

Telehospice: A Systematic Review

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Submitted in Partial Fulfillment of the Requirements
for the Northern Arizona University School of Nursing
Doctor of Nursing Practice Program

APRIL 25, 2014

Abstract

Using telemedicine technology in the delivery of hospice care has been described as telehospice. Despite the fact that telehospice technology has been in use over the past 16 years, there is limited reporting concerning the current state of telehospice practice. A review of the telehospice literature was conducted in order to identify, appraise, and report on the use of telehospice in patient care. Questions addressed in the review are, what is the current state of telehospice practice, who is using telehospice technology, and how is it being utilized in patient care?

KEY WORDS

telehospice; telemedicine; hospice; end of life; systematic review

Telehospice: A Systematic Review

Background and Significance for Health Care

The National Hospice and Palliative Care Organization (NHPCO, 2012) has estimated that 1.65 million patients received hospice services in 2011. In addition, the NHPCO estimates that 44.6% of all deaths in the United States (U.S.) occurred in hospice care in 2011. There are 60 million Americans currently caring for a fragile child or elder at home (Byock, 2012). A demographic tidal wave of aging “Baby Boomers” called the “silver tsunami” and chronically ill patients will require additional hospice care services for many years to come (Byock, 2012).

In the adult population in the U.S., degenerative diseases have replaced communicable diseases as leading causes of death (NHPCO, 2012). There are increasing numbers of older adults living with multiple chronic illnesses, (NHPCO, 2012) and this needs to be considered in the context of patients’ quality of life and their goals for care. The health care system in the U.S. provides advanced medical technologies that attempt to cure illness and prolong life. However, these curative technological measures may sacrifice a peaceful quality of life and may not meet the patient’s goals for care at their end of life.

In 2011, 66.4% of hospice patients received care in their home (NHPCO, 2012). Hospice care in the U. S. is delivered largely in a home setting, similar to home health care. This means that hospice patients may be distributed throughout a large geographic area. The challenges and cost considerations involved in delivering home hospice care over a large geographic area make it possible for telemedicine technology to be considered as a possible solution (Parker Oliver et al., 2012).

One definition of telemedicine is the use of communication technology to improve health care outcomes by increasing access to health care and in providing health information (World

Health Organization, 2010). Telemedicine uses various information technologies to overcome geographic barriers and to increase access to health care particularly in rural and underserved communities. Geographic barriers and cost considerations make telemedicine technology an attractive option to remedy challenges in providing home hospice care.

The term telehospice refers to the use of telemedicine technology in providing hospice care (Whitten, Doolittle, & Hellmich, 2001). Parker Oliver et al. (2012) affirmed the concept of telehospice as the use of telemedicine technology to overcome geographic distance obstacles in the delivery of hospice care. Kidd, Cayless, Johnston, and Wengstrom, (2010), evolved the notion of telehospice as providing a means of supporting and monitoring patients in the home setting, while reducing demand for health care services.

Review Questions

Questions for this review are: What is the current state of telehospice practice? Who is using telehospice technology? And, how is it being utilized in patient care?

Methods: Data Collection and Analysis

Eligibility Criteria

The review was exempt from Northern Arizona University (NAU) Institutional Review Board approval. Inclusion criteria for the review were articles concerning hospice care providers, patients and family caregivers involved with telehospice. Telehospice interventions for patient care were included in the review. Telehospice interventions examples are telephone advice lines, hospice team meeting video reviews, nurses using personal digital assistants (PDAs) for documenting hospice care, video conferencing with hospice caregivers and patients, and the use of webcasting for hospice providers and patients. Studies that considered outcomes such as patient quality of life, patients' satisfaction of care, quality of care, professional practice,

cost, and telemedicine technology resource use were included in the review.

Editorial reviews and commentaries concerning telehospice were excluded for review. Articles not published in English and not published in peer-reviewed journals were excluded for review. Literature that was not full text retrievable was excluded for review.

