EXECUTIVE SUMMARY

Changing realities in the health sector in the United States have made it necessary for hospitals and physicians to achieve stronger levels of collaboration, as both groups need to find innovative ways to reduce costs and improve patient outcomes. Covenant HealthCare of Saginaw, Michigan, wishes to expand its relationships with its Medical Staff, and has determined that a physician intranet portal will allow it to do so. This information and communication technology platform will provide stronger channels of communication, access to information, data-sharing, and improved workflow. The physician portal will be used by Covenant HealthCare’s employed providers, including physicians and advanced practice providers, independent physicians belonging to the Physician Hospital Organization (PHO), and independent physicians outside of the PHO. Prior to designing an intranet portal, however, it is crucial to gather input from the end users, so that the platform is designed to deliver the most value and usability.

To develop an understanding of the Medical Staff’s priorities and concerns for the physician portal, surveys were distributed to members of Covenant HealthCare’s Medical Staff, with 94 surveys returned for inclusion in the study. The most valuable potential portal features were identified as access to EPIC and EPIC help materials, access to e-learning materials, and a Medical Staff directory with the ability to update personal information. Features intended to improve communication, such as access to Covenant HealthCare announcements and a hospital administration feedback form, were viewed as slightly less valuable by the Medical Staff. The top barriers for the physician portal were ease of use concerns, uncertainty about the physician portal’s value, and privacy concerns. Other themes from the open-ended feedback included
concerns that the portal’s information would quickly become inaccurate, and that the providers would struggle to integrate another platform into their routines, given their full schedules.

This study yielded several recommendations for the successful design and implementation of Covenant HealthCare’s physician portal. First, the physician portal should be designed with ease of use as a top priority, with an intuitive platform and single sign-on capabilities, so that members of the Medical Staff are able to master it quickly. Another priority for the physician portal should be the quality and availability of educational materials; therefore, it will be vital to collaborate with key departments throughout Covenant HealthCare to provide high-quality training content. In addition, a strong communication plan to introduce the physician portal and establish its value to the Medical Staff will be necessary, with portal launch initiatives, training sessions, and staff presentations. Finally, a clear system of information ownership must be put into place, with designated point persons responsible for maintaining specified areas of the physician portal. Ensuring that information on the physician portal is accurate and updated will positively contribute to the Medical Staff’s perception of its worth, and enhance the likelihood of its adoption.
COVENANT HEALTHCARE’S PHYSICIAN INTRANET PORTAL: MEDICAL STAFF PRIORITIES, CONCERNS, AND IMPACT OF LEVEL OF INTEGRATION

MSA 699 Applied Research Project in Administration

Submitted in Partial Fulfillment of Requirements
For the Degree of Master of Science in Administration
(Concentration in Health Services Administration)

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November 27, 2015
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CHAPTER 1: PROBLEM DEFINITION

Background

Covenant HealthCare is a non-profit health system based in Saginaw, Michigan. With approximately 4,500 employees, more than 500 physicians, and 643 acute care licensed beds, it is the largest health system in Michigan’s Great Lakes Bay Region. Covenant HealthCare provides a broad spectrum of medical services, including pediatric and neonatal intensive care, cardiology, oncology, neurosurgery, orthopedics, emergency care, robotic surgery, and much more (Covenant HealthCare, 2015). Though the main hospital campus is located in Saginaw, Covenant HealthCare serves 20 counties across Michigan. The Covenant HealthCare system was formed in 1998 through the merger of two local health providers, Saginaw General Hospital and St. Luke’s Healthcare Association (Covenant HealthCare, 2015). Since the merger, Covenant HealthCare has sought to fulfill its mission of achieving “Extraordinary care for every generation” in the communities it serves.

The physicians of Covenant HealthCare can be grouped into three categories: employed physicians, members of the Physician Hospital Organization, or PHO, and independent physicians. Currently, there are more than 200 physicians and advanced practice providers in the Covenant Medical Group, which is Covenant HealthCare’s employed physician network (Covenant HealthCare, 2015). These directly employed physicians offer a wide range of services, including primary care, cardiology, wound healing, gastroenterology, pediatric neurology, and forms of hospital-based medicine, such as critical and emergency care. The Physician Hospital Organization, Covenant HealthCare Partners, consists of physicians who have partnered with Covenant HealthCare to provide streamlined, high-quality care to the community (Covenant HealthCare, 2015). Though they are not necessarily employed by Covenant
HealthCare, these physicians work with Covenant to align goals and strategies, negotiate insurance plans, and contribute to the future direction of the health system. The third group is independent physicians, who are the least connected to Covenant HealthCare. These physicians typically have Medical Staff privileges, but are otherwise not formally tied to the health system.

As Covenant HealthCare continues to expand its relationships with physicians, the need for a centralized information technology platform to enable communication and data-sharing between the hospital and physicians has grown more apparent. This need will only increase in the future. Health reform initiatives have made it necessary for hospitals and physicians to work together, as new regulations have made it imperative that health providers find ways to reduce costs and improve quality measures (Sowers, Newman, & Langdon, 2013). Several hospital administrators and physicians have requested that a physician intranet portal be built to address the need for stronger communication between all parties: hospital administration, employed physicians and advanced practice providers, PHO physicians, and independent physicians. While basic concepts have been developed in regards to the intranet portal’s potential applications, no formal study had been conducted to identify physicians’ priorities and concerns in the design of the portal prior to this research. However, it is crucial to gather user input when developing an intranet portal, as it is one of the largest predictors of the portal’s adoption and overall success (Robertson, 2010). Therefore, building a thorough understanding of what physicians believe would be most beneficial in a portal, along with potential barriers to its use, can greatly enhance the portal’s value and usability.

**Research Problem**

Covenant HealthCare identified a need for a physician intranet portal, which will serve to improve communication and data-sharing between the hospital system and physicians. This
project sought to determine, based on physician input, how Covenant HealthCare can best design and implement a physician intranet portal. This research question was examined through the following sub-questions:

- Which intranet portal features do physicians believe would be most beneficial in improving communication amongst Covenant HealthCare and its associated physicians?
- Which intranet portal features do physicians believe would be most beneficial in improving physicians’ workflow?
- What issues or concerns do physicians believe could inhibit their use of the intranet portal?
- Do the three groups of physicians (employed, PHO, and independent) express significantly different priorities or concerns for the intranet portal?

**Research Objective**

The results of this research have been written and presented to Covenant HealthCare’s Office of Physician Relations, Chief Medical Quality and Informatics Officer, Information Technology department, and Planning and Business Development department, as these are the key players in the development of the physician portal. The objective was to share information about how to best design the physician portal based on physician input, and to improve the portal’s value and functionality to physicians when it is built.

As the healthcare landscape changes in the United States, hospitals and physicians must continually find ways to align their goals and strategies, and to foster better communication. Information and communication technology platforms, such as intranet portals, offer ways for hospitals and physicians to work together to reduce costs and improve health outcomes. If Covenant HealthCare wishes to succeed and grow amidst new healthcare regulations, it will need
to develop strong lines of communication and access between itself and its associated physicians. Research gathering physicians’ input on the applications and design of the portal represented an opportunity for Covenant HealthCare to develop stronger relationships with the physicians, and to more closely align their goals.

