1.05	0.47	1.52	0.58
38	Context of Dx	0.97	0.13	1.10	0.84
23	Patient Press_UR	0.56	0.01	0.57	0.55
39	Tx Available	0.56	0.47	1.03	0.09
24	Desire to Please	0.48	-0.23	0.25	0.71
11	HDC	0.48	0.69	1.17	-0.21
20	Patient Expectns	0.40	-0.23	0.17	0.63
10	Medico-legal	0.40	0.13	0.53	0.27
6	Bureaucratic	0.32	0.13	0.45	0.19
19	Chars of Patient	0.25	-0.61	-0.36	0.86
34	Diagnostic Algorithms	0.25	0.47	0.72	-0.22
12	Imp for Comm of Dx	0.25	1.33	1.58	-1.08
9	Chars of GP	0.17	-0.89	-0.72	1.06
37	Fear of Uncertainty	0.17	-0.11	0.06	0.28
25	NHS	0.17	0.58	0.75	-0.41
32	What Others Think	0.17	1.01	1.18	-0.84
22	Patient Press_R	0.09	-0.23	-0.14	0.32
13	Clin Setting	0.09	0.25	0.34	-0.16
33	Closeness of Relatnship	0.01	-0.75	-0.74	0.76
18	Circs of Patient	0.01	-0.48	-0.47	0.49
4	Patient Advocacy	0.01	-0.11	-0.10	0.12
5	Legal	0.01	0.13	0.14	-0.12
16	Ramification of Dx	-0.10	-0.35	-0.45	0.25
21	Justify Action	-0.15	0.01	-0.14	-0.16
26	Tech Tools	-0.24	1.33	1.09	-1.57
14	Time	-0.32	-1.03	-1.35	0.71
31	Expectns of Drs	-0.49	0.25	-0.24	-0.74
36	Need for Outcome	-0.58	-0.75	-1.33	0.17
15	Ext FB Med	-0.58	-0.35	-0.93	-0.23
8	GP's Clin Exp	-1.18	-1.69	-2.87	0.51
27	Know Local Conds	-1.18	-0.23	-1.41	-0.95
3	Ix	-1.29	-0.75	-2.04	-0.54
7	EBM	-1.29	0.13	-1.16	-1.42
2	Exam	-1.82	-0.75	-2.57	-1.07
1	History	-3.30	-2.12	-5.42	-1.18

group=ACCSMT

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	6.55	1.78	8.33	4.77
25	NHS	4.58	1.02	5.60	3.56
17	Media	4.58	1.38	5.96	3.20
35	Patient Advocacy Groups	4.58	2.28	6.86	2.30
28	Funder	2.84	0.37	3.21	2.47
38	Context of Dx	2.84	0.69	3.53	2.15
24	Desire to Please	2.84	1.02	3.86	1.82
23	Patient Press_UR	2.84	1.38	4.22	1.46
4	Patient Advocacy	1.73	0.69	2.42	1.04
39	Tx Available	1.73	0.69	2.42	1.04
12	Imp for Comm of Dx	1.73	1.02	2.75	0.71
10	Medico-legal	1.73	1.38	3.11	0.35
13	Clin Setting	1.73	1.78	3.51	-0.05
6	Bureaucratic	0.89	-0.30	0.59	1.19
29	Business	0.89	-0.30	0.59	1.19
34	Diagnostic Algorithms	0.89	0.37	1.26	0.52
37	Fear of Uncertainty	0.89	0.37	1.26	0.52
14	Time	-0.25	-0.30	-0.55	0.05
16	Ramification of Dx	-0.25	0.05	-0.20	-0.30
22	Patient Press_R	-0.25	0.05	-0.20	-0.30
11	HDC	-0.25	0.37	0.12	-0.62
32	What Others Think	-0.25	0.69	0.44	-0.94
9	Chars of GP	-0.70	-1.12	-1.82	0.42
20	Patient Expectns	-0.70	-0.68	-1.38	-0.02
18	Circs of Patient	-0.70	0.05	-0.65	-0.75
5	Legal	-1.13	0.05	-1.08	-1.18
21	Justify Action	-1.13	0.69	-0.44	-1.82
31	Expectns of Drs	-1.13	0.69	-0.44	-1.82
33	Closeness of Relatnship	-1.59	-1.12	-2.71	-0.47
27	Know Local Conds	-1.59	-0.68	-2.27	-0.91
19	Chars of Patient	-1.59	-0.30	-1.89	-1.29
26	Tech Tools	-1.59	0.37	-1.22	-1.96
15	Ext FB Med	-2.11	-0.68	-2.79	-1.43
8	GP's Clin Exp	-2.72	-3.34	-6.06	0.62
3	Ix	-2.72	-1.12	-3.84	-1.60
36	Need for Outcome	-2.72	-1.12	-3.84	-1.60
2	Exam	-3.57	-2.42	-5.99	-1.15
1	History	-6.69	-2.42	-9.11	-4.27
7	EBM	-10.26	-3.34	-13.60	-6.92

group=CM

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.01	0.57	1.58	0.44
23	Patient Press_UR	0.99	0.04	1.03	0.95
24	Desire to Please	0.99	0.28	1.27	0.71
25	NHS	0.92	0.43	1.35	0.49
28	Funder	0.90	0.40	1.30	0.50
29	Business	0.86	0.31	1.17	0.55
20	Patient Expectns	0.69	0.27	0.96	0.42
35	Patient Advocacy Groups	0.65	0.44	1.09	0.21
22	Patient Press_R	0.61	-0.01	0.60	0.62
17	Media	0.56	0.43	0.99	0.13
10	Medico-legal	0.43	0.12	0.55	0.31
32	What Others Think	0.42	0.37	0.79	0.05
13	Clin Setting	0.41	0.24	0.65	0.17
18	Circs of Patient	0.40	0.09	0.49	0.31
19	Chars of Patient	0.38	0.13	0.51	0.25
38	Context of Dx	0.34	0.09	0.43	0.25
33	Closeness of Relatnship	0.32	-0.10	0.22	0.42
4	Patient Advocacy	0.29	-0.12	0.17	0.41

group=CM (continued)

Item	Question	desirable	important	impact	desirable_ minus_important
9	Chars of GP	0.28	0.03	0.31	0.25
37	Fear of Uncertainty	0.22	0.07	0.29	0.15
11	HDC	0.18	0.15	0.33	0.03
16	Ramification of Dx	0.17	-0.30	-0.13	0.47
39	Tx Available	0.09	0.16	0.25	-0.07
12	Imp for Comm of Dx	0.08	0.21	0.29	-0.13
31	Expectns of Drs	-0.02	0.28	0.26	-0.30
21	Justify Action	-0.08	-0.13	-0.21	0.05
5	Legal	-0.28	0.08	-0.20	-0.36
14	Time	-0.36	-0.17	-0.53	-0.19
26	Tech Tools	-0.40	0.21	-0.19	-0.61
34	Diagnostic Algorithms	-0.43	0.09	-0.34	-0.52
6	Bureaucratic	-0.44	0.03	-0.41	-0.47
27	Know Local Conds	-0.58	-0.04	-0.62	-0.54
36	Need for Outcome	-0.59	-0.39	-0.98	-0.20
8	GP's Clin Exp	-0.78	-0.46	-1.24	-0.32
15	Ext FB Med	-0.82	-0.39	-1.21	-0.43
7	EBM	-1.38	-0.30	-1.68	-1.08
1	History	-1.66	-0.98	-2.64	-0.68
3	Ix	-2.09	-1.08	-3.17	-1.01
2	Exam	-2.30	-1.05	-3.35	-1.25

group=DRSL

Item	Question	desirable	important	impact	desirable_ minus_important
28	Funder	3.46	0.40	3.86	3.06
25	NHS	3.46	0.59	4.05	2.87
23	Patient Press_UR	3.46	0.66	4.12	2.80
30	Ext Incentives	3.46	0.81	4.27	2.65
35	Patient Advocacy Groups	2.28	0.53	2.81	1.75
29	Business	2.28	0.59	2.87	1.69
13	Clin Setting	1.27	0.53	1.80	0.74
12	Imp for Comm of Dx	1.27	0.81	2.08	0.46
20	Patient Expectns	1.02	0.08	1.10	0.94
24	Desire to Please	1.02	0.14	1.16	0.88
10	Medico-legal	1.02	0.33	1.35	0.69
11	HDC	1.02	0.46	1.48	0.56
39	Tx Available	0.83	0.73	1.56	0.10
4	Patient Advocacy	0.68	-0.25	0.43	0.93
18	Circs of Patient	0.55	-0.55	0.00	1.10
17	Media	0.55	0.89	1.44	-0.34
38	Context of Dx	0.34	-0.40	-0.06	0.74
5	Legal	0.34	0.27	0.61	0.07
19	Chars of Patient	0.16	-0.47	-0.31	0.63
22	Patient Press_R	0.16	-0.05	0.11	0.21
32	What Others Think	0.09	0.97	1.06	-0.88
16	Ramification of Dx	0.02	-0.25	-0.23	0.27
14	Time	0.02	-0.12	-0.10	0.14
37	Fear of Uncertainty	0.02	-0.05	-0.03	0.07
33	Closeness of Relatnship	-0.11	-0.05	-0.16	-0.06
34	Diagnostic Algorithms	-0.11	0.21	0.10	-0.32
31	Expectns of Drs	-0.11	0.81	0.70	-0.92
21	Justify Action	-0.18	0.14	-0.04	-0.32
6	Bureaucratic	-0.18	0.21	0.03	-0.39
9	Chars of GP	-0.56	-0.63	-1.19	0.07
36	Need for Outcome	-0.71	-0.12	-0.83	-0.59
15	Ext FB Med	-0.75	-0.12	-0.87	-0.63
27	Know Local Conds	-1.06	-0.40	-1.46	-0.66
26	Tech Tools	-1.06	0.14	-0.92	-1.20
8	GP's Clin Exp	-1.27	-1.21	-2.48	-0.06
7	EBM	-1.67	-0.05	-1.72	-1.62
1	History	-2.18	-1.90	-4.08	-0.28
3	Ix	-2.18	-1.60	-3.78	-0.58
2	Exam	-2.79	-2.08	-4.87	-0.71

