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## Improving palliative care provision in primary care:

a pre- and post-survey evaluation among PaTz groups

### Abstract

#### Background

In PaTz (PAlliative Thuis Zorg, palliative care at home), modelled after the Gold Standards Framework, GPs and community nurses meet on a regular basis to identify patients with palliative care needs (the PaTz register), and to discuss care for these patients.

#### Aim

To study the effects of the implementation of PaTz, and provide additional analyses on two important elements: the PaTz register and patient discussions.

#### Design and setting

A pre- and post-evaluation among Dutch GPs ( $n = 195$  before the start of PaTz;  $n = 166$ , 1 year after the start of PaTz). The GPs also provided data on recently deceased patients ( $n = 460$  before the start of PaTz;  $n = 305$  14 months after the start of PaTz).

#### Method

GPs from all 37 PaTz groups filled in questionnaires. Pre- and post-test differences were analysed using multilevel analyses to adjust for PaTz group.

#### Results

Identification of patients with palliative care needs was done systematically for more patients after implementation of PaTz compared with before (54.3% versus 17.6%). After implementation, 64.8% of deceased patients had been included on the PaTz register. For these patients, when compared with patients not included on the PaTz register, preferred place of death was more likely to be known (88.1% of patients not on the register and 97.3% of deceased patients included on the register), GPs were more likely to have considered a possible death sooner (>1 month before death: 53.0% and 80.2%), and conversations on life expectancy, physical complaints, existential issues, and possibilities of care occurred more often (60.8% and 81.3%; 68.6% and 86.1%; 22.5% and 34.2%; 60.8% and 84.0%, respectively).

#### Conclusions

Implementation of PaTz improved systematic identification of palliative care patients within the GP practice. Use of the PaTz register has added value.

#### Keywords

end-of-life care; healthcare surveys; interprofessional relations; palliative care; primary care physician; primary health care.

### INTRODUCTION

Palliative care aims to improve the quality of life of patients and their families facing the problems associated with life-threatening illness.<sup>1</sup> Interprofessional collaboration may play a decisive role in the ability to provide comprehensive end-of-life care according to the preferences of patients and their informal carers, for instance to allow a patient to die at home.

To improve palliative care provision and collaboration between registered nurses working in the community and delivering care to patients at home (henceforth referred to as 'community nurses') and GPs in the Netherlands, the main providers of palliative care at home, PaTz groups were introduced. They are an adaptation of the Gold Standards Framework (GSF).<sup>2,3</sup> Fundamental to PaTz are the interprofessional meetings, generally six times per year, between GPs and community nurses working in the same area, with support from a palliative care consultant (a physician or nurse with formal training and experience in palliative care). One important element is the identification of patients with palliative care needs (for example, by using the surprise question: 'Will I be surprised if this patient dies in the next 12 months?') and consequently including them on the PaTz palliative care

register. A second important element is the discussion of patients with palliative needs during PaTz meetings. The choice of patients that are discussed differs per group: some groups briefly mention all patients on the PaTz register and some groups discuss patients with urgent or complex issues. A focus group study with PaTz participants showed positive results on interprofessional cooperation and perceptions of participants regarding quality of end-of-life care.<sup>3</sup> A review on the GSF also showed consistent and favourable results regarding these aspects.<sup>4</sup>

Research on the GSF and PaTz has mainly focused on process outcomes, such as uptake of the intervention (meetings and/or use of the palliative care register) and interdisciplinary communication, mainly using qualitative methods.<sup>3,4</sup> In this study, the authors took a quantitative approach to study the effects of PaTz on primary palliative care. Furthermore, they studied the added value of the use of the two important elements of PaTz — the PaTz register and patient discussions. The authors address the following questions:

- What is the effect of PaTz on the organisation of GP provision of palliative care?

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## How this fits in

Patients consider good collaboration between their GP and other professionals to be crucial to quality of care at the end of life. Both the Gold Standards Framework and PaTz (modelled after the Gold Standards Framework) improve interprofessional cooperation and quality of end-of-life care according to participants. In this study, more palliative care patients were identified after implementation of PaTz, and there was added value in the use of the PaTz palliative care register. Implementation of PaTz should be encouraged, and training or support should be provided within PaTz to use the PaTz register to identify palliative care needs in patients without cancer.