**Assumptions**

The researcher assumed that the physicians and advanced practice providers participating in the survey answered the questions honestly. It is also assumed that they have at least some experience with web-based technologies. Finally, the researcher assumed that the participants were familiar with Covenant HealthCare, as they were either employed by Covenant HealthCare, or had Medical Staff privileges within the health system.

**Scope/Delimitations**

This research focused solely on physicians and advanced practice providers, such as nurse practitioners and physician assistants, associated with the Covenant HealthCare system. This included employed physicians, members of Covenant HealthCare’s PHO, and independent physicians with Medical Staff privileges. Therefore, the research may not be applicable to all hospitals or health systems. In addition, though hospital administrators will use the physician portal to communicate with physicians, this research was limited to physicians and advanced practice providers, and excluded hospital administrators. Finally, surveys for this research were administered in the fall of 2015. Given the rapidly evolving nature of information technology, particularly in the health sector, the findings may only apply to a narrow period of time.

**Definition of Terms**

The following terms are foundational to this research, and are defined here to prevent potential confusion or ambiguity.
- Advanced Practice Provider: Members of the Medical Staff who provide advanced medical services, but who are not doctors of medicine (MD) or osteopathy (DO). This includes nurse practitioners (NP), physician assistants (PA), certified registered nurse anesthetists (CRNA), and others (Center for Medicare & Medicaid Services, 2004).

- Employed Physician: A physician who is directly employed by the hospital or health system. Often, these physicians work at a hospital-acquired primary care or specialty practice, though they may also work in an in-patient setting (Health Research & Educational Trust, 2012).

- Independent Physician: For the purposes of this research, an independent physician is any physician or advanced practice provider who has Medical Staff privileges at Covenant HealthCare, but who is not employed by Covenant HealthCare and is not a member of Covenant’s PHO.

- Intranet Portal: An intranet portal is a form of information and communication technology that provides organizations with “a single electronic access point to a large and diverse array of internal web-based information to authorized end users” (Neill & Richard, 2012, p. 147). At Covenant HealthCare, the physician intranet portal is typically referred to more simply as the “physician portal.”

- Level of Integration: The level of integration describes the extent that a physician or advanced practice provider is affiliated or connected with a hospital or health system. For example, employed physicians are considered highly integrated with a hospital, while independent physicians with Medical Staff privileges at a hospital have a lower level of integration.
• Medical Staff Privileges: Medical Staff privileges allow physicians and other advanced medical providers to perform specific procedures and provide certain types of care within an organization. These are typically granted after an application and evaluation of the practitioner’s competency and credentials (Center for Medicare & Medicaid Services, 2004).

• Physician Hospital Organization (PHO): A Physician Hospital Organization is a legal entity composed of a hospital or health system and physicians. A PHO typically affords its members greater negotiating power in terms of insurance contracts. The members may also work together to improve their overall quality measures (Health Research & Educational Trust, 2012).
CHAPTER 2: REVIEW OF THE RELATED LITERATURE

Introduction to the Literature

Before delving into specific methodological considerations, it is necessary to gain a thorough understanding of the increased need for physician-hospital collaboration, and of potential intranet portal applications and issues. Though research focused directly on hospital-based physician intranet portals is limited, extensive literature is available regarding the evolving nature of physician-hospital relationships, the new communication needs this model has created, intranet portal applications, and physicians’ use of information and communication technology. This literature review is organized into three topics to provide sufficient background for the research questions: Physician-Hospital Alignment and Communication Needs, Benefits and Applications of a Physician Intranet Portal, and Potential Barriers to Use of a Physician Intranet Portal.

Presentation of the Literature

Physician-Hospital Alignment and Communication Needs. The landscape of relationships between hospitals and physicians has changed significantly over the past decade, particularly in the wake of healthcare reform. This shifting landscape has led to an increased need for integration between hospitals and physicians, through both standard economic partnerships and noneconomic forms of collaboration (Sowers, Newman, & Langdon, 2013). For example, the rise of coordinated care and additional emphasis placed on quality outcomes have driven many hospital systems and physicians to strive to align more closely (Harbeck, 2011). Hospitals and physicians alike face mounting pressure to lower healthcare costs while improving patient outcomes. As the financial risks associated with healthcare are transferred from patients to health providers, hospitals and physicians have begun to focus more on integration, working
together to achieve cost savings, enhance health outcomes, and pool financial risk (Trybou, Gemmel, & Annemans, 2011). The changing realities of healthcare in the United States have made it imperative that hospitals and physicians find new models of collaboration and communication.

Several models of physician-hospital integration have emerged, with varying levels of interconnectedness. The most tightly linked form of integration is the direct employment of physicians by hospitals. The hospital-employed physician model is quickly rising, with a reported 53 percent of physicians employed by hospitals or medical groups in 2014 (Physicians Foundation, 2014). From a physician’s perspective, hospital employment is increasingly attractive due to stagnating levels of reimbursement, work-life balance considerations, and the desire to reduce administrative burden (Pate, 2012). For hospitals, the employment of physicians has several benefits as well, such as reduced inpatient costs and improved patient outcomes, which are gradually being tied to reimbursement rates (PwC Health Research Institute, 2011). Though this model theoretically features a high degree of integration between hospitals and physicians, challenges in aligning goals and strategies still exist, especially for organizations without clear channels of communication. According to O’Malley, Bond, and Berenson (2011), communication remains one of the largest barriers to meaningful collaboration between hospitals and physicians, even among employed physicians.

Another model of integration involves a closely connected strategic partnership between hospitals and physicians, though the physician is not employed by the hospital. This model falls between the tight integration of physician employment and the loose affiliation of independent physicians. Within this model, variations still exist, even within the naming structure; some are referred to as physician-hospital organizations, while others are deemed co-management
ventures (Sowers, Newman, & Langdon, 2013). These arrangements are valuable to both parties. While physicians are able to retain a level of independence, they benefit from hospital branding and technology (May, 2011). Hospitals are also able to develop new services lines through these agreements, without the need to directly recruit physicians, which can prove to be difficult. For this type of model to succeed, however, there must be clear, continuous communication between the hospital and physicians. Though these physicians are often independent, their partnership with the hospital means they have a stake in how the hospital is managed (May, 2011). Therefore, the physicians must be kept abreast of the hospital’s policies, performance, and decisions, and should have a voice in shaping them.

On the continuum of physician-hospital alignment, the least interconnected model features independent physicians. Though these physicians are not formally linked to the hospital through employment, they may have other connections, such as clinical privileges; therefore, it is still in the best interest of hospitals and community physicians to work together and develop strong communication. Sowers, Newman, and Langdon (2013) refer to these alliances as “tactical,” which is less encompassing than the “transformational” nature of physician employment structures (p. 1819). Though the partnership between hospitals and independent physicians is less formal than in other models, the two parties can still align strategies and achieve a mutually beneficial relationship (Coker Group, 2013). However, because the relationship between hospitals and independent physicians is more distant, the groups may need to find innovative ways to communicate with each other. While independent physicians may not be granted access to the same level of hospital information as employed physicians, and vice versa, a certain level of access can be beneficial, and may help build trust between the hospital and independent physicians.
A common theme across all types of physician-hospital integration, from employed models to independent physicians, is the need for improved communication. As hospitals seek to lower costs and improve health outcomes, they must find new and better ways to communicate with physicians. In a survey of physicians conducted by the PwC Health Research Institute (2011), physicians who did not trust hospitals as partners identified the “lack of communication among physicians and hospital administrators” as one of the leading causes for their distrust (p. 7). Hospitals must also find innovative ways to engage physicians. According to Milliken (2014), increased engagement between administrative staff and clinicians is necessary in order for hospitals to provide consistent, high-quality care in their communities. The task of improving communications between physicians and hospitals, however, will require substantial effort; physician workloads have left many already feeling overextended, especially after the influx of patients brought on by healthcare reform (Physicians Foundation, 2014). Therefore, communication processes should simplify hospital engagement for physicians, rather than add to their workload. An information and communication technology based solution, such as an intranet portal, may strongly contribute to improved communication processes.

