

**Increasing Inpatient Volume and Efficiency Through Decreasing
Readmission Rates at Fox Chase Cancer Center
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Introduction

Fox Chase Cancer Center (Fox Chase) has a long history of cancer treatment and research. The American Oncologic Hospital was originally founded in 1904 where cancer research, prevention, detection, treatment development, survivorship, and community outreach were their main mission. The Institute for Cancer Research was founded in 1927. Fox Chase was created when these two institutes merged in 1974. Fox Chase then merged with Temple University Health System in 2012 and has been a part of their health system ever since. The strategic initiatives of Fox Chase and Temple University Health System are aligned however they are licensed independently. Ever since the beginning of Fox Chase, research has been a large part of the center. There have been many medical discoveries made by Fox Chase staff, one of the largest being the Hepatitis-B vaccine which is the first “anti-cancer” vaccine and has reduced incidences of liver cancer. This discovery was awarded The Nobel Prize in Physiology or Medicine in 1976. The main facility sits right outside of Philadelphia in Cheltenham, Pennsylvania. There are also other campuses including locations in East Norrington, PA, Furlong, PA, Huntington Pike, PA, and two Fox Chase at Temple University Health locations in Philadelphia. Fox Chase treats patients by separating care into three categories. These categories are surgical care, infusion (chemotherapy), and radiation oncology where the bulk of their operations are done in ambulatory care. Their most treated types of cancer are prostate, breast, and lung cancer (Fox Chase Cancer Center). For a small facility, Fox Chase provides a great number of high-quality services to its patients.

Mission, Vision, and Values Statements

Mission: To prevail over cancer.

Vision: To be a national leader in cancer science and medicine.

Values: Respect, quality, and service.

Internal Assessment

Strengths

Fox Chase employs a range of exceptional physicians and oncologic staff. These physicians are imperative to the success of the center. Physicians at Fox Chase also play the role of researchers. The staff of Fox Chase has a generous number of publications that can be accessed on their website. In 2022, there were 708 faculty publications highlighted on the Fox Chase website on various cancer treatments and causes. As well as research opportunities, Fox Chase advocates for a strong education in the medical field. There are multiple programs available through Fox Chase including research training programs as well as residencies and fellowships for medical students. The center is highly awarded with some of their physicians having received General Motors Cancer Research Foundation Prizes, American Cancer Society Medals of Honor, induction into the National Inventors Hall of Fame, the Kyoto prize, and even the Nobel Prize in Medicine and Chemistry.

Fox Chase has also been recognized for their outstanding patient-centered approach. As of January 31, 2023, Fox Chase has been awarded the Gold Certification of Excellence in Person-Centered Care by Planetree International. This is one of the highest levels of achievement in the realm of patient-centered care. Fox Chase has been awarded this for their outstanding abilities to prioritize the participants and patients of cancer care. This includes involving all parties in the patients' treatment with compassion, transparency, inclusion, and most importantly quality.

Fox Chase ranks highly among competitors. It is stated by several sources that Fox Chase is highly ranked in multiple sections. The first source is the US News Cancer Scorecard. These ratings are based on various categories including patient outcomes, the volume of high-risk patients, patient experience, nurse staffing, and advanced clinical technologies. Going off of these categories, Fox Chase ranked nationally as high performing. The center ranked excellent in 30-day survival, which is the survival of patients 30 days after being admitted, discharging patients home, patient experience, patient services, and advanced technologies. The second source is Press Ganey, a global organization dedicated to

improving patient experiences in healthcare facilities across the world. Press Ganey presented Fox Chase with two awards in 2021. These are the Guardian of Excellence Award in Patient Experience and the Pinnacle of Excellence Award in Patient Experience. Observing both of these sources as well as the Golden Certification of Excellence in Patient-Centered awarded by PlaneTree in 2023, it is evident Fox Chase has a highly regarded patient experience. The center is also a destination employer. Fox Chase is known to have a great company culture and to be an environment that employees love. This along with their success in the quality of care attracts oncologic staff. Fox Chase has received many prestigious titles for research, and quality of care and has been recognized by the U.S. News health report, these awards give them the opportunity for increased access to patients as physicians refer them to care at Fox Chase. These awards prove that Fox Chase provides both quality care and care catered to each patient. This puts Fox Chase in a position of power among competitors and distinguishes them from the crowd of cancer centers. It should also be noted that all of Fox Chase's nursing staff are trained in oncology in addition to their regular nursing requirements. This means that Fox Chase has a well-rounded staff of physicians who are also researchers, with nurses who are well-educated in what they do. This factor differentiates their staff from other centers' staff and shows that Fox Chase is a destination healthcare provider.

