

# Oncology nurses' experiences with the implementation and trial of video communication in the follow-up of cancer patients in primary care: a pilot study in Norway

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## Research article

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# Abstract

**Background:** Cancer survival has increased significantly over the last decade. An increasing number of patients require long-term health care. There is a need for new models of effective follow-up in primary cancer care.

**Objective:** The aim was to provide knowledge about oncology nurses' (ONs') experiences and perceptions of the use of video communication (VC) to follow up with patients living at home.

**Methods:** This was a descriptive, qualitative study of ONs' experiences with implementing and trying VC. Data were gathered after a 3-month trial. Individual interviews were content analyzed.

**Results:** Four female ONs participated. The study provides knowledge about the introduction of VC and its influences on follow-up care.

**Conclusions:** With the provision of technical support and training during the introduction of VC and with the protection of patient safety, VC seems to be an effective addition to the traditional follow-up of cancer patients living at home. The findings indicate that VC can be used in primary cancer care. Our findings have practical consequences for nursing leaders considering VC in patient follow-up. Additional research is necessary.

## Background

Living with cancer is often very demanding. Patients with feelings of insecurity, fear and helplessness may require a great deal of information and psychosocial support from health professionals. Research has shown that patients with various forms of cancer often have unmet needs related to such support [1-5].

Internet-based video communication (VC) as a home-based telehealth service can provide patients and their primary oncology nurses (ONs) with the opportunity for contact using sound and video over the Internet and can be a supplement to traditional health service. A number of studies indicate patients' needs for close follow-up [2], and the use of VC may contribute to close follow-up [6, 7].

In Norway, which is characterized by a dispersed population [8], harsh climate, and remote districts, there were 33 564 new cases of cancer recorded in 2017, and by the end of 2017, there were more than 273 740 individuals who had been previously diagnosed with cancer and survived [9]. Recently, cancer survival has increased, patients are living longer with cancer diagnoses, and an increasing number of patients require longer periods of

long-term health care [10-12]. The Norwegian specialist health services provide cancer treatment, while the municipal health service is responsible for the follow-up of patients living at home [13]. In the last few decades, follow-up of cancer patients in Norwegian municipalities has partly been assigned to ONs with special education in the cancer care field [14]. Patients may visit ONs or ONs may conduct home visits in the follow-up of patients and families. Long-distance travel can be arduous for patients. Because of the dispersed settlement pattern, driving distances are long for ONs covering large geographical areas in Norwegian rural areas [15]. Driving also causes ecological stress on the natural environment.

The use of VC can give patients access to health care personnel without staff or patients having to spend time and effort traveling. Compared to verbal telephone follow-up, VC can also generate richer, more in-depth conversation by allowing the use of body language, and research has shown that patients in community care have found that VC counseling and guidance is similar to face-to-face meetings [7, 16-21].

Cancer patients living at home may be in need of follow-up both during and after treatment, and for some survivors, follow-up may last for several years. Thus, there seems to be a need for an increase in follow-up capacity [22-24]. A desirable change could be strengthening online services in communication between patients and ONs while simultaneously ensuring the proper security of patient information [25-27]. Patients and families may benefit from easy access to support for their physical, emotional, and social needs [24]. The use of VC is recommended to be complementary to traditional care [28]. Research has shown that cancer patients who have access to online support in interactions with health care professionals cope better with their illnesses and everyday lives [21, 29-31].

Despite the increasing number of studies on the implementation, training and use of telehealth using VC as a tool in primary care, few studies have been conducted on the implementation process for home-based cancer care [6, 7, 20, 32]. Therefore, there is a need for knowledge about the implementation and influence of VC in follow-up care.

This study conducted in 3 Norwegian rural municipalities focused on ONs' experiences of implementing VC in care for patients with cancer living at home.

The aim of this study was to describe ONs' experiences with the implementation process. To do so, we developed the following research questions:

RQ 1: How do ONs experience the introduction of VC as a tool in follow-up care for patients with cancer living at home?

RQ 2: What are ONs' experiences of the influence of VC use in follow-up care?