group=Delphi2

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	4.41	4.35	8.76	0.06
25	NHS	2.50	1.06	3.56	1.44
29	Business	2.50	2.46	4.96	0.04
38	Context of Dx	2.08	0.62	2.70	1.46
28	Funder	2.08	2.14	4.22	-0.06
23	Patient Press_UR	1.78	0.71	2.49	1.07
24	Desire to Please	1.35	0.71	2.06	0.64
37	Fear of Uncertainty	1.35	0.80	2.15	0.55
39	Tx Available	1.35	0.80	2.15	0.55
17	Media	1.29	1.06	2.35	0.23
35	Patient Advocacy Groups	0.82	1.24	2.06	-0.42
14	Time	0.77	-0.30	0.47	1.07
13	Clin Setting	0.77	0.09	0.86	0.68
6	Bureaucratic	0.77	0.71	1.48	0.06
32	What Others Think	0.55	0.89	1.44	-0.34
18	Circs of Patient	0.38	0.27	0.65	0.11
16	Ramification of Dx	0.36	-0.20	0.16	0.56
11	HDC	0.36	0.62	0.98	-0.26
21	Justify Action	0.28	0.09	0.37	0.19
22	Patient Press_R	0.27	-0.30	-0.03	0.57
5	Legal	0.10	1.15	1.25	-1.05
10	Medico-legal	-0.13	-0.30	-0.43	0.17
31	Expectns of Drs	-0.13	0.27	0.14	-0.40
34	Diagnostic Algorithms	-0.13	0.71	0.58	-0.84
33	Closeness of Relatnship	-0.43	-0.30	-0.73	-0.13
36	Need for Outcome	-0.48	-0.73	-1.21	0.25
20	Patient Expectns	-0.55	-0.51	-1.06	-0.04
9	Chars of GP	-0.61	-1.32	-1.93	0.71
19	Chars of Patient	-0.61	-0.30	-0.91	-0.31
4	Patient Advocacy	-0.68	-0.30	-0.98	-0.38
12	Imp for Comm of Dx	-0.74	0.62	-0.12	-1.36
26	Tech Tools	-0.81	1.43	0.62	-2.24
15	Ext FB Med	-1.18	-0.20	-1.38	-0.98
8	GP's Clin Exp	-1.83	-2.30	-4.13	0.47
3	Ix	-2.04	-2.05	-4.09	0.01

group=Delphi2 (continued)

Item	Question	desirable	important	impact	desirable_ minus_important
27	Know Local Conds	-2.28	-2.14	-4.42	-0.14
2	Exam	-2.76	-3.73	-6.49	0.97
7	EBM	-2.76	-1.85	-4.61	-0.91
1	History	-3.56	-5.95	-9.51	2.39

---------- group=DipOCCMed ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.85	1.69	3.54	0.16
17	Media	0.97	0.80	1.77	0.17
28	Funder	0.93	0.37	1.30	0.56
23	Patient Press_UR	0.77	0.11	0.88	0.66
38	Context of Dx	0.70	0.46	1.16	0.24
35	Patient Advocacy Groups	0.57	0.75	1.32	-0.18
13	Clin Setting	0.54	0.64	1.18	-0.10
34	Diagnostic Algorithms	0.51	0.64	1.15	-0.13
24	Desire to Please	0.42	0.01	0.43	0.41
29	Business	0.42	0.32	0.74	0.10
25	NHS	0.39	0.26	0.65	0.13
39	Tx Available	0.36	0.30	0.66	0.06
20	Patient Expectns	0.26	-0.23	0.03	0.49
22	Patient Press_R	0.23	-0.23	0.00	0.46
6	Bureaucratic	0.23	-0.02	0.21	0.25
19	Chars of Patient	0.16	-0.40	-0.24	0.56
37	Fear of Uncertainty	0.14	-0.10	0.04	0.24
11	HDC	0.14	0.16	0.30	-0.02
18	Circs of Patient	0.11	-0.20	-0.09	0.31
12	Imp for Comm of Dx	0.11	0.70	0.81	-0.59
32	What Others Think	0.06	0.37	0.43	-0.31
10	Medico-legal	0.02	-0.34	-0.32	0.36
5	Legal	0.02	0.19	0.21	-0.17
14	Time	0.00	-0.80	-0.80	0.80
16	Ramification of Dx	-0.07	-0.12	-0.19	0.05
33	Closeness of Relatnship	-0.07	0.01	-0.06	-0.08
31	Expectns of Drs	-0.09	0.47	0.38	-0.56
26	Tech Tools	-0.09	1.16	1.07	-1.25
21	Justify Action	-0.16	-0.47	-0.63	0.31
9	Chars of GP	-0.16	-0.34	-0.50	0.18
4	Patient Advocacy	-0.26	-0.50	-0.76	0.24
36	Need for Outcome	-0.26	-0.30	-0.56	0.04
15	Ext FB Med	-0.52	-0.15	-0.67	-0.37
27	Know Local Conds	-0.81	-0.20	-1.01	-0.61
3	Ix	-0.96	-0.56	-1.52	-0.40
7	EBM	-1.12	-0.09	-1.21	-1.03
8	GP's Clin Exp	-1.21	-1.34	-2.55	0.13
2	Exam	-1.56	-0.80	-2.36	-0.76
1	History	-2.55	-2.20	-4.75	-0.35

---------- group=GP ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.71	1.95	3.66	-0.24
17	Media	1.23	0.92	2.15	0.31
23	Patient Press_UR	0.89	0.46	1.35	0.43
28	Funder	0.89	0.94	1.83	-0.05
38	Context of Dx	0.77	0.71	1.48	0.06
25	NHS	0.72	0.68	1.40	0.04
29	Business	0.70	0.78	1.48	-0.08
34	Diagnostic Algorithms	0.58	0.79	1.37	-0.21
6	Bureaucratic	0.54	0.31	0.85	0.23
37	Fear of Uncertainty	0.46	0.30	0.76	0.16
10	Medico-legal	0.45	-0.30	0.15	0.75
11	HDC	0.45	0.25	0.70	0.20
24	Desire to Please	0.42	0.30	0.72	0.12
35	Patient Advocacy Groups	0.40	0.75	1.15	-0.35
39	Tx Available	0.33	0.59	0.92	-0.26
12	Imp for Comm of Dx	0.29	0.63	0.92	-0.34
13	Clin Setting	0.26	0.05	0.31	0.21
16	Ramification of Dx	0.22	-0.06	0.16	0.28
32	What Others Think	0.19	0.48	0.67	-0.29
18	Circs of Patient	0.17	-0.09	0.08	0.26
21	Justify Action	0.16	-0.18	-0.02	0.34
22	Patient Press_R	0.12	-0.11	0.01	0.23
14	Time	0.11	-0.36	-0.25	0.47
5	Legal	0.09	0.18	0.27	-0.09
20	Patient Expectns	0.06	-0.08	-0.02	0.14
26	Tech Tools	0.05	0.86	0.91	-0.81
31	Expectns of Drs	-0.09	0.32	0.23	-0.41
33	Closeness of Relatnship	-0.14	-0.07	-0.21	-0.07
9	Chars of GP	-0.17	-0.26	-0.43	0.09
19	Chars of Patient	-0.26	-0.42	-0.68	0.16
36	Need for Outcome	-0.36	-0.59	-0.95	0.23
15	Ext FB Med	-0.56	-0.47	-1.03	-0.09
4	Patient Advocacy	-0.71	-0.55	-1.26	-0.16
27	Know Local Conds	-0.88	-0.55	-1.43	-0.33
7	EBM	-1.29	-0.74	-2.03	-0.55
3	Ix	-1.34	-0.87	-2.21	-0.47
8	GP's Clin Exp	-1.39	-1.82	-3.21	0.43
2	Exam	-1.97	-1.41	-3.38	-0.56
1	History	-3.06	-3.30	-6.36	0.24

---------- group=GPACC ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.72	1.79	3.51	-0.07
17	Media	1.08	0.75	1.83	0.33
23	Patient Press_UR	1.02	0.37	1.39	0.65
28	Funder	0.94	0.74	1.68	0.20
29	Business	0.76	0.69	1.45	0.07
25	NHS	0.63	0.46	1.09	0.17

---------- group=GPACC (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
38	Context of Dx	0.60	0.52	1.12	0.08
24	Desire to Please	0.52	0.27	0.79	0.25
6	Bureaucratic	0.43	0.14	0.57	0.29

