

THE UNIVERSITY OF CALGARY

GROUP MEDICINE
AN EXPLORATION OF COLLABORATION
WITHIN MEDICAL GROUPS

by

Peter C. Berger

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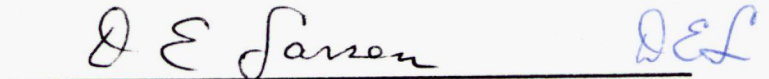
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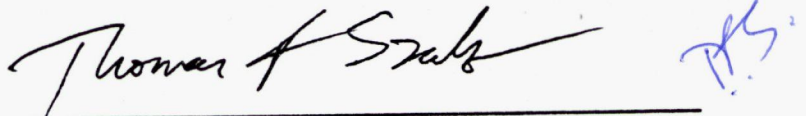
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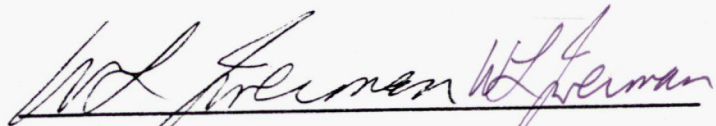
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ABSTRACT

The main purpose of this exploratory study was to find out whether the hypothesized decline of collaboration - especially clinical collaboration - within medical group practices of Southern Alberta actually did happen over the last 15 years. The study was conducted in two stages:

Stage I: With the help of a database program, the composition of Southern Albertan groups, given by their size (number of physicians) and diversity (number of specialties), was documented from the 1973 and 1987 Medical Directories. Analysis of these data reveals that there was a tremendous increase of family practice groups and family physicians practicing in groups. Furthermore, there was an increase of small groups (3-5 physicians) and single-specialty groups, while large groups (≥ 6 physicians) and multi-specialty groups decreased.

Stage II: In the Winter of 1988, a survey was conducted of the group practices found for 1987 (Stage I). A self-administered questionnaire was mailed to 90% of those groups, while 10% were asked for an interview. The survey addressed two issues: the group composition, and the quantity and quality of inter-physician collaboration.

Regarding the second issue, both large groups and multi-specialty groups exhibited more collaboration than small groups and single-specialty groups, whereas no apparent qualitative differences could be detected.

As both stages assessed the composition of the groups, it was possible to interconnect the longitudinal trend of Stage I with the cross-sectional information from Stage II. As the types of group practice that decreased over the last 15 years showed a higher degree of collaboration in 1988, while the increasing groups demonstrated low emphasis on collaboration, it may be concluded that there was a decline of inter-physician collaboration within groups between 1973 and 1987. A discussion of possible underlying reasons for these observations concludes this report.

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1. INTRODUCTION

1.1. Statement of the Problem

The phenomenon of group practice is more than 100 years old. In a paper presented 1971, White said:

The origin of group practice is obscure. The principle probably was prompted by specialization and represents the response to the need of making specialized practice workable and adaptable to the total care of the patient. I would place the beginning in the large German clinics that developed in the latter part of the last century. [1]

In North America, pioneering groups established group medicine as a respectable new form of medical practice early in the 20th century. Following this initiation period, one of the most widely recognized publications recommending group medicine was the 1932 final report of the Committee on the Costs of Medical Care [2]. After a five-year research by its 50 members, the committee came up with a long list of recommendations that - surprisingly - appear to be still relevant to the health care scene today. The recommendations have been summarized in a five-point statement, the first reads:

The Committee recommends that medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organized, preferably around a hospital, for rendering complete home, office, and hospital care. The form of organization should encourage the maintenance of high

standards and the development or preservation of a personal relation between patient and physician. [2]

Although this committee had an economic focus, the whole text (not only the group practice-related parts) appears to be well-balanced, both economic and patient care issues are viewed from both the physician's and the patient's perspective.

As Lyon put it:

(...) the early pioneers of the group practice movement had demonstrated, to their own satisfaction at least, the ability of group practice to provide for the patient a better medical service than solo effort. They had also demonstrated that a mechanism from the financial side could be evolved which was satisfactory to doctors. [3]

The main purpose of the study reported below is to investigate if the well-balanced view of this continually expanding form of practicing medicine was kept alive into the 1980s, or was being threatened by a narrower, one-sided approach indicated by Bryant et al.:

The grouping of medical care is coming none too soon. The improvements it can bring are desperately needed. Its direction, however, is not assured. The most serious challenge is to employ grouping no longer mainly in the quest for efficiency but to restructure the health system. (...) For this, many of its sponsors are unprepared both conceptually and organizationally. They may continue to concentrate on increasing the income and convenience of providers. However, they can make of group practice the central mode of delivery in a better-structured, better-planned, and more responsive health care system. [4]

1.2. Review of the Literature

1.2.1. THE TEAM APPROACH TO GROUP PRACTICE

Probably the most important non-economic facilitator of the group practice movement was the so called "team approach" philosophy. In fact, the "team approach" comprises a number of different physician-centered and patient-centered approaches, e.g. the "pooling of knowledge" or the intention to provide "care for the whole person". Many of the early group practices advocates were convinced that the most important single ingredient in a group practice is teamwork [5].

Wendland and Crawford indicate that much of the rationale for the team concept comes from the realization that fragmented care does not really meet the needs of the individual and that

the team must recognize the principle that its specialist members need to become one functioning unit; just as the patient's life is one organismic whole. [6]

-·| |·-·| |·-·| |·-·| |·-·| |·-·| |·-

It is however important to emphasize that in the medical scene, this philosophy is not meant to be utilized in physician groups exclusively. In fact, the "real" team

approach enthusiasts talk about "interprofessional" or "interdisciplinary" teamwork. The following definition, taken from a recent paper by Drinka and Ray [7], is drawn from several sources:

An interdisciplinary health care team is a functional unit [8, 9] with common goals [10] composed of individuals with varied and specialized training [8], who utilize interdependent collaboration [9, 10] to provide services to patients and their caregiving system [8].

However, in most modern (and ancient?) societies, this concept of a democratic team of different professions (physicians, nurses, social workers, therapists, etc.) never really got established on a community-practice level. Although it is not the focus of this thesis to investigate this issue, a very brief excursion is necessary to round out the discussion about the team approach to medicine. Based on an article by Peeples and Francis [11] and a number of other publications [12, 13, 14, 15, 16, 17, 18], the following list of socio-psychological obstacles to the functioning of interprofessional health teams could be identified:

- **Occupational Gaps:** educational separation, lack of coordination on the educational level; emphasis on the hierarchical structure of the health professions; differentials between attitudes, goals, technology, tasks and - maybe most importantly - between the status of those tasks.

■ **Power Differentials:** the physician as the "natural" leader of the team; the "Florence Nightingale Stereotype" of the nurse as the physician's handmaiden; professional competence, communication skills, organizing abilities, experience on teams.

■ **Socioeconomic Gaps:** social class differences, with exceptionally high social status of the physician; sex role stereotypes (doctor = "he", other health workers = "she"), dominant male doctors vs. subordinate female non-physician health workers; income gaps between physicians and other health professionals (partly due to income inequities between men and women in all sectors of society).

These and other obstacles "prevented" the interprofessional approach to get a major force in community-based group practices. Because of the paucity of interprofessional teams in the geographical location of this study (the author knows only one community group practice in Southern Alberta that could be labelled "interprofessional"), the study will exclusively focus on teamwork among physicians.

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How can teamwork in group practices be assessed and described?

In most studies that look at physician and patient satisfaction in a group practice, teamwork typically is not a variable under study [19/20/21; 22/23; 24/25].

In their classical study of a consumer-sponsored clinic in Saskatchewan [26/27], Wolfe and Badgley assessed teamwork by looking at referral practices. Other authors discuss team meetings [28, 29], consultations between group members [29, 30, 31], and common chart use [28, 32] as important features of team functioning.

Papers focusing on health centres and/or interprofessional co-operation - not surprisingly - are more often turning their attention to teamwork issues. A report from a large Multi-Service Centre in Ottawa [28] includes a detailed description of team organization and team meetings, drawing a very positive conclusion about team functioning and effects of this type of service delivery for providers and patients (e.g. immediate access to a wide range of services, running programs that a small medical team couldn't run, dealing with complex social and emotional needs).

1.2.2. THE SHIFT FROM THE TEAM APPROACH TO THE ORGANIZATIONAL APPROACH

In his discussion of the recent history of health care teams [33], Brown describes three periods in the "twentieth-century history of health care team talk":

1. 1910 to W.W.II: "Fitful Growth"
2. W.W.II until early 1970s: "High Tide"
3. continuing today: "Re-evaluation"

According to Brown, in the first period, "team talk" grew out of two reasons. Firstly, the recognition that efforts should be made to compensate for the increasingly weak social considerations given in medical care as it became more heavily technological, fragmented and institutionally centered. Secondly, the realization by ambitious allied personnel - nurses particularly - that teamwork was a useful alternative to the traditional, physician-dominated, hierarchic organization of health care services [33].

The second period was characterized by a further acceleration of the rise of the specialist and decline of the general practitioner. This rapidly increased enthusiasm for teams or at least "team talk". But ironically, the teamwork notions not only stressed the need to reintegrate

specialty-fragmented medicine and to provide missing social components, but also served to legitimize technology and "fragmentation of medical responsibility" [34].

As Brown put it:

Teamwork (...) was an ideological prop to the advance of technology and science in modern medicine. [33]

In the third period (up to the present),

close scrutiny led rather quickly and naturally to questions about the reality behind the rhetoric of the fifties and sixties. [33]

Following the overblown enthusiasm of the second period, disillusionment with team issues led to an increasing withdrawal from actual teamwork.

A review of the literature basically proves Brown's point that the original well-balanced view of group practice that has been expressed in the report of the Committee on the Costs of Medical Care (see page 1, [2]), has been kept alive well into the 1960s and 1970s. An example is Scaife's ambitious paper about multi-specialty group practice in Australia [32], concluding that the world-wide trend to specialization over the whole range of human activity has led to the loss of the General Practitioner's ability to function alone, and that multi-specialty groups seem to be the obvious alternative to the G.P. of the past. Scaife and others [3, 30, 35, 36, 37] emphasize the broad spec-

trum of advantages that group practice implies for both doctors and patients, and talk about the potential disadvantages as well.

In an article about group practice in Ophthalmology, Patterson and Campbell [38] state that **single-specialty group practice** also has mutual benefits: they divide the section headed "Advantages of Partnership" into two subsections "Benefits to Members" and "Benefits to Patients". But it seems to be obvious that this type of grouping mainly produces physician benefits, as the differing numbers of benefits under the respective subsections in this paper also suggest.

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During the last two decades, the discussion about physician **advantages** became increasingly prominent, whereas the patient's needs became a subordinate matter. Weinerman in 1968 stated:

All fabrics of social organization, while historically determined in the fundamental sense, are woven ultimately to fit the needs of those who own the loom and set the weaving pattern. (...) So is it with group medical practice. (...) Since most group practice in this country has been developed by doctors, it should surprise no one that the resulting pattern is better for them than for the patients. [39]

Weinerman also criticizes the professional composition of groups: he describes "Noah's-ark types" (one or two var-

ities of every known species of medical specialist under one roof) and "inverted-pyramid types" (large complement of superspecialists, like an inverted pyramid balanced on its apex of a few "intake" practitioners). He proposes

a pyramid resting on its natural foundation of general health service, which supports the narrowing superstructure of specialist-assistants. [39]

After 1970 the development in Canada was quite different from that in the United States, at least in terms of the introduction of Medicare in Canada [40], and the evolution of government-supported prepaid group practice plans in the United States (Health Maintenance Organizations, Independent Practice Associations, etc.; see Section 1.2.3.). Although both developments theoretically prevent excessive emphasis on physician benefits, the overall trend to physician-oriented objectives seems to be uniform in all of North America [41].

The body of literature on group practice clearly shows this progressive focus on one segment of group practice issues, namely, the organization of groups. For example, a computerized literature search at the U of C Medical Library, entering the key words "Group Practice" and "Interprofessional Relationships", yielded 50 articles for the time period 1966-1976, whereas for 1977-1986 only 11

articles could be found. Other search methods yielded similar results, the most remarkable phenomenon being the emphasis on economic and organizational factors in recent years. The group practice associations' own journals (e.g. the Group Practice Journal) emphasize organizational issues, but the more scientific literature also offers a large number of studies on the economy of group practice [42, 43, 44, 45, etc.].

The correlation between this trend in the literature and the "real world" seems to be the trend to more "business-like" group practices, the shift from multi-specialty to single-specialty groups, and the development of large, well-organized medi-clinics (walk-in clinics) working like business corporations.

1.2.3. An Illustration:
HEALTH MAINTENANCE ORGANIZATIONS (HMOs)

The complexity of this typical U.S.-phenomenon may be distilled into a three-point rationale:

- prepayment represents a comprehensive insurance coverage for the enrolled patients;
- the removal of the fee-for-service system facilitates preventive services ("health maintenance");
- competition among plans and the absence of fee-for-service incentives lead to a reduction of the overall health care costs.

The literature mainly focuses on the third point, the economic advantages of HMOs:

One of the most widely discussed studies of HMO economics was done by Manning and associates ("The Rand Health Insurance Experiment") [46, 47]. They conducted a controlled trial by randomly assigning persons previously receiving care from a fee-for-service physician to receive care at an HMO or to remain with the fee-for-service physician. Persons already enrolled in the HMO were used as a control group [46]. The results of the Rand Experiment are strikingly consistent with the results of previous (non-controlled) studies:

- outpatient-visit rates in the HMO group were similar to those in the fee-for-service group;
- there were 40% fewer hospital admissions and hospital days in the HMO group than in the fee-for-service group;
- expenditures were 28% lower in the HMO group than in the fee-for-service group.

Manning et al. concluded that the physicians of this HMO "were simply practicing a different style of medicine" [46].

Although the Rand Experiment showed that a random assignment of young and old, healthy and sick people to an HMO still resulted in a reduction of both hospital admissions and expenditures, it also seems to be true that, in the "real world", HMOs attract certain subgroups of the population more than others. There are various reasons for that phenomenon: For example, the frequently criticized fact that the poor feel less attracted to HMOs [48, 49] could be explained by factors like the existence of a strong tie to a fee-for-service physician, the complexity of the HMO-setting, or the complicated appointment system of HMOs [48]. Looking at the HMO's side, we have to consider that the HMO policy primarily was a way to reduce health care costs, and that HMOs subsequently developed

into large business corporations that simply want to make profit. Therefore they obviously are interested in attracting healthier people. They can do that by offering contracts to firms or employee groups within a firm that are known to be at low risk [48].

The author's hypothesis regarding the rationale behind HMOs brings us back to the study reported in this text: During the last two decades the somewhat holistic philosophy behind the original prepaid group practices [50, 51, 52] was replaced by the narrow philosophy of the HMOs as the fighters of the health care cost inflation. Although this replacement process might have been going on for a longer time period, the involvement of the U.S. government probably was the crucial step leading to a radical shift to an economically oriented rationale behind HMOs, and giving the final touch to the complete establishment of marketing concepts into health delivery.

Aside from the involvement of governments, it is important to emphasize that HMOs represent a major new market for the U.S. Industry. A large proportion of the newest generation of "alternative delivery systems" works under strict for-profit rules, not infrequently governed by third parties without a medical background, which have the power

to withhold payment for care that is deemed to have been inappropriate.

Although the Canadian situation seems to be completely different at first glance, it is important to note that with the slow but steady growth of the so-called Health Services Organizations (HSOs) similar changes of the system may occur in Canada [53]. Fortunately, the differences between the American HMOs and the Canadian HSOs are still substantial (the HSOs are more or less the equivalent to the classical health centres) [53, 54], but sooner or later the American philosophy might be influencing the developments in Canada to a greater extent than it does today. In fact, the first HMO in Canada may be established soon in Toronto [55].

Besides prepayment and patient (self-)selection, there is another potential explanation for the HMOs' reduction of services and expenditures that often is neglected, but might be of importance to this study: the role of group practice [56, 57].

In a 1980 comparative study of an HMO and another large clinic in the same community, only minimal differences in hospitalization rates have been found. The authors con-

clude that

this lends support to the hypothesis that the lower hospital surgery rates found under prepaid-group-practice plans may be due as much to the group practice form of organization as to their prepaid features. [58]

After assigning elderly patients to a group practice or to their former system of care, Shapiro et al. [59] found that, among those assigned to the group practice, the former very low utilizers showed an increase in services, whereas the services for the very high utilizers declined. No substantial change occurred among those remaining in their former system of care.

These findings would suggest that not only HMOs, but group practices in general, tend to pattern medical services toward care for their population, coordinating resources with population needs, while solo providers may focus more narrowly on individual patients seen in their regular practice [56].

1.2.4. THE INFLUENCE OF STRUCTURAL FACTORS ON TEAM (GROUP) FUNCTIONING

Up to this point, the discussion of collaborative practices did not yet touch on potential effects of group structure upon group functioning; such is the domain of the sociological literature, especially texts on Medical Sociology.

The most apparent structural factor of group medical practice is the **composition** of the group, given by the number of physicians (size) and the number of different specialties (diversity).

There is considerable literature on the relationship between the size of the group and group processes. One consistently mentioned factor is that the size of a group greatly influences the attraction to, and the cohesiveness of the group. According to a number of authors [e.g. 60, 61], smaller groups are more likely to be more attractive than large ones, because it is easier to get to know the other group members, and to have a sense of being a significant participant in the group. But that does not necessarily bear on the professional success of a group, as Cartwright emphasizes:

there is no clear indication that groups of different

sizes tend to be reliably different in their productivity. [62, see also reference 63].

Napier and Gershenfeld basically agree:

There appears to be no magic number for a successful working group (...). Nevertheless, a group of five or seven seems to be optimal (...) since there are enough people to allow for a diversity of opinions and ideas, yet the group remains small enough to allow everyone to be heard [60].

Another important factor related to group size is the number of interactions possible between group members. According to Bossard's formula $N^2 - N/2$ [64], this number sharply increases beyond $N=4$ [65]. Depending on the effects under study, a high number of possible relations might be viewed advantageous or disadvantageous [66]. Regarding various types of collaboration between group physicians described in the study reported below, a higher number of relations seems to facilitate interaction between physicians. This would simply stem from the fact that there are more opportunities to consult each other, to cover for each other, etc. No sociological paper could be identified that describes exactly this issue and/or clearly supports the proposed increase of all types of collaboration within medical groups as, through an increase in group size, the number of possible interactions increases.

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In terms of the second major structural factor under

study, the group's diversity with regards to the mix of medical specialties, the identified papers were not as conclusive as for the group size. Frequently the degree of differentiation is referred to as a variable of the size, or rather the growth, of the group. Authors like Blau [67], Freidson [34], and Gowler and Legge [68] suggest that increasing size is associated with increasing formalization of roles, bureaucratization, and structural differentiation,

as work is sub-divided into more specialized segments and assigned to separate units in an organization [69].

Although this is undoubtedly true in most cases, the suggested differentiation in the course of the growth of an organization would explain only part of the phenomenon of multi-specialty group practice. For example, a group might get newly established and, based on "philosophical" considerations, decide to be diverse right from the beginning, such that the time factor suggested in the quotation above could not be applied to explain diversity. Or a group might even get less differentiated while it is growing, because group members consciously decide, for example, to replace a retiring physician by a physician of another specialty. In summary, this issue shows that there are theoretical principles of group processes that do not fully apply to medical groups. However, based on the sociological principles noted above and on common

sense, it seems to be quite obvious that multi-specialty groups would tend to be larger than single-specialty groups [70].

Furthermore, Blau states that

structural differentiation in organizations enlarges the administrative component, because the intensified problems of coordination and communication in differentiated structures demand administrative attention [67].

Although this principle seems to be based on research in another type of group (large companies), one would expect it to be applicable to group practice: multi-specialty groups might have both more administrative personnel and a more extensive and rigid assignment of administrative responsibilities to physicians.

Regarding inter-physician collaboration on a clinical basis, no conclusive literature could be identified. The author's hypothesis is that multi-specialty groups have a higher degree of clinical collaboration, especially with respect to consultations and referrals. This is simply based on the observation that consultations and referrals logically occur between physicians of different specialties, and therefore single-specialty groups rarely would report them. It might even be hypothesized that single-specialty groups will be more likely to use their collaborative potential for organizational (business-type) issues than for clinical issues,

while for multi-specialty groups, the reverse will more likely be true.

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Despite the abundance of work that has been done in the area of group dynamics and processes, the literature referred to in this section leaves us with one problem: There is hardly any discussion of the particular issue that this thesis tries to elucidate, namely, the effect of the composition of medical groups, or rather changing patterns of group composition, on within-group interaction. Eliot Freidson, probably the most outstanding sociologist concerned with the phenomenon of group medical practice [e.g. 71], states:

The foremost question about medical practice is its consequences (...). It is unfortunately the question about which there is least information. (...) Very little is known about the processes of interaction among physicians (...). Much more empirical information is needed before it can be argued that group practice as an organizational form creates rather than merely permits better technical care. [34]

Although Freidson's statement is almost 10 years old, it basically reflects the difficulties that the author of this thesis encountered when he reviewed the literature in 1988. Considering that Freidson addressed a fairly broad topic, the lack of comparative data between solo and group practice, the difficulties become even more apparent when one tries to narrow down on a comparison between different types of group practice. Even in acknowledged textbooks

of Medical Sociology, like David Mechanic's [72] or Rodney Coe's [73], no thorough comparisons beyond the broader issue "Group vs. Solo Practice" [74] could be identified.