To gain a better understanding of how aligned the Medical Staff feels with Covenant HealthCare, a Physician Engagement Survey is conducted on a bi-annual basis. Using questions developed by the Advisory Board Company, this survey allows Covenant HealthCare to measure how engaged its medical providers are with the health system. Based on their responses, employed participants are categorized on a continuum as disengaged, ambivalent, content, or engaged. In 2015, 46.6% of employed health providers were considered engaged. This represented a decline from 2013, when 53.2% of employed providers were categorized as engaged. In a similar fashion, independent providers are categorized on a continuum as
disaffected, at risk, loyal, or aligned. In 2015, only 29.3% of independent providers were considered aligned; this was a marked decrease from 2013, in which 35.1% of independent providers were classified as aligned. Although Covenant HealthCare’s levels of engagement and alignment among the Medical Staff remain above the national median, the declining levels in 2015 are a point of concern. By improving communication, workflow, and the sharing of information, the physician portal may improve levels of engagement and alignment.

**Benefits and Applications of a Physician Intranet Portal.** One of the most obvious uses of a hospital physician portal is as a secure place to exchange and store information. Portals offer hospitals a centralized method of distributing information to physicians, such as meeting minutes, announcements, and policy manuals, based on each user’s intended level of access (Robertson, 2010). Part of the appeal of hosting information on an intranet portal is that it is always available, making it easier for physicians to access. This exchange of information must flow both ways though, so that the portal does not become a static repository of documents. In addition, if an intranet portal only passes information from hospital administration to physicians, and does not allow information to flow back, it can reinforce the “us” versus “them” mentality. Therefore, mechanisms such as feedback forms and discussion forums should be included; these allow physicians to share information and ideas, which can lead to higher engagement and satisfaction (Spurlock & O’Neil, 2009). Ideally, a physician portal should allow for information to be shared vertically between hospital administration and physicians, and horizontally, from physician to physician.

Beyond hospital and physician messages, a physician portal can also facilitate the transfer of clinical data. The availability of this data to physicians is crucial, as medical providers are increasingly being driven to improve quality measures and provide greater transparency
(Chassin, Loeb, Schmaltz, & Wachter, 2010). For instance, physicians could benefit from access to a dashboard that tracks how the hospital is performing in regards to its infection prevention targets. Physicians could also benefit from access to hospital or departmental HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) scores. Reimbursements are increasingly tied to these patient satisfaction measures; therefore, it is in the best interest of the hospital and physicians to monitor these scores, and to actively work to improve them (Morris, Jahangir, & Sethi, 2013). As data and quality measures become more integral to healthcare delivery and reimbursement, the ability to share relevant data with physicians within a hospital system will become progressively more important.

Another potential application of a physician intranet portal is online education. Through e-learning modules, webinars, and other educational resources, physicians can use the portal to undergo necessary training in an online environment. A key advantage of e-learning is that it allows for acknowledgment of receipt of the information, along with tests to ensure that the information was understood (Kobewka et al., 2014). This allows organizations to determine if educational resources are truly being utilized; in comparison, hospitals sending educational information to physicians via email or printed materials may struggle to track physician receipt or understanding. In addition, e-learning offers schedule flexibility and greater ease of access, with the efficacy of online medical education proven to be similar to that of in-person workshops (Schoen et al., 2009). As hospitals and physicians seek to improve health outcomes and increase potential reimbursement, e-learning through a physician portal can provide a convenient way to distribute information on best practices and clinical guidelines.

A physician portal can also help to improve workflow and expedite administrative processes. According to the Physicians Foundation (2014), physicians spend approximately
10.58 hours each week on non-clinical paperwork requirements. The amount of paperwork physicians must complete continues to rise, as documentation standards become more stringent. Fortunately, the gradual adaptation of information technology solutions, such as electronic medical records, is slowly reducing the amount of time spent on paperwork. However, hospitals should continue to leverage electronic forms and submission processes to further decrease the amount of time physicians spend on paperwork (Yoon, 2014). Other administrative processes, such as schedule creation and distribution, can also be incorporated into the portal. For instance, some hospitals have found success in documenting staff participation in health initiatives, such as influenza vaccinations, through an intranet system (Bertin et al., 2007). Online access to administrative tasks also frees physicians to complete their work in a variety of locations, so that they are not restricted to their offices (Yoon, 2014). By placing necessary forms and tasks onto the physician intranet portal, hospitals can ease physician paperwork burden, and offer them a greater sense of convenience.

**Potential Barriers to Use of a Physician Intranet Portal.** Though a physician portal has much to offer to hospitals and physicians, particularly as these groups seek to become more closely aligned, there are still obstacles to its successful implementation. The largest potential barrier is the willingness of physicians to accept and engage with the physician portal. According to Gagnon et al. (2012), factors influencing physicians’ willingness to engage with new forms of information and communication technology include their perceptions of its usefulness, ease of use, design and technical concerns, and concerns of interoperability. The information on an intranet portal must also be accurate and updated for the portal to be seen as worthwhile (Piliouras & Braun, 2010). Physicians’ judgments of an intranet portal’s usefulness and ease of use are especially crucial to its success; if physicians are not convinced that their investment of
time in mastering the portal will improve their work experience and productivity, the portal may quickly become irrelevant or abandoned (Spurlock & O’Neil, 2009). Therefore, when designing the physician intranet portal, it is essential to develop a thorough understanding of what physicians believe would make the portal most useful, and to ensure that it is simple and intuitive to use.

Another common reason that intranet portals falter is a failure to solicit input from end users, or to integrate that input into the final design. According to the Health Research & Educational Trust (2012), hospitals seeking to improve physician alignment initiatives through information technology platforms must engage in “thorough technology planning that defines user requirements at the physician level and engages physicians early in the process” (p. 15). Without soliciting feedback on the intranet portal from physician end users, hospitals are only able to speculate about what physicians may require of the platform. In order to build an intranet portal that is likely to be meaningfully adopted by physicians, it is imperative to identify their needs as a group, and to mold the portal’s functionalities to best meet those needs (Robertson, 2010). Though it seems intuitive to engage the end users of an intranet portal during the design and development process, this step is often omitted, leading to poorly designed portals and frustrated organizations.

