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# Out-of-hours demand in primary care: frequency, mode of contact and reasons for encounter in Switzerland

## Abstract

**RATIONALE, AIMS AND OBJECTIVES:** To investigate the demand for traditional out-of-hours general practitioner (GP) emergency care in Switzerland including GPs' satisfaction and reasons for encounter (RFE).

**METHOD:** During a 2-month period (2009), a questionnaire-based, cross-sectional study was performed in GPs participating in the mandatory out-of-hours service in the city of Zurich, Switzerland. The number and mode of patient contacts were assessed to investigate the demand for GP care in traditional out-of-hours services. GPs and patient characteristics, including RFE according to the International Classification of Primary Care, were noted. Descriptive statistics and non-parametric tests were conducted.

**RESULTS:** Out of the 295 out-of-hours episodes during the study period, 148 (50%) duty periods were documented by a total of 93 GPs (75% men) with a mean (SD) age of 48.0 (6.2) years. The median (interquartile range) number of out-of-hours contacts was 5 (3-8) and the demand for home visits was significantly more common compared with practice and telephone consultations. A total of 112 different RFEs were responsible for the 382 documented patient contacts with fever accounting for the most common complaint (13.9%). Although 80% of GPs agreed to be satisfied overall with their profession as primary care provider, 57.6% among them were dissatisfied with the current out-of-hours service. Inappropriate payment and interference with their daily work in practice were most frequently reported.

**CONCLUSIONS:** Our findings indicate that there is still strong patient demand for out-of-hours care with special need for home visits, suggesting that new organizational models such as integrating GPs into emergency care may not be an appropriate approach for all patients. Therefore, the ongoing reorganization of the out-of-hours-service in many health care systems has to be evaluated carefully in order not to miss important patient needs.

## **Out-of-hours demand in primary care: frequency, mode of contact and reasons for encounter in Switzerland**

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## **Abstract**

### **Rationale, aims and objectives**

To investigate the demand for the traditional out-of-hours general practitioner (GP) emergency care in Switzerland including GPs' satisfaction and reasons for encounter (RFE).

### **Method**

During a two-month period (2009), a questionnaire based cross-sectional study was performed in GPs participating in the mandatory out-of-hours service in the city of Zurich, Switzerland. Number and mode of patient contacts were assessed to investigate the demand for GP care in traditional out-of-hours services. GPs and patient characteristics, including RFE according to the International Classification of Primary Care (ICPC-2) were noted. Descriptive statistics and non-parametric tests were conducted.

### **Results**

Out of the 295 out-of-hours episodes during the study period 148 (50%) duty periods were documented by a total of 93 GPs (75% men) with a mean (SD) age of 48.0 (6.2) years. The median (IQR) number of out-of-hours contacts was 5 (3-8) and the demand for home visits was significantly more common compared to practice- and telephone consultations. 112 different RFE were responsible for the 382 documented patient contacts with fever accounting for the most common complaint (13.9%). Although 80% of GPs agreed to be overall satisfied with their profession as primary care provider, 57.6% among them were dissatisfied with the current out-of-hours service. Inappropriate payment and interference with their daily work in practice was most frequently reported.

**Conclusions**

Our findings indicate that, there is still a strong patients' demand for out-of-hours care with special need for home visits, suggesting that new organisation models such as integrating GPs in emergency may not be an appropriate approach for all patients. Therefore the ongoing reorganisation of the out-of-hours-service in many health care systems has to be evaluated carefully in order not to miss important patient needs.

## Introduction

In the last years the organisation of out-of-hours services in primary care has changed in many countries. There are new models of out-of-hours care such as large-scale general practice cooperatives, primary care centres integrated in hospitals' emergency departments (EDs) or telephone triage and advice services [1-4]. Various reasons account for this reorganisation such as an increasing number of patients with minor problems self-referred to EDs, the shortage of general practitioners (GPs), and an increasing demand for out-of-hours care resulting in a higher workload for GPs' [3, 5-8]. In consequence, these factors lead to an inappropriate use of the health care system and represent a waste of human and financial resources [2]. Compared to GP cooperative organisation models, the hospital based ED model does not address important aspects of care such as the continuity and coordination, which are of great importance e.g. in the care of chronically ill.

