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## General practitioners' perspectives on the avoidability of hospitalizations at the end of life: A mixed-method study

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### ABSTRACT

**Background:** Many patients are hospitalized in the last months of life. Little is known about the avoidability of these hospitalizations.

**Aim:** To explore whether and how hospitalizations could have been avoided in the last 3 months of life and barriers to avoid this, according to general practitioners in the Netherlands.

**Design:** Sequential mixed-method design, starting with a cross-sectional nationwide questionnaire study among general practitioners, followed by in-depth interviews.

**Setting/participants:** General practitioners were asked about their most recent patient who died non-suddenly and who was hospitalized in the last 3 months of life. Additionally, 18 of these general practitioners were interviewed in depth about the situation surrounding hospitalization.

**Results:** According to 24% of 319 general practitioners, the last hospitalization in the final 3 months of their patient's life could have been avoided. Of all avoidable hospitalizations, 46% could have been avoided by proactive communication with the patient, 36% by more communication between professionals around hospitalization, 28% by additional care and treatment at home, and 10% by patient and family support. In the in-depth interviews, general practitioners confirmed the aforementioned strategies, but also mentioned various barriers in daily practice, such as the timing of proactive communication with the patient, incompleteness of information transfer in acute

situations, and the lack of awareness among patients and family that death was near.

Conclusion: A proactive approach could avoid some of the hospitalizations at the end of life, in the opinion of general practitioners.

More insight is needed into communication and psychological barriers for timely discussions about end-of-life issues.

## INTRODUCTION

Many patients are hospitalized during the final phase of life.<sup>1,2</sup> The proportion of patients who are transferred from home to hospital in the last 3 months of life is 55% in the Netherlands and 60% in Belgium. In Canada, 68% are transferred to hospital in the last 6 months of life.<sup>1-3</sup> Staying at home is not only preferable from the perspective of the majority of patients<sup>4-7</sup> but also from the perspective of health-care costs.<sup>8</sup> In addition, a high proportion of hospitalizations in the population as a whole is considered to be an indicator of poor quality in end-of-life care.<sup>9</sup> While staying at home at the end of life is preferred, little is known about the avoidability of hospitalizations.

The reasons most commonly given for the hospitalization of patients at the end of life are falls/confusion or deterioration, cancer complications, and chronic obstructive pulmonary disease (COPD) exacerbation.<sup>10</sup> For Canadian lung cancer patients, dyspnea, pain, an inability to cope at home, and altered level of consciousness are the most important reasons for hospitalization.<sup>11</sup> In a large study in the United States based on experts assessing diagnostic codes in patient records, it was found that 26% of the hospitalizations of patients receiving home-based and community-based services could potentially have been avoided.<sup>12</sup> A British study based on chart analyses suggested that 33% of hospitalized patients who were identified as being in the last year of their life could have been treated at home.<sup>13</sup> A lower proportion of 7% potentially avoidable hospitalizations was identified in another British chart study of hospitalized palliative care patients, with most of these patients being referred because of confusion, general deterioration, or symptom control.<sup>10</sup> These studies about avoidable hospitalizations are based on chart reviews and assessment by clinical experts.

To unravel the avoidability of hospitalizations, it is also important to know the opinion of general practitioners (GPs) about whether and how hospitalizations of their patients at the end of life could have been avoided. More insight into which hospitalizations could have been avoided and in what way is important for GPs and other caregivers in letting them enable patients to remain at home at the end of life. Therefore, the aims of this study are the following: to explore for how many patients hospitalization could have been avoided, according to GPs; to explore how hospitalization could have been avoided, barriers in avoiding hospitalizations; and to explore the characteristics of avoidable versus unavoidable hospitalizations in the final 3 months of patients' lives.

