BUSINESS PLAN: Feasibility and Value of Adding Fluoroscopic Examinations to an Academic Hospital Affiliated Outpatient Imaging Center

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Executive Summary

Nebraska Medicine has been serving patients from every state in the country as well as 47 countries worldwide since the founding of Clarkson Hospital in 1869. With its main academic campus deeply rooted in the heart of midtown Omaha, Nebraska, Nebraska Medicine has strategically expanded their service region to include a second hospital in Bellevue, Nebraska, multiple primary care clinics located throughout the metropolitan area, and a robust outpatient facility in the Village Pointe area of west Omaha. Located within the outpatient center is an outpatient imaging department equipped with the most up to date imaging equipment. This business plan discusses the feasibility of the addition of an outpatient fluoroscopy service line within this imaging department.

The expansion of this service line is assessed through a detailed external and internal environmental scan, market analysis with the identification of the target market, risk assessment, competition analysis, and financial evaluation. Multiple internal strengths and external threats are identified and addressed. The development of a marketing strategy is also discussed.

The financial analysis reveals that the significant startup cost lends itself to the potential of financial loss for the first year of operation while the department is not operating at full capacity. It is expected that with a vigorous marketing campaign a new patient population will be captured, and existing patients may be attracted to the convenient outpatient location. The new patients entering the Nebraska Medicine network through referrals to this department could feed into the stream of referrals for other specialty service lines throughout the organization. The qualitative value of this service line cannot be understated while evaluating the financial impact this expansion will have throughout the organization.

ORGANIZATION OR COMPANY DESCRIPTION

Nebraska Medicine is a nationally recognized healthcare organization providing comprehensive medical care in many specialties. The Nebraska Medicine enterprise has partnered with the University of Nebraska Medical Center, a Nebraska state university, in both education and research (Nebraska Medicine, 2018b). The organization offers world renowned services in many specialties, including cancer care, organ transplantation, and infectious disease management (Nebraska Medicine, 2018b). Nebraska Medicine is known both regionally and nationally as a highly regarded academic medical center with strong ties throughout the state of Nebraska.

History

The enterprise known today as Nebraska Medicine is the result of decades of growth, partnership and innovation. Though there have been multiple name changes throughout the years, Nebraska Medicine was developed through the merging of Clarkson Hospital, founded in 1869, and the University Hospital, founded in 1917 (Nebraska Medicine, 2018b). Both organizations had histories deeply rooted in the advancement of health care and in the State of Nebraska and together they became known as the Nebraska Health System. The name of the enterprise would later change to The Nebraska Medical Center in 2003.

The Nebraska Medical Center expanded its operations to include a hospital located in Bellevue, Nebraska in 2010 (Nebraska Medicine, 2018b). In an effort to combine the clinical expertise of both hospitals and a well-known clinical group, UNMC Physicians, The Nebraska Medical Center once again changed its name to Nebraska Medicine. Nebraska Medicine now represents the successful integration of three clinically excellent entities into one enterprise driven to serve patients under one name.

Location

Nebraska Medicine's main academic campus is in Omaha, Nebraska with a second affiliated community hospital located in Bellevue, Nebraska. Nebraska Medicine Village Pointe is in western Omaha and comprises of two freestanding buildings that are home to multiple Nebraska Medicine affiliated outpatient service lines, including a diagnostic outpatient radiology department, laboratory services, oncology infusion services, cancer care clinics, family medicine clinics, and an ambulatory surgery center. There are currently 40 primary care and specialty care clinics located in Omaha and the surrounding region (Nebraska Medicine, 2018a).

Services

Nebraska Medicine offers a wide variety of primary care and specialty healthcare services covering many conditions and diagnoses. As a nationally certified Level One trauma center, Nebraska Medicine is equipped with physicians and specialists to handle the most complex injuries (Nebraska Medicine, 2018b). With the backing of over 50 different specialty care service lines, Nebraska Medicine is well equipped to handle most medical conditions for all patients ranging from neonatal to geriatric services.

The Nebraska Medicine Village Pointe facility has a full-service radiology department that offers many advanced imaging modalities to patients in a convenient ambulatory setting. This location currently offers diagnostic radiology, 3-D mammography, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound, and dual energy x-ray absorptiometry (DEXA) services (Nebraska Medicine, 2019a). This facility has a unique opportunity to expand its services in that there is existing clinical space that can be outfitted to fit the needs of a fluoroscopy suite.

Population Served

Nebraska Medicine is committed to serving a diverse patient population. While Nebraska Medicine's main academic campus is in Douglas County, Nebraska, patients from all 50 states and 47 countries have sought care at Nebraska Medicine facilities (Nebraska Medicine, 2018b). The Nebraska Medicine Village Pointe outpatient radiology department serves on average approximately 1,800 patients per month through all the imaging modalities (A. Pitzer, personal communication, October 3, 2019). Residents of Douglas County and neighboring Sarpy County account for over 70% of Nebraska Medicine's inpatient and outpatient facility visits at both the main campus as well as the community hospital in Bellevue, Nebraska (Nebraska Medicine, 2016).

Mission and Values

Nebraska Medicine's mission statement and values clearly identify the organization's commitment to providing an outstanding patient experience and serves as a beacon guiding each employee to serve those who have trusted Nebraska Medicine with their care. "Our mission is to lead the world in transforming lives to create a healthy future for all individuals and communities through premier educational programs, innovative research and extraordinary patient care" (Nebraska Medicine, 2018a). The values instilled by organizational leaders have built a foundation of excellence through teamwork which encourages accountability and creativity. These hallmarks are well established and visible throughout the different locations and through the actions of each employee.

Leadership and Achievements

Nebraska Medicine has taken great measures to cultivate an organizational leadership team that is well equipped with the experience and knowledge necessary to lead this innovative

organization. Nebraska Medicine's management team is an integral role in identifying market trends, developing strategic plans, and implementing new objectives to reach organizational and community goals. Throughout Nebraska Medicine's monumental history, there have been many milestones reached and prestigious awards collected, all of which were earned through the dedication of the leadership team and the employees who provide extraordinary care to patients each day.

Nebraska Medicine is proud to be the state's oldest medical center and has invested in many community initiatives that have garnered accolades from local, regional, and national award committees. The organization is proud to be recognized locally as one of Nebraska's Safest Companies by The National Safety Council, Nebraska, regionally as the National Consumer Choice award winner, and nationally ranked by *U.S. News and World Report* as the number one ranked hospital in the state as well as having multiple specialty service lines being recognized for their outstanding services (Nebraska Medicine, 2018c). Nebraska Medicine is thriving in an ever-changing healthcare industry by planning for future growth while maintaining its award-winning level of patient care.

Summary

Nebraska Medicine has a rich history of providing extraordinary care for all patients, both locally and internationally. The organization strives to fulfill their mission of providing excellent medical care while remaining up to date with the ever-changing advancements in medicine. Nebraska Medicine has embraced the changing landscape of healthcare by strategically expanding their operations throughout Omaha, Nebraska and the surrounding area. The Village Pointe Outpatient Imaging Center has a unique opportunity to further the mission of Nebraska Medicine by expanding their service lines to include outpatient fluoroscopy examinations.

Product or Service Description

Nebraska Medicine strives to stay on the cutting edge of new technology and services. The organization's leaders take the responsibility of being one of the premier health providers for the state of Nebraska seriously by strategically planning for equipment upgrades and service line expansions. Therefore, offering fluoroscopic procedures at the Nebraska Medicine Village Pointe outpatient imaging facility would allow patients the opportunity to complete routine fluoroscopic procedures in a convenient ambulatory setting.

Description of Services

Fluoroscopy is the use of live, continuous radiation that allows physicians to view the human body in real time as opposed to one still image (U.S. Food & Drug Administration, 2018). Fluoroscopic examinations can be ordered by healthcare providers for a variety of reasons to help aid in the diagnosis and treatment of many medical conditions. Fluoroscopic examinations can also be used for preoperative planning purposes or to monitor a patient's recovery progress after a surgical intervention.

Some of the most commonly ordered fluoroscopic procedures include examinations of the esophagus, stomach, small bowel, colon, and urinary bladder. Although exam details can vary by facility and physician or radiologist preference, these exams typically do not require a large time commitment by the patient nor do they require much, if any, downtime post procedure. These exams do require some physical movements and to be able to follow basic instructions.

Service Uniqueness

Currently, if an outpatient has a physician's order for a routine fluoroscopic examination, they must schedule their procedure to be completed on the main campus of Nebraska Medicine

located in a busy metropolitan area. This process may prove to be overwhelming to some patients for several reasons. Maneuvering through increased vehicle traffic and parking lots with limited patient parking stalls may prove to be a hindrance for some patients, both local and from other regions. Patients, especially those with limited mobility or physical stamina issues, may find navigating the labyrinths of a large academic hospital facility cumbersome and intimidating. This burden may compound the level of stress and anxiety felt by patients prior to their examination.

While an outpatient fluoroscopy service line could help to eliminate some of the physical barriers that patients may experience, it may also lessen the stigma of a harsh, sterile environment that a patient may encounter when having a procedure done in a hospital setting. Furthermore, it is often common practice for inpatients to have fluoroscopic examinations in the same area of the department as outpatients. This setup could lead to outpatients waiting in the same area as inpatients. An outpatient may not be prepared to visualize all the medical apparatus, such as feeding or drain tubes, IV monitors that have audible alarms, or surgical dressings that an inpatient may be connected to. This visualization could be traumatic to outpatients not accustomed to a hospital environment. Having a fluoroscopic examination in an outpatient facility also eliminates the threat of a critically ill inpatient superseding a stable outpatient for a scheduled appointment time, thus causing a delay in examination time for the outpatient.

Village Pointe Outpatient Imaging

The Nebraska Medicine Village Pointe Outpatient Imaging Center is in the same complex as various other Nebraska Medicine providers. Many patients seeking imaging exams are referred from other providers located within the Nebraska Medicine Village Pointe Health Center

including a multispecialty clinic, laboratory services, radiation oncology, pain medicine, general surgery, and an oncology infusion center (Nebraska Medicine, 2019b). The Village Pointe Outpatient Imaging Center provided imaging services to approximately 21,323 patients in all modalities in the fiscal year 2018 (A. Pitzer, personal communication, October 3, 2019).

There are 14 fulltime imaging staff members, one registered nurse, one radiologist and two fulltime patient registration employees within this department. All imaging staff are accredited and licensed to practice within their modality scope. One nurse is staffed within the department to assist during iodinated contrast injections. The radiologist provides services for specialty breast imaging examinations as well as monitoring patients receiving iodinated contrast injections. Each modality is equipped with top-of-the-line equipment including digital radiography, 1.5T MRI scanner, and 3D mammography units (Nebraska Medicine, 2019a). There is no fluoroscopy equipment located within this department. Patients with fluoroscopy imaging orders are referred to the main academic campus fluoroscopy department.

Alignment with Organizational Missions and Values

Nebraska Medicine has made its mission of providing extraordinary care to all patients visible throughout all the facilities. Employees are trained to identify the organization's core values in everyday situations and use them to enhance the patient's experience. Innovation, teamwork, excellence, accountability, courage, and healing serve as the paramount values throughout the Nebraska Medicine enterprise (Nebraska Medicine, 2018d). Each of these values guide every decision throughout the organization, including the addition of fluoroscopy services at the Village Pointe outpatient imaging center.

Innovative changes in the way fluoroscopic procedures are performed and the facilities in which we perform them will enhance the comfort and the convenience of care for our patients.