In Switzerland, patients have unlimited access to the health care system, including specialist care and emergency care at the hospital. Previous research has shown that most ED patients are so called "walk-in-patients" seeking directly for care without any referral by a GP [9, 10]. Therefore many efforts are currently made to reorganise out-of-hours services in Switzerland. In the greater area of Zurich for example, several hospitals have launched primary care centres integrated in hospitals' ED. In addition, community based emergency practices have been established. The aim of this study was to provide an extensive overview of the current situation of out-of-hours-services in Zurich to have a valid baseline for the changes in patients' pathways which will be affected by the reorganisation of emergency services.

## **Methods**

### **Setting**

The out-of-hours-service in the city of Zurich is currently organised by an Emergency Medical Service Telephone (EMST) Switchboard as a unit of the general emergency medical service. Zurich is divided into five emergency areas and in each of them one GP has to provide a mandatory out-of-hours service from 7 a.m. until 7 a.m. the following day. Between 10 p.m. and 7 a.m. a so called “night physician” provides the out-of-hours-care and the GP on duty supports the night physician only in case of high demand for emergency health care (back-up service). Our survey covers all patient contacts of the GP during a 24-hours-service, procured via the EMST.

### **Subjects and data collection**

The data on the out-of-hours-service were collected between January, 1st to February 28th, 2009. Questionnaires were sent by the EMST switchboard via email to all on-duty physicians. Before commencement of duty, a telephone reminder was made via the EMST to assure that the GP on duty had received the questionnaire and was aware of the study. Two days after the out-of-hours-service a further telephone reminder was conducted by the EMST.

### **Variables measured**

The survey assessed demographics and the professional experience of the GP with the current out-of-hours system. To investigate the demand for out-of-hours care, the number and mode of patient contacts during the duty period was reported. The mode of patient contact was coded as followed: contact in the GP practice, visit at home by the GP, or telephone contact. In addition it was recorded if the contact took place before or after 10 p.m. In addition, we assessed the satisfaction of GPs with the current out-of-hours service on a

five-point likert scale ranging from “completely disagree” (=1) to “completely agree” (=5). Regarding patients’ characteristics, GPs documented age, sex, reasons for encounter, and if patients had a personal GP of their own. The characteristics were documented for the first, second and the last patient contact by the GP. Reasons for encounter (RFE) were assessed according to the International Classification of Primary Care (ICPC-2) [11].

### **Statistics**

Descriptive analyses were conducted to describe patients and physicians characteristics. Furthermore, non-parametric tests (Friedman test; Wilcoxon-rank-sum test) were used to compare the number of consultations between different modes of contact during on-duty episode. The intra-rater reliability of the ICPC-coding for the RFE was tested using Kappa statistics, based on 130 randomly selected patient contacts. All analyses were calculated using the STATA statistical package, version 9.2 (Stata Incorporation, College Station, TX, USA). The statistical significance was defined as  $p < 0.05$ .

### **Results**

The full evaluation period comprised 295 out-hours-service episodes. 148 (50.2%) of these episodes were documented by a total of 93 general practitioners. Patients’ and GPs’ characteristics are illustrated in table 1. The participating GPs, consisted of 75.0% male and 25.0% female physicians with a mean (SD) age of 48 (6.2) years. Most of the GPs (75.1%) had an experience of at least six years in the current out-of-hours-service. GPs reported patient characteristics of 382 contacts. The 382 patients were mostly

female (64.9%) and had a mean age of 59 (23.5) years. 84.6% of the patients reported to have a personal GP with no difference between gender.

#### Table 1

During an out-of-hours-service period, the GPs reported a median (interquartile range) of 5.0 (3.0-8.0) patient contacts (N=433). The distribution of the mode of contact was as follows: 1.0 (0.0-2.0) contacts took place in the practice of the GP (practice consultations), 2.0 (1.0-4.0) took place at the patients' home (home visits). A median of 1.0 (0.0-2.0) contacts could be completely handled with the initial telephone contact and required no further consultation or personal contact. The distribution of the three modes of contact was significantly different (Friedman=13.4; p-value=0.0002). Group comparisons between the different modes of contact revealed that home visits were significantly more frequent than practice and telephone contacts (p<0.01 for both comparisons).

After 10 p.m. the "night physician" was primarily responsible for the out-of-hours-service, resulting in not more than 1 contact in 75% of all documented duty episodes thus we restricted a detailed analysis of the different contact modes on the time between 7 a.m and 10 p.m. (Table 2). In over 60% of out-of-hours periods none or only one practice or telephone consultation was performed by the GP. However, in over 50% of the reported out-of-hours episodes two or more home visits were necessary and in less than 20% of episodes no home visit was requested.