## **Methods**

We conducted a descriptive qualitative pilot study with traditional content analyses [33-37] of interviews with ONs who had been introduced to VC, had been trained to use it, and had used it in the follow-up of patients with cancer living at home. A thematic guide was developed. Open questions and follow-up questions were asked about key information regarding ONs' experiences with implementing and trying VC. The interviews were conducted in the ONs' offices in the municipalities, and they were audio recorded and transcribed. After transcribing the interviews, the researcher deleted the audio recordings. The study was descriptive, and the aim of the analysis of the transcribed text was to illuminate the themes and categories in the data material [35, 38].

### ***Sample and sampling***

This pilot study was conducted in three rural municipalities in Norway that together have approximately 7500 inhabitants and cover an area of 3842.1 km<sup>2</sup>. The three municipalities were chosen to gain knowledge about cancer nursing in rural areas. The participants were four ONs employed in the selected municipalities. The sample was informative and provided rich information [39]. The study of the small number of individuals involved the elicitation of extensive details about each individual ON's experiences. The number of participants was within the range recommended in phenomenological research [38]. The heads of the health care administration in each municipality informed the ONs about the intervention and provided written information from the researchers about their voluntary participation in the research, confidentiality and anonymity. They asked the ONs for their voluntary participation in the study. All four ONs

who were invited wanted to participate. The ONs signed a consent form prior to the interviews.

### ***Intervention***

VC with sound and video was used between the ON and patient over a 3-month period. Patients and ONs each received a tablet with Skype installed [40]. An Internet technology (IT) technician affiliated with the project provided the ONs with oral instructions about the technical use of tablets and Skype. Then, the ONs provided the instructions to their patients. The IT technician assisted in ensuring that the VC functioned optimally. On the tablets, the ONs and patients could observe whether the other person was available for contact or was disconnected [41, 42]. The ONs were free to organize their use of VC, for example, by creating a schedule or having flexible availability based on the ONs' and patients' needs. Patients were informed that the ONs either were available for calls or would call back during work hours from 7:00 a.m. to 3:00 p.m., Monday through Friday. During the project period, each ON used VC to communicate with two patients. The patients had varying cancer diagnoses, and their prognoses varied from possible recovery to life-long or recurrent life-threatening cancer.

### ***Research ethics***

The participants' informed voluntary consent and anonymity were ensured. The project was presented for The Regional Committee for Medical and Health Research Ethics in Central Norway (ref. no. 2016/968) and applied for approval from the Norwegian Centre for Research Data which assessed and accepted the study (ref. no. 49571).

### ***Analysis***

The data were analyzed using traditional content analysis [36, 37], which included repeated examinations of the text. First, the authors read the transcribed text from the interviews several times to obtain a sense of the content. Two researchers began inductively coding the material to reach a common understanding of the meaning units,

condensed meaning, and code designations. At the end of the decontextualization during this the open coding process [33], the text was reread, the coding list was reviewed, and unmarked text was reconsidered in relation the research questions. Then, all three researchers analyzed the coded material for its relevance to the theme and categories. This process led to descriptions of the theme, categories and subcategories. All researchers discussed the results in light of the research questions, theory, and previous research.

## Results

Four female ONs between 32 and 65 years old (mean: 46 years) participated in this pilot study.

Each of the nurses asked two patients to voluntarily participate in the use of VC.

The analysis revealed two categories under the theme “Experience of VC implementation in follow-up cancer care”: 1) tool introduction and 2) influences of VC on follow-up care. Table 1 provides an overview of the categories and subcategories of the theme.

**Table 1.** Experience of VC implementation in follow-up cancer care

Category	Subcategory
Tool introduction	Training in the use of VC
	VC introduction and patient safety
Influences of VC on conversations in follow-up care	Influences on interactions and focus
	VC avoidance in poor prognosis situations

### *Tool introduction*

Two subcategories were identified in this category: 1) training in the use of VC and 2) VC introduction and patient safety