The teamwork present between the staff at the outpatient imaging center and the physicians at the main academic campus help build a relationship of trust between the patient and their care team. This bridge also enables the patient to seamlessly receive the appropriate care at different locations without the potential loss of pertinent medical information. Because the Village Pointe outpatient imaging department is a direct branch of the Nebraska Medicine enterprise, it is held accountable to the same superior standards of care and quality of exams that has become the benchmark on the main campus. This project advances the healing mission of Nebraska Medicine in that it will provide services to a specific demographic, ambulatory outpatients, that may feel underserved in a conventional hospital setting.

Summary

The addition of a fluoroscopy service line at the Village Pointe Outpatient Imaging Center provides an opportunity for Nebraska Medicine to offer additional imaging services in a convenient ambulatory location. Establishing this service line would allow Nebraska Medicine to capture the market by being the first academic hospital affiliated outpatient imaging center to offer these services. There are multiple intrinsic values associated with the addition of this service line including enhancing the patient experience for outpatients, convenient location, and more scheduling availability. Offering these services will help fulfill the goals and mission of Nebraska Medicine by serving a potentially underserved patient population.

Industry Analysis and Trends

Healthcare organizations face many challenges including stringent regulatory policies, changing payment models, and increasing pressure to reduce costs while still maintaining positive patient outcomes. Nebraska Medicine is not immune from these, or many other, challenges. It is important to stay abreast to changes and strategically plan for the future. Nebraska Medicine serves a diverse patient population and strives to meet the needs of the community when planning for future service line changes.

Description of Industry

The outpatient fluoroscopy service line at Nebraska Medicine Village Pointe would be part of the diagnostic medical imaging industry which is part of the healthcare industry. In 2016 the United States spent 17.8% of the gross domestic product (GDP) on healthcare (Papanicolas, Woskie, & Jha, 2018). Approximately 42% of the total healthcare expenditure for the United States was spent on outpatient services (Papanicolas, et al., 2018). Medicare reported that in 2005 there were 4,481,000 barium studies performed in the United States (Levine, Rubesin & Laufer, 2009). On a global scale, the United States spent more on healthcare than any other industrialized nation. The United States ranked first, second and third in the number of the advanced imaging machines used in mammography, MRI and CT respectively when compared to 10 of the highest income countries throughout the world (Papanicolas, et al., 2018).

The state of Nebraska had a population of 1,920,076 in 2017 (United States Census Bureau, 2017). Nebraskans spent approximately $8,412 on healthcare expenditures per capita in 2014 with an annual average increase in spending of 6.4% (Henry J. Kaiser Family Foundation, 2018). It is clear that healthcare spending is on the rise throughout the United States and the state of Nebraska.

Industry Trends

Healthcare is traditionally not impacted by economic cycles as healthcare will always be a service people will require. There will always be a need for diagnostic imaging examinations, including fluoroscopy procedures, to aid in the diagnosis and treatment of various medical conditions. However, the number of healthcare visits that are elective in nature can increase or decrease with dependence on the economy and time of year. Changes in Medicare, Medicaid and insurance policies can alter the number of non-essential examinations completed by patients. While some fluoroscopic examinations are medically necessary for the diagnosis, treatment or monitoring of a disease process, some may be performed as a preoperative clearance for a surgical procedure. Many patients also wait until the last months of the year after they have successfully met their insurance deductible to complete non-essential medical examinations or procedures.

There is a plethora of internal and external factors that are forcing changes within the diagnostic outpatient imaging industry. Nebraska Medicine, while rooted deep in its reputation of extraordinary medical care and advanced patient care practices, is not sheltered from these threats to potential growth and future project advancements. Dramatic changes to radiology payment schedules, the prevalence of employer funded health insurance programs which shift the burden of healthcare payments to the consumer, adjusted market pay scales to reflect trends that will both attract and retain highly skilled employees, and the constant need for advanced imaging equipment are all issues that require careful consideration by organizations. These trends have the potential to impact future projects or expansions within the Nebraska Medicine organization.

Updated Payment Models

Updated radiology payment models have the potential to have a profound impact on reimbursement rates for radiologists and medical imaging departments. Silva, McGinty, Hughes and Duszak (2016) describe some of the challenges faced by radiologists who could potentially be classified in different patient care phases depending on what type of exam they are performing. Radiologists can either be classified as a physician who performs examinations as ordered by other providers, or as a consultative physician. Each classification utilizes a different pay schedule. Organizations must maintain updated policies to ensure that procedures are being billed appropriately to remain financially stable.

Changes in Government Funded Insurance Programs

The expansion of Medicare and Medicaid coverage options is an ever-changing process that could impact healthcare organizations profoundly. Organizations, such as Nebraska Medicine, must anticipate an influx of newly insured patients when coverage is expanded within the service area. It is important to note that approximately 50% of Nebraska Medicine patients are recipients of Medicare, Medicaid, or other government-funded insurance programs (Nebraska Medicine, 2016). Thus, it is imperative that departments, including diagnostic medical imaging departments, plan for future shifts in policies, procedures and potentially more patients seeking care with newly acquired healthcare insurance policies. Approximately 110,000 additional Nebraskans will be eligible for coverage under Medicaid when the coverage is expanded (Norris, 2018). In the event these individuals qualify for government funded health insurance, Nebraska Medicine must anticipate the need for services and ensure they are equipped to meet the demands of its target market.

Maintaining a Skilled Workforce

As the cost of healthcare continues to rise, it is critical to invest assets wisely. The largest asset an organization has is its strong workforce of educated healthcare providers. Nebraska Medicine has over 8,000 employees and over 1,000 practicing physicians (Nebraska Medicine, 2018b). For Nebraska Medicine to attract and retain highly skilled employees it is necessary to be one of the most attractive employers in the region. This includes competitive wages, affordable health insurance policies, and generous retirement benefits. Nebraska Medicine takes great care to ensure that market adjustments are applied to pay scales and wage caps are adjusted to account for increased cost of living expenses within the region. To ensure that Nebraska Medicine employees are committed to the mission and values of the organization it must be clear that Nebraska Medicine is committed to its employees professional and personal well-being.

All radiologic technologists employed by Nebraska Medicine are required to be board certified by the American Registry of Radiologic Technologists (ARRT) and licensed to practice in the state of Nebraska. The ARRT serves as the accrediting body for imaging professionals. The ARRT ensures that all radiologic technologists have a minimum education level of an associate degree, complete an educational program, and establish competencies through didactic coursework as well as competency within the clinical setting (ARRT, 2019). Specific competencies must be demonstrated for fluoroscopy examinations prior to completion of an educational program. After successfully passing the radiography board examination, technologists can practice in the field of diagnostic radiology including fluoroscopy. There are no additional technologist certifications needed to work within a fluoroscopy department.

Investment in Equipment

Ensuring that the outpatient fluoroscopy service line remains current on the most recent technology available not only provides the highest quality diagnostic exams for our patients, it also helps us establish our outpatient fluoroscopy services as a technologically advanced top service provider and a convenient alternative to hospital-based imaging departments. Nebraska Medicine was keen to notice the shift in imaging trends with regards to advancing to 3-D mammography units. The organization invested a significant amount of capital to install the newest, up-to-date mammography technology to meet the demands of the target market to maintain the organization's competitive edge. The same commitment would be necessary to ensure the success of the outpatient fluoroscopy service line.

Many reputable vendors offer comparable fluoroscopy equipment. Nebraska Medicine has historically researched different brands, models, and setups of fluoroscopic suites. Site visits were conducted prior to purchasing the fluoroscopic equipment that is utilized at the main academic hospital. It was determined that the Siemens Luminos Agile Max fluoroscopy equipment was the best setup to meet the diverse needs of the Nebraska Medicine fluoroscopy department. This fluoroscopy equipment offers various advantages to the performing radiologist, radiologic technologist, and the patient including easy to use exposure handles, tableside controls, extended weight limits, and wider tube clearance to allow for bariatric or wheelchair bound patients (Siemens, 2019). Purchasing the same equipment to use at all locations will allow greater consistency in image quality as well as ease of use by rotating radiologists and technologists.

Strategic Opportunities

Nebraska Medicine has multiple unique strategic opportunities to expand its services at the Village Pointe outpatient imaging center. The existing space necessary to build a fluoroscopy suite is already available. The recognizable brand and reputation of Nebraska Medicine, and enhanced total benefits package to attract the most qualified employees, are some of the internal strategic advantages that would make expanding fluoroscopy services at the Nebraska Medicine Village Pointe outpatient imaging department favorable.

Existing Space

Currently, the outpatient imaging department at Nebraska Medicine Village Pointe has two large shell rooms that are open to renovation to customize for additional service lines, including fluoroscopy. The space is already available, thus new real estate would not need to be purchased to expand fluoroscopy services. However, a significant capital investment would be necessary to complete the renovations and outfit the exam suite with fluoroscopy equipment.

Brand and Reputation

With over 426,900 outpatient visits to both primary and specialty service providers and almost 92,000 visits to the emergency department, Nebraska Medicine is trusted by many patients (Nebraska Medicine, 2018b). This relationship is carried over by many specialty or private healthcare providers that have entrusted Nebraska Medicine with the care of their patients through patient transfers and referrals. The reputation of Nebraska Medicine has the potential to attract new patients who want healthcare services backed by a well-known and trusted organization as opposed to a singular, stand-alone facility with no affiliated hospital to provide follow-up or specialty care.

Enhanced Benefits Package for Employees

Ensuring that a radiology department is adequately staffed with well qualified, trained employees is a major concern for organizations. Medical imaging departments are not shielded from staffing shortages. The Bureau of Labor and Statistics (U.S. Department of Labor, 2018) predicts that the field of radiologic technologists will see a 13% increase in the demand for qualified candidates, approximately 30,300 technologists, between 2016 and 2026. Organizations must maintain an adequate level of competent medical imaging professionals to complete the exams ordered and a staff of radiologists to provide official interpretations of imaging procedures to aide in the diagnosing and treatment of patients. Enhanced total benefits packages including affordable health insurance policies, generous retirement contribution programs, and tuition reimbursement allow Nebraska Medicine to attract and maintain a qualified workforce.

Summary

To meet the growing demands of patients and referring providers, healthcare organizations must be prepared to expand their service locations and services offered. Organizations must also be plan for shifts within the healthcare landscape, including changes to reimbursement payment models, healthcare legislature, increased regulations, as well as maintaining a skilled workforce outfitted with state-of-the-art equipment to best serve the patient population. Nebraska Medicine has a unique opportunity to expand the services offered at an existing outpatient imaging center. Nebraska Medicine will rely heavily on their brand reputation as well as their comprehensive benefits package to recruit and retain a skilled workforce.

Target Market and Market Analysis

Nebraska Medicine serves patients from all regions of Nebraska. Douglas and Sarpy Counties in Nebraska and the immediate surrounding communities have been identified as the target service area for the Nebraska Medicine at Village Pointe outpatient imaging center, however many patients of varying socioeconomic backgrounds come from locations throughout the region. The city Omaha has a population of 466,893 people (United States Census Bureau, 2017). Some pertinent economic information regarding Omaha, Nebraska includes the median household income of $50,827 and approximately 16% of Omaha's residents are currently living below the poverty line (United States Census Bureau, 2017). According to the Nebraska State Government website, the city of Omaha's total geographical area accounts for 28.8% of the state's total population while accounting for 32% of the state's total income (Official Nebraska Government Website, 2018).

