



Published in final edited form as:

*Oncol Nurs Forum*. 2017 March 01; 44(2): 165–170. doi:10.1188/17.ONF.165-170.

## Oncology nursing perceptions of patient electronic portal use: a qualitative analysis

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### Abstract

**Purpose/Objectives**—To identify nursing staff reactions to and perceptions of electronic portal use in a cancer setting.

**Research Approach**—Qualitative

**Setting**—Outpatient clinic at the Harold C. Simmons Comprehensive Cancer Center of the University of Texas Southwestern Medical Center in Dallas, Texas.

**Methodological Approach**—Two focus groups (N=13 nurse participants) were conducted. Theoretical thematic content analysis of data was performed.

**Findings**—Key themes to emerge for consideration of electronic portals included: (1) work volume and flow, (2) patient expectations and safety, (3) variation in use of communication technologies, (4) education and management

**Conclusions**—The current study provides insight into the implications of electronic portals by identifying nursing staff reactions to this technology. These reactions are predominantly related to impact on clinical workload and patient safety and expectations.

### Keywords

electronic portals; electronic medical records; patient health records; communication; cancer; nursing

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The electronic medical record (EMR) is now widely implemented in clinical practices (Fernald, Wearner, & Dickinson, 2013; Jain, Seidman, & Blumenthal, 2010; Krist et al.,

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**Disclosures:** The authors report no relevant disclosures.

2014). Bolstered by government prioritization and support, it has seen uptake in primary care and specialty practices, emergency departments, and inpatient facilities (Office of the National Coordinator for Health Information Technology, 2010). Within the EMR, electronic portals have been designed to enhance the timeliness, efficiency, transparency, and patient-centeredness of care (Feeley & Shine, 2011). Electronic portals provide patients with real-time access to their personal patient health records (PHR) and communication with healthcare providers (Fisher, Bhavnani, & Winfield, 2009; Hassol et al., 2004; Ralston, Coleman, Reid, Handley, & Larson, 2010). Patients who opt to use the electronic portal may view upcoming appointments; personal health information such as allergies, medications, social history, family history, and medical history; and laboratory and radiology results. Additionally, portals may allow patients to communicate electronically with clinic staff and medical providers. Such communication can range from appointment and medication refill requests, to asking clinical questions, to reporting symptom development or changes.

As access to personal computers and mobile devices expands, so too have availability and use of electronic portals. Research to understand the implications of these new tools on clinical practice and patient care is growing (Kaelber, Jha, Johnston, Middleton, & Bates, 2008; Kruse, Bolton, & Freriks, 2015; Liss et al., 2014; Murphy et al., 2016; Kim M Nazi et al., 2010). Implementation and uptake of this technology in oncology may introduce particular considerations (Beard, Schein, Morra, Wilson, & Keelan, 2012; Feldman & Rodriguez, 2012; Honeyman, Cox, & Fisher, 2005; Ward, 2012; Wiljer et al., 2010). With close clinic follow up, frequent laboratory testing, multiple imaging, the longitudinal outpatient care of individuals with cancer is more intensive than that of many other specialties, possibly leading to increased EMR and PHR data flow. Laboratory and radiology results could represent important clinical developments such as disease progression. Alternatively, abnormalities that have no clinical significance may still result in anxiety and confusion when viewed outside of clinical visits without concurrent provider interpretation and explanation. Additionally, due to the potentially aggressive nature of the underlying cancer, symptoms reported electronically by patients with cancer might be more likely to represent medical urgencies than are symptoms reported by non-cancer populations. How these text messages are handled by clinical practices and providers raises important questions about patient safety and satisfaction (Rodriguez, 2010).

In an earlier study, we confirmed that PHR portal use by patients with cancer is highly frequent and increasing (Gerber et al., 2014). A subsequent analysis demonstrated that, among health professionals, non-physician clinical personnel—in particular, nurses—are handling the majority of this communication (Laccetti et al., 2015). Because nursing perception of the impact of electronic patient portal utilization has not been extensively studied, we conducted focus groups with nurses in our cancer center to explore this question.