10	Medico-legal	0.42	-0.42	0.00	0.84
13	Clin Setting	0.40	0.25	0.65	0.15
11	HDC	0.39	0.09	0.48	0.30
37	Fear of Uncertainty	0.35	0.19	0.54	0.16
35	Patient Advocacy Groups	0.31	0.76	1.07	-0.45
34	Diagnostic Algorithms	0.30	0.44	0.74	-0.14
32	What Others Think	0.29	0.41	0.70	-0.12
39	Tx Available	0.28	0.45	0.73	-0.17
14	Time	0.24	-0.08	0.16	0.32
16	Ramification of Dx	0.21	-0.12	0.09	0.33
21	Justify Action	0.20	-0.08	0.12	0.28
12	Imp for Comm of Dx	0.18	0.50	0.68	-0.32
22	Patient Press_R	0.14	-0.04	0.10	0.18
20	Patient Expectns	0.12	0.02	0.14	0.10
18	Circs of Patient	0.10	0.02	0.12	0.08
9	Chars of GP	0.02	-0.03	-0.01	0.05
26	Tech Tools	-0.01	0.94	0.93	-0.95
5	Legal	-0.08	-0.21	-0.29	0.13
19	Chars of Patient	-0.09	-0.14	-0.23	0.05
33	Closeness of Relatnship	-0.11	-0.04	-0.15	-0.07
31	Expectns of Drs	-0.14	0.24	0.10	-0.38
36	Need for Outcome	-0.15	-0.40	-0.55	0.25
4	Patient Advocacy	-0.57	-0.53	-1.10	-0.04
15	Ext FB Med	-0.63	-0.39	-1.02	-0.24
27	Know Local Conds	-0.87	-0.28	-1.15	-0.59
8	GP's Clin Exp	-1.26	-1.39	-2.65	0.13
3	Ix	-1.35	-0.62	-1.97	-0.73
7	EBM	-1.59	-0.91	-2.50	-0.68
2	Exam	-2.05	-1.30	-3.35	-0.75
1	History	-2.77	-3.06	-5.83	0.29

---------- group=MAPWRGPDI ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	4.90	1.16	6.06	3.74
10	Medico-legal	3.65	1.16	4.81	2.49
28	Funder	3.65	1.58	5.23	2.07
24	Desire to Please	1.67	1.16	2.83	0.51
25	NHS	1.67	1.37	3.04	0.30
6	Bureaucratic	1.22	-0.82	0.40	2.04
20	Patient Expectns	1.22	0.94	2.16	0.28
21	Justify Action	1.22	0.94	2.16	0.28
29	Business	1.22	0.94	2.16	0.28
38	Context of Dx	1.22	0.94	2.16	0.28
16	Ramification of Dx	0.81	-0.82	-0.01	1.63
18	Circs of Patient	0.81	0.04	0.85	0.77
19	Chars of Patient	0.81	0.04	0.85	0.77
22	Patient Press_R	0.81	0.39	1.20	0.42
17	Media	0.81	0.69	1.50	0.12
13	Clin Setting	0.81	0.94	1.75	-0.13
23	Patient Press_UR	0.81	0.94	1.75	-0.13
14	Time	0.44	-1.83	-1.39	2.27
34	Diagnostic Algorithms	0.44	-0.82	-0.38	1.26
37	Fear of Uncertainty	0.44	0.69	1.13	-0.25
11	HDC	0.44	0.94	1.38	-0.50
15	Ext FB Med	0.10	-0.37	-0.27	0.47
9	Chars of GP	0.10	0.69	0.79	-0.59
5	Legal	0.10	0.94	1.04	-0.84
35	Patient Advocacy Groups	0.10	0.94	1.04	-0.84
12	Imp for Comm of Dx	0.10	1.37	1.47	-1.27
4	Patient Advocacy	-0.53	-0.37	-0.90	-0.16
33	Closeness of Relatnship	-0.53	0.04	-0.49	-0.57
39	Tx Available	-0.53	0.04	-0.49	-0.57
32	What Others Think	-0.85	-0.37	-1.22	-0.48
31	Expectns of Drs	-0.85	0.04	-0.81	-0.89
27	Know Local Conds	-1.60	-2.46	-4.06	0.86
36	Need for Outcome	-1.60	-0.37	-1.97	-1.23
8	GP's Clin Exp	-2.07	-2.46	-4.53	0.39
26	Tech Tools	-2.07	-0.82	-2.89	-1.25
2	Exam	-3.27	-1.83	-5.10	-1.44
7	EBM	-3.27	-1.83	-5.10	-1.44
3	Ix	-3.27	-0.37	-3.64	-2.90
1	History	-4.15	-3.36	-7.51	-0.79

---------- group=MOH ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	6.38	2.71	9.09	3.67
17	Media	3.01	0.86	3.87	2.15
28	Funder	3.01	1.63	4.64	1.38
29	Business	3.01	2.33	5.34	0.68
38	Context of Dx	2.27	0.34	2.61	1.93
39	Tx Available	2.27	1.63	3.90	0.64
21	Justify Action	1.64	-0.40	1.24	2.04
24	Desire to Please	1.64	-0.40	1.24	2.04
25	NHS	1.64	1.26	2.90	0.38
35	Patient Advocacy Groups	1.64	1.63	3.27	0.01
34	Diagnostic Algorithms	1.64	2.71	4.35	-1.07
37	Fear of Uncertainty	1.11	0.34	1.45	0.77
11	HDC	1.11	1.27	2.38	-0.16
23	Patient Press_UR	0.66	1.80	2.46	-1.14
10	Medico-legal	0.26	-2.28	-2.02	2.54
22	Patient Press_R	0.26	-1.81	-1.55	2.07
14	Time	0.26	-1.32	-1.06	1.58
20	Patient Expectns	0.26	-0.40	-0.14	0.66
12	Imp for Comm of Dx	0.26	1.27	1.53	-1.01
6	Bureaucratic	0.26	1.98	2.24	-1.72
18	Circs of Patient	-0.11	-1.81	-1.92	1.70
9	Chars of GP	-0.11	-1.32	-1.43	1.21
36	Need for Outcome	-0.11	-1.32	-1.43	1.21

---------- group=MOH (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
19	Chars of Patient	-0.48	-0.40	-0.88	-0.08
32	What Others Think	-0.48	0.34	-0.14	-0.82
13	Clin Setting	-0.48	0.86	0.38	-1.34
4	Patient Advocacy	-0.48	1.27	0.79	-1.75
5	Legal	-0.48	1.98	1.50	-2.46
33	Closeness of Relatnship	-0.87	-1.32	-2.19	0.45
16	Ramification of Dx	-1.29	0.34	-0.95	-1.63
31	Expectns of Drs	-1.29	0.34	-0.95	-1.63

2	Exam	-1.75	-2.28	-4.03	0.53
15	Ext FB Med	-1.75	-2.28	-4.03	0.53
27	Know Local Conds	-2.24	-2.28	-4.52	0.04
3	Ix	-2.24	-1.32	-3.56	-0.92
26	Tech Tools	-2.24	0.61	-1.63	-2.85
8	GP's Clin Exp	-2.77	-2.28	-5.05	-0.49
7	EBM	-2.77	1.27	-1.50	-4.04
1	History	-4.26	-5.55	-9.81	1.29

---------- group=MP ----------

Item	Question	desirable	important	impact	desirable_ minus_important
17	Media	3.26	1.88	5.14	1.38
30	Ext Incentives	3.26	3.90	7.16	-0.64
18	Circs of Patient	2.08	0.34	2.42	1.74
28	Funder	2.08	1.88	3.96	0.20
29	Business	1.30	0.34	1.64	0.96
12	Imp for Comm of Dx	0.78	0.03	0.81	0.75
10	Medico-legal	0.78	0.34	1.12	0.44
24	Desire to Please	0.78	1.44	2.22	-0.66
38	Context of Dx	0.78	1.88	2.66	-1.10
20	Patient Expectns	0.39	0.03	0.42	0.36
25	NHS	0.39	0.85	1.24	-0.46
32	What Others Think	0.39	1.12	1.51	-0.73
6	Bureaucratic	0.03	-2.81	-2.78	2.84
21	Justify Action	0.03	-1.26	-1.23	1.29
4	Patient Advocacy	0.03	-0.41	-0.38	0.44
9	Chars of GP	0.03	0.03	0.06	0.00
34	Diagnostic Algorithms	0.03	0.03	0.06	0.00
19	Chars of Patient	0.03	0.34	0.37	-0.31
11	HDC	0.03	0.85	0.88	-0.82
35	Patient Advocacy Groups	0.03	0.85	0.88	-0.82
8	GP's Clin Exp	-0.32	-2.81	-3.13	2.49
23	Patient Press_UR	-0.32	-0.41	-0.73	0.09
26	Tech Tools	-0.32	0.03	-0.29	-0.35
22	Patient Press_R	-0.32	0.34	0.02	-0.66
13	Clin Setting	-0.32	0.60	0.28	-0.92
16	Ramification of Dx	-0.32	0.60	0.28	-0.92
15	Ext FB Med	-0.70	0.03	-0.67	-0.73
33	Closeness of Relatnship	-0.70	0.03	-0.67	-0.73
39	Tx Available	-0.70	0.03	-0.67	-0.73
37	Fear of Uncertainty	-0.70	1.44	0.74	-2.14
27	Know Local Conds	-1.17	-1.26	-2.43	0.09
31	Expectns of Drs	-1.17	0.60	-0.57	-1.77
7	EBM	-1.84	-4.47	-6.31	2.63
5	Legal	-1.84	0.34	-1.50	-2.18
2	Exam	-2.89	-1.26	-4.15	-1.63
36	Need for Outcome	-2.89	-0.41	-3.30	-2.48
1	History	-4.35	-4.47	-8.82	0.12
3	Ix	-4.35	-2.81	-7.16	-1.54
14	Time	-4.35	-2.81	-7.16	-1.54