Demographically, 55.6% of Omaha's population is between the ages of 18 and 65 and 12.1% of Omaha's population, or 56,494 residents, are over the age 65 years (United States Census Bureau, 2017). On a national average, those living to age 65 will have 20 more years of life, however, 37% of people aged 65 and older, approximately 14 million people, have some form of a disability (Bragg & Hansen, 2015). With the increase in the average age and disabilities of that population, there is also the potential for an increased need for fluoroscopic imaging services to aide in the diagnosis and treatment of various medical conditions associated with advanced age. Omaha is no exception when it comes to an aging population. According to the United States Census Bureau, Douglas County, Nebraska, has a total population of 561,620 and 70,893 of those included in the 2017 American Community Survey were 65 years or older (U.S. Census Bureau, 2018).

According to the Nebraska vital statistics report published by the Nebraska Department of Health and Human Services (2018) in 2016, there were a total of 16,207 deaths in the state of Nebraska with the average age of death being 75.2 years. In 2016 cancer was the leading cause of death in the state accounting for 842 deaths in Douglas County; heart disease was the second leading cause of death with 684 deaths occurring in Douglas county; Nebraska also had an infant mortality rate of 6.2 per 1,000 live births in which Douglas County accounted for 63 of those deaths (Nebraska Department of Health and Human Services, 2018).

With a burgeoning aging population, Omaha, Nebraska is a prime market for healthcare organizations and expanding imaging services to meet the needs of the community. It is clear by the number of deaths due to cancer and cardiovascular disease that there is a high demand for specialty services and primary care. Diagnostic medical imaging, including fluoroscopic procedures, are often required in the diagnosis and treatment of both conditions, thus the need to expand imaging services to include fluoroscopic imaging at the Village Pointe outpatient imaging center could potentially increase access for the patient population and generate additional revenue for Nebraska Medicine and other specialty care service lines.

The Competition

Currently, consumers have multiple options to choose from when selecting a provider for outpatient medical imaging. However, the options for outpatient fluoroscopic imaging is limited to primarily hospital-based radiology departments. Nebraska Medicine Village Pointe is competitively positioned to assume a large share of the outpatient fluoroscopic imaging market in the defined service area. Nebraska Medicine took great care to consider patient needs when planning for the Village Pointe outpatient imaging department and positioned the department for

extended services. However, there are two local competitors in close proximity to the Village Pointe facility that must acknowledged.

Non-Hospital Affiliated Freestanding Outpatient Imaging Facility

There is a non-hospital affiliated freestanding outpatient imaging facility located within one mile of the Nebraska Medicine Village Pointe outpatient imaging center. This facility is part of a national chain of advanced imaging departments located primarily in the Southwest United States. While this facility offers most of the same services as the Nebraska Medicine outpatient imaging center, they do not offer diagnostic x-ray services which leaves a large gap in its service coverage. This facility does offer fluoroscopic services; however, the menu of fluoroscopic exams is limited to bone arthrography.

This facility is a direct threat to the Nebraska Medicine Village Pointe outpatient imaging department because it offers many of the same services and have economical pricing and flexible payment plans for their patients. Like a hospital-based imaging department, the non-hospital freestanding imaging center is considered in-network with most major insurance providers. However, because this facility limits the fluoroscopic services offered to bone arthrography, they are a moderate threat to the proposed project. If this company expands their fluoroscopy service line in the future the threat to the Nebraska Medicine Village Pointe outpatient imaging facility would increase. While the convenience and economic pricing may entice some patients to utilize their services, this freestanding facility is not affiliated with any hospital organization. Any follow up care must be obtained through a different facility. The break in the continuity of care may serve as a barrier for some patients.

Hospital-Based Outpatient Imaging Department

One of Nebraska Medicine's largest competitors as an organization is a local hospital that is part of a national chain of hospitals. This facility has a full-service radiology department, including fluoroscopy services and other advanced imaging modalities. While this hospital-based radiology department offers fluoroscopy services, it does not offer CT exams which requires many patients to receive imaging services at other facilities. The hours of operation for this department are longer, thus patients may find their hours more convenient. Nebraska Medicine Village Pointe outpatient imaging center maintains its competitive edge with this hospital-based department by offering a complete line of imaging services and the convenient freestanding facility, which eliminates the burden of navigating a large hospital and ample free parking spaces.

Nebraska Medicine will rely on its brand and reputation to attract and maintain a patient population while competing for market share with this hospital chain. Brand loyalty is important for Nebraska Medicine to assert and maintain its competitive advantage in the outpatient fluoroscopic service line. Knowing that examination results will be available to any physician within the Nebraska Medicine organization will allow for continuity of care throughout service lines for the patient. This hospital-based radiology department may also find it difficult to find the real estate to build any additional imaging rooms within the hospital facility whereas Nebraska Medicine Village Pointe outpatient imaging department has existing space available and ready for the building of additional imaging suites.

Summary

Nebraska Medicine will encounter various competitors upon entry into the outpatient fluoroscopy services arena. After a thorough competitor analysis, two main competitors were

identified. A non-hospital affiliated freestanding imaging department was identified as a moderate competitive threat upon review of the current services offered at that location. If this competitor expands their fluoroscopy services, the threat level would elevate. A hospital-based fluoroscopy department was also identified as a moderate threat, but due to their limited menu of services offered Nebraska Medicine maintains their competitive advantage. To remain competitive, Nebraska Medicine must continually survey the competition and strategically plan for future expansions.

MANAGEMENT AND ORGANIZAITON

The addition of an outpatient fluoroscopy imaging service line at a free-standing academic hospital affiliated outpatient imaging center must be carefully evaluated by all levels of leadership within the organization to ensure the viability of the project. A diverse range of staff members will be needed to carry out daily operations efficiently. Because this service line will operate in an existing department, minimal additional staff will need to be onboarded for this project. Figure 1 provides a visual representation of the organizational hierarchy of the outpatient fluoroscopy service line. The organizational hierarchy of Nebraska Medicine will serve as a representation of the different levels of leadership and radiology staff.

Figure 1. *Organizational hierarchy of outpatient imaging department.*

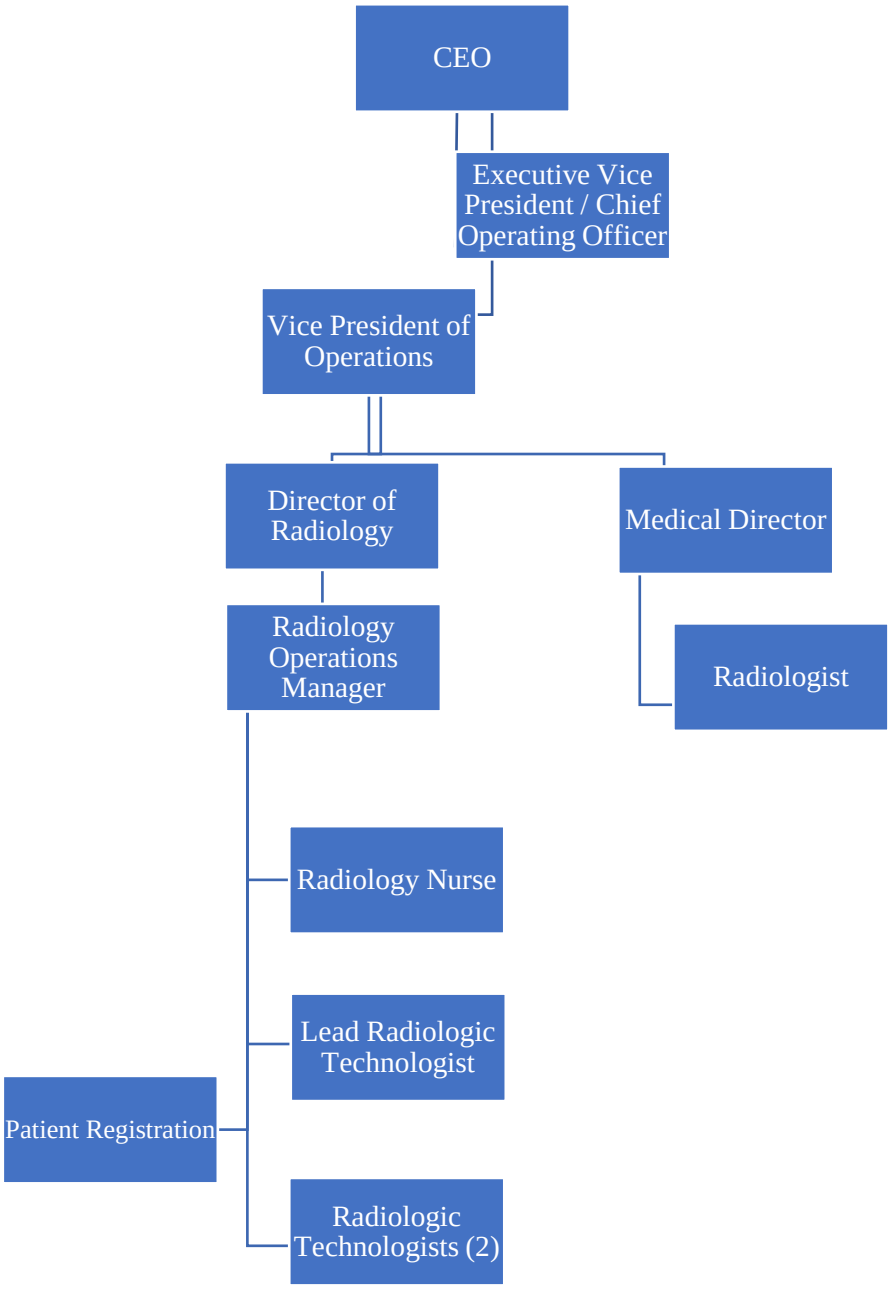


Figure 1. Organizational hierarchy for outpatient imaging department showing the levels of leadership throughout the entire organization.

Chief Executive Officer

The Chief Executive Officer (CEO) is responsible for the overall operations for the entire enterprise. Nebraska Medicine's CEO oversees all aspects of the main campus activities as well

as outpatient facilities and satellite locations. The CEO is in the driving force behind the planning, directing, and coordinating of all operations within an organization (Bureau of Labor Statistics, 2019). The CEO, in conjunction with the board of directors, is responsible for the strategic planning to ensure the organization meets its goals and fulfills the mission for the entire organization. The CEO will receive up-to-date information regarding the status of the organization's wellbeing from the Executive Vice President/ Chief Operating Office and the Vice President of Operations.

Executive Vice President / Chief Operating Officer and Vice President of Operations

The Executive Vice President/Chief Operating Officer (EVP/COO) and the Vice President of Operations are responsible for the day-to-day operations within the organization. Both positions are designed to increase the efficiency and profits generated throughout the organization. While the CEO develops the strategic plans for an organization, it is the EVP/COO and Vice President of Operations who are responsible for the implementation of new initiatives and operational changes. While the CEO has a general idea of the performance of each department, the EVP/COO and the Vice President of Operations must have detailed knowledge of the financial performance from each department that enables them to make informed decisions. The EVP/COO and the Vice President of Operations will receive updates directly from department directors.

Director of Radiology

The director of radiology reports to the senior administrators within the organization. The director of radiology oversees operations within the various imaging departments located within the main academic campus as well as the outpatient imaging facility. They have the authority to make changes within the department related to, but not

limited to, staffing, departmental strategic goals, department education, communications, workplace safety, adhering to performance standards and maintaining operational certifications. They will have a presence within the imaging departments to gauge the effectiveness of changes and to monitor the progress made within the departments towards organizational goals. The director of radiology will depend on various radiology operations managers for information regarding the different modalities within the Radiology department, including the fluoroscopy department.

