Referral rates in Swiss primary care with a special emphasis on reasons for encounter

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Referral rates in Swiss primary care with a special emphasis on reasons for encounter

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Abstract

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Conclusions: An average of 1.7 RFE per consultations and a broad clinical spectrum of problems were presented in primary care; nevertheless 94.3% of all problems were solved in primary care, reflecting the crucial role of PCPs as a coordinator of healthcare.

Key words: Primary care, consultation, referral, reason for encounter, coordination of care
Introduction
There is growing evidence that a strong primary care contributes to efficiency and quality in healthcare (1, 2). Referrals from primary to secondary care reflect this important role of primary care physicians (PCP). In Switzerland, systematic data on referrals was last collected in 1989 as part of a European referral study (3). Many conditions have changed since then; the study was taking place at a time where 3833 PCPs were working in private practices. Today Switzerland has a higher density of population (1990: 6.75 million to 8.04 million in 2012) (4), of PCPs (2013: 5929) (5), and also of specialists in secondary care. The population growth of 19.1% is opposed by a growth of physicians in primary care of 54.7%. Swiss healthcare system is mainly financed through private health insurances. Health insurance is mandatory for every Swiss citizen since a new established law in January 1996. A gatekeeping system is not mandatory for health insurance and the role of PCPs as gatekeepers is often challenged. It remains unclear how these changes affected referral rates.

Earlier studies reporting referral rates were calculated on the basis of consultations. This does not completely reflect the work of PCPs. Some studies have shown that during a consultation usually more than one problem is discussed between patient and PCP (6-8).

The aim of our study was to investigate consultations and to update recordkeeping and the database on referrals of Swiss primary care. Unlike e.g. in the United Kingdom, electronic health records coverage in Switzerland is still low and currently available databases in primary care, such as the FIRE database were not able to answer our question (9, 10). Therefore we decided to prospectively collect data on consultations; furthermore we specifically aimed to calculate a referral rate based on consultations but also based on all problems raised during these consultations.

Methods
Participants
PCPs were recruited through primary care organizations and networks situated in rural as well as in urban regions of Switzerland, we aimed to include at least 60 PCPs of different
regions in Switzerland. As remuneration PCPs were paid 500 Swiss francs for participation. Patients were not remunerated.

Time frame
The study was conducted in 2012 and 2013. PCPs collected data during three study months. During each study month (March 2013, May 2013 and November 2012 or 2013 respectively) five weekdays (each month Monday to Friday to achieve representative data (11)) were fixed as study days. PCPs were asked to participate according to their normal workload; full time corresponds to 15 study days during the whole study period. If PCPs were not able to collect data on the study day, they were asked to collect data within four weeks on the same weekday. Data for analysis was excluded when PCP did not collect data on at least two days per study month.

Measurements
During each study day the PCP documented every consultation on paper form collecting following information: patient’s year of birth, sex, membership in a managed care model and up to six reasons for encounter (RFE). The study form was piloted with four PCPs, where an average of three RFE were documented, we therefore included up to six RFE on the final study form. PCPs were asked to write down reason for encounters and not their diagnosis and to fill in the consultation form after each consultation rather than at the end of the working day. For each RFE the PCP indicated whether a referral was initiated or not. If a referral was initiated, PCPs completed a second form to further assess referral details (e.g. type of specialist, aim, initiator, shared decision, and time frame). During a study day all face-to-face physician-patient consultations were documented. Telephone encounters and administrative work (such as reviewing a discharge letter in absence of a patient) were not documented. A referral was considered as an investigation to another doctor, including radiologic investigations as CT-Scans or MRI. Conventional x-rays are commonly available in Swiss private practices and therefore not considered as a referral. Emergency referrals to hospitals were also not documented.

Data management and coding
Data was consecutively sent to the Institute of Primary Care in Zurich and entered into a database. The RFE were written in full text by PCPs and consecutively coded by two researchers according to the ICPC2-classification (12). ICPC-2 is a WHO acknowledged coding system particularly suitable for primary care, since the coding system does not only include diagnoses, but also symptoms (e.g. headache). The coding system is based on chapters usually representing organ systems (e.g. chapter K=circulatory or L=musculoskeletal). To achieve a high coding reliability a random sample of 1000 RFEs was first double coded and an inter-rater agreement was assessed by using kappa statistics. Agreement was substantial on single code levels (letter indicating organ system and number indicating diagnosis or procedure) (80.6%) and reached an almost perfect congruence of 94.4% on organ chapter levels, consistent with the literature (13), thus all further RFE were coded only once by the two independent researchers.