---------- group=OccMed ----------

Item	Question	desirable	important	impact	desirable_ minus_important
23	Patient Press_UR	3.54	-0.14	3.40	3.68
30	Ext Incentives	2.34	0.93	3.27	1.41
24	Desire to Please	1.33	-0.03	1.30	1.36
35	Patient Advocacy Groups	1.33	-0.03	1.30	1.36
17	Media	1.33	0.50	1.83	0.83
29	Business	1.08	-0.25	0.83	1.33
28	Funder	1.08	0.08	1.16	1.00
10	Medico-legal	0.88	-0.51	0.37	1.39
11	HDC	0.72	-0.38	0.34	1.10
13	Clin Setting	0.72	0.46	1.18	0.26
6	Bureaucratic	0.72	0.83	1.55	-0.11
18	Circs of Patient	0.58	-0.38	0.20	0.96
20	Patient Expectns	0.58	-0.14	0.44	0.72
22	Patient Press_R	0.58	-0.03	0.55	0.61
9	Chars of GP	0.45	-0.66	-0.21	1.11
4	Patient Advocacy	0.45	-0.38	0.07	0.83
19	Chars of Patient	0.45	-0.25	0.20	0.70
39	Tx Available	0.45	0.39	0.84	0.06
38	Context of Dx	0.32	-0.38	-0.06	0.70
33	Closeness of Relatnship	0.32	0.18	0.50	0.14
25	NHS	0.32	0.74	1.06	-0.42
16	Ramification of Dx	0.20	-0.83	-0.63	1.03
34	Diagnostic Algorithms	0.20	-0.25	-0.05	0.45
37	Fear of Uncertainty	0.20	-0.24	-0.04	0.44
5	Legal	0.20	1.03	1.23	-0.83
14	Time	0.15	-0.14	0.01	0.29
12	Imp for Comm of Dx	0.08	1.03	1.11	-0.95
21	Justify Action	-0.04	0.18	0.14	-0.22
36	Need for Outcome	-0.55	-1.24	-1.79	0.69
32	What Others Think	-0.55	-0.10	-0.65	-0.45
31	Expectns of Drs	-0.95	-0.03	-0.98	-0.92
26	Tech Tools	-1.08	0.83	-0.25	-1.91
8	GP's Clin Exp	-1.22	-0.03	-1.25	-1.19
3	Ix	-1.97	-0.25	-2.22	-1.72
15	Ext FB Med	-2.03	-0.14	-2.17	-1.89
27	Know Local Conds	-2.15	0.18	-1.97	-2.33
2	Exam	-3.08	-0.38	-3.46	-2.70
7	EBM	-3.40	0.61	-2.79	-4.01
1	History	-6.24	-0.83	-7.07	-5.41

Desirability

13

---------- group=Patient ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.19	1.01	2.20	0.18
28	Funder	0.72	0.77	1.49	-0.05
23	Patient Press_UR	0.71	0.55	1.26	0.16
25	NHS	0.53	0.49	1.02	0.04
17	Media	0.50	0.34	0.84	0.16
10	Medico-legal	0.50	0.36	0.86	0.14
24	Desire to Please	0.48	0.48	0.96	0.00
38	Context of Dx	0.48	0.54	1.02	-0.06
29	Business	0.46	0.47	0.93	-0.01
32	What Others Think	0.46	0.54	1.00	-0.08
34	Diagnostic Algorithms	0.43	0.49	0.92	-0.06
12	Imp for Comm of Dx	0.37	0.34	0.71	0.03
20	Patient Expectns	0.36	0.38	0.74	-0.02
6	Bureaucratic	0.31	0.15	0.46	0.16
37	Fear of Uncertainty	0.28	0.02	0.30	0.26

13	Clin Setting	0.27	0.25	0.52	0.02
22	Patient Press_R	0.26	0.15	0.41	0.11
31	Expectns of Drs	0.21	0.25	0.46	-0.04
11	HDC	0.20	0.25	0.45	-0.05
18	Circs of Patient	0.18	0.14	0.32	0.04
19	Chars of Patient	0.18	0.20	0.38	-0.02
5	Legal	0.16	0.01	0.17	0.15
35	Patient Advocacy Groups	0.09	0.14	0.23	-0.05
33	Closeness of Relatnship	0.08	0.12	0.20	-0.04
9	Chars of GP	0.07	0.03	0.10	0.04
16	Ramification of Dx	-0.01	-0.09	-0.10	0.08
21	Justify Action	-0.06	-0.17	-0.23	0.11
39	Tx Available	-0.15	-0.12	-0.27	-0.03
26	Tech Tools	-0.26	-0.10	-0.36	-0.16
14	Time	-0.42	-0.42	-0.84	0.00
27	Know Local Conds	-0.53	-0.45	-0.98	-0.08
4	Patient Advocacy	-0.53	-0.38	-0.91	-0.15
15	Ext FB Med	-0.64	-0.46	-1.10	-0.18
36	Need for Outcome	-0.75	-0.80	-1.55	0.05
7	EBM	-0.76	-0.71	-1.47	-0.05
8	GP's Clin Exp	-0.91	-0.93	-1.84	0.02
1	History	-1.31	-1.27	-2.58	-0.04
2	Exam	-1.48	-1.22	-2.70	-0.26
3	Ix	-1.65	-1.36	-3.01	-0.29

---------- group=RACCS1 ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.22	1.13	2.35	0.09
23	Patient Press_UR	0.83	0.57	1.40	0.26
28	Funder	0.65	0.61	1.26	0.04
10	Medico-legal	0.53	0.42	0.95	0.11
38	Context of Dx	0.53	0.49	1.02	0.04
25	NHS	0.52	0.43	0.95	0.09
29	Business	0.51	0.47	0.98	0.04
32	What Others Think	0.49	0.47	0.96	0.02
17	Media	0.47	0.42	0.89	0.05
24	Desire to Please	0.47	0.48	0.95	-0.01
12	Imp for Comm of Dx	0.42	0.32	0.74	0.10
34	Diagnostic Algorithms	0.41	0.38	0.79	0.03
20	Patient Expectns	0.34	0.36	0.70	-0.02
13	Clin Setting	0.32	0.25	0.57	0.07
22	Patient Press_R	0.32	0.30	0.62	0.02
37	Fear of Uncertainty	0.28	0.02	0.30	0.26
6	Bureaucratic	0.26	0.10	0.36	0.16
31	Expectns of Drs	0.22	0.21	0.43	0.01
19	Chars of Patient	0.22	0.25	0.47	-0.03
18	Circs of Patient	0.15	0.08	0.23	0.07
5	Legal	0.10	-0.03	0.07	0.13
33	Closeness of Relatnship	0.08	0.10	0.18	-0.02
35	Patient Advocacy Groups	0.08	0.17	0.25	-0.09
9	Chars of GP	0.03	0.01	0.04	0.02
16	Ramification of Dx	-0.02	-0.22	-0.24	0.20
11	HDC	-0.04	0.03	-0.01	-0.07
39	Tx Available	-0.13	-0.23	-0.36	0.10
21	Justify Action	-0.16	-0.12	-0.28	-0.04
26	Tech Tools	-0.28	-0.08	-0.36	-0.20
14	Time	-0.37	-0.32	-0.69	-0.05
27	Know Local Conds	-0.48	-0.35	-0.83	-0.13
15	Ext FB Med	-0.62	-0.58	-1.20	-0.04
4	Patient Advocacy	-0.68	-0.52	-1.20	-0.16
7	EBM	-0.89	-0.75	-1.64	-0.14
36	Need for Outcome	-0.95	-0.87	-1.82	-0.08
8	GP's Clin Exp	-1.09	-0.84	-1.93	-0.25
1	History	-1.16	-1.04	-2.20	-0.12
2	Exam	-1.18	-0.97	-2.15	-0.21
3	Ix	-1.39	-1.18	-2.57	-0.21

---------- group=RACCS2 ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.24	1.10	2.34	0.14
29	Business	0.68	0.55	1.23	0.13
23	Patient Press_UR	0.65	0.53	1.18	0.12
28	Funder	0.59	0.58	1.17	0.01
10	Medico-legal	0.56	0.36	0.92	0.20
32	What Others Think	0.53	0.52	1.05	0.01
25	NHS	0.52	0.43	0.95	0.09
38	Context of Dx	0.51	0.48	0.99	0.03
34	Diagnostic Algorithms	0.49	0.36	0.85	0.13
12	Imp for Comm of Dx	0.44	0.32	0.76	0.12
17	Media	0.42	0.34	0.76	0.08
24	Desire to Please	0.41	0.43	0.84	-0.02
20	Patient Expectns	0.33	0.32	0.65	0.01
37	Fear of Uncertainty	0.28	0.01	0.29	0.27
22	Patient Press_R	0.28	0.33	0.61	-0.05
19	Chars of Patient	0.27	0.28	0.55	-0.01
31	Expectns of Drs	0.27	0.29	0.56	-0.02
6	Bureaucratic	0.26	0.01	0.27	0.25

---------- group=RACCS2 (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
5	Legal	0.25	-0.03	0.22	0.28
13	Clin Setting	0.21	0.16	0.37	0.05
9	Chars of GP	0.14	0.06	0.20	0.08
33	Closeness of Relatnship	0.14	0.19	0.33	-0.05
18	Circs of Patient	0.12	0.10	0.22	0.02
11	HDC	0.12	0.13	0.25	-0.01
35	Patient Advocacy Groups	0.03	0.19	0.22	-0.16
16	Ramification of Dx	-0.03	-0.20	-0.23	0.17
21	Justify Action	-0.12	-0.15	-0.27	0.03
39	Tx Available	-0.21	-0.22	-0.43	0.01
14	Time	-0.31	-0.39	-0.70	0.08
26	Tech Tools	-0.32	-0.11	-0.43	-0.21
27	Know Local Conds	-0.49	-0.24	-0.73	-0.25
4	Patient Advocacy	-0.51	-0.44	-0.95	-0.07
15	Ext FB Med	-0.70	-0.47	-1.17	-0.23
7	EBM	-0.80	-0.62	-1.42	-0.18
36	Need for Outcome	-0.84	-0.80	-1.64	-0.04
8	GP's Clin Exp	-0.96	-0.76	-1.72	-0.20
1	History	-1.30	-1.14	-2.44	-0.16