Radiology Operations Manager

The radiology operations manager will serve as the subject matter expert for the director of radiology and provide detailed information of the daily operations of each individual modality. There are multiple radiology operations managers, each with specific modalities to oversee. The radiology operations manager responsible for the outpatient fluoroscopy service line will also serve as the manager for the rest of the diagnostic radiology departments within the organization; no new radiology operations manager will need to be hired for this service line expansion. This manager will be visible within the department and readily available to assist with issues that arise during daily operations. The radiology operations manager will be the first point of contact for conflict resolution efforts, patient satisfaction concerns, as well as serving as a first-hand evaluator for workflow processes and improvement efforts. The radiology operations manager may delegate specific tasks to the lead radiologic technologist to increase efficiency.

Lead Radiologic Technologist

The lead radiologic technologist will play an integral part in the expansion of outpatient fluoroscopy services. This experienced technologist will serve as a liaison between the staff of

technologists and all levels of management. This position will be filled by a radiologic technologist who is already employed at the outpatient imaging center. The lead technologist will be responsible for all the daily operations within the department including supply management, staffing coordination, and maintaining communication between staff and management. Together, with the radiology operations manager and radiologists, the lead technologist will assist in creating exam protocols and workflow processes. They will be instrumental in the implementation of new policies and procedures and will provide feedback to management regarding the progress of new initiatives. The lead technologist will also be providing direct patient care within the fluoroscopy service line daily. New employee orientation and staff education will be the responsibility of the lead technologist. The lead technologist will also mitigate conflicts between staff and will report directly to the radiology operations manager. The lead technologist is responsible for monitoring and evaluating staff and workflow procedures. Staffing or policy changes proposed by the lead technologist must be approved by the radiology operations manager prior to implementation. The lead radiologic technologist will serve as a guide and mentor to all staff radiologic technologists within the imaging department.

Radiologic Technologists

Radiologic technologists will provide direct patient care daily to the patients undergoing fluoroscopic examinations within the outpatient imaging department. One additional radiologic technologist will need to be hired to fulfill the demands of this service line expansion. This technologist will join the existing two technologists, including the lead technologist, in providing imaging services through a rotation in the fluoroscopy department as well as the diagnostic radiology department within the outpatient imaging center. These technologists will be

responsible for the efficient completion of fluoroscopic examinations including pre-procedural screening, providing support to the patient and the radiologist during the procedure, and completing any post-procedural imaging requested by the performing radiologist. The radiologic technologist will be also be responsible for preparing the examination room and contrast media for use during the fluoroscopic examination. The radiologic technologist will work directly with the lead technologist, radiology operations manager, and radiologists to complete fluoroscopic examinations.

STRATEGIC POSITION AND RISK ASSESSMENT

The objective of the academic hospital affiliated outpatient fluoroscopy project is to provide readily accessible fluoroscopic imaging examinations in an outpatient setting in western Omaha, Nebraska while asserting our market dominance in the outpatient fluoroscopy imaging services sector. To achieve the goal of better serving our target market, this project has a detailed strategic position that puts emphasis on maintaining the consistent level of extraordinary care set forth by the Nebraska Medicine mission statement, establishing a broad referral network designed to meet the fluoroscopy imaging needs of various healthcare providers, operate in a convenient location with the most up-to-date imaging equipment, and attract and retain highly skilled and motivated staff of imaging professionals.

Strategic Position

The academic affiliated outpatient imaging center's strategic position has been determined by performing an in-depth evaluation of industry trends, identifying the target market, appraising the competitive environment, reviewing the strengths of the project, and acknowledging the risks the project may encounter. Several strategies including increased concentration on the perception of our services by our target market, targeting a specific part of the outpatient imaging market, establishing the project as a market leader in the outpatient fluoroscopy market, and employing effective and efficient operational practices will be utilized.

Consumer Perception

Healthcare services are not immune from the instant gratification mentality often found in consumers looking to get the most value for their healthcare dollar. Just as consumers can research where they purchase a vehicle, they can also research hospitals and other healthcare facilities utilizing price transparency tools to help decide where to receive their healthcare

(Desai, Hatfield, Hicks, Chernew & Mehrotra, 2016). One way this project can gain competitive advantage over other facilities offering similar services is to differentiate how the consumer perceives our business. Because prices for fluoroscopic examinations are based on reimbursement rates set by CMS, most facilities are already offering the same services at similar prices. The burden of differentiation now rests on how this project can surpass the competition in terms of quality of services offered, excelling in providing extraordinary patient care, and marketing the convenient location and extended hours to better serve consumers.

Market Segment

The outpatient fluoroscopy department at Nebraska Medicine Village Pointe has a significant competitive advantage in that the location of the department is near some of Omaha's most populous regions (Statistical Atlas, 2018). The geographic location of Nebraska Medicine at Village Pointe may also appeal to many consumers who live in western Omaha as well as those from the western part of the state.

Market Share

This project has a distinct competitive advantage because it will be the first freestanding academic hospital affiliated outpatient imaging center to offer fluoroscopic imaging services in Omaha, Nebraska and may be able to capture the market share before competitors enter the arena. Ideally, if other facilities begin to offer similar services and an increase in marketing and promotion is necessary, this project will have already established its strength in this market.

Operational Practices

The effective and highly efficient operational practices established within the main academic hospital's fluoroscopy department will serve as an operational template for the outpatient fluoroscopy department to achieve competitive advantage. The operational processes

utilized in the daily operations of the fluoroscopy department can provide the structure and stability necessary to operate efficiently. More attention can then be paid to ensuring that effective patient care is being delivered and customer satisfaction is achieved.

Risk Assessment

Assessing the risk of expanding fluoroscopy services at the Nebraska Medicine at Village Pointe outpatient imaging center is imperative to the project's success. A project should provide opportunities for both high market growth and the ability to capture a high market share to be considered a viable investment. To determine if this expansion of services is a viable investment, a thorough analysis of the value-creating strengths, opportunities for advancement, value-reducing weaknesses, and potential threats to future growth must be evaluated. Figure 2 represents a strength, weaknesses, opportunities, and threats (SWOT) analysis for this proposed service line expansion.

A SWOT assessment allows an organization to evaluate how their strengths could potentially circumvent risks associated with the delivery of services within the value chain (Ginter, Duncan & Swayne, 2013). This analysis tool was utilized to identify strengths that add value to the project and weaknesses that could detract from that value as they relate to the delivery of services. This analysis highlights where the organization should focus their attention to capture the competitive advantage within the market and reveals situations that will require future strategic planning to avoid detrimental outcomes for this project.

Figure 2. SWOT Analysis for addition of fluoroscopy services to outpatient imaging center.

Strengths	**Weaknesses**
▪ Affiliation with well-known academic hospital ▪ Skilled workforce ▪ Access to follow-up care ▪ First freestanding academic hospital affiliated outpatient imaging center to offer fluoroscopy services ▪ Existing space = no new construction ▪ Established workflows ▪ Extended service hours ▪ Up-to-date imaging equipment	▪ Large scale marketing campaign needed to raise awareness of new service line ▪ Costly updates to equipment ▪ Geographical disconnect from main campus ▪ Potential for quality control issues
Opportunities	**Threats**
▪ Gain access to new streams of patients to be referred to other service lines for follow-up care ▪ Offer services to nearby acute rehabilitation hospital ▪ Potential for increased patient satisfaction	▪ Multiple direct competitors ▪ Large financial commitment to renovate existing space ▪ Expensive equipment

Figure 2. Strengths, weakness, opportunities, and threats assessment for the addition of fluoroscopy services to the outpatient imaging center.

Strengths. Several high value, difficult to imitate, and sustainable strengths associated with this project were identified. The affiliation between Nebraska Medicine and the University of Nebraska Medical Center is undeniably the strongest asset to this project as patients will have access to highly skilled medical experts to provide follow-up care after their fluoroscopic examination if necessary. Being the first free standing academic hospital affiliated outpatient imaging center in the market to offer outpatient fluoroscopy services in west Omaha, Nebraska will prove to be a strength no other facility can claim. The fact that the space necessary to build a fluoroscopy suite is already available and ready to be installed is an opportunity very few competitors have access to. Competitors would need to build additions on to existing facilities or purchase additional land to build a new facility, both of which require a large time and financial commitment.

The maintenance of a highly skilled and loyal workforce will serve as a source of strength when establishing market dominance amongst consumers. The quality of care delivered by these employees will serve as a value proposition for both organizational marketing campaigns and word-of-mouth referrals from current consumers. These employees will be encouraged and supported by the experienced leadership team and directors Nebraska Medicine has appointed to guide the organization. The geographical location in west Omaha, preestablished efficient workflows, extended service hours, and up-to-date imaging equipment are high value and sustainable strengths. There are also several after-service strengths, such as the use of an electronic system to send radiology reports directly to the ordering provider and the picture archiving and communication system (PACS) that would allow outside providers to view the fluoroscopic examinations, that will contribute to providing a positive patient experience.

Weaknesses. No project is insulated from the threat of failure. The addition of outpatient fluoroscopy services to the Nebraska Medicine at Village Pointe outpatient imaging center could prove to be an unwise investment if certain weaknesses are not addressed. Several high value unique weaknesses may also prove to be difficult to correct while allowing our competitors to gain valuable market share in the process. The need for a large-scale marketing plan would aide in establishing the department's presence in the outpatient fluoroscopy market, however it could prove to be costly to the organization.

The costs of upkeeping the advanced imaging equipment through routine maintenance and software updates will need to be considered when budgeting for the expansion of fluoroscopy services. Employees will be guided by the values and mission of the organization, a geographical disconnect from the main academic campus will be present throughout this project.

The potential for quality control issues and the presence of behaviors not in line with the organization's mission may occur due to disengagement.

Opportunities. The expansion of outpatient fluoroscopy services could usher in different opportunities for the organization to further fulfill their mission of serving the community. Fluoroscopic imaging services could be marketed to a variety of privately owned and operated specialty providers, such as gastroenterologists and gynecologists, that might be sending their patients to other facilities for fluoroscopic examinations. By targeting these providers, a new stream of patients could be brought into the organizational network for follow up care or referrals. Fluoroscopic imaging services could also be offered to the patients of a nearby acute care rehabilitation hospital that does not have a radiology department in their facility. Due to the proximity of the acute care rehabilitation hospital and the outpatient imaging center, the shorter distance to travel for imaging needs may enhance patient satisfaction.

Threats. There are multiple direct competitors within a small radius that could potentially hinder the growth of this expansion of services. While there are distinct differences that will set this project apart from competitors, the threat of imitation is always present. It will be imperative to distinguish the services and unique benefits this department offers from those of other providers. The large financial commitment needed to outfit the existing space to conform to the requirements of a fluoroscopy suite could also serve as a deterrent to the expansion of services at this location. The initial cost of the fluoroscopy imaging equipment will be a large, upfront cost that will require future investments to remain up to date.

Competitor Analysis

While there are multiple direct competitors to this service expansion project, there are two direct competitors that are also located in the same geographical region of west Omaha.

Using a Porter service area structural analysis model, the two direct competitors within a five-mile radius of the fluoroscopy service expansion project have been analyzed (Ginter et al., 2013). Both competitors offer services, however there are differences that will provide competitive advantages to the fluoroscopy expansion project.