- What is the effect of PaTz on patient care according to GPs?
- Are there differences in palliative care provision between patients included on the PaTz register and patients not included on the register?
- Are there differences in palliative care provision between patients who are discussed during PaTz meetings and patients who are not discussed?

## METHOD

### Design and population

This is a pre-and post-evaluation using questionnaire data provided by GPs participating in PaTz groups. Through the GPs, the authors collected data on deceased patients and the care provided to them. Between September 2011 and October 2014, all 37 PaTz groups that were about to start that were known to the PaTz foundation were included in the study. Implementation was supported by oral and written instructions.

### Procedure

Participating GPs were asked to fill in two questionnaires at two separate time intervals: one before the start of PaTz, and the second 14 months after the start. The first questionnaire was on characteristics of the GP and care provision. The second questionnaire was on the most recently deceased patient(s) who did not die suddenly and unexpectedly (for the post-test this could be patients who were or were not on the PaTz register, and who were or were not discussed), and dealt with the care the deceased patient received in the last 3 months of life. This questionnaire could be filled in for more than one patient (up to a maximum of five patients). The

questionnaires were developed for and used in a pilot study among the first four PaTz groups (these pilot groups were not included in this study).<sup>3</sup>

## Data analysis

Pre- and post-test differences regarding GPs (the first two research questions) were analysed in multilevel analyses to adjust for PaTz group. Both linear and logistic multilevel analyses were performed, according to the outcome variable. Pre- and post-test differences regarding patient questionnaires were analysed in multilevel analyses adjusted for PaTz group (research question 1) and for PaTz group, patient age, sex, and cause of death (cancer versus rest) (research question 2). To investigate differences in palliative care provision in patients included on the PaTz register or not (research question 3), the authors used multilevel analyses adjusted for PaTz group, patient age, sex, and cause of death. Differences in palliative care provision in patients discussed during the PaTz meetings or not (research question 4) were tested in logistic regression analyses adjusted for age and cause of death. Logistic regression analyses were performed using SPSS, IBM Statistics for Windows version 20.0; multilevel analyses were performed using MLwiN.

## RESULTS

### Characteristics of GPs and organisation of palliative care provision by the GP

A total of 37 PaTz groups were involved; the response rate was 59% before the start of PaTz, and 51% 1 year after it started. The mean age of GPs was 50 years, and half were female. Most GPs had a practice of >2000 patients, 41% of GPs worked full time, and 60% had received extra training in palliative care (Table 1).

### Differences in organisation of palliative care provision before and after implementation of PaTz

Identification of patients with palliative care needs was done systematically for more patients after implementation of PaTz than before (not done 37.3% versus 23.8%: some patients 45.1% versus 22.0%: all patients 17.6% versus 54.3%) (Table 1). GPs' ratings for continuity of care (7.7 versus 7.9), coordination of care (7.2 versus 7.5), and the competence of the GP to deliver palliative care (7.4 versus 7.7) improved after implementation of PaTz, according to GPs. There were no differences following implementation of PaTz compared with before in the use of a care plan, discussions