## Table 2

Table 3 illustrates the satisfaction of the GPs with the current out-of-hours service system. The majority of the GPs felt that they were disrupted in their daily routine practice work by the out-hours service (54.4%). They experienced the out-hours service as a burden (57.0%) and in their view, the reimbursement of the service is not appropriate (62.0%). On the other hand, most GPs felt that the out-of-hours service had no negative impact on their physical or psychological health (64.1% and 58.7%, respectively). Overall, a vast majority (88.0%) was satisfied with their profession as a GP and nearly two third (63.2%) would even recommend to students to choose a career in primary care.

## Table 3

Based on the 382 documented out-of-hours contacts a total of 512 RFE (average of 1.3 reasons for encounter/physician contact: range 1-5) have been further analyzed. The intra-rater reliability for the repeated coding of a random sample of 130 RFE according to ICPC-2 was high with a Cohen's Kappa of 0.9. Overall, 112 different reasons for encounter could be classified according to the ICPC-2. Symptoms and complaints from the ICPC-chapter A (General and Unspecified) were most commonly reported (31%), followed by the ICPC-chapter R (Respiratory) (28%) and L (Musculoskeletal) (19%) (Figure 1). Overall, RFEs showed a wide clinical variation (figures not shown); 34 different RFE surpassed the threshold of a frequency of 1% related to all

RFE. But overall these 34 RFE represented only 30.4 % of all reasons to contact a GP. Nearly 70% of the RFE represented relatively rare conditions (<1 per 100 patient contacts).

Figure 1

Figure 2 shows the 34 most common RFE (relative frequency > 1%). Fever represented the most common RFE (13.9%), followed by influenza (7.9%), cough (7.6%) and dizziness (7.6%). Only six RFE showed a frequency of more than 5%

Figure 2

## **Discussion**

Our survey provides detailed information about the frequency of out-of-hours demands in an urban setting but also about the different reasons for encounter, according to the ICPC classification. Furthermore, we could show that most GPs experience the current organisation of the out-of-hours-service as an additional burden for their daily practice work.

This is the first study that investigated the demand on current out-of-hours services in the area of Zurich, which represents the biggest city in Switzerland with about 380.000 inhabitants. In our study females were more frequently seeking for out-of-hours care compared to men which is consistent with the

well-known fact of a higher utilisation of the health care system by females, which in general is explained by differences in health behaviour [12-16]. Interestingly this gender difference holds true regarding utilisation of out-of-hours services where females tended to contact a GP-based service, whereas men tended to visit an ED [4, 6]. Gender-specific differences in medical emergency problems with an overrepresentation of injuries in men might be responsible for these findings. The proportion of patients in our study that reported to have a GP (85%) has to be considered as high when taking into account the urban study setting and the lack of a gate-keeping role of the GP in the Swiss health care system. One might assume that the patients' experience with a well-functioning GP-relationship was an important prerequisite to choose a non-ED out-of-hours service.

The total frequency of patient contacts during an out-of-hours-service period was quite low compared to other studies. Previously published surveys in more rural regions of Switzerland revealed on average 28.7 and 13 patient contacts, respectively, during one out-of-hours-service period although a smaller population had to be covered by the rural duty areas [17, 18]. This discrepancy might be explained rather by differences in the organisation of the out-of-hours service (i.e. dedicated night physician after 10 p.m.) and the availability of different emergency care services in the city (i.e. ED's, Walk-in centers, private emergency-care services) than by differences related to the populations' health status.

Interestingly, home visits were the most frequent mode of contact in the current out-of-hours service performed by GPs in Zurich. It is in contrast with data from other studies, which found a smaller percentage of home visits compared to consultations at the practice, by telephone or contacts by a nurse [19-21]. This finding is important for the reorganisation efforts, currently made in many countries including Switzerland. Following the growing number of walk-in-patients, which directly seek for help in EDs, many hospitals are currently establishing hospital based out-of-hours-services, performed by GPs. Our results indicate that new models with a low-threshold access for primary care at the hospital may not satisfy the need for emergency home visits. There is probably still a need for the traditional primary care service in the different systems of out-of-hours care.

Consistently with another Swiss study, most GPs in our survey experienced out-of-hours service as a burden [22]. Interferences with daily routine practice work and inappropriate payment are the main reasons for dissatisfaction with the current system, although overall the satisfaction with the profession as a GP was high. Interestingly, previous research revealed a positive impact on GP satisfaction after introduction of GPs out-of-hours co-operative on accident and emergency services [23-25]. This reorganisation model has been associated with improvement in general health status and quality of life [25] and a decrease in stress levels [26].