Fox Chase is one of the 11 other cancer hospitals nationally that holds a DRG exemption. Their DRG-exempt status gives them the opportunity to not have to participate in the prospective payment for Medicare, which means they use fee-for-service. The DRG exempt status has the potential to greatly increase the care the patients are receiving from Fox Chase as the center will not be limited to providing only what the CMS has listed in their diagnostic groups and they are paid at a higher rate for the services provided. Given that Medicare makes up 53% of their payer mix it is significant that they are able to be paid more than the average cancer center for many services.

Fox Chase is heavily involved with the community surrounding them. The center conducts events related to healthcare, an example of this is the upcoming Introduction to Hospice and Palliative care event. These events are run by their medical staff and are a free source of education to the community.

Fox Chase also conducts yearly community health needs assessments. They utilize these assessments to further understand the health of their surrounding population and prioritize the health needs of the public. These publications include assessments of the three counties closest to Fox Chase as well as community perspectives, spotlight topics, focus areas and communities, community health needs, and local resources for the community.

Since 2012, Fox Chase has been aligned with the Temple University Health System. Temple Health is much bigger than Fox Chase with four hospitals excluding the Fox Chase centers as well as five multispecialty centers and three urgent care centers. This merger with Temple Health has brought a lot of new opportunities for Fox Chase. They are now part of a larger health system and subsequently get the same benefits as a large health center such as the well-known reputation, resources, and the patients that are already part of the bigger system. Under Temple Health they are advertised to a new set of patients. Since there is no other cancer specialty center under Temple Health besides Fox Chase, those who are already being cared for by Temple Health and who need cancer services are more likely to look for treatment from Fox Chase. Therefore they have opened themselves to new consumers. They also set themselves up to receive more funding. Since they were such a small center until they were merged with Temple Health, it did not have as much opportunity for funding. Small health centers aren't able to treat as many patients as larger health centers because of their size and the number of staff they employ. Being under a large health center like Temple Health gives them more leverage in the healthcare world.

Weaknesses

As a not-for-profit organization, Fox Chase relies heavily on charitable donations from community members and philanthropists to help them thrive. However, the pandemic brought donations to a halt causing the center to experience a lack of resources that limits them from being able to achieve its full potential. While they are still receiving funding through their philanthropic donors, they are not yet

in the position to expand their physical location, which would greatly change their size from a weakness to a strength.

Fox Chase currently only has 100 inpatient beds, which is pretty similar to the number of beds at some of the other NCI cancer centers. Fox Chase constantly operates at full capacity and yet is able to provide only a small amount of the market supply for its area of service, which really shows they are limited in the amount of revenue they are able to bring in. Fox Chase is also landlocked. The center having strict physical boundaries makes it difficult for large expansions which could be quite helpful in helping the center to be able to care for a higher volume of patients. While the size of the center creates a limitation when it comes to the volume of inpatient services they offer, the type of care they provide can also serve as a weakness for them. Most of Fox Chase's cancer care is considered outpatient care since the patients are able to come in for their procedures and leave without having to be hospitalized. While outpatient care is more cost-effective for the patients, it is less lucrative for Fox Chase as the provider. Having a limited number of inpatient beds gives Fox Chase a limited number of options to increase the volume of the facility.

Nursing shortages have become rampant since the COVID-19 pandemic. During the peak of the pandemic, nurses and physicians were overworked to the point of burnout. Due to this, there have been many problems with finding nursing staff in the years following. There is no doubt that all aspects of oncologic staff and general medical staff have been affected by the pandemic, but it is seen most through the drastic shortages of nurses that have been occurring in the past year. According to McKinsey&Company, a local Philadelphia consulting group, pre-pandemic the United States was projected to have a 9% increase in nursing staff. Now there is a projected 10% gap between the registered nursing demand and the registered nursing supply. This can be seen graphically on the right (Berlin, 2022.). This shortage already poses a threat to Fox Chase as nursing staff are crucial to their operations. According to the U.S. News Cancer Scorecard, Fox Chase ranks as average in nurse staffing as of 2022 ("Fox Chase Cancer Center in Philadelphia, PA - Rankings, Ratings & Photos | US News Best Hospitals

Rankings”). Although this is not horrifying, this is still their lowest-ranking category. This means just as every other healthcare facility in the United States, Fox Chase is struggling with nurse staffing.