## METHOD

### Design

A mixed-method study was conducted using a sequential strategy.<sup>14</sup> First, we conducted a nationwide retrospective cross-sectional questionnaire study among

Dutch GPs in 2011 (Table 1). In the questionnaire, GPs were asked to recall their most recently deceased adult patient who died non-suddenly and who was hospitalized in the final 3 months of life. When this patient underwent multiple hospitalizations, we asked for the last hospitalization before death, and hospitalization was defined as admission to a hospital for at least one night. Second, in-depth qualitative interviews were conducted with a selection of the GPs to explore in depth how hospitalization could have been avoided and the barriers for this (Table 1).<sup>15</sup> In the Netherlands, GPs are responsible for palliative care patients living at home and mostly have long-term relationships with patients and their families.

#### [TABLE 1]

##### **Study population**

Quantitative questionnaire study. A random sample of 1200 GPs was selected from 8896 registered GPs in the Dutch "Medical Address Book" of 2010. Respondents had to be working as a GP at the time of the data collection. Of the 1200 GPs in the sample, 150 were not working as a GP when the questionnaire was sent and 100 did not have patients who met the criteria. This resulted in 950 eligible GPs, of whom 322 filled out the questionnaire (34%).

Three GPs were excluded because they had not filled out the core question about the avoidability of the hospitalization, leaving 319 questionnaires to be analyzed.

Qualitative in-depth interview study. In the questionnaire, GPs were asked whether they would be willing to participate in the in-depth interview study as well. Of the GPs responding positively to this request, 18 were selected purposively.

The purposive sample was based on diversity in GPs' age, degree of urbanization, patients' age, and patients' disease.

##### **Measurements**

Quantitative questionnaire study. The written questionnaires were developed using relevant literature<sup>1,2,13</sup> and in-depth interviews with five physicians. A draft of the questionnaire was tested among 14 GPs. Their comments were incorporated in the final version of the questionnaires. The questionnaire included one open question about the most important reason for the last hospitalization and closed questions about the characteristics of the last hospitalization, such as who initiated the hospitalization, whether an acute episode and/or a diagnostic goal played a role in hospitalization, and the patient's prognosis before hospitalization.

Finally, GPs were asked whether in retrospect they thought that hospitalization for this patient could have been avoided and to indicate how hospitalization could have been avoided by selecting from pre-structured options.

Qualitative in-depth interview study. Of the 18 in-depth interviews, 16 were held face-to-face at the GP's surgery and two were held by telephone. The mean interview time was on average 1 h. The interviews started with a "grand tour" question: "Tell me about the situation of the patient for whom you filled in the questionnaire around the time of the hospitalization." After exploring the patients' circumstances around the time of the hospitalization, questions were asked about the avoidability of the hospitalization.

Interviewees were also asked about other recent cases where the GP thought that hospitalization could have been avoided and, in contrast, about patients who were not

hospitalized in the last 3 months of life. These in-depth interviews were conducted by a nurse experienced in interviewing (M.D.K.) in the first half of 2012.

### **Analyses**

Quantitative questionnaire study. Analyses were performed for hospitalizations that could have been avoided and hospitalizations that could not have been avoided according to the GP. A chi-square test or Fisher's exact test (for low numbers) was used to assess the significance of differences between avoidable and unavoidable hospitalizations.

Qualitative in-depth interview study. The interviews were transcribed verbatim and examined thoroughly. The first transcripts were read thoroughly, and the first codings were discussed by two researchers experienced in qualitative research (M.D.K. and H.R.P.). Then, a coding scheme was conceived in a deductive manner,<sup>16</sup> using the main answers given in the questionnaire study on how hospitalizations could have been avoided. The coding scheme and interview transcripts were entered in the software program ATLAS.ti.

The relevant interview fragments were linked to the codes.

In the analysis, we tried to find fragments that confirmed, contradicted, and/or refined the quantitative findings. This qualitative analysis process was discussed step by step by the first author (M.D.K.) and the co-researcher (H.R.P.).

Peer debriefing was conducted by all authors; B.S. has 40 years of experience as a GP and in palliative care, and A.F., B.O., and L.D. have more than 15 years of experience in qualitative and palliative care research.

## **RESULTS**

### **Demographic characteristics of the participants**

The mean age of the 319 GPs who filled out the questionnaire was 49 years, with a range from 31 to 64 years: 55% were male, 6% had completed specialized training in palliative care, and 46% worked in a highly urbanized environment.