**Table 1. Characteristics of GPs participating in PaTz groups in pre- and post-measurement**

	Before start of PaTz (n= 195)	1 year after start of PaTz <sup>a</sup> (n= 166)	OR (95% CI) <sup>b</sup>
GP age, years, mean (SD)	49.5 (8.5)	NA	
GP sex, female, n (%)	99 (50.8)	NA	
Number of years working as GP, mean (SD)	17.3 (9.1)	NA	
Type of GP practice, n (%)		NA	
Solo	39 (20.0)		
Duo	53 (27.2)		
Group	62 (31.8)		
Health centre	31 (15.9)		
Other	10 (5.1)		
Works full time	80 (41.0)	NA	
Number of patients, n (%)		NA	
<1000 patients	5 (2.6)		
1000–1500 patients	23 (11.8)		
1500–2000 patients	46 (23.6)		
>2000 patients	121 (62.1)		
Received training/schooling in palliative care (besides regular GP education), n (%)	117 (60.0)	NA	
Systematically identifies patients with palliative care needs, n (%)			1 (ref)
Yes, all palliative care patients	34 (17.6)	89 (54.3)	
Yes, some palliative care patients	87 (45.1)	36 (22.0)	<b>0.158 (0.091 to 0.274)</b>
No	72 (37.3)	39 (23.8)	<b>0.207 (0.119 to 0.359)</b>
Use of a care plan for palliative care patients, n (%)			1 (ref)
Yes, for all palliative care patients	18 (9.4)	20 (12.4)	
Yes, for some palliative care patients	77 (40.3)	84 (52.2)	0.982 (0.486 to 1.986)
No	96 (50.3)	57 (35.4)	0.534 (0.262 to 1.088)
Discussions with fellow GPs on palliative care patients, (structural or ad hoc), n (%)	97 (49.7)	88 (53.3)	1.155 (0.764 to 1.746)
Discussions with community nurses on palliative care patients (structural or ad hoc), n (%)	113 (58.9)	89 (54.3)	0.829 (0.545 to 1.261)
Who offers care to patients with palliative care needs after office hours? n (%)			1 (ref)
Myself	78 (40.0)	56 (34.4)	
Out-of-hours locum, and also myself	87 (44.6)	92 (56.4)	1.473 (0.940 to 2.306)
Out-of-hours locum	30 (15.4)	15 (9.2)	0.696 (0.344 to 1.408)
Information transfer to locum, n (%)			1 (ref)
Yes, for all palliative care patients	104 (53.3)	96 (58.9)	
Yes, for some palliative care patients	86 (44.1)	66 (40.5)	0.831 (0.545 to 1.266)
No	5 (2.6)	1 (0.6)	0.217 (0.025 to 1.855)
Rating <sup>c</sup> on continuity of care for palliative care patients within the practice (SD)	7.7 (0.8)	7.9 (0.6)	<b>1.372 (1.024 to 1.838)</b>
Rating <sup>c</sup> on coordination of care for palliative care patients within the practice (SD)	7.2 (1.0)	7.5 (0.8)	<b>1.575 (1.227 to 2.021)</b>
Rating <sup>c</sup> on own competence to deliver palliative care (SD)	7.4 (0.8)	7.7 (0.6)	<b>1.970 (1.417 to 2.739)</b>

<sup>a</sup>NA = not asked; these questions were not included in the post-measurement. <sup>b</sup>OR = odds ratio and CI; multilevel analysis adjusted for PaTz group. Number of missing values ranges between 0 and 12 (for the three ratings). Results in bold: P<0.05. <sup>c</sup>On a scale of 1 to 10, with 1 being 'poor' and 10 being 'good'. PaTz = Palliative Thuis Zorg, palliative care at home. Ref = reference. SD = standard deviation.

with fellow GPs or community nurses, provision of palliative care after office hours, and information transfer to a locum.

**Characteristics of patients and palliative care provision to patients**

Age of the deceased patients for whom the GPs had filled in a questionnaire was higher (71.7 versus 75.2 years) after

implementation of PaTz than before (Table 2). There were no differences in sex (female 52.7% and 48.9%) and cause of death (cancer: 72.2% and 69.8%) of these patients between pre- and post-test.

When controlled for age, sex, and cause of death, no differences between pre- and post-test were found. At both times, a large majority of GPs was aware of the preferred