Data Sources and Searches

An NAU Cline librarian was consulted in order to develop search strategies. A variety of search strings were designed to identify telehospice use and applications. The terms telehospice, hospice, telemedicine, patient care, palliative care, telenursing, telecommunication, telehealth, ehealth and mhealth were used in MeSH formatting to capture potential relevant literature. The following databases were searched in a systematic manner using MeSH protocol: CINAHL Plus, Medline, Academic Search Complete, PsychINFO, PsychARTICLES, IEEE Xplore, Google Scholar for Engineering, Cochrane Reviews, Sage Journals, Mosby's Nursing Consult, Science Direct, and the Mendeley Reference System. A total of 78 searches were run using various search strings with MeSH typology in the databases. Data limiters for the searches were peer reviewed articles in English with the yearly range from 1988 to 2013. The decision to track back 25 years was an attempt to identify early years of telehospice literature. In addition, the grey literature was searched using an ancestry approach in order to identify early telehospice studies (Polit and Beck, 2012). The searches were conducted in September and October 2013 from a Mac platform using Safari, Firefox and Mendeley software. Retrieved articles were stored in iBooks and the Mendeley database.

Results

Using a PRISMA approach, the literature searches yielded 229 articles from the databases and the ancestry search of the literature (Moher, Liberati, Tetzlaff, Altman, & The

PRISMA Group, 2009). There were 125 articles excluded for reasons such as articles were duplicates, policy analysis, commentaries or not relating to telehospice technology and patient care. There were 104 full text articles concerning telehospice that were assessed for review eligibility with 80 of these articles excluded for reasons such as being commentaries, policy guidelines or not relating to telehospice and patient care. There was a total of 25 articles included in the review. Appendix A shows a flow diagram of the search strategy based upon a PRISMA approach. The 25 articles were published in 18 different journals indicating little possibility of journal bias. The review reflects telehospice use in the U.S. and the United Kingdom (UK).

Of note, in the review assessment of the searches there were articles depicting the use of telemedicine in palliative care. Palliative care optimizes the quality of life of patients in the continuum of end of life care and may be in a hospice setting (End-of-Life Nursing Education Consortium (ELNEC), 2013). Kidd, Cayless, Johnston, and Wengstrom (2010) conducted a systematic review of the evidence for telepalliative care in the UK. A systematic review of the U.S. telepalliative care literature has not been published. A review of the telepalliative care literature in the U.S. could influence the current state of practice for that specialty.

Who is using telehospice technology?

Assessing the included literature for this review, hospice providers are comprised of nurses, physicians, administrators, volunteer coordinators, social workers, and chaplains. Hospice providers have been using telehospice technology in a variety of ways since 1998. In addition, home hospice caregivers and patients have also been using telehospice technology. Telehospice care has occurred in various forms such as using telephone and videophone consultation with hospice providers, using computers to research hospice web pages, and

measuring patient symptoms using tablet computers (Parker Oliver, Washington, Wittenberg-Lyles, Demiris, & Porock, 2009, Taylor & Lennox, 2013, Wilkie et al., 2009).

How is telehospice being used in patient care?

Articles in the review describe telehospice technology being used in patient care in a variety of ways. Different approaches to telehospice use have demonstrated success and satisfaction. Patient and caregiver satisfaction has been determined with the use of telephones and videophones for after-hour calls (Doolittle, Yaezel, Otto, & Clemens, 1998). Tablet computers have been used for pain assessments in home hospice patients resulting in improved pain control (Wilkie, Kim, Suarez, Dauw, & Stapleton, 2009).

Telehospice use provides a positive supplement to traditional home hospice care and leads to greater patient satisfaction about the overall delivery of care (Whitten, Doolittle, & Hellmich, 2001; Oliver, Demiris, Fleming, & Edison, 2003). Telehospice use can enhance and improve communication between caregivers and providers while decreasing patient anxiety (Parker Oliver, Demiris, Day, Courtney, & Porock, 2006; Demiris, Parker Oliver, Courtney, & Day, 2007; Schmidt, Gentry, Monin, & Courtney, 2011).

Telehospice practice can improve clinical interventions and can enhance the quality of home hospice care for patients (Parker Oliver, Demiris, & Porock, 2005; Parker Oliver et al., 2009). In addition, telehospice practice can facilitate positive relationships between hospice teams, caregivers and patients that improve patient care delivery (Demiris, Parker Oliver, Kruse, & Wittenberg-Lyles, 2013; Wittenberg Lyles et al., 2013).

