Use of out of hours services: a comparison between two organisations

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Objectives: To investigate differences in numbers and characteristics of patients using primary or emergency care because of differences in organisation of out of hours care.

Background: Increasing numbers of self referrals at the accident and emergency (A&E) department cause overcrowding, while a substantial number of these patients exhibit minor injuries that can be treated by a general practitioner (GP).

Methods: Two different organisations of out of hours care in two Dutch cities (Heerlen and Maastricht) were investigated. Important differences between the two organisations are the accessibility and the location of primary care facility (GP cooperative). The Heerlen GP cooperative is situated in the centre of the city and is respectively 5 km and 9 km away from the two A&E departments situated in the area of Heerlen. This GP cooperative can only be visited by appointment. The Maastricht GP cooperative has free access and is located within the local A&E department. During a three week period all registration forms of patient contacts with out of hours care (GP cooperative and A&E department) were collected and with respect to the primary care patients a random sample of one third was analysed.

Results: For the Heerlen and Maastricht GP cooperative the annual contact rate, as extrapolated from our data, per 1000 inhabitants per year is 238 and 279 respectively ($\chi^2=4.385$, p=0.036). The contact rate at the A&E departments of Heerlen (n=66) and Maastricht (n=52) is not different ($\chi^2=1.765$, p=0.184). Some 51.7% of the patients attending the A&E department in Heerlen during out of hours were self referred, compared with 15.9% in Maastricht ($\chi^2=203.13$, p<0.001).

Conclusions: The organisation of out of hours care in Maastricht has optimised the GP’s gatekeeper function and thereby led to fewer self referrals at the A&E department, compared with Heerlen.
hours, together serving a population of 300,000 patients. These A&E departments are about 5 km and 9 km away from the GP cooperative, and are located in the suburbs of Heerlen and the centre of a nearby city (Kerkrade), respectively.

The GP cooperative Maastricht is situated at the A&E department of the university hospital Maastricht and serves a population of 190,000 patients, with 83 participating GPs. The university hospital Maastricht is located in the suburbs of Maastricht. Both regions consist of rural and urban areas.

Data collection
During a three week period in June 2001 in Heerlen and from 22 September to 15 October 2001 in Maastricht, all data of patient contacts with both GP cooperatives and A&E departments in the corresponding areas were collected. We used standard registration forms completed for every patient contact. Every third consecutive patient contact with the GP cooperative was entered into a database and was analysed. With respect to the A&E departments all data were analysed.

We had no reason to believe that the differences in registration periods may account for relevant differences between the datasets. Neither of these periods included bank holidays or the summer vacation period, which might influence contact rates. Also Salisbury et al.16 showed only little seasonal variation. We assume that the distribution of patient contacts characteristics remains comparatively stable over various periods, and therefore differences in characteristics are not likely to be caused by differences in these data collection periods. In August 2001 the patient population of the GP cooperative of Maastricht expanded from 120,000 to 190,000 patients, with the inclusion of 24 GPs from the Maastricht area. With this expansion the comparability between both regions (distribution of rural and urban areas) increased, which is one of the reasons we choose to perform data collection in September and October in Maastricht.

Outcome measures
Main outcome measures involved number of patient contacts, diagnostic information, type of consultation with the GP cooperative, and referrals to the A&E department. Because of lack of detail of telephone consultations, we only analysed patient contact characteristics with respect to consultations at the GP cooperative and home visits. With respect to total number of patient contacts all data were used. The diagnostic information was coded according to the chapters of the International Classification of Primary Care (ICPC).17

Statistics
Pearson’s $\chi^2$ tests were carried out to test for differences and the level of significance was set at 0.05.

RESULTS
Over the three week periods that were monitored, in total 3825 contacts were registered in the Heerlen GP cooperative, and 3054 contacts in the Maastricht GP cooperative. In the A&E departments, 1152 contacts and 567 contacts were recorded in Heerlen and Maastricht respectively. We extrapolated the data to an annual contact rate per 1000 inhabitants per year. For the Heerlen and Maastricht GP cooperative the annual contact rate per 1000 inhabitants per year is 238 and 279 respectively (p=0.036). The contact rate at the A&E departments of Heerlen and Maastricht is not different (p=0.184) (see table 1).