2	Exam	-1.47	-1.21	-2.68	-0.26
3	Ix	-1.67	-1.30	-2.97	-0.37

group=ACCMA

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	2.00	1.78	3.78	0.22
12	Imp for Comm of Dx	0.25	1.33	1.58	-1.08
26	Tech Tools	-0.24	1.33	1.09	-1.57
17	Media	1.32	1.11	2.43	0.21
32	What Others Think	0.17	1.01	1.18	-0.84
29	Business	1.14	0.90	2.04	0.24
11	HDC	0.48	0.69	1.17	-0.21
25	NHS	0.17	0.58	0.75	-0.41
35	Patient Advocacy Groups	1.05	0.47	1.52	0.58
39	Tx Available	0.56	0.47	1.03	0.09
34	Diagnostic Algorithms	0.25	0.47	0.72	-0.22
28	Funder	1.23	0.36	1.59	0.87
13	Clin Setting	0.09	0.25	0.34	-0.16
31	Expectns of Drs	-0.49	0.25	-0.24	-0.74
38	Context of Dx	0.97	0.13	1.10	0.84
10	Medico-legal	0.40	0.13	0.53	0.27
6	Bureaucratic	0.32	0.13	0.45	0.19
5	Legal	0.01	0.13	0.14	-0.12
7	EBM	-1.29	0.13	-1.16	-1.42
23	Patient Press_UR	0.56	0.01	0.57	0.55
21	Justify Action	-0.15	0.01	-0.14	-0.16
37	Fear of Uncertainty	0.17	-0.11	0.06	0.28
4	Patient Advocacy	0.01	-0.11	-0.10	0.12
24	Desire to Please	0.48	-0.23	0.25	0.71
20	Patient Expectns	0.40	-0.23	0.17	0.63
22	Patient Press_R	0.09	-0.23	-0.14	0.32
27	Know Local Conds	-1.18	-0.23	-1.41	-0.95
16	Ramification of Dx	-0.10	-0.35	-0.45	0.25
15	Ext FB Med	-0.58	-0.35	-0.93	-0.23
18	Circs of Patient	0.01	-0.48	-0.47	0.49
19	Chars of Patient	0.25	-0.61	-0.36	0.86
33	Closeness of Relatnship	0.01	-0.75	-0.74	0.76
36	Need for Outcome	-0.58	-0.75	-1.33	0.17
3	Ix	-1.29	-0.75	-2.04	-0.54
2	Exam	-1.82	-0.75	-2.57	-1.07
9	Chars of GP	0.17	-0.89	-0.72	1.06
14	Time	-0.32	-1.03	-1.35	0.71
8	GP's Clin Exp	-1.18	-1.69	-2.87	0.51
1	History	-3.30	-2.12	-5.42	-1.18

group=ACCSMT

Item	Question	desirable	important	impact	desirable_ minus_important
35	Patient Advocacy Groups	4.58	2.28	6.86	2.30
30	Ext Incentives	6.55	1.78	8.33	4.77
13	Clin Setting	1.73	1.78	3.51	-0.05
17	Media	4.58	1.38	5.96	3.20
23	Patient Press_UR	2.84	1.38	4.22	1.46
10	Medico-legal	1.73	1.38	3.11	0.35
25	NHS	4.58	1.02	5.60	3.56
24	Desire to Please	2.84	1.02	3.86	1.82
12	Imp for Comm of Dx	1.73	1.02	2.75	0.71
38	Context of Dx	2.84	0.69	3.53	2.15
4	Patient Advocacy	1.73	0.69	2.42	1.04
39	Tx Available	1.73	0.69	2.42	1.04
32	What Others Think	-0.25	0.69	0.44	-0.94
21	Justify Action	-1.13	0.69	-0.44	-1.82
31	Expectns of Drs	-1.13	0.69	-0.44	-1.82
28	Funder	2.84	0.37	3.21	2.47
34	Diagnostic Algorithms	0.89	0.37	1.26	0.52
37	Fear of Uncertainty	0.89	0.37	1.26	0.52
11	HDC	-0.25	0.37	0.12	-0.62
26	Tech Tools	-1.59	0.37	-1.22	-1.96
16	Ramification of Dx	-0.25	0.05	-0.20	-0.30
22	Patient Press_R	-0.25	0.05	-0.20	-0.30
18	Circs of Patient	-0.70	0.05	-0.65	-0.75
5	Legal	-1.13	0.05	-1.08	-1.18
6	Bureaucratic	0.89	-0.30	0.59	1.19
29	Business	0.89	-0.30	0.59	1.19
14	Time	-0.25	-0.30	-0.55	0.05
19	Chars of Patient	-1.59	-0.30	-1.89	-1.29
20	Patient Expectns	-0.70	-0.68	-1.38	-0.02
27	Know Local Conds	-1.59	-0.68	-2.27	-0.91
15	Ext FB Med	-2.11	-0.68	-2.79	-1.43
9	Chars of GP	-0.70	-1.12	-1.82	0.42
33	Closeness of Relatnship	-1.59	-1.12	-2.71	-0.47
3	Ix	-2.72	-1.12	-3.84	-1.60
36	Need for Outcome	-2.72	-1.12	-3.84	-1.60
2	Exam	-3.57	-2.42	-5.99	-1.15
1	History	-6.69	-2.42	-9.11	-4.27
8	GP's Clin Exp	-2.72	-3.34	-6.06	0.62
7	EBM	-10.26	-3.34	-13.60	-6.92

group=CM

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.01	0.57	1.58	0.44
35	Patient Advocacy Groups	0.65	0.44	1.09	0.21
25	NHS	0.92	0.43	1.35	0.49
17	Media	0.56	0.43	0.99	0.13
28	Funder	0.90	0.40	1.30	0.50
32	What Others Think	0.42	0.37	0.79	0.05
29	Business	0.86	0.31	1.17	0.55
24	Desire to Please	0.99	0.28	1.27	0.71
31	Expectns of Drs	-0.02	0.28	0.26	-0.30
20	Patient Expectns	0.69	0.27	0.96	0.42
13	Clin Setting	0.41	0.24	0.65	0.17
12	Imp for Comm of Dx	0.08	0.21	0.29	-0.13
26	Tech Tools	-0.40	0.21	-0.19	-0.61
39	Tx Available	0.09	0.16	0.25	-0.07
11	HDC	0.18	0.15	0.33	0.03
19	Chars of Patient	0.38	0.13	0.51	0.25
10	Medico-legal	0.43	0.12	0.55	0.31
18	Circs of Patient	0.40	0.09	0.49	0.31

group=CM
(continued)

Item	Question	desirable	important	impact	desirable_ minus_important
38	Context of Dx	0.34	0.09	0.43	0.25
34	Diagnostic Algorithms	-0.43	0.09	-0.34	-0.52
5	Legal	-0.28	0.08	-0.20	-0.36
37	Fear of Uncertainty	0.22	0.07	0.29	0.15
23	Patient Press_UR	0.99	0.04	1.03	0.95
9	Chars of GP	0.28	0.03	0.31	0.25
6	Bureaucratic	-0.44	0.03	-0.41	-0.47
22	Patient Press_R	0.61	-0.01	0.60	0.62
27	Know Local Conds	-0.58	-0.04	-0.62	-0.54
33	Closeness of Relatnship	0.32	-0.10	0.22	0.42
4	Patient Advocacy	0.29	-0.12	0.17	0.41
21	Justify Action	-0.08	-0.13	-0.21	0.05
14	Time	-0.36	-0.17	-0.53	-0.19
16	Ramification of Dx	0.17	-0.30	-0.13	0.47
7	EBM	-1.38	-0.30	-1.68	-1.08
36	Need for Outcome	-0.59	-0.39	-0.98	-0.20
15	Ext FB Med	-0.82	-0.39	-1.21	-0.43
8	GP's Clin Exp	-0.78	-0.46	-1.24	-0.32
1	History	-1.66	-0.98	-2.64	-0.68
2	Exam	-2.30	-1.05	-3.35	-1.25
3	Ix	-2.09	-1.08	-3.17	-1.01

group=DRSL

Item	Question	desirable	important	impact	desirable_ minus_important
32	What Others Think	0.09	0.97	1.06	-0.88
17	Media	0.55	0.89	1.44	-0.34
30	Ext Incentives	3.46	0.81	4.27	2.65
12	Imp for Comm of Dx	1.27	0.81	2.08	0.46
31	Expectns of Drs	-0.11	0.81	0.70	-0.92
39	Tx Available	0.83	0.73	1.56	0.10
23	Patient Press_UR	3.46	0.66	4.12	2.80
25	NHS	3.46	0.59	4.05	2.87
29	Business	2.28	0.59	2.87	1.69
35	Patient Advocacy Groups	2.28	0.53	2.81	1.75
13	Clin Setting	1.27	0.53	1.80	0.74
11	HDC	1.02	0.46	1.48	0.56
28	Funder	3.46	0.40	3.86	3.06
10	Medico-legal	1.02	0.33	1.35	0.69
5	Legal	0.34	0.27	0.61	0.07
34	Diagnostic Algorithms	-0.11	0.21	0.10	-0.32
6	Bureaucratic	-0.18	0.21	0.03	-0.39
24	Desire to Please	1.02	0.14	1.16	0.88
21	Justify Action	-0.18	0.14	-0.04	-0.32
26	Tech Tools	-1.06	0.14	-0.92	-1.20
20	Patient Expectns	1.02	0.08	1.10	0.94
22	Patient Press_R	0.16	-0.05	0.11	0.21
37	Fear of Uncertainty	0.02	-0.05	-0.03	0.07
33	Closeness of Relatnship	-0.11	-0.05	-0.16	-0.06
7	EBM	-1.67	-0.05	-1.72	-1.62
14	Time	0.02	-0.12	-0.10	0.14
36	Need for Outcome	-0.71	-0.12	-0.83	-0.59
15	Ext FB Med	-0.75	-0.12	-0.87	-0.63
4	Patient Advocacy	0.68	-0.25	0.43	0.93
16	Ramification of Dx	0.02	-0.25	-0.23	0.27
38	Context of Dx	0.34	-0.40	-0.06	0.74
27	Know Local Conds	-1.06	-0.40	-1.46	-0.66
19	Chars of Patient	0.16	-0.47	-0.31	0.63
18	Circs of Patient	0.55	-0.55	0.00	1.10
9	Chars of GP	-0.56	-0.63	-1.19	0.07
8	GP's Clin Exp	-1.27	-1.21	-2.48	-0.06
3	Ix	-2.18	-1.60	-3.78	-0.58
1	History	-2.18	-1.90	-4.08	-0.28
2	Exam	-2.79	-2.08	-4.87	-0.71

