

# Early palliative home care: Evaluation of an interprofessional educational intervention for district nurses and general practitioners about nutritional care

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Erika Berggren<sup>1,2</sup>, Ann Ödlund Olin<sup>3,4</sup>, Ylva Orrevall<sup>5,6</sup>,  
Peter Strang<sup>7,8</sup>, Sven-Erik Johansson<sup>1,2</sup> and Lena Törnkvist<sup>1,2</sup>

## Abstract

**Background:** Teamwork is important in early palliative home care, and interprofessional education is required to achieve teamwork. It is thus crucial to ensure that interprofessional education works well for the members of all participating professions because levels of knowledge and educational needs may vary.

**Aim:** To evaluate, by profession, the effectiveness of an interprofessional educational intervention for district nurses and general practitioners on three areas of nutritional care for patients in a palliative phase.

**Design:** A quasi-experimental study that used a computer-based, study-specific questionnaire to evaluate the effectiveness of the intervention. The continuing education in primary health care (ConPrim<sup>®</sup>) model was used to create the intervention. ConPrim includes a web-based program, a practical exercise and a case seminar, all with interprofessional training.

**Setting:** Primary health care centers in Stockholm County, Sweden. Intervention group (n=87; 48 district nurses, 39 general practitioners); control group (n=53; 36 district nurses, 17 general practitioners).

**Results:** The total intervention effect was significant in all three areas,  $p=0.000-0.004$ . The intervention effects were similar and significant for both professions in areas 1 and 2. In area 3, the intervention effects were significant for general practitioners but not for district nurses.

**Conclusions:** The intervention seems promising, as it may create better prerequisites for teamwork and caring for patients living at home. However, it needs to be optimized to better increase district nurses' level of knowledge (area 3).

## Keywords

District nurses, general practitioners, home care, interprofessional educational intervention, nutrition, palliative care, patients, primary health care, teamwork

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## Introduction

### Background

The palliative care definition of 2002 includes not only care for patients in a late palliative phase with a short life expectancy,

but also for patients with chronic diseases who are in an early palliative phase for years.<sup>1</sup> In Sweden, as in many countries,

<sup>1</sup>Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

<sup>2</sup>Academic Primary Health Care Centre, Stockholm County Council, Sweden

<sup>3</sup>Department of Clinical Science, Intervention and Technology, Karolinska Institutet, Stockholm, Sweden

<sup>4</sup>Department of Quality and Patient Safety, Karolinska University Hospital, Stockholm, Sweden

<sup>5</sup>Function Area Clinical Nutrition, Karolinska University Hospital, Stockholm, Sweden

<sup>6</sup>Department of Learning, Informatics, Management, and Ethics, Karolinska Institutet, Stockholm, Sweden

<sup>7</sup>Department of Oncology-Pathology, Karolinska Institutet, Stockholm, Sweden

<sup>8</sup>Stockholms Sjukhem Foundation, Stockholm, Sweden

### Corresponding author:

Erika Berggren, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Alfred Nobells allé 23, 141 83 Huddinge, Stockholm, Sweden.

Email: erika.berggren@ki.se



more and more patients receive home care earlier in the palliative disease trajectory.<sup>2,3</sup> These patients are often older and have several chronic diseases, yet still benefit from active treatment in addition to palliative interventions.<sup>1,2,4</sup> According to World Health Organization (WHO), more attention should be paid to these patients to reduce suffering, facilitate well-being and promote an active life as long as possible.<sup>1</sup>

In Sweden, patients in the early palliative phase are often cared for by district nurses (DNs) and general practitioners (GPs) in home care provided by the primary health care system or the municipality.<sup>5</sup> In caring for these patients, DNs and GPs need competence in palliative care.<sup>6</sup> To support patients' well-being, the professionals must be aware of the difference between the early and the late palliative phase, since the goal of care differs by phase,<sup>1,2</sup> not least with regard to nutritional care. However, primary health care professionals do not always recognize patients' needs in the early palliative phase.<sup>2,4</sup>

Although continuing education plays an important role in helping health care professionals achieve up-to-date knowledge, they often lack opportunities for continuing education adapted to the special context of their work. In addition, they lack educational contexts that support them in achieving the level of understanding required for applying knowledge in practice.<sup>6</sup>