The mean age of the 18 GPs interviewed was 50 years, with a range from 32 to 64 years: 14 (78%) were male, 1 (6%) had undertaken specialized training in palliative care, and 7 (39%) worked in a highly urban environment (not in table).

### **[TABLE 2]**

### **Demographic and clinical characteristics of hospitalized patients**

The last hospitalization in the final 3 months of their patient's life could have been avoided according to 77 (24%) of the 319 GPs. In total, 31% of all hospitalized patients were aged over 80: 57% were male, 65% had died of cancer, 51% had multimorbidity, and 32% died in hospital.

No significant differences were found in patients' demographic and clinical characteristics between avoidable and unavoidable hospitalizations (Table 2).

### **Characteristics of and reasons for hospitalization**

The most common reasons for hospitalization were respiratory symptoms (31%), digestive symptoms (17%), and cardiovascular symptoms (14%). An acute episode (73%) and a diagnostic goal (44%) often played a role in hospitalization. A proportion of 41% of the patients had a prognosis of a few weeks or less, 41% of the patients stayed in the hospital for more than 7 days, and the hospitalization was

initiated most often by the patient's own GP (46%). The following significant differences ( $p < 0.05$ ) were found in avoidable hospitalizations in comparison with non-avoidable hospitalizations, as assessed by the GPs: in avoidable hospitalizations, social circumstances were more often the most important reason for hospitalization (6% vs 2%), an acute episode played a role less often before hospitalization (62% vs 76%), a diagnostic goal played a role less often (26% vs 49%), and there was a life expectancy of a few weeks or less more often (52% vs 37%). In cases where the GP had initiated the hospitalization ( $n = 146$ ), significantly ( $p < 0.05$ ) more GPs who assessed the hospitalization as avoidable considered not hospitalizing the patient (62% vs 25%) and discussed this option with the patient (76% vs 54%) compared to the GPs who assessed the hospitalization as unavoidable (Table 3).

### [TABLE 3]

#### **Strategies to avoid hospitalizations**

Of the 77 hospitalizations that were retrospectively perceived as avoidable, 25% of the GPs reported two strategies and 27% reported three or more strategies that could have helped avoid the hospitalization (not in table). Of all the avoidable hospitalizations, 46% could have been avoided by proactive communication with the patient, including talking about withholding treatment and diagnostics, 36% by more communication between professionals around hospitalization, 28% by additional care and treatment at home, and 10% by patient and family support (Table 4). Similar strategies to the ones mentioned in Table 4 emerged from the in-depth interviews. However, the interviews revealed complexities in practice that could form barriers to applying these strategies. This will be elaborated on below.

### [TABLE 4]

#### **Proactive communication with the patient**

GPs talked in the in-depth interviews about the importance of proactive communication about withholding treatment in the hospital. Opportunities to start this communication could arise, for example, when a patient took the initiative to discuss an advanced directive with the GP (e.g. for euthanasia or a do-not-resuscitate order) or after a medical specialist had phoned the GP to inform that there were no more curative treatment options.

Although many GPs stressed the importance of proactive communication, GPs explained that proactive communication often did not take place because the GPs found it difficult to find the right moment to talk about this.

Finding the right moment was difficult in the case of patients who had an unexpectedly fast deterioration process from a progressive cancer, for patients who seemed still very active and not very ill at first glance, or also for patients in a slow deterioration process, as is often the case for the very old patients.

GP26: About a man (aged 96) with Alzheimer's disease; there was a slight deterioration, he was living at home with a 62-year-old woman and had an acute CVA.

Interviewer: What was the reason why the possibility of talking about the impending death was never raised? GP26: I think basically that this wasn't yet really relevant while he was still reasonably okay and it was still possible to hold a conversation



with him, and when he basically started deteriorating and getting dementia it wasn't really technically possible to have that conversation.

So I really felt, well, now there was not much point any more in talking about this with that man because would he even understand what I was talking about? Well, perhaps there's a gray area in between where you can say: perhaps we could still have done that, but that requires you as the GP to actively work out that man is so old now and he's getting a bit worse, shouldn't I pay him a visit now to talk to him. Well, you don't normally manage that in day-to-day practice.