### *Training in the use of VC*

The ONs had varied experiences of Internet use and varying views on VC as a natural communication tool; thus, their needs for training varied. Three of the four nurses were unfamiliar with the use of VC on tablet computers. One of these three nurses was trained

through practicing VC with an experienced ON, and as a result, she understood the technology quickly during training. Another inexperienced nurse received training from a patient who had experience with the Internet and took the initiative to communicate with the nurse with VC. The third inexperienced ON received two trainings from the IT employee before she began using VC with patients. For this ON, VC felt unnatural:

*“ . . . it is a little unusual; so, I think it’s much easier for me to pick up the phone and call—because I’m used to that . . . I think that young people are much more accustomed to communicating online; it becomes more natural for them” (ON 4).*

As the findings show, three nurses were novices in the use of VC when they provided training to patients, who also had various motivations and experiences with Internet usage. Regarding patient education, the one experienced nurse provided the patients with instruction once and then used the phone when necessary to provide further instruction on how to connect to VC on the tablet. This training was successful. This nurse and two other nurses began training their patients soon after Internet access was established, while one nurse waited several weeks before she began training her patients. This nurse felt somewhat unsure about the use of the technology. When she began educating the patient, she repeatedly received instructions from the IT employee. She reported that she spent a considerable amount of time teaching one patient how to use VC, while the other patient was familiar with VC and just needed information about the program being used in the project.

Three of the six patients had used VC prior to this study. One patient, who had never used a computer or accessed the Internet, told the nurse that he grew very fond of the tablet. Another patient with no Internet experience avoided using the tablet computer even though the nurse had tried to educate the patient twice. The ON felt that the patient was not motivated to use the tablet and avoided the use of VC. The other patients found it easy to use VC on the tablet after some education.

### *VC introduction and patient safety*

The VC tool had to be delivered to the patients, and thus, the first meeting was always an in-person meeting. During this meeting, the nurse guided the patient in how to use Skype

and the tablet. After the first in-person meeting, the ONs and patients communicated by VC, phone, and in person. VC was available both at fixed times and as needed during the nurses' working hours. If the nurse was busy when the patient made a call, the nurse returned the call as soon as possible that day.

One benefit of VC was that the patients did not need to leave home:

*"The patients can get ahold of us when they sit in a comfortable chair at home, without having to come here" (ON 3).*

VC was used flexibly, was adapted to the patients' situations, and was used as a complement to home visits:

*"VC is suitable as an addition to home visits" (ON 1).*

The nurses felt that the use of VC should be flexible and based on the patient's condition. For example, one nurse used VC with two patients whose illnesses were in a "calm phase." One had reduced the amount of follow-up but wanted more frequent contact:

*"She is in a stable situation now, and therefore, I do not have a meeting with her every week" (ON 2).*

By using VC, this nurse could meet the patient's desire for contact without spending time traveling to in-person meetings with the patient. However, the nurse's other patient had become more ill, and the ON felt that the patient would have difficulties if there were any problems with the Internet. The ON therefore followed up with this patient with more frequent VC and planned to take quick action if network problems arose.

Using VC as a communication tool also provided more flexibility in the ONs' daily work. The ONs could call their patients from different places, such as a home office or while traveling to visit other patients. They also saved travel time by using VC:

*"I think it's very good; I save a lot of time due to less traveling" (ON 1).*

Phones are currently smaller than pads and easier to carry, for example, while out shopping in stores, but new developments may lead to the use of new smartphones for VC.

*"It is easier to bring a phone outside the house than to take your tablet" (ON 2).*

Patient safety is a challenge when using VC technology in nursing. This study revealed that connection problems occurred during patient-nurse communications. Not all

Internet connections were stable in some of the remote districts, and therefore, one nurse conducted a home visit:

*“We were in a Skype conversation, but we were cut off, so then I thought I had to go to her to see what was wrong . . . and then we fixed the error . . . ”* (ON 3).

In some cases, the ON may make considerable errors based on a patient’s lack of contact with the ON:

*“I have the impression that she (the patient) has felt safe at home with the service she has received. She has access to both me and the other cancer nurse, and she has not made contact with her either. So, then, I have to assume that it is positive and that she is doing well”* (ON 2).