**Table 2. Patient and care characteristics in pre- and post-measurement for deceased patients**

	Before start of PaTz (n= 460)	1 year after start of PaTz (n= 305)	OR (95% CI) <sup>a</sup>
<b>Patient characteristics</b>			
Patient age, years, mean (SD)	71.7 (14.5)	75.2 (13.0)	<b>1.022 (1.010 to 1.034)</b>
Patient sex, female, n (%)	242 (52.7)	149 (48.9)	0.790 (0.586 to 1.064)
Cause of death, cancer, n (%)	332 (72.2)	213 (69.8)	1.093 (0.770 to 1.553)
<b>Care characteristics</b>			
<b>Preferred place of death is known by GP, n (%)</b>			
Home/with family	410 (90.7)	280 (93.6)	1.548 (0.864 to 2.773)
Nursing home	285 (62.2)	208 (68.2)	1 (ref) <sup>b</sup>
Care home	14 (3.1)	2 (0.7)	0.146 (0.032 to 0.663)
Hospital	52 (11.4)	26 (8.5)	0.433 (0.245 to 0.765)
Hospice	48 (10.5)	29 (9.5)	0.782 (0.465 to 1.316)
	59 (12.9)	40 (13.1)	0.914 (0.582 to 1.434)
<b>Number of hospitalisations in last 30 days, n (%)</b>			
0	293 (64.1)	186 (61.0)	1 (ref)
1	122 (26.7)	87 (28.5)	1.130 (0.806 to 1.583)
≥2	24 (9.2)	32 (10.5)	1.355 (0.815 to 2.255)
<b>How long before death did GP consider a possible death within 6 months or sooner? n (%)</b>			
>6 months	119 (26.4)	103 (34.0)	1 (ref) <sup>b</sup>
3–6 months	177 (39.2)	109 (36.0)	0.676 (0.469 to 0.976)
1 or 2 months	85 (18.8)	47 (15.5)	0.562 (0.355 to 0.891)
Between 1 month and 1 week	56 (12.4)	31 (10.2)	0.607 (0.360 to 1.021)
In the last week	14 (3.1)	13 (4.3)	1.099 (0.479 to 2.521)
<b>How long before death was treatment aimed at comfort or palliation? n (%)</b>			
>6 months	90 (19.8)	74 (24.5)	1 (ref)
3–6 months	126 (27.8)	77 (25.5)	0.811 (0.525 to 1.252)
1 or 2 months	114 (25.1)	64 (21.2)	0.726 (0.462 to 1.142)
Between 1 month and 1 week	62 (13.7)	54 (17.9)	1.100 (0.671 to 1.801)
In the last week, or not at all	62 (13.7)	33 (10.9)	0.684 (0.399 to 1.171)
Patient was included in PaTz register, n (%)	NA <sup>c</sup>	188 (64.8)	
<b>Conversations on: n (%)</b>			
Main diagnosis	319 (70.1)	208 (68.4)	0.891 (0.642 to 1.237)
Incurability of disease	358 (78.7)	250 (82.2)	1.480 (0.977 to 2.242)
Life expectancy	333 (73.2)	226 (74.3)	1.055 (0.747 to 1.491)
Possible medical complications	218 (47.9)	160 (52.6)	1.237 (0.915 to 1.674)
Physical complaints	357 (78.5)	243 (79.9)	1.154 (0.797 to 1.671)
Psychological issues	259 (56.9)	168 (55.3)	1.060 (0.779 to 1.442)
Social or societal issues	167 (36.7)	94 (30.9)	0.876 (0.634 to 1.211)
Spiritual or existential issues	154 (33.8)	89 (29.3)	0.834 (0.603 to 1.156)
Possibilities of palliative care	343 (75.4)	229 (75.3)	1.003 (0.699 to 1.439)
Burden of treatment	187 (41.1)	131 (43.1)	1.120 (0.828 to 1.515)
Wishes regarding (non-)treatment	312 (68.6)	209 (68.8)	1.019 (0.739 to 1.406)

<sup>a</sup>OR = odds ratio and CI; multilevel analysis adjusted for PaTz group, age, and sex of the patient, and cause of death (cancer versus other). Number of missing values ranges between 0 and 15 (for inclusion in the PaTz register). Results in bold: P < 0.05. <sup>b</sup>The overall Wald test was not significant. <sup>c</sup>NA = not asked; this question was not included in the pre-measurement. PaTz = Palliative Thuis Zorg, palliative care at home. Ref = reference. SD = standard deviation.

place of death (90.7% and 93.6%), most patients died at home (62.2% and 68.2%), were not hospitalised in the last 30 days of life (64.1% and 61.0%), and GPs considered a possible death sooner (>1 month before death 84.4% and 85.5%). Of 11 topics relevant to palliative care, the incurability of the disease was discussed most frequently (78.7% and 82.2%), and spiritual issues were discussed least (33.8% and 29.3%) between GP and patient on both occasions (Table 2).