The level of integration physicians have with the hospital can also influence their willingness to use the portal. Physicians who are more tightly connected to the hospital, such as employed physicians, are generally more willing to engage with the hospital’s information systems (Lammers, 2012). Conversely, private physician practices are the least likely to use these forms of technology. This may be caused in part by a continued sense of competition between hospitals and independent physicians (Grossman, Bodenheimer, & McKenzie, 2006).
Though physician-hospital alignment is growing in importance, independent physicians may feel apprehensive about sharing information and engaging with a competitor hospital. Another reason independent physicians are less likely to use hospital information systems is its perceived lack of usefulness. Without strong ties to the hospital, independent physicians often see no advantage to using a hospital physician portal, particularly if its usefulness is not readily apparent or has not been marketed well. However, according to Grossman, Bodenheimer, and McKenzie (2006), independent physicians who admit high numbers of patients to a specific hospital are more likely to utilize that hospital’s health information systems. Given the growing need for hospitals and physicians to become better aligned, it is important to find ways to engage physicians of all integration levels through hospital information systems.

**Summary of the Literature**

Rapid changes in the healthcare sector, such as an increased focus on quality measures and the need to find cost savings, have forced hospitals and physicians to collaborate more closely. Several models of physician-hospital alignment have emerged to accommodate changes in U.S. health regulations, such as direct physician employment and physician-hospital organizations. Even independent physicians, who have traditionally maintained distance from their hospital competitors, are increasingly seeking ways to collaborate with hospitals. Though improved coordination of goals and strategies, pooling of financial risk and negotiating power, and data-sharing, physicians of all levels of integration and hospitals are now aiming to work together for their mutual benefit. However, despite these attempts to become better-aligned, many hospitals and physician relationships continue to be stymied by poor communications and ineffective workflow processes.
An information and communication technology solution, such as an intranet portal, could greatly enhance communications between hospitals and physicians. In addition, it could streamline physicians’ administrative responsibilities, allow for the distribution and monitoring of e-learning materials, facilitate clinical data-sharing, and increase access to information on quality measures. While an intranet portal offers a wealth of potential benefits, physician acceptance and adoption of the portal should not be taken for granted. Several factors, such as the intranet portal’s perceived usefulness and ease of use, can prevent physicians from utilizing the portal. In addition, physicians who are less connected to the hospital, such as independent physicians, are generally less inclined to adopt hospital information technology systems. However, designing the intranet portal around physicians’ input can increase the probability that the portal is adopted by physicians, and that it is able to meaningfully enhance physician-hospital communications and alignment strategies.
CHAPTER 3: RESEARCH METHODOLOGY

Research Approach

Covenant HealthCare wishes to improve communications with physicians, enhance data sharing, and streamline physician workflow through the development of a physician intranet portal. When designing an information and communication technology platform, it is essential to first cultivate an understanding of the end users’ needs and concerns. Therefore, this research sought to use physician input to determine how Covenant HealthCare can best implement a physician intranet portal. By building an awareness of physicians’ priorities and concerns in regards to the intranet portal, the effectiveness of Covenant HealthCare’s future design and implementation of the portal should be enhanced.

This research project combined elements of a feasibility study and program design. The principal data for this research was collected through a survey. This survey was distributed to Medical Staff to gather data on which features they would find most valuable on the physician intranet portal, and to identify any potential barriers to their use of the portal. Based on the results of this survey, recommendations were made on how Covenant HealthCare can best design and implement the physician intranet portal.

Data Collection Approach and Procedures

Data collected. Basic demographic information was collected regarding the physician’s level of integration with the hospital (employed, PHO, or independent), along with their role within the health system. Quantitative data was also collected on the perceived value of potential physician intranet portal applications through the use of a Likert scale. The perceived importance of several prospective barriers to their utilization of the intranet portal was also gathered. Qualitative data was collected regarding additional intranet portal applications that the
participants were interested in, along with any further concerns or barriers to the portal’s use, through open-ended questions.

**Data collection procedures.** Data for this research was collected through online surveys, which were distributed through a web-based survey tool, SurveyMonkey. Because the researcher did not have access to physician email addresses, an email with a link to the survey was sent by Covenant HealthCare’s Chief Medical Quality and Informatics Officer.

**Target population.** The target population for this research was physicians and advanced practice providers affiliated with Covenant HealthCare, including employed physicians, members of the PHO, and independent physicians. According to Covenant HealthCare, there were 739 physicians and advanced practice providers in this population at the time of the survey’s distribution; this includes 201 employed physicians and advanced practice providers, 236 PHO members, and 302 independent practitioners.

**Sample details.** Given the relatively small size of the target population, surveys were distributed to all members of the population. To be included in the study, these physicians and advanced practice providers had to be affiliated with Covenant HealthCare through direct employment, the PHO, or as an independent physician or practitioner with Medical Staff privileges.

This research did not include members of vulnerable populations. Contact information for the target population, such as email addresses, was not obtained by the researcher. Instead, the Chief Medical Quality and Informatics Officer sent an email on behalf of the researcher with a description of the project and a link to the online survey.

**Instrumentation.** Data was collected through an anonymous online survey built on SurveyMonkey. The survey questions were created specifically for this study, and were not
tested for validity and reliability. The first two questions were used to identify the participant’s level of integration with Covenant HealthCare, and their role in the health system. Eleven of the sixteen survey questions used a Likert scale, which allowed for quantitative analysis. However, three open-ended questions were included to provide survey participants with an opportunity to provide additional qualitative information. Surveys with unanswered questions were allowed, as some participants may have not been familiar with certain portal features. The survey questions can be found in Appendix B. In addition, all participants were provided with a digital consent form; please see Appendix C for a copy of this form.

**Procedures.** To ensure the privacy of the physicians, and to safeguard their email addresses, the survey was sent via email by Covenant HealthCare’s Chief Medical Quality and Informatics Officer on behalf of the researcher. The email described the research project, and informed the Medical Staff that their participation was completely voluntary. The email also contained the digital consent form and a direct link to the survey. The surveys were submitted through SurveyMonkey, and were anonymous. While the researcher is employed by Covenant HealthCare, there was no supervisor-subordinate relationship between the researcher and the participants.

**Timing.** Surveys for this research were distributed in October of 2015, with surveys collected over the span of three weeks. Each survey took approximately five minutes to complete.

**Approach for Data Analysis and Synthesis**

Quantitative data collected through the surveys were analyzed using the statistical software SPSS. For each quantitative survey question, descriptive statistics such as mean and standard deviation were calculated. The researcher had also intended to determine if there were
statistically significant differences in participants’ responses for each quantitative survey question based on their level of integration with Covenant HealthCare (employed, PHO, or independent with Medical Staff privileges). However, the sample size was not sufficiently large to determine if there were statistically significant differences in the groups’ responses. Therefore, while descriptive statistics were calculated for each group, no conclusions were drawn regarding statistical significance.

Qualitative data collected through the survey’s open-ended questions was analyzed using a content analysis method outlined by Fink (2013). First, the researcher examined the open-ended survey responses, using a coding system to group similar comments. If a substantial portion of the comments touch on the same priorities or concerns, it was considered a “theme” (Fink, 2013, p. 116). These themes were used in conjunction with the quantitative data gathered from the survey to provide a more complete understanding of the research questions.