It is also critical for health care professionals to cooperate with those close to the patient and to work in teams.<sup>7,8</sup> Despite the benefits of teamwork,<sup>8</sup> primary health care professionals often work individually and separately.<sup>9</sup> Interprofessional education helps professionals better understand the roles, responsibilities and expertise of their own and other professions, strengthening them in their professional roles and enabling more effective collaboration, teamwork and care for patients.<sup>8,10</sup> However, continuing educational programs often are directed at one single profession and thus do not support teamwork.<sup>10</sup>

To meet the needs described above, a model (framework) for continuing education in primary health care, ConPrim<sup>®</sup>, was developed by a multiprofessional research group. The ConPrim model is based on an influential educational theory and constructive alignment<sup>11</sup> and includes a web-based program, a practical exercise and a case seminar.<sup>12,13</sup>

ConPrim was used to develop an educational intervention about nutritional care for patients in a palliative phase living at home.<sup>12</sup> Nutritional care is critical in the early palliative phase, but a gap exists between best-practice care and what is done in clinical practice.<sup>12,14</sup> Insufficient teamwork and lack of subject-specific and interprofessional knowledge may contribute to this gap.<sup>8,10</sup>

In a previous study, our research group evaluated the effectiveness of the intervention on primary health care professionals' knowledge about important aspects of nutritional care.<sup>12</sup> However, to create the prerequisites necessary for teamwork, it is crucial to ensure that the intervention leads to learning for the members of both professions.<sup>10</sup> We therefore aimed to evaluate, by profession, the effectiveness of the interprofessional educational intervention for DNs and GPs

on knowledge about three areas of nutritional care for patients in a palliative phase living at home.

## Methods

### Study design

This quasi-experimental study evaluated the intervention about nutritional care for patients in a palliative phase by profession (DN and GP). An intervention group (IG) and a control group (CG) were included. The IG completed a computer-based, study-specific questionnaire at baseline and at follow-up (i.e. after the approximately 1-month intervention). The CG, recruited later, also completed the questionnaire twice with 1 month between response occasions.

### Setting and participants

In all, 114 professionals were recruited from 10 of 189 eligible primary health care centers in the Stockholm County council area. Prior to the study, the professionals provided their verbal consent to participate. They also provided written consent at the case seminar. A total of 48 DNs and 39 GPs (n=87; 76%) responded both at baseline and follow-up. Managers, DNs and GPs working at 46 of the remaining 179 centers were contacted to recruit the CG. Of the 85 professionals who volunteered to participate in the CG, 36 DNs and 17 GPs (n=53; 62%) working at 32 primary health care centers took part. For more details, see Berggren et al.<sup>12</sup> The Regional Ethical Review Board in Stockholm, Sweden, approved the study (dnr.2011/1198-31/2).

### The educational intervention

The educational intervention about nutritional care for patients in a palliative phase consisted of three parts (summarized below). All parts used well-established pedagogical methods intended to help professionals achieve the levels of understanding needed to apply knowledge in practice.<sup>11</sup> All three parts were adapted to primary health care circumstances and needs, included interprofessional training and were to be performed within 1 month. For a more detailed description of the ConPrim educational model used to create the intervention, see Berggren et al.<sup>13</sup> For a more detailed description of the intervention, see Berggren et al.<sup>12</sup>

Part 1: A web-based program with interactive multiple-choice questions built around evidence-based information about nutritional care in palliative phase and a patient case from primary health care. The professionals could complete the program at a time and place of their own choice and also stop and resume whenever they liked. The patient case was described from both DNs' and GPs' perspectives.

Part 2: A practical exercise (home visit in their own home care area). The DNs were instructed to use the Mini

Nutritional Assessment (MNA) tool<sup>15</sup> to identify nutritional problems among patients in the early palliative phase. They were then to discuss their findings with GPs and collaborate to take any actions deemed necessary.

Part 3: A case seminar at the professionals' own workplace led by two facilitators (DN and GP) whose task was to stimulate analytical discussions and collaboration. Before the seminar, DNs and GPs were asked to read a written patient case written from the perspective of their own profession. At the seminar, they read the case from the perspective of the other profession.