External Assessment

Opportunities

While it is quite unfortunate that the burden of cancer disproportionately affects the state of Pennsylvania, the city of Philadelphia has one of the highest rates in the state. With an incidence rate of 476.8 people out of every 100,000 affected by cancer, Philadelphia currently has a higher incidence rate than the state of Pennsylvania itself (National Cancer Institute). As a cancer center that prides itself in providing the best technologically advanced oncology care, that is a great opportunity for Fox Chase to be able to make a difference in the lives of the people it serves. As stated previously, Fox Chase is currently working at its full capacity. While that is great for them as a business, in the long run they would make more profit from expanding their center to encompass and treat more patients. This expansion would allow Fox Chase to provide enough to keep up with the growing demand for oncologic care. In other words, given that Fox Chase is currently trusted to provide care to a level that they are fully occupied at all times, getting more beds would undoubtedly be a great way for them to be able to serve more patients.

In 1951, Henrietta Lacks visited the Johns Hopkins Hospital where it was discovered that she had cervical cancer. Henrietta’s care ultimately led to the discovery of HeLa cells which are still used to study the effects of drugs and toxins on cancer cells today. Henrietta passed away in October of 1951 and was never able to see her contribution to cancer research. The Henrietta Lacks Enhancing Cancer Research Act is a federal act requiring the government to report and classify all government-funded cancer research trials. Fox Chase conducts many clinical research trials on patients and a large amount of research outside of the trials. This act gives Fox Chase the opportunity to have the work they are producing be observed and noted by.

Another opportunity for Fox Chase is the continuous advancement in technology which will impact the rate at which they are able to care for their patients, perform procedures, and turn over their beds in a manner that allows them to continue to maximize the number of patients they are caring for. As more equipment and techniques are introduced, Fox Chase will be able to operate more efficiently while increasing patient volume. These technologies include robot-assisted surgeries and new pharmaceuticals. Robot-assisted surgeries allow for more efficient and precise surgeries. This could accelerate the time surgeries take at Fox Chase and allow for faster turnaround times for inpatient beds. There are also new pharmaceuticals in the oncology world, one of which is named radiopharmaceuticals.

Radiopharmaceuticals is a new drug that combines radiation with pharmaceuticals. This drug contains a radioactive substance utilized to diagnose or treat disease by delivering radiation therapy specifically to cancer cells (National Cancer Institute). This technology makes radiation therapy both more efficient and less demanding. Utilizing a drug like this at Fox Chase would accelerate the time it takes for radiation therapy, allowing the center to treat more patients.

Technology is also crucial when it comes to establishing order within the centers as it is used for quality assurance monitoring. In Fox Chase's case, they utilize Vizient for quality assurance, which is a dashboard that juxtaposes them against other institutions, some within the NCI and others outside of it. In other words, technology is also used to make sure the care that is given is being done well while helping to run the business side of it as well.

Threats

As stated previously, new technology creates a faster rate at which patients can leave the facility, but this can also be a threat to Fox Chase. New medical technology is being discovered constantly. One of these technologies is robotic surgery. Robotic surgery also known as robot-assisted surgery is just one of the new technologies in cancer treatment. These types of surgeries allow surgeons to utilize a robotic arm to complete surgeries instead of by hand. The surgeries can do anything from removing the tumor entirely, reducing the tumor size, or relieving symptoms like loss of function or pain. These surgeries have many

benefits including smaller incisions, more precise incisions, less scarring, reduced pain, and blood loss, and shortened hospital stays (“Robotic Surgery for Cancer Treatment”). The identified threat is the potential reduction in the length of hospital stays due to this technology. Robotic surgery is not the only medical technology that can reduce hospital stays. Overall most technologies being researched have the benefits of reducing pain, reducing the time of treatment, and reducing hospital stays (“Robotic Surgery for Cancer Treatment”). Although the reduced pain is a benefit for the patient, reduced hospital stays can lead to Fox Chase losing revenue.