In Heerlen, comparatively more patients receive telephone advice, fewer patients attend the GP cooperative for a consultation, and more patients are paid a home visit compared with Maastricht. These differences were statistically significant (p<0.001).

Some 51.7% of the patients attending the A&E department in Heerlen were coded as self referred, compared with 15.9% in Maastricht (p<0.001).

GP’s in Maastricht saw comparatively more patients with musculoskeletal problems, and less circulatory problems compared with GP’s in Heerlen (p<0.001 and p=0.002 respectively) (see table 2).

DISCUSSION
We found no difference in the total number of patient contacts with out of hours emergency care, between Heerlen and Maastricht. However, in Maastricht significantly more patients were seen by a GP with fewer self referrals to the A&E department.

The contact rate per 1000 patients per year in Heerlen is comparable to another Dutch study by Van Duijn et al.18 However, other studies, mainly in the UK, report lower contact rates.
patients). Contact rates have been reported (423 to 514 per 1000 expected less attendees at the Maastricht A department.

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Table 2 Patient’s complaints subdivided according to the chapters of the International Classification of Primary Practice (ICPC). These data concerns only consultations at the cooperative and home visits

<table>
<thead>
<tr>
<th>Code</th>
<th>ICPC chapter*</th>
<th>GP cooperative Heerlen</th>
<th>GP cooperative Maastricht</th>
<th>χ² Value</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>General and unspecified</td>
<td>76 9.5</td>
<td>108 10.0</td>
<td>0.124 (1df)</td>
<td>0.725</td>
</tr>
<tr>
<td>B</td>
<td>Blood, blood forming organs†</td>
<td>5 0.6</td>
<td>4 0.4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>D</td>
<td>Digestive</td>
<td>108 13.6</td>
<td>117 10.9</td>
<td>3.141 (1df)</td>
<td>0.076</td>
</tr>
<tr>
<td>E</td>
<td>Eye</td>
<td>35 4.4</td>
<td>42 3.9</td>
<td>0.283 (1df)</td>
<td>0.595</td>
</tr>
<tr>
<td>H</td>
<td>Ear</td>
<td>32 4.0</td>
<td>40 3.7</td>
<td>0.113 (1df)</td>
<td>0.736</td>
</tr>
<tr>
<td>K</td>
<td>Circulatory</td>
<td>69 8.7</td>
<td>55 5.1</td>
<td>9.358 (1df)</td>
<td>0.002</td>
</tr>
<tr>
<td>L</td>
<td>Musculoskeletal</td>
<td>102 12.8</td>
<td>212 19.7</td>
<td>15.522 (1df)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>N</td>
<td>Neurological</td>
<td>31 3.9</td>
<td>43 4.0</td>
<td>0.012 (1df)</td>
<td>0.911</td>
</tr>
<tr>
<td>A</td>
<td>Psychological</td>
<td>75 9.1</td>
<td>19 1.8</td>
<td>3.768 (1df)</td>
<td>0.051</td>
</tr>
<tr>
<td>R</td>
<td>Respiratory</td>
<td>100 12.6</td>
<td>123 11.4</td>
<td>0.558 (1df)</td>
<td>0.455</td>
</tr>
<tr>
<td>S</td>
<td>Skin</td>
<td>133 16.7</td>
<td>216 20.1</td>
<td>3.417 (1df)</td>
<td>0.065</td>
</tr>
<tr>
<td>T</td>
<td>Endocrine, metabolic and nutritional†</td>
<td>7 0.9</td>
<td>4 0.4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>U</td>
<td>Urology</td>
<td>44 5.5</td>
<td>65 6.0</td>
<td>0.220 (1df)</td>
<td>0.639</td>
</tr>
<tr>
<td>W</td>
<td>Pregnancy, childbirth, family planning</td>
<td>12 1.5</td>
<td>7 0.7</td>
<td>3.345 (1df)</td>
<td>0.067</td>
</tr>
<tr>
<td>X</td>
<td>Female genital system and breast</td>
<td>11 1.4</td>
<td>6 0.6</td>
<td>3.465 (1df)</td>
<td>0.063</td>
</tr>
<tr>
<td>Y</td>
<td>Male genital system</td>
<td>4 0.5</td>
<td>8 0.7</td>
<td>0.417 (1df)</td>
<td>0.518</td>
</tr>
<tr>
<td>Z</td>
<td>Social problems †</td>
<td>2 0.3</td>
<td>1 0.1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>796 100</td>
<td>1075 100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The overall Pearson χ² test showed a significantly distribution of complaints between both cooperatives (χ² [16df], p<0.001). †One of the cells has an expected count less than 5, and therefore no χ² test is performed.