Freidson also gives a possible explanation for this relative lack of information, when he addresses a unique difference between medical groups and other work groups:

Work in most of the established professions is carried on publicly - in the court, the church, and the lecture hall - as often as in the office. The doctor's work, however, is characteristically conducted in the privacy of the consulting room, and his personal services are usually rendered to individuals rather than to congregations or classes. Perhaps because of these characteristics, medicine is more likely than other established professions to be seen as involving a relationship between two individuals - the practitioner and the patient. [34]

That might imply that, within medical groups, certain group-dynamics principles do not directly apply. However, Freidson continues by stating:

But this view is not entirely correct; medicine is practiced within an organized framework that influences both doctor and patient. [34]

This quotation points to the focus of this thesis: an exploration of the composition of Southern Albertan group practices, its evolution over the last 15 years, and some implications of composition change for the interaction (collaboration) patterns among physicians. The term "teamwork" will not be used in the remainder of this text, because the most common form of group practice in Canada today is

the single-specialty group, which - strictly speaking - is not a team [9]. Instead, the term "collaboration", which is intended to describe a much broader range of interaction, will be used.

Based on the literature reviewed in this section, this study hypothesizes that, between 1973 and 1987, the following broad changes will have occurred in Southern Alberta:

- an increase of the number of group practices and the proportion of physicians involved in group practice;
- an increase of the proportion of single-specialty group practices;
- an increase of forms of within-group collaboration that are mainly beneficial to physicians;
- a decrease of forms of within-group collaboration that are mainly beneficial to patients.

Specific research questions are outlined in the next section.

1.3. Research Questions

Research Question 1.

- (a) Did the number of Southern Albertan group practices and the proportion of physicians involved in group practice change between 1973 and 1987?
- (b) Did the **composition** (size and diversity) of groups change over these 15 years?

Research Question 2.

What forms of collaboration exist in the 1988 group practices?

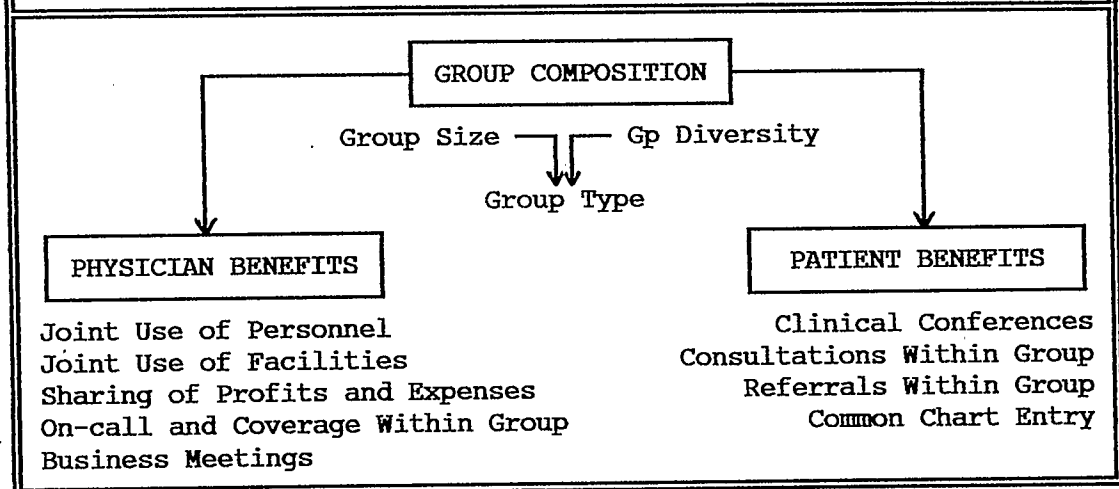
Do group members

- (a) jointly use personnel?
- (b) jointly use facilities and equipment?
- (c) share profits and/or expenses?
- (d) have on-call and coverage arrangements?
- (e) hold business meetings?
- (f) hold clinical conferences?
- (g) consult other group members?
- (h) refer to other group members?
- (i) have equal access to all charts?

While all factors (a) to (i) above might be viewed as benefits to both physicians and patients, for purposes of this study, the answers to questions 2.(a)-2.(e) will be

taken to indicate the degree of emphasis on physician benefits, whereas questions 2.(f)-2.(i) will be assumed to relate more to patient benefits. The rationale behind this categorization focuses on the patient: if a form of collaboration has no direct positive bearing on the patient, it is considered a non-patient-benefit and called PHYSICIAN BENEFIT. Hence, the two variable categories PHYSICIAN BENEFITS (= collaboration on an organizational level) and PATIENT BENEFITS (= collaboration on a clinical level) represent an attempt to distinguish between "mainly physician benefits" and "mainly patient benefits".

Figure 1.1. PROPOSED MODEL OF RELATIONSHIPS BETWEEN THE VARIABLE CATEGORIES GROUP COMPOSITION, PHYSICIAN BENEFITS AND PATIENT BENEFITS



Throughout this text, the terms used in Figure 1.1. - and a few others which will be introduced later - will be

capitalized in the way it is shown here, when used as a study variable.

Research Question 3.

What effect does the structure (composition) of a group have on the intra-group utilization of PHYSICIAN BENEFITS and PATIENT BENEFITS?

Research Question 4.

Do the demonstrated relationships have implications for present and future health care delivery?

2. METHODS

2.1. Methods of Data Collection

2.1.1. Stage I - HISTORICAL PERSPECTIVE

The main purpose of Stage I, in response to Research Question 1., was to determine the patterns of change in the composition of Southern Albertan medical groups.

Southern Alberta has been defined as being identical with Census Divisions 01-09 [75]. Taking the population counts of 1981 [76] as the base, this definition seemed most reasonable, because almost exactly half (49.4%) of the total population of Alberta was registered in one of those nine divisions (see Appendix A, Figure 1 and Table 1).

A first step was an investigation of the origins of group practice in Southern Alberta. For that purpose, the oldest available copies of Henderson's Directories [77, 78, 79] have been used to determine the earliest medical groups in Calgary and other larger communities of Southern Alberta. In addition to these oldest copies (1881-1915), the directories for 1930, 1945 and 1957 (30 years prior to the study year) have been investigated [79, 80, 81, 82, 83].

Assuming that all practicing physicians were registered in these directories, it was easy to identify the groups, because (1) most groups - instead of alphabetically listing the individual physicians - have been listed as a group, and (2) in these early years, the total number of physicians was so small that the remaining groups could be detected "at a glance".

For 1973 (15 years prior to the study year) and for 1987 (study year) it was much more complicated to identify the group practices. Instead of Henderson's Directories, the Medical Directories of the College of Physicians and Surgeons of Alberta [84, 85] were used as the main data source. The latter offer more detailed information, especially the medical specialty of all physicians, but were not in use before the 1960s.

Because of the large number of alphabetically listed physicians in Calgary and other parts of Southern Alberta, a database program for microcomputers has been applied to identify the group practices and their professional composition from the 1973 and 1987 Medical Directories. After entering the name, address, and telephone number of each physician, the program was asked to sort out the group practices, using the following definition:

DEFINITION OF GROUP PRACTICE USED IN THIS STUDY

A group practice is a practice (medical office) that meets one of three criteria:

- (a) at least two physicians with identical phone numbers;
- (b) at least two physicians with identical suite numbers and/or addresses;
- (c) at least two physicians with identical phone and suite numbers (addresses).

Excluded are hospitals and University-based offices.

This is an operational definition of group practice, arising from the need to find groups by means of the Medical Directory. It doesn't correspond to definitions that can be found in the literature (there is no generally accepted definition). Most definitions [e.g. in references 3, 4, 86] feature as the principal elements of group practice: three or more physicians, legal entity, sharing of personnel and facilities, and sharing of income and expenses. Although two-physician groups, by these definitions, would not be considered as being group practices, they have been included in Stage I of this study, because they represent the most common form of medical groups in Canada (and Alberta). The operational definition presented above roughly describes the status that Bryant et al. [4] call "grouping" which applies essentially to all physicians not in solo practice.

The application of this definition and the utilization of the Medical Directory unfortunately produced some limitations:

Firstly, in 1973, phone numbers were not listed; only the address and/or suite number could be used to identify a group from the Medical Directory. To compensate for this missing information, the 1973 Henderson's Directory [87] has been used as an additional data source. Considering the groups identified by the 1973 Medical Directory as the base, additional groups have been added, based on information in the 1973 Henderson's Directory.

Secondly, the Medical Directory frequently quotes home addresses. For that reason, married physicians (both using home addresses) erroneously might have been included as a two-physician practice, whereas an actual group physician might have been lost, if he/she was registered with his/her home address. But, by viewing the 1987 data, one can detect that, although many physicians gave their home address, only a few gave their home telephone number. An explanation for this phenomenon might be that many physicians prefer to work on their business mail at home, whereas only few want to be bothered with telephone calls in their free time. Therefore, for the analysis of the 1987

data, the telephone number got the priority as the identifying instrument: criterion (c) of the operational definition would indicate the ideal situation, criterion (a) would indicate an acceptable situation, whereas criterion (b) would indicate a situation requiring careful consideration.

In addition to address and phone number, each physician's specialty has been entered into the database. This assisted in determining the professional composition of the group with the same address and/or phone number. In order to present the data in an easily understandable way, the 46 specialties used in the 1987 Medical Directory [85] have been reduced to four categories of specialties: Family Medicine, Medical Specialties, Surgical Specialties, and Laboratory Specialties (see Appendix B for more details). These four specialty categories are used in the descriptive statistics of various government bodies, e.g. Alberta Health Care [personal communication], and therefore seemed to be the most reasonable categorization of medical specialties.

Following identification, the groups have been arranged according to the geographical areas shown in the table below:

Table 2.1. GEOGRAPHICAL AREAS	
CALGARY	Northwest Northeast Southwest Southeast
RURAL CITIES	Lethbridge Medicine Hat Red Deer
RURAL TOWNS	Large Towns Small Towns

The four sectors of **Calgary** have been determined by the geographical suffix to the address (e.g.: 17 Ave. S.W.).

Rural Cities and Rural Towns have been defined by the 1981 population counts [76]:

Table 2.2. CATEGORIZATION OF RURAL CITIES AND TOWNS	
RURAL CITIES	$\geq 10,000$
LARGE TOWNS	4,000 - 9,999
SMALL TOWNS	$\leq 3,999$

Placement of the cut-off point for Rural Cities at a population count of 10,000 was an arbitrary decision. It did seem to make sense to separate Lethbridge, Medicine Hat and Red Deer from the rest of rural communities, because

of the big gap in population counts between these three cities (all > 40,000) and the next group of towns headed by Brooks (9,421). It is interesting to note that Census of Canada specifies Drumheller as a city, although there are two larger communities (Brooks, Crowsnest Pass) that are specified as towns. This study does not follow the Census of Canada classification, because the actual population counts seem to be more important in predicting differences in the patterns of group practice than the criteria used by federal and provincial authorities to distinguish between cities and towns. In other words, many characteristics of the City of Drumheller obviously are more similar to those of the Town of Brooks than to those of the City of Red Deer. Therefore, in this study, Drumheller is considered as being a "Large Town".

The cut-off point between Large Towns and Small Towns at 4,000 is a result of the following considerations: All Rural Towns with at least one group practice comprise a population of 145,414 (the three Rural Cities: 140,845). The round number that best divides this population count into two roughly equal groups is 4,000 (Large Towns with a total population of 77,774, and Small Towns with a total population of 67,640).

Appendix A has all the details about population counts of Southern Albertan communities and the classification criteria used in this study.

Each group practice that could be identified and geographically classified was further classified by assigning two numbers to each of them: the number of physicians per group (**Group Size**), and the number of specialties per group (**Group Diversity**). In order to clarify the data presentation, their categories have been collapsed, basically following the categorization used in "Group Practice in Canada" [86], such that six **Group Types** can be described:

Table 2.3. GROUP TYPES DESCRIBED IN STAGE I		
TYPE	SIZE	DIVERSITY
1. two-physician single-specialty	2	1
2. small single-specialty	3-5	1
3. large single-specialty	≥ 6	1
4. two-physician multi-specialty	2	2
5. small multi-specialty	3-5	2-4
6. large multi-specialty	≥ 6	2-4

The main purpose of Stage I of this study is to describe the changing patterns of group practice between 1973 and 1987. Changes in both Group Size and Group Diversity as well as changes in the geographical distribution will be documented in Section 3.1.2.

2.1.2. Stage II - SURVEY OF THE 1988 GROUP PRACTICES

In the Fall of 1987, mainly to extend his own knowledge about group practice, especially in terms of the "extremes", the author visited three group practices before actually designing the survey instruments:

- a multispecialty clinic in Lethbridge;
- a "health centre" (family physicians + social workers) in Calgary;
- the largest multispecialty clinic in Calgary.

Some qualitative data derived from informal interviews with members of these three groups have been very helpful in creating the survey instruments.

While Stage I yielded information about the **changing** patterns of group practice, the survey of the 1988 group practices (Stage II), in response to Research Questions 2. and 3., provided more detailed information about the present patterns of group practice in Southern Alberta.

The database search for 1987 group practices, described for Stage I, yielded 99 groups of three or more physicians in Calgary and other communities of Southern Alberta (Appendix C, 1987 - Table 3a). Two-physician practices have been excluded from the survey, because most authors

define group practice as a practice of "three or more physicians", and because, in Stage I, errors in identifying groups have been more likely for two-physician groups (see page 30). Hence, the definition of group practice used in Stage II is slightly different from the definition used in Stage I:

DEFINITION OF GROUP PRACTICE, MODIFIED FOR SURVEY

A group practice is a practice (medical office) that meets one of three criteria:

- (a) at least three physicians with identical phone numbers;
- (b) at least three physicians with identical suite numbers and/or addresses;
- (c) at least three physicians with identical phone and suite numbers (addresses).

Excluded are hospitals and University-based offices.

Likewise, the exclusion of two-physician practices modifies the number of Group Types described:

Table 2.4. GROUP TYPES DESCRIBED IN STAGE II		
TYPE	SIZE	DIVERSITY
1. small single-specialty	3-5	1
2. large single-specialty	≥ 6	1
3. small multi-specialty	3-5	2-4
4. large multi-specialty	≥ 6	2-4

Assuming that errors in detecting identical addresses

could be minimized, the 99 groups of three or more physicians represent the total population of Southern Albertan group practices. No sampling has been carried out, all practices being asked to participate in the survey.

In the Winter of 1988, a self-administered questionnaire was mailed to 89 of the 99 practices. It was created specifically for this study, as no existing material was available. The four-page questionnaire (see Appendix D) attempted to assess the **group composition** (corresponds to the variable category GROUP COMPOSITION in the model presented on page 25 to illustrate Research Question 3.), the degree of organizational structure (corresponds to PHYSICIAN BENEFITS), and the degree of clinical collaboration between group members (corresponds to PATIENT BENEFITS). **Organizational structure** has been measured by the degree of joint use of personnel and facilities, the financial management of the group, the coverage and on-call practices, and the frequency of business meetings. **Clinical collaboration** has been elucidated by asking for the frequency of clinical conferences, the consultation and referral patterns within the group, and the existence of common chart use. Two concluding open-ended questions investigated the physician's general attitudes towards group medicine.

In addition to a covering letter (see Appendix D), a self-addressed and stamped return envelope was mailed with each questionnaire. To further increase the response rate, all non-respondents were given a follow-up call on day 26 and day 50 after the original mailing. Upon request, another copy of the questionnaire, including a new covering letter (see Appendix D), was mailed. If a physician refused to participate, had retired, or had left the group, another physician was randomly selected from the same group, and a questionnaire was mailed to him/her.

In April 1988, the remaining ten practices have been surveyed by interview. Cost and time constraints limited this part of the study to group practices in Calgary. The ten practices represented about 20% of the Calgary groups, and about 10% of the total population of Southern Albertan group practices.

Stratified sampling ensured that the different types of medical groups in Calgary were properly represented in the interview sample. Rather than considering the four "theoretical" Group Types (see Table 2.4.) as the strata, an attempt was made to define the types of group practice that really are typical for Calgary and, based on their distribution, to randomly select a specific number of

practices out of each type (stratum):

Table 2.5. STRATIFICATION OF THE CALGARY GROUPS				
STRATA (Group Types)			total # of groups in stratum	# of groups selected
Size	Specialty	Diversity		
3	family	single	14	2
4	family	single	7	1
5	family	single	4	1
≥6	family	single	6	1
3	others	single	9	1
≥4	others	single	3	1
≥3	fam. + oth.	multi	5	2
3	others	multi	1	1
TOTAL			49	10

As there were eight strata, from which ten practices had to be selected, two strata had to be overrepresented in the interview sample. Stratum 1 was chosen, because it comprises most (28.6%) practices, whereas Stratum 7 was chosen because of its uniqueness in terms of the combination of specialists (family physicians + other specialists).

The interviews were conducted in a fairly structured way, by following the points in the self-administered questionnaire. Additional comments by the interviewed physician were however encouraged. This way, the achievement of two goals could be assured. Firstly, the answers to the stan-

standardized questions could still be used for the analysis of the questionnaire: no quantitative data have been lost. Secondly, the survey also yielded some very revealing qualitative data.

Theoretically each member of the practice's "health team" could have been surveyed, i.e. a physician, or a nurse, or another health professional within the group. But it seemed to be more feasible to address only physicians. Firstly, because the majority of medical groups are groups of physicians, whereas nurses work as the physicians' assistants, such that they should be counted as "personnel" (see also Section 1.2.1.). Secondly, because in medical groups it is very rare to find health professionals other than physicians or nurses. Therefore one randomly selected physician per group was interviewed or asked to complete the questionnaire, thus promoting a higher degree of standardization and comparability. See also Section 1.2.1. for a review of the practicality of "interprofessional teamwork".

In terms of assessing collaboration between group members, the same kind of realism has been applied: although it would have been interesting to study collaboration between all the professionals of a group practice, only the

assessment of collaboration between the group physicians appeared to be feasible.

Identification numbers have been put on the self-administered questionnaires before mailing, such that a practice could be identified after the return of the questionnaire. This was helpful in evaluating the results of Stage I, assuming that questionnaires and interviews are the superior instrument for measuring GROUP COMPOSITION. Additionally, the identification of the practices allowed for follow-up mailings and/or calls.

But despite the necessary identification all data have been handled confidentially.

The strengths and weaknesses of the sampling method have been discussed in the section on Stage I (pages 30/31). The major weakness of Stage II is the fact that the vast majority (78.1%) of groups are single-specialty groups, most of them (55.2%) family practice groups (Appendix C, 1987 - Table 4, and 1987 - Table 5). This lack of variation, especially the small number of multi-specialty groups, makes the detection of differences much more difficult. But as this is an exploratory study, no confirmative results were anticipated. Thus, for this explora-

tion, the described methods seem to be sufficiently valid to discover extant interrelations between the variables under study. No pre-existing questionnaire was available for use in this study, necessitating some "pioneering" efforts.

2.2. Methods of Data Analysis

2.2.1. Stage I - HISTORICAL PERSPECTIVE

The database output for 1973 and 1987 has been arranged in tabular form, according to the following variables:

Table 2.6. VARIABLES DESCRIBED IN STAGE I
Geographical Area
Number of Group Physicians
Number of Group Practices
Specialty
Combination of Specialties
Group Size (= number of physicians per group)
Group Diversity (= number of specialties per group)

The last two variables are the most important: They separate large from small groups and multi-specialty from single-specialty groups.

The number of group physicians might have been affected considerably by the shortcomings of the selection method described on page 30. The number of group practices probably is much more accurate, because, for example, missing one or two physicians of a group of four or more physicians would not influence the result. The Group Size, like the number of group physicians, might have reduced

accuracy, although the collapsing into the categories "two-physician", "small", and "large" might have prevented some of this reduction. The Group Diversity, due to an a priori collapsing into four categories (Appendix B), should be rather precise.

The 1973 and the 1987 data have been arranged in six tables each:

**Table 2.7. TABLES USED TO DESCRIBE THE RESULTS
OF STAGE I, 1973 AND 1987 SEPARATELY**

Table 1. Number of Group Physicians, by Geographical Area and Specialty

Table 2. Percentage that Group Physicians Comprise of the Total Number of Practicing Physicians, by Geographical Area and Specialty

Table 3. Number of Group Practices, by Geographical Area and Group Size

Table 4. Number of Group Practices, by Geographical Area and Group Diversity

Table 5. Number of Group Practices, by Geographical Area and Various Combinations of Specialties

Table 6. Number of Group Practices, by Group Size and Group Diversity

Appendix C represents a complete listing of all 12 tables.

By subtracting each cell's 1973 percentage from each

cell's 1987 percentage, the respective percentage point changes could be shown. The result is another set of six tables, displayed in Section 3.1.2., showing all the percentage point increases or decreases that occurred between 1973 and 1987. This way, the patterns of change over the last 15 years could be demonstrated, and a trend could be determined. Based on this trend, it also was possible to discuss possible changes in the coming years.

No inferential statistical testing is reported, because Stage I addressed the total population ("statistical universe") of Southern Albertan group practices; the presented numbers are therefore "real", and not subject to sampling variation. As this is a descriptive-exploratory study, only descriptive statistical methods (means, percentage differences, cross-tabulations, etc.) are used. Methods of statistical inference (significance tests) might be used in further research. However, in order to test the validity of the measurement methods, part of the data can be compared with results from other studies, and the complete data set can be compared with the findings for the variable category GROUP COMPOSITION described in Stage II of this study (see Section 3.2.2.).

2.2.2. Stage II - SURVEY OF THE 1988 GROUP PRACTICES

The same considerations about inferential statistical methods apply to Stage II: the survey basically addressed the total population of Southern Albertan group practices. Although there were some non-respondents (see Section 3.2.1.), their number was so small that there is no reason to assume that the respondents vary from the total population. Hence, Stage II also involves descriptive statistics exclusively.

The ten groups that have been asked for an interview represent a random sample from the surveyed groups. Although a stratified sampling method was applied, it never was intended to obtain a really representative sample. Moreover, the number of interviewed physicians is very small, such that quantitative confirmations could not be expected anyway. Hence, the interviews only were intended to yield additional qualitative data, and do not need to involve inferential statistical testing.