An innovative approach in the use of telehospice technology is the creation of a virtual hospice in a Scotland hospice group. The design of virtual hospice is to extend hospice services to the Highlands and Islands of Scotland that is a geographically large and remote area. Using

online meetings, telehealth remote monitoring of patient conditions, online patient care resources and telephone consultation, the purpose is to provide hospice resources with physical, emotional and spiritual care to patients, caregivers and families (Taylor & Lennox, 2013).

What is the current state of telehospice practice?

In the first ever systematic review of telehospice literature in the U.S., the authors report that the telehospice technologies are significant tools for the delivery of future hospice care (Parker Oliver et al., 2012). These eminent telehospice researchers determined that a small evidence base with medium strength have evolved for telehospice practice in the U.S. since the year 2000. They have determined that the evidence base for telehospice practice can be made stronger by conducting large randomized clinical trials that focus upon clinical outcomes. In order to facilitate such research, a telehospice project was formed by the Hospice Caregiving Research Network (HCRN) (<http://telehospice-project.org/about.htm>). HCRN is an interdisciplinary team that designs and tests hospice care interventions using various information technologies. The team collaborates with hospice agencies in four states to facilitate research translation into clinical practice.

A systematic review of telehealth in palliative care that included telehospice literature in the UK reported that evidence based research in telehealth practice is deficient (Kidd, Cayless, Johnston, & Wengstrom, 2010). The review stated telehealth practice as being new to clinical care but gaining acceptance with patients and health care professionals.

Discussion

It is clear that a telehospice practice has relevance for patient care at the end of life. Oliver, Demiris, Fleming and Edison (2003), report that telehospice has the potential to decrease patient and caregiver isolation during the dying process. They also describe that telehospice has

the potential for hospice agencies to decrease costs and travel time and allow staff to monitor patients in a timely fashion. It has been determined that 64.5% of home hospice nursing visits could be accomplished utilizing telehospice technology (Doolittle, Whitten, McCartney, Cook, & Nazir, 2005). Thus, the potential exists for reducing in-person visits that could reduce travel costs. However, there is also a concern that this could also increase hospice patient workloads for hospice staff.

Telehospice is poised to move into the clinical setting in an increasing manner as its patient care benefits are realized. The next evolution for telehospice care may be translational research such as developing an iPad application incorporating patient self-reporting using a standardized end of life assessment and conducting a pilot study. As we move into more interdisciplinary research and practice, it becomes feasible to develop hardware and software technology that can easily be incorporated into the end of life care with measurable patient benefits. The creation of virtual hospices in the U.S. to extend hospice services would benefit end of life patients in rural, remote areas. The use of ehospice web portals by hospice agencies and providers has the potential to enhance the end of life patient care.

<http://www.ehospice.com/usa/en-gb/home.aspx>).

It is important for the nursing profession to be a part of telehospice technology discussion, as well as part of the development and evaluation of health technology solutions (McGonigle & Mastrian, 2012). Nursing practice, with an essential belief in patient centered care, brings a unique perspective of caring to health technology discussions. Through the process of living grounded in caring, a telehospice intervention may be seen as a nursing call of care at the end of life that can transform the caring relationship and enhance the quality of life for patients and their families (Boykin & Schoenhofer, 2001). The application of knowingly caring

for a patient and using telehospice technology is an important endeavor so that knowing whom the patient is and caring for them does not become sacrificed through technology use.

Implications for Arizona Telehospice Practice

There are 21 American Indian tribes in Arizona with the state having the second highest Native American population in the U.S. (http://www.aaanativearts.com/tribes-by-states/arizona_tribes.htm). These represent diverse cultural considerations that telehospice practice needs to consider in providing end of life care. Establishing culturally appropriate telehospice practice, clinical guidelines or care protocols would be a means to respect diverse American Indian beliefs concerning end of life care. In addition, communication technology access remains an issue on some of the reservations and telehospice practice would need to consider this.