Academic hospital fluoroscopy department. There is an academic hospital campus that offers both inpatient and outpatient fluoroscopy services located three miles from the expansion project. The hospital-based fluoroscopy department is considered a high-level competitor because they offer the same services during similar operating hours in the same geographical region as the proposed expansion project. Both departments accept a variety of insurance plans and offer various forms of payment options. There are several key differences that will differentiate the two departments and ultimately provide competitive advantage to this fluoroscopy expansion project. Because the academic hospital fluoroscopy department is located within a medical campus that serves both inpatients and outpatients, the allure of convenient, outpatient only service lines becomes important.

Independently owned outpatient imaging center. The independently owned and operated outpatient imaging center located one mile from the expansion project has been identified as a moderate-level competitor. This imaging center, while not affiliated with any hospital organization, is able to perform a limited number of fluoroscopy services to outpatients. This company offers economical cash-payment options for a variety of examinations. The images are then transported by the patient via compact disc to their choice of care providers. The expansion project maintains the competitive advantage through the affiliation of the academic hospital and the full menu of fluoroscopic procedures available. Patients can be assured that the

continuity of care will be maintained, and their fluoroscopic images and radiologist reports are available for their entire care team to view.

Summary

An in-depth strategic analysis highlighted multiple opportunities to gain competitive advantage in the outpatient fluoroscopy market. It was determined that establishing this project as a market leader and targeting specific patient populations will help fulfill the mission of the department as well as reach strategic organizational goals of providing more services to more patients. A SWOT risk analysis was performed and revealed multiple high-quality strengths as well as several risks. A competitor analysis was also performed and found that direct competitors in the same geographical area offered similar services but did not offer the same amenities and benefits as this project.

THE OPERATIONS

The addition of fluoroscopy imaging services to the Nebraska Medicine at Village Pointe outpatient imaging center will operate, for the most part, under the same guidelines and protocols utilized in the fluoroscopy department located in the main academic hospital. There will be several operational variances to account for the different needs of the patient population being served. It will be crucial for the success of this project to ensure that operation plans are tailored to the outpatient population to ensure maximum patient satisfaction and efficiency within the department.

Key Characteristics

The location of the facility and the affiliation with a large academic hospital will serve as key elements of the expansion of fluoroscopy services at the Nebraska Medicine at Village Pointe Outpatient Imaging Center. The updated facility is modern and easily accessible. While it is separated from the main academic campus, the outpatient imaging center is fully connected via an electronic medical record system and a picture archiving and communication system that allows care providers access to all imaging exams at any location. Continuity of care is present throughout all locations.

Facilities. The three-level building is leased by Nebraska Medicine. There is a central loading dock that serves as a delivery point for all departments in the building. Multiple parking areas make it easy for patients to find free parking close to one of the three main entrances of the building. Both entrances to the facility from the surface streets have clear signage providing guidance to motorists; the entrance for the outpatient imaging center is additionally marked on street level signage. Structural maintenance will be provided by the building owners; facilities maintenance will be performed by Nebraska Medicine facilities employees.

Inventory. This department will benefit from the affiliation with the main academic hospital's fluoroscopy department by utilizing their purchasing power to obtain necessary inventory at the hospital's negotiated prices. Larger institutions are often able to buy supplies, such as the contrast media required in fluoroscopic examinations, at a reduced rate. The large-scale purchasing power could also translate to discounts on expensive operational items such as the fluoroscopic machine itself.

Customer service. The same standards of care enforced at the main academic hospital will also be followed at the outpatient imaging center. Patients served at this facility will have the same feedback resources afforded to them as those served at the main campus. Constant managerial presence during the first weeks of operation will provide patients an immediate resource for both positive and negative feedback. This direct feedback will serve as a resource to identify opportunities for improvement as well as gauge any future trends that could impact services (Brook, Siewert, Weinstein, Ahmed & Kruskal, 2017). Additional feedback may be solicited from patients in the form of surveys delivered in the mail or in an online format.

All employees will be guided by the values and mission statement set forth by Nebraska Medicine, both of which emphasize providing extraordinary care and providing a positive patient experience. Employees will be encouraged to engage in service recovery, or the belief that quick acknowledgement of wrongdoing and response to the situation by staff members, to help mitigate the ramifications of a poor patient experience (McKay, 2018). These responses are aimed at providing a better patient experience but will also help fulfill the organizational value of accountability.

Daily operation services. Additional services necessary to sustain daily operations include linen laundering services, information technology (IT) support to include a radiology

specific PACS, central supply and purchasing services. Most of these services will be a continuation of those utilized at the main academic hospital. Linen services will be necessary to support the increased use of linen, scheduled delivery and pick of soiled laundry by the contracted company employed by the Nebraska Medicine enterprise. All IT and PACS services will be channeled through Nebraska Medicine's in-house service departments which will bill the cost center of the radiology department. Agreements to use the central supply and purchasing departments located at the main academic campus are already in place to serve the rest of the outpatient imaging department and will be extended to cover the addition of the fluoroscopy service line.

Competitive Advantages

In addition to the brand recognition of the affiliated academic hospital and being the first freestanding outpatient imaging center to offer fluoroscopy imaging exams, the location, being able to utilize existing space within an outpatient imaging facility, and the extensive network of specialty service lines serve as two distinct operational advantages. These factors will not only help to increase the number of patients served at this facility, but they will also help to funnel those patients requiring additional care to the specialty service lines throughout the Nebraska Medicine enterprise.

Location. The location of the Nebraska Medicine Village Pointe outpatient imaging center is an invaluable competitive advantage. Not having to drive to a congested metropolitan area of town, search for a parking spot, and navigate the confusing labyrinths of a large academic hospital will attract many patients who live close to the facility as well as those who are traveling from the rest of the state.

Existing space. Aside from the convenient geographical location of the academic hospital affiliated outpatient imaging center, the use of existing space to build a fluoroscopy suite will serve as a large competitive advantage as well as cost effective when compared to new construction. The outpatient imaging department currently has two large examination rooms that are not being utilized. Either of these areas could be built to satisfy the needs of a fluoroscopy suite, including existing water and sewer hookups. Competitors will either need to build new construction or renovate existing space to accommodate these additional services, both of which could prove to be large financial investment.

Existing referral network. Because Nebraska Medicine is an educational partner with The University of Nebraska Medical Center, there is an extensive referral network already in place to accommodate an efficient and reliable referral for patients requiring the skills of a specialty service line. This will serve as a valuable competitive advantage because it will eliminate the burden of ensuring that necessary imaging exams are available to specialists before, during and after their care of the patient. All imaging exams are easily accessible to Nebraska Medicine service providers.

Cost and Time Efficiencies

The convenience of serving patients in an outpatient capacity will serve as an effective alternative for many patients when completing a fluoroscopy exam. While some outpatients may still choose to have their exams completed in the main academic campus' fluoroscopy department, they will do so knowing that their appointment time could be delayed due to the needs of a more critical inpatient requiring a fluoroscopic examination. Performing routine fluoroscopic examinations at an outpatient facility will allow for greater efficiency both in scheduling exams and maintaining that schedule by eliminating the need to "work-in" urgent

examinations into an already full schedule. This could also lead to increased patient satisfaction and less delay in results being relayed to the ordering provider.

The reimbursement rates for examinations completed are dictated by Medicare, Medicaid, and private insurance companies and will not vary significantly in the outpatient setting. The cost of supplies used during examinations will be comparable to that of the fluoroscopy department located on the main academic campus due to the utilization of the enterprises' bulk purchasing power. While the enterprise will profit from increasing the number of reimbursable examinations performed, significant cost savings could be noticed by the patients as well. There could be a reduction in the amount of time spent traveling to the imaging facility if they are located closer to the outpatient imaging facility. A potential for less time spent at the imaging facility due to effective scheduling and schedule adherence could result in patients taking less time off work or school to complete ordered examinations.

Problems Addressed and Overcome

A major cost of this project will be renovating the existing space to accommodate a fluoroscopy suite and purchasing a new fluoroscopic machine. Both expenses will need to be leveraged against the increase in the number of examinations performed both at the outpatient facility and the main academic hospital. Up to date imaging equipment is essential to ensuring that diagnostic examinations are completed while minimizing the radiation exposure to patients and staff.

Renovating the space that will be utilized as a fluoroscopy suite, while less expensive than new construction, will be considerable investment for this project. The space is included in the lease agreement, so no additional lease expenses will be incurred. Outfitting the space for use as a fluoroscopy suite will include a floor mounted fluoroscopy machine, a stand-alone

upright imaging receptor, lead lined control booth, and a restroom. Currently, there are men's and women's dressing rooms that are utilized by all imaging modalities within the department that can accommodate the needs of the fluoroscopy patients.

Ensuring that the most up to date equipment is being utilized will require frequent updates to software and examination protocols. Most software updates will be performed by a biomedical technician under the service contract agreement with the company selling the fluoroscopic equipment. While the service contract will be an additional cost to this project, it will ultimately be cost effective to ensure that the imaging equipment used is effective and operating efficiently. Routine maintenance will also help reduce down-time due to machine malfunction.

Both the cost of renovating the existing space and the initial investment in an up-to-date fluoroscopy machine should be offset by the increase in revenue generated from performing multiple outpatient fluoroscopy examinations daily. It will be important to have effective marketing and referral systems in place to ensure that the cost of this project is surpassed by the reimbursements received from this new revenue stream.

Summary

A thorough environmental scan was performed to ensure the validity and value of this service line expansion project. The organizational hierarchy was reviewed to ensure proper leadership was in place to lead a team of skilled imaging professionals. A SWOT analysis was performed and revealed multiple strengths, weaknesses, opportunities and threats associated with this service line expansion project. Several competitive operational advantages were identified, and potential problems were discussed.

MARKETING PLAN AND SALES STRATEGY

The expansion of outpatient fluoroscopy services at a freestanding, academic hospital affiliated outpatient imaging center will distinguish itself from competitors by offering these services in a more convenient location. Outpatient imaging services are very lucrative for hospitals but are often not well represented in a marketing campaign and are subsequently not achieving their full earning capabilities (Rudisill & Schwartz, 2017). Other fluoroscopy service providers may market their services to the same target market; however, this project will engage in a marketing campaign that targets not only the patient, but the healthcare providers who are ordering these fluoroscopy examinations. A marketing campaign will serve as a method of informing those who are ordering these examinations of the different geographical locations their patients can obtain these ordered services. All marketing and promotional services will be rendered by the Nebraska Medicine marketing department. Any use of the Nebraska Medicine logo for marketing or promotional purposes will need to be authorized prior to distribution.

Services Offered

The outpatient fluoroscopy department expansion project's main objective will be to offer fluoroscopy examinations in an outpatient facility. This location will serve as an alternative imaging site to the main academic hospital. All examinations will be done in accordance with the standard of care and protocols set by Nebraska Medicine radiologists and leadership team.

Pricing Strategy

Currently, patients have more information regarding the cost of their healthcare available to them than ever before, including reimbursement contracts with Medicare, Medicaid and

private insurance. These resources allow healthcare consumers to make informed decisions regarding their healthcare delivery, including the cost of fluoroscopy examinations.

To remain competitive, the cost of a fluoroscopic examination should be comparable to that of our competitors while still ensuring that the costs of all supplies used during these examinations are covered. A policy of marking up all supplies costing $10.00 or more at a rate of 2.5% will be put in place to help ensure that all costs associated with an examination are recouped. A professional fee and a facility fee will also be charged to the patient to cover the costs associated with the radiologist performing the examination and the use of the fluoroscopy suite.