## Methods

### Setting and Recruitment

Our study was conducted in the outpatient clinics of NCI-designated Harold C. Simmons Comprehensive Cancer Center at UT Southwestern Medical Center in Dallas, Texas. The study team worked with clinic nursing managers to invite nurses to participate in focus

group sessions by group email, with follow-up invitations issued at staff meetings by nurse managers (eligible n= 47). To limit the possibility of recruiting a study sample inherently biased toward or against the electronic patient portal paradigm, we described the topic of the planned focus groups as a general examination of various means of communication between clinical staff, patients and physicians within the cancer center. Participants from the first session were specifically instructed not to discuss the content of the group or the identities of participants with other nurses, to limit bias among potential participants in the second group. Sessions were conducted in a small conference room adjacent to the clinics; snacks and beverages were provided as an acknowledgement of participant time and engagement, no direct incentives were offered. The study was approved by the UT Southwestern Institutional Review Board (STU #092014–67).

### Focus Group Conduct

To explore implications of patient health portals on clinical care and nursing activities, the investigator team generated a discussion guide covering a range of issues related to electronic patient portal use within the cancer center. The focus groups were moderated by a senior qualitative scientist (S.C.L.). Physician members of the research team (D.E.G., M.S.B.) and nursing supervisors did not attend the focus groups to limit observer effects on participant responses and discussion. We provided information sheets to participants and solicited informed oral consent, per protocol. Using the discussion guide to initiate conversation, the moderator first posed a question to the group and then elicited comments from participants, through prompts and follow-up queries, allowing unstructured time for participants to compare and contrast their experiences and opinions with one another. As the second session proceeded through the discussion guide, the moderator presented initial comments from the first session, to check credibility and confirmability. Each focus group was audio-recorded and subsequently transcribed verbatim by a professional contractor.

### Analysis

After both focus groups were completed, the research team (D.E.G., M.S.B., S.C.L.) sequentially reviewed transcripts and assessed issues raised using an inductive, text-driven approach to thematic content analysis (Creswell, 1988; Miles & Huberman, 1994). The investigators collectively identified preliminary themes, leading to theme consolidation and extraction, with subsequent iterative discussion and analysis by the entire team, thereby also allowing us to address discrepancies by consensus (Cohen & Crabtree, 2008; Mays & Pope, 1995). To explicitly address issues of credibility and confirmability, the two nursing supervisor investigators (T.D, M.G.) reviewed identified themes against transcript excerpts.

### Results

Thirteen out-patient nurses agreed to participate (~27% response rate) in two sessions (n=6; 7) conducted on two sequential days. Five participants represented infusion clinic, eight from medical oncology, two of whom represented additional service in bone marrow transplant clinics. Overall credentials ranged from RN to RN, BSN, CCRN, OCN; cancer-related clinical experience ranged from one month to 10 years at our site, and from one year to 24 years overall.

Participants reported a number of factors described as advantages and disadvantages of the electronic patient portal. We consolidated these issues to identify four major themes that classify nurses' reasoning that are elaborated upon below.

### **Work volume and flow**

The primary consideration of this technology was its impact on work volume and flow. Nurses raised concerns about the perceived substantial increase in the volume of electronic communications, the burden of documentation, the potential for multiple exchanges between patients and staff (contrasted to a single telephone or in-person exchange), and the increase in number of steps and staff members involved in a given communication thread. To improve efficiency, participants raised the possibility of a central triage system for electronic communication, drawing analogy to the telephone call triage program currently in place at our center. Others described using a communication function that prevented patients from replying within the portal, only to find that patients would instead initiate a new message thread.

### **Patient expectations and safety**

Patient expectations and safety also emerged as central concerns. In an era when text messaging has become standard communication practice across society, nurses reported that many patients appear to expect immediate responses to their inquiries or status updates. Nurses described numerous examples of patients or caregivers using the portal to report medical emergencies and expressed concern when patients reacted adversely to electronic communication with unedited medical or technical language, with particular reference to automated release of lab results (Cahill, Gilbert, & Armstrong, 2014)..

