Self-triage at an urgent care collaboration with and without information campaign

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Abstract

Background

Patients in Belgium needing out-of-hours care have two options: the emergency department (ED) or the general practitioner on call. The latter is often organised in a General Practice Cooperative (GPC). At the ED, there is an overload of patients who could be helped more efficiently by the GPC.

Research Question

What is the proportion of patients switching from the ED to the GPC (called voluntary switchers) with and without an information campaign? What are the characteristics of these patients?

Methods

Single centre prospective intervention trial. The first ten weekends there was no intervention. The next twenty-four weekends patients in the ED were informed about the out-of-hours care in Belgium. The information contained several topics: characteristics of both services, where to go using examples, practicalities and costs. This information was distributed through leaflets and broadcasted on a screen in five languages.

Results

During the study period, 7453 patients entered the ED of which 330 voluntary switchers. The proportion of voluntary switchers was 1.7% before and 5.4% after the intervention ($p<0.01$). This effect remained stable for ten more months after the study. The average number of patients presenting at the ED per hour was 3.1 whereas on hours with voluntary switchers this was 5.1 ($p<0.01$). The age distribution and epidemiological profile of the voluntary switchers resembles the one of primary care patients. The GPs referred 6% of the voluntary switchers back to the ED.

Conclusion

Co-location of the GPC and the ED and informing patients is a meaningful step towards a more profound collaboration.

Introduction

Emergency department (ED) utilization has dramatically increased in Belgium as in most developed countries over the last decades. This evolution has been associated with adverse outcomes and increased costs. Effective policies to reduce this utilization are scares. Research about, pre-hospital diversion (including telephone triage), education and self-management support revealed contradictory results whereas interventions aimed at increasing primary care accessibility and ED cost-sharing seem to be effective[1,2].

Patients in Belgium needing out-of-hours medical care have two options: the emergency department (ED) of a hospital or the general practitioner on call. A patient must make the choice himself because of the lack of a common triage service (self-triage). Both services have free access and a fee-for-service system. As in the United States, every ED in Belgium needs to give appropriate care to anyone entering the service regardless of citizenship, legal status or ability to pay. All patients get a face to face triage (at the study site the Manchester Triage System[3] is used).

Almost all Belgians are member of the mandatory healthcare insurance. They need to pay 18% of their healthcare expenditures themselves[4]. The cost of a daytime consultation during the weekend at the ED is at least €38 of which the patient needs to pay €11 or €20 depending on his income. At the GP on call this cost is €39 and €1 or €4 respectively. At the studied ED, the final cost is on average €102 due to costs for technical interventions and examinations.

Continuity of care is a legal obligation of primary care in Belgium. In large parts of Belgium GPs have organised on call services themselves through General Practice Cooperatives (GPCs), starting from

2003. Their aim was to increase safety, improve working conditions of the GPs and a more efficient delivery of care.

EDs in Belgium, as throughout Europe, are overcrowded[5]. The rise of GPCs in Belgium did not reduces this overcrowding. On the contrary, there was a rise of contacts for both services[6]. Previous research revealed that only through intensive collaboration on the same location the GPs take a substantially higher proportion of all out-of-hours patients leading to a reduction of about 20% in patient volume at the ED[7-9]. In Belgium, there is no financial or legal support for such a collaboration. Internationally, the prevalence of inappropriate ED use varies from 20 to 40%[10]. In the UK the proportion of patients that GPs consider suitable for primary care management is 43%[11]. There is some research available about referring patients to the GP after triage at the ED[12,13] but as far as we know, no previous evidence is available about patients leaving the ED spontaneously to go to the GP. Our hypothesis is that when a GPC is available nearby an ED a small proportion of patients will safely go to the GPC depending on the information they get and on the current waiting time at the ED.

Methods

Study setting

In the city of Antwerp, general practitioners have created four GPCs open during weekends and public holidays. The GPC of Antwerp East moved in September 2016 to a location adjacent to the ED of a general hospital. Before this study, there was no formal collaboration. Together the ED and the GPC want to become an Urgent Care Collaboration (UCC)[14]. In 2016 the GPC had about 10 000 consultations in the weekend for a population of almost 150 000 inhabitants. All 110 GPs working in the surroundings of the GPC are obliged to work at the GPC on average one shift per month.
The ED treated about 35 000 patients in 2016. It has a twenty-four hours service. The ED does not have a well-described target population. About eight emergency physicians staff the ED. The area surrounded by both services is a mix of middle-income neighbourhoods and ethnically diverse deprived neighbourhoods.

Inclusion criteria

We performed a single centre prospective trial from 01/01/2017 until 31/8/2017. We included all patients going to the GPC after having entered the ED. There were no exclusion criteria.

To identify patients coming from the ED the GPC receptionist asked all patients the same question: "Did you enter the ED before you came here?" We call patients answering "yes" to this question voluntary switchers.