### **Communication between professionals around hospitalization**

GPs said in the interviews that an important condition for avoiding hospitalizations was continuity of care to be guaranteed in the out of hours. Several of the GPs interviewed also gave their mobile number toward the end of the patient's life and wrote down the patient's preferences in the digital record that was available for the locum GPs working in the out-of-hours practice. However, sometimes the GP had not yet taken such anticipatory measures in the case of diseases that were progressing fast. GPs also indicated that even when they had taken such measures in anticipation, locums did not always read the complete digital record, especially in the case of heart failure or cerebral vascular accidents because then it is assumed that "every minute counts." If there was little information in the digital records for the locum about a patient's limited life expectancy and the patient's preferences, the locum often felt that the best choice was to refer the patient to a hospital.

GP26: You do get situations where they phone up in panic saying oh, my father's got pains in his chest and the ambulance arrives to pick them up— whereas they're basically dying of prostate cancer. Which makes me think, hold on a minute guys. That pain in the chest comes from the bone metastases, now that's not a job for the cardiologist at all, that can sometimes be one of the best ways to die.

[...] That assessment has to be made by a doctor, in the person's home, in short order. [...] In principle you can see just the same information at the out-of-hours general practice here. In fact, we have a laptop here that you can take with you to the home that lets you view the entire file.

Interviewer: Does that file show sufficiently clearly that someone has a limited life expectancy? GP: Not always, but that's an extra task for the person's own general practitioner to record that clearly somehow or other, and we still need to make agreements to arrange that. [...] Otherwise, if you don't have a file, it gets difficult for the out-of-hours general practitioner that doesn't have any information.

Yes, then perhaps you should go for the safe option and just send in all the people like that. But if you do have access to that information, then I feel you should, well, use that information for an individual assessment. [...] Don't automatically pull out all the stops. Look, "every minute counts" applies if you want to save something and that's the case for the heart, if you want to save the heart muscle tissue with an acute stent, in order to make sure these people stay in the best possible condition, but that's not so important for everyone.

### **Additional care and treatment outside the hospital**

GPs said that nurses were often important in enabling family carers to continue care at home. Without the support, care, and observation of a nurse, it would be too burdensome for the family carer. Some GPs started early in arranging nursing care at home for the patient and family and asked a nurse to make weekly visits to discuss

the patient's care needs with them and their family and also to get the patient used to nursing care. However, GPs said that some family carers wanted to do everything themselves.

In cases in which there was no family carer living in the patients' home, day and/or night nursing care could have helped avoid hospitalization, but was not accepted by every patient.

GP22: About a patient with colon carcinoma who wanted to go to the hospital Well, this couple—how do I put this diplomatically? —they were a couple of cards short of a full deck. So it was very difficult to explain things, they had some kind of aversion to home care and I've never been able to find out what that was about. His wife died eighteen months later from ovarian cancer. Though that did go well; we kept her at home. With home care too, and she said at one point, well, that's a shame, we could have done that with my husband too.

### **Patient and family support**

Several of the GPs interviewed said that they had informed the patients and family about acute symptoms or situations they could expect, such as pain or dyspnea, and told them they could always call the GP if something happened.

But if there was an acute episode, there was panic at the patient's home and then sometimes a medical specialist in the hospital would be called, resulting in a hospitalization.

GP12: About a lung cancer patient, male 67 years. The GP had explained to the patient and his wife what could happen in case of dyspnea. After a hospitalization for hemoptysis, the patient had said that he would not go to the hospital anymore. Because they said "I won't go back to the hospital the next time." But then he starts coughing up blood again and they go after all; apparently they start to panic, they get some kind of panic reaction. Then they call up the specialist directly, saying "I'm coughing up blood, what should I do?" "Well," says the specialist, "come along"—and then he admits him again.

Then I think, okay, what did you have to do that for? GPs also said that they were often confronted with patients and family who were not ready to accept that the end was near. The most difficult situation for GPs was to support family members who were not aware of the patient's deterioration or family who almost never visited the patient and still "demanded" an intervention by the GP, which often resulted in an acute hospitalization.