### **Variation in use of portal and other communication technologies**

Nurses reported notable differences in the work flow of how patient portal communications were handled between physicians in the same clinic. Physician seniority, behavior traits, clinical expertise (clinician vs. researcher) were cited as potential factors affecting this workflow. Impact of electronic portals on other aspects of clinical practice was also noted. For instance, nurses described the challenges and stresses of staying abreast of portal upkeep (i.e., managing their in-baskets) while simultaneously seeing patients in clinic. Others described altering the scheduling of key diagnostic tests such as radiology studies and provider clinic appointments to ensure test results were not released electronically to the patient prior to the office visit.

### **Education and management**

Nursing staff had numerous suggestions for streamlining workflow and improving patient and staff experience. Increasing patient and caregiver education regarding appropriate use and expectations was a widely agreed upon approach. However, a number of participants felt that no amount of counseling would prevent all patients from using the portal to report medical emergencies or matters irrelevant to their clinical care.

Nursing staff also cited number of benefits of portals for patient care and clinic workflow. In some situations, nurses preferred the slower time-line of electronic communication to the

immediacy of telephone conversations, allowing nurses to discuss and research their responses before answering questions. The written format, as opposed to telephone speech, was also described as advantageous for some patients because instructions regarding medication usage or future appointments could be reviewed by the patient/caregiver at home, whereas directions received by telephone might not be understood or forgotten.

## Discussion

Focus group methodology has been applied extensively in healthcare and medical research. (Gerber, Hamann, Rasco, Woodruff, & Lee, 2012; Ritchie, Herscovitch, & Norfor, 1994) Focus groups provide a means to solicit patient and provider opinions of clinical issues. (Barbour, 2005; Krueger & Casey, 2000) They have the added value of group dynamics, as participants are free to react to others' comments and further develop discussion beyond that initially anticipated by the investigators. Given the potential reluctance for nurses to discuss personal opinions and concerns with physicians or practice administrators, focus groups may yield particular insight into these reactions.

To our knowledge, this is the first qualitative study of nurse attitudes and beliefs assessing the impact of PHR portal technology in an oncology setting. Results from our two focus groups suggest that electronic patient portals represent an area of considerable significance to nursing staff within a regional cancer center, supporting early implementation reports of PHR prototypes in cancer care (Rodriguez, Thom, & Schneider, 2011) and emerging studies conducted among primary care physicians in Veterans' Administration (VA) health systems (K. M. Nazi, 2013).

Although multiple members of the healthcare team, including clerical staff, nurses, mid-level providers, and physicians, interface with the patient portal, we elected to focus on nursing staff because our preliminary research demonstrated that they carry out the majority of tasks related to portal activities. (Laccetti et al., 2015) Prior studies have suggested that physician awareness of PHR and their engagement with the technology may be low. (Fuji, Galt, & Serocca, 2008) In contrast, nurses are able to provide a unique, multi-directional perspective, as they carry out portal activities themselves and also communicate with patients in a variety of settings (portal, telephone, in-person encounters), allowing them to provide insight not only into their own reactions to portal technology, but also into their perceptions of patient experience. In contrast to a prior survey, our findings suggest oncology nursing staff have real concerns about increasing workload as patient portal use rises (Rodriguez et al., 2011). In this regard, our findings reflect the organizing framework advocated by VA research emphasizing PHR *adoption* (K. M. Nazi et al. 2010). By elucidating actual communication and process strategies within oncology clinical practice, our study advances understanding of the dynamics of PHR integration beyond studies of initial uptake (K.M. Nazi et al 2013).

Patients with cancer frequently develop networks of family members and advocates who may be deeply involved with day to day activities and treatment decisions. Patient family members and other caregivers are increasingly granted access by patients to their electronic portal to organize aspects of clinical care such as office appointments. Communication

initiated by patient advocates using the patient portal provides an extra layer of nonconventional communication, with implications for patient autonomy, privacy and flow of personal health information that warrant further study.