Statistics
We used descriptive statistics to describe patient and PCP characteristics. Figures are reported in absolute numbers and percentage of total in brackets and/or means and standard deviation (SD) in brackets. Referral rates (95%-CI) were calculated as a proportion of the number of consultations and of the number of all RFE. Patient and PCP characteristics were compared using parametric- and non-parametric tests as appropriate. We considered a p-value < 0.05 as statistically significant.

Ethical issues
By 2012, under Swiss ethics guidelines a study based on anonymous data does not require a formal ethics approval. For the present study we consulted the Ethics Committee of the Canton of Zurich, which confirmed that an ethical approval was not necessary (correspondence letter from June 28th 2012).

Results
Participating PCPs
92 PCPs participated in our study; data of 2 PCPs were excluded because they did not collect data throughout the whole study period. Overall 24’774 consultations of patients
were included. **9'278 (37.5%) patients were insured in a managed-care model.** A summary of data on PCPs and patients is provided in Table 1.

**Referrals**

During the study 2'427 RFE (brought up during 2'341 consultations) led to a referral; which corresponds to a referral rate of 5.65% (95-CI 5.43 - 5.87%) based on all RFE and 9.44% (95-CI 9.08-9.81%) based on consultations respectively. The PCP was initiator of the referral in 68.4%, in 19.4% the patient was initiator of the referrals, in 12.2% the situation is not clear. The decision concerning a referral was shared by patients and PCP in 97.2%. The most frequent referral recipients were radiologists (495, 21.14%), gastroenterologists (219, 9.35%), and orthopedic surgeons (218, 9.31%). The most frequent aim of referrals was advice concerning diagnosis or therapy (n= 1084, 46.3%), radiologic investigation (computed tomography, MRI, ultrasound) (492, 21.01%), non-surgical intervention (280, 11.96%), and surgical intervention (251, 10.72%). Referral rates differed within the RFE chapters in a range of 1.4% in chapter T (endocrine, metabolic and nutritional) up to 18.7% in chapter F (eye). Figure 1 shows the referral rate according to the RFE chapters.

**Consultations and reasons for encounter**

Overall data on 1’179 study days was collected, corresponding to 992.5 full working days. On average a PCP had 24.7 consultations per day (SD 9.8). The total of 24’774 consultations corresponds to 42’890 reasons for encounter (RFE). This corresponds to a mean of 1.73 RFE (SD 1.07) per consultation. In 13’893 (56.1%) of the consultations one RFE was documented, in 6’312 (25.5%) two reasons, in 2’760 (11.1%) three reasons and in 1’806 (7.3%) more than three reasons per consultation were documented. In the group younger than 20 a mean of 1.25 RFE (SD 0.55) and in the older than 80 a mean of 2.11 (SD 1.19) RFE per consultation could be found. Figure 2 shows the numbers of RFE per consultation according to age groups of the patients.

We analyzed the RFE according to the chapters of ICPC corresponding to an organ region. The most common categories of RFE were musculoskeletal (chapter L, n=5’309, 21.4%), cardiovascular (K, n=3’427, 13.8%) and respiratory (R, n=2’827, 11.4%). The frequency of ICPC chapters were different between male and female patients, in female patients the
most common reasons were musculoskeletal (21.7%), cardiovascular (13.0%) and respiratory (11.4%), in male patients the most common reasons were musculoskeletal (21.3%), cardiovascular (15.0%) and general (11.6%). Overall a total of 830 RFE were coded. The most frequent codes were K86 (uncomplicated hypertension, n=2636, 6.15%), K34 (cardiovascular blood test, n=1’264, 2.95%), T90 (Diabetes, non-insulin dependent, n=1’182, 2.76%), P76 (depressive disorder, n=769, 1.79%) and L29 (other musculoskeletal symptoms, n=677, 1.58%). The three most common RFE were identical in male and female patients. Figure 3 shows the frequency of RFE chapters in male and female patients.

Discussion
In 24’774 consultations a total of 42’890 reason for encounters were raised, which results in an average of 1.73 RFE per consultation. A broad spectrum of RFE was brought up during the consultations, overall 830 different RFE were recorded. Nevertheless 90.6% of the consultations or 94.3% of problems raised in primary care consultations were managed by PCPs and did not need a referral.