Promotional and Marketing Strategy

The marketing strategy for this project will target not only the patients seeking these services, but also the ordering providers who will refer these patients on to fluoroscopy departments to complete imaging examinations. Utilizing data retrieved from the internal electronic health records system, pertinent patient demographic information, such as home zip code and referring physician contact information, can be used to help guide the focus of the marketing campaign (Rudisill & Schwartz, 2017). A three-tiered approach in which the potential patients, the ordering provider, and the ancillary staff within the healthcare offices in charge of facilitating the scheduling of fluoroscopy examinations are targeted will be utilized.

The use of a physician outreach liaison will play an integral part in pursuing both the ordering providers and their ancillary staff. The physician outreach liaison will ensure that relationships are built and fostered between the fluoroscopy department and the ordering provider. The ordering providers must feel comfortable sending their patients to a fluoroscopy department, and this working relationship will help ensure that the needs of the ordering

physician and the patient are being met. The physician outreach liaison will also be accountable for building a relationship with the ancillary staff responsible for either electronically ordering the fluoroscopy examinations or filling out the paperwork by hand. Ensuring that the ordering process and result delivery systems is efficient and easy to use by all staff members will encourage ordering providers to continue referring their patients to this department.

The target market of patients should also be included in the marketing and promoting of the expansion of fluoroscopy services. To reach current and future patients in the community, the marketing plan will include promoting the service line expansion at community health screenings, health and wellness expos, direct mailing advertisements, online and social media advertisements, and hosting an open house event that would allow the public to meet with the radiologists and staff and tour the facility.

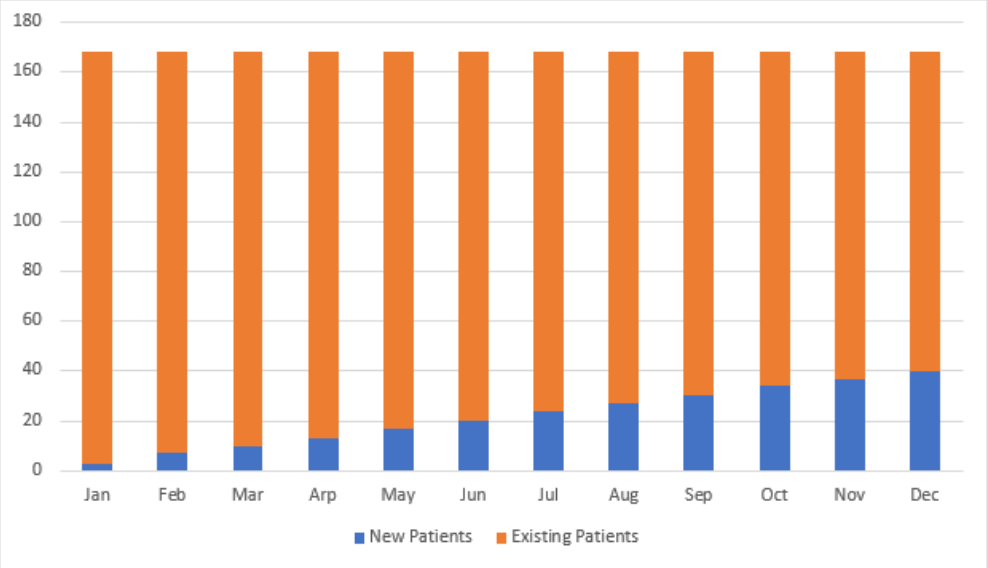
The marketing and promotions department will reach new avenues of referrals. Many private practice specialists require the services of a fluoroscopy department and should be approached by a physician outreach liaison. A member of the marketing and promotions department will contact these offices to set up a meeting with staff members in which a physician outreach liaison will provide information on the services available within the fluoroscopy department. Continued contact with these offices will be crucial to gaining and maintaining their business.

Measurements of Success

The number of patients served by this new service line could be impacted by external forces such as the addition of new ordering providers to the referral network, an influx in the number of inpatients being served at the main campus fluoroscopy department could potentially draw more patients to utilize the outpatient fluoroscopy department, and the success of drawing

in new customers through the marketing campaign. Figure 3 represents the projected number of patients that could be potentially served by the addition of fluoroscopy services to the outpatient imaging center operating at 60% capacity with a 2% increase in the number of new patients served per month. It will be important to track the number of patients that are new to the organization and those who are returning patients. If there is little growth in the number of new patients it could signal a need for an increase in marketing to new referring providers. This project may not be profitable in the first years of operation due to the substantial start-up expenses. Objective, non-financial benchmarks should also be utilized to measure the success of this project. Areas that could be measured include monitoring the number of patients served that are new to the Nebraska Medicine system; achieving decreased wait times between scheduling and when the examination is completed; increased patient satisfaction; and increased ordering provider satisfaction. These benchmarks will serve to either justify investing more capital into this project or reinvesting the allocated funds to other projects.

Figure 3. Projected monthly service projections for outpatient fluoroscopy department.



Note. Total number of patients served based on operation at 60% capacity, 168 patients, per month. Increase of new patients based on projection of 2% increase per month.

New patient benchmark. The number of new patients receiving imaging services in this department will be monitored via information retrieved from the patient registration department. This information will be used to gauge the effectiveness of the marketing campaign reaching referring providers and potential patients. This data can also help quantify the number of patients seeking imaging services for certain disease processes, which could also help further refine future marketing campaigns.

Wait time benchmark. Documentation of the amount of time between the date of the initial contact from the referring physician's office to schedule the fluoroscopic examination and the date the exam is completed will help prove this project is achieving one of the main goals of decreasing the wait time for outpatients seeking fluoroscopic examinations. If these benchmarks are not met, process improvement measures can be implemented to help determine the cause.

Wait time within department benchmark. Accurate and consistent use of the radiology application within the electronic health records system will allow for the tracking of the amount of time a patient spends within the department. This measurement can be further stratified by determining how much time is spent waiting in the lobby after the check-in process, time spent completing the examination, and the amount of time until the finalized report is available to the referring physician. These benchmarks can then be used to ensure that maximum efficiency is being achieved. These measurements can also be used to help correlate the level of patient satisfaction with regards to wait times.

Satisfaction benchmarks. The level of satisfaction from ordering providers can be tangibly measured by maintaining contact with provider and their staff. The physician outreach liaison will be responsible for completing satisfaction surveys with all ordering providers to ensure that their needs are being met and that they are satisfied with the services of the

fluoroscopy department. Patient satisfaction can be measured through surveys. Post examination surveys will allow the patient the opportunity to answer questions regarding their satisfaction with the services provided to them. The surveys will be mailed to the patient and will provided a stamped return envelope for the convenience of the patient. These satisfaction benchmarks will allow staff to address any concerns and improve workflows to better serve the patients.

Summary

It was determined that a large-scale marketing campaign would be needed to inform referring ordering providers, potential new patients, as well as existing Nebraska Medicine patients that outpatient fluoroscopy services would be offered at new location. Promotional items as well as various forms of advertisement would need to be purchased and distributed. Multiple factors will be monitored to measure the success of this project including patient and ordering provider satisfaction surveys as well as wait-time benchmarks. The number of new patients will also be monitored to measure the growth of the service line. The use of marketing and promotional items in addition to the services of a physician outreach liaison will help to ensure patients and ordering providers are aware of this service line expansion.

FINANCE

Nebraska Medicine, through years of strategic planning, has invested in the expansion of their presence in west Omaha through the development of an outpatient cancer infusion center and multispecialty clinics. These service lines are housed in two separate leased buildings which has allowed for growth through the addition of specialty service lines. Nebraska Medicine has collaborated with the owners of the buildings to invest in extensive renovations to the department, including two large shell rooms that will allow for future service line expansions. Nebraska Medicine has also invested in the hiring and training of staff members for these new departments. The outpatient fluoroscopy service line will require extensive capital investments in the renovation and outfitting of the space to accommodate a fluoroscopy suite including a floor and ceiling mounted fluoroscope, secured supply storage, departmental safety call-system installation, lead lined walls, restroom, and a technologist workstation.

Fluoroscopy exam reimbursement rate estimates

The Centers for Medicare & Medicaid Services (CMS) (2019) published a Physician Fee Schedule of estimated CMS payments for all imaging examinations, including fluoroscopic examinations. The examinations chosen to be performed at the outpatient fluoroscopy department are those that do not require any pre-procedural lab tests and do not require post-procedural observation by nursing staff. Those examinations include the modified barium swallow (MBS), esophogram, upper gastro-intestinal series (UGI), small bowel series (SBS), barium enema (BE), air contrast barium enema (ACBE), and hysterosalpingogram (HSG). The estimated exam payment models represented in table 1 include only the examinations to be completed at the outpatient fluoroscopy department. The average CMS payment per completed fluoroscopic examination was calculated to be $222.68. The total of the average CMS payment

is comprised of the technical component, paid to facility, and the professional fee, paid to the radiologist for their services. This average payment does not include payments generated by privately insured or self-payment patients nor does it take into consideration examinations utilizing additional supplies or staff resources than the average examination. The estimated payment amounts have been calculated to include a technical component and professional component to cover the cost of the exam.

Table 1

CMS Estimated OPPS Reimbursement Rates for Selected Fluoroscopy Examinations

Exam code	Exam description	Technical component	Professional fee	Total OPPS facility payment amount
74220	ESOPH	$ 201.82	$ 34.60	$ 236.42
74230	MBS	$ 112.44	$ 27.39	$ 139.83
74241	UGI	$ 201.82	$ 35.32	$ 237.14
74245	UGI W/ SBS	$ 230.65	$ 46.49	$ 277.14
74246	UGI W/ AIR	$ 201.82	$ 35.22	$ 237.14
74250	SBS	$ 112.44	$ 24.15	$ 136.59
74270	BE	$ 201.82	$ 35.32	$ 237.14
74280	ACBE	$ 201.82	$ 50.82	$ 252.63
74740	HSG	$ 230.65	$ 19.46	$ 250.11
	Average Payment	**$ 188.36**	**$ 34.31**	**$ 222.68**

Note. OPPS = Outpatient Prospective Payment System; MBS= Modified Barium Swallow; UGI= Upper Gastrointestinal series; UGI w/Air = Upper Gastrointestinal series with air contrast; UGI w/ SBS= Upper Gastrointestinal series with Small Bowel Series; SBS= Small Bowel Series; BE= Barium Enema; ACBE= Air Contrast Barium Enema; HSG= Hysterosalpingogram. Reimbursement rates obtained from CMS (2019).

Staffing Needs

The outpatient imaging department currently has three radiologic technologists staffed five days per week. All images are electronically transferred to radiologist reading rooms on the main academic campus for interpretation. Fluoroscopy examinations require a radiologist to be physically present in the examination room to operate the fluoroscope and obtain fluoroscopic images throughout the examination. To meet the demands of the addition of this service line, the organization will be required to hire an additional radiologic technologist and one additional radiologist to perform daily fluoroscopy examinations. These staff members would be in addition to the existing staff of imaging professionals that can rotate through this department. These staff members would be hired for eight-hour day shifts with no weekend, evening or holiday coverage required. The radiologist will be recruited, hired, and paid by the hospital's radiology group which consists of radiologists who rotate through the various modalities providing image interpretation services. The group of radiologists receives their designated technical fee for each fluoroscopy exam completed. This professional fee is built into the CMS payment model and is part of the total reimbursement rate. The average professional fee for the fluoroscopy exams to be completed by this new service line is $34.31 per examination (CMS, 2019). It is important to remember that while the radiologist assigned to perform fluoroscopy examinations at the outpatient imaging center will be responsible for rendering services associated with these examinations, they can also maintain productivity by reading and interpreting non-fluoroscopic images from various other modalities utilizing the enterprise wide electronic imaging and dictation software.