The 12 variables presented in Figure 1.1. on page 25 have been assessed by the following questions of the questionnaire (Appendix D):

Table 2.8. VARIABLES DESCRIBED IN STAGE II
AND THE CORRESPONDING QUESTIONS

GROUP COMPOSITION	
Group Size	1.
Group Diversity	1.
Group Type	1.
(personnel	1., 2.)
PHYSICIAN BENEFITS	
Joint Use of Personnel	3.
Joint Use of Facilities	4.
Sharing of Profits and Expenses ...	5., 6., 7.
On-call and Coverage Within Group .	8., 9.(g.-j.)
Business Meetings	12.(b)
PATIENT BENEFITS	
Clinical Conferences	12.(a)
Consultations Within Group	9.(a.-d.)
Referrals Within Group	9.(e.-f.)
Common Chart Entry	10.

After obtaining the frequency distributions and other basic statistics of the answers to the questionnaire, the four Group Types were cross-tabulated with all the other variables. The original plan to separately cross-tabulate the two variables that make up the Group Types (Group Size and Group Diversity) with all the other variables was laid aside, because of the strong correlation between these variables (described in Section 3.2.2.1.: single-specialty groups tend to be smaller, multi-specialty groups larger). Therefore all cross-tabulations presented in Section 3.2. were done with the four Group Types.

For each of the four Group Types, the cross-tabulations basically yielded the degree of interlacing and solidarity in organizational affairs (variables of the category PHYSICIAN BENEFITS) and the degree of actual clinical collaboration between group members (variables of the category PATIENT BENEFITS).. Essentially this analysis represents an attempt to elucidate the degree of emphasis on the physicians' vs. the patients' benefits in the most common types of group practice.

3. RESULTS & DISCUSSION

3.1. Stage I

Historical Perspective

3.1.1. THE DEVELOPMENT OF GROUP PRACTICE IN SOUTHERN ALBERTA

3.1.1.1. The Development of Group Practice in Calgary

According to Henderson's Manitoba, Northwest Territories and British Columbia Gazetteer and Directory [77] and a typewritten report by the Office of Medical Education at the University of Calgary [88], the first two group practices in Southern Alberta were Lafferty & Mackid, and Lindsay & George, both established in Calgary in the year 1890. Considering the fact that, in those days, there were only six physicians in this city of about 3,500, it is quite impressive that four of them practiced in partnership.

Lindsay & George's partnership lasted only about three years. Although the partnership of Lafferty & Mackid probably lasted only slightly more than one year [88], those two men have to be considered as the pioneers of group practice in Calgary: Lafferty was the senior part-

ner and actually invited Mackid to join him, and Mackid eventually founded another group - bearing his name - that will be described in more detail below.

The Henderson's Directories don't specify any other partnerships between 1890 and the early 1900s [78].

In 1905, three two-physician groups existed in Calgary: Mackid & Mackid (father and son), Crawford & McEachern, and Stewart & McLaren [79]. Interestingly, Stewart had been Mackid's partner around 1903/04, and they were briefly joined by McLaren, before Stewart and McLaren left the group in 1905 to practice together until 1913 [88]. Although it probably lasted only about a year, Mackid, Stewart & McLaren was the first three-physician partnership (i.e., according to most definitions, the first "true" group practice in Calgary and all of Southern Alberta).

In 1907 a third partner, Maclaren, joined Mackid & Mackid, and from 1912 on, this first permanent three-or-more-physician partnership was called Mackid & Maclaren [79]. Between 1909 and 1912 the group even had a forth partner, making it the most "progressive" group in the city [88].

Around 1910, there might have been two or three other groups in Calgary (one of them even a three-physician group), but due to inconsistencies in listing, it is not possible to proof that with the Henderson's Directory alone.

The next significant changes happened in 1912, when Crawford & McEachern were joined by three other physicians, creating the second "true" group practice. One of the new partners left after a brief time period, and, starting in 1915, the group was called McEachern, Graham, Crawford & Merritt [79, 88].

In the same year, 1912, the first clearly defined group of specialists appeared:

GUNN & HACKNEY, Practice limited to Eye, Ear, Nose and Throat. Rms 5, 6, 7, 8, 9, 10 McDougall Block. Phones M3349 and M3098. Office Hours 10 a.m. to 6 p.m. [79]

As the impressive number of rooms suggests, this practice set the standards for a new style of medicine in Calgary.

Hence, by 1912, the trends were clearly visible: more and more groups were established, they became larger, and even single-specialty groups (other than G.P.-groups) already came into existence.

The three groups that have been discussed in detail above might be called the "legendary" Calgary groups, because they not only started so early, but also survived for quite a long time:

The group name Mackid & Maclaren could be found in the directories until the mid-1960s [79]. By then, it had grown into a multi-specialty group of six physicians. The last of the three original men retired from the group in 1959, and after the group left the original offices in 1966 [88], it was called Rothwell & Associates, a group that existed until recently. The sign on their door at Palliser Square West specified only two physicians, but it was possible to read three names that had been wiped out, testifying to the historic legacy. At the end of June 1988, the group finally dissolved.

The McEachern, Graham, Crawford & Merritt group went through many personal changes, always changing the group name according to the names of the new partners. After 1963 they called themselves Ingram & Associates [79], a group that usually contained seven or eight physicians. When the Medical Arts Building, where it was located for about three decades, was torn down in the early 1970s, the group dissolved; only two physicians continued to prac-

tice together in another office until 1978 [88].

Gunn & Hackney also had various partners, of which one, Shore, took over in the 1940s (later calling the group Shore, Dowling, Shafto & Stewart) [79]. In the 1950s and 1960s, the group was still "limited to eye, ear, nose and throat", and basically this did not change until recently: In the 1970s and early 1980s, the group comprised one ophthalmologist and one otolaryngologist, and today there is a "group" of one ophthalmologist left

From these early years (around 1910) until the end of World War II, the then established Henderson's Calgary City Directories don't show any dramatic changes in the patterns of group practice. In 1945, a fairly high number of two-physician groups (7) can be found, while there is only one significant addition to the larger groups: the Calgary Associate Clinic [79].

The Associate Clinic was founded in 1922 as a partnership of five G.P.s [personal communication]. In 1930, the first specialist was added, and from that time, this multi-specialty group was considerably increasing in size. In 1945, it already amounted to 19 physicians, and in 1957, to 27 physicians. After reaching a peak of almost

50 physicians in the early 1980s [88], the group split up and moved to another location. Today 29 physicians of all specialties constitute the Associate Clinic.

In 1948, the Canadian Medical Association for the first time supported the idea of practicing together [86], leading to a nation-wide increase of group practices. In 1957, 30 years prior to the study year, Calgary had more than 30 two-physician groups, 6 groups with 3-6 physicians, and the Calgary Associate Clinic with 27 physicians [79].

3.1.1.2. The Development of Group Practice in Rural Cities and Rural Towns

In the book "Early Medicine in Alberta" [89], some references to early group practices in Rural Cities and Rural Towns have been located:

Lethbridge:

Dr. Reginald Burton Deane (...) settled in Maple Creek, Saskatchewan, (...) in 1898. A year later he was associated with Dr. F. H. Mewburn in Lethbridge.

Red Deer:

Dr. Arthur S. Thompson, a graduate of Manitoba, at one time around 1900 was in partnership with Dr. Denovan.

Red Deer:

Dr. Douglas Gray was associated with Dr. Sanders and Dr. Collison in 1911.

Ponoka:

Dr. T. B. Stevenson of Wetaskiwin was for a time associated with Dr. W.A. Campbell.

Wetaskiwin:

Two women doctors, Dr. Dora Smith who had served as a medical missionary in the Far East, and Dr. Ethal M. Magill set up an office in 1907. (...) These two left overnight, the latter to California after a brief period in Wetaskiwin.

According to Henderson's Directories, the first partnerships outside Calgary originated in Lethbridge and Medicine Hat just before 1910 [78]. With one exception (Campbell group, three physicians in 1911) those were only two-physician partnerships, but in the early 1930s there were already three larger groups (two in Lethbridge, one in Medicine Hat); in the same time period, Red Deer had at least one two-physician group [80].

In 1957, Lethbridge had three large group practices, the Haig Clinic (12 physicians), the Campbell Clinic (10), and the Bigelow-Fowler Clinic (9); in addition there were the Roy Clinic (4 physicians), a group of three physicians that eventually (mid-1960s) was called Hunt Clinic, and three two-physician groups [81]. In the same year, Medicine Hat had its Medical Arts Clinic with 20 physicians [82]. And in Red Deer, in 1965, there were the Parsons Clinic with 14 physicians, and the Associate Clinic with 6 physicians [83].

3.1.2. GROUP COMPOSITION 1973 vs 1987

In this section, mainly changes in the group practice composition between 1973 and 1987 will be reported. Only the most important results of the separate analyses for 1987, representing the current situation, are summarized here; the complete set of separate results can be found in Appendix C. In the three sets of tables (1973, 1987, and 1973 vs 1987), the same numbering system has been used. For example, the detailed figures for 1973 that correspond to the table titled "1973 vs 1987 - Table 4", can be found in "1973 - Table 4" in Appendix C.

The tables presented below specify percentages for 1973 and 1987 (taken from the tables in Appendix C), and the percentage point differences between 1973 and 1987. The latter have been calculated by subtracting the 1973 percentage from the 1987 percentage. Hence, a percentage change displayed in one of the six tables below is not based on a shift of absolute numbers, but on the simple difference between percentages.

In Tables 1, 3, 4, and 5, the specified percentages refer to the total of a row, i.e. to the total number of group practices (in Table 1, total number of physicians) per

geographical area. Therefore all "1973" and "1987" rows add up to 100%, and all "Diff." rows add up to 0%. To avoid the monotonous repetition of 100% and 0%, no "Total" column has been included in those tables. Instead, an "N" column specifies the totals (N's) of the respective rows.

Tables 2 and 6 use a different layout. Explanations regarding the underlying totals will be made in the respective sections.

3.1.2.1. The Number of Group Physicians

1973 vs 1987 - Table 1						
PERCENTAGE DISTRIBUTION OF THE FOUR SPECIALTY CATEGORIES, BY GEOGRAPHICAL AREA						
GEOGR. AREA	YEAR	SPECIALTY				N
		Family	Medical	Surgical	Labor.	
CALGARY	1973	42.4	15.6	31.2	10.8	269
	1987	58.9	15.8	22.1	3.2	380
	Diff.	+16.5	+0.2	-9.1	-7.6	
RURAL CITIES	1973	59.4	16.1	17.9	6.6	106
	1987	56.4	18.6	18.6	6.4	172
	Diff.	-3.0	+2.5	+0.7	-0.2	
RURAL TOWNS	1973	89.2	4.2	6.6	0.0	120
	1987	92.1	3.5	4.4	0.0	203
	Diff.	+2.9	-0.7	-2.2	0.0	
SOUTH. ALTA.	1973	57.4	12.9	22.4	7.3	495
	1987	67.3	13.1	16.6	3.0	755
	Diff.	+9.9	+0.2	-5.8	-4.3	

The total number of Southern Albertan physicians involved in group practice increased from 495 in 1973, to 755 in 1987. While the proportion of the four specialty categories to the total number of group physicians remained fairly stable in Rural Cities and Rural Towns, a dramatic shift from surgical and laboratory specialists to family

physicians can be detected in Calgary. The percentage point increase of 16.5 for Calgary family physicians also accounts for the overall increase of family physicians in Southern Albertan medical groups (+9.9%).

3.1.2.2. The Proportion of Group Physicians

Notice that the following table uses a layout different from the previous one. Each percentage was calculated from the total of the respective cell, i.e. the 40 percentages in the "1973" and "1987" rows are based on 40 different totals. Rather than complicating the tables by including each cell's N, the reader is referred to the tables in Appendix C (1973 - Table 2, and 1987 - Table 2) for the absolute numbers.

1973 vs 1987 - Table 2						
PERCENTAGE THAT GROUP PHYSICIANS COMPRISE OF THE TOTAL NUMBER OF PRACTICING PHYSICIANS, BY GEOGRAPHICAL AREA AND SPECIALTY						
GEOGR. AREA	YEAR	SPECIALTY				TOTAL
		Family	Medical	Surgical	Labor.	
CALGARY	1973	40.6	27.5	56.0	67.4	42.9
	1987	38.3	19.4	41.8	17.9	32.7
	Diff.	-2.3	-8.1	-14.2	-49.5	-10.2
RURAL CITIES	1973	67.0	65.4	42.2	70.0	60.6
	1987	66.0	65.3	50.8	73.3	62.8
	Diff.	-1.0	-0.1	+8.6	+3.3	+2.2
RURAL TOWNS	1973	62.6	50.0	88.9	0.0	63.2
	1987	78.2	77.8	75.0	0.0	77.8
	Diff.	+15.6	+27.8	-13.9	0.0	+14.6
SOUTH. ALTA.	1973	52.0	33.9	54.4	67.9	49.9
	1987	52.3	26.9	45.3	27.7	44.5
	Diff.	+0.3	-7.0	-9.1	-40.2	-5.4

A recent survey of physicians in rural Alberta [90] basically confirms the findings for 1987: 74.8% of the surveyed rural physicians were in group practice; the respective figure found in this study is 77.8% (see Rural Towns, line 1987).

As explained in the "Comments on Table 2" (Appendix C), it

was very difficult to get valid figures for the total number of practicing physicians. In addition, by examining the three geographical areas separately, these figures show a very unequal increase between 1973 and 1987 (see Appendix C, 1987 - Table 2): in Calgary, the number of physicians increased by 86%, in the Rural Cities by 57%, and in the Rural Towns by 37%. These differences might be due (1) to general population shifts into urban areas (according to Census of Canada, in 1971, 62.7% of the Southern Albertan population lived in Calgary and the Rural Cities [91], and in 1986, 68.9% [92]); and/or (2) to a dramatic increase of "administrative (non-clinical) physicians" in Calgary, and to a lesser degree in the Rural Cities (opening of the Medical School in Calgary, a more accentuated increase of bureaucratic services in the cities, etc.). Assuming that the latter was the more decisive factor, the decrease of the proportion of group physicians in Calgary (-10.2%) and the very small increase of this proportion in the Rural Cities (+2.2%) might reflect a sharp increase in the proportion of "administrative physicians". Although we can find a clear increase of the proportion of group physicians in the Rural Towns (+14.6%), the overall percentage point difference (-5.4%) seems to be affected by those circumstances, too.

In addition, following discussions with physicians that have been practicing in Alberta for a long time, the author finds it questionable that there was an actual decrease of the proportion of group physicians between 1973 and 1987. Because of the absence of "administrative physicians", the percentage point increase that has been calculated for the Rural Towns (+14.6%) might even represent the most realistic figure for all of Southern Alberta. In summary, there is no indisputable answer to the second part of Research Question 1.(a), pertaining to change in the proportion of group physicians.

Knowing that the percentages and percentage point differences presented in Tables 2 may be somewhat defective, we still can look at the differences between the four specialty categories. The respective figures in Table 2 confirm the conclusions drawn from Table 1: there was a shift from specialists to family physicians. That means, assuming that there actually was an increase of the proportion of group physicians, this has to be explained by the higher proportion of family physicians joining or establishing group practices.

3.1.2.3. The Group Size

1973 vs 1987 - Table 3					
PERCENTAGE DISTRIBUTION OF THE FOUR GROUP SIZE CATEGORIES, BY GEOGRAPHICAL AREA					
GEOGR. AREA	YEAR	# of physicians per group			N
		2	3-5	≥6	
CALGARY	1973	65.5	27.4	7.1	84
	1987	59.2	33.3	7.5	120
	Diff.	-6.3	+5.9	+0.4	
RURAL CITIES	1973	46.7	13.3	40.0	15
	1987	40.8	29.6	29.6	27
	Diff.	-5.9	+16.3	-10.4	
RURAL TOWNS	1973	24.1	48.3	27.6	29
	1987	37.0	46.3	16.7	54
	Diff.	+12.9	-2.0	-10.9	
SOUTH. ALTA.	1973	53.9	30.5	15.6	128
	1987	50.7	36.3	13.0	201
	Diff.	-3.2	+5.8	-2.6	

Overall only the small groups (3-5 physicians) increased between 1973 and 1987, whereas two-physician groups and large groups (≥6 physicians) decreased to a small extent. While, roughly speaking, the trends in Calgary and the Rural Cities are similar to the overall trend, there is a

different trend in the Rural Towns: here mainly two-physician groups increased, whereas small and large groups decreased.

This is the first table displaying the number of group practices. The total number of group practices increased from 128 in 1973, to 201 in 1987. Although the relative increase of +57% appears to be quite impressive, it is lower than the relative increase of Southern Albertan physicians (+71%), shown in Appendix C, 1987 - Table 2. Reconsidering the limitations of the reported numbers of all practicing physicians (page 61), the comparison of these two relative increase figures is likely to be misleading. However, in response to the first part of Research Question 1.(a), we may state that there was a remarkable increase of group practices over the last 15 years.

Considering a recent estimate by the Medical Group Management Association Canada [41], the number of group practices found in this study appears to be too high: by their definition (i.e. three or more physicians, etc.) the MGMA(C) estimated approximately 600 groups in Canada, so the count of 99 Southern Albertan groups of three or more physicians (Appendix C, 1987 - Table 3a) can hardly be

correct. This comparison perfectly illustrates the weaknesses as well as the strengths of the applied search methods: although there is - due to different definitions - an obvious discrepancy between the two estimates, one has to bear in mind that this study does not want to explore "legal" group practices exclusively, but all kinds of medical grouping; thus, for this study, the chosen definition and search method would seem to be superior to more conservative ways to count and study group practices.

Continuing with a look at 1987, representing the current situation, we try to find out how the three geographical areas differ: In terms of Group Size, Calgary seems to be the exception. Rural Cities and Rural Towns are more similar, at least with respect to the ratio between two-physician groups and "real" groups: there is a 40:60 ratio in Rural Cities and Rural Towns, while Calgary shows a 60:40 ratio. Overall about half of the group practices are two-physician groups, and only half of them are "real" groups of three or more physicians.

While the distribution in Calgary is extremely skewed, we find a fairly symmetrical distribution in the Rural Cities, with a remarkably high proportion (29.6%) of large groups. In 1973 this figure was even higher (40.0%).

Although the distribution in the Rural Towns is somewhat skewed, it is notable that the small groups (3-5 physicians) exhibit the highest percentage, whereas in both Calgary and Rural Cities the two-physician groups are highest. We also have to consider that due to the lower number of physicians in Rural Towns, the likelihood of the existence of larger groups is certainly lower than in Calgary and in the Rural Cities. Therefore it is even more surprising that in both size categories of "real" groups (3-5, ≥ 6) the Rural Towns exhibit a larger percentage than Calgary, for large groups (≥ 6 physicians) the percentage is more than twice as high.

3.1.2.4. The Group Diversity

1973 vs 1987 - Table 4							
PERCENTAGE DISTRIBUTION OF THE FOUR GROUP DIVERSITY CATEGORIES, BY GEOGRAPHICAL AREA							
GEOGR. AREA	YEAR	Number of specialties per group					N
		Single-	Multi-specialty				
		1	2	3	4	2-4	
CALGARY	1973	75.0	21.4	2.4	1.2	25.0	84
	1987	83.3	14.2	1.7	0.8	16.7	120
	Diff.	+8.3	-7.2	-0.7	-0.4	-8.3	
RURAL CITIES	1973	33.3	40.0	20.0	6.7	66.7	15
	1987	40.7	40.7	14.9	3.7	59.3	27
	Diff.	+7.4	+0.7	-5.1	-3.0	-7.4	
RURAL TOWNS	1973	69.0	24.1	6.9	0.0	31.0	29
	1987	85.2	11.1	3.7	0.0	14.8	54
	Diff.	+16.2	-13.0	-3.2	0.0	-16.2	
SOUTH. ALTA.	1973	68.7	24.2	5.5	1.6	31.3	128
	1987	78.1	16.9	4.0	1.0	21.9	201
	Diff.	+9.4	-7.3	-1.5	-0.6	-9.4	

In all three geographical areas, there are apparent changes: in the course of these 15 years, single-specialty groups increased, whereas multi-specialty groups decreased. This shift is most manifest in the Rural Towns (16.2%), but it is very clear in Calgary and the Rural Cities, too (8.3%)

and 7.4%, respectively). The overall shift from multi-specialty to single-specialty groups amounts to 9.4%.

Compared with the percentage point differences that we found for the variable Group Size, these figures are significantly higher. Hence, we have to conclude that between 1973 and 1987 the diversity of Southern Albertan groups changed much more than their size.

Focusing on the most recent data, from 1987, separately (see the lines specifying 1987 in the table above, or Appendix C, 1987 - Table 4), the most striking finding is the extreme skewness of their distribution: 78.1% of the group practices are single-specialty groups.

Another surprising fact is the similarity of the figures found in Calgary and in the Rural Towns (83.3% and 85.2% single-specialty groups, respectively), while the figures for the Rural Cities are almost inverse: only 40.7% single-specialty groups, and 59.3% multi-specialty groups. In all three categories of multi-specialty groups (2, 3, or 4 specialties) the Rural Cities clearly have the highest percentage.

3.1.2.5. The Combination of Specialties

1973 vs 1987 - Table 5						
PERCENTAGE DISTRIBUTION OF VARIOUS COMBINATIONS OF SPECIALTIES, BY GEOGRAPHICAL AREA						
GEOGR. AREA	YEAR	Single-specialty		Multi-specialty		N
		family phys. only	other spec. only	family and others	other spec. only	
CALGARY	1973	30.9	44.1	19.1	5.9	84
	1987	51.6	31.7	10.9	5.8	120
	Diff.	+20.7	-12.4	-8.2	-0.1	
RURAL CITIES	1973	20.0	13.3	66.7	0.0	15
	1987	11.1	29.6	51.9	7.4	27
	Diff.	-8.9	+16.3	-14.8	+7.4	
RURAL TOWNS	1973	69.0	0.0	31.0	0.0	29
	1987	85.2	0.0	14.8	0.0	54
	Diff.	+16.2	0.0	-16.2	0.0	
SOUTH. ALTA.	1973	38.2	30.5	27.3	4.0	128
	1987	55.2	22.9	17.4	4.5	201
	Diff.	+17.0	-7.6	-9.9	+0.5	

In this table and in Tables 5 in Appendix C, the figures for single-specialty and multi-specialty groups from Tables 4 have been further subdivided, based on the presence or absence of family physicians. After having seen

Tables 1 and 2, it is not surprising that the only category that increased in the course of the last 15 years is the family practice group (+17.0%). While multi-specialty groups without family physicians remained fairly stable, we can find a decline of both single-specialty groups without family physicians (-7.6%) and multi-specialty groups of family physicians and specialists (-9.9%).