Intervention

The first ten weekends there was no intervention. The next ten weekends we informed patients about the out-of-hours care in Belgium in the waiting room of the ED. To ensure enough patients could be included, this intervention period was prolonged for another fourteen weekends. The information contained several topics: characteristics of both services, where to go using common examples, practicalities and costs. All patients received a leaflet after registering at the reception of the ED. The same information was broadcasted on a screen in the waiting room of the ED. We translated this information in the most common languages of the surroundings: Dutch, Arabic, Polish, English and French. These materials are available as supplementary on-line content. Ethical clearance was obtained at the ethical committee of the Antwerp University Hospital and the local ethical committee of AZ Monica Deurne (number 16/49/529). Individual informed consent was waived because only aggregated data were collected.

Outcome measures

Our primary outcome is the proportion of voluntary switchers out of the ED population. Secondary outcomes are sex, age distribution (seven categories), reason for encounter, diagnosis, number of patients presenting at the ED within the last one and four hours (the last two are considered as a proxy for the current crowding at the ED).

Data analysis

We collected all the data using the software of the GPC and the ED itself. In the GPC software, the GP is obliged to fill in a reason for encounter and a diagnosis using a Dutch topic list linking clinical labels to the second International Catalogue of Primary care (ICPC-2). The ED was not able to deliver diagnoses and reasons for encounter for the included patients. The ED could only deliver age and gender for the entire population of 2017 and not specifically for those patients included in this study. The extracted data were analysed using Microsoft Excel 2016 and IBM SPSS 24. We used chi square tests to analyse categorical variables before and after the intervention as well as to compare categorical variables among the voluntary switchers, the total ED population, the GPC population and the referred voluntary switchers. We used post hoc standardised residuals with Bonferroni correction to assess differences in between the different patient categories for seven age categories. Mann-Whitney U test was used to assess the number of patients presenting at the ED within the same hour as a voluntary switchers appeared versus hours without any voluntary switchers. We did the same for the number of patient within the last four hours. To assess the long-term effects of the information campaign, the analysis was continued after the intervention. We calculated the extra workload at the GPC due to voluntary switchers from 1/9/2017 until 31/5/2018 using the GPC's standard queries.

Results

Proportion of voluntary switchers

During the study period 7453 patients entered the ED. Of these patients 330 were voluntary switchers. The proportion of voluntary switchers was 1.7% before and 5.4% after the intervention ($p<0.01$). In total 6177 patients attended the GPC. The extra workload due to voluntary switchers was 2.6% before and 6.1% after the intervention ($p<0.01$). After the study this rate remained stable at 5.9% during at least one year.

The average number of patients presenting at the ED per hour without a voluntary switcher was 3.1 (range 0-13). On hours with at least one voluntary switcher this was 5.1 (range 1-13, p<0.01). The average number of patients presenting in a four hours' time frame before an hour without a voluntary switcher was 16 (range 0-43). For the hours with voluntary switchers this was 21 (range 1-39, P<0.01). There was no difference before and after the intervention.

Characteristics of the patients

Compared to the overall ED population the voluntary switchers were more often children below fourteen years of age (28.4% versus 17.7%, p<0.01). The voluntary switchers had the same age distribution as the overall GPC population (p= 0.49). Both the voluntary switchers as the rest of the GPC population consisted of 53% women. At the ED, the proportion of women was lower: 48% (p<0.01).

Of the 330 voluntary switchers, nineteen (5.8%) were referred back to the ED. For all other patients presenting at the GPC the referral rate was similar (5.4%, p=0.15). We did not find significant differences between the referred and the non-referred patients for gender and age.

Epidemiology

The ten most common reasons for encounter of voluntary switchers can be found in table 1. The most common reasons are upper respiratory tract symptoms, fever and gastro intestinal tract complaints. We see the same presentations as in the overall GPC population but the order is different: they present more often with headache and abdominal pain and less often with fever.

The ten most common diagnoses can be found in table 2. They are located in the same organ systems as the reasons for encounter. In the overall GPC population, we see the same diagnoses but more upper respiratory tract infections. The diagnoses of the 19 referred patients can be found in table 3.

Discussion

In this small single centre prospective pilot trial, we have noticed a small but significant increase of voluntary switchers after a promotion campaign. The voluntary switchers in this study did not need care at the ED. The co-location of ED and GPC has led to a decrease of 5,4% of patients presenting at the ED and thus contributes to a more efficient management of the ED.

This proportion of voluntary switchers is influenced by the waiting time at the ED: patients are more prone to switch when it is busy at the ED. The voluntary switchers have a profile similar to patients presenting themselves directly to the GPC: more women and young children than the entire ED population. This is in line with previous research in the Netherlands and Belgium[6,15].