Methodological Limitations

This research was largely grounded in quantitative survey questions delivered to members of Covenant HealthCare’s Medical Staff. While this is not a limitation in itself, it did not allow for follow-up questions, and may not have yielded as rich of data as interviews or other more time-consuming methods. In addition, the survey questions were designed specifically for this study, and were not tested for validity and reliability. A third potential limitation was due to the online distribution of the survey. This may have introduced a bias to the research, as the participants who regularly checked their email may have had different perspectives or levels of comfort with intranet portals than participants who did not regularly check email. Finally, this research focused solely on the Medical Staff of Covenant HealthCare; therefore, the findings may not be generalizable to other health systems or populations.
CHAPTER 4: DATA ANALYSIS

Introduction

As Covenant HealthCare strives to align itself more closely with its Medical Staff, hospital leadership has requested the development of a physician portal. The primary aims of this portal are to improve access to information, strengthen channels of communication, and enhance workflow. Before developing the physician portal, it was imperative to gather input from members of the Medical Staff, as this is one of the largest determinants of an intranet platform’s success (Robertson, 2010). A survey was distributed to Covenant’s Medical Staff to gain insight into which potential portal features were perceived as the most valuable, as well as to identify any prospective concerns or barriers to the physician portal’s success. Both descriptive and qualitative theme analyses were used to develop an understanding of the research data and to explore participants’ views of the physician portal.

Characteristics of Participants

The sample for this study was composed of 94 members of Covenant HealthCare’s Medical Staff. Of the respondents, 49 were directly employed by Covenant HealthCare, comprising 52.13% of the sample. 27 respondents (28.72%) were independent members of the Medical Staff, but were also members of the Physician-Hospital Organization (PHO). The remaining 18 respondents (19.15%) were independent and did not belong to the PHO.

Participants were also asked about their role at Covenant HealthCare. Of the 94 respondents, 74 (78.72%) were physicians. An additional 18 respondents (19.15%) identified themselves as advanced practice providers, such as nurse practitioners and physician assistants. Two respondents (2.13%) selected the “Other” category, with one identifying as a research director, and the other stating that he or she was an allied psychologist.
Physician Portal Priorities

To develop an understanding of the Covenant HealthCare Medical Staff’s priorities for the physician portal, survey respondents were asked to indicate how valuable 11 potential physician portal features would be to them using a Likert scale. The Likert scale options were as follows: Not Valuable (1), Slightly Valuable (2), Fairly Valuable (3), Valuable (4), and Very Valuable (5). A corresponding number from 1 to 5 was assigned to each option to allow for quantitative analysis. Data for each of the 11 physician portal features is presented in order from most valuable to least valuable. See Appendix D for a detailed chart of the mean values assigned to each physician portal feature.

Access to EPIC and EPIC Help Materials. Participants were asked how valuable they believed access to EPIC and EPIC help materials would be. EPIC is the electronic medical records system used by Covenant HealthCare. 93 participants answered this question, ranking this feature as the most valuable of all potential portal features listed. Access to EPIC and EPIC help materials received a mean value of 3.91 and a standard deviation of 1.05. Those directly employed by Covenant HealthCare gave access to EPIC and EPIC help materials a mean value of 3.79, with a standard deviation of 1.09. For independent participants who were members of the PHO, the mean value was higher at 4.26, with a standard deviation of 0.94. For independent participants who were not members of Covenant’s PHO, the mean value was 3.72 and the standard deviation was 1.02. See Figure 1 for the distribution of participant responses.
Access to E-Learning Materials. According to survey participants, the second most valuable physician portal feature was access to e-learning materials. 93 respondents answered this question, with a mean value of 3.66 and a standard deviation of 1.12. Participants directly employed by Covenant HealthCare assigned access to e-learning materials a mean value of 3.54, with a standard deviation of 1.07. For independent participants who belonged to the PHO, the mean value was higher at 4.04, with a standard deviation of 1.22. For independent physicians who were not members of the PHO, the mean value was 3.39, and the standard deviation was 0.98. See Figure 2 for the distribution of participant responses.
**Medical Staff Directory.** Participants were asked to indicate how valuable they would find a Medical Staff directory with the ability to update personal information. This question was answered by 93 respondents, with a mean value of 3.65 and a standard deviation of 1.16. Those directly employed by Covenant HealthCare assigned the Medical Staff directory a mean value of 3.52, with a standard deviation of 1.19. For independent participants who were members of the Covenant PHO, the mean value was slightly higher at 3.92, with a standard deviation of 1.02. Independent participants who were not members of the PHO gave the Medical Staff directory a lower mean value of 3.56, with a standard deviation of 1.25. See Figure 3 for the distribution of participant responses.

![Figure 3](image_url)

*Figure 3.* Response distribution for the value of a Medical Staff directory with an ability to update personal information.

**Access to Call Schedules.** The fourth most valuable feature, according to survey respondents, would be online access to call schedules. 92 participants answered this question, with a mean value of 3.62 and a standard deviation of 1.31. For respondents directly employed by Covenant, the mean value was 3.74, with a standard deviation of 1.31. Independent participants who were members of the PHO gave access to call schedules a mean value of 3.81, with a standard deviation. Finally, for independent respondents who did not belong to the PHO,
the mean value was lower at 3.00, with a standard deviation of 1.25. For details on the
distribution of participant responses, see Figure 4.

![Figure 4](image1.png)

*Figure 4.* Response distribution for the value of online access to call schedules.

**Links to Related Sites.** Survey participants were asked to assign a value to links to
related sites, such as Crimson and UpToDate. 91 survey participants responded to this question,
with a mean value of 3.62 and a standard deviation of 1.28. Those directly employed by
Covenant gave links to related sites a mean value of 3.77, with a standard deviation of 1.19. For
independent participants belonging to the PHO, the mean value of 3.67, with a standard
deviation of 1.39. For independent participants outside of the PHO, the mean value was 3.06, and
the standard deviation was 1.29. See Figure 5 for the distribution of participant responses.

![Figure 5](image2.png)

*Figure 5.* Response distribution for the value of links to related sites, such as Crimson and
UpToDate.
Access to Covenant HealthCare Announcements. Participants ranked access to Covenant HealthCare announcements as the sixth most valuable feature. This question was answered by 93 respondents, with a mean value of 3.51 and a standard deviation of 1.09. Those directly employed by Covenant gave access to Covenant HealthCare announcements a mean value of 3.44, with a standard deviation of 1.07. For independent participants who belonged to the PHO, the mean value was higher at 3.81, and the standard deviation was 1.11. For independent physicians who were not members of the PHO, the mean value was 3.22, with a standard deviation of 1.06. See Figure 6 for the distribution of participant responses.