The ON may assume that the patient does not need help based on a lack of communication. Therefore, in using technological aids for communication, the nurse should ensure that silence is a result of the patient doing well and not a poor Internet connection or other issues. One nurse also had an experience with a patient being very ill but not contacting her on Skype:

*“Usually, they call, but one patient doesn’t when she is terribly ill; I have to follow up here a little bit extra”* (ON 1).

### ***Influences of VC on conversations in follow-up care***

This category includes two subcategories: 1) influences on interactions and focus and 2) VC avoidance in poor prognosis situations.

#### ***Influences on interactions and focus***

The ONs reported that being able to see the patient through VC was a good way to promote a relationship with the patient. Using VC, the nurses found that they focused on the patient more than when communicating by phone. The ONs focused on the patient-nurse relationship, and their alertness was sharpened when using VC as a tool, as ON 1 explained:

*“It becomes more personal (than on the phone) . . . You get eye contact if both are ‘on’ (have the video function turned on). You feel a little more that there is someone*

*you are talking to directly more than if you just talk right out into the air than if you talk into the (phone at you) ear” (ON 2).*

Some of the nurses experienced that when using the phone, they sometimes lost their ability to concentrate on the conversation. However, using VC sharpened the nurses’ focus.

*“I find that I have a little more focus on the patient when I see him. When you sit and talk on the phone, one can quickly lose concentration a little faster. . . Yes, because the other one can see you. So, there is something about being a little more focused on the person you are talking to” (ON 1).*

The ONs commented that they had to think more carefully about their own nonverbal responses, as one nurse explained:

*“They read you when you are visible on the screen” (ON 1).*

In addition, by using VC as opposed to a phone call, the nurses could observe patients’ physical and psychological conditions. For example, one patient used the VC video function to show the nurse his surgical stitches, which had become very tight. The nurse was then able to take appropriate action. The nurses also found VC to be a good tool when they were assessing patients’ needs for psychosocial follow-up. One ON explained this use of VC as follows:

*“I look for facial expressions, wrinkles, if they have pain, are afraid or if they are relaxed - it is good to see the patient and see his face when he calls me” (ON 4).*

Sometimes, the nurses felt that patients did not want to complain, but with VC, they could observe when patients looked tired, worried or in pain. Patient could also see the nurses, which facilitated patients’ understanding of the nurses’ messages, especially when the patient had hearing loss and were able to interpret the nurses’ messages nonverbally.

Furthermore, patient-nurse meetings with the use of VC became more direct and goal oriented than in-person meetings. The ONs reported that the consultations via VC were somewhat shorter than in-person meetings because the consultations focused directly on the patient’s needs, without much small talk. However, they also noted that with VC, there was little time for reflection during conversations. Due to the focused communication when they used VC, the nurses felt that they were prone to forget to discuss certain topics. One ON explained this tendency as follows:

*“ . . . I had a conversation . . . and then I felt I should not have finished so soon because afterwards I came across something I really should have asked, but then I forgot” (ON 4).*

### ***VC avoidance in poor prognosis situations***

*The ONs expressed skepticism about the use of VC in situations when a patient could be in crisis because of new information about a poor prognosis. They indicated a preference for being physically present when they were talking with patients about life-threatening matters. Thus, home visits were important for ONs in situations when they planned to have deep conversations about serious topics, such as dying. They thought that it would be inappropriate to conduct conversations on such topics on VC, as one ON expressed:*

*“ . . . I think that if one is to talk about things that really have an impact, I think it’s much better to sit like we do now than to sit on that screen” (ON 2).*

Therefore, VC could not replace home visits in such situations. Nevertheless, one ON reported having a conversation about a serious topic with a patient via VC. While the patient was on vacation, he received a serious message from his physician. The patient wanted to talk to the ON and called her on the tablet. They had a conversation in which the nurse found VC suitable to provide care despite the seriousness of the circumstances.

## **Discussion**

Overall, the ONs found that VC was a suitable tool for follow-up care for patients living at home. The implementation of VC included the provision of a relevant introduction to the tool and compliance with security requirements for patient safety [25-27].