Finally, hospice agencies will need to discern a policy for the use of telehospice practice. Ideally, this policy would describe telehospice practice use as an adjunct care mechanism to traditional hospice care while respecting caregiver and patient needs for end of life care.

Conclusion

Telehospice technology is an emerging area of hospice care services. The continuing evolution of telehospice care brings hope that using such technology will empower hospice caregivers and patients in maintaining an optimal comfort level at the end of life. This review demonstrates the importance of using telehospice technology in supporting the unique needs of people at the end of life.

Disclosure Statement

There are no competing financial interests.

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Appendix A

Flow Diagram of Telehospice Literature Search

<p style="text-align: center;">Databases Searched</p> <p>CINAHL Plus, Medline, Academic Search Complete, PsychINFO, PsychARTICLES, IEEE Xplore, Google Scholar for Engineering, Cochrane Reviews, Sage Journals, Mosby's Nursing Consult, Science Direct, and the Mendeley Reference System using MeSH typology. Range from January 1, 1988 to October 31, 2013.</p> <p style="text-align: center;">230 articles identified</p>
<p style="text-align: center;">Identified Duplicates</p> <p style="text-align: center;">5 articles removed 225 articles remaining</p>
<p style="text-align: center;">Articles excluded with reasons</p> <p style="text-align: center;">Non-English speaking, not-peer reviewed journals, editorials, or opinions 200 articles excluded 25 articles remaining</p>
<p style="text-align: center;">Articles included in review results</p> <p style="text-align: center;">25</p>

Appendix B

Included Studies

Author(s), Date	Purpose/Aim	Research Question(s)/ Objectives	Framework/ Study Design	Study Population/ Setting	Main Findings/ Themes
Doolittle, Yaezel, Otto, & Clemens, 1998	Study of telenursing for terminally ill patients at home.	Determining utilization patterns of after-hours calls in the homes of home hospice patients.	Data concerning the utilization patterns were gathered for two separate three-month periods.	Six hospice patients living in either Kansas or Missouri.	Patients and caregivers reported general satisfaction with the telehospice system. Nurses conducted video-assessments to determine whether an 'in person' visit was necessary.
Whitten, Doolittle, & Hellmich, 2001	Videophones were placed in the homes of hospice patients and hospice providers used this technology to supplement traditional care.	Paper presented preliminary results from the first of this two-year project.	Hospice providers implemented pre-perception surveys. Hospice patients/caregivers participated in telephone interviews. Activity logs and patient charts yielded utilization data.	A telehospice project was launched in Michigan and Kansas, designed to provide end-of-life services to hospice patients and their caregivers.	Hospice providers are cautiously enthusiastic about telehospice and skeptical about the comparable quality with traditional visits. Patients and caregivers using telehospice are positive about the service and wish to see increased utilization within their own care plans.

Included Studies, Continued

Author(s), Date	Purpose/Aim	Research Question(s)/ Objective(s)	Framework/ Study Design	Study Population/ Setting	Main Findings/ Themes
Oliver, Demiris, Fleming, & Edison, 2003	To investigate the impact of a telehospice model on satisfaction with delivered care, caregiver burden, crisis prevention rates and overall cost of delivered care.	Determining the design, type of technology, frequency of usage and perceived impact on quality of hospice care.	A needs assessment study was conducted where hospice staff members responded to a set of questions within focus group and interview sessions.	Five urban and rural hospice agencies in Missouri participated.	Hospice staff have positive perceptions of telehospice. Telehospice is perceived as having the potential to reduce the sense of patient and caregiver isolation and burden, and improve the screening process during emergency situations. Telehospice could also assist agencies by decreasing travel time and costs as well as allowing staff to monitor patients more closely and provide timely and appropriate support at every stage of the dying process.