GPs documented 112 different RFE. This high variation of RFE with many of them having a low prevalence is quite typical for primary care and reflects the

broad spectrum of symptoms and complaints of GP medical care in the low-prevalence setting [27, 28]. For example, in a German episode-based sample of about 30'000 patients in primary care the most frequent RFE had a prevalence of only 8% and the ten most frequent RFE accounted for 38% of all RFE [27]. Our results of the most common reasons for encounter are in line with findings in a Dutch study which analysed the out-of-hours demand for primary care in an emergency setting [6]. Interestingly, the same patient reasons in emergency care account for the most common RFE during the normal operating time of primary care practices as well [29].

A limitation of our study is that only 50.2% of the out-of-hours episodes could be analysed. Although a participation rate over 50% in physician assessments can be regarded as success [30] a potential selection bias can not be excluded. Some private organisations also perform out-of-hours services in Zurich. Data from these organisations were not available. Nevertheless, our results -especially regarding the RFE - fit quite well to previous findings from other countries and indicate the validity of our assessment. An important strength of our study is that we used the ICPC-2 classification, an internationally recognised classification system for primary care. Especially in a primary care emergency setting, where definitive diagnoses are often rare, ICPC-2 is superior over the International Classification of Diseases (ICD10). The high intra-rater reliability, as shown in our study, is another argument to apply the ICPC-2 classification in this context.

The economic burden, caused by the walk-in-patients, flooding the EDs has

urged many countries to rethink organisation of the out-of-hours service. Our study revealed some important findings which should be considered, when the traditional out-of-hours service provided by GPs is reorganised: The clear demand for home visits indicated that new organisation models such as hospital based out-of-hours services, performed by GPs will probably not be an appropriate offer for all patients. The danger that the needs' of older or disabled patients will be missed if the traditional out-of-hours service would completely disappear is high.

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## Figure legends

### **Figure 1 - ICPC Chapter of All Patients' Problems**

Breakdown of the reasons for contact, from the perspective of the patient, in the chapter on ICPC-2 classification. Symptoms and complaints, which with a total of 118 mentions (31%) as the most commonly occurring, could be classified as Chapter A (General/Non-Specific), followed by symptoms and complaints of the respiratory system (Chapter R) and the musculoskeletal system (Chapter L) with a total of 108 (28%) and 69 (18%) mentions respectively.

### **Figure 2 - Most Frequent RFE (Symptoms)**

Distribution and breakdown of the 34 contact reasons, from the perspective of the patient, which were named with a relative frequency of at least 1/100 patient contacts (dashed line). With 53 mentions and an incidence rate of 13.9%, from the perspective of the patient, fever (ICPC-2 Code A03) was the most named reason for encounter.

Table 1: Patients' and GPs' Characteristics

Variables	GPs' Characteristics <sup>a</sup>		Patients' Characteristics <sup>a</sup>	
	N=93	N (%)	N=382	N (%)
Gender				
Women	23	(25.0)	209	(64.9)
Men	70	(75.0)	113	(35.1)
Mean age (SD)	48	(6.2)	59	(23.5)
Experience in the current out-of-hours service				
<2 years	8	(9.1)	-	
2-5 years	14	(15.9)	-	
6-10 years	26	(29.6)	-	
>10 years	40	(45.5)	-	
Personal GP of their own				
Patient with GP	-		313	(84.6)
Patient without GP	-		57	(15.4)

<sup>a</sup> Due to missing data, subgroups comprise less than 93 or 382 cases

Table 2: Distribution of the Modes of Contact

Number of Patient Contacts	Practice consultations N(%)	Home Visits N(%)	Telephone Contacts N(%)
	Before 10 PM	Before 10 PM	Before 10 PM
None	57 (40.0)	27 (18.8)	63 (43.8)
One	41 (28.3)	34 (23.6)	33 (22.9)
Two	18 (12.4)	30 (20.8)	28 (19.4)
Three	7 (4.8)	18 (12.5)	9 (6.3)
More than three	21 (14.5)	35 (24.3)	11 (7.6)
Mean (SD)	1.5 (2.2)	2.7 (2.9)	1.2 (1.5)
Median (IQR)	1.0 (0.0-2.0)	2.0 (1.0-3.0)	1.0 (0.0-2.0)

The results based on data of a 24-hours service period, in which all patient contacts were counted by the GP.