## **DISCUSSION**

### **Main findings and comparison with other studies**

This study shows that 24% of the hospitalizations in the final 3 months of GPs' patients who died non-suddenly could have been avoided, according to the GPs. Proactive communication with the patient, communication between professionals around hospitalization, arranging additional care and treatment at home, and patient and family support were the strategies most often mentioned to avoid hospitalization. The in-depth interviews with GPs confirmed these strategies, but also revealed various barriers in daily practice, such as difficulties in the timing of proactive communication with the patient, the incompleteness of information transfer in acute situations, and the lack of awareness of patients and family that death is near.

We found that a quarter of hospitalizations could have been avoided based on the retrospective perspective of the GP treating the patient. Other studies showed that 7%,<sup>10</sup> 24%,<sup>12</sup> and 33%<sup>13</sup> of hospitalizations of patients with a short life expectancy could have been avoided; these estimates were based on clinical experts' opinions reviewing hospital charts. Valid comparisons of these results are hampered due to different perspectives, different populations, and different strategies for assessing whether hospitalizations were avoidable.<sup>10-13</sup> Nevertheless, these previous studies also suggest that hospitalizations at the end of life can be reduced in order to help patients remain at home up to the end of life.

For practice, it is relevant that our study shows that a proactive approach, in various forms, is the most common suggestion given by GPs on how they could have avoided the hospitalization in retrospect. Other studies have confirmed that proactivity can indeed help avoiding hospitalizations, for instance, studies that included proactive monitoring and timely discussion with the patient/ family about their preferences and what might happen at the end of life.<sup>17,18</sup> Furthermore, information transfer from the GP to the out-of-hours general practice<sup>19</sup> or the availability of appropriate "as needed" medication<sup>20</sup> were proactive approaches shown to be capable of reducing hospitalizations. The answer to why the GPs in our study did not act sufficiently proactive to avoid the hospitalization can be found in the in-depth interviews with the GPs.

There, the GPs mentioned various barriers to a proactive approach. One of the barriers mentioned is the difficulty of finding the right time for proactive communication with the patient. The difficulty in recognizing that patients are in need of palliative care is confirmed by other studies.<sup>21,22</sup> Clinical indicators are available for the timely recognition of palliative care needs, such as the Gold Standards Framework.<sup>23,24</sup> However, these clinical indicators do not eliminate other communicative and psychological barriers, mentioned by the GPs, that may hinder timely end-of-life discussions. One of the communicative and psychological barriers, namely, both physician's and patient's hidden awareness that the patient is dying, has already been described extensively in the classic study by Glaser and Strauss<sup>25</sup> and Lokker et al.<sup>26</sup> These clinical, communicative, and psychological aspects underline the complexity of a proactive approach to end-of-life care. Given this complexity, it can be questioned whether in daily practice GPs really will be able to act proactive in all potentially avoidable hospitalizations (24%). Furthermore, other aspects also influence hospitalization, such as the patient preference for hospitalization or an acute episode which makes the hospitalization unavoidable. In these cases, a hospitalization can be the most preferable option.

Previous studies of avoidability of hospitalizations based their assessment mainly on clinical aspects, such as diagnosis, comorbidity, and the reason for admission.<sup>12,13</sup> Our study did not find significant differences between avoidable and unavoidable hospitalizations for these clinical aspects. However, significant differences were found for life expectancy, social reasons, and for patients for whom an acute episode and/or a diagnostic goal played a role in the decision for hospitalization. Although for 44% of patients a diagnostic goal played a role in the decision for hospitalization, this was the most important reason for hospitalization for a low proportion of patients (5%).



These aspects were not mentioned in other research into avoidable hospitalizations at the end of life, and they add new insights into the complexity surrounding hospitalization at the end of life.