Online Administrative Forms. Survey participants were asked how valuable they would find online administrative forms, such as forms used to verify credentials. In total, 92 participants responded to this question, with a mean value of 3.39 and a standard deviation of 1.12. Those directly employed by Covenant assigned online administrative forms a mean value of 3.53, with a standard deviation of 1.00. For independent participants who belonged to the PHO, the mean value was lower at 3.30, and the standard deviation was 1.23. For independent participants outside of the PHO, the mean value of online administrative forms was 3.17, and the standard deviation was 1.25. See Figure 7 for details on the distribution of participant responses.
Ability to Update Call Schedules. Participants were asked how valuable they believed the ability to update call schedules through the physician portal would be. In total, 91 participants answered the question, with a mean value of 3.35 and a standard deviation of 1.46. Those directly employed by Covenant assigned the ability to update call schedules a mean value of 3.35, with a standard deviation of 1.48. For independent participants who belonged to the PHO, the mean value was higher at 3.70, with a standard deviation of 1.32. Independent physicians who were not members of the PHO gave the ability to update call schedules a lower mean value of 2.83, with a standard deviation of 1.50. For detailed information on the distribution of participant responses, see Figure 8.
Access to Meeting Minutes and Agendas. Survey participants were asked how valuable they would find online access to meeting minutes and agendas. 94 participants responded, ranking this feature the ninth most valuable, with a mean value of 3.35 and a standard deviation of 1.15. For participants directly employed by Covenant HealthCare, the mean value was 3.41, with a standard deviation of 1.12. Those who were independent but members of the PHO indicated a mean value of 3.59 and a standard deviation of 1.08. For independent participants who were not members of the PHO, the mean value was lower at 2.83, with a standard deviation of 1.25. For details on the distribution of participant responses, see Figure 9.

![Figure 9](image_url)

*Figure 9. Response distribution for the value of access to meeting minutes and agendas.*

Personalized Quality Dashboards. Participants were asked to indicate how valuable they would find personalized quality dashboards, such as HCAHPS scores. 87 participants responded to this question, with a mean value of 3.25 and a standard deviation of 1.29. For those directly employed by Covenant HealthCare, the mean value was 3.39, and the standard deviation of 1.20. Independent participants who were members of the PHO gave personalized quality dashboards a mean value of 3.38, with a standard deviation of 1.38. For independent participants who did not belong to the PHO, the mean value was lower at 2.71, with a standard deviation of 1.31. See Figure 10 for details on the distribution of participant responses.
Hospital Administration Feedback Form. The least valuable physician portal feature was a hospital administration feedback form. 91 participants responded to this question, with a mean value of 3.19 and a standard deviation of 1.17. For those directly employed by Covenant HealthCare, the mean value was 3.28, with a standard deviation of 1.16. Independent participants belonging to the PHO assigned the hospital administration feedback form a mean value of 3.26, with a standard deviation of 1.20. For independent participants who did not belong to the PHO, the mean value was lower at 2.82, and the standard deviation was 1.19. For information on the distribution of participant responses, see Figure 11.
Open-Ended Responses. The survey contained an open-ended question in which participants could describe any additional features they would find valuable on the physician portal. Of the 94 participants, 24 (25.53%) provided responses. However, one response contained two separate suggestions for additional portal features. For categorization purposes, this response was split into two, for a total of 25 responses. The researcher used a coding system described by Fink to categorize the responses into themes. Six of the 25 responses indicated that participants would like the physician portal to provide them with access to information. Specific information requested included the hospital directory, reports for specific departments, Medical Staff bylaws and policies, safety and quality information, and information on new services and physicians. Another six responses stated that additional or improved communication channels would be valuable. Suggested communication channels included a message board for providers, direct messaging options including text messages, and an area for suggestions. In a similar vein, two of the 25 responses specified that participants would like direct access to email through the physician portal, while two more responses requested a reminder or notification system.

Access to specific systems, such as PACS and the call schedule system, was stated to be valuable in two responses. An additional two responses simply expressed disappointment with Covenant HealthCare’s level of communication with the Medical Staff. Two of the 25 responses involved logging in to the physician portal, requesting a simple, single sign-on system. One response indicated that a patient scheduling feature would be valuable. The final two responses did not describe additional features. Instead, one stated that the participant was unsure of what personalized dashboards were, while the other remarked that he or she had no additional features to suggest. See Figure 12 for a breakdown of the response categories; the final two responses, which contained no suggestions, were not included in this chart.
In addition to studying which physician portal features would be most valuable, this research also sought to determine which factors could prevent the Medical Staff from using the physician portal. Participants were asked to indicate which of the following factors they viewed as a potential barrier to their use of the physician portal: privacy concerns, general discomfort with technology, ease of use concerns, lack of clinical integration with Covenant HealthCare, reluctance to learn a new technology platform, and uncertainty about the physician portal’s value. There was also an option titled, “Other – please specify,” in which participants could describe any additional factors that could prevent them from using the physician portal. Data from this portion is presented in order of how many participants selected that factor, from largest to smallest.

**Ease of Use Concerns.** 45 of the 94 participants (47.87%) specified that ease of use concerns were a factor that could inhibit their use of the physician portal. Among the 49 participants directly employed by Covenant HealthCare, 24 selected ease of use concerns (49.0%). 14 of the 27 independent participants who are members of the PHO (51.85%) indicated...
that ease of use concerns were a potential barrier to their use of the portal. Finally, seven of the 18 independent physicians not belonging to the PHO (3.89%) selected ease of use concerns as a factor.

**Uncertainty about the Physician Portal’s Value.** 31 of the 94 respondents (32.98%) designated uncertainty about the value of the physician portal as a potential barrier to its use. Among the 49 participants directly employed by Covenant, 16 selected this as a factor (32.65%). 9 of the 27 independent respondents belonging to the PHO, (33.33%) identified uncertainty about the physician portal’s value as a potential barrier. For six of the 18 independent participants not belonging to the PHO, or 33.0%, this was also selected as a factor.

**Privacy Concerns.** In total, 22 of the 94 participants (23.4%) identified privacy concerns as a factor that could prevent them from using the physician portal. Among the 49 survey participants directly employed by Covenant HealthCare, 8 (16.32%) selected privacy concerns as a factor. Ten of the 27 independent participants belonging to the PHO (37.03%) indicated that privacy concerns were a factor. For independent physicians who were not members of the PHO, Four of the 18 participants (22.22%) marked privacy concerns as a potential barrier to their use of the physician portal.

**Lack of Clinical Integration with Covenant HealthCare.** In total, 21 of the 94 participants (22.34%) identified a lack of clinical integration with Covenant HealthCare as a potential barrier to their use of the physician portal. Of the 49 respondents directly employed by Covenant, 12 (24.49%) indicated that this was a factor. Seven of the 27 independent participants belonging to the PHO (25.92%) selected lack of clinical integration with Covenant HealthCare. Among the 18 independent participants not belonging to the PHO, two respondents (11.11%) chose this as a potential barrier.
Reluctance to Learn a New Technology Platform. Six of the 94 respondents (6.38%) indicated that reluctance to learn a new technology platform was a factor that could prevent them from using the physician portal. Only one of the 49 participants directly employed by Covenant (2.04%) identified this as a potential barrier. Among independent participants who were members of Covenant’s PHO, three of the 27 respondents (11.11%) selected reluctance to learn a new technology platform. Two of the 18 independent participants not belonging to the PHO (11.11%) also marked this as a factor.

General Discomfort with Technology. Only six of the 94 participants (6.38%) indicated that a general discomfort with technology could prevent them from using the physician portal. For those directly employed by Covenant HealthCare, three of the 49 participants (6.12%) selected general discomfort with technology as a concern. Among independent participants who were members of Covenant’s PHO, three of the 27 respondents (11.11%) identified general discomfort with technology as a potential barrier. No independent physicians who were not members of the PHO selected this as a factor.