Included Studies, Continued

Author(s), Date	Purpose/Aim	Research Questions/ Objectives	Framework/ Study Design	Study Population/ Setting	Main Findings/ Themes
Parker Oliver & Demiris, 2004	To assess the readiness of hospice organizations to accept technological innovation.	Questions that determined demographic information, how employees received new information, the current use of various forms of technology, comfort with technology and perceptions of the use of video-phones.	Survey	Seven of 62 certified hospice programs in the state of Missouri. 124 respondents categorized as nurses, administrators and nurse supervisors, social workers, physicians, home health aids, chaplains and other staff (clerical and bereavement staff).	Reported using technological devices at work but not a video-phone or a Web camera. There were differences between hospices in the degree of use of computers at work, the number of devices used at work and the perceived benefits of video-phone technology. There were differences between disciplines in the degree of use of computers at work and at home, the number of devices used at work, and their comfort both with the use of new technology and with the idea of introducing new technology to patients and families. Variations in the perceived usefulness of videophones for hospice care.

Included Studies, Continued

Author(s), Date	Purpose/Aim	Research Question(s)/ Objectives	Framework/ Study Design	Study Population/ Setting	Main Findings/ Themes
Parker Oliver, Demiris, & Porock, 2005	To determine the usability of videophones for seniors.	Could videophones technically meet the needs of connecting seniors with hospice care providers? Could frail older adults and hospice staff operate the equipment? Would older adults accept videophone technology in their homes if healthcare professionals recommended it?	Convenience sample	A demonstration booth was set up at a local senior assisted living facility in a midwestern state, with 12 senior citizens participating.	Seniors successfully demonstrated use of the videophone and were supportive, interested, excited, comfortable, and willing to accept the technology into their home. Videophone is not appropriate for individuals who suffer severe vision or hearing impairment. Individuals who read lips to compensate for their hearing impairment may become frustrated with the video delays and the inability to link the lip movements with the voice they hear. Video- phone technology is preferred over a voice over internet protocol (VoIP).

Included Studies, Continued

Author(s), Date	Purpose/Aim	Research Question(s)/ Objective(s)	Framework/ Study Design	Study Population/ Setting	Main Findings/ Themes
Parker Oliver, Demiris, & Porock, 2005	To determine the usability of videophones for hospice providers.	Would hospice providers see value of telehospice technology as a clinical intervention?	Convenience sample. Exploratory study with hospice providers used interviews, surveys, and observations following a demonstration of a videophone.	A hospice and palliative care conference was selected as the site for data collection. A total of 63 individuals participated in videophone demonstrations. The majority of participants were social workers and nurses.	The data support the use of videophones with hospice providers as a possible intervention tool. Hospice care providers perceive videophones as easy to use and valuable. Hospice administrators expressed financial concerns but noted that they would be willing to pursue fundraising sources if the equipment were found to be valuable to care delivery. Study demonstrated need for further usability testing and supported the feasibility of a demonstration projects using videophone technology in homes of hospice patients.

Included Studies, Continued

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Doolittle, Whitten, McCartney Cook, & Nazir, 2005	To determine what amount of home hospice visits could be conducted using telemedicine technology.		Clinical records reviewed retrospectively for hospice nurse home visits. 597 nursing notes analyzed using a 85 item-coding instrument.	Home nursing visits from two hospices, one based in Kansas, and the other in Michigan.	64.5% of home hospice nursing visits could be conducted by telemedicine. Telehospice makes it possible to reduce the number of in-person visits, and decrease the cost of providing hospice care.
Whitten, Doolittle, & Mackert, 2005	To learn about how providers feel about using telemedicine services with hospice patients.	Learning about how providers' perceptions of telehospice services could change over the course of the project as they became more familiar and comfortable with providing telehospice services. Researchers were interested in how providers' perceptions of telehospice might influence utilization.	Providers were surveyed at the beginning and end of the project to track their perceptions of telehospice services. Five focus groups with providers were conducted over the course of the project to allow providers to elaborate their thoughts and perceptions about telehospice.	Four hospice offices took part in the study. Two were in rural areas and two were in urban settings with a total of 187 patients receiving telehospice care.	Utilization of telehospice did not have a significant impact on perceptions of services. Providers began the project with pre-conceived notions about telehospice and these perceptions constant during the course of the project. Providers are gatekeepers to telehospice and the manner of providing care

Included Studies, Continued

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Parker Oliver, Demiris, Day, Courtney, & Porock, 2006	To report on the experience of two hospice caregivers using videophone technology to enhance communication with care providers.		Case study reports.	Home hospice patients.	Data demonstrates an overall satisfaction and technical feasibility with videophone technology in home hospice.
Demiris, Parker Oliver, Courtney, Day, 2007	To introduce videophones into the homes of elderly caregivers of dying patients.	Evaluating videophone use as a communication tool.	Pilot study. Videophones were installed allowing caregivers to conduct video calls with hospice staff.	12 senior caregivers from two hospice agencies.	Anxiety scores significantly decreased for participants. Differences in quality of life scores were not statistically significant. Videophones were perceived as easy to use by caregivers who saw benefit in visual feedback during communication with hospice staff.