Table 3: GP satisfaction in the Current Emergency Medical Service System

	Completely disagree N(%)	Disagree N(%)	I don't know N(%)	Agree N(%)	Completely agree N(%)
Practice management was disrupted by the emergency medical service.	7 (7.6)	33 (35.9)	2 (2.2)	24 (26.1)	26 (28.3)
Overall, I find the emergency medical service to be a burden.	10 (10.9)	23 (25.0)	6 (6.5)	28 (30.4)	25 (27.2)
Overall, the emergency medical service has a negative impact on my physical health.	33 (35.9)	26 (28.3)	9 (9.8)	18 (19.6)	6 (6.5)
Overall, the emergency medical service has a negative impact on my psychological health.	32 (34.8)	22 (23.9)	5 (5.4)	21 (22.8)	12 (13.0)
The reimbursement in the emergency medical service is sufficient.	29 (31.5)	28 (30.4)	7 (7.6)	25 (27.2)	3 (3.3)
Overall, I am satisfied with my profession as a primary care provider.	1 (1.2)	6 (7.2)	3 (3.6)	35 (42.2)	38 (45.8)
I would recommend to students to choose a career in primary care.	9 (10.3)	14 (16.1)	9 (10.3)	31 (35.6)	24 (27.6)

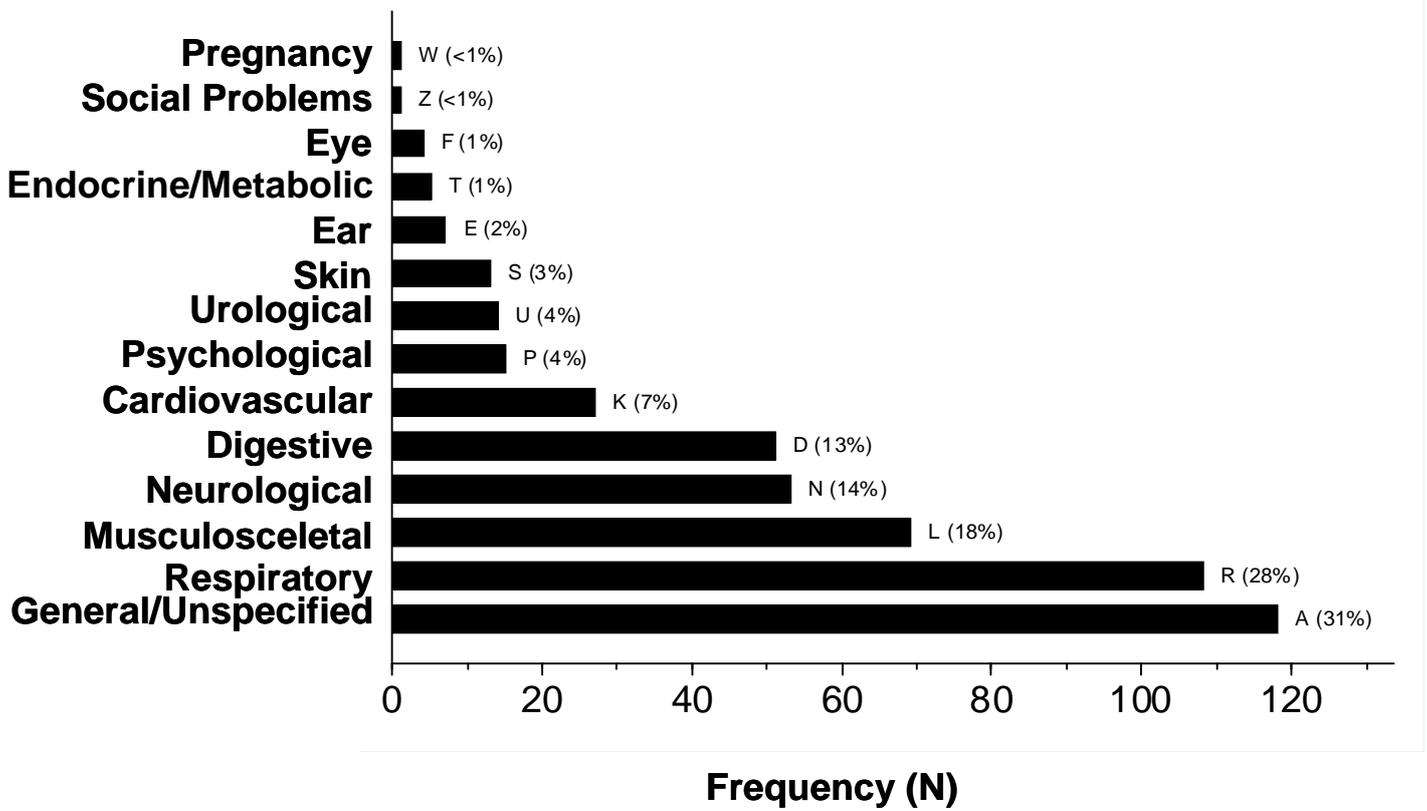


Figure 1: ICPC Chapter of All Patients' Problems

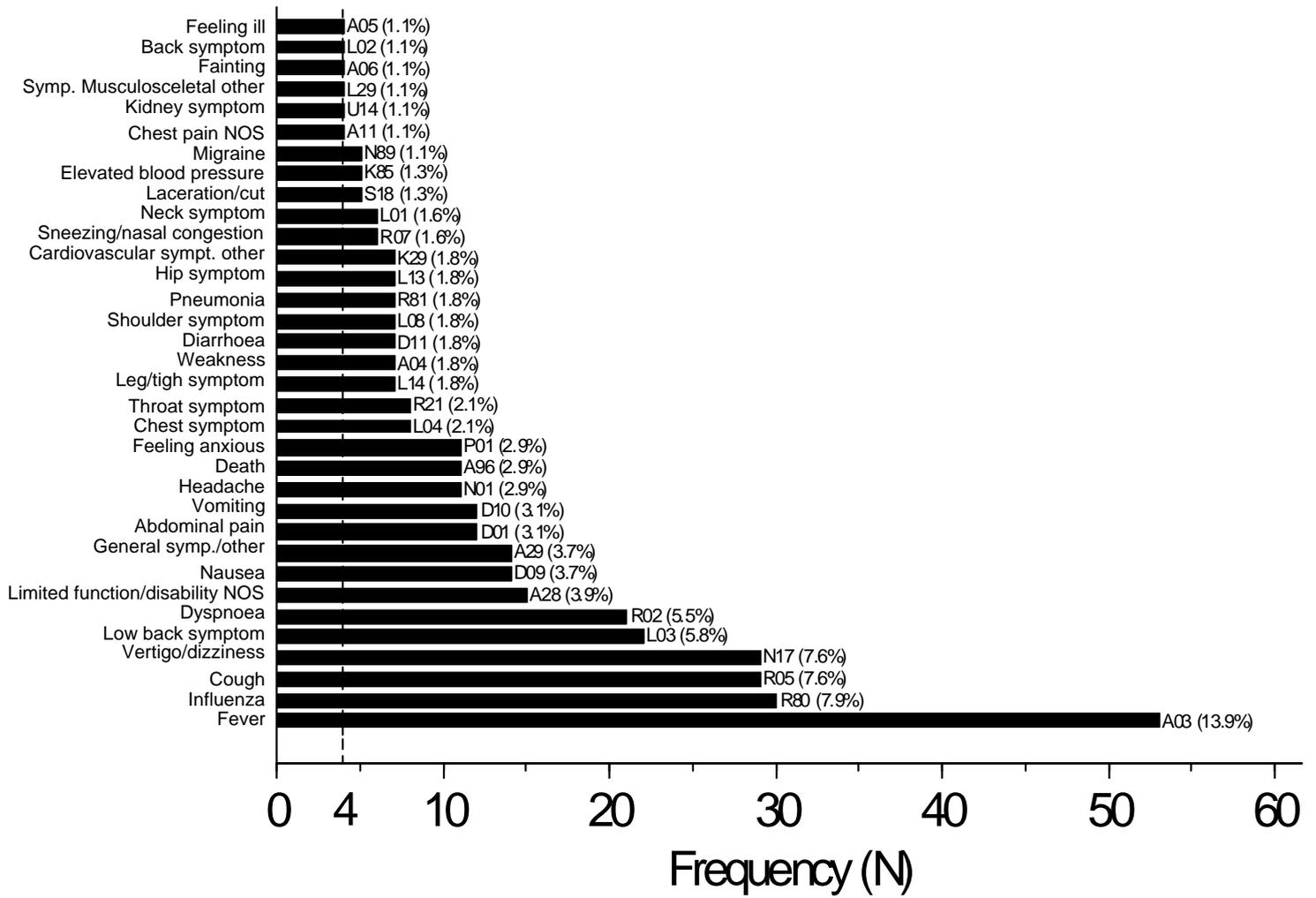


Figure 2: Most Frequent RFE