### Data collection

Data were collected with a pilot-tested, computer-based questionnaire about important aspects of nutritional care

for patients in palliative care<sup>12</sup> that consisted of 32 positive statements divided into three main areas (Table 1): (1) perceived familiarity (with information important for nutritional care in a palliative phase; 14 statements), (2) perceived collaboration (with other caregivers with regard to patients' nutritional problems and needs; 4 statements) and (3) level of knowledge (about important aspects of nutritional care; 14 statements). Participants were required to respond to all statements. Responses were provided on a Likert response scale that ranged from "fully agree" (score: 4) to "mainly agree" (score: 3), "partly agree" (score: 2) and "do not agree at all" (score: 1). The higher the scores, the greater the agreement with the positive statement. For all but two of the statements 19 and 20 (Table 1), the scale was reversed. There were also 10 mainly demographic questions about the DNs' and GPs' backgrounds.

**Table 1.** The three topic areas that formed the basis of the analyses in this study and the statements in each area.

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1. Statements assessing DNs' and GPs' *perceived familiarity* with information important to nutritional care in a palliative phase. I am familiar with ...
    1. WHO's definition of palliative care
    2. The meaning of the four dimensions of palliative care (physical, psychological, social and spiritual/existential)
    3. The meaning of the four cornerstones that form the basis of palliative care (teamwork, symptom relief, communication and support of those close to the patient)
    4. The meaning of the early and the late palliative phase
    5. The importance of communication with patients (and those close to them) about critical transition points in the continuum of care
    6. How nutritional care is individually planned on the basis of the patient's current palliative phase
    7. How the MNA (Mini Nutritional Assessment) tool is used to assess the patient's nutritional status
    8. How I can communicate about and advise against nutritional support (specific nutritional products) when death is approaching
    9. How to distinguish the differences between nutritional needs in the early and the late palliative phase so I can explain these differences to the patient
    10. How food and meals for patients in the early palliative phase should be adapted to suit the patient's individual nutritional problems
    11. The importance of between-meal snacks, such as ready-to-drink oral nutritional supplements, for patients in the early palliative phase
    12. The importance of symptom relief in facilitating eating for patients who are in a palliative phase and who have nutritional problems
    13. The physical, psychological, social and existential consequences that can result from nutritional problems
    14. Determining when the nutritional treatment no longer is appropriate for patients in the late palliative phase
  2. Statements assessing the DNs' and GPs' *perceived collaboration* with other caregivers with regard to patients' nutritional problems and needs. I cooperate with ...
    15. Others at my place of work regarding patients who are in a palliative phase and who have nutritional problems
    16. Those close to the patient on issues about food, regarding patients in the early or late palliative phase who have nutritional problems
    17. Specialized palliative care teams regarding patients who are in a palliative phase and who have nutritional problems
    18. Social assistance care workers regarding issues about food for patients who are in a palliative phase and who have nutritional problems
  3. Statements assessing the DNs' and GPs' *level of knowledge* about important aspects of nutritional care.
    19. A normal BMI rules out undernutrition
    20. Cachexia is the same as starvation
    21. It is common for patients in the early palliative phase to have nutritional problems
    22. The MNA should be used to assess nutritional status and risk of undernutrition in all patients who are in the early palliative phase
    23. In the late palliative phase, focusing on calorie intake can lead to stress for the patient and those close to the patient
- 

(Continued)

Table 1. (Continued)

24.	In the late palliative phase of life, energy and nutrient intake is no longer expected to lead to improved nutritional status
25.	In the late palliative phase, fatty and protein-rich foods can cause the patient to feel nauseous
26.	For patients in the late palliative phase who are receiving enteral or parenteral nutrition, the goal can be to discontinue or reduce enteral or parenteral nutrition
27.	When the patient is receiving basic home health care, it is the responsibility of primary health care professionals to identify, assess, investigate and treat the patient's nutritional problems
28.	In basic home health care, it is the district nurse's responsibility to assess the patient's ability to eat and drink as well as any need for help with eating and mealtime companionship
29.	In basic home health care, it is the district nurse's responsibility to assess the patient's dining area and eating environment
30.	In basic home health care, it is the general practitioner's responsibility to ensure that the patient's medication has as little impact as possible on the patient's appetite and ability to eat
31.	In basic home health care, teamwork is important to good nutritional care
32.	In my work in basic home health care, I often meet patients in the early palliative phase who have nutritional problems

### Data analysis

Summary statistics for background data (percentages and medians with 95% confidence intervals) were calculated for DNs and GPs in the IG and CG. Differences in proportions were assessed using the chi-squared test or Fisher's exact test. For comparisons of background data, the significance level was set at  $p < 0.05$ .