Included Studies, Continued

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Willis, Demiris, & Parker Oliver, 2007	To explore the current evidence related to use of the internet by hospice patients or families and palliative care/hospice professionals.	Research questions for this study relate to internet-based interventions in hospice and palliative care and the evidence of their effectiveness.	Literature review.	Six studies included research about web-based clinical interventions for patients, and patients', caregivers' and hospice/palliative care providers' use of the Internet. Participants in the studies were patients, caregivers/family members, and health care professionals.	Findings indicate effectiveness of internet-based interventions. Patients and professionals are using the Internet to find answers to healthcare questions, to communicate, and deliver healthcare interventions.
Washington, Demiris, Parker Oliver, & Day, 2008	To measure telehospice acceptance in a national sample of hospice professionals from various disciplines.	If telehospice is to be successful, hospice professionals must first accept it as a useful and user-friendly method of service delivery.	Convenience sampling.	Hospice professionals from various disciplines (N = 160).	Findings indicate that telehospice acceptance was moderately high. Significant differences exist among individuals from different disciplines, with nurses and administrators generally indicating higher levels of acceptance than social workers and chaplains. Findings demonstrate that telehospice interventions will likely be more accepted by nursing and administrative staff. Employees who address primarily psychosocial issues may be reluctant to use telehospice.

Included Studies, Continued

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Parker Oliver, Washington, Wittenberg-Lyles, Demiris, & Porock, 2009	To evaluate an intervention through videophone encounters.	A qualitative evaluation of an intervention (Assessing Caregivers for Team Intervention through Videophone Encounters [ACTIVE]) using videophone technology to include patients and/or their family caregivers in hospice interdisciplinary team meetings.	Structured interviews.	Individual interviews with hospice staff members and family caregivers who participated in ACTIVE intervention.	Results indicate that ACTIVE intervention enhanced team functioning in terms of context, structure, processes and outcomes. Data supported the ACTIVE intervention as a way for hospice providers to realize their goal of optimal patient and family participation in care planning.
Whitten, Holtz, & Nazione, 2009	To investigate why there is a lack of acceptance of videophone use in hospice care.		Surveys, structured interviews.	Hospice employees.	Research demonstrated that leadership, context, and perceptions of videophones are key features effecting telehospice acceptance.

Included Studies, Continued

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Whitten, Holtz, Meyer, & Nazione, 2009	To investigate why hospice nurses are slow to adopt videophones to care for their patients.	Adoption of videophone use.	Surveys	25 hospice employees participated. 18 were in clinical positions and 7 were in non-clinical positions.	39% of respondents reported no videophone training, despite the fact that every employee had received training. 4 staff members actually used a videophone with patients. Respondents stated that they had the organizational resources necessary to use videophones and they easy to operate. Despite initial enthusiasm, leaders in the hospice agency did not endorse videophones for work.
Wilkie, Kim, Suarez, Dauw, & Stapleton, 2009	To determine the acceptability and feasibility of a pentablet-based software program.	Using PAINReportIt-Plus, as an assessment tool for patients in home hospice to report their symptoms and differences in acceptability by demographic variables.	Self report surveys.	131 patients with cancer in home hospice care.	Findings demonstrate that terminally ill patients with cancer are willing and able to use computers to record and describe their pain and other symptoms.