The number of self referrals to the A&E department in Maastricht is much lower than in Heerlen. This is caused by the fact that in Maastricht the GP’s gatekeeper function is fully established. The GP decides with respect to all patients attending the GP cooperative and A&E department whether a patient is suitable for primary care or if the patient should be referred to the A&E department. Patients entering the hospital with obviously very severe injuries are immediately referred to the A&E department and are registered as self referred, while in fact they are not. This completely explains the 15.9% self referrals in Maastricht.

Assuming that minor injuries mainly relate to musculo-skeletal problems and skin or subcutaneous wounds, it is obvious that the Maastricht GP cooperative sees more of these patients at the GP cooperative or during home visits. These two chapters of the ICPC together account for 40% of all disorders as presented at the GP cooperative in Maastricht, compared with 30% in Heerlen (see table 2). The finding that GPs in Maastricht seem to handle fewer patients with circulatory problems, lays probably in the fact that in Maastricht patients with clear cardiac complaints are directly referred to the cardiologist, and thereby bypassing the GP cooperative.

Despite the selection function of the GP in Maastricht, there was no statistical difference in the number of patients using emergency care between Heerlen and Maastricht. As reported in the literature a lot of patients using emergency care exhibit minor injuries that can be taken care of by a GP. Therefore we expected less attenders at the Maastricht A&E department in comparison with Heerlen. There may be two explanations for not finding a difference between these two A&E departments. Firstly, the A&E department in Heerlen advises patients with minor injuries, in case of crowdedness at the A&E department, to contact the GP cooperative. This causes a reduction of the number of patients using emergency care. However, it is unclear how many patients are advised to do so, and eventually attend the GP cooperative. Secondly, there used to be three A&E departments serving the Heerlen region population. A couple of months before this study, one A&E department was closed during out of hours. This may also have caused a number of patients with minor injuries to decide not to attend one of the other two A&E departments, as their travel distance to the nearest A&E department had increased. This assumption is supported by a study of O’Reilly et al.

This study also showed that GPs in Maastricht performed more consultations at the GP cooperative than their colleagues in Heerlen. There are two predominant explanations for this difference. Firstly, the former self referrals in Maastricht used to enter the A&E department without an appointment, and now enter the GP cooperative also without an appointment. Secondly, because the GP cooperative in Heerlen uses telephone triage, patients are seen by appointment, which enables the GP cooperative to handle a substantial number of patient contacts by telephone. In Maastricht, annual reports showed that only about 23% of all consultations at the GP cooperative were preceded by a telephone consultation.

As suggested by others, there is need for primary care at the A&E department. Supplying primary care outside a hospital will only partially fulfil these needs, as numerous patients believe that they should be treated in the A&E department.

The organisation of out of hours care in Maastricht ensures that all primary care patients are treated by GPs in contrast with Heerlen. Overcrowding at the A&E department as caused by patients with minor problems is likely to be reduced more in Maastricht than in Heerlen. However, this is not supported by the results of this study. The most important benefit of the way out of hours care as organised in Maastricht, is that health care is optimally geared to the symptoms of the patient, which implies efficient and appropriate care. The role of the GP as gatekeeper to secondary care is fully established. Patients needing emergency care are directly referred to the A&E department and primary care patients are seen by a GP. In addition, patients no longer need choose between attending a GP cooperative or the A&E department. They are always in the right place.

The organisation of out of hours care in Maastricht supports close collaboration between primary and emergency care. This offers possibilities for exchanging expertise and clinical knowledge. We hope to investigate this aspect in future research.

In summary, the organisation of out of hours care in Maastricht has optimised the GP’s gatekeepers function and led to fewer self referrals at the A&E department, compared with Heerlen.

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REFERENCES