The new staff members will require organizational, departmental, and modality training. The training period will require a time and financial commitment from the organization. The financial commitment will continue past the initial training period in the form of wages and

benefits for each employee. The Nebraska Department of Labor (NDOL) website provides a database of employment wage statistics (NEworks, 2019). The estimated annual median salary for a radiologic technologist in Nebraska is $53,953.00 (NEworks, 2019). While there will be three radiologic technologists working within this service line, only one will be assigned to this modality daily thus the wages of only one of the technologists will be assigned to the fluoroscopy cost center. The estimated annual median salary for a radiologist in Nebraska is $116,935.00 (NEworks, 2019).

Operating on an eight-hour schedule, the outpatient fluoroscopy department can be scheduled to complete approximately 14 examinations per operational day. To operate at maximum capacity, the outpatient fluoroscopy service line will provide services for approximately 3,360 examinations. Table 2 provides examination data for operations at 20%, 40%, 60%, 80% and 100% capacity. Using the average CMS (2019) reimbursement rate for both the technical component as well as the professional fee for specific fluoroscopy procedures, the annual estimated revenue required to cover the costs of the additional staff can be calculated. The fluoroscopy service line can operate at 20% capacity, 672 patients annually, and generate enough revenue to cover the salary expense of the additional radiologic technologist hired for this service line. The fluoroscopy service line must operate at full capacity, 3,360 patients annually, to provide coverage for the salary expense of the radiologist. It is highly unlikely that the project will be operating at 100% capacity during the first year of operations, however, the radiologist has the potential to remain productive and bring in additional revenue for the organization by providing interpretation of other non-fluoroscopy examinations during periods of downtime within the fluoroscopy schedule.

Table 2

Estimated Exam Capacity and Corresponding Reimbursement Rates

Percentage of total annual exam capacity	Estimated number of exams completed annually	Estimated revenue from exam technical component reimbursements ($188.36)	Estimated revenue from exam professional fee reimbursements ($34.31)
20.00%	672	$126,577.92	$ 23,056.32
40.00%	1,344	$253,155.84	$ 46,112.64
60.00%	2,016	$379,733.76	$ 69,168.96
80.00%	2,688	$506,311.68	$ 92,225.28
100.00%	3,360	$632,889.60	$115,281.60

Note. Estimated total revenue from technical component reimbursement based on average reimbursement rate of $188.36. Estimated total revenue from professional fee reimbursement based on average reimbursement rate of $34.31. Estimated revenue rates calculated from CMS Physician Fee Schedule (CMS, 2019).

Capital and Other Expenses

Nebraska Medicine will need to invest in several key pieces of equipment to produce a fluoroscopy suite that is up to date and functioning for patient use. A significant investment will also need to be made to allow for the renovation and construction of the shell room to ensure the fluoroscopy suite will meet all code and safety requirements. These expenditures will need to be factored into the total cost of this project and considered when projecting estimated revenues.

Fluoroscopy Machine

To maintain consistency with the fluoroscopy department located on the main academic campus of Nebraska Medicine, a Siemens Luminos Agile Max fluoroscopy system will be purchased. This fluoroscopy system is favored by Nebraska Medicine for a variety of reasons including high exam table weight limits, adjustable table height, open design for easy access to the patient on either side of the table, and superior image quality (Siemens, 2019). A yearly

service contract should also be purchased to provide technical and mechanical support to the facility. The price of a service contract is often negotiable and can be influenced by the number of existing service contracts an organization currently holds with the company (T. Cruze, personal communication, September 11, 2019). While the exact cost of the fluoroscopy machine and accompanying service contract can vary depending upon the purchasing power of the organization, Nebraska Medicine should budget for $390,000.00 to cover the costs associated with purchasing this equipment and related service contracts.

Renovation and Construction

While the use of an already built shell room provides a distinct competitive and financial advantage over new construction, the renovation of that shell room will still require a large investment from the organization. There are many facets that must be considered when budgeting for the renovation and construction of a fluoroscopy suite. Some of the main projects will include the finishing of the floors and ceilings to support a floor mounted fluoroscopy machine as well as a ceiling suspended x-ray machine, the building of a bariatric restroom, connecting a fire sprinkler and fire pull system, and installing a medical gas infrastructure and coordinating hookups. There will also be cosmetic projects that will enhance the aesthetics of the suite while providing functional support during examinations such as installing locking cabinetry, adjustable LED lighting, and widened doorways for convenient wheelchair access. Renovation and construction costs should be estimated at about $500,000.00 to include materials, time and labor expenses (T. Cruze, personal communication, September 11, 2019).

Radiation Protection and Positioning Devices

Various radiation protection and positioning devices will need to be purchased to ensure proper radiation safety standards are met for both staff and patients. Lead aprons, lead gloves, thyroid shields, and lead glasses will need to be purchased for use by staff. Positioning devices, such as impervious coated positioning sponges, will need to be available for use by patients. These items are purchased through a regional reputable vendor from Pulse Medical Inc. The prices utilized to calculate estimated startup costs were obtained through the Pulse Medical Inc. website (Pulse Medical Inc., 2019). Table 3 lists the approximate cost of these pieces of equipment and should be factored into the outpatient fluoroscopy operating budget. Approximately $3,700.00 should be allocated for these items within the initial startup costs.

Table 3

Estimated Costs of Radiation Protection and Positioning Devices

Equipment description	Estimated equipment cost per item	Number of items to be purchased	Total estimated cost of equipment
Full coverage lead apron	$ 640.00	3	$ 1,920.00
Thyroid shield	$ 65.00	3	$ 195.00
Lead gloves	$ 225.00	1	$ 225.00
Lead glasses	$ 285.00	2	$ 570.00
Portable lead apron storage rack	$ 515.00	1	$ 515.00
Positioning sponges	$ 266.00	1	$ 266.00
Total Estimated Cost			$ 3,691.00

Note. Prices reflect full protection, 0.55mm Earth-Lite™ protection, size large lead aprons; narrow wing thyroid shield, 0.55mm Earth-Lite™ protection; Incredibles wraparound lead glasses; Porta Rack mobile apron rack with glove holder; Positioning wedge kit “B”. All prices obtained from Pulse Medical Inc. (2019).

Other Operating Expenses

The new outpatient fluoroscopy service line will encounter various other expenses not associated with the purchasing of the fluoroscopy equipment, renovation and construction of the fluoroscopy suite, and the additional staffing necessary to operate. These expenses can be attributed to both direct patient care items as well as non-direct patient care expenses. There are many patient care items, such as urinals, bedpans, bandages, and contrast media cups and straws that are considered non-billable. The organization will absorb these expenditures knowing that they are necessary to perform daily patient care operations. The outpatient fluoroscopy service line will also employ the services of other departments to maintain functional daily operations, including IT, PACS, health information management (HIM), linen distribution, marketing, promotions, and human resources. These departments will bill the radiology department for their services as appropriate.

The building in which the outpatient fluoroscopy service line will be located is a leased space. The building owners include the cost of basic utilities, gas, water, electricity, and trash disposal, into the monthly rent. The addition of high energy use equipment, such as a fluoroscopy machine, may require a higher monthly rent. Specialized waste disposal services must be contracted for the safe removal of biohazardous waste materials from the facility. The non-billable patient care items, monthly rent expenses, and specialized waste disposal services will comprise the outpatient fluoroscopy's other expenses.

Marketing Budget

While investing capital in the marketing and promoting of the expansion of fluoroscopy services may be viewed as an expense, it is a necessary investment into the future success of the project. As shown in Table 4, the marketing budget will include investments in marketing services and products that will contribute to the success of this project. A large portion of the

budget will be invested in the use of a physician outreach liaison to help reach potential referring providers. Because the fluoroscopy department is located within an existing Nebraska Medicine radiology department, the expenses incurred from utilizing the marketing department will become part of the ongoing marketing campaign to promote the outpatient imaging department.

Marketing specialists will engage in social media tactics to reach potential customers who are connected to Nebraska Medicine through various social media platforms. Updates to Nebraska Medicine's website will need to be made to reflect the additional imaging facility options. The time spent by a marketing specialist completing these tasks is invaluable to the success of the department and should be considered when formulating a marketing budget. A marketing budget for this project will also include the cost of any promotional items to be distributed, newspaper and online advertisements, and updating brochures to distribute.

Table 4

Quarterly Marketing Expense Budget

Expense	**Jan. - Mar.**	**Apr. - Jun.**	**Jul. - Sep.**	**Oct. - Dec.**	**TOTAL EXPENSES**
Professional Assistance					
Marketing Specialists	8,000	5,000	3,000	2,000	18,000
Social Media Specialists	2,000	1,000	500	500	4,000
Graphic Design Specialists	1,000	400	200	200	1,800
Physician Outreach Liaison	10,000	10,000	10,000	10,000	40,000
Promotional Handouts	3,500	2,500	1,000	500	7,500
Signs/Billboards	2,000	300	200	200	2,700
Media/Advertising					
Print	1,000	500	200	200	1,900
Radio/Television	1,000	500	200	200	1,900
Online	1,000	500	100	100	1,700
Direct Mailings	2,000	1,500	400	300	4,200
Website					
Development/Maintenance	1,000	500	200	200	1,900
Public Relations Materials	2,000	1,000	1,000	1,000	5,000
Marketing/Networking					
Meetings	2,000	1,400	1,000	1,000	5,400
TOTAL QUARTERLY EXPENSES:	$36,500	$25,100	$18,000	$16,400	$96,000

Note. Quarterly marketing expense budget.

Estimated Revenues and Expenses

The outpatient fluoroscopy service line has the potential to perform 3,360 fluoroscopy examinations while operating at 100% scheduling capacity annually. The service line can estimate the average CMS reimbursement rate of each fluoroscopy examination to be $222.68, including both the technical component that is paid to the facility as well as the professional fee which is paid to the radiologist providing services during the examination (CMS, 2019). While it is not likely the service line will be operating at 100% capacity with only patients covered under programs reimbursed by CMS for the first year of operation, the maximum average total reimbursement rate from CMS would be $748,204 annually. It is important to acknowledge that approximately 50% of Nebraska Medicine patients are recipients of Medicare, Medicaid, or other government-funded insurance programs (Nebraska Medicine, 2016). The average total reimbursement rate does not take into consideration the reimbursement rates from commercial insurance policies and patients who chose to self-pay for services.

Not all patients can be included in the total revenue for the service line; only revenue generated by providing services to new patients will count towards the total inflow of revenue for this department. Revenue generated from patients that would have had the same examination performed on the main campus cannot be counted as it is replacing the income from another department (Porter & South-Winter, 2016). Considering that 50% of all patients served by Nebraska Medicine are recipients of Medicare, Medicaid, or other government funded insurance programs, it could be estimated that 50% of the total number of new patients will also be covered under these programs. It could also be estimated that 15% of new patients will be self-pay and 35% of new patients will be covered by commercially purchased insurance policies. If the total number of new patients estimated by the monthly service projections in Figure 3 is 262 annually, it can be assumed that 50% of those patients' examinations will be paid for by CMS

reimbursements to the organization at an average rate of $222.68, 15% will be paid for by the patients themselves at an average rate of $280.00 per examination, and that 35% of new patient examinations will be paid for by insurance companies at a negotiated average rate of $250.00. The revenues collected from the payment for examinations will comprise the revenue inflow of $63,091.08 annually, displayed in Table 5.