Statements on the four-point Likert scale were summarized separately for DNs and GPs in each group (IG and CG) both at baseline and follow-up and are presented as mean rank, as the scales were ordinal. The Wilcoxon signed-rank test was used to assess changes in DNs and changes in GPs between baseline and follow-up. The Wilcoxon rank-sum test and ordinal logistic regression were used to examine changes by profession in the IG and the CG (i.e. to determine whether there was an intervention effect by profession). Ordinal logistic regression was applied to test for differences in the intervention effects in DNs and GPs; a significant interaction indicates an intervention effect. The intervention effect was tested by including the interaction between profession and time. Ordinal logistic regression was also used to test the total intervention effect. A significant interaction indicates an intervention effect. Cronbach's alpha<sup>16</sup> was estimated to test internal consistency in each area of the questionnaire and was regarded as acceptable if it was  $> 0.70$  in each area,<sup>17</sup> presented in Table 2.

To avoid problems with mass significance, we calculated the false discovery rate (FDR).<sup>18</sup> The FDR is the number of rejected  $H_0$  when  $H_0$  is true, divided by the total number of rejected  $H_0$ . It is less conservative than the Bonferroni correction. Because we conducted 54 tests (shown in Table 2), significance was set at  $p \leq 0.025$  (FDR). The analyses were conducted with Stata Statistical Software: Release 14, StataCorp 2015.

### Power

Power was estimated with means and standard deviations from a previous study by our research group<sup>19</sup> that used a questionnaire with a format and questions similar to those in this study. The primary outcome of the study for which the comparison questionnaire was designed was treatment of

undernutrition among older people in basic home care in the Stockholm County Council area. The calculation showed that to detect a difference of 0.48 (standard deviation = 0.87) in means at 80% power ( $\alpha = 0.05$ ), the IG and the CG should each consist of at least 30 individuals.

### Results

With regard to baseline data, there were no statistical differences with few exceptions: DNs in the CG had worked more years caring for patients who received basic home care than GPs in the CG (data not shown). Moreover, more DNs in the IG than the CG worked solely with home care at baseline and follow-up, more DNs in the CG than the IG had taken part in a course about prescribing oral nutritional supplements at baseline, and more DNs in the CG than the IG had received other education in nutrition at follow-up (data not shown).

The internal consistency in each area of the questionnaire was high (Cronbach's  $\alpha = 0.80-0.95$ ) and the total intervention effect was significant in all three areas,  $p = 0.000-0.004$ . There was no significant interaction between profession and time, which means that the total intervention effect did not differ between DNs and GPs (Table 2, last column).

With regard to the main focus of this study, effects by profession, the intervention effects were significant and similar for both professions in all areas except area 3, level of knowledge. In this area, the effects were significant for GPs but not DNs. A more detailed analysis of area 3 at the statement level (data not shown) showed significant increases in GPs' level of knowledge about 4 of the 14 aspects of nutritional care, including undernutrition, calories and nutrients (statements 21, 22, 24 and 25), and DNs' about undernutrition (statement 21). For a list of the statements, see Table 1.

The only significant difference between DNs and GPs at either baseline or follow-up was that on both occasions in the CG, DNs had greater perceived familiarity with information important to nutritional care in a palliative phase (Table 2). Differences by profession in the IG and CG were found at baseline and/or follow-up in perceived familiarity (area 1) and perceived collaboration (area 2) but not in level of knowledge (area 3; see Table 2).

**Table 2.** Differences between DNs and GPs in mean rank of perceived familiarity (area 1), collaboration (area 2) and level of knowledge (area 3) are shown by group (IG or CG). Differences in these areas between the IG and CG are also shown by profession. Intervention effects are shown by profession. Additionally, intervention effects (interactions) are shown for professionals × time and for group × time.