Inspecting the power of the current oncologic workforce brought to light multiple opportunities for growth. As stated previously, the current outlook of oncologic care is growing. This in turn means that the need for oncologic staff is on the rise. A study conducted in late 2019 shows “the demand for cancer treatment is expected to grow by 40 percent over the next six years and at the same time, the American Society of Clinical Oncology (ASCO) is projecting a shortage of more than 2,200 oncologists over the next six years”(“New Study Shows Growing Shortage of U.S. Oncologists Poses Risks to Women's Health”). According to Incredible Health, a resource for medical staff, from 2021 to 2031 there is a projected 6% growth in the need for oncologic nursing staff (Berg, 2022). Although the projected growth in the need for cancer treatment is advantageous for Fox Chase, a greater demand for cancer treatment means more patients to treat, and the projected shortage of oncologic staff could cause problems for Fox Chase down the line. There is also the national nursing shortage occurring currently that could affect Fox Chase. The nursing staff at Fox Chase are imperative to their operation. Nurses are needed in every sector of the facility, both inpatient and outpatient. The nurses at Fox Chase are also specifically certified in oncology since they are a specialty center. This means that their pool of nursing staff is smaller than a general acute care facility. Philadelphia specifically has been hit hard with the nursing shortage, it is even apparent by a simple google search of nursing positions available in the area. Factoring in the nursing shortage, the projected job outlook growth, and the projected growth in demand for the oncologic workforce, this could greatly impact Fox Chase’s operations. Since they rely so heavily on nursing staff in

their centers, becoming short on these crucial staff could lead Fox Chase to be unable to run at capacity. Since they are accustomed to running this way, their profit margins would be heavily affected by this change.

A large threat to Fox Chase is the competition surrounding them. Philadelphia has a large incidence of cancer and therefore a plethora of cancer centers or medical campuses that have cancer centers. In close proximity to Fox Chase Cancer Center, there are Alliance Cancer Specialists which has two locations in Philadelphia, one in Northeast Philadelphia near FCCC and one in Chestnut Hill, PA. There is also Einstein Medical Center which has two Philadelphia locations as well as two centers in East Norriton, where Fox Chase also has a satellite location. Another competitor is the Sidney Kimmel Cancer Center which is under the Jefferson Health System located in Philadelphia. Lastly, there is the Abramson Cancer Center which is under the Penn Medicine Health System, also found in Philadelphia. These centers are all fairly small and under larger health systems like Fox Chase. Although they are all different in the way care is delivered and their individual missions and techniques, these centers are all fighting for the same pool of consumers.

Prior to the pandemic, Fox Chase was set to leave the Temple University Health System and merge with the Jefferson University Health System. This deal collapsed in 2020 due to financial situations on Jefferson's side and the pandemic. Although the falling out of this deal was not the fault of Fox Chase, it still could be perceived that they are unreliable. This deal could have opened Fox Chase up to new opportunities that Temple Health is not able to present. Although the pandemic is over, it has had a lasting impact on the world of healthcare. This deal is just one of the ways that FCCC has been affected by the pandemic. This loss of opportunity could lead to other problems in the future for Fox Chase.

As stated in the Burden of Cancer in Pennsylvania report published by the DOH, "The incidence rate of cancer decreased between 2000 and 2016, with an average annual percentage change (AAPC) of 0.4 percent" (DOH, 2019). New regulations could decrease the incidence of cancer in Pennsylvania. The Further Consolidated Appropriations Act of 2020 changed the federal age of sale for tobacco from 18 to

21. This change keeps tobacco out of the hands of younger individuals who don't completely understand the ramifications. There is also a ban on multiple PFAs in Pennsylvania. Per- and polyfluoroalkyl substances also known as PFAs are a group of chemicals linked to be in a multitude of products including clothing, furniture, food packaging, adhesives, and insulation (Centers for Disease Control and Prevention). These chemicals do not break down in the environment, can contaminate drinking sources by penetrating soils, and build up in wildlife. PFAs are also linked to carcinogens, which are chemicals that cause cancer. As of January 2023, Pennsylvania mandated a rule that required all public and private water treatment facilities to test their water for PFAs and PFOs (Molotsky, 2023). Although this mandate is for the bettering of the health of the public, banning these carcinogens could lead to a decreased incidence of cancer in Pennsylvania. This would lead to Fox Chase having a decreased number of patients.