As in Tables 4, the Rural Cities exhibit a trend distinct from the trend in the other two geographical areas: here both categories with family physicians decreased, while the groups without family physicians increased.

Again examining 1987 separately, we find that more than half (55.2%) of the group practices are family practice groups. Due to the higher proportion of family physicians in Rural Towns, the percentage of family practice groups obviously is higher there (85.2%). Once more, the Rural Cities are the exception: while multi-specialty groups of family physicians and specialists are rare in Calgary and in the Rural Towns, they are frequent in the Rural Cities, in fact, they represent more than half (51.9%) of all group practices.

3.1.2.6. The Group Types

In this study, the coupling of the variables Group Size (number of physicians per group) and Group Diversity (number of specialties per group) determines the Group Type (see Table 2.3.).

The layout of Tables 6 in Appendix C and of the table below is different from the layouts of all previous tables: Tables 6 present a tabulation of two outcome variables (Group Size and Group Diversity); in addition, the margins ("TOTAL") represent a summary of Tables 3 and 4. Therefore Tables 6 have to be regarded as the most comprehensive tables. Most of the questionnaire results (Section 3.2.) will be presented by using this type of layout.

Notice that the percentages displayed in Tables 6 represent percentages of the Grand Total, whereas Tables 1, 3, 4, and 5 specified row percent (% of each geographical area's total), and Table 2, cell percent (% of all physicians). Therefore, unlike the percentages in all other tables, the percentages in Tables 6 add up horizontally and vertically. The absolute values of the 1973 and 1987 Grand Totals are specified in a footnote.

<div>1973 vs 1987</div> <div>Table 6</div>				
PERCENTAGE DISTRIBUTION OF VARIOUS TYPES OF GROUP PRACTICE				
GROUP SIZE	YEAR	GROUP DIVERSITY		TOTAL
		Single	Multi	
2	1973	39.8	14.1	53.9
	1987	40.3	10.4	50.7
	Diff.	+0.5	-3.7	-3.2
Small	1973	23.4	7.1	30.5
	1987	31.8	4.5	36.3
	Diff.	+8.4	-2.6	+5.8
Large	1973	5.5	10.1	15.6
	1987	6.0	7.0	13.0
	Diff.	+0.5	-3.1	-2.6
TOTAL	1973	68.7	31.3	100.0 ¹
	1987	78.1	21.9	100.0 ²
	Diff.	+9.4	-9.4	0.0

¹ Grand Total for 1973: N=128

² Grand Total for 1987: N=201

The highest percentage point change occurred in small single-specialty groups (+8.4%), the changes in the five other Group Types are less distinct.

The most remarkable conclusion that we can draw from this table is that Group Diversity shows a clearer changing pattern

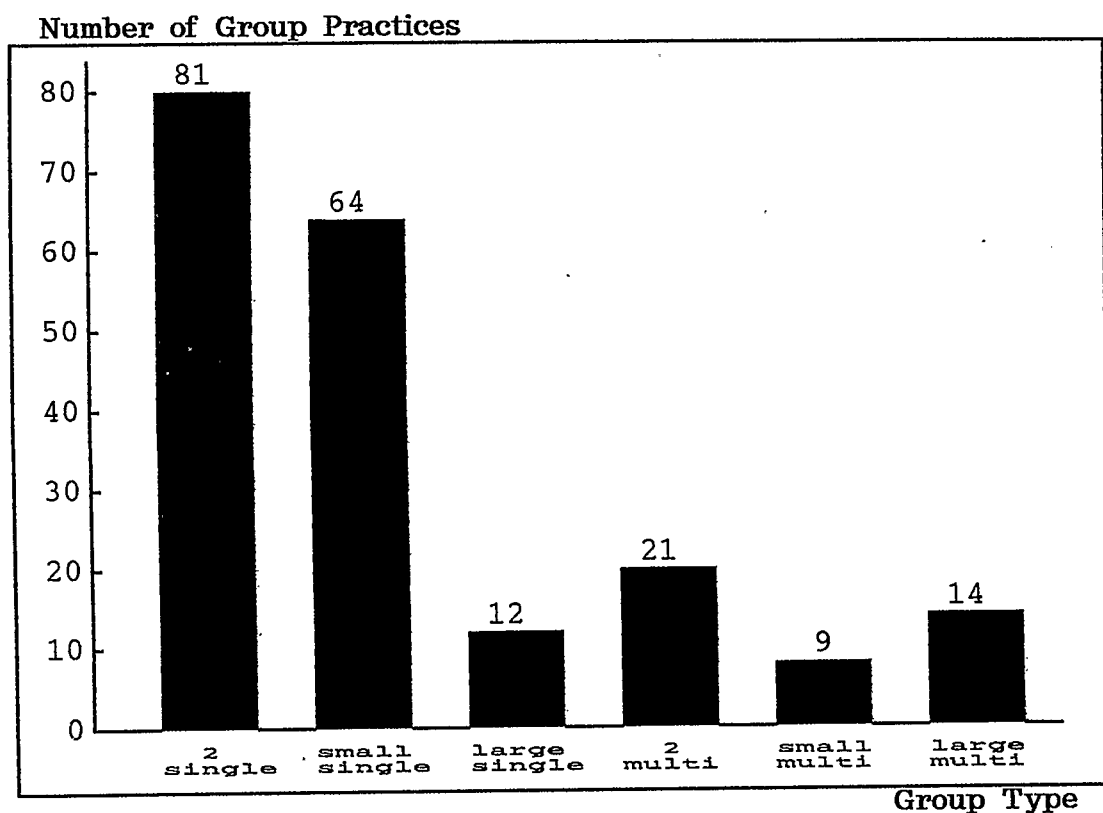
than Group Size: Checking for Group Diversity first (looking vertically), we find that all size categories of single-specialty groups increased, and all size categories of multi-specialty groups decreased. On the other hand, Group Size (looking horizontally) does not show a consistent pattern over the categories of Group Diversity. This is also reflected in the total changes, displayed in the margins of the table (and in 1973 vs 1987 - Tables 3 and 4), that are more explicit for the variable Group Diversity. This confirms the conclusion that was drawn above (page 68): between 1973 and 1987, the diversity of Southern Albertan group practices changed much more than their size.

In response to Research Question 1.(b), we can say that there was a notable change of the composition of Southern Albertan group practices over the last 15 years.

After having examined the variables Group Size and Group Diversity separately (Tables 3 and 4), it is not surprising that, in 1987, representing the current situation, the most frequent type of group practice was the two-physician single-specialty group (40.3%). Second was the small single-specialty group (31.8%), all other Group Types had a considerably lower percentage, in essence showing a sharp

reduction from the upper left corner to the lower right corner of the table. Figure 3.1. below shows this reduction graphically:

Figure 3.1. DISTRIBUTION OF GROUP TYPE CATEGORIES
(1987, Stage I)



3.2. Stage II

Survey of the 1988 Group Practices

3.2.1. RESPONSE RATE

Fifty-nine physicians (66.3%) returned the mailed questionnaire before day 26, and therefore did not need any follow-up. To increase the response rate, 39 follow-up calls were made, 30 on day 26, and nine on day 50 after the original mailing. Obviously, the nine groups that were called on day 50, had already been contacted on day 26.

Out of the 39 follow-up calls, 13 only served the purpose of reminding the physician of the still not returned questionnaire; 21 were followed by the mailing of another questionnaire; four confirmed the non-eligibility of the group; and only one confirmed the group's unwillingness to participate in the survey.

A group was considered non-eligible for this study and therefore was excluded, if (1) it comprised only two physicians, or (2) the contacted physician clearly stated: "We are not a group". The latter exclusion criterion unfortunately is fairly imprecise, because the four physicians that made this statement probably based it on their own

conception of group practice, not on the definition that underlies this study. For example, one physician that actually did return the questionnaire stated:

Our group is a loosely knit group. It really should not be considered a group. We have tended to practice privately, but share the space and make use of the non-medical staff as a group. Referrals are made between us based on our respective interests and expertise.

Out of the 89 groups that got a mailed questionnaire, four groups (4.5%) did not return it, and/or stated in the course of the follow-up call that they are not interested in participating; those four groups have to be considered as the "true" non-respondents. The remaining 85 respondents make a response rate of 95.5%.

Four groups (4.5%) did not return the questionnaire, after they confirmed their non-eligibility by telephone. The remaining 81 groups returned the questionnaire, producing a return rate of 91.0%.

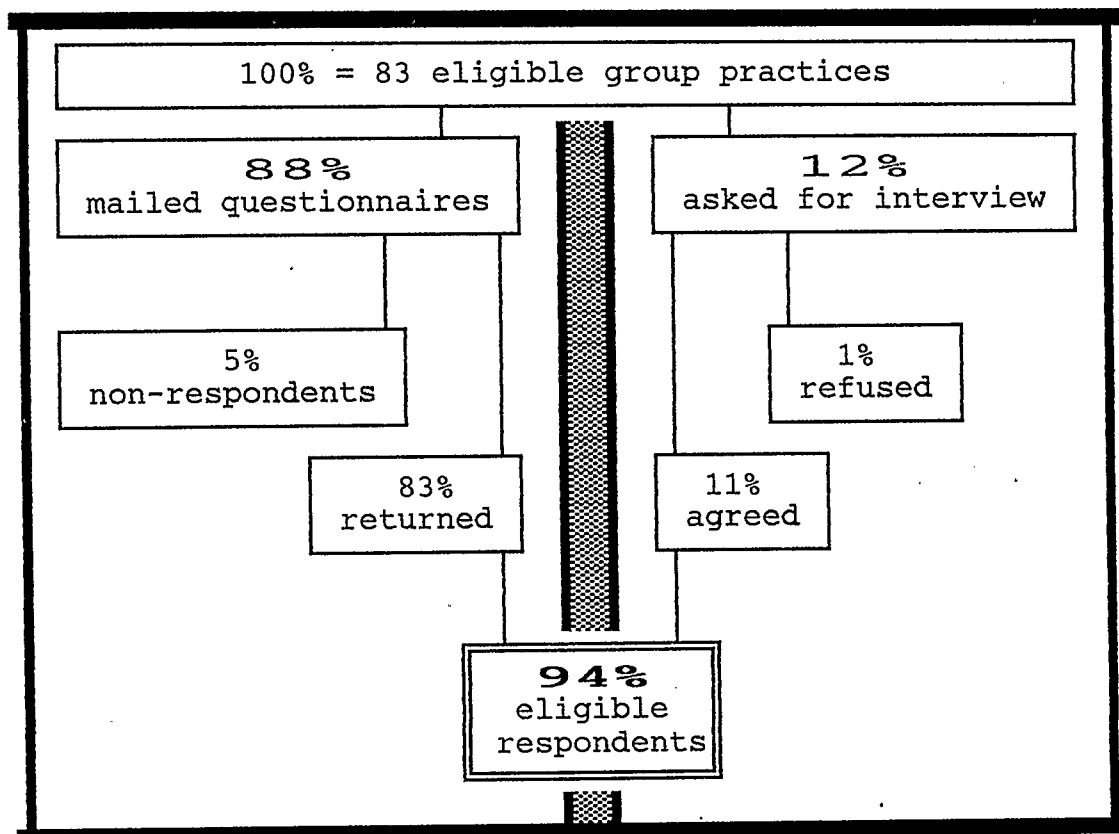
After the return of the questionnaires, 12 groups (13.5%) turned out to be non-eligible. Excluding them, we end up with 69 eligible groups (77.5%).

Nine (90.0%) of the ten physicians that were asked for an interview agreed to participate, only one (10.0%) refused.

Another physician was randomly selected from the same group, but he also refused.

The following diagram represents an attempt to summarize the above, including both the questionnaire sample and the interview sample. Notice that non-eligible groups are not displayed; the given percentages are based on the total of eligible groups: $99-16=83$ eligible group practices.

Figure 3.2. RESPONSE RATES, RETURN RATES, AND ELIGIBLE RESPONDENTS



For the mailed questionnaire, we can further analyze the response rate by geographical area (the interview sample comprised only group practices in Calgary):

Table 3.1. RESPONSE RATE, BY GEOGRAPHICAL AREA (Mailed Questionnaire Only)			
Geogr. Area	responded	returned	eligible
Calgary	97.4%	94.9%	76.9%
Rural Cities	87.5%	75.0%	56.3%
Rural Towns	97.1%	94.1%	88.2%
South. Alta.	95.5%	91.0%	77.5%

As there was only one "true" non-respondent in both Calgary and the Rural Towns, response rate and return rate were highest in those geographical areas. Calgary had a higher number of non-eligible respondents than the Rural Towns; therefore the percentage of eligible respondents is highest in the Rural Towns.

The proportion of both non-respondents and non-eligible respondents was highest in the Rural Cities. Hence, in the above table, all three figures for this geographical area are the lowest.

3.2.2. GROUP COMPOSITION

3.2.2.1. Group Size, Group Diversity, and Group Types

Table 3.2. shows the distribution of Group Types in the survey sample:

Table 3.2. NUMBER OF SURVEYED GROUP PRACTICES, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	46 59.0	5 6.4	51 65.4
Large	14 17.9	13 16.7	27 34.6
TOTAL	60 76.9	18 23.1	78 100.0

Not surprisingly, the majority of the group practices can be found in the upper left corner of the table, i.e. they tend to be small and single-specialty. Contrasted with the figures in the margins of the table, the number of large multi-specialty groups appears to be unexpectedly high. These two observations would simply prove that single-specialty groups tend to be smaller, whereas multi-specialty groups tend to be larger. As already explained

in Section 2.2.2., this led to the decision not to cross-tabulate the outcome variables with Group Size and Group Diversity separately, but to cross-tabulate them with the Group Types.

The following three figures illustrate the extreme skewness of the distribution of the study population. Notice that Figures 3.3. and 3.4. display the frequencies of Group Size and Group Diversity, before they have been collapsed into the categories "small", "large", "single-specialty", and "multi-specialty".

Figure 3.3. DISTRIBUTION OF GROUP SIZE CATEGORIES
(Stage II)

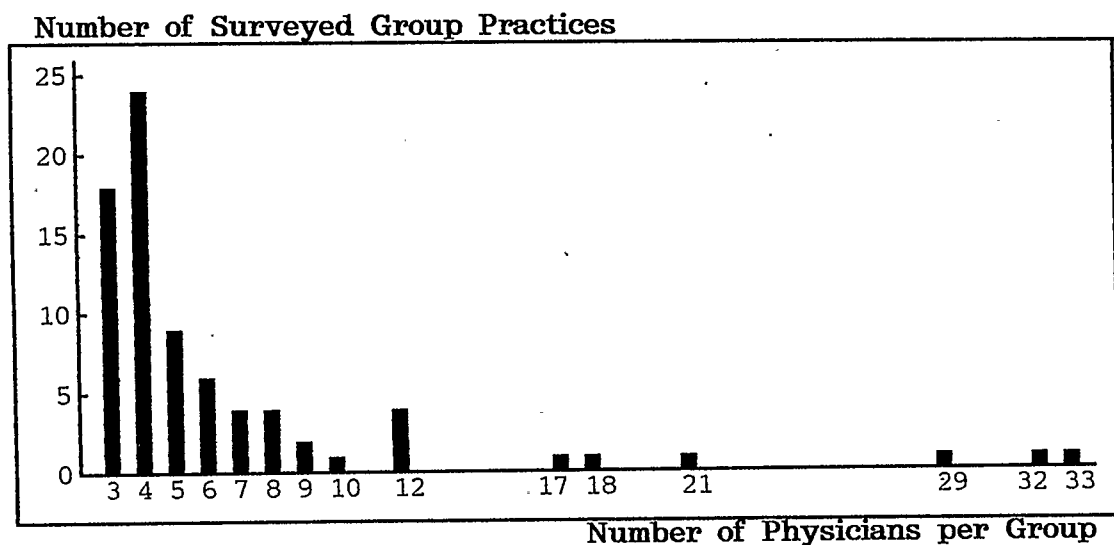


Figure 3.4. DISTRIBUTION OF GROUP DIVERSITY CATEGORIES (Stage II)

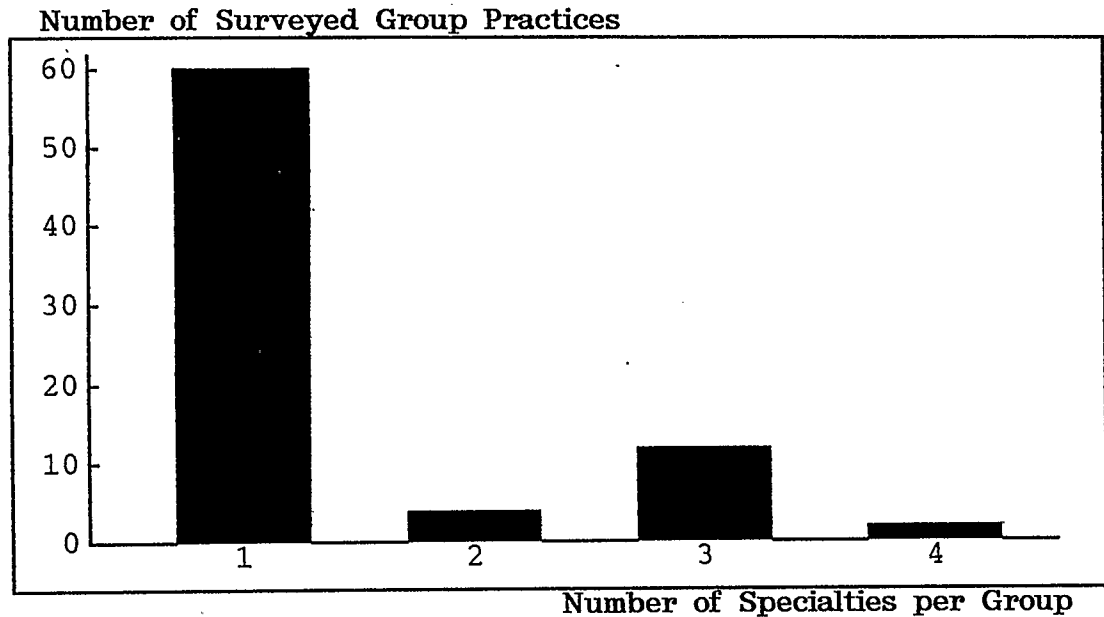


Figure 3.5. DISTRIBUTION OF GROUP TYPE CATEGORIES (Stage II)

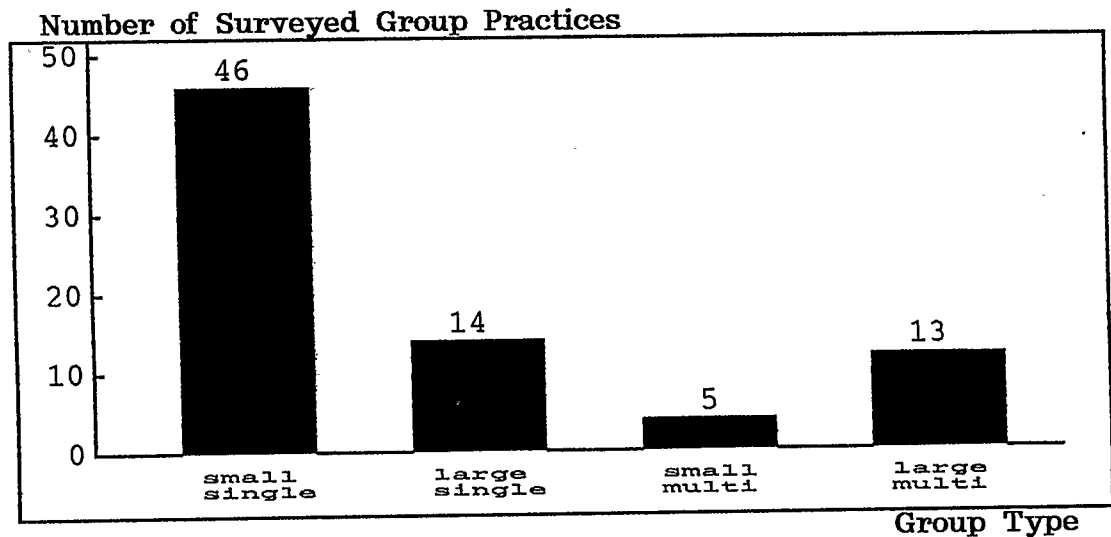


Table 3.3. represents a comparison of the findings from Stage I with those from Stage II. Notice that the percentages specified here for Stage I do not correspond with the figures in 1987 - Table 6: in order to be comparable with the Stage II results, two-physician groups have been excluded from the Stage I results.

Table 3.3. COMPARISON OF THE PERCENTAGE DISTRIBUTIONS OF GROUP TYPES IN STAGE I AND STAGE II				
GROUP SIZE	STAGE	GROUP DIVERSITY		TOTAL
		Single	Multi	
Small	Stage I	64.7	9.1	73.8
	Stage II	59.0	6.4	65.4
Large	Stage I	12.1	14.1	26.2
	Stage II	17.9	16.7	34.6
TOTAL	Stage I	76.8	23.2	100.0 ¹
	Stage II	76.9	23.1	100.0 ²

¹ Grand Total for Stage I: N=99

² Grand Total for Stage II: N=78

There are no dramatic differences between the findings of Stage I and Stage II. In Stage II, a lower percentage of small groups has been found, while large groups exhibit a higher percentage than in Stage I. On the other hand, there is an astonishing homogeneousness of the findings for Group Diversity: In both Stage I and Stage II, almost exactly the same ratio (77:23) has been found.