The corresponding referral rate of 9.4% almost tripled compared to the European Referral study from 1989, which found a 3.7% referral rate in Switzerland (3). Increased diagnostic and therapeutic options may account for the increase in the referral rate. We used similar definitions of referral as in 1989, in one specific point our definition differed from the European referral study: we included radiologic investigation with involvement of a radiologist (such as CT and MRI scans); these entities were not included in the European referral study; but also not very common in 1989. Furthermore radiologic interventions that accounted for a fifth of the referrals have to be differentiated to other referrals; especially considering that there is rarely a direct contact between a radiologist and the patient for diagnostic procedures and the results are often communicated by the PCP in a further consultation.

Contemporary referral rates of Switzerland are comparable to recent referral rates in the US with 9.3% in 2009 (14), but lower than Danish, Norwegian or UK data with 12.7%, 13.7% and 13.9% respectively (15–17). In regard of the different health care system the
comparison might be limited, especially considering a strong gatekeeper role of PCPs in Denmark, Norway and UK, while in the U.S. a direct contact to a specialist is possible. In Switzerland gatekeeping with a first contact to a PCP is not mandatory, but insurance companies have introduced managed care health plans, where patients pay lower monthly fees. Furthermore specialization to become a PCP differs: in Switzerland PCPs have a comparable training to specialists (18). In addition, investigative instruments, such as a point of care lab tests, conventional x-rays and ECG are commonly available in Swiss primary care practices.
This infrastructure (including its reimbursement) might contribute to the number of problems that can be solved in primary care.

However a referral rate as a proportion of the number of consultations does not completely reflect work in primary care. Often more than one subject is handled within a consultation (6-8). In our study we confirmed an increasing number of RFE with increasing age; most likely explained by higher prevalence of chronic conditions and multimorbidity in older patients (19, 20). To our knowledge this is the first study using the number of RFE as basis of the referral rate. In our analysis the most common clinical chapters of RFE resulted in lower referral rates than the average. The highest referral rate was observed within ophthalmologic diseases, overall a very rare RFE in primary care and diagnostic and treatment options are very limited in primary care. These data are not very surprising, but just confirm that the most common reason could be handled best. Additionally, a wide range of RFEs were reported in these consultations. A total of 830 different RFE were recorded in this dataset, and only 18 were more frequent than 1%. These figures demonstrate the broad clinical spectrum that can be handled in primary care. Despite different problems within one consultations and the broad variety of clinical problems during consultations, PCPs were able to handle 94.3% of the problems in primary care, which clearly reflects the crucial role of primary care in coordination of care.

Strengths and limitations
We present representative data of 90 PCPs from different regions in Switzerland, collected over a study period of three non-consecutive months and all weekdays. Data was collected prospectively and not analyzed based e.g. on administrative data. Our study is limited by
following circumstances: Data was collected on random days throughout the whole year and therefore a long-term observation of a single patient (e.g. with several consultations with the same RFE) was not possible. Our PCPs are only from the German speaking part of Switzerland and female PCPs are slightly underrepresented; nevertheless data on consultation content are similar to earlier studies in Swiss primary care. Furthermore our data collection included data on RFE that were recorded directly by the PCPs. This might underestimate the number of RFE per consultation. With ICPC2 we used an accepted coding system and achieved a high interrater agreement. Finally our study does not allow any conclusions on adequacy of referrals or quality of care or satisfaction with the referral.

Conflict of interests
All authors declare no conflicts of interests.

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Table 1. Data on PCPs and patients

| Table1. Data of the participating PCPs and patients. Figures of participants describe numbers and percentages of male and female PCPs or patients. *143 values concerning sex in patients are missing. Figures indicated mean and standard deviation in brackets. |
Figure 1. Percentage of RFE within ICPC2-chapters which led to a referral (light) or were handled in primary care (dark). (A General and unspecified; B Blood, blood forming organs, lymphatic, spleen; D Digestive; F Eye; H Ear; K Circulatory; L Musculoskeletal; N Neurological; P Psychological; R Respiratory; S Skin; T Endocrine, metabolic and nutritional; U Urology; W Pregnancy, childbirth, family planning; X Female genital system and breast; Y Male genital system; Z Social problems)
Figure 2 – Number of RFE per consultation

Figure 2 Number of reason for encounters (RFE), x-axis describes age of patients, y-axis describes percentages of each group.
Figure 3 – Frequency of RFE in male and female patients

Figure 3
Frequency of RFE according to ICPC-2 chapters in male (dark) and female (light) patients. (A General and unspecified; B Blood, blood forming organs, lymphatics, spleen; D Digestive; F Eye; H Ear; K Circulatory; L Musculoskeletal; N Neurological; P Psychological; R Respiratory; S Skin; T Endocrine, metabolic and nutritional; U Urology; W Pregnancy, childbirth, family planning; X Female genital system and breast; Y Male genital system; Z Social problems)