### ***Tool introduction***

This study showed that nurses had various levels of knowledge and mastery of VC as a communication tool in nursing, which indicates that when using VC in nursing practice, nurses’ training should be individualized. Additionally, individualized training in VC use

is also important for patients. Our findings explored ONs' attitudes toward the new technology that present obstacles that need to overcome. Gund et al. [42] found that some nurses had to be motivated to accept and use information and communication technology (ICT) in nursing. Other research has shown that the training and motivation of nursing staff in the use of ICT is a prerequisite for VC use in nursing [32, 43].

We found that the use of VC provided nurses with more flexibility in their daily work because they could call and have face-to-face VC meetings with their patients from different places, even if they were out of the office and far from where the patients lived. Indeed, even when a patient was on vacation, the patient and nurse could reach each other and communicate using sound and video. Such flexibility represents some of the benefits of using VC. Lindberg et al. [6] found that people living with chronic illnesses and their health care professionals had positive reactions toward the use of ICT applications. Telehealth-based services were found to be comparable to services delivered in person.

VC can make nurses more accessible to patients and make nurses' workdays more flexible. Using VC with patients was also noted to reduce response times when patients needed care. The use of VC in cancer care also seems to be beneficial because it decreases travel time, and patients can stay at home while accessing health services. Increased use of VC, therefore, may become useful when meeting future challenges with increased demands for caring services [10, 12, 22, 30, 44].

With VC, patients and nurses can see each other when talking; the nonverbal dimension of communication thus becomes visualized, which is an important part of creating and maintaining the relational dimension of communication [45, 46].

Not all nurses felt comfortable using the VC equipment, which may have been because they had little knowledge about its use, did not prioritize taking the time to learn how to use VC, or refused to use the video function that was available on the VC equipment. Research has shown that some health personnel have an aversion toward using VC in care due to technical problems [20, 43]. A prerequisite for VC to be a good nursing aid is that it works with little technical difficulty and is used frequently so that both patients and nurses become accustomed to the new aid [30, 43]. Despite the fact that nurses may somewhat avoid the use of the Internet as a communication channel, recent research has shown that

the use of Internet communication among cancer patients and their providers is increasing [47].

Nurses must be confident in their use of VC to be able to educate their patients to ensure that VC becomes a good tool for patients. A nurse's lack of confidence in using VC can be communicated nonverbally to a patient; when the patient senses a lack of confidence from the nurse, he or she becomes uncertain, both about what will be learned through the training and how he or she should use VC with the nurse. Without confidence in their use of VC, nurses' motivation to use this tool will decrease, and thus nurses may avoid using VC on hectic days. If nurses avoid using VC, they may travel to patients even if the situation does not indicate the need for an in-person visit, which is an inefficient use of nurses' time. Additionally, nurses who avoid using VC may choose to use the phone, which will not provide them with the opportunity to observe and acquire knowledge of patients' conditions in the same way that VC does [20, 21, 31]. Of course, it is likely that the use of new cellphones may make tablets obsolete, which may also alter nurses' and patients' familiarity with using video to communicate.

In this study, nurses became more focused on their patients when using VC than when using the phone. The ONs knew that patients could see them and observe whether their attention was directed toward them. When they were on the phone, nurses could perform other tasks, such as checking email, during conversations, which made them not as focused on the patients as they should be. In contrast, VC sharpened the nurses' concentration on the patient-nurse relationship. This finding is consistent with other research that has shown that VC demands deeper engagement and presence than the phone [48]. Thus, the use of VC seems to make communication more effective than over the phone. Phones are currently smaller than tablets and easier to carry. However, the continued development of smartphones may influence future use of VC.

For many of the ONs, VC was a new and somewhat unfamiliar tool. They needed technical support and training to be able to train the patients and actively use VC in cancer care. Patient safety was also an important consideration.

Nurses should be aware that when patients are ill, they may not make the necessary VC contact with their nurses. If a nurse does not hear from a patient, the nurse should

check on the patient. This same guideline also applies if the technology fails. Additionally, nurses must ensure that patients have the opportunity to contact health services when needed. Other research has confirmed that using VC in cancer care requires a great deal of attention to patient safety [25-27].

Whether using smartphones or tablets, patient safety is important. Patient safety is important in terms of the security of communication channels and the manner and location in which nurses communicate with their patients.