The similarity of the percentage distributions of Stage I and II implies that (1) the survey findings confirm the Stage I findings and (2) it will be possible to synthesize the conclusions from Stage I and II, and to discuss implications of the overall findings. The latter specifically refers to Research Question 4. on page 26 ("... implications for ... future health care delivery?"): as the survey is based on a cross-sectional research method, focusing on one specific point in time only, we need comparable longitudinal data to be able to identify implications for the future. In this study, Stage I provides the longitudinal data and Stage II the cross-sectional data.

3.2.2.2. Personnel

Aside from the combination of physicians, Question 1. (Appendix D) also provided tabulation of different types of personnel. Social workers/therapists worked in only three of the surveyed group practices, and therefore were excluded from further analysis. According to the means of the remaining five types of personnel (nurses $\mu=3.7$, technicians $\mu=1.1$, receptionists $\mu=2.4$, typists $\mu=2.7$, and administrators $\mu=0.6$) the counts of those personnel types have been collapsed into two categories each: "above

average count", and "below average count". For all five types of personnel, those two categories were tabulated with the four Group Types. Table 3.4. shows the respective figures for nurses, Table 3.5. for administrators:

Table 3.4. PERCENTAGE OF GROUPS WITH AN "ABOVE AVERAGE COUNT" OF NURSES, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	22.2 N=45	0.0 N=5	20.0 N=50
Large	50.0 N=14	66.7 N=12	57.7 N=26
TOTAL	28.8 N=59	47.1 N=17	32.9 N=76

Table 3.5. PERCENTAGE OF GROUPS WITH AN "ABOVE AVERAGE COUNT" OF ADMINISTRATORS, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	24.4 N=45	60.0 N=5	28.0 N=50
Large	85.7 N=14	92.3 N=13	88.9 N=27
TOTAL	39.0 N=59	83.3 N=18	49.4 N=77

Roughly speaking, the tables are very similar, but there is one exception: the large difference between the two rates for **small multi-specialty groups**. However, this is the Group Type with the lowest N, and therefore sizeable fluctuations can occur very easily. In addition, this Group Type represents the most uncommon group structure, combining the two (almost contradictory) characteristics "small" and "multi-specialty". In the narrative description of tables that are affected by trend inconsistencies involving this Group Type, this problem will only be mentioned briefly, and inconsistencies will be ignored.

For technicians and receptionists, percentage distributions similar to the nurses' could be found, whereas the distribution for typists was similar to that for administrators. This partitioning is not surprising, because those staff types differ in one respect: nurses, technicians, and receptionists - to varying degrees - are medical professionals, whereas administrators and typists are purely non-medical, bureaucratic types of personnel.

For the medical personnel, the "above average count" rates are generally lower than for the non-medical personnel. However, for all types of personnel the figures increase with increasing Group Size and Group Diversity. The per-

centage differences between small groups and large groups are more accentuated than the differences between single-specialty and multi-specialty groups. However, it is "natural" that large groups have more employees than small groups. Therefore the difference between the two Group Diversity categories appears to be more striking: although we can find some trend inconsistencies over the categories of Group Size, there seems to be a trend to more personnel in multi-specialty groups. Overall we may conclude that a group is more likely to have an "above average count" of personnel, if it is large, and perhaps if it is multi-specialty.

At this point it seems to be appropriate to reflect upon the issue of "truisms" in this study. The fact that large groups employ more staff than small groups is not surprising. One easily assumes also that with increasing Group Size not only staff, but also all types of collaboration would increase, simply because there would be more opportunities to collaborate. One is tempted to assume the same for Group Diversity ("what is to share, if all are experts in the same field?"), although it seems to be not as clear-cut. To avoid misleading prejudice, all results will be reported here. However, apparent "truisms" will be dealt with very briefly, while results that differ from the expectations will be elucidated in more detail.

3.2.2.3. Committees, Directors and "Leaders"

24.7% of the surveyed groups have an executive committee. The differences between the four Group Types are mostly due to variations in Group Size, whereas Group Diversity again shows an inconsistent trend: large groups are more likely to have an executive committee.

While almost half of the groups have some kind of informal "leader", only 19.5% have a formal director. Once more, the existence of a director is mainly explained by differences between the categories of the variable Group Size: large groups tend to have a director.

Summarizing Section 3.2.2. we can state: Large groups clearly tend to function on a higher level of staff organization than small groups. This is not surprising, because it is well-known that an increase of the size of any social group increases the formalization of roles and interactions between the members (see Section 1.2.4.). The respective differences between single-specialty and multi-specialty groups are not as apparent; but if there is any overall trend for the variable Group Diversity, multi-specialty groups have a more formalized way to organize their personnel.

3.2.3. PHYSICIAN BENEFITS

The categorization of the forms of group collaboration into the two categories PHYSICIAN BENEFITS and PATIENT BENEFITS has been discussed in Section 1.3. (page 25).

It has already been stated (Section 1.2.4.) that Group Size is expected to have a more clear-cut influence on the quantity and quality of collaboration among group physicians than Group Diversity. Large groups will probably utilize most forms of collaboration under study to a higher degree than small groups. As to PHYSICIAN BENEFITS, we especially would expect that large groups would show a higher frequency of Joint Use of Facilities and Equipment, On-call and Coverage Within Group, and Business Meetings. Joint Use of Personnel might be more frequent in small groups, because sharing of staff would be an economic necessity. As financial matters usually are a more delicate issue and largely depend on personal opinions, there is no apparent reason to expect that, with regards to Sharing of Profits and Expenses, large groups would be different from small groups.

Regarding Group Diversity, there is no expectation that single-specialty or multi-specialty groups would have a

higher degree of Joint Use of Facilities and Equipment, and Sharing of Profits and Expenses. According to Blau's analysis ([67], page 20), multi-specialty groups might hold more Business Meetings. Joint Use of Personnel might be higher in single-specialty groups, because - for example - it would be unlikely for two physicians of a different specialty to have one nurse in common. On-call and Coverage Within Group are expected to be higher in single-specialty groups, because a larger pool of physicians of the same specialty should increase the opportunities to cover for each other.

3.2.3.1. Joint Use of Personnel

Table 3.6. NUMBER OF GROUP PRACTICES, BY TYPE OF PERSONNEL AND JOINT USE OF PERSONNEL			
TYPE OF PERSONNEL	JOINT USE OF PERSONNEL		TOTAL
	Yes	No	
Nurses row %	47 74.6	16 25.4	63 100.0
Receptionists row %	67 94.4	4 5.6	71 100.0
Typists row %	62 95.4	3 4.6	65 100.0

In about three quarters of the surveyed groups, the physicians share nurses, i.e. one nurse works with more than one group physician, while about 95% of the groups share receptionists and typists.

Examining the four Group Types separately, no apparent differences could be found for the joint use of receptionists and typists. This probably is due to the very small portion of groups that do not share those two types of personnel. For nurses, this proportion is larger, and Table 3.7. exhibits the respective figures.

Notice that in all tables below (Sections 3.2.3. and 3.2.4.), the specified percentages are based on the total of the cell. That means, if there are two or more percentage figures per cell, they add up to 100%; and if there is only one percentage per cell (usually the "yes" answer), the percentage of the opposite answer (usually the "no" answer) is just the complement of the cell's percentage (100% minus x%). In addition to the percentages, each table specifies the N's of all cells.

Table 3.7. PERCENTAGE OF GROUPS
THAT JOINTLY USE NURSES,
BY GROUP SIZE AND
GROUP DIVERSITY

GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	75.8 N=33	100.0 N=5	78.9 N=38
Large	76.9 N=13	58.3 N=12	68.0 N=25
TOTAL	76.1 N=46	70.6 N=17	74.6 N=63

Based on the four central cells (the four Group Types) only, it is hard to determine a clear trend, especially with the 100% recorded for small multi-specialty groups. However, reservations regarding this Group Type have been elaborated upon in Section 3.2.2.2. (low N, uncommon group structure). Overall, one may conclude: a group more likely shares nurses, if it is small and/or single-specialty, which basically supports the initial hypothesis.

3.2.3.2. Joint Use of Facilities and Equipment

The answers to question 4. of the questionnaire (Appendix D) were coded 0-4, according to the number of boxes checked off. It was assumed that the more boxes checked

off the more sharing of facilities occurred in the group. Therefore the codes can be treated as simple numerical values, and basic descriptive statistics can be calculated. Table 3.8. displays the means and standard deviations for the four Group Types:

Table 3.8. MEAN SCORES FOR JOINT USE OF FACILITIES, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	2.91 $\sigma=1.06$	2.60 $\sigma=0.89$	2.88 $\sigma=1.04$
Large	3.07 $\sigma=0.83$	3.23 $\sigma=0.83$	3.15 $\sigma=0.82$
TOTAL	2.95 $\sigma=1.01$	3.06 $\sigma=0.87$	2.97 $\sigma=0.97$

All Group Types have mean scores around 3, with small multi-specialty groups showing the lowest score. For all types, the medians are 3, except for small multi-specialty groups that show a median score of 2. As all marginal medians (for the categories of Group Size and Group Diversity) and the overall median are 3 as well, the low mean and median of small multi-specialty groups have to be regarded as the most deviant figures of this table. But by ignoring the resulting inconsistency on the Group Div-

ersity level, we find a trend reverse to the previous one: a group more likely shares office equipment and facilities, if it is large and/or multi-specialty. The latter was not expected, but the difference is small.

3.2.3.3. Sharing of Profits and Expenses

Out of the total of 78 group practices that provided useable data, 24 (30.8%) indicated that group physicians share profits, whereas the remaining 54 groups (69.2%) do not share profits from income generated in the practice. Table 3.9. shows the profit-sharing figures for the four Group Types separately:

Table 3.9. PERCENTAGE OF GROUPS THAT SHARE PROFITS, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	21.7 N=46	40.0 N=5	23.5 N=51
Large	35.7 N=14	53.8 N=13	44.4 N=27
TOTAL	25.0 N=60	50.0 N=18	30.8 N=78

Three of the four Group Types exhibit a figure between 20% and 40%, i.e. are distributed around the overall 30.8%. Only large multi-specialty group practices have an unusually high percentage of profit-sharing groups (53.8%).

Again looking at the total percentages (in the margins of the table), we can detect a very clear trend: a group more likely shares profits, if it is large and/or multi-specialty, and contrary to the two previous PHYSICIAN BENEFITS, there are no inconsistencies when checking for the trend over the categories of the other marginal variable.

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Among groups that do not share profits, only 11.3% pay staff's salaries and operating expenses on an individual basis, while 47.2% of non-profit-sharing groups partly share their expenses, and 41.5% share all expenses.

None of the groups that share profits pay expenses individually, 8.3% partly share expenses, while the vast majority (91.7%) of the profit-sharing groups also shares all the operating expenses.

Table 3.10. displays the expense-sharing figures by Group Types, regardless of their practice of profit-sharing:

Table 3.10. PERCENTAGE DISTRIBUTION OF GROUPS, BY SHARING OF EXPENSES, GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	SHARING OF EXPENSES	GROUP DIVERSITY		TOTAL
		Single	Multi	
Small	Yes	55.5	60.0	56.0
	Partly	35.6	40.0	36.0
	No	8.9 N=45	0.0 N=5	8.0 N=50
Large	Yes	42.9	76.9	59.3
	Partly	42.9	23.1	33.3
	No	14.2 N=14	0.0 N=13	7.4 N=27
TOTAL	Yes	52.5	72.2	57.1
	Partly	37.3	27.8	35.1
	No	10.2 N=59	0.0 N=18	7.8 N=77

There are only small variations between the two categories of Group Size; this is mainly due to an inconsistent trend over the categories of Group Diversity. The differences between single-specialty and multi-specialty groups are more evident, and they are consistent over the categories of Group Size: Only 52.5% of the single-specialty groups, but 72.2% of the multi-specialty groups, share all their expenses. While more than 10% of the single-specialty groups do not share expenses at all, there is no multi-specialty group employing this policy. Therefore we can conclude that a group more likely shares operating expenses, if it is multi-specialty. The role of Group Size in predicting

the amount of expense-sharing cannot be determined.

The findings about financial policies regarding the variable Group Size are not surprising, but the findings regarding Group Diversity are. There is a clearly higher rate of profit-sharing and expense-sharing in multi-specialty groups. As the willingness to share financially is a very personal decision that cannot as easily be explained by structural factors, there seems to be a "multi-specialty personality" that - among other characteristics - has a higher willingness to share. This proposed "sharing personality trait" would partly explain the strong tendency to share financially, and the somewhat weaker tendency to share facilities (see preceding section), both of which were not expected. Such observations might be helpful in explaining findings of the following sections, too.

3.2.3.4. On-call and Coverage Within Group

Out of the 78 group practices that have been used for these analyses, 66.7% have an on-call schedule within the group; 29.5% share on-call with members of another office, or share within the group and with another office;

and only 3.8% of the groups do not have on-call arrangements at all. Table 3.11. shows the percentages of groups that share on-call exclusively within the group:

Table 3.11. PERCENTAGE OF GROUPS THAT SHARE ON-CALL ONLY WITHIN THE GROUP, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	56.5 N=46	40.0 N=5	54.9 N=51
Large	85.7 N=14	92.3 N=13	88.9 N=27
TOTAL	63.3 N=60	77.8 N=18	66.7 N=78

The differences between the four Group Types are apparent. There is a consistent trend for Group Size (large groups more frequently share on-call within the group), whereas the trend for Group Diversity is not consistent over the categories of Group Size: on the small-group level more single-specialty groups share within, but on the large-group level more multi-specialty groups share within the group. One possible explanation of this inconsistency might be that within small multi-specialty groups, there are only few physicians (or no physician at all) of the

same specialty that could be on-call for another group physician. For that reason and because of the small N in this cell, we can however conclude that a group more likely shares on-call within the group exclusively, if it is large and/or multi-specialty.

Although the latter trend is rather weak, it is surprising that there is a tendency to a higher rate of on-call sharing in multi-specialty groups at all. According to our expectations, single-specialty groups should share on-call more extensively. Aside from the proposed "sharing personality trait" of physicians involved in multi-specialty group practice (see page 96), this finding may simply be explained by a major limitation of this study: the strong correlations between small and single-specialty, and between large and multi-specialty.

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In case of a short-term absence (1-2 weeks) of a group physician, 79.5% of the groups frequently cover for him/her within the group, and only 11.7% of the groups frequently bring in a locum. In case of a long-term absence (more than two weeks), 60.3% frequently cover within the group, while 26.0% frequently get a locum.

By combining the answers to short-term group coverage and long-term group coverage, an overall estimate for the frequency of group coverage was obtained. The respective figures for the four Group Types are displayed in Table 3.12. Notice that due to the combining of two variables, the N's are artificial numbers (Grand Total: $N=2 \times 78=156$).

Table 3.12. PERCENTAGE DISTRIBUTION OF GROUPS, BY GROUP COVERAGE, GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	COVERAGE WITHIN THE GROUP	GROUP DIVERSITY		TOTAL
		Single	Multi	
Small	Frequently	65.2	70.0	65.7
	Occasionally	25.0	10.0	23.5
	Never	9.8 N=92	20.0 N=10	10.8 N=102
Large	Frequently	78.6	76.9	77.8
	Occasionally	14.3	19.2	16.7
	Never	7.1 N=28	3.9 N=26	5.5 N=54
TOTAL	Frequently	68.3	75.0	69.9
	Occasionally	22.5	16.7	21.1
	Never	9.2 N=120	8.3 N=36	9.0 N=156

Once more we find inconsistent trends for the variable Group Diversity that may partly be explained by the special status of small multi-specialty groups previously noted. But even by considering that, it is impossible to identify a clear pattern for Group Diversity, whereas

Group Size shows a clear and consistent pattern: a group more likely covers for an absent physician within the group, if it is large. Although we expected single-specialty groups to show a higher tendency to cover within, the fact that only Group Size appears to determine the amount of coverage within the group basically supports the initial expectations.

3.2.3.5. Business Meetings

In question 12. (Appendix D), the group physicians were asked for the average number of formal meetings per month or per year. For this analysis, the per-month figures have been converted into per-year figures. The number of clinical conferences per year (see Section 3.2.4.1.) is a combination of the two types of "patient-oriented meetings" specified in question 12. The number of business meetings per year was obtained by combining the four types of "group-oriented meetings".

The majority (60.1%) of group practices has no business meetings at all. 20.8% have 1-4 meetings per year, 17.5% 5-12 meetings, and 1.6% meet more than 12 times yearly. One group meets for business reasons 144 times per year;

it was excluded from further analysis.

The average number of formal business meetings per year can be treated as a regular numerical value, and basic descriptive statistics like mean, standard deviation, and median can be calculated. Table 3.13. summarizes those statistics for the four Group Types separately:

Table 3.13. MEAN NUMBER OF BUSINESS MEETINGS PER YEAR, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	2.31 $\sigma=4.19$	3.90 $\sigma=10.6$	2.47 $\sigma=5.18$
Large	3.79 $\sigma=6.22$	3.73 $\sigma=5.74$	3.76 $\sigma=5.96$
TOTAL	2.66 $\sigma=4.78$	3.78 $\sigma=7.34$	2.92 $\sigma=5.49$

One pattern can clearly be seen: the lowest mean number of business meetings occurs in small single-specialty groups, whereas the three other Group Types exhibit considerably higher means. Even by re-including the group that meets 144 times (a small single-specialty group!), the mean for this Group Type increases only to 3.09. Because of this different status of small single-specialty

groups, the overall trend seems to be evident: a group more often meets for business reasons, if it is large and multi-specialty. But the figures might be misleading; there actually is no difference between the three other Group Types, therefore we may only conclude: small single-specialty groups less often meet for business reasons than all other types of group practice. However, a look at the σ -values seems to invalidate even this rather cautious statement. The enormous overlap of the distributions makes the comparison of means rather useless. The medians do not help either, because they would indicate a slightly different trend: only large single-specialty groups have a median of 1 business meeting per year, the other Group Types exhibit a median=0.

Based on the literature reviewed in Section 1.2.4., we expected that an increase of size and complexity of the group would increase the formalization of the interactions between the group members. Although the detected trend somewhat supports the proposed relationship, it appears to be too weak to lead to a meaningful overall conclusion regarding the variable Business Meetings.

3.2.4. PATIENT BENEFITS

Regarding **Group Size**, we generally would expect a higher utilization of PATIENT BENEFITS in large groups. This should especially be true for the variables Consultations Within Group and Referrals Within Group, because the more physicians to consult or to refer to, the higher the probability of consultations and referrals. Clinical Conferences and Common Chart Entry might be more common in large groups, too, but our expectations in this regard are not as clear as for consultations and referrals.

For **Group Diversity** the expectations are different from the expectations in the category PHYSICIAN BENEFITS. One of the basic assumptions of this study was that the greater the diversity of specialties, the larger the incentive to look for clinical help within the group (see Section 1.2.4.). Consultations and referrals principally would happen between physicians of different specialties, therefore they will rarely be reported by single-specialty groups. That means we expect a higher rate of Consultations Within Group and Referrals Within Group in multi-specialty groups. The same might be true for Clinical Conferences and Common Chart Entry, but not necessarily: physicians might feel more comfortable discussing cases

with peers from their own specialty and therefore single-specialty groups might hold more Clinical Conferences. The frequency of Common Chart Entry would be increased with the frequency of On-call and Coverage Within Group.

3.2.4.1. Clinical Conferences

The procedures of obtaining the average number of clinical conferences per year has been explained in the first paragraph of Section 3.2.3.5.

The percentage of groups that have no clinical conferences at all (72.1%) is even larger than the respective figure for business meetings (60.1%). 9.1% of the groups have 1-4 meetings per year, 12.3% meet 5-12 times, and 6.5% more than 12 times yearly. Two group practices (both small single-specialty groups) hold 240 clinical conferences per year; they have been excluded from further analysis. But it is important to realize the tremendous variations between the surveyed groups: the frequency of clinical conferences varies from "none at all" to "daily", the standard deviation σ for the whole data set (including the two extreme results) is 28.02 meetings.

Table 3.14. presents some basic descriptive statistics for the four Group Types separately:

Table 3.14. MEAN NUMBER OF CLINICAL CONFERENCES PER YEAR, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	3.15 $\sigma=8.86$	0.60 $\sigma=1.90$	2.89 $\sigma=8.45$
Large	4.82 $\sigma=8.33$	2.70 $\sigma=4.80$	3.80 $\sigma=6.88$
TOTAL	3.55 $\sigma=8.73$	2.11 $\sigma=4.28$	3.21 $\sigma=7.92$

Once more small multi-specialty groups are the big exception, but this time they do not cause inconsistency. Rather, they support a very consistent trend that can be seen in both the central cells and the marginal cells: a group more often holds clinical conferences, if it is large and single-specialty. This appears to confirm both the expectation that large groups would hold more clinical conferences and the suggestion that physicians might feel more comfortable with discussion in an immediate peer group of physicians of their own specialty. But the high standard-deviation figures again weaken the trend.

3.2.4.2. Consultations Within Group

While 77.9% of all groups frequently have some kind of informal "corridor consultation", in only 32.0% of the group practices do physicians frequently consult each other within the group. On the other hand, in 76.9% of the groups, physicians frequently consult a physician outside the group. Table 3.15. separates the four Group Types' figures for formal consultations within the group:

Table 3.15. PERCENTAGE DISTRIBUTION OF GROUPS, BY CONSULTATIONS WITHIN GROUP, GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	CONSULTATION WITHIN THE GROUP	GROUP DIVERSITY		TOTAL
		Single	Multi	
Small	Frequently	15.2	60.0	19.6
	Occasionally	65.2	40.0	62.7
	Never	19.6	0.0	17.7
		N=46	N=5	N=51
Large	Frequently	35.7	76.9	55.6
	Occasionally	35.7	23.1	29.6
	Never	28.6	0.0	14.8
		N=14	N=13	N=27
TOTAL	Frequently	20.0	72.2	32.0
	Occasionally	58.3	27.8	51.3
	Never	21.7	0.0	16.7
		N=60	N=18	N=78

We find very consistent trends: Towards the lower right corner of the table, both marginal variables show a sharp

increase of the answer "frequently" and a decrease of the answers "occasionally" and "never". The trend of the variable Group Diversity is more accentuated, in each category of Group Size showing a "frequently"-percentage for multi-specialty groups that is two to four times higher than the figure for single-specialty groups. In addition, none of the multi-specialty group physicians checked off "never". That means that a group physician more likely formally consults a physician within the group, if the group is large and/or multi-specialty.