Fox Chase Cancer Center is one of the eleven cancer centers in the United States that is DRG exempt. The DRG exemption means that they do not receive Medicare payment through PPS which is the prospective payment system that is used nationwide for healthcare payments. Instead, Fox Chase collects their payments at a slightly higher rate than cancer centers that are non-exempt, meaning they are collecting more revenue from Medicare than competitors. Fox Chase is provided with this exemption due to their standing as a cancer center, but not all cancer centers are permitted this exemption. A study conducted involving Northwestern University, the University of Virginia School of Medicine, and Jesse Brown VA Medical Center compares PPS-exempt facilities and non-PPS- exempt facilities finding that there is really no difference in outcomes. The PPS-exempt and PPS non-exempt have virtually no difference in oncology patient volume, patient safety ratings, comorbidity burden, nurse staffing, total cancer scores, or survival scores. They also had similar adjusted postoperative outcomes, including mortality, readmission, and surgical site infections (Merkow et al.). Although exempt cancer facilities are linked to positive outcomes, there is not much difference between the average PPS non-exempt facility and the average PPS-exempt cancer facility. These very minute differences make it easy for Medicare to

want to discontinue this exemption. They have made plans to do so several times, one of which is outlined in a report from February of 2015.

The U.S. Government Accountability Office found that PPS-exempt hospitals were not creating much difference compared to those hospitals, specifically teaching hospitals, that were not PPS-exempt. Due to this finding, they proposed taking away the PPS exemption in order to increase efficiency in these cancer centers. This redaction of the PPS exemption would be a great loss to Fox Chase as they would go from charging what they need for each service, to having to charge under the prospective payment system like every other hospital in the U.S. Although the proposed legislation for removing this exemption did not pass, CMS is constantly looking for new ways to remove this exemption. This threat would cause the center a great deal of revenue loss and would in turn lead to other side effects for Fox Chase.

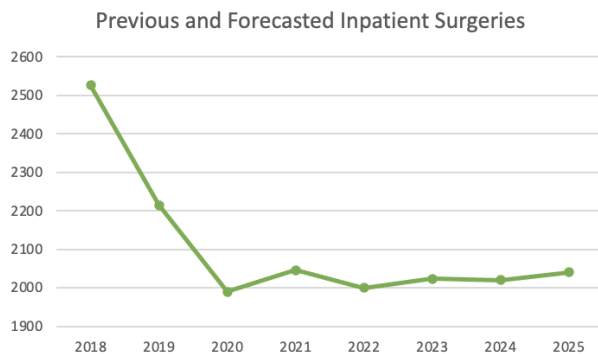
As for the consumers of Fox Chase, all patients are in need of the comprehensive cancer care that the center provides. For these patients, cancer care is a necessity that lacks the ability of choice. Another set of consumers are the surgeons providing care to the patients. From 2018 to 2040, the global demand for oncologic surgery is projected to increase by 5 million procedures or 52%. In high-income countries like the United States, the oncologic surgical workforce will have to increase by four times its current size in order to keep up with the demand (Perera, 2021). This high demand for a surgical workforce leads the surgeons to have the advantage over facilities. Physicians are able to choose their place of employment meaning that they are able to not work at a facility that does not deliver great quality. The physicians are also the ones that bring the patients to each specific facility, so facilities need to be favorable for the physician. If a facility is not up to the physician standards or there is a high amount of competition, physicians can request more salary. With the increasing need for oncologic care and the decreasing availability of qualified physicians, Fox Chase could have to compete for employees, which would be more costly for them.

Lastly, since Fox Chase is a non-profit organization, they rely heavily on philanthropic efforts and funding. "Philanthropy often funds capital, clinical programs, and more. To provide context, \$427 billion

was given in charitable contributions to U.S. not-for-profit organizations in 2018, with almost \$40 billion of that benefiting health causes. Of money directed to health causes, \$10.8 billion specifically went to U.S. not-for-profit hospitals and health systems” (Taylor,). However, since the COVID-19 pandemic, there has been a stall in the philanthropic efforts provided to not-for-profit hospitals. In the past years, a deficit of about \$14.8 billion in philanthropic efforts to not-for-profit hospitals has accrued. This deficit due to the pandemic has no outlined cause other than the adversity that occurred within hospitals (Gliadkovskaya). This lack of philanthropic efforts since the pandemic has resulted in less money being funded by Fox Chase. This is money that could have been funneled into expanding the hospital and increasing its inpatient surgical volumes.