Areas	Intervention group (n=87; DN=48/GP=39)			Control group (n=53; DN=36/GP=17)			Difference IG-CG By profession		Intervention effects By profession		Intervention effects (interaction)	
	Baseline	Follow-up	Difference	Baseline	Follow-up	Difference	Baseline	Follow-up	Baseline	Follow-up	Professionals	Total
	Mean rank	Mean rank	p value <sup>a</sup>	Mean rank	Mean rank	p value <sup>a</sup>	p value <sup>b</sup>	p value <sup>b</sup>	p value <sup>c</sup>	p value <sup>d</sup>	p value <sup>e</sup>	p value <sup>f</sup>
<b>Area 1<sup>g</sup>: perceived familiarity</b>											0.36	0.000
DN	2.3	3.3	0.0000	2.7	2.8	0.15	0.011	0.0004	0.0000	0.000		
GP	2.2	3.3	0.0000	2.2	2.3	0.08	0.78	0.0000	0.0000	0.000		
Difference (DN-GP)	0.75	0.92		0.015	0.016							
p value <sup>b</sup>												
<b>Area 2<sup>h</sup>: perceived collaboration</b>											0.79	0.000
DN	2.0	2.7	0.0000	2.5	2.5	0.36	0.005	0.26	0.0001	0.000		
GP	2.3	2.9	0.0000	2.5	2.3	0.17	0.34	0.013	0.0002	0.000		
Difference (DN-GP)	0.19	0.17	–	0.91	0.38	–						
p value <sup>b</sup>												
<b>Area 3<sup>i</sup>: level of knowledge</b>											0.13	0.0037
DN	3.1	3.4	0.0003	3.2	3.3	0.036	0.71	0.058	0.12	0.17		
GP	3.0	3.4	0.0000	3.0	3.1	0.049	0.58	0.034	0.012	0.021		
Difference (DN-GP)	0.08	0.44	–	0.028	0.11	–						
p value <sup>b</sup>												

DN: district nurse; GP: general practitioner; IG: intervention group; CG: control group.

The higher the score, the better the perceived familiarity, collaboration or level of knowledge (4 = “fully agree,” 3 = “mainly agree,” 2 = “partly agree” and 1 = “do not agree at all”).

The p values <0.025 are significant and adjusted for false discovery rate.

<sup>a</sup>Wilcoxon signed-rank test.

<sup>b</sup>Wilcoxon rank-sum test.

<sup>c</sup>Wilcoxon rank-sum test (IG vs CG) by DN and GP.

<sup>d</sup>Ordinal logistic regression (IG vs CG) by DN and GP.

<sup>e</sup>Ordinal logistic regression including the interaction professionals (DNs + GPs) × (multiplied by) intervention to test difference in intervention effect.

<sup>f</sup>Ordinal logistic regression to test the total intervention effect (IG vs CG).

<sup>g</sup>Area 1: 14 statements assessing perceived familiarity with information important to nutritional care in a palliative phase (Cronbach's alpha 0.95).

<sup>h</sup>Area 2: 4 statements assessing perceived collaboration with other caregivers with regard to patients' nutritional problems and needs (Cronbach's alpha 0.90).

<sup>i</sup>Area 3: 14 statements assessing level of knowledge about important aspects of nutritional care (Cronbach's alpha 0.80).

Analyses of changes in the IG and CG from baseline to follow-up showed improvements in the IG in all three areas (Table 2, first column:  $p=0.0000$ – $p=0.0003$ ) but no changes in the CG (Table 2, second column:  $p=0.036$ – $p=0.36$ ).

## Discussion

This study evaluated the effectiveness of an interprofessional educational intervention separately for DNs and GPs. The analyses evaluated three areas of nutritional care for patients in a palliative phase living at home: perceived familiarity, perceived collaboration and level of knowledge. The total intervention effects were significant in all three areas, and there was no difference between DNs and GPs in the total

intervention effect. However, separate analyses by profession revealed a more nuanced picture. In two of the three areas, the intervention was highly successful for both DNs and GPs, but in the third, level of knowledge, the effect was only statistically significant for GPs. This more nuanced picture shows the importance of examining effectiveness by profession, which was the aim of this study.