Table 5

Estimated Revenue Inflows Generated by New Patients

Payment Category	Inflow per procedure	Estimated number of new patient procedures	Total new patient cash inflows
Self-pay patient	$ 280.00	39	$10,920.00
Insurance covered patient	$ 250.00	92	$23,000.00
CMS reimbursement patient	$ 222.68	131	$29,171.08
Total annual new patient inflows		262	$63,091.08

Note. Inflow per procedure based upon average reimbursement rate from CMS (CMS, 2019). Estimated number of new patient procedures based on estimated service projections.

There are various startup costs associated with the establishment of an outpatient fluoroscopy service line including purchasing equipment, hiring additional staff members, renovating and constructing a fluoroscopy suite, and purchasing examination supplies. Nebraska Medicine will need to provide the capital investment to ensure that proper equipment, supplies, qualified staff, and adequate operating space is available for us. It is estimated that $390,000 is needed to purchase the fluoroscopy machine and service warranty plan, $500,000 for the renovation and construction of the fluoroscopy suite, and an additional $3,700 for radiation protection and positioning devices, totaling $893,700 in startup costs not including the salary expenses of the additional staff necessary to operating this service line. Table 6 represents a 5-year projection of total patient encounters, revenue generated, and expenses. Because there is a

net loss in year one of $711,686 due to the start-up costs associated with the purchasing of the equipment and the renovation of the fluoroscopy suite, the project is not projected to break even until the fourth year of operation. After the fourth year of operation, the project is anticipated to generate profits.

Table 6

5 Year Projected Proforma

OPERATION YEAR	**1**	**2**	**3**	**4**	**5**
PATIENT ENCOUNTERS	2016 (60% capacity)	2352 (70% capacity)	2688 (80% capacity)	3024 (90% capacity)	3360 (100% capacity)
INCOME					
Gross Revenue	$ 448,902	$ 523,719	$ 598,536	$ 673,354	$ 748,171
EXPENSES – GENERAL / ADMINISTRATIVE					
Staffing					
Radiologist Salary	$ 116,935	$ 119,273	$ 121,658	$ 124,091	$ 126,572
Radiologic Technologist Salary	$ 53,953	$ 55,032	$ 56,132	$ 57,254	$ 58,399
Marketing	$ 96,000	$ 96,000	$ 96,000	$ 96,000	$ 96,000
Fluoroscopy Machine	$ 330,000	$ -	$ -	$ -	$ -
Fluoroscopy Machine and Service Plan	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000
Radiation Protection / Positioning Devices	$ 3,700	$ -	$ -	$ -	$ -
Renovation/Construction	$ 500,000	$ -	$ -	$ -	$ -
TOTAL EXPENSES	$ 1,160,588	$ 330,305	$ 333,790	$ 337,345	$ 340,971
NET INCOME FROM OPERATION	$ (711,686)	$ 193,414	$ 264,746	$ 336,009	$ 407,200
BREAK EVEN PROJECTION	$(711,686)	$(518,272)	$(253,526)	$ 82,483	$ 407,200

Note. Total encounters are calculated to include a 10% increase in total patient encounters annually with 3,360 encounters being 100% capacity. Gross revenue calculated using average CMS payment of $222.67 (CMS, 2019). Staffing salary expenses include a 2% annual increase.

Summary

The main campus of Nebraska Medicine serves a diverse patient population and offers a wide array of general and specialized services at a variety of convenient locations. Nebraska Medicine has unique opportunity to enter the market of outpatient fluoroscopy services located at a free-standing, not located on the main academic campus, location. Providing fluoroscopy services in an outpatient setting will provide multiple benefits to both Nebraska Medicine and the patients served including decreased waiting time for examinations, the potential for increased patient satisfaction, and the attraction of new patients that can then be referred on to other service lines for follow up care. Operating at an outpatient facility will relieve some of the scheduling burden of the main academic campus' fluoroscopy department which will allow for more efficiency in treating both the inpatient and outpatient population.

Nebraska Medicine will be responsible for planning for the expenses associated with the starting of a new service line. The hiring of new staff members, purchasing fluoroscopic equipment, the construction and renovation of an existing space, as well as various direct patient care and overhead costs will all need to be factored into the startup budget. It will be unlikely that the service line will operate at 100% capacity with all patients being new to the organization and all examinations being reimbursed at the average reimbursement rate provided by CMS within the first year of operation, which may result in a financial loss. After reviewing the estimated revenue inflows generated by new patients, it is likely that the project will experience financial loss during the first three years of operation. With an estimated startup cost of $893,700.00, this new service line is not projected to be profitable to the organization until the fourth year of operation. Nebraska Medicine can, however, expect numerous qualitative gains in the form of attracting potential new patients that may feed into the referral stream for other Nebraska Medicine service lines, increased patient satisfaction with exam scheduling wait times,

location choices, and the ability to serve existing patients as well as new patients at convenient locations in a timely manner, thus bolstering the success of this new service line for years to come.

OTHER CONSIDERATIONS

The addition of an outpatient fluoroscopy service line at a Nebraska Medicine outpatient facility have been discussed in great length throughout this business plan. The deeply rooted history of the organization, the potential need for these services, and the unique opportunity to expand into a new service market have also been discussed. An internal and external market analysis identified various industry trends that could have an impact on this expansion project. The target demographic market was identified, and alternative competitor options were discussed. A marketing plan to best reach the identified target market was developed and a budget presented. A financial review including the significant startup costs associated with purchasing fluoroscopy equipment, hiring new staff members, and renovating and constructing a fluoroscopy suite was discussed.

While this business plan provides a comprehensive review of the potential risks and benefits associated with the expansion of an outpatient fluoroscopy service line, there are several additional considerations that have not been discussed. These issues have the potential to impact daily operations within the outpatient fluoroscopy service line including radiation safety, the use of electronic communication of examination results, and the implementation of patient centered care using a standardized communication tool.

Radiation Safety

Part of fulfilling Nebraska Medicine's mission is providing appropriate and safe healthcare services to patients. In the outpatient fluoroscopy department, part of providing safe imaging services includes educating staff on ways to decrease their occupational radiation dose, but also educating patients about their radiation exposure. It is recommended that a patient radiation dose monitoring program be implemented to document, track, and educate patients

regarding their cumulative medical radiation dose as well as providing education to them regarding their personal risk from radiation exposure (Regan & Clark, 2017). Patients often have concerns about the potential risks due to radiation exposure but may not express those fears until after the procedure is completed. Most of these fears can be calmed through direct communication with the technologist or radiologist. Informing the patients that their radiation dose will be documented, tracked and monitored prior to the completion of an examination will allow for open communication regarding radiation safety.

Many patients undergo multiple fluoroscopic examinations for the diagnosis, treatment, or monitoring of a disease process. An electronic cumulative radiation dose tracking program would allow the referring physician, radiologist, and radiologic technologist to be aware of the patient's dose history and modify examinations appropriately if necessary. This program will ultimately enhance patient safety and could potentially increase provider and patient satisfaction.

Electronic Communication of Examination Results

It is important to recognize that not all communication regarding fluoroscopic examinations will transpire within the capacity of the department. Because the outpatient fluoroscopy service line will be marketed to numerous independently owned and operated healthcare practices, it will be important that an electronic communication infrastructure is built to support the timely communication of pertinent patient information from outside facilities as well as transmitting the fluoroscopic imaging results back to the ordering providers. Larson, Froehle, Johnson and Towbin (2014) liken the importance of the communication systems used in a radiology department to that of the clinical care the patient is receiving. If the results from the fluoroscopic examination are not received in a clear and timely manner by the ordering provider, a delay in patient care may occur.

Because the patients being served by this new service line are in varying stages of diagnosis, treatment or recovery from a medical condition, it is possible that multiple providers from different service lines, and potentially different organizations, may have a vested interest in the results of a fluoroscopic examination. The information must then be communicated effectively and efficiently to all receivers. Larson et al. (2014) goes on to explain that as the complexity of the communication network increases, the system used to communicate should be advanced simultaneously. Unlike the fluoroscopy department located at the main academic hospital, the outpatient fluoroscopy department will most likely not have direct access to the ordering providers to discuss examination results and will rely heavily on the transmission of electronic resulting programs across multiple platforms. Northouse and Northouse (1998) cited the potential for pertinent information not being conveyed when communicating between agencies. While electronic communication will play a pivotal role in this project's success, members of the department must be engaged in multidirectional communication methods, including electronic, written, and verbal, to ensure that the message being communicated is received as intended by the sender to provide clinically competent care for the patient

Standardized Communication Tool

Ensuring that the staff working within the outpatient fluoroscopy department is focused on caring for the diverse patient population served is a key element in fulfilling the mission of the organization. Currently, there is no standardized communication tool used to guide staff members in engaging in clear and compassionate dialogue within the organization. The addition of a fluoroscopy service line offers the opportunity to educate staff members of the benefits of utilizing a scripted communication tool that will allow them to better serve their patients and initiate its implementation. A.I.D.E.T., an acronym that stands for acknowledge, introduce,

duration, explanation, and thank you, is a communication tool that guides staff members through essential communication points in a clear, concise, and compassionate manner (Barber, 2018). Each of these steps will serve as an opportunity to elevate the level of patient care and satisfaction within the outpatient fluoroscopy department.

One of the goals of this new service line will be having staff show appreciation to the patients served. Acknowledging that the patient could have chosen a competitor for their fluoroscopic imaging needs and thanking them for their patronage adds value to the services provided (Braverman et al., 2015). By focusing on the thank you portion of the A.I.D.E.T. process, the patient will feel valued and could potentially return for follow up examinations, speak favorably of the department, and potentially refer other patients to receive care at this facility.

The use of A.I.D.E.T. within the fluoroscopy department expansion project will allow for meaningful communication that can also be objectively measured through patient satisfaction surveys. A study completed in 2016 found that only 65% of patients responding to a patient satisfaction survey were satisfied with the healthcare system through which they received their care (Barber, 2018). While improved patient connection through effective communication will not solve all issues concerning patient satisfaction, it will be beneficial to the long-term success of the fluoroscopy service line. Braverman et al. (2015) reports that an increase in the connection between patients and their healthcare providers have been attributed to a decrease in anxiety for patients and an increase in positive outcomes. The benefits from implementing a communication tool, such as A.I.D.E.T., within this new service line could lead to its use throughout the organization.

Conclusion

Nebraska Medicine should investigate the possibility of expanding their fluoroscopy service line to operate within a freestanding outpatient imaging department in west Omaha, Nebraska. Expanding this service line may provide multiple benefits to the organization. Although the financial analysis revealed that the startup costs will exceed the potential revenue generated from CMS reimbursements for the first four year of operation, it did not take into consideration the value of the qualitative benefits arising from this expansion.

The potential qualitative benefits to the organization, patients and community are plentiful. The organization will reap the benefits of being the first in the market to offer outpatient fluoroscopy imaging services at an academic hospital affiliated freestanding imaging department. The potential for new patients to enter the organization's network and enter the referral stream for other providers within the organization is high. The patient may benefit from not having to navigate the busy academic campus and potentially have their exam delayed due to the urgent needs of an inpatient add-on examination. Providing these services in a highly populated region where these services are not currently available will fulfill the community's need for fluoroscopic imaging within the Nebraska Medicine enterprise at a convenient location. These benefits may not be able to be quantified in a financial analysis, but the impact they create could equate to financial gains throughout the entire Nebraska Medicine enterprise.

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