In essence, the trend for informal "corridor consultations" is identical, the frequency of the answer "frequently" ranging from 73.9% (small single-specialty) to 92.3% (large multi-specialty). None of the 78 surveyed groups indicated that they "never" would informally consult within the group.

The trend for consultations outside the group, not surprisingly, is exactly reverse, but the range is not nearly as broad as for consultations within the group. The respective percentages of "frequently" answers are: 78.4% (small groups), 74.1% (large groups), 78.3% (single-specialty groups), and 72.2% (multi-specialty groups).

The combination of "occasional" within-consultations and "frequent" outside-consultations turned out to be the prevailing practice of consultation (35.9% of all groups).

Overall we may conclude that in all Group Types, consultations outside the group are frequent, whereas consultations within the group are only common in large groups and particularly in multi-specialty groups. This confirms the initial hypothesis.

3.2.4.3. Referrals Within Group

Table 3.16. PERCENTAGE DISTRIBUTION OF GROUPS, BY REFERRALS WITHIN GROUP, GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	REFERRALS WITHIN THE GROUP	GROUP DIVERSITY		TOTAL
		Single	Multi	
Small	Frequently	13.0	0.0	11.8
	Occasionally	52.2	100.0	56.8
	Never	34.8	0.0	31.4
		N=46	N=5	N=51
Large	Frequently	35.7	61.5	48.1
	Occasionally	64.3	38.5	51.9
	Never	0.0	0.0	0.0
		N=14	N=13	N=27
TOTAL	Frequently	18.3	44.4	24.4
	Occasionally	55.0	55.6	55.1
	Never	26.7	0.0	20.5
		N=60	N=18	N=78

In 24.4% of the group practices, physicians frequently refer a patient to a physician within the group, while in 69.2% of the groups, patients frequently get referred to a physician outside the group.

The percentage distribution for small multi-specialty groups is not very meaningful. Re-considering the limitations that the small N and certain other characteristics of this Group Type entail, it seems to be legitimate to ignore the subsequent trend inconsistencies, and to compare the marginal figures only. By doing so we find a constant frequency (around 55%) of the answer "occasionally", whereas "frequently" and "never" show an inverse pattern for both Group Size and Group Diversity: Large groups and multi-specialty groups explicitly show higher percentages of "frequently" and lower percentages of "never", than small groups and single-specialty groups. That means that a group more likely refers patients within the group, if it is large and/or multi-specialty.

Contrary to the findings for consultations, the trend for **outside-referrals** shows a pattern similar to that for within-referrals, and the differences between the Group Types are more apparent than the differences that we found for outside-consultations: While in 64.7% of small groups and in

66.7% of single-specialty groups physicians frequently refer outside, 77.8% of both large groups and multi-specialty groups frequently refer to a physician outside the group. It is difficult therefore to come to a meaningful overall conclusion for the issue of referrals. Large groups and multi-specialty groups apparently refer more often within and outside the group. But considering that the differences are much more accentuated for within-referrals, we may draw the conclusion that, in general, group practices refer outside the group much more often than within the group, and that within-referrals are more common in large groups and multi-specialty groups.

Finally, consultations and referrals have to be looked upon in context, because there is no clear boundary between those two ways of seeking help from a colleague. In fact, in the course of the nine interviews, it became more and more evident that, except for informal "corridor consultations", physicians do not really distinguish between consultations and referrals. Therefore we have to draw an overall picture of how physicians ask for a colleague's help. Reviewing the last two sections, it appears to be very clear that physicians in large groups and multi-specialty groups tend to seek help from colleagues within the group. This was a basic assumption arising from the literature review,

and the results clearly confirm it.

3.2.4.4. Common Chart Entry

Table 3.17. PERCENTAGE OF GROUPS WITH A GENERALLY ACCESS- SIBLE CENTRAL CHART LIBRARY, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	76.1 N=46	100.0 N=5	78.4 N=51
Large	92.9 N=14	92.3 N=13	92.6 N=27
TOTAL	80.0 N=60	94.4 N=18	83.3 N=78

83.3% of the surveyed group physicians indicated that their group had a central chart library that all group physicians are equally entitled to access (Appendix D, option 4 of question 10.). Ignoring small single-specialty groups, one might conclude that a group more likely holds the principle of Common Chart Entry, if it is large and/or multi-specialty.

3.2.5. PERCEIVED ADVANTAGES AND DISADVANTAGES

The open-ended questions 13. and 14. (Appendix D) asked for advantages and disadvantages of group medical practice as perceived by the physician completing the questionnaire. Table 3.18. below lists, for each Group Type separately, the five most often mentioned advantages of group practice. The terms in the table may be defined as follows:

- **Coverage:** within-group coverage for absent group physicians (holidays, sickness, continuing medical education, etc.); on-call schedule for weeknights and weekends; continuity of patient care within group.
- **Expenses:** sharing of operating expenses and staff's salaries; financial benefits in consequence of a reduction of overhead costs; possibility to purchase expensive equipment.
- **Consulting:** "corridor consultations"; formal consultations within group; pooling of expertise and experience; exchange of information; continuing education.
- **Relations:** personal relations; comraderie; group of people with similar interests.
- **Management:** shared management responsibilities; reduction of responsibilities because management is

handled by administrator(s); ease of organization.

- **Subspec.Int.:** subspecialty interests of the individual physicians; broad spectrum of expertise; high professional standards.

Table 3.18. RANK-ORDER OF PERCEIVED ADVANTAGES, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	Coverage Expenses Consulting Management Relations	Consulting Expenses Coverage Subspec.Int. ---	Coverage Expenses Consulting Management Relations
Large	Coverage Expenses Consulting Relations ---	Coverage Consulting Expenses Management Relations	Coverage Expenses Consulting Relations Management
TOTAL	Coverage Expenses Consulting Relations Management	Coverage Consulting Expenses Management Relations	Coverage Expenses Consulting Relations Management

Coverage was mentioned as a major advantage by 68 of the 78 physicians, and therefore clearly is the number-one advantage perceived by group physicians. Although small multi-specialty groups perceive Consulting as the main advantage, Coverage remains number one in all marginal cells. Expenses ranks number two, except for large multi-

specialty groups that rank Consulting as more important. Comparing the marginal cells we find that on the one hand, large groups, small groups, and single-specialty groups have the same perceived advantages in the first three positions: 1. Coverage (mentioned 68 times); 2. Expenses (54 times); and 3. Consulting (44 times). On the other hand, multi-specialty groups more often specified Consulting than Expenses. As there is no clear pattern for Personal Relations and Management, the latter fact seems to be the only notable variation: formal and informal consultations, pooling of expertise, etc. are rated higher by multi-specialty groups than by single-specialty groups.

Table 3.19. below specifies the rank-order of disadvantages of group medical practice as perceived by the different Group Types. The terms employed have the following meanings:

- **Management:** problems in decision making and management; need to find consensus; delayed decision making; slow changes; blurred responsibilities and authority structures.
- **Personality:** personal conflicts; incompatibility of individual personalities.
- **Dependence:** lack of control (staffing, finances, work-

ing conditions); loss of freedom and independence.

- **Styles:** differences in practice style; restriction of individual practice styles; different ideals, objectives, and professional standards.
- **Inequities:** financial injustice in consequence of inequities in expenses; reduced income; advantages for people on the "high end of the scale" vs. disadvantages for people on the "low end of the scale".
- **Competition:** competitiveness; "stealing" of patients.
- **Staff:** high staff turnover; high workload for staff.
- **"none":** physician perceives no disadvantages at all.

Table 3.19. RANK-ORDER OF PERCEIVED DISADVANTAGES, BY GROUP SIZE AND GROUP DIVERSITY			
GROUP SIZE	GROUP DIVERSITY		TOTAL
	Single	Multi	
Small	Personality Management Dependence Styles "none"	Management Dependence Personality Inequities Staff	Management Personality Dependence Styles "none"
Large	Dependence Personality Management Inequities Styles	Management "none" Personality Styles Competition	Management Personality Dependence "none" Styles
TOTAL	Personality Management Dependence Styles "none"	Management "none" Styles Personality Inequities	Management Personality Dependence Styles "none"

Management and Personality are the clear leaders, mentioned by the surveyed group physicians 24 and 23 times, respectively. While there is no clear trend detectable by comparing the four central cells (the Group Types), notable trends can be found for Group Size and Group Diversity. There virtually is no difference between small groups and large groups. Single-specialty and multi-specialty groups differ considerably, e.g. Management and Personality are positioned reverse to each other, and in multi-specialty groups, "none" occupies a remarkable second position.

3.2.6. THE INTERVIEWS

By and large, the formal meetings with nine group physicians confirmed the findings of the mailed questionnaire, and as explained in the Methods Section, they actually have been included in the quantitative part of the analysis. These interviews yielded additional qualitative data, the most notable of which are reported in this section.

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The interview with a physician in a very large multi-specialty group was revealing. This group is one of the legendary Canadian multi-specialty clinics, and it is commonly assumed that it represents a high standard of "teamwork"-like collaboration. The interviewed surgeon explains the organization of the building:

This corner is all General Surgery, the other corner is all Orthopedic Surgery, and then sort of the other corner is a mixture, and that corner over there is all Cardiovascular Surgery. (...) Second floor is mostly GPs, third floor are lot of the internists, and the ENT Surgeons are down on the third floor. (...) A lot of the GPs share an area. (...) Because the internists are in the office most of the time, they tend to have an office by themselves.

The various specialties that constitute the clinic are clearly separated, and most of the clinical and non-clinical collaboration occurs within these subgroups

exclusively. The only clinical exception would be referrals, the only non-clinical exception, a common business management. That means, apart from the common management, there is no real difference to a medical arts building or professional building.

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A group physician in one of those medical buildings touched on this topic:

My idea originally in putting up this building, I put it up with a couple other guys, was to get in many, many different disciplines, right in this building, and though not joined financially, we joined in proximity. And theoretically, that has happened. We don't have quite the representation we need, but it's pretty good multidisciplinary representation. (...) I don't know that I want to be in such a big set-up [like the large clinic mentioned above], I am happy with a loose association in proximity. (...) And I think the patients like the referral that is just down the hall, so I think that is nice.

The author agrees with the quoted opinion that the only difference between the medical building and the large multi-specialty clinic is that the physicians of the latter are "joined financially". Clinically, there is no difference between a group practice in the medical building and a subgroup formed by a certain specialty in the large clinic.

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Another surprising finding is the fact that in a group of

subspecialists, representing extreme "non-diversity", there can be as much, or even more, clinical collaboration as in a multi-specialty group, representing maximum Group Diversity. A physician in a large group of Cardiologists explained it in the following way:

Within the design as a group, we've tried to attract people that have some specialty interests in Cardiology. So within our group, in addition to people doing General Cardiology, we have one person whose major interest is Echo Doppler, one person whose major interest is Rehabilitation, we have two people who are doing Angioplasty, so that the interests within the group are varied. (...) What would happen is, if you want somebody to see that patient for a specific thing, say they need an Angioplasty, that you send him to that physician, but the ongoing care, the patient would come back to you to carry on with the ongoing care. (...) It's certainly very helpful that we really have within our group all the subspecialty interests, that makes my practice stronger.

A physician in a small group of Neurosurgeons stated when she was talking about informal consultations:

That happens all the time. That's the other nice thing about being in a partnership, with us being in the same office, it's very easy to go next door and ask somebody else's opinion. There is some subspecialization between the three of us (...), and we tend to shift the patients according to those interests.

Those two groups of highly specialized physicians turned out to have at least the same amount of clinical collaboration as the two multi-specialty groups in the interview sample. The sub-subspecialization of individual physicians of the same subspecialty seems to have the same diversifying effects as the combination of different specialties in the first place. Given the diversity, other

factors, like the compatibility of personalities, appear to determine the functioning or non-functioning of collaboration within the group. The Neurosurgeon explains:

Dr.: We all tend to be fairly hard working individuals, and there hasn't been any problem in that regard at all. It is potentially a problem, but it has never been a problem with any of the partners that have been involved in the group, because all tend to have similar personalities and work objectives.

Int.: So you feel that's an important part, to have the similar personality?

Dr.: I think it makes it a lot easier. I think there is a critical number where that system just becomes an uncomfortable one, because just of numbers and the odds of having someone in the group that has a different personality and just doesn't get along.

Int.: So, what's your feeling, where is this critical number?

Dr.: I don't know, I don't know where the critical number is, but I would think it would be above four. Once you got more than four people, I think your chances of having discord become higher.

A conclusion from the interviews might be that it is impossible to predict degree and quality of collaboration by just looking at the composition of the group, given by the traditional set of specialties. The determinants of collaboration are much more subtle, including the individual physician's (sub-)subspecialty interests and the compatibility of personalities.

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In the course of the interviews with family physicians, the problem of the legal side of consultations and referrals within family practice groups came up. A member of a

group of four family physicians asserted:

No, not in Alberta Health Care. They won't pay. It's illegal. You can't refer within the same group, amongst family doctors. I could refer to another family doctor outside, if he or she had some skill or some area of expertise that you might want to use.

Another family physician stated:

There is no sort of written request or something that is chargeable through medicare as a consultation in the general practice setting. It would all be informal.

But the latter also said:

There is a certain exchange of patients within a practice, in that patients may get negative with me because of certain personality problems, or what have you, and they'll go to my partner. And that's fine, I recognize that. Early on, I said to the other lads, look, if this is going to happen, don't let animosities and personal differences arise because of it, because it's the nature of the business in dealing with human interaction. (...) And it makes it easier to deal with patients, if they feel they have a certain amount of freedom, too.

Another reason for referrals within family practice groups is the fact that an increasing percentage of family physicians is not doing obstetrics. As a physician in a group of nine family physicians put it:

Yes, some of us do obstetrics, others don't. So they refer us patients.

As suggested above, in order to be able to talk about clinical collaboration, the traditional groupings of specialists have to be transcended, and subspecialty interests have to be taken into consideration.

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A topic that was mentioned frequently, particularly by woman physicians, was the satisfaction with the reduction of responsibilities within a group setting that in turn implies a loss of independence and control over the working conditions. As one physician, asked about her desire to be more independent, put it:

No, (...) that's not a real important issue for me. It is for some doctors (...), from my point of view that's just a pain in the ass. I've never had to hire a nurse, I wouldn't know what to look for in a nurse, when I was interviewing. I don't want those hassles (...), whereas some people, it's important to them to have that control.

Another physician explained it in more detail:

For me it was ideal. I didn't have to worry about anything. Now, in return for that, I didn't have as much say as I would have had. (...) But it's easy, beautifully easy, it takes away all the hassle of running an office, you leave that to somebody else. (...) For me, having three children at home, to go home to look after and want to be involved with, I don't want the hassle of looking after an office, and I'm willing to accept having to go along with the way that somebody else runs an office, as long as my feeling is that patient care is fine when I'm not there.

Later on, she elucidated this point again:

The major advantage is patient care when you are not available. [Group practice] allows one's schedule to be much more flexible, and be sure that your patients are taken care of. I guess, especially when you want to work as little as I want to work, you have to have someone available to see your patients. Because I'm not in every day - I'm in Mondays, Wednesdays and Fridays - and it's just not reasonable to leave two days mid-week where there is nobody available to see patients.

Those two physicians very clearly stated that they did not want to waste their time with administrative duties, and rather wanted to really "work at medicine" when they were

in the office. This would not be possible if they were in solo practice. The fact that the group arrangement allows for part-time work if desired, was also rated as a major advantage of this form of medical practice.

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Finally, the following two statements are an illustration of the broad range of contradictory opinions about competition within group practices. The physician in the small Neurosurgery group said:

The main advantage is that [group practices] eliminate competition. (...) Because of that you can have a much friendlier relationship. I'm sure all three of us probably consider ourselves close to our best friends, certainly within the medical sense of the word.

On the other hand, a physician in a family practice group, after having the interviewer share some preliminary findings, stated very broadly:

I wonder if, amongst professionals, it isn't sort of a universal thing that there isn't that much collaboration within that little group. (...) It's almost a jealousy factor kind of thing. You want to protect the fact that you know as much as this next fellow, but you are prepared to go to a different level of expertise, in quest of ideas. So I wonder, how much collaboration amongst an immediate peer group in any profession there is, law firms, architects, engineers, what have you.

The author certainly feels very sympathetic to the first statement, but after having been involved in all those interviews, he thinks that the second statement comes closer to reality for most groups.

4. CONCLUSION

The purpose of this section is to **highlight** the most striking results presented in Section 3. of this text, and to draw an overall picture of the study findings. The latter will be achieved by attempting to **interconnect** the multitude of separate findings (all described in separate sections above), specifically by interconnecting the results of Stage I and Stage II.

In Section 4.1., the findings of Stage I (representing a set of longitudinal data) are summarized. The findings of Stage II (cross-sectional survey data) are reviewed in Section 4.2. Section 4.3. attempts to add a longitudinal dimension to the cross-sectional survey data by combining the trends found in Stages I and II. Finally the relationship between the development of collaboration within medical groups and overall implications for present and future health care delivery are discussed.

4.1. Stage I

Historical Perspective

The most important findings of Stage I of this study are:

- Within the population of Southern Albertan group physicians, there was a shift from surgical and laboratory specialists to family physicians.
- Accordingly, a sharp increase of family practice groups could be detected, while combinations of family physicians and specialists and groups without family physicians decreased.
- It cannot be shown with certainty, whether there was an increase or a decrease of the proportion of group physicians to the total number of practicing physicians. However, it seems to be more likely that there was an increase.
- For the variable Group Size, no consistent and sizeable trend could be detected. Although only small groups (3-5 physicians) exhibit an increase, two-physician groups continue to be the most frequent form of group practice (>50%).

■ There was an overall shift from multi-specialty to single-specialty groups, amounting to 9.4%. This changing pattern of the variable Group Diversity proved to be consistent in the three geographical areas and over the categories of the variable Group Size. In 1987, 78.1% of Southern Albertan group practices were single-specialty groups.

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The impressive increase of family physicians involved in group practice, especially in Calgary (1973 vs 1987 - Table 1), and the even more dramatic increase of family practice groups (1973 vs 1987 - Table 5) can partly be explained by the general increase of the proportion of family physicians (G.P.s) over the last 15 years. Table 4.1. below compares the 1973 and 1987 percentage distributions of the total number of practicing physicians in Calgary and all of Southern Alberta (the absolute values on which these percentages are based are found in Appendix C, 1973 - Table 2, and 1987 - Table 2):

Table 4.1. PERCENTAGE DISTRIBUTION OF THE FOUR SPECIALTY CATEGORIES AMONG THE TOTAL NUMBER OF PRACTICING PHYSICIANS						
GEOGR. AREA	YEAR	SPECIALTY				N
		Family	Medical	Surgical	Labor.	
CALGARY	1973	44.8	24.4	23.9	6.9	627
	1987	50.3	26.7	17.3	5.7	1163
	Diff.	+5.5	+2.3	-6.6	-1.2	
SOUTH. ALTA.	1973	55.0	19.1	20.6	5.3	992
	1987	57.2	21.7	16.2	4.9	1698
	Diff.	+2.2	+2.6	-4.4	-0.4	

Table 4.1. demonstrates that the trend for all physicians is the same as for group physicians: there was an increase of Family Physicians and Medical Specialists, and a decrease of Surgical and Laboratory Specialists, both in Calgary and all of Southern Alberta. However, the percentage point differences displayed in the table above are not as large as in "1973 vs 1987 - Table 1" on page 58, especially the figures for family physicians. Hence, the general increase of Southern Albertan family physicians cannot sufficiently explain the differential move of family physicians into groups.

Exploring "1973 vs 1987 - Table 5" (page 69) in more detail, we see that only single-specialty groups of family

physicians (= family practice groups) increased, whereas multi-specialty groups with family physicians decreased. In addition, single-specialty groups of other specialists decreased as well. Knowing that one of the most significant trends of the last 15 years was the shift to single-specialty group practice (see Section 3.1.2.4.), these findings suggest that for some reason family physicians were much more "trendy" than other specialists.

There are no certain explanations arising directly from this study. It can only be reasoned that there might be a more pressing economic rationale behind the family physicians' attraction to group practice. Perhaps the economic struggle is notably harder for family physicians than for traditional specialists. In 1986, the average Alberta Health Care payments to family physicians were not only lower than the payments to specialists, but were also decreasing in the two previous years [93]. This development might continue in the coming years, especially in the light of factors like the increasing competition among physicians, particularly among family physicians (see Table 4.1. above; in Section 4.3., this issue will be discussed in more detail), and the ongoing deterioration of personal relationships between service providers and consumers in society (e.g. shopping centres, fast food,

automobile services) and in the medical system ("doctor shopping"). The latter partly supports the replacement of the family physician as the primary-contact physician by alternative ways to access the system (hospital emergency departments, walk-in clinics, birth control clinics, occupational health settings, etc.). For all these reasons, family physicians might be more likely to seek a way to improve their financial situation. As group practice probably is the best-established way to reduce overhead costs of an office, more family physicians might choose to practice this way. Although this would not directly explain the family physicians' tendency to establish or join single-specialty groups, it appears to be reasonable to assume that physicians merely looking for economic benefits would tend to establish a fairly conservative single-specialty undertaking, rather than leaping into the complexity of a multi-specialty venture.

In theory, other **organizational** advantages and lifestyle-related benefits of group practice, like the sharing of on-call, that will be discussed in Section 4.2., should be equally attractive for all specialties. **Clinical** advantages, like the possibility of consultations, should attract family physicians into multi-specialty groups to a similar or even greater extent than they apparently are

attracted into single-specialty groups. Therefore the author believes that economic factors play a more important role in the family physicians' decision to join a group practice than other organizational and clinical benefits.