**Differences between patients who were included on the PaTz register or not**

Table 3 shows a comparison between patients who were or were not included on the register; 64.8% (n = 188) of patients were included on the PaTz register. Patients included on the register were younger (79.6 versus 72.4 years), and more likely to have died from cancer (52.9% versus 78.7%) compared with patients not included on the register. Controlled for these patient characteristics, preferred place

**Table 3. Differences in patient and care characteristics of patients who were included on the PaTz register or not<sup>a</sup>**

	Not in register (n= 102)	On register (n= 188)	OR (95% CI)
<b>Patient characteristics</b>			
Patient age, years, mean (SD)	79.6 (12.5)	72.4 (12.6)	<b>0.971 (0.949 to 0.994)</b>
Patient sex, female, n (%)	61 (59.8)	84 (44.7)	0.774 (0.452 to 1.326)
Cause of death, cancer, n (%)	54 (52.9)	148 (78.7)	<b>2.535 (1.418 to 4.532)</b>
<b>Care characteristics</b>			
Preferred place of death is known by GP, n (%)	89 (88.1)	178 (97.3)	<b>3.804 (1.185 to 12.208)</b>
<b>Place of death, n (%)</b>			
Home/with family	60 (58.8)	138 (73.4)	1 (ref)
Nursing home	1 (1.0)	1 (0.5)	0.718 (0.033 to 15.551)
Care home	14 (13.7)	9 (4.8)	1.363 (0.466 to 3.993)
Hospital	14 (13.7)	14 (7.4)	0.509 (0.206 to 1.255)
Hospice	13 (12.7)	26 (13.8)	1.397 (0.610 to 3.199)
<b>Number of hospitalisations in last 30 days, n (%)</b>			
0	59 (57.8)	119 (63.3)	1 (ref)
1	32 (31.4)	50 (26.6)	0.640 (0.350 to 1.168)
≥2	11 (10.8)	19 (10.1)	0.487 (0.200 to 1.188)
<b>How long before death did you consider a possible death within 6 months or sooner? n (%)</b>			
>6 months	21 (20.6)	79 (42.5)	1 (ref)
3–6 months	34 (33.3)	66 (35.5)	0.468 (0.231 to 0.950)
1 or 2 months	19 (18.6)	27 (14.5)	0.322 (0.139 to 0.747)
Between 1 month and 1 week	16 (15.7)	13 (7.0)	0.213 (0.081 to 0.558)
In the last week	12 (11.8)	1 (0.5)	<b>0.022 (0.002 to 0.199)</b>
<b>How long before death was treatment aimed at comfort or palliation? n (%)</b>			
>6 months	19 (19.0)	50 (26.7)	1 (ref)
3–6 months	19 (19.0)	55 (29.4)	0.844 (0.365 to 1.951)
1 or 2 months	15 (15.0)	45 (24.1)	0.792 (0.330 to 1.901)
Between 1 month and 1 week	26 (26.0)	26 (13.9)	0.265 (0.111 to 0.632)
In the last week, or not at all	21 (21.0)	11 (5.9)	<b>0.172 (0.061 to 0.482)</b>
<b>Patient has been discussed during a PaTz meeting, n (%)</b>	<b>11 (10.8)</b>	<b>146 (77.7)</b>	<b>30.265 (13.739 to 66.670)</b>
<b>Conversations on: n (%)</b>			
Main diagnosis	59 (57.8)	138 (73.8)	1.548 (0.881 to 2.720)
Incurability of disease	76 (74.5)	160 (85.6)	1.210 (0.601 to 2.438)
Life expectancy	62 (60.8)	152 (81.3)	2.662 (1.466 to 4.834)
Possible medical complications	47 (46.1)	104 (55.6)	1.122 (0.652 to 1.929)
Physical complaints	70 (68.6)	161 (86.1)	2.173 (1.146 to 4.119)
Psychological issues	48 (47.1)	115 (61.5)	1.471 (0.866 to 2.500)
Social or societal issues	28 (27.5)	63 (33.7)	1.143 (0.637 to 2.052)
Spiritual or existential issues	23 (22.5)	64 (34.2)	1.986 (1.054 to 3.742)
Possibilities of palliative care	62 (60.8)	157 (84.0)	2.460 (1.318 to 4.591)
Burden of treatment	44 (43.1)	84 (44.9)	1.011 (0.591 to 1.728)
Wishes regarding (non-)treatment	69 (67.6)	132 (70.6)	1.103 (0.625 to 1.945)