Patient safety also includes confidentiality [26]. When using VC in cancer care for patients living at home, ONs' VC with patients should take place in an undisturbed area where patient information cannot be intercepted by anyone. A person-centered ethical approach should be used to protect patients' integrity and dignity [49, 50].

### ***Influences of VC on follow-up care***

VC can promote clearer communication from both parties. We found that patient-nurse conversations became more directed and focused on specific problem areas with the use of VC, which may save consultation time. Nilsson et al. [30] also found communication to be more direct when with the use of ICT than other forms of communication. However, important moments that may arise through small talk may be lost, and coreflection may be eliminated through VC [44]. These consequences may result in one or both parties forgetting to raise topics they had wanted to address in a patient-nurse conversation.

In our study, the nurses discovered that they could use the video function to identify nonverbal expressions of pain and worry. The nurses could use that information to meet the patients' needs for information and psychosocial support through closer follow-up [1-5].

The literature has reported contradictory findings on the ability to interpret nonverbal communication using VC; some studies have shown a loss in the ability to recognize subtleties in communication, such as facial details and facial expressions that are difficult to discern, especially when more than two people are communicating [44]. However, our findings highlight the benefits of the nurse and patient being able to see each other, especially when the patient has hearing loss and can interpret the nurses' messages nonverbally. Other research has identified some difficulty in observing physical details,

such as the color of a patient's skin, when a nurse is observing and considering the patient's condition [48]. Studies have indicated that VC cannot replace physical presence in nursing, but it can be a complementary nursing tool in primary cancer care [6, 30, 42].

Consistent with our findings, research has shown that VC has many benefits, including that patients are able to stay home and communicate with health personnel instead of having to travel long distances to a consultation [6, 31, 44]. In this study, the nurses estimated VC to be cost-effective for primary health care. Costs for the equipment and operation of VC are likely small compared with the benefits and savings it may provide, including decreased travel costs, less strenuous journeys for patients, and lower environmental impacts [43, 51].

Nurse leaders in primary care can play a significant role in advancing and improving the efficiency of care for cancer patients by integrating VC into traditional care. By using VC in a creative approach to nursing with critical thinking and clinical reasoning, VC can be a useful tool in follow-up care processes [52, 53]. VC seems to work well over long distances and to benefit patients in rural areas [15]. In addition, several studies have found that using VC interventions with patients and their providers can reduce the use of hospital services and improve some contributors to quality of life (QoL) [21, 51]. Nurse-led follow-up VC appears feasible; however, new initiatives should incorporate evaluations of patient outcomes [22].

### **Strengths and limitations**

This was a small 3-month pilot study with few participants. However, all ONs in the three rural municipalities participated, which was a strength. To provide sustainable results, major studies of larger trials are needed in this field.

To achieve trustworthiness and minimize any bias from researcher influence, three researchers from different fields within nursing research analyzed the material and collaborated on the research process.

## **Conclusion**

VC seems to be an effective addition to the traditional follow-up of cancer patients living at home. There seems to be a need of provision for technical support and training during the introduction of VC. Safeguarding of patient safety is required. The findings indicate that VC can be used in primary cancer care. Our findings have practical consequences for nursing leaders considering VC in patient follow-up. Additional research is necessary.

## **Declarations**

### **Abbreviations**

VC: Videoconferencing

ON: Oncology nurse

ICT: information and communication technology

### ***Ethics approval and consent to participate***

Informed voluntary consent for participation and anonymization of participants were ensured. The project was presented for The Regional Committee for Medical and Health Research Ethics in Central Norway (ref. no. 2016/968) and applied for approval from the Norwegian Centre for Research Data which assessed and accepted the study (ref. no. 49571).

### ***Consent for publication***

Not applicable

### ***Availability of data and materials***

The datasets used and analyzed in this study are available from the corresponding author upon reasonable request.

### ***Competing interests***

The authors have no funding or conflicts of interest to disclose.

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## ***Authors' contributions***

LØR contributed to all phases of the project.

HVB contributed to the study design, development, analysis and reporting.

BN contributed to the study design, development, data gathering, analysis and reporting.

All authors have read and approved the final version of this manuscript.

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