Other Potential Barriers. Through an open-ended option, survey participants were given the opportunity to identify other factors that could prevent them from using the physician portal. 18 of the 94 participants (19.15%) provided responses for this. Using a content analysis method outlined by Fink (2013), the researcher coded these responses into larger themes. Four of the 18 responses simply stated that there were no other factors that would prevent use of the physician portal, or that they believed the portal was a “great idea.” In four of the 18 responses, participants specified that they were too busy, and would not have enough time for the physician portal. Another three responses stated that they would require reminders or notifications to use the physician portal. Three of the 18 responses indicated that they were concerned the physician
portal would be overly complicated, such as requiring too many passwords. Two of the 18 responses specified that the participants would prefer to receive information by email. For one of the 18 respondents, previous technological difficulties with Covenant HealthCare systems was identified as a potential factor that could prevent their use of the physician portal. Finally, one participant stated that he or she was unsure of how the physician portal would work. See Figure 13 for a breakdown of the response themes.

Figure 13. Categorization of open-ended responses to the survey question “Which of the following factors could prevent you from using the physician portal?” in the “Other (please specify)” option. Responses specifying that the participant had no factors to add were not included in this chart.

**Additional Concerns.** The survey included an open-ended question in which participants could share any of their concerns about the physician portal. 25 of the 94 participants (26.6%) provided responses for this question, which were again coded by the researcher into themes. Five of the 25 responses conveyed uncertainty about the value of the physician portal, and stated that they were unsure it would be useful enough to warrant learning a new system. Three more responses indicated that the information on the physician portal should be consistently updated and accurate. Three responses expressed excitement about the physician portal, while three other responses stated that they had no additional concerns. Two of the 25 responses stated that the physician portal should be integrated with EPIC, Covenant HealthCare’s electronic medical
Another two responses indicated that it would be difficult for the participants to remember to check the physician portal, with one of those participants requesting an email notification system.

In two of the 25 responses, participants expressed concern that physicians would not have time to use the portal, while one of those participants shared that physicians already have to log into too many systems. For one of the 25 respondents, the potential feature of updating call schedules through the portal was a concern, as he or she felt this process should be monitored. One participant simply asked that the physician portal be easy to use, while another stated that the portal was long overdue. One of the 25 responses stated that the participant was concerned that portal would not allow individuals to communicate within it. One additional response indicated that privacy was a concern. For a visual breakdown of the response categories, see Figure 14.

![Figure 14](image-url)

*Figure 14. Categorization of open-ended responses to the survey question “Describe any concerns you may have about the physician portal.” Responses specifying that the participant had no concerns to add were not included in this chart.*
CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

In the wake of health reform initiatives in the United States, the need for strong lines of communication and coordination between health systems and medical providers continually grows stronger. To address this need, several hospital administrators and physician leaders have requested that Covenant HealthCare develop and implement a physician intranet portal. This physician portal should provide Covenant’s Medical Staff with access to pertinent information, improved channels of communication, training materials, and other features to enhance their workflow. This portal will be used to connect medical providers directly employed by Covenant HealthCare, members of the PHO, and independent physicians to each other, and to Covenant’s administration. By investing in a physician portal, Covenant aims to achieve better integration with its Medical Staff, strengthen the health system’s level of integration, and achieve new efficiencies.

Before designing an intranet portal, it is imperative to seek input from the end users. According to Robertson (2010), gathering input from those who will actually use the intranet portal is one of the largest factors in determining the platform’s success. Therefore, this research sought to garner input from members of Covenant HealthCare’s Medical Staff regarding their priorities and concerns for the physician portal. To develop an understanding of the Medical Staff’s priorities for the portal, the survey asked participants to rate how valuable they would find several potential portal features using a Likert scale. The physician portal features ranked as most valuable were access to EPIC and EPIC help materials (mean value of 3.91), access to e-learning materials (mean value of 3.66), and a Medical Staff directory with the ability to update personal information (mean value of 3.65). These features all serve to enhance physicians’
workflow. Features designed to improve communications, such as access to Covenant announcements (mean value of 3.51) and a hospital administration feedback form (mean value of 3.19) were ranked lower in terms of value to the Medical Staff. However, all 11 features received mean ratings between fairly valuable (3) and valuable (4). This indicates that the Medical Staff does believe that there is value to be found in the physician portal’s features.

Participants were also asked to identify any potential barriers or concerns for the physician portal. The top barrier selected by participants was ease of use concerns, with 45 of the 94 respondents (47.87%) choosing this factor. Other top barriers included uncertainty about the physician portal’s value (selected by 32.98% of respondents) and privacy concerns (23.4%). Some barriers anticipated by the researcher, such as reluctance to learn a new technology platform and a general discomfort with technology, were only selected by a handful of participants. This is a positive indicator for the physician portal, as the Medical Staff seems willing to learn a new platform. When given the opportunity to discuss physician portal concerns in an open-ended format, themes that emerged included fear that information on the portal would be inaccurate or outdated, and that members of the Medical Staff were already too busy to integrate another system into their routines. When designing the physician portal, it will be essential to keep these concerns in mind, and to develop the physician portal in a manner that addresses them.

Conclusion

The changing nature of the health sector has made it necessary for Covenant HealthCare to find novel ways to engage with its Medical Staff. The physician portal is intended to provide Covenant’s physicians and advanced practice providers with access to information, improve their workflow and efficiency, and strengthen channels of communication. This research gathered
input from the Medical Staff to determine their priorities and concerns for the physician portal, and to establish how Covenant HealthCare can best design and implement this portal. The findings will be used in the development of the physician portal, and can also be used to strengthen Covenant’s relationship with the Medical Staff by demonstrating that the health system values their input and suggestions. Though this research focused only on Covenant HealthCare, and may not be generalizable to other health systems, it does serve to advance the discussion of the use of technology platforms to strengthen the level of integration between a hospital and its health providers. Given the increasing pressure on the health sector to improve patient outcomes and reduce costs, these discussions are likely to grow even more pertinent in the future.

**Recommendations**

Input from the Medical Staff on their priorities and concerns for the physician portal is extremely helpful in determining how to best design and implement this new platform. The following recommendations are based on the findings of this research project.

**Ease of Use.** One of the primary considerations in designing the physician portal should be ease of use. Survey participants ranked ease of use concerns as the top factor that could prevent them from using the physician portal, with nearly half of the respondents selecting this factor. This is similar to elements of the literature review; for instance, findings from Gagnon et al. (2012) indicated that one of the most important determinants in physicians’ acceptance of new information and communication technology was how easy it was to use. Therefore, when designing the physician portal, it will be crucial to ensure that the platform is intuitive, logical, and does not take much time or effort to master. Creating a single sign-on feature, which integrates several systems into one platform with a shared username and password, would also
make the physician portal easier to use. Several themes that arose in the open-ended portions of the survey touched on how busy the Medical Staff already was, with some participants expressing concern that the physician portal would make their work more complicated. Integrating the portal with existing systems through a single sign-on feature would make it simpler and more efficient for the Medical Staff, and enhance the likelihood that the physician portal will be utilized.