group=Delphi2

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	4.41	4.35	8.76	0.06
29	Business	2.50	2.46	4.96	0.04
28	Funder	2.08	2.14	4.22	-0.06
26	Tech Tools	-0.81	1.43	0.62	-2.24
35	Patient Advocacy Groups	0.82	1.24	2.06	-0.42
5	Legal	0.10	1.15	1.25	-1.05
25	NHS	2.50	1.06	3.56	1.44
17	Media	1.29	1.06	2.35	0.23
32	What Others Think	0.55	0.89	1.44	-0.34
37	Fear of Uncertainty	1.35	0.80	2.15	0.55
39	Tx Available	1.35	0.80	2.15	0.55
23	Patient Press_UR	1.78	0.71	2.49	1.07
24	Desire to Please	1.35	0.71	2.06	0.64
6	Bureaucratic	0.77	0.71	1.48	0.06
34	Diagnostic Algorithms	-0.13	0.71	0.58	-0.84
38	Context of Dx	2.08	0.62	2.70	1.46
11	HDC	0.36	0.62	0.98	-0.26
12	Imp for Comm of Dx	-0.74	0.62	-0.12	-1.36
18	Circs of Patient	0.38	0.27	0.65	0.11
31	Expectns of Drs	-0.13	0.27	0.14	-0.40
13	Clin Setting	0.77	0.09	0.86	0.68
21	Justify Action	0.28	0.09	0.37	0.19
16	Ramification of Dx	0.36	-0.20	0.16	0.56
15	Ext FB Med	-1.18	-0.20	-1.38	-0.98
14	Time	0.77	-0.30	0.47	1.07
22	Patient Press_R	0.27	-0.30	-0.03	0.57
10	Medico-legal	-0.13	-0.30	-0.43	0.17
33	Closeness of Relatnship	-0.43	-0.30	-0.73	-0.13
19	Chars of Patient	-0.61	-0.30	-0.91	-0.31
4	Patient Advocacy	-0.68	-0.30	-0.98	-0.38
20	Patient Expectns	-0.55	-0.51	-1.06	-0.04
36	Need for Outcome	-0.48	-0.73	-1.21	0.25
9	Chars of GP	-0.61	-1.32	-1.93	0.71
7	EBM	-2.76	-1.85	-4.61	-0.91
3	Ix	-2.04	-2.05	-4.09	0.01

Importance

17

group=Delphi2
(continued)

Item	Question	desirable	important	impact	desirable_ minus_important

27	Know Local Conds	-2.28	-2.14	-4.42	-0.14
8	GP's Clin Exp	-1.83	-2.30	-4.13	0.47
2	Exam	-2.76	-3.73	-6.49	0.97
1	History	-3.56	-5.95	-9.51	2.39

group=DipOCCMed

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.85	1.69	3.54	0.16
26	Tech Tools	-0.09	1.16	1.07	-1.25
17	Media	0.97	0.80	1.77	0.17
35	Patient Advocacy Groups	0.57	0.75	1.32	-0.18
12	Imp for Comm of Dx	0.11	0.70	0.81	-0.59
13	Clin Setting	0.54	0.64	1.18	-0.10
34	Diagnostic Algorithms	0.51	0.64	1.15	-0.13
31	Expectns of Drs	-0.09	0.47	0.38	-0.56
38	Context of Dx	0.70	0.46	1.16	0.24
28	Funder	0.93	0.37	1.30	0.56
32	What Others Think	0.06	0.37	0.43	-0.31
29	Business	0.42	0.32	0.74	0.10
39	Tx Available	0.36	0.30	0.66	0.06
25	NHS	0.39	0.26	0.65	0.13
5	Legal	0.02	0.19	0.21	-0.17
11	HDC	0.14	0.16	0.30	-0.02
23	Patient Press_UR	0.77	0.11	0.88	0.66
24	Desire to Please	0.42	0.01	0.43	0.41
33	Closeness of Relatnship	-0.07	0.01	-0.06	-0.08
6	Bureaucratic	0.23	-0.02	0.21	0.25
7	EBM	-1.12	-0.09	-1.21	-1.03
37	Fear of Uncertainty	0.14	-0.10	0.04	0.24
16	Ramification of Dx	-0.07	-0.12	-0.19	0.05
15	Ext FB Med	-0.52	-0.15	-0.67	-0.37
18	Circs of Patient	0.11	-0.20	-0.09	0.31
27	Know Local Conds	-0.81	-0.20	-1.01	-0.61
20	Patient Expectns	0.26	-0.23	0.03	0.49
22	Patient Press_R	0.23	-0.23	0.00	0.46
36	Need for Outcome	-0.26	-0.30	-0.56	0.04
10	Medico-legal	0.02	-0.34	-0.32	0.36
9	Chars of GP	-0.16	-0.34	-0.50	0.18
19	Chars of Patient	0.16	-0.40	-0.24	0.56
21	Justify Action	-0.16	-0.47	-0.63	0.31
4	Patient Advocacy	-0.26	-0.50	-0.76	0.24
3	Ix	-0.96	-0.56	-1.52	-0.40
14	Time	0.00	-0.80	-0.80	0.80
2	Exam	-1.56	-0.80	-2.36	-0.76
8	GP's Clin Exp	-1.21	-1.34	-2.55	0.13
1	History	-2.55	-2.20	-4.75	-0.35

group=GP

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.71	1.95	3.66	-0.24
28	Funder	0.89	0.94	1.83	-0.05
17	Media	1.23	0.92	2.15	0.31
26	Tech Tools	0.05	0.86	0.91	-0.81
34	Diagnostic Algorithms	0.58	0.79	1.37	-0.21
29	Business	0.70	0.78	1.48	-0.08
35	Patient Advocacy Groups	0.40	0.75	1.15	-0.35
38	Context of Dx	0.77	0.71	1.48	0.06
25	NHS	0.72	0.68	1.40	0.04
12	Imp for Comm of Dx	0.29	0.63	0.92	-0.34
39	Tx Available	0.33	0.59	0.92	-0.26
32	What Others Think	0.19	0.48	0.67	-0.29
23	Patient Press_UR	0.89	0.46	1.35	0.43
31	Expectns of Drs	-0.09	0.32	0.23	-0.41
6	Bureaucratic	0.54	0.31	0.85	0.23
37	Fear of Uncertainty	0.46	0.30	0.76	0.16
24	Desire to Please	0.42	0.30	0.72	0.12
11	HDC	0.45	0.25	0.70	0.20
5	Legal	0.09	0.18	0.27	-0.09
13	Clin Setting	0.26	0.05	0.31	0.21
16	Ramification of Dx	0.22	-0.06	0.16	0.28
33	Closeness of Relatnship	-0.14	-0.07	-0.21	-0.07
20	Patient Expectns	0.06	-0.08	-0.02	0.14
18	Circs of Patient	0.17	-0.09	0.08	0.26
22	Patient Press_R	0.12	-0.11	0.01	0.23
21	Justify Action	0.16	-0.18	-0.02	0.34
9	Chars of GP	-0.17	-0.26	-0.43	0.09
10	Medico-legal	0.45	-0.30	0.15	0.75
14	Time	0.11	-0.36	-0.25	0.47
19	Chars of Patient	-0.26	-0.42	-0.68	0.16
15	Ext FB Med	-0.56	-0.47	-1.03	-0.09
4	Patient Advocacy	-0.71	-0.55	-1.26	-0.16
27	Know Local Conds	-0.88	-0.55	-1.43	-0.33
36	Need for Outcome	-0.36	-0.59	-0.95	0.23
7	EBM	-1.29	-0.74	-2.03	-0.55
3	Ix	-1.34	-0.87	-2.21	-0.47
2	Exam	-1.97	-1.41	-3.38	-0.56
8	GP's Clin Exp	-1.39	-1.82	-3.21	0.43
1	History	-3.06	-3.30	-6.36	0.24

group=GPACC

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.72	1.79	3.51	-0.07
26	Tech Tools	-0.01	0.94	0.93	-0.95
35	Patient Advocacy Groups	0.31	0.76	1.07	-0.45
17	Media	1.08	0.75	1.83	0.33
28	Funder	0.94	0.74	1.68	0.20
29	Business	0.76	0.69	1.45	0.07

group=GPACC
(continued)

Item	Question	desirable	important	impact	desirable_ minus_important
38	Context of Dx	0.60	0.52	1.12	0.08
12	Imp for Comm of Dx	0.18	0.50	0.68	-0.32
25	NHS	0.63	0.46	1.09	0.17
39	Tx Available	0.28	0.45	0.73	-0.17