The first area in which the intervention was successful for both DNs and GPs was perceived familiarity with nutritional care in a palliative phase. This is important because such familiarity enables early identification of patients' need for palliative care, a need that now frequently goes unrecognized.<sup>20</sup> Communicating with patients and those close to them about critical transition points improves the



conditions for providing the care that patients need in each phase of palliative care.<sup>1,3</sup> Increased familiarity with nutritional care for patients in a palliative phase may also improve DNs<sup>21</sup> and GPs<sup>22</sup> confidence in their work.

The second area in which the intervention was successful for both DNs and GPs was perceived collaboration with other caregivers with regard to patients' nutritional problems and needs. Collaboration is of the utmost importance to support the well-being of patients in a palliative phase living at home,<sup>1,10,23</sup> and previous studies have shown that collaboration among primary health care professionals needs improvement.<sup>24,25</sup> Thus, the intervention creates better conditions for collaboration in home care. Furthermore, opportunities to learn together as a team increase collaboration and collective capability.<sup>26</sup> Such opportunities may also strengthen DNs and GPs' awareness of their responsibilities for patients in need of palliative care and their responsibilities to those close to the patient.

In the third area, level of knowledge about important aspects of nutritional care, the intervention was successful for GPs, whereas DNs did not show statistical improvements. Interestingly, GPs' level of knowledge about clinically important aspects of nutritional care, such as recognizing nutritional problems in the early palliative phase, improved significantly. Topics in which they improved included the knowledge that offering a high-energy and nutrient-rich diet in the late palliative phase is unhelpful and that fatty, protein-rich foods, may cause patients to feel nauseated instead of increasing their well-being.<sup>27,28</sup>

There are several possible explanations for the intervention's lower effectiveness with regard to level of knowledge in DNs than GPs. Evidence-based information was provided via the web-based program, and maybe the DNs did not use the web-based program as intended. Furthermore, the DNs and GPs' responsibilities were not directly stated in the web-based program but rather presented in the form of examples. Possibly, a more direct explanation of responsibilities is needed. Such an explanation can easily be added to the program. Additionally, some DNs may have understood what their professional responsibilities are but did not agree that these responsibilities should be theirs and answered accordingly.

### *Methodological considerations*

No suitable validated questionnaire was available for the study. Thus, we developed a study-specific questionnaire. The questionnaire had several strengths. First, it was developed by the members of the multiprofessional research group who developed the intervention. These professionals had expertise relevant to the task. Second, the questionnaire was pilot tested.<sup>12</sup> Third, Cronbach's alpha showed that the internal consistency in each area of the study-specific questionnaire was good to excellent. Additionally, only professionals who answered the questionnaire at both baseline and follow-up

were included in the analyses. All participants responded to all statements; thus, there were no missing data.

This study also had some weaknesses. Only 17 GPs in the CG completed the questionnaire at follow-up, and we can only speculate about why, as their reasons were not recorded. Furthermore, participants were not randomly assigned to the IG and CG. However, the only significant difference between the two groups at baseline was that DNs in the CG had greater perceived familiarity with information important to nutritional care in a palliative phase than DNs in the IG, which hypothetically would decrease, not increase, the true effects. One reason might be that the DNs in the CG were recruited on a later occasion than the DNs in the IG and had more time to gain knowledge about the subject (e.g. via a course given in Stockholm County about prescribing oral nutritional supplements).

Since the study was performed at 10 primary health care centers located in varying socio-demographic and geographic areas in Stockholm County, results might be applicable to other organizations with similar conditions.

## **Conclusion**

The interprofessional intervention about nutritional care for patients in a palliative phase living at home was successful for both DNs and GPs in two areas: perceived familiarity and perceived collaboration. In a third area, level of knowledge, it was only successful for GPs. The intervention seems promising, as it may create better prerequisites for teamwork and caring for patients living at home. However, it needs to be adjusted to optimize DNs' level of knowledge. If the model used to develop this intervention (ConPrim) is used for interventions in other subjects, those interventions should also be evaluated by profession to ensure that interprofessional education works well for the members of all participating professions.

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## **Ethical approval**

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## Informed consent

Prior to the study, the professionals provided their verbal consent to participate. They also provided written consent at the case seminar.

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