### **Strengths and limitations of the study**

The strengths of the nationwide study presented here are the new insights about how hospitalizations could have been avoided from the GPs' perspective and the mixed method design in which we have combined a quantitative questionnaire study with information from in-depth interviews with GPs. A limitation is the weakness of evidence that the suggested strategies could have avoided hospitalizations at the end of life. In order to find stronger evidence, it is recommended to test these strategies in a stronger research design, such as a clinical trial. However, the strategies the GPs mentioned are found in other studies to help avoiding hospitalization (as described in the "Discussion" section). Above that also other aspects influence hospitalization, such as the patient preference for hospitalization or an acute situation which makes the hospitalization unavoidable. In these cases, a hospitalization can be the most preferable option. Another limitation is the low response rate in the quantitative part of the study.

However, since the characteristics of the respondents in our study sample do not differ from the general Dutch population of GPs,<sup>27</sup> we presume that this has a limited effect at most on the validity and generalizability. Another limitation is the potential recall bias of GPs in this retrospective design. Therefore, in the in-depth interviews, we asked also about more recent cases.

### **CONCLUSION**

This study provides insights into the differences between avoidable and unavoidable hospitalizations at the end of life and strategies for avoiding hospitalizations from a GP perspective. According to GPs, a quarter of all hospitalizations could have been avoided and nearly half of the avoidable hospitalizations could have been avoided by proactive communication. For practice, it is recommended to provide more attention to proactive communication and the communicative and psychological barriers to timely communication between GPs, patients, and family carers about limited prognoses, withholding treatment, and diagnostics at the end of life.

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### **Declaration of conflicting interests**

The authors declare that there were no conflicts of interest in preparing this study and they have full control of all primary data.

### **Ethical approval**

A study protocol was approved by the Ethics Board of the VU University Medical Center Amsterdam. Before the start of each in-depth interview, the GP was told that participation was voluntary, that the transcripts would be made anonymous, and that confidentiality was assured. After that, an informed consent form was signed by the GP.

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## REFERENCES

1. Abarshi E, Echteld M, Van den Block L, et al. Transitions between care settings at the end of life in the Netherlands: results from a nationwide study. *Palliat Med* 2010; 24: 166–174.
2. Van den Block L, Deschepper R, Driessens K, et al. Hospitalizations at the end of life: using a sentinel surveillance network to study hospital use and associated patient, disease and healthcare factors. *BMC Health Serv Res* 2007; 7: 69.
3. Lawson B, Burge FI, Critchley P, et al. Factors associated with multiple transitions in care during the end of life following enrollment in a comprehensive palliative care program. *BMC Palliat Care* 2006; 5: 4.
4. Ko W, Beccaro M, Miccinesi G, et al. Awareness of general practitioners concerning cancer patients' preferences for place of death: evidence from four European countries. *Eur J Cancer* 2013; 49: 1967–1974.
5. Gomes B, Higginson IJ, Calanzani N, et al. Preferences for place of death if faced with advanced cancer: a population survey in England, Flanders, Germany, Italy, the Netherlands, Portugal and Spain. *Ann Oncol* 2012; 23: 2006–2015.
6. Stajduhar KI, Allan DE, Cohen SR, et al. Preferences for location of death of seriously ill hospitalized patients: perspectives from Canadian patients and their family caregivers. *Palliat Med* 2008; 22: 85–88.
7. Choi J, Miyashita M, Hirai K, et al. Preference of place for end-of-life cancer care and death among bereaved Japanese families who experienced home hospice care and death of a loved one. *Support Care Cancer* 2010; 18: 1445–1453.
8. Dumont S, Jacobs P, Fassbender K, et al. Costs associated with resource utilization during the palliative phase of care: a Canadian perspective. *Palliat Med* 2009; 23(8): 708–717.
9. De Roo ML, Leemans K, Claessen SJJ, et al. Quality indicators for palliative care: update of a systematic review. *J Pain Symptom Manage* 2013; 46: 556–572.
10. Gott M, Gardiner C, Ingleton C, et al. What is the extent of potentially avoidable admissions amongst hospital inpatients with palliative care needs? *BMC Palliat Care* 2013; 12: 9.
11. Barbera L, Paszat L and Qiu F. End-of-life care in lung cancer patients in Ontario: aggressiveness of care in the population and a description of hospital admissions. *J Pain Symptom Manage* 2008; 35: 267–274.
12. Walsh EG, Wiener JM, Haber S, et al. Potentially avoidable hospitalizations of dually eligible Medicare and Medicaid beneficiaries from nursing facility and home- and community- based services waiver programs. *J Am Geriatr Soc* 2012; 60: 821–829.
13. Abel J, Rich A, Griffin T, et al. End-of-life care in hospital: a descriptive study of all inpatient deaths in 1 year. *Palliat Med* 2009; 23: 616–622.
14. Holloway I and Wheeler S. *Qualitative research in nursing*. Oxford: Blackwell Science, 2002.
15. Caelli K, Ray L and Mill J. "Clear as mud": toward greater clarity in generic qualitative research. *Int J Qual Methods* 2008; 2: 1–13.
16. Dierckx de Casterle B, Gastmans C, Bryon E, et al. QUAGOL: a guide for qualitative data analysis. *Int J Nurs Stud* 2012; 49: 360–371.
17. Brumley RD, Enguidanos S and Cherin DA. Effectiveness of a home-based palliative care program for end-of-life. *J Palliat Med* 2003; 6: 715–724.
18. Ahlner-Elmqvist M, Jordhoy MS, Jannert M, et al. Place of death: hospital-based advanced home care versus conventional care. A prospective study in palliative cancer care. *Palliat Med* 2004; 18: 585–593.
19. Schweitzer BP, Blankenstein N, Deliens L, et al. Out-of-hours palliative care provided by GP co-operatives: availability, content and effect of transferred information. *BMC*