34	Diagnostic Algorithms	0.30	0.44	0.74	-0.14
32	What Others Think	0.29	0.41	0.70	-0.12
23	Patient Press_UR	1.02	0.37	1.39	0.65
24	Desire to Please	0.52	0.27	0.79	0.25
13	Clin Setting	0.40	0.25	0.65	0.15
31	Expectns of Drs	-0.14	0.24	0.10	-0.38
37	Fear of Uncertainty	0.35	0.19	0.54	0.16
6	Bureaucratic	0.43	0.14	0.57	0.29
11	HDC	0.39	0.09	0.48	0.30
20	Patient Expectns	0.12	0.02	0.14	0.10
18	Circs of Patient	0.10	0.02	0.12	0.08
9	Chars of GP	0.02	-0.03	-0.01	0.05
22	Patient Press_R	0.14	-0.04	0.10	0.18
33	Closeness of Relatnship	-0.11	-0.04	-0.15	-0.07
14	Time	0.24	-0.08	0.16	0.32
21	Justify Action	0.20	-0.08	0.12	0.28
16	Ramification of Dx	0.21	-0.12	0.09	0.33
19	Chars of Patient	-0.09	-0.14	-0.23	0.05
5	Legal	-0.08	-0.21	-0.29	0.13
27	Know Local Conds	-0.87	-0.28	-1.15	-0.59
15	Ext FB Med	-0.63	-0.39	-1.02	-0.24
36	Need for Outcome	-0.15	-0.40	-0.55	0.25
10	Medico-legal	0.42	-0.42	0.00	0.84
4	Patient Advocacy	-0.57	-0.53	-1.10	-0.04
3	Ix	-1.35	-0.62	-1.97	-0.73
7	EBM	-1.59	-0.91	-2.50	-0.68
2	Exam	-2.05	-1.30	-3.35	-0.75
8	GP's Clin Exp	-1.26	-1.39	-2.65	0.13
1	History	-2.77	-3.06	-5.83	0.29

---------- group=MAPWRGPDI ----------

Item	Question	desirable	important	impact	desirable_ minus_important
28	Funder	3.65	1.58	5.23	2.07
25	NHS	1.67	1.37	3.04	0.30
12	Imp for Comm of Dx	0.10	1.37	1.47	-1.27
30	Ext Incentives	4.90	1.16	6.06	3.74
10	Medico-legal	3.65	1.16	4.81	2.49
24	Desire to Please	1.67	1.16	2.83	0.51
20	Patient Expectns	1.22	0.94	2.16	0.28
21	Justify Action	1.22	0.94	2.16	0.28
29	Business	1.22	0.94	2.16	0.28
38	Context of Dx	1.22	0.94	2.16	0.28
13	Clin Setting	0.81	0.94	1.75	-0.13
23	Patient Press_UR	0.81	0.94	1.75	-0.13
11	HDC	0.44	0.94	1.38	-0.50
5	Legal	0.10	0.94	1.04	-0.84
35	Patient Advocacy Groups	0.10	0.94	1.04	-0.84
17	Media	0.81	0.69	1.50	0.12
37	Fear of Uncertainty	0.44	0.69	1.13	-0.25
9	Chars of GP	0.10	0.69	0.79	-0.59
22	Patient Press_R	0.81	0.39	1.20	0.42
18	Circs of Patient	0.81	0.04	0.85	0.77
19	Chars of Patient	0.81	0.04	0.85	0.77
33	Closeness of Relatnship	-0.53	0.04	-0.49	-0.57
39	Tx Available	-0.53	0.04	-0.49	-0.57
31	Expectns of Drs	-0.85	0.04	-0.81	-0.89
15	Ext FB Med	0.10	-0.37	-0.27	0.47
4	Patient Advocacy	-0.53	-0.37	-0.90	-0.16
32	What Others Think	-0.85	-0.37	-1.22	-0.48
36	Need for Outcome	-1.60	-0.37	-1.97	-1.23
3	Ix	-3.27	-0.37	-3.64	-2.90
6	Bureaucratic	1.22	-0.82	0.40	2.04
16	Ramification of Dx	0.81	-0.82	-0.01	1.63
34	Diagnostic Algorithms	0.44	-0.82	-0.38	1.26
26	Tech Tools	-2.07	-0.82	-2.89	-1.25
14	Time	0.44	-1.83	-1.39	2.27
2	Exam	-3.27	-1.83	-5.10	-1.44
7	EBM	-3.27	-1.83	-5.10	-1.44
27	Know Local Conds	-1.60	-2.46	-4.06	0.86
8	GP's Clin Exp	-2.07	-2.46	-4.53	0.39
1	History	-4.15	-3.36	-7.51	-0.79

---------- group=MOH ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	6.38	2.71	9.09	3.67
34	Diagnostic Algorithms	1.64	2.71	4.35	-1.07
29	Business	3.01	2.33	5.34	0.68
6	Bureaucratic	0.26	1.98	2.24	-1.72
5	Legal	-0.48	1.98	1.50	-2.46
23	Patient Press_UR	0.66	1.80	2.46	-1.14
28	Funder	3.01	1.63	4.64	1.38
39	Tx Available	2.27	1.63	3.90	0.64
35	Patient Advocacy Groups	1.64	1.63	3.27	0.01
11	HDC	1.11	1.27	2.38	-0.16
12	Imp for Comm of Dx	0.26	1.27	1.53	-1.01
4	Patient Advocacy	-0.48	1.27	0.79	-1.75
7	EBM	-2.77	1.27	-1.50	-4.04
25	NHS	1.64	1.26	2.90	0.38
17	Media	3.01	0.86	3.87	2.15
13	Clin Setting	-0.48	0.86	0.38	-1.34
26	Tech Tools	-2.24	0.61	-1.63	-2.85
38	Context of Dx	2.27	0.34	2.61	1.93
37	Fear of Uncertainty	1.11	0.34	1.45	0.77
32	What Others Think	-0.48	0.34	-0.14	-0.82
16	Ramification of Dx	-1.29	0.34	-0.95	-1.63
31	Expectns of Drs	-1.29	0.34	-0.95	-1.63
21	Justify Action	1.64	-0.40	1.24	2.04

---------- group=MOH (continued) ----------

Item	Question	desirable	important	impact	desirable_ minus_important
24	Desire to Please	1.64	-0.40	1.24	2.04
20	Patient Expectns	0.26	-0.40	-0.14	0.66
19	Chars of Patient	-0.48	-0.40	-0.88	-0.08
14	Time	0.26	-1.32	-1.06	1.58
9	Chars of GP	-0.11	-1.32	-1.43	1.21
36	Need for Outcome	-0.11	-1.32	-1.43	1.21
33	Closeness of Relatnship	-0.87	-1.32	-2.19	0.45
3	Ix	-2.24	-1.32	-3.56	-0.92
22	Patient Press_R	0.26	-1.81	-1.55	2.07

18	Circs of Patient	-0.11	-1.81	-1.92	1.70
10	Medico-legal	0.26	-2.28	-2.02	2.54
2	Exam	-1.75	-2.28	-4.03	0.53
15	Ext FB Med	-1.75	-2.28	-4.03	0.53
27	Know Local Conds	-2.24	-2.28	-4.52	0.04
8	GP's Clin Exp	-2.77	-2.28	-5.05	-0.49
1	History	-4.26	-5.55	-9.81	1.29

---------- group=MP ----------

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	3.26	3.90	7.16	-0.64
17	Media	3.26	1.88	5.14	1.38
28	Funder	2.08	1.88	3.96	0.20
38	Context of Dx	0.78	1.88	2.66	-1.10
24	Desire to Please	0.78	1.44	2.22	-0.66
37	Fear of Uncertainty	-0.70	1.44	0.74	-2.14
32	What Others Think	0.39	1.12	1.51	-0.73
25	NHS	0.39	0.85	1.24	-0.46
11	HDC	0.03	0.85	0.88	-0.82
35	Patient Advocacy Groups	0.03	0.85	0.88	-0.82
13	Clin Setting	-0.32	0.60	0.28	-0.92
16	Ramification of Dx	-0.32	0.60	0.28	-0.92
31	Expectns of Drs	-1.17	0.60	-0.57	-1.77
18	Circs of Patient	2.08	0.34	2.42	1.74
29	Business	1.30	0.34	1.64	0.96
10	Medico-legal	0.78	0.34	1.12	0.44
19	Chars of Patient	0.03	0.34	0.37	-0.31
22	Patient Press_R	-0.32	0.34	0.02	-0.66
5	Legal	-1.84	0.34	-1.50	-2.18
12	Imp for Comm of Dx	0.78	0.03	0.81	0.75
20	Patient Expectns	0.39	0.03	0.42	0.36
9	Chars of GP	0.03	0.03	0.06	0.00
34	Diagnostic Algorithms	0.03	0.03	0.06	0.00
26	Tech Tools	-0.32	0.03	-0.29	-0.35
15	Ext FB Med	-0.70	0.03	-0.67	-0.73
33	Closeness of Relatnship	-0.70	0.03	-0.67	-0.73
39	Tx Available	-0.70	0.03	-0.67	-0.73
4	Patient Advocacy	0.03	-0.41	-0.38	0.44
23	Patient Press_UR	-0.32	-0.41	-0.73	0.09
36	Need for Outcome	-2.89	-0.41	-3.30	-2.48
21	Justify Action	0.03	-1.26	-1.23	1.29
27	Know Local Conds	-1.17	-1.26	-2.43	0.09
2	Exam	-2.89	-1.26	-4.15	-1.63
6	Bureaucratic	0.03	-2.81	-2.78	2.84
8	GP's Clin Exp	-0.32	-2.81	-3.13	2.49
3	Ix	-4.35	-2.81	-7.16	-1.54
14	Time	-4.35	-2.81	-7.16	-1.54
7	EBM	-1.84	-4.47	-6.31	2.63
1	History	-4.35	-4.47	-8.82	0.12