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Aside from the remarkable changes that family physicians have introduced into the pattern of group practice in Southern Alberta, the changes of the variables Group Size (see Section 3.1.2.3.), Group Diversity (Section 3.1.2.4.), and the combined variable Group Type (Section 3.1.2.6.) are the most notable findings of Stage I of this study.

Except for some shifts within Rural Cities and Rural Towns, there were no major overall changes in the size of Southern Albertan group practices: small groups increased to a small extent, large groups decreased. This could be explained, for example, by the finding of sociologists [60, 61] that small groups, for various reasons, tend to be more attractive (see Section 1.2.4.).

The changes regarding Group Diversity were much more accentuated and consistent: while single-specialty groups increased considerably, multi-specialty groups decreased. The changes of the frequency of Group Types therefore are

mainly attributable to the changes of the variable Group Diversity: small single-specialty groups increased, large multi-specialty groups decreased, while large single-specialty and small multi-specialty groups exhibited only smaller percentage point changes.

In summary, the findings of Stage I of this study are striking. A clear change of the group composition pattern in the course of the 15 years under study could be demonstrated. Isolated from other factors, these findings may only be taken as historical facts. However, in Section 4.3., an attempt is made to correlate them with the findings of the survey, which will permit implications beyond this historical dimension.

4.2. Stage II

Survey of the 1988 Group Practices

The following two tables represent an attempt to answer Research Question 3. by summarizing the relationships between PHYSICIAN BENEFITS / PATIENT BENEFITS and the variables Group Size and Group Diversity that have been reported in Sections 3.2.3. and 3.2.4. of this thesis. Moderate relationships are distinguished from strong ones, based on either the (in)consistency of the trend or the standard deviation of the distribution: inconsistent trends and trends involving high σ -values are recorded as moderate relationships, consistent trends and trends with a narrow standard deviation, as strong relationships.

Table 4.2. below focuses on identified effects of the structural factors Group Size and Group Diversity on the amount of within-group collaboration on an organizational level (PHYSICIAN BENEFITS).

Table 4.2. RELATIONSHIPS BETWEEN THE VARIABLE CATEGORY PHYSICIAN BENEFITS, AND THE VARIABLES GROUP SIZE AND GROUP DIVERSITY (☒ indicates a moderate, ☐ a strong relationship)				
PHYSICIAN BENEFITS	SIZE		DIVERSITY	
	Small	Large	Single	Multi
Joint Use of Nurses	☒		☒	
Jt. Use of Facilities		☐		☒
Sharing of Profits		☐		☐
Sharing of Expenses				☐
On-call Within Group		☐		☒
Coverage Within Group		☐		
Business Meetings				

Large groups show a strong relationship to four of the seven variables, whereas multi-specialty groups show a strong relationship only to the two variables dealing with the financial management of the group. Overall there seems to be a trend towards higher utilization of PHYSICIAN BENEFITS in large groups, and to a lesser degree, in multi-specialty groups. In comparison with the expected results, there are clearly more surprises arising from the variable Group Diversity.

In Table 4.3. the effects of Group Size and Group Diver-

sity on the amount of clinical collaboration among group physicians (PATIENT BENEFITS) are summarized.

Table 4.3. RELATIONSHIPS BETWEEN THE VARIABLE CATEGORY PATIENT BENEFITS, AND THE VARIABLES GROUP SIZE AND GROUP DIVERSITY (▤ indicates a moderate, ▥ a strong relationship)				
PATIENT BENEFITS	SIZE		DIVERSITY	
	Small	Large	Single	Multi
Clinical Conferences		▤	▤	
Consultations Within		▥		▥
Referrals Within		▥		▥
Common Chart Entry		▤		▤

The overall trend seems to be quite similar to the trend that we found for PHYSICIAN BENEFITS: as expected, large groups, and to a lesser degree, multi-specialty groups exhibit a tendency to higher utilization of PATIENT BENEFITS.

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Looking at the two summarizing tables in context, we can see "at a glance" that large groups and multi-specialty groups tend to have more collaboration within the group. On the basis of sociological principles outlined in Section 1.2.4. and common sense, we expected that large

groups would utilize most of the types of collaboration under study to a greater extent than small groups. But we did not expect that multi-specialty groups would show a considerably higher rate of collaboration in both categories, PHYSICIAN BENEFITS and PATIENT BENEFITS.

Multi-specialty groups especially utilize PHYSICIAN BENEFITS to an extent that we did not expect. Reviewing the expectations for the relationships between PHYSICIAN BENEFITS and Group Diversity (pages 88/89), we find that we actually expected multi-specialty groups to be higher in only one of the collaboration types listed under PHYSICIAN BENEFITS, namely, Business Meetings. We expected single-specialty groups to show a higher rate of Joint Use of Personnel and On-call and Coverage Within Group, whereas for the remaining PHYSICIAN BENEFITS no differences were expected. The fact that multi-specialty groups surpass single-specialty groups not only in the amount of clinical collaboration (PATIENT BENEFITS), which we expected, but also in the amount of business-type collaboration (PHYSICIAN BENEFITS), appears to be one of the most surprising findings of this study. The findings reported in Sections 3.2.5. (perceived advantages and disadvantages) and 3.2.6. (interviews) support this trend: the most important advantages of group medical practice reported by both

single-specialty and multi-specialty group physicians are lifestyle-related benefits like an on-call schedule, week-end coverage, or the possibility of part-time work, all of which are PHYSICIAN BENEFITS.

The possibility of the existence of a "sharing personality trait" of multi-specialty group physicians which might explain this phenomenon has been noted (see Section 3.2.3.3.). We also have to remind ourselves that there is a strong relationship between the two characteristics "large" and "multi-specialty", and that therefore the (expectedly) high collaboration rates in large groups might have caused the (unexpectedly) high collaboration rates in multi-specialty groups. As explained in detail previously (Section 3.2.2.2.), the small number of small multi-specialty groups does not permit testing of this hypothesis.

As multi-specialty groups utilized both PHYSICIAN and PATIENT BENEFITS to a higher degree than single-specialty groups, this study could not confirm the hypothesized difference on the Group Diversity level (single-specialty groups utilize more PHYSICIAN BENEFITS, multi-specialty groups more PATIENT BENEFITS; see page 20/21). The real world apparently is not as black-and-white as expected.

Perhaps one conclusion might be that the utilization of PHYSICIAN BENEFITS has some kind of effect on the utilization of PATIENT BENEFITS, and/or vice versa. For example, a group satisfied with the way its business side is run might be more likely to satisfactorily collaborate on a clinical level, too. This might imply that the distinction between PHYSICIAN BENEFITS and PATIENT BENEFITS is too artificial. It might even be impossible to effectively differentiate business-type collaboration and clinical collaboration, despite essential differences from a conceptual point of view. In this light, the findings from this study regarding Group Diversity would be getting less obscure: multi-specialty groups, especially large multi-specialty groups, demonstrate more collaboration than do other types of group practice. However, the survey, especially the interviews, demonstrate that this conclusion actually is too simplistic. In order to determine whether a group is likely to have a high degree of collaboration among physicians, one has to transcend the traditional out-of-the-directory groupings of specialists. Other diversifying factors, like subspecialty interests of individual physicians, have a considerable bearing on the amount of collaboration, especially clinical collaboration, between physicians.

4.3. Stages I & II

Implications for Present and Future Health Care Delivery

In this final section, an attempt will be made to interconnect the findings of Stage I and Stage II. The linkage is achieved through the variable category GROUP COMPOSITION, which was investigated in both stages of this study. The three "overlapping" variables are Group Size, Group Diversity, and the combined variable Group Type. The rationale for interconnecting Stages I & II is the combination of a longitudinal with a cross-sectional research method. The combination of those two methods will permit explanation of an issue that could not be assessed by one of the two methods separately: the change of the collaboration patterns over the last 15 years.

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Table 4.4. below is a graphic summary of the data generated by this study. Two scores have been assigned to the three "overlapping" variables: one score for the findings of Stage I (change of the frequency of the respective type of group practice over the last 15 years), and one score for the findings of Stage II (amount of collaboration within the respective type of group practice). For the

Stage I findings, six scores have been used, based on the percentage point changes reported in "1973 vs 1987 - Table 6" (page 72), which have been categorized as follows:

SCORE	PERCENTAGE POINT CHANGE
+ + +	$\geq (+6.0)$
+ +	$(+3.0) - (+5.9)$
+	$0 - (+2.9)$
-	$(-2.9) - 0$
- -	$(-5.9) - (-3.0)$
- - -	$\leq (-6.0)$

The same scores have been used for the findings of Stage II. They have been derived from Tables 4.2. and 4.3. (pages 133/134) by examining the relative differences between the types of group practice regarding their relationship to various indicators of collaboration. This relative difference has been shown to be more accentuated on the Group Size level. Therefore (+ + +) and (- - -) have been assigned to large groups and small groups, whereas (+ +) and (- -) have been assigned to multi-specialty groups and single-specialty groups, respectively. The scores for the four Group Types have been obtained by combining these scores.

Table 4.4. COMPARISON OF STAGE I AND STAGE II RESULTS REGARDING THE THREE "OVERLAPPING" VARIABLES			
VARIABLE	CATEGORY	FREQUENCY CHANGE (Stage I)	AMOUNT OF COLLABORATION (Stage II)
Group Size	small	+	-
	large	+	+
Group Diversity	single	+	-
	multi	+	+
Group Type	small single	+	-
	large single	+	+
	small multi	-	-
	large multi	-	+

The pattern is clear: comparing horizontally, we find a reverse score for almost each category. That means that, roughly speaking, the types of group practice with a high degree of collaboration were decreasing, while the types of group practice with a low degree of collaboration were increasing. In other words, collaboration among group physicians, as defined in this study, declined over the last 15 years.

It has been discussed previously that an interpretation in terms of the PHYSICIAN / PATIENT BENEFITS concept is not sufficiently precise. However, in the light of the striking change of collaboration patterns suggested by Table 4.4., we may reconsider this concept. The finding that collaboration among group physicians declined considerably

represents some support for the hypothesized (page 23) move away from structures which might have a greater potential to maximize the welfare of patients.

Why would this decline of collaboration have happened? We have to discuss two issues: (1) Why is inter-physician collaboration no longer a major incentive to practice together? (2) What other incentives have replaced it?

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The most apparent answer to question (1) is that **increasing competition** between physicians does not facilitate collaboration. The fact that physicians anecdotally complain about an increase of competition is supported by a look at the shift of the physician/population ratio over the time period under study. Notice that the figures presented in Table 4.5. below are based on Census data [91, 92] and findings of this study (1973 - Table 2, and 1987 - Table 2), and therefore are slightly different from other published reports [e.g. 94]. A ratio in Table 4.5. reflects the size of the (theoretical) population pool from which one physician recruits his/her patients:

Table 4.5. PHYSICIAN/POPULATION RATIO IN 1973 AND 1987, BY GEOGRAPHICAL AREA			
GEOGR. AREA		1973	1987
CALGARY	Population	403,319	636,104
	# of Physicians	627	1,163
	Phys./Pop. Ratio	1 / 643	1 / 547
RURAL CITIES	Population	95,409	155,070
	# of Physicians	175	274
	Phys./Pop. Ratio	1 / 545	1 / 566
RURAL TOWNS	Population	296,293	356,204
	# of Physicians	190	261
	Phys./Pop. Ratio	1 / 1,559	1 / 1,365
SOUTH. ALTA.	Population	795,021	1,147,378
	# of Physicians	992	1,698
	Phys./Pop. Ratio	1 / 801	1 / 676

The shift is fairly apparent, especially in Calgary and the Rural Towns: today a physician has a smaller pool of persons to recruit his/her patients from or the other way round, more physicians compete for a patient. The decline of inter-physician collaboration that this study has suggested is therefore not surprising. Increasing competition within the medical community might explain the changing patterns of group practice in an even broader sense, including the general increase of the number of group practices: physicians feeling uncomfortable with competition might join groups for two reasons:

- to improve their economic situation which is impaired by competition;
- to get rid of their (unconscious) guilt regarding the "unethical" competition among peers by joining with, and therefore getting closer to, those peers (see first quotation on page 123).

This might explain why today there are more group practices with less collaboration among physicians. On the other hand, grouping potentially increases competition, especially between-group competition. This phenomenon can, for example, be found in the United States, where competition between prepaid group practices actually is encouraged (see Section 1.2.3.).

Another explanation for the decline of collaboration as a major incentive to practice together might be the increasing improvements in the practicality of collaboration among physicians not joined geographically. In addition, most consultations and referrals in the formal sense need not to be instant; physicians therefore might see no real reason to have a consultant "in house" all the time.

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Question (2) (What other incentives have replaced collaboration?) can be answered, on the basis of this study, by

doing another analysis of the advantages of group practice as perceived by the surveyed physicians (see Section 3.2.5.). Aside from various types of collaboration that have been assessed by the closed-ended part of the questionnaire, the list of advantages identified by physicians includes some additional factors like

- financial benefits in consequence of a reduction of overhead costs
- possibility to purchase expensive equipment
- high professional standards
- continuing education
- group of people with similar interests
- shared management responsibilities
- reduction of responsibilities because management is handled by administrator(s)
- ease of organization

We may conclude that while collaboration among physicians increasingly may lose its appeal as an incentive to join a group, the factors listed above remain to dominate the decision making process of a physician contemplating group practice.

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There seems to be no rational reason to assume that the noted trends in group practice would terminate by the year

1988. Indeed, there may be a further decline of collaboration among group physicians.

The identified trends and the suggested underlying reasons are not necessarily "bad". However, some of the reported incentives, like "reduction of overhead costs", or "reduction of responsibilities", have to be considered as fairly "egoistic" motives. Taken in context with other findings of this study, they might be an indicator for the future development of a new breed of group practices that do not focus on the improvement of patient care. The physicians in those groups might be better business (wo)men, but perhaps not better healers.

Future research on the outcome for patients of exposure to different organizational forms of health care will be needed to sufficiently answer this question.

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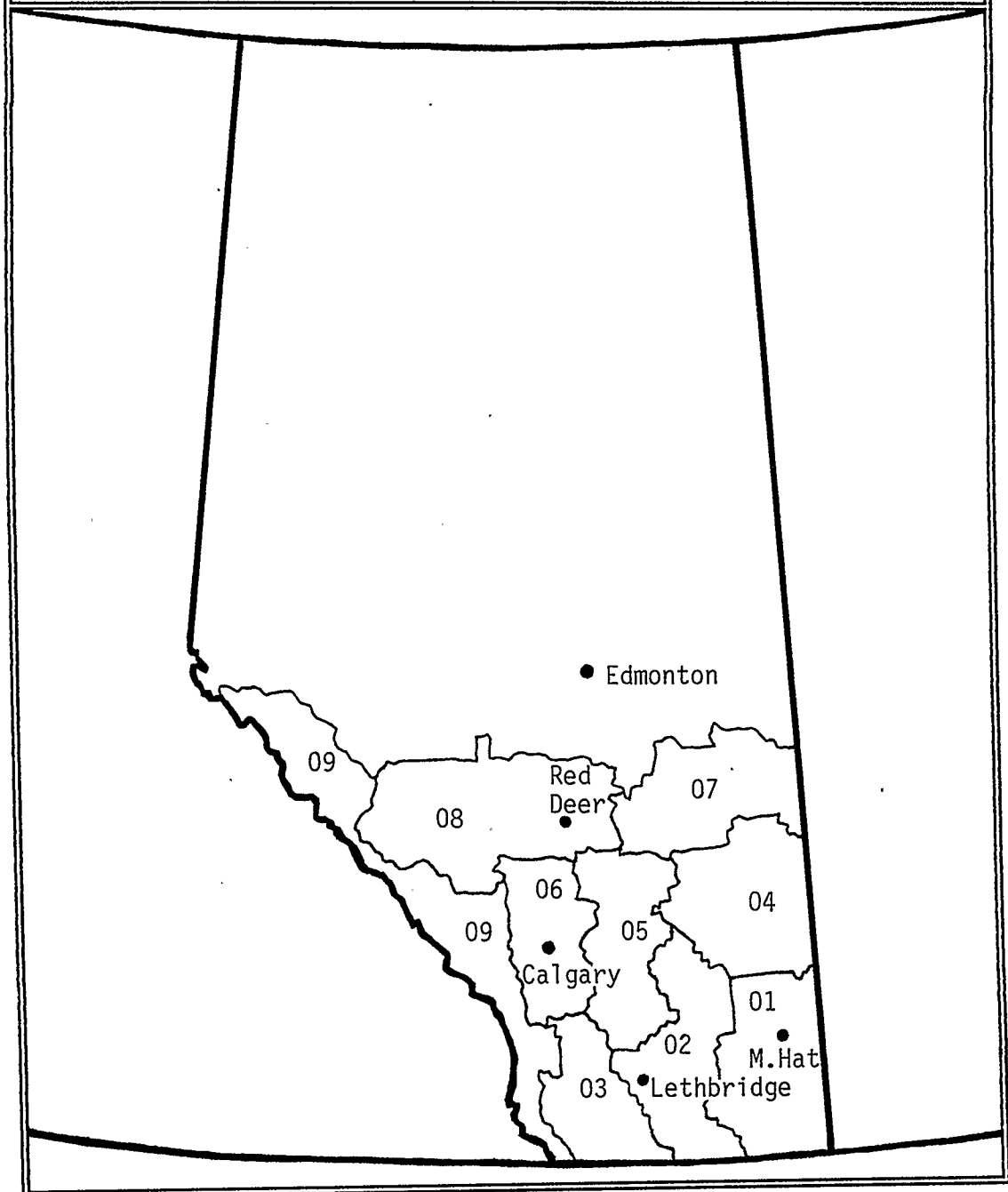
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6. APPENDICES

Appendix A
Figure 1

MAP OF THE PROVINCE OF ALBERTA
SOUTHERN ALBERTA = Census Divisions 01-09



Appendix A
Table 1

**TOTAL POPULATION OF
SOUTHERN ALBERTA,
BY CENSUS DIVISIONS
(Census Canada 1981)**

Census Division	Population Count
01	55,375
02	110,477
03	35,652
04	12,119
05	38,382
06	668,682
07	40,071
08	123,642
09	21,670
South.Alta.	1,106,070 ¹
Alberta	2,237,724 ²
Canada	24,343,181

¹ 49.4% of the total population of Alberta

² 9.2% of the total population of Canada

Appendix A
Table 2

SOUTHERN ALBERTAN COMMUNITIES
WITH AT LEAST ONE GROUP PRACTICE,
BY POPULATION SIZE
(Census Canada 1981)

CALGARY	592,743	Calgary	
RURAL CITIES	54,072	Lethbridge	
	46,393	Red Deer	
	40,380	Medicine Hat	
Subtotal	140,845		
LARGE TOWNS	9,421	Brooks	5,136 Stettler
	7,306	Crowsnest Pass	4,813 Olds
	6,508	Drumheller	4,792 High River
	5,988	Taber	4,698 Rocky Mtn. House
	5,591	Lacombe	4,579 Coaldale
	5,247	Innisfail	4,266 Wainwright
	5,221	Ponoka	4,208 Banff
Subtotal	77,774		
SMALL TOWNS	3,847	Okotoks	1,641 Nanton
	3,779	Sylvan Lake	1,576 Magrath
	3,757	Pincher Creek	1,491 Bow Island
	3,544	Cochrane	1,489 Vulcan
	3,493	Claresholm	1,444 Black Diamond
	3,484	Canmore	1,404 Picture Butte
	3,269	Jasper	1,309 Coronation
	3,267	Cardston	1,200 Bassano
	3,139	Fort Macleod	894 Milk River
	3,095	Didsbury	880 Trochu
	2,986	Strathmore	870 Eckville
	2,837	Raymond	823 Bentley
	2,806	Hanna	679 Daysland
	1,787	Three Hills	641 Hardisty
	1,742	Sundre	632 Consort
	1,685	Rimbey	505 Bragg Creek
	1,645	Provost	
Subtotal	67,640		
TOTAL	879,002	(= 79.5% of total population of S.A.)	

Appendix B
Table 1

**SPECIALTY CATEGORIES, USED BY
ALBERTA HOSPITALS AND MEDICAL
CARE (expanded)**

FAMILY MEDICINE

*Family Medicine

MEDICAL SPECIALTIES

*Anesthesia	Medical Oncology
*Cardiology	Neonatology
Clinical Immunology	Nephrology
Community Medicine	*Neurology
*Dermatology	Occupational Medicine
Emergency Medicine	Pediatric Cardiology
Endocrinology & Metabolism	*Pediatrics
*Gastroenterology	Perinatal Medicine
Geriatric Medicine	Physical Medicine & Rehab.
*Hematology	*Psychiatry
Infectious Diseases	*Respiratory Medicine
*Internal Medicine	*Rheumatology

SURGICAL SPECIALTIES

*Cardiovascular Surgery	*Otolaryngology
*General Surgery	Pediatric General Surgery
*Neurosurgery	*Plastic Surgery
*Obstetrics & Gynecology	Thoracic Surgery
*Ophthalmology	*Urology
*Orthopedic Surgery	Vascular Surgery

LABORATORY SPECIALTIES

*Anatomical Pathology	Medical Microbiology
*Diagnostic Radiology	Neuropathology
*General Pathology	Nuclear Medicine
Hematological Pathology	Radiation Oncology
Medical Biochemistry	

*denotes a specialty that was represented in the
1987 group practices (Stage I)

Appendix C					
1973 - Table 1					
NUMBER OF GROUP PHYSICIANS, BY GEOGRAPHICAL AREA AND SPECIALTY					
GEOGR. AREA	SPECIALTY				TOTAL
	Family	Medical	Surgical	Labor.	
CALGARY	114	42	84	29	269
row %	42.4	15.6	31.2	10.8	100.0
N.W.	28	3	5	5	41
N.E.	2				2
S.W.	64	36	65	24	189
S.E.	20	3	14		37
RURAL CITIES	63	17	19	7	106
row %	59.4	16.1	17.9	6.6	100.0
RURAL TOWNS	107	5	8	0	120
row %	89.2	4.2	6.6	0.0	100.0
large	72	2	5		79
small	35 ¹	3 ¹	3 ¹		41 ¹
SOUTH. ALTA.	284	64	111	36	495
row %	57.4	12.9	22.4	7.3	100.0

¹ estimates

Appendix C					
1973 - Table 2					
PERCENTAGE THAT GROUP PHYSICIANS COMPRISE OF THE TOTAL NUMBER OF PRACTICING PHYSICIANS, BY GEOGRAPHICAL AREA AND SPECIALTY					
GEOGRAPH. AREA	SPECIALTY				TOTAL
	Family	Medical	Surgical	Labor.	
CALGARY					
all physicians ¹	281	153	150	43	627
group physicians	114	42	84	29	269
% of all phys.	40.6	27.5	56.0	67.4	42.9
RURAL CITIES					
all physicians ¹	94	26	45	10	175
group physicians	63	17	19	7	106
% of all phys.	67.0	65.4	42.2	70.0	60.6
RURAL TOWNS					
all physicians ¹	171	10	9	0	190
group physicians	107	5	8	0	120
% of all phys.	62.6	50.0	88.9	0.0	63.2
SOUTHERN ALBERTA					
all physicians ¹	546	189	204	53	992
group physicians	284	64	111	36	495
% of all phys.	52.0	33.9	54.4	67.9	49.9

¹ see comments on following page

Comments on Table 2:

The numbers in the "all physicians" rows represent estimates of the number of practicing physicians. No reliable source for these numbers could be found: the Medical Directory [84] includes physicians currently not practicing, and the (probably more realistic) statistics from the Alberta Health Care Insurance Plan [personal correspondence] don't specify geographical areas.