Included Studies, Continued

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Kidd, Cayless, Johnston, & Wengstrom, 2010	To review telehealth applications (including hospice) in the UK.	Who is using telehealth? What purpose is telehealth being used? Is telehealth use increasing?	Systematic literature review	21 documents included in the review.	Telehealth being used by health care providers in oncology in a variety of settings. Most common applications are, telephone support, advice, videoconferencing, consultations, assessments, education. Telehealth technology is acceptable to providers and patients.
Parker Oliver, & Demir, 2010	To compare the delivery of a psychoeducational intervention with hospice caregivers, delivered in person and via videophone.		Case study.	Hospice caregivers.	Caregiver expressed satisfaction with the telehealth experience, supporting the value of video communication.
Schmidt, Gentry, Monin, Courtney, 2011	To demonstrate the range of emotional expressions displayed by nurse and family caregiver during a telehospice videophone consultation.	Hypothesized that a nurse providing telehospice care via videophone would gain access to nonverbal emotional signals from the caregiver and communicate a social presence to the caregiver.	Video recording of a case was obtained. Nonverbal communication through facial expressions of emotion was quantified by coding of facial movement and expression.	A recorded videophone conversation between 1 nurse and 1 caregiver.	Demonstrated the value of videophone contact for providing access to visual nonverbal emotional communication.

Included Studies, Continued

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Parker Oliver, Demiris, Wittenberg-Lyles, Washington, Day, Novak, 2012	The purpose was to focus on available telehospice research.	What is the state of the evidence related to telehospice services?	Systematic review.	26 studies were identified.	A small evidence base for telehospice has emerged since the year 2000. Evidence is of medium strength.
Baldwin, McAuley, Van Nostrand, 2012	Investigated organizational factors associated with the use of telehospice.	Examined the relationship between the use of telehospice and a number of organizational factors.	Logistic regression.	Investigation was based on the 2007 National Home and Hospice Care Survey with 695 hospice agencies, of which 6% used telehospice.	Directors who had at least a Masters degree or had a longer tenure as director of the agency, there was a higher likelihood that the agency used telehospice. If the director was a nurse, the likelihood that telehospice was used was lower. Organizations with inter-agency contracts were less likely to use telehospice. Providing financial, training and organizational support to agencies that recognize the potential benefits of telehospice would assist in its use.

Included Studies, Continued

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Wittenberg-Lyles, Shaunfield, Parker-Oliver, Demiris & Schneider, 2012	How technology is used in hospice volunteer programs.	What technology is being used to facilitate volunteer work? What is the response of hospice volunteers and managers to the idea of using new technology in patient care?	31-item questionnaire assessing demographics, communication, technology use and comfort with technology use.	169 hospice volunteer coordinators and volunteers recruited from throughout the U.S.	Computers were available with internet access. Hospices are using EMR and volunteer management software. Computers being used for volunteer work; in home; accessing email; using a cell phone or palm computer. Respondents are comfortable using current technology and comfortable with introducing technology to patients.
Demiris, Parker Oliver, Kruse, & Wittenberg-Lyles, 2013	To examine the technical quality of hospice videoconferencing with caregivers. To compare the quality of telephone service with web based videoconferencing.	Comparing quality of telephones with videoconferencing	Data obtained from ongoing randomized clinical trial. Retrospective analysis of video-recorded team meetings and web videoconferencing with hospice caregivers.	200 hospice team meetings and 19 caregiver interviews.	Caregivers found videoconferencing use to be a useful tool in communicating with the hospice team. Telehealth has the potential to improve communication in hospice care.
Taylor & Lennox, 2013	To develop an implementation plan for a virtual hospice.		Knowledge exchange process.	Hospice staff of the Highland Hospice in Inverness, Scotland.	The knowledge exchange process generated a more accurate and realistic implementation plan for a virtual hospice.

Included Studies, Continued

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Wittenberg-Lyles, Parker Oliver, Kruse, Demiris, Gage, Wagner, 2013	To explore team communication when video-conferencing is used to facilitate the family caregiver's participation in a hospice team meeting.	Does videoconferencing enhance relationship building?	Video-recorded team meetings with and without family were analyzed for using an interaction analysis system.	Hospice staff and family caregivers in a midwest U.S. hospice.	Meetings that included caregivers revealed an emphasis on biomedical education and relationship building between participants. There was little psychosocial counseling but increased talk from social workers and chaplains.