Although the voluntary switchers have less upper respiratory tract infections, they present with typical first line reasons for encounter and diagnoses. The referral rate among these patients was similar to the general GPC population and the current literature possibly indicating a similar safety profile[16]. The referred patients had more severe and urgent problems. During the study period, there were no reported safety incidents.

Although only a small proportion of ED patients switched to the GPC, this result is relevant. It was obtained with a small effort and without inducing a safety risk. The effect lasted after ending the study, possibly because of an educational effect (patients are more aware of the existence of the GPC). Other urgent care collaborations can easily carry out a similar promotion campaign and study it using already available routine data. It is an easy first small step towards a more profound collaboration using telephone, physical or on-line triage. When doing so the local circumstances and applicable laws must be taken into account. In the US for example, the emergency physician must see all patients after triage regardless of their needs.

As far as we know this is the first study specifically examining voluntary switchers. Its strength lies in its unique design and in the large number of studied patients at both sites. It has got several

significant limitations: the short time span between the co-location of the studied services and this study (four months), a short study period, a single centre design and the lack of some relevant variables at the ED such as reason for encounter and diagnosis. This study was not randomised so we do not know whether the increase of voluntary switchers is due to the information campaign. It might be due to more general changes in the behaviour of the ED's staff, informal contacts between patients and staff, increasing brand awareness of the GPC or other yet unknown reasons. The small proportion of referred voluntary switchers does not allow definite conclusions about the safety of the information campaign. We used the number of presenting patients in the last hour and the last four hours because a validated indicator for crowding at the ED such as National Emergency Department OverCrowding Scale (NEDOCS) was not available[17].

We recommend further research about voluntary switchers in different settings with and without an information campaign and with a longer follow-up period. Especially in other countries with different health care organisation, the results might differ. This study serves as a pilot for a cluster randomised trial (ClinicalTrials.gov Identifier: NCT03793972) about nurse led triage at the same urgent care collaboration. In this trial, a nurse will refer a proportion of the ED patients to the adjacent GPC.

Conclusion

Patients voluntary leaving the ED to go to the GPC have the same referral rate as the overall GPC population. Most of them have typical primary care reasons for encounter and diagnoses. The odds of going to the ED is influenced by the occupancy rate of the ED. Co-location of the GPC and the ED and informing patients is a first and meaningful step toward a more profound collaboration between primary care and ED. It leads to a lasting switch of 5.9% of the ED patients triaging themselves to the GPC and thus improves the management of the ED. We recommend other collaborations between ED and GPC to start with a promotion campaign as a first small but meaningful step towards more profound collaboration.

Table 1. Reasons for Encounter: comparison between the voluntary switchers and the GPC population.

ICPC clinical label	Proportion of voluntary switching patients (%)	Proportion of the GPC population (%)*	Pearson chi square P-value
Abdominal pain/cramps general	8	3	<0,01
Fever	6	10	0,02
Headache	**4**	**2**	**0,07**
Upper respiratory infection acute	4	7	0,04
Cough	4	8	0,01
Teeth/gum symptom/complaint	4	1	<0,01
Back symptom/complaint	4	2	0,01
Abdominal pain epigastric	3	1	0,04
Laceration/cut	3	1	0,04
Pruritus	3	1	0,04

*: only GPC patients that have not entered the ED before entering the GPC

Table 2. Diagnoses: comparison between the voluntary switchers and the GPC population.

ICPC clinical label	Proportion of voluntary switching patients (%)	Proportion of the GPC population (%)*	Pearson chi square P-value
Disease/condition of unspecified nature/site**	7	3	<0,01
Upper respiratory infection acute	5	10	<0,01
Stomach function disorder	4	2	0,01
Tonsillitis acute	**3**	**3**	**1**
Laceration/cut	**3**	**2**	**0,21**
Teeth/gum symptom/complaint	2	0	<0,01
Gastroenteritis presumed infection	**2**	**3**	**0,29**
Acute bronchitis/bronchiolitis	**2**	**3**	**0,29**
Viral disease other	2	4	0,07
Insect bite/sting	2	1	0,09

*: only GPC patients that have not entered the ED before entering the GPC

** including no diagnosis possible (13) and removing sutures (7)

Table 3: Diagnoses of referred voluntary switchers (N=19).

Diagnosis ICPC-2 code	Diagnoses
R80	Flu
D83	Parotitis
A05	Feeling unwell
A99	No diagnoses could yet be made
P99	Mental Illness
U70	Acute Pyelonephritis
D21	Swallowing problem
K77	Heart failure
K02	Chest pain
R78	Acute bronchitis
A88	Dehydration
T87	Hypoglycaemia
F72	Eye lid abscess
S76	Erysipelas
L76	Unspecified Fracture
R99	Subglottic laryngitis
S12	Insect sting on extremity
N80	Crush trauma of the head
N01	Headache
L76	Rib fracture

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