*Palliat Care* 2009; 8: 17.

20. Wowchuk SM, Wilson EA, Embleton L, et al. The palliative medication kit: an effective way of extending care in the home for patients nearing death. *J Palliat Med* 2009; 12: 797–803.

21. Thoonsen B, Groot M, Engels Y, et al. Early identification of and proactive palliative care for patients in general practice, incentive and methods of a randomized controlled trial. *BMC Fam Pract* 2011; 12: 123.

22. Claessen SJ, Francke AL, Engels Y, et al. How do GPs identify a need for palliative care in their patients? An interview study. *BMC Fam Pract* 2013; 14: 42.

23. Shaw KL, Clifford C, Thomas K, et al. Review: improving end-of-life care: a critical review of the Gold Standards Framework in primary care. *Palliat Med* 2010; 24: 317–329.

24. Thoonsen B, Engels Y, van Rijswijk E, et al. Early identification of palliative care patients in general practice: development of RADboud indicators for Palliative Care Needs (RADPAC). *Br J Gen Pract* 2012; 62: e625–e631.

25. Glaser BG and Strauss AL. *Awareness of dying*. Chicago, IL: Aldine Publishing Company, 1965.

26. Lokker ME, van Zuylen L, Veerbeek L, et al. Awareness of dying: it needs words. *Support Care Cancer* 2012; 20: 1227–1233.

27. Hingstman L and Kenes RJ. *Cijfers uit de registratie van huisartsen, peiling 2011* [Numbers of the registration of general practitioners 2011]. Utrecht: NIVEL, 2012.

## TABLES

**Table 1.** Overview of research aims and the method(s) used to study them.

Research aims	Quantitative questionnaire study	Qualitative in-depth interview study
1. Explore for how many patients hospitalization could have been avoided, according to GPs	Yes (closed question)	No
2. How hospitalization could have been avoided, according to GPs	Yes (closed question, Table 4)	Yes (open question)
3. Barriers in avoiding hospitalizations	No	Yes (open question)
4. Explore the characteristics of avoidable versus unavoidable hospitalizations in the final 3 months of patients' lives	Yes (open and closed questions, Table 2)	Yes (open question)

GPs: general practitioners.

**Table 2.** Demographic and clinical characteristics of patients with avoidable hospitalizations compared to unavoidable hospitalizations, according to the GP.