<sup>a</sup>OR = odds ratio and CI; multilevel analysis adjusted for PaTz group, age, and sex of the patient, and cause of death (cancer versus other). Number of missing values ranges between 0 and 6 (for knowledge on preferred place of death). Results in bold: P < 0.05. PaTz = Palliative Thuis Zorg, palliative care at home. Ref = reference. SD = standard deviation.

of death was more likely to be known (88.1% versus 97.3%), GPs considered a possible death sooner (>1 month before death 72.5% versus 92.5%), and treatment was aimed at palliation earlier (>1 month before death 53.0% versus 80.2%) for patients included on the register compared with patients not included on the register. In addition, conversations on life expectancy (60.8% versus 81.3%), physical complaints (68.6%

versus 86.1%), existential issues (22.5% versus 34.2%), and possibilities of palliative care (60.8% versus 84.0%) occurred more often, compared with patients not included on the register.

**Differences between patients who were discussed during a PaTz meeting or not**

Of the 188 patients included on the PaTz register, 146 (78%) were discussed during a

**Table 4. Differences in patient and care characteristics of patients included on the PaTz register who are discussed during a PaTz meeting or not**

	Not discussed (n=42)	Discussed at least once (n=146)	OR (95% CI) <sup>a</sup>
<b>Patient characteristics</b>			
Patient age, years, mean (SD)	75.8 (11.4)	71.4 (12.8)	<b>0.968 (0.938 to 0.999)</b>
Patient sex, female, n (%)	17 (40.5)	67 (45.9)	1.497 (0.724 to 3.096)
Cause of death, cancer, n (%)	33 (78.6)	115 (78.8)	0.780 (0.311 to 1.953)
<b>Care characteristics</b>			
Preferred place of death is known by participant, n (%)	41 (97.6)	137 (97.2)	0.843 (0.090 to 7.930)
<b>Place of death, n (%)</b>			
Home/with family	33 (78.6)	105 (71.9)	1 (ref)
Nursing home	0 (0)	1 (0.7)	NA
Care home	3 (7.1)	6 (4.1)	0.946 (0.191 to 4.682)
Hospital	2 (4.8)	12 (8.2)	2.055 (0.429 to 9.844)
Hospice	4 (9.5)	22 (15.1)	1.882 (0.596 to 5.943)
<b>Number of hospitalisations in last 30 days, n (%)</b>			
0	22 (52.4)	97 (66.4)	1 (ref) <sup>b</sup>
1	13 (31.0)	37 (25.3)	0.681 (0.302 to 1.535)
≥2	7 (16.7)	12 (8.2)	0.320 (0.108 to 0.947)
<b>How long before death did you consider a possible death within 6 months or sooner? n (%)</b>			
>6 months	11 (26.2)	68 (47.2)	1 (ref)
3–6 months	17 (40.5)	49 (34.0)	0.480 (0.205 to 1.123)
1 or 2 months	9 (21.4)	18 (12.5)	0.419 (0.144 to 1.215)
Between 1 month and 1 week	5 (11.9)	8 (5.6)	0.284 (0.077 to 1.049)
In the last week	0 (0)	1 (0.7)	NA
<b>How long before death was treatment aimed at comfort or palliation? n (%)</b>			
>6 months	5 (11.9)	45 (31.0)	1 (ref)
3–6 months	14 (33.3)	41 (28.3)	0.291 (0.094 to 0.897)
1 or 2 months	10 (23.8)	35 (24.1)	0.372 (0.112 to 1.241)
Between 1 month and 1 week	12 (28.6)	14 (9.7)	0.130 (0.039 to 0.440)
In the last week, or not at all	1 (2.4)	10 (6.9)	<b>0.945 (0.097 to 9.238)</b>
<b>Conversations on: n (%)</b>			
Main diagnosis	32 (76.2)	106 (73.1)	0.834 (0.369 to 1.884)
Incurability of disease	37 (88.1)	123 (84.8)	0.546 (0.181 to 1.648)
Life expectancy	33 (78.6)	119 (82.1)	1.032 (0.421 to 2.530)
Possible medical complications	20 (47.6)	84 (57.9)	1.386 (0.667 to 2.882)
Physical complaints	40 (95.2)	121 (83.4)	0.251 (0.056 to 1.125)
Psychological issues	23 (54.8)	92 (63.4)	1.453 (0.714 to 2.957)
Social or societal issues	9 (21.4)	54 (37.2)	1.912 (0.839 to 4.357)
Spiritual or existential issues	14 (33.3)	50 (34.5)	1.093 (0.518 to 2.310)
Possibilities of palliative care	37 (88.1)	120 (82.8)	0.641 (0.224 to 1.832)
Burden of treatment	20 (47.6)	64 (44.1)	0.842 (0.417 to 1.702)
Wishes regarding (non-)treatment	29 (69.0)	103 (71.0)	1.027 (0.474 to 2.226)