---------- group=OccMed ----------

Item	Question	desirable	important	impact	desirable_ minus_important
5	Legal	0.20	1.03	1.23	-0.83
12	Imp for Comm of Dx	0.08	1.03	1.11	-0.95
30	Ext Incentives	2.34	0.93	3.27	1.41
6	Bureaucratic	0.72	0.83	1.55	-0.11
26	Tech Tools	-1.08	0.83	-0.25	-1.91
25	NHS	0.32	0.74	1.06	-0.42
7	EBM	-3.40	0.61	-2.79	-4.01
17	Media	1.33	0.50	1.83	0.83
13	Clin Setting	0.72	0.46	1.18	0.26
39	Tx Available	0.45	0.39	0.84	0.06
33	Closeness of Relatnship	0.32	0.18	0.50	0.14
21	Justify Action	-0.04	0.18	0.14	-0.22
27	Know Local Conds	-2.15	0.18	-1.97	-2.33
28	Funder	1.08	0.08	1.16	1.00
24	Desire to Please	1.33	-0.03	1.30	1.36
35	Patient Advocacy Groups	1.33	-0.03	1.30	1.36
22	Patient Press_R	0.58	-0.03	0.55	0.61
31	Expectns of Drs	-0.95	-0.03	-0.98	-0.92
8	GP's Clin Exp	-1.22	-0.03	-1.25	-1.19
32	What Others Think	-0.55	-0.10	-0.65	-0.45
23	Patient Press_UR	3.54	-0.14	3.40	3.68
20	Patient Expectns	0.58	-0.14	0.44	0.72
14	Time	0.15	-0.14	0.01	0.29
15	Ext FB Med	-2.03	-0.14	-2.17	-1.89
37	Fear of Uncertainty	0.20	-0.24	-0.04	0.44
29	Business	1.08	-0.25	0.83	1.33
19	Chars of Patient	0.45	-0.25	0.20	0.70
34	Diagnostic Algorithms	0.20	-0.25	-0.05	0.45
3	Ix	-1.97	-0.25	-2.22	-1.72
11	HDC	0.72	-0.38	0.34	1.10
18	Circs of Patient	0.58	-0.38	0.20	0.96
4	Patient Advocacy	0.45	-0.38	0.07	0.83
38	Context of Dx	0.32	-0.38	-0.06	0.70
2	Exam	-3.08	-0.38	-3.46	-2.70
10	Medico-legal	0.88	-0.51	0.37	1.39
9	Chars of GP	0.45	-0.66	-0.21	1.11
16	Ramification of Dx	0.20	-0.83	-0.63	1.03
1	History	-6.24	-0.83	-7.07	-5.41
36	Need for Outcome	-0.55	-1.24	-1.79	0.69

group=Patient

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.19	1.01	2.20	0.18
28	Funder	0.72	0.77	1.49	-0.05
23	Patient Press_UR	0.71	0.55	1.26	0.16
38	Context of Dx	0.48	0.54	1.02	-0.06
32	What Others Think	0.46	0.54	1.00	-0.08
25	NHS	0.53	0.49	1.02	0.04
34	Diagnostic Algorithms	0.43	0.49	0.92	-0.06
24	Desire to Please	0.48	0.48	0.96	0.00
29	Business	0.46	0.47	0.93	-0.01
20	Patient Expectns	0.36	0.38	0.74	-0.02
10	Medico-legal	0.50	0.36	0.86	0.14
17	Media	0.50	0.34	0.84	0.16
12	Imp for Comm of Dx	0.37	0.34	0.71	0.03
13	Clin Setting	0.27	0.25	0.52	0.02
31	Expectns of Drs	0.21	0.25	0.46	-0.04
11	HDC	0.20	0.25	0.45	-0.05
19	Chars of Patient	0.18	0.20	0.38	-0.02
6	Bureaucratic	0.31	0.15	0.46	0.16
22	Patient Press_R	0.26	0.15	0.41	0.11
18	Circs of Patient	0.18	0.14	0.32	0.04
35	Patient Advocacy Groups	0.09	0.14	0.23	-0.05
33	Closeness of Relatnship	0.08	0.12	0.20	-0.04
9	Chars of GP	0.07	0.03	0.10	0.04
37	Fear of Uncertainty	0.28	0.02	0.30	0.26
5	Legal	0.16	0.01	0.17	0.15
16	Ramification of Dx	-0.01	-0.09	-0.10	0.08
26	Tech Tools	-0.26	-0.10	-0.36	-0.16
39	Tx Available	-0.15	-0.12	-0.27	-0.03
21	Justify Action	-0.06	-0.17	-0.23	0.11
4	Patient Advocacy	-0.53	-0.38	-0.91	-0.15
14	Time	-0.42	-0.42	-0.84	0.00
27	Know Local Conds	-0.53	-0.45	-0.98	-0.08
15	Ext FB Med	-0.64	-0.46	-1.10	-0.18
7	EBM	-0.76	-0.71	-1.47	-0.05
36	Need for Outcome	-0.75	-0.80	-1.55	0.05
8	GP's Clin Exp	-0.91	-0.93	-1.84	0.02
2	Exam	-1.48	-1.22	-2.70	-0.26
1	History	-1.31	-1.27	-2.58	-0.04
3	Ix	-1.65	-1.36	-3.01	-0.29

group=RACCS1

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.22	1.13	2.35	0.09
28	Funder	0.65	0.61	1.26	0.04
23	Patient Press_UR	0.83	0.57	1.40	0.26
38	Context of Dx	0.53	0.49	1.02	0.04
24	Desire to Please	0.47	0.48	0.95	-0.01
29	Business	0.51	0.47	0.98	0.04
32	What Others Think	0.49	0.47	0.96	0.02
25	NHS	0.52	0.43	0.95	0.09
10	Medico-legal	0.53	0.42	0.95	0.11
17	Media	0.47	0.42	0.89	0.05
34	Diagnostic Algorithms	0.41	0.38	0.79	0.03
20	Patient Expectns	0.34	0.36	0.70	-0.02
12	Imp for Comm of Dx	0.42	0.32	0.74	0.10
22	Patient Press_R	0.32	0.30	0.62	0.02
13	Clin Setting	0.32	0.25	0.57	0.07
19	Chars of Patient	0.22	0.25	0.47	-0.03
31	Expectns of Drs	0.22	0.21	0.43	0.01
35	Patient Advocacy Groups	0.08	0.17	0.25	-0.09
6	Bureaucratic	0.26	0.10	0.36	0.16
33	Closeness of Relatnship	0.08	0.10	0.18	-0.02
18	Circs of Patient	0.15	0.08	0.23	0.07
11	HDC	-0.04	0.03	-0.01	-0.07
37	Fear of Uncertainty	0.28	0.02	0.30	0.26
9	Chars of GP	0.03	0.01	0.04	0.02
5	Legal	0.10	-0.03	0.07	0.13
26	Tech Tools	-0.28	-0.08	-0.36	-0.20
21	Justify Action	-0.16	-0.12	-0.28	-0.04
16	Ramification of Dx	-0.02	-0.22	-0.24	0.20
39	Tx Available	-0.13	-0.23	-0.36	0.10
14	Time	-0.37	-0.32	-0.69	-0.05
27	Know Local Conds	-0.48	-0.35	-0.83	-0.13
4	Patient Advocacy	-0.68	-0.52	-1.20	-0.16
15	Ext FB Med	-0.62	-0.58	-1.20	-0.04
7	EBM	-0.89	-0.75	-1.64	-0.14
8	GP's Clin Exp	-1.09	-0.84	-1.93	-0.25
36	Need for Outcome	-0.95	-0.87	-1.82	-0.08
2	Exam	-1.18	-0.97	-2.15	-0.21
1	History	-1.16	-1.04	-2.20	-0.12
3	Ix	-1.39	-1.18	-2.57	-0.21

group=RACCS2

Item	Question	desirable	important	impact	desirable_ minus_important
30	Ext Incentives	1.24	1.10	2.34	0.14
28	Funder	0.59	0.58	1.17	0.01
29	Business	0.68	0.55	1.23	0.13
23	Patient Press_UR	0.65	0.53	1.18	0.12
32	What Others Think	0.53	0.52	1.05	0.01
38	Context of Dx	0.51	0.48	0.99	0.03
25	NHS	0.52	0.43	0.95	0.09
24	Desire to Please	0.41	0.43	0.84	-0.02
10	Medico-legal	0.56	0.36	0.92	0.20
34	Diagnostic Algorithms	0.49	0.36	0.85	0.13
17	Media	0.42	0.34	0.76	0.08
22	Patient Press_R	0.28	0.33	0.61	-0.05
12	Imp for Comm of Dx	0.44	0.32	0.76	0.12
20	Patient Expectns	0.33	0.32	0.65	0.01
31	Expectns of Drs	0.27	0.29	0.56	-0.02
19	Chars of Patient	0.27	0.28	0.55	-0.01
33	Closeness of Relatnship	0.14	0.19	0.33	-0.05
35	Patient Advocacy Groups	0.03	0.19	0.22	-0.16

group=RACCS2 (continued)

Item	Question	desirable	important	impact	desirable_ minus_important
13	Clin Setting	0.21	0.16	0.37	0.05
11	HDC	0.12	0.13	0.25	-0.01
18	Circs of Patient	0.12	0.10	0.22	0.02
9	Chars of GP	0.14	0.06	0.20	0.08
37	Fear of Uncertainty	0.28	0.01	0.29	0.27
6	Bureaucratic	0.26	0.01	0.27	0.25
5	Legal	0.25	-0.03	0.22	0.28
26	Tech Tools	-0.32	-0.11	-0.43	-0.21
21	Justify Action	-0.12	-0.15	-0.27	0.03
16	Ramification of Dx	-0.03	-0.20	-0.23	0.17
39	Tx Available	-0.21	-0.22	-0.43	0.01
27	Know Local Conds	-0.49	-0.24	-0.73	-0.25
14	Time	-0.31	-0.39	-0.70	0.08
4	Patient Advocacy	-0.51	-0.44	-0.95	-0.07
15	Ext FB Med	-0.70	-0.47	-1.17	-0.23
7	EBM	-0.80	-0.62	-1.42	-0.18
8	GP's Clin Exp	-0.96	-0.76	-1.72	-0.20
36	Need for Outcome	-0.84	-0.80	-1.64	-0.04
1	History	-1.30	-1.14	-2.44	-0.16
2	Exam	-1.47	-1.21	-2.68	-0.26
3	Ix	-1.67	-1.30	-2.97	-0.37