	All hospitalizations (n = 319) (%)	Avoidable (n = 77) (%)	Unavoidable (n = 242) (%)	p value
Age (years)				0.917
<65	30	31	30	
65–80	39	37	40	
>80	31	32	31	
Gender				0.624
Male	57	59	56	
Cause of death				
Cancer	65	60	66	0.374
Cardiovascular disease	15	20	14	0.231
Respiratory disease	11	11	11	0.947
Stroke (CVA)	2	0	3	0.203
Other diseases	7	9	6	0.367
Multimorbidity				
Two diseases	28	24	29	0.338
Three or more diseases	23	30	20	0.069
In-home family caregivers	66	68	65	0.768
Place of death				0.270
Home	50	54	48	
Hospital	32	25	34	
Home for the elderly	5	7	5	
Nursing home	3	1	3	
Inpatient hospice	10	12	10	

GP: general practitioner; CVA: cerebrovascular accident.

**Table 3.** Characteristics of avoidable hospitalizations compared to unavoidable hospitalizations, according to the GP.

Characteristics of the last hospitalization	All hospitalizations (n = 319) (%)	Avoidable (n = 77) (%)	Unavoidable (n = 242) (%)	p value
Most important reasons for hospitalization <sup>a</sup>				
Symptomatic reasons	85	84	85	0.901
Respiratory	31	30	31	0.820
Digestive	17	13	18	0.278
Cardiovascular	14	14	14	1
Pain	6	5	6	0.734
Psychological	4	6	3	0.224
Fracture	4	3	4	0.530
Other symptomatic reasons	16	17	16	0.896
Social reasons	4	8	2	0.028
Diagnostic reasons	5	1	7	0.083
Treatment	10	13	8	0.225
Aspects that played a role in hospitalization <sup>a</sup>				
Acute situation	73	62	76	0.015
Diagnostic goal	44	26	49	<0.001
Prognosis before hospitalization				
A few weeks or less	41	52	37	0.019
Length of hospitalization				0.540
1–2 days	27	29	27	
3–6 days	32	34	31	
1–2 weeks	27	22	28	
3–4 weeks	11	14	10	
>4 weeks	1	0	1	
Person who initiated hospitalization				
Patient's own GP	46	38	49	0.113
GP locum	28	34	27	0.197
Patient and/or family	10	12	10	0.718
Medical specialist	13	15	13	0.562
Other	2	1	3	1
Only for GPs who initiated hospitalization:	(n = 146) (%)	(n = 29) (%)	(n = 117) (%)	
GP had considered not hospitalizing patient	33	62	25	<0.001
Just before hospitalization, the GP discussed the option of not hospitalizing with the patient and/or family	59	76	54	0.036

<sup>a</sup>More than one answer could be given.

GP: general practitioner.

**Table 4.** How hospitalization could have been avoided, according to the GP.<sup>a</sup>

	Avoidable hospitalizations (n = 77)		All hospitalizations (n = 319)
	n	%	%
Proactive communication with the patient	42	46	11
Early discussion about withholding treatment in hospital	23	30	7
Early discussion about limited prognosis	17	22	5
Early discussion about withholding diagnostics in hospital	10	13	3
Medical specialist informed the patient that illness was incurable	10	13	3
Other proactive communication with the patient	3	4	1
Communication between professionals relating to hospitalization	28	36	9
Medical specialist consulted GP before hospitalization	13	17	4
Clear information transfer to the out-of-hours general practice	10	13	3
Nurses informed GP early about symptoms	5	7	2
Consultation of a specialized palliative care consultation team	4	5	1
Other communication between professionals	6	8	2
Additional care and treatment outside the hospital	22	28	7
Early start of nursing care	11	14	3
Transfer to inpatient hospice	11	14	3
Initiation of night-care services	6	8	2
Treatment at home	3	4	1
Initiation of care by volunteers	1	1	0
Other caregiving	1	1	0
Patient and family support	8	10	3
More support to informal caregivers	4	5	1
Instruction to patient and/or family about symptoms	3	4	1
Provide and give instructions about "if needed" medication	3	4	1
Other patient and family support	3	4	1
Other strategies	8	10	3

<sup>a</sup>More than one answer could be given.

GP: general practitioner.