<sup>a</sup>OR = odds ratio, and CI; calculated in logistic regression analysis adjusted for age of the patient and cause of death (cancer versus other). NA = not calculated (due to a value of zero). Analyses on patients included in the PaTz register (n = 188). Number of missing values ranges between 0 and 5 (for knowledge on preferred place of death). Results in bold: P<0.05.

<sup>b</sup>The overall Wald test was not significant. PaTz = Palliative Thuis Zorg, palliative care at home. Ref = reference. SD = standard deviation.

PaTz meeting. Patients who were discussed during a PaTz meeting were younger (71.4 years versus 75.8 years), whereas there were no differences for sex (female 45.9% and 40.5%) and cause of death (cancer 78.8% and 78.6%). Controlled for age and cause of death, differences in care characteristics were found for one variable – treatment was aimed at palliation earlier (>1 month 69.0% versus 83.4%), compared

with patients who were not discussed (Table 4).

## DISCUSSION

### Summary

Regarding the organisation of GP provision of palliative care, more palliative care patients were identified and GPs rated continuity of care and coordination of care higher after implementation compared



with before. Also, they rated their own competence to deliver palliative care higher after implementation compared with before. However, this did not go together with positive results regarding patient care (for example, the number of hospitalisations, place of death). Further analyses showed that this might be related to underuse of the PaTz register, and not discussing patients on the register during the PaTz meetings. When these elements were used, place of death was more likely to be known (register), GPs considered a possible death sooner (register), and treatment was aimed at palliation earlier (register and discussions), and conversations on life expectancy, physical complaints, existential issues, and possibilities of palliative care occurred more often (register).

### **Strengths and limitations**

This is the first quantitative study on the impact of PaTz on patient care. However, this study has some potential limitations. First, it was limited to the point of view of GPs. They may have another (potentially more favourable) opinion of the care they provided than patients and carers. Also, as the study was a pre-post design among PaTz groups starting in practice, and not a randomised controlled trial, it was not possible to control for potential confounders (for example, the level of palliative care provision before implementation). To have a better understanding of underlying mechanisms, future studies should include a control group of patients not receiving support from PaTz participants. Finally, this study was conducted in the Dutch healthcare system, in which the GP and community nurse are the main providers of palliative care within the community. The level of palliative care provision among GPs and community nurses may be higher compared with systems with a focus on specialist care provision. Notwithstanding these limitations, this pre-post comparison, and additional in-depth analyses on the two important elements of PaTz, gives insight into palliative care provision after implementation of PaTz.