### Study limitations

Limitations of our study include the single-center setting, the relatively small number of participants, and factors inherent to the focus group design. As an NCI-designated comprehensive cancer center located in a major metropolitan area, it is conceivable that our patient population is not representative of the broader oncology population, but potentially more educated and more motivated regarding their cancer diagnoses and treatment (Ballard et al., 1994; Onega, Duell, Shi, Demidenko, & Goodman, 2009). These characteristics may, in turn, result in distinct patterns of portal use and reactions,(Goel et al., 2011) thereby impacting the nursing experience and perceptions. We are also aware that workflow of patient portal communications may vary between outpatient oncology practices, as participants themselves noted. Although our findings come from a single academic cancer center, these themes can be broadly applied across practice types with respect to staff and patient communications and work flow. Despite the relatively small number of participants, our sample constitutes a broad range of both nursing credentialing and clinical experience both at our site and elsewhere. Our analysis revealed sufficient thematic repetition to suggest saturation whereby major nursing experiences and perceptions were identified across the two focus groups. Inherent to focus group design, there is the potential for group dynamics to suppress objections or disagreements. However, moderator tactics may be employed to establish group rapport through experiential commonalities, particularly in small group settings. In this study, the moderator deliberately prepared participants for contrasting answers and encouraged participants to compare their own and patients' experiences among one another. There is also a risk of employees behaving in a manner they believe is desired by their supervisors. To minimize this effect, we explicitly excluded nursing supervisors and physicians from focus group discussions.

### Conclusion

Electronic patient portals appear to have had a major impact on outpatient oncology nursing in our setting. Our study demonstrates that nurses devote considerable effort to portal activities. Key nursing themes to emerge include (1) work volume and flow, (2) patient expectations and safety, (3) variation in use of communication technologies, (4) education and management. While a study of this nature is not definitive, our findings suggest that oncology practices and cancer centers may wish to address portal implementation and function among clinical staff on a regular basis to address emerging concerns. Such an approach will become increasingly important as the number of patients with cancer grows nationwide, as these patients live longer, as treatment regimens become more complex, and as a greater proportion of the population embraces electronic communication.

### Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgements

The authors thank Ms. Dru Gray for assistance with manuscript preparation.

**Funding:** Supported by a National Cancer Institute Midcareer Investigator Award in Patient-Oriented Research (1K24CA201543-01) (to D.E.G.) and by the UT Southwestern Center for Patient-Centered Outcomes Research through a grant from the Agency for Healthcare Research and Quality (R24 HS022418) (to S.J.C.L.). Additional support provided by the NCI Cancer Center Support Grant (2P30 CA142543-06).

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### **Implications for Nursing**

As clinical cancer facilities incorporate electronic portal technology into their operations, attention to impact on staff workload, division of labor, patient safety, and patient expectations should be considered.

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### Knowledge Translation

(1) Nursing concerns regarding the impact of electronic portals on workload include volume of communications, documentation burden, and increase in number of steps and staff involved. (2) Electronic portals may affect nursing clinical practice by impacting test and appointment scheduling practices. (3) Increasing patient and caregiver education regarding appropriate portal use and expectations are suggested to improve patient and staff experience. (4) Potential benefits of electronic portals include increased opportunities to discuss and research responses before answering questions and the availability of the written format for future review by patients as needed.

**Table 1.**

Preliminary Themes

Technology as communication channel
Patient and family expectations of care
Patient safety
Impact on productivity
Scheduling and triage
Patient training
Physician training

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**Table 2.**

Focus group participant demographics

Credentials	Service	Cancer-related clinical experience	
		Total UTSW	Total Career
RN, BSN, CCRN, OCN	Bone Marrow Transplant	2 years 6 mos	2 years 6 mos
RN, OCN	Hem/Onc clinic	10 years	13 years
RN, OCN	Hem/Onc clinic	8 mos	8 mos
RN, OCN	Hem/Onc infusion	2 years 3 mos	24 Years
RN, OCN	Hem/Onc clinic, infusion	1 month	6 years
RN, OCN	Hem/Onc clinic	3 years	3 Years
RN, BSN, OCN	Bone Marrow Transplant	3 years	11 years
RN	Hem/Onc Infusion	1 year	5 years
RN, BSN, OCN	Hem/Onc Infusion	1 year	1 year
RN, BSN, OCN	Hem/Onc Infusion	4 years 6 mos	4 years 6 mos
RN, BSN, OCN	Hem/Onc clinic	8 years	15 years
RN, BSN, OCN	Hem/Onc clinic	8 years	3 years
RN, OCN	Hem/Onc clinic	1 month	3 years