**Learning and Training Materials.** A top priority for the physician portal should be the quality and availability of training materials. Survey participants rated “Access to EPIC and EPIC help materials” and “Access to e-learning materials” as the first and second most valuable potential portal features, respectively. The high values assigned to these features signifies that Covenant’s Medical Staff believes that the physician portal may be most useful as an educational tool. By providing access to quality learning materials, such as EPIC training files, instructional modules, and topic-specific webinars, the physician portal can deliver a higher level of value to the Medical Staff. In addition, in contrast to in-person training sessions, these materials would be available at any time; for physicians and advanced practice providers, whose schedules are often full, this flexibility may make training options more feasible. In developing training and learning features for the physician portal, it will be crucial to coordinate with various departments throughout Covenant, such as the EPIC specialists, Corporate Compliance, and clinical units, to ensure that the educational content offered is both high-quality and relevant for the Medical Staff.

**Communication of the Portal’s Value.** A third key consideration for the physician portal’s success will be convincing the Medical Staff of the portal’s value. Nearly one-third of the survey’s respondents (32.98%) indicated that uncertainty about the physician portal’s value
could prevent them from using the portal. This echoed research by Spurlock and O’Neill (2009), who asserted that when employees are unaware of the benefits of an intranet portal, they will likely view the platform as irrelevant to their work, and avoid investing the time to learn how to use it. Therefore, to ensure that Covenant HealthCare’s physician portal is adopted by the Medical Staff, it will be crucial to develop a strong communication plan to introduce the portal. By launching the physician portal in conjunction with effective messaging that describes the portal’s features and value, the physician portal’s chances of success will be greatly increased. In collaboration with the Office of Physician Relations and the PHO, Covenant HealthCare should organize physician portal launch initiatives, provide training and demonstration sessions, and present the physician portal at Medical Staff meetings. Spreading awareness of the physician portal’s value and features from the onset strongly enhances the likelihood that the Medical Staff will use it.

**Accuracy and Ownership of Information.** Another element of convincing the Medical Staff of the physician portal’s value will be ensuring that information on the portal is accurate and up to date. This emerged as a theme in the open-ended portion of the survey, and also relates to assertions by Piliouras and Braun (2010), as discussed in the literature review. If information on the physician portal is not maintained, the Medical Staff will quickly begin to view it as a poor source of information, and it will fall out of use. To ensure that information on the portal remains updated, a clear system of information ownership must be established. It will be vital to designate an engaged point person for each section of the physician portal, who will be in charge of maintaining the accuracy of their area’s information. The sheer amount and variety of information to be housed in the physician portal makes a decentralized system of information
maintenance the most logical choice. With the successful implementation of a decentralized maintenance system, the portal’s information should remain accurate and updated.

**Recommendations for Future Research.** This research gathered input from members of Covenant HealthCare’s Medical Staff prior to the development of the portal. However, once medical providers have had the opportunity to use a physician portal, their priorities and concerns may shift. Therefore, future research regarding physician portals may explore the experiences of physicians after the portal has been built and introduced. In addition, the researcher had originally intended to determine if there were statistically significant differences in the priorities and concerns for the physician portal based on the respondents’ level of integration with Covenant HealthCare (directly employed, independent members of the PHO, and independent physicians outside of the PHO). However, the number of surveys returned was not sufficient to calculate statistical significance at a meaningful level. In the future, research with a higher number of participants could continue to explore the variations in physician portal priorities and concerns based on the level of integration with a health system.
References


Appendix A

Permission to Conduct Study

September 17, 2015

Jamie Jager
Covenant HealthCare
500 S. Hamilton Street, Third Floor
Saginaw, MI 48602

Dear Ms. Jager:

I have reviewed your request to conduct a research project involving the Medical Staff at Covenant HealthCare and the survey that will be used regarding a computer based physician portal. I feel that this project will be beneficial to Covenant HealthCare. You have my permission to distribute a survey to the Covenant HealthCare Medical Staff for this project. The following stipulations should be observed: the survey is to be anonymous; it is not to be published; and the results must be shared with Medical Staff Services Office at Covenant HealthCare.

If you have any questions regarding this letter of approval, please give me a call at 989-583-6147.

Sincerely,

Michael L. Schultz, M.D.
Vice President, Medical Affairs
Appendix B

Survey Questions

1. What is your relationship to Covenant HealthCare?
   ○ Directly employed by Covenant HealthCare/Covenant Medical Group
   ○ Independent, but a member of Covenant’s Physician Hospital Organization (PHO)
   ○ Independent, but not a member of Covenant’s Physician Hospital Organization (PHO)

2. What is your role at Covenant HealthCare?
   ○ Physician (MD or DO)
   ○ Advanced Practice Provider (NP, PA, CRNA, or CRM)

3. How valuable would each of the following physician portal features be to you?

<table>
<thead>
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<th>Feature</th>
<th>Not Valuable</th>
<th>Slightly Valuable</th>
<th>Fairly Valuable</th>
<th>Valuable</th>
<th>Very Valuable</th>
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<td>Medical Staff Directory with ability to update personal information</td>
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<td>Access to meeting minutes and agendas</td>
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<tr>
<td>Access to call schedules</td>
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<tr>
<td>Ability to update call schedules</td>
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<tr>
<td>Links to related sites (e.g. Crimson, UpToDate)</td>
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4. Describe any additional features you would find valuable on the physician portal.
5. Which of the following factors could prevent you from using the physician portal? Check all that apply.
   ○ Privacy concerns
   ○ General discomfort with technology
   ○ Ease of use concerns
   ○ Lack on clinical integration with Covenant HealthCare
   ○ Reluctance to learn a new technology platform
   ○ Uncertainty about the physician portal’s value
   ○ Other (please specify)

6. Describe any concerns you may have about the physician portal.
September 27, 2015

Dear Participant:

My name is Jamie Jager, and I am a graduate student at Central Michigan University. For my final project, I am examining Medical Staff priorities and concerns for the upcoming physician intranet portal. Because you are a member of Covenant HealthCare’s Medical Staff, I am inviting you to participate in this research study by completing the attached survey.

The following questionnaire will require approximately five to ten minutes to complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please do not include your name. Copies of the project will be provided to my Central Michigan University instructor and to Covenant HealthCare’s Medical Staff Office, Office of Physician Relations, and the Chief Medical Quality and Informatics Officer. If you choose to participate in this project, please answer all questions as honestly as possible and return the completed questionnaires promptly by clicking on the survey link found at the end of this letter. Participation is strictly voluntary and you may refuse to participate at any time.

Thank you for taking the time to assist me in my educational endeavors. The data collected will provide useful information regarding how Covenant HealthCare can best design and implement the physician intranet portal. Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below. Please feel free to e-mail me if you would like a summary copy of the study.

Please note that if you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any complaints to the MSA Program by calling 989-774-6525 or addressing a letter to the MSA Program, Rowe 222, Central Michigan University, Mt. Pleasant, MI 48859.

Sincerely,

Jamie Jager
Tel: (989) 583-7668 Email: jamiejager@chs-mi.com
Dr. John Zappala
Tel: (989) 774-6525 Email: zappa1jg@cmich.edu

Please click the following link to access this web-based survey.
https://www.surveymonkey.com/r/CovenantPortal

Thanks for your participation.
## Appendix D

### Mean Values of Potential Physician Portal Features

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