### **Comparison with existing literature**

Organisation of palliative care provision improved after implementation of PaTz. This was also demonstrated in research on the GSF.<sup>4</sup> The differences before and after implementation in the GPs' own ratings on continuity, coordination, and their own competence were small and, although statistically significant, may not be clinically significant. But the difference in systematic identification of patients with palliative care

needs before and after implementation was substantial, particularly because identification of palliative care needs can be challenging.<sup>5</sup> The improvement in organisation did not match with positive results regarding patient care (place of death and the number of hospitalisations). Admittedly, these do not necessarily go hand in hand. But because PaTz participants receive support from a palliative care consultant, and palliative care patients are systematically identified, the authors expected the number of hospitalisations to be lower after implementation and the preferred place of death known more often. It has been shown that the level of primary palliative care provision in the Netherlands is high,<sup>6,7</sup> so the level of palliative care provision may already be high before implementation of PaTz, leading to a 'ceiling effect'. For instance, the knowledge on preferred place of death is already 91%, and the number of patients with no hospitalisations in the last 30 days is 64%, before PaTz is implemented. In the pilot study, performed by the authors in the first four PaTz groups in 2010,<sup>8</sup> the level of palliative care provision of the PaTz GPs was lower before implementation of PaTz than in this study. The pilot yielded more positive results, for example, a decrease of hospitalisations in the last month of life (51% and 37%) and an increase in knowledge on preferred place of death (79% and 88%). The GPs in these first four PaTz groups (these pilot groups were not included in this study) were recruited by one of the authors, whereas the later groups enlisted through self-referral. Probably these participants were already more concerned with palliative care before implementation.

Use of the two important elements of PaTz, in particular patients being placed on the PaTz register, was associated with awareness of the need for palliative care, and with patient communication in line with this awareness. The authors have found no previous studies that investigated differences in palliative care provision and the use of a palliative care register and patient discussions. PaTz, like the GSF, endorses use of the 'surprise question' ('Will I be surprised if this patient dies in the next 12 months?') for identification of patients with palliative care needs. When the answer is 'no', patients should be included on the PaTz register. The authors cannot say whether this earlier recognition of palliative care needs was linked to use of the surprise question, or whether knowledge and awareness in general have improved. Previous research on the surprise question shows mixed results.<sup>9-11</sup>

PaTz was implemented to improve palliative care provision and collaboration between community nurses and GPs. The added value of the PaTz palliative care register may indicate that PaTz improves knowledge on palliative care. Unfortunately, the patient discussions and use of the PaTz register did not help to include more patients without cancer. Patients on the register were more likely to be patients with cancer (compared with patients not on the register). Recognition of palliative care needs, especially for patients without cancer, remains difficult.<sup>12-14</sup> Once a patient is 'known' as a palliative care patient, and care is provided accordingly, this can result in less hospitalisations, more congruence between preferred and actual place of death, and more end-of-life conversations.<sup>5,15-17</sup>

#### **Implications for practice**

Promotion of implementation of PaTz

groups is advisable to further improve palliative primary care. Use of the PaTz register is a key element in this. A first recommendation for PaTz is therefore to stimulate and facilitate implementation of the PaTz register (for example, provide training to participants in the use of the PaTz register). A second recommendation is to give due attention to recognition of patients with palliative care needs. Palliative care for vulnerable groups, such as frail older patients and patients with organ failure, should be promoted. In addition, even when the patient is discussed during PaTz and is included on the PaTz register, some topics are often not discussed with patients (social issues, existential issues, burden of treatment). A final recommendation is that some additional training or support is provided within PaTz on how to discuss those topics with patients.

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#### **Provenance**

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#### **Competing interests**

Two of the authors, Bart Schweitzer and Bregje D Onwuteaka-Philipsen, are board members of PaTz Foundation, which was established to further develop PaTz through evaluation, and to facilitate implementation of PaTz in the Netherlands.

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