The numbers were estimated by taking the total number of Albertan physicians by specialty only, provided by both the College and Alberta Health Care for 1973:

	College	AHC	Difference
Family Medicine	1,342	1,232	- 8.20 %
Medical Specialties	431	432	+ 0.23 %
Surgical Specialties	434	430	- 0.92 %
Laboratory Specialties	131	111	- 15.27 %
Total	2,338	2,205	- 5.69 %

The subtraction of these percentage differences from the number of Southern Albertan physicians by geographical area and specialty (obtained from the 1973 Medical Directory) yielded the presented estimates.

Notice that these numbers include hospital physicians registered in the Health Care Insurance Plan, whereas for the calculation of group physicians hospital-based physicians have been excluded in advance. Thus, assuming that the number of physicians registered within AHC is the best estimate of the number of practicing physicians, the percentages displayed in Table 2 represent estimates of the proportion of community group physicians to the total of practicing physicians.

Appendix C				
1973 - Table 3				
NUMBER OF GROUP PRACTICES, BY GEOGRAPHICAL AREA AND GROUP SIZE				
GEOGR. AREA	# of physicians per group			TOTAL
	2	3-5	≥6	
CALGARY	55	23	6	84
row %	65.5	27.4	7.1	100.0
N.W.	7	7		14
N.E.	1			1
S.W.	41	15	4	60
S.E.	6	1	2	9
RURAL CITIES	7	2	6	15
row %	46.7	13.3	40.0	100.0
RURAL TOWNS	7	14	8	29
row %	24.1	48.3	27.6	100.0
large	3	8	6	17
small	4	6	2	12
SOUTH. ALTA.	69	39	20	128
row %	53.9	30.5	15.6	100.0

Appendix C

1973 - Table 4

NUMBER OF GROUP PRACTICES,
BY GEOGRAPHICAL AREA
AND GROUP DIVERSITY

GEOGR. AREA	Number of specialties per group					TOTAL
	Single-	Multi-specialty				
	1	2	3	4	2-4	
CALGARY	63	18	2	1	21	84
row %	75.0	21.4	2.4	1.2	25.0	100.0
N.W.	11	3			3	14
N.E.	1					1
S.W.	45	14		1	15	60
S.E.	6	1	2		3	9
RURAL CITIES	5	6	3	1	10	15
row %	33.3	40.0	20.0	6.7	66.7	100.0
RURAL TOWNS	20	7	2	0	9	29
row %	69.0	24.1	6.9	0.0	31.0	100.0
large	11	5	1		6	17
small	9	2	1		3	12
SOUTH. ALTA.	88	31	7	2	40	128
row %	68.7	24.2	5.5	1.6	31.3	100.0

Appendix C

1973 - Table 5

NUMBER OF GROUP PRACTICES,
BY GEOGRAPHICAL AREA
AND VARIOUS COMBINATIONS
OF SPECIALTIES

GEOGR. AREA	Single-specialty		Multi-specialty		TOTAL
	family phys. only	other spec. only	family and others	other spec. only	
CALGARY	26	37	16	5	84
row %	30.9	44.1	19.1	5.9	100.0
N.W.	8	3	2	1	14
N.E.	1				1
S.W.	15	30	11	4	60
S.E.	2	4	3		9
RURAL CITIES	3	2	10	0	15
row %	20.0	13.3	66.7	0.0	100.0
RURAL TOWNS	20	0	9	0	29
row %	69.0	0.0	31.0	0.0	100.0
large	11		6		17
small	9		3		12
SOUTH. ALTA.	49	39	35	5	128
row %	38.2	30.5	27.3	4.0	100.0

Appendix C				
1973 - Table 6				
NUMBER OF GROUP PRACTICES, BY GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	GEOGR. AREA	GROUP DIVERSITY		TOTAL
		Single	Multi	
2	Calgary	43	12	55
	Rural Cities	3	4	7
	Rural Towns	5	2	7
	South. Alta.	51	18	69
	% Grand Total	39.8	14.1	53.9
Small	Calgary	17	6	23
	Rural Cities	2	0	2
	Rural Towns	11	3	14
	South. Alta.	30	9	39
	% Grand Total	23.4	7.1	30.5
Large	Calgary	3	3	6
	Rural Cities	0	6	6
	Rural Towns	4	4	8
	South. Alta.	7	13	20
	% Grand Total	5.5	10.1	15.6
TOTAL	Calgary	63	21	84
	Rural Cities	5	10	15
	Rural Towns	20	9	29
	South. Alta.	88	40	128
	% Grand Total	68.7	31.3	100.0

Appendix C					
1987 - Table 1					
NUMBER OF GROUP PHYSICIANS, BY GEOGRAPHICAL AREA AND SPECIALTY					
GEOGR. AREA	SPECIALTY				TOTAL
	Family	Medical	Surgical	Labor.	
CALGARY	224	60	84	12	380
row %	58.9	15.8	22.1	3.2	100.0
N.W.	78	22	32	4	136
N.E.	28	18	22		68
S.W.	52	17	23	8	100
S.E.	66	3	7		76
RURAL CITIES	97	32	32	11	172
row %	56.4	18.6	18.6	6.4	100.0
RURAL TOWNS	187	7	9	0	203
row %	92.1	3.5	4.4	0.0	100.0
large	80	3	5		88
small	107	4	4		115
SOUTH. ALTA.	508	99	125	23	755
row %	67.3	13.1	16.6	3.0	100.0

Appendix C					
1987 - Table 2					
PERCENTAGE THAT GROUP PHYSICIANS COMPRISE OF THE TOTAL NUMBER OF PRACTICING PHYSICIANS, BY GEOGRAPHICAL AREA AND SPECIALTY					
GEOGRAPH. AREA	SPECIALTY				TOTAL
	Family	Medical	Surgical	Labor.	
CALGARY					
all physicians ¹	585	310	201	67	1163 (+86%) ²
group physicians	224	60	84	12	380
% of all phys.	38.3	19.4	41.8	17.9	32.7
RURAL CITIES					
all physicians ¹	147	49	63	15	274 (+57%) ²
group physicians	97	32	32	11	172
% of all phys.	66.0	65.3	50.8	73.3	62.8
RURAL TOWNS					
all physicians ¹	239	9	12	1	261 (+37%) ²
group physicians	187	7	9	0	203
% of all phys.	78.2	77.8	75.0	0.0	77.8
SOUTHERN ALBERTA					
all physicians ¹	971	368	276	83	1698 (+71%) ²
group physicians	508	99	125	23	755
% of all phys.	52.3	26.9	45.3	27.7	44.5

¹ see comments on following page² increase between 1973 and 1987

Comments on Table 2:

The numbers in the "all physicians" rows represent estimates of the number of practicing physicians. No reliable source for these numbers could be found: the Medical Directory [85] includes physicians currently not practicing, and the (probably more realistic) statistics from the Alberta Health Care Insurance Plan [93, and personal correspondence] don't specify geographical areas.

The numbers were estimated by taking the total number of Albertan physicians by specialty only, provided by both the College and Alberta Health Care for 1987:

	College	AHC	Difference
Family Medicine	2,202	2,074	- 5.81 %
Medical Specialties	948	855	- 9.81 %
Surgical Specialties	584	549	- 5.99 %
Laboratory Specialties	310	191	- 38.39 %
Total	4,044	3,669	- 9.27 %

The subtraction of these percentage differences from the number of Southern Albertan physicians by geographical area and specialty (obtained from the 1987 Medical Directory) yielded the presented estimates.

Notice that these numbers include hospital physicians registered in the Health Care Insurance Plan, whereas for the calculation of group physicians hospital-based physicians have been excluded in advance. Thus, assuming that the number of physicians registered within AHC is the best estimate of the number of practicing physicians, the percentages displayed in Table 2 represent estimates of the proportion of community group physicians to the total of practicing physicians.

Appendix C				
1987 - Table 3				
NUMBER OF GROUP PRACTICES, BY GEOGRAPHICAL AREA AND GROUP SIZE				
GEOGR. AREA	# of physicians per group			TOTAL
	2	3-5	≥6	
CALGARY	71	40	9	120
row %	59.2	33.3	7.5	100.0
N.W.	22	10	4	36
N.E.	15	10	1	26
S.W.	25	13	1	39
S.E.	9	7	3	19
RURAL CITIES	11	8	8	27
row %	40.8	29.6	29.6	100.0
RURAL TOWNS	20	25	9	54
row %	37.0	46.3	16.7	100.0
large	4	6	7	17
small	16	19	2	37
SOUTH. ALTA.	102	73	26	201
row %	50.7	36.3	13.0	100.0

Appendix C			
1987 - Table 3a			
NUMBER OF GROUP PRACTICES, BY GEOGRAPHICAL AREA AND GROUP SIZE			
GEOGR. AREA	# of physicians per group		TOTAL
	2	≥3	
CALGARY	71	49	120
row %	59.2	40.8	100.0
N.W.	22	14	36
N.E.	15	11	26
S.W.	25	14	39
S.E.	9	10	19
RURAL CITIES	11	16	27
row %	40.8	59.2	100.0
RURAL TOWNS	20	34	54
row %	37.0	63.0	100.0
large	4	13	17
small	16	21	37
SOUTH. ALTA.	102	99	201
row %	50.7	49.3	100.0

Appendix C						
1987 - Table 4						
NUMBER OF GROUP PRACTICES, BY GEOGRAPHICAL AREA AND GROUP DIVERSITY						
GEOGR. AREA	Number of specialties per group					TOTAL
	Single-	Multi-specialty				
	1	2	3	4	2-4	
CALGARY	100	17	2	1	20	120
row %	83.3	14.2	1.7	0.8	16.7	100.0
N.W.	30	5		1	6	36
N.E.	25	1			1	26
S.W.	28	10	1		11	39
S.E.	17	1	1		2	19
RURAL CITIES	11	11	4	1	16	27
row %	40.7	40.7	14.9	3.7	59.3	100.0
RURAL TOWNS	46	6	2	0	8	54
row %	85.2	11.1	3.7	0.0	14.8	100.0
large	12	4	1		5	17
small	34	2	1		3	37
SOUTH. ALTA.	157	34	8	2	44	201
row %	78.1	16.9	4.0	1.0	21.9	100.0

Appendix C

1987 - Table 5

NUMBER OF GROUP PRACTICES,
BY GEOGRAPHICAL AREA
AND VARIOUS COMBINATIONS
OF SPECIALTIES

GEOGR. AREA	Single-specialty		Multi-specialty		TOTAL
	family phys. only	other spec. only	family and others	other spec. only	
CALGARY	62	38	13	7	120
row %	51.6	31.7	10.9	5.8	100.0
N.W.	20	10	3	3	36
N.E.	13	12		1	26
S.W.	15	13	8	3	39
S.E.	14	3	2		19
RURAL CITIES	3	8	14	2	27
row %	11.1	29.6	51.9	7.4	100.0
RURAL TOWNS	46	0	8	0	54
row %	85.2	0.0	14.8	0.0	100.0
large	12		5		17
small	34		3		37
SOUTH. ALTA.	111	46	35	9	201
row %	55.2	22.9	17.4	4.5	100.0

Appendix C				
1987 - Table 6				
NUMBER OF GROUP PRACTICES, BY GROUP SIZE AND GROUP DIVERSITY				
GROUP SIZE	GEOGR. AREA	GROUP DIVERSITY		TOTAL
		Single	Multi	
2	Calgary	57	14	71
	Rural Cities	7	4	11
	Rural Towns	17	3	20
	South. Alta.	81	21	102
	% Grand Total	40.3	10.4	50.7
Small	Calgary	36	4	40
	Rural Cities	4	4	8
	Rural Towns	24	1	25
	South. Alta.	64	9	73
	% Grand Total	31.8	4.5	36.3
Large	Calgary	7	2	9
	Rural Cities	0	8	8
	Rural Towns	5	4	9
	South. Alta.	12	14	26
	% Grand Total	6.0	7.0	13.0
TOTAL	Calgary	100	20	120
	Rural Cities	11	16	27
	Rural Towns	46	8	54
	South. Alta.	157	44	201
	% Grand Total	78.1	21.9	100.0

Appendix D



3330 Hospital Drive N.W., Calgary, Alberta, Canada T2N 4N1

Faculty of MEDICINE
Department of COMMUNITY HEALTH SCIENCES

Dr. Peter C. Berger

February 5, 1988:

Dear Colleague:

I am a physician from Innsbruck, Austria. With the support of the Austrian Government, I'm staying in Canada for a two-year period to study the health care system of this country. Group medical practice is one aspect of the Canadian system that is of great interest to me, because in Austria group practices simply don't exist.

Therefore I would like to ask you for your help in my study of the present patterns of group practice in Southern Alberta. This study will be the central part of my Master's Thesis in Community Health Sciences.

Your name was randomly selected from published sources as being a medical group member. For the purpose of my study, I have defined group practice as a practice of three or more physicians with identical addresses and/or phone numbers.

My request of you is to take just five minutes of your time to check off answers to a few questions about your medical group in the attached short questionnaire.

As you were selected from your group at random, please feel free to pass on the questionnaire to another physician in the group if you are unable to complete it. I would especially recommend that if one of your colleagues would show more interest in the topic.

Responses in this survey will be handled in a completely confidential manner. No physician names, group names, or addresses will be used in my report. The identification number seen in the upper right corner of page 1 of the questionnaire is for coding purposes only.

As I have to meet certain deadlines of my graduate program, I would be very happy if you or another group physician would complete the questionnaire and return it to me by the end of February. Please use the self-addressed and stamped envelope for that.

Thank you very much for your help! If you have any questions or concerns, please feel free to call me directly at 220-4375, or to leave your name and telephone number at 220-4286 and I will get back to you.

Yours sincerely,

Peter C. Berger, M.D.



Olympic Village and Speedskating - 1988

Appendix D

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GROUP MEDICINE**AN EXPLORATORY STUDY OF GROUP PRACTICES IN SOUTHERN ALBERTA**

1. How many persons out of the professional groups presented below are working within your group? (including part-time, excluding temporary staff)
Please note the number of persons in the boxes to the left of the titles
(e.g.: [2] SURGICAL SPECIALISTS):

Physicians:

[] FAMILY PHYSICIANS

[] MEDICAL SPECIALISTS

Anesthesia	Medical Oncology
Cardiology	Neonatology
Clinical Immunology	Nephrology
Community Medicine	Neurology
Dermatology	Occupational Medicine
Emergency Medicine	Pediatric Cardiology
Endocrinology & Metab.	Pediatrics
Gastroenterology	Perinatal Medicine
Geriatric Medicine	Physical Medicine & Rehabilitation
Hematology	Psychiatry
Infectious Diseases	Respiratory Medicine
Internal Medicine	Rheumatology

[] SURGICAL SPECIALISTS

Cardiovascular Surgery	Otolaryngology
General Surgery	Pediatric General Surgery
Neurosurgery	Plastic Surgery
Obstetrics & Gynecology	Thoracic Surgery
Ophthalmology	Urology
Orthopedic Surgery	Vascular Surgery

[] LABORATORY SPECIALISTS

Anatomical Pathology	Medical Microbiology
Diagnostic Radiology	Neuropathology
General Pathology	Nuclear Medicine
Hematological Pathology	Radiation Oncology
Medical Biochemistry	

Other health professionals:

[] NURSES

[] SOCIAL WORKERS & THERAPISTS

[] TECHNICIANS & OTHERS

Non-medical staff:

[] RECEPTIONISTS

[] TYPISTS & OTHER OFFICE HELP

[] ADMINISTRATORS / BUSINESS MANAGERS

2. Does your group have

an Executive Committee (Board of Directors)? [] yes ... [] no
 an Executive Director and/or Medical Director? ... [] yes ... [] no
 an informal "leader"? [] yes ... [] no

Appendix D

9. Beside each of the events presented below, please indicate [✓] whether it occurs frequently (frequ.), occasionally (occas.), or never:

	frequ.	occas.	never
Two (or more) group physicians informally discuss a case ("corridor consultation")	[]	[]	[]
A group physician formally consults one (or more) other group physicians	[]	[]	[]
Two (or more) group physicians actually work on one case	[]	[]	[]
A group physician consults a physician outside the group	[]	[]	[]
A group physician refers a patient to another group physician	[]	[]	[]
A group physician refers a patient to a physician outside the group	[]	[]	[]
In case of short-term absence (less than two weeks), another group physician takes over the patients ...	[]	[]	[]
In case of short-term absence (less than two weeks), an outside locum takes over the patients	[]	[]	[]
In case of long-term absence (more than two weeks), another group physician takes over the patients ...	[]	[]	[]
In case of long-term absence (more than two weeks), an outside locum takes over the patients	[]	[]	[]

10. How are the **charts** organized in your group practice ? Please check [✓] only one answer:

[] each physician has his/her own charts for his/her personal patients

[] each physician has own charts, but in case of referrals within the group other physicians may look into them

[] there is a central chart library, but physicians are allowed to pull only their personal patients' charts

[] there is a central chart library, and group physicians are equally entitled to access all the charts

[] there is a generally accessible central chart library, but physicians additionally keep their own personal records

[] another model of chart organization

Appendix D

11. Does your group (or subgroups) have regular formal meetings ?

[] no (skip question 12., go directly to question 13.)
[] yes (please answer question 12.)

12. For each applicable combination of participants presented below, please note the average number of formal meetings per month or per year (e.g. [3]), distinguishing between (a) patient-oriented meetings (i.e. clinical conferences, or case discussions), and (b) group-oriented meetings (i.e. meetings concerned with business, organizational issues, group dynamics, etc.):

(a) <u>patient-oriented meetings:</u>	average number of formal meetings
	per month <u>or</u> per year
physicians only	[] []
physician(s) + other health professional(s)	[] []
(b) <u>group-oriented meetings:</u>	average number of formal meetings
	per month <u>or</u> per year
physicians only	[] []
physician(s) + other health professional(s)	[] []
non-medical staff	[] []
full staff	[] []

13. In your opinion, what are the advantages of group medical practice?

14. In your opinion, what are the disadvantages of group medical practice?

Thank you very much for completing this questionnaire ! Please put it into the self-addressed and stamped envelope, and mail it as soon as possible. PCB.

Appendix D



THE
UNIVERSITY
OF CALGARY

3330 Hospital Drive N.W., Calgary, Alberta, Canada T2N 4N1

Faculty of MEDICINE
Department of COMMUNITY HEALTH SCIENCES

Dr. Peter C. Berger

March 15, 1988:

Dear Colleague:

Enclosed please find another copy of the questionnaire that I sent to you last month, including the original covering letter (dated as of February 5, 1988).

As you did express your interest during yesterday's telephone call, I am looking forward to get your reply in the coming weeks. Please don't forget to use the self-addressed and stamped envelope for returning the completed questionnaire.

Yours sincerely,

Peter C. Berger, M.D.



Olympic Village and Speedskating - 1988

Appendix D



THE
UNIVERSITY
OF CALGARY

3330 Hospital Drive N.W., Calgary, Alberta, Canada T2N 4N1

Faculty of MEDICINE
Department of COMMUNITY HEALTH SCIENCES

Dr. Peter C. Berger

March 15, 1988:

Dear Colleague:

I am a physician from Innsbruck, Austria. With the support of the Austrian Government, I'm staying in Canada for a two-year period to study the health care system of this country. Group medical practice is one aspect of the Canadian system that is of great interest to me, because in Austria group practices simply don't exist.

Therefore I would like to ask you for your help in my study of the present patterns of group practice in Southern Alberta. This study will be the central part of my Master's Thesis in Community Health Sciences.

Your name was randomly selected from published sources as being a medical group member. For the purpose of my study, I have defined group practice as a practice of three or more physicians with identical addresses and/or phone numbers.

My request of you is to take about 20-30 minutes of your time to meet with me in your office. I would like to talk with you about various characteristics of your group, following points in a short questionnaire.

All responses in this survey will be handled in a completely confidential manner. No physician names, group names, or addresses will be used in my report.

As you were selected from your group at random, please feel free to ask another physician in the group whether he/she wants to meet with me for a half-hour interview. I would especially recommend this if one of your colleagues would show more interest in the topic.

I would appreciate to meet with you (or another group member), whenever it is convenient for you (him/her). I will call you next week to hear whether you want to meet with me, and to set up an appointment.

Thank you very much for your help! If you have any questions or concerns, please feel free to call me directly at 220-4375, or to leave your name and telephone number at 220-4286 and I will get back to you.

Yours sincerely,

Peter C. Berger, M.D.



Olympic Village and Speedskating - 1988