Organizational Volume Forecast

Looking at the past five years of inpatient surgeries at Fox Chase, there has been a decrease in the number of discharges since 2018. In 2018, Fox Chase performed 2,526 surgeries. In 2019, there were 2,214 while in 2020 there were 1,990 surgical discharges. This is expected as 2020 housed the COVID-19 pandemic where hospitals were ridden with cases of COVID and staff burnout. Elective surgeries set to occur throughout the time of the pandemic were postponed due to the chance of contracting the virus, which explains the sudden decrease in inpatient surgeries. In 2021, the number of surgeries rose again to 2,046 but fell slightly in 2022 to 2,000. Although surgeries have grown since the pandemic, they are still not back to their volume in 2018 meaning that they are losing revenue.



Using a simple linear forecasting model based on the data from the past five years, Fox Chase’s forecasted surgical discharges for the next three years can be seen to the left.

For the year 2023, Fox Chase is projected to have a surgical volume of 2,023 discharges while in 2024

there is a projected volume of 2,020, and in 2025 a volume of 2,040. The findings from this forecast show a slight growth in the number of inpatient surgeries for the next three years. While the projected growth does not approach the number of surgeries performed pre-COVID, there will likely be rapid growth as Fox Chase continues to recover from the pandemic.

Market Volume Forecast

According to many different sources such as the Drexel University's School of Public Health and the American Cancer Society, the incidence rate for cancer in Philadelphia has been between 476 and 480 for every 100,000 residents in the past five years, with women slightly affected at a higher rate than men (taking into account breast cancer). Furthermore, when examining the incidence rate in Fox Chase's market, there has been a steady decline in new diagnoses from 2010 onward. The information following is found in the City of Philadelphia's Department of Health, community health assessment. As stated in the report, *Health of the City*, "In 2017, cancer incidence reached a low of 470.9 cases per 100,000 residents, and in 2019 cancer mortality also reached a low of 160.4 deaths per 100,000" ("Health of The City 2020"). This is great news given that new technology and research have given us more ways to care for cancers and detect them early for a higher chance of successful treatment. However, that has the potential to affect the market that Fox Chase is able to cater to.

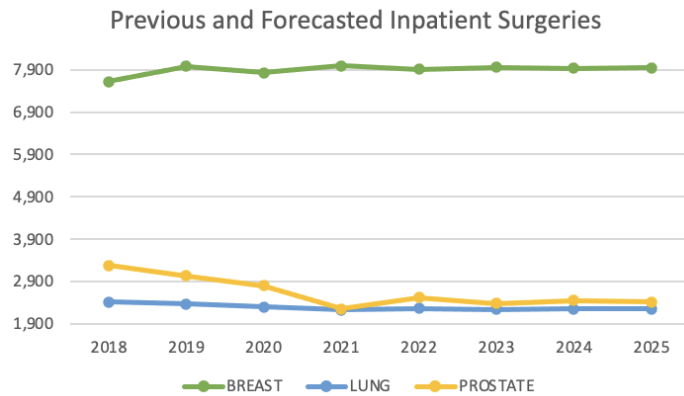
As stated earlier, the top three cancers Fox Chase provides care for are prostate, lung, and breast cancer, and their main market is from the Philadelphia and Bucks county area.

According to the Pa HCCC, there were a total of 7,622 patient surgeries to remove breast cancer, 2,410 for lung, and 3,281 to remove prostate cancer in 2018. In 2019, in-patient surgery volume to remove breast and prostate cancer both increased, however, lung did experience a slight decrease. In 2020, all three types experienced a decrease, which can be assumed to be due to the global pandemic, as some people were not able to go in for previously scheduled surgeries due to the chance of catching Covid, while others did not schedule as the year progressed. Continuing in 2021, the volume of people

receiving inpatient surgical surgeries continued to steadily decrease for both prostate and lung cancer, while breast cancer increased from 7,832 to 7,997.

From 2021 to 2022, the trend changed where lung and prostate cancer experienced growth in volume, however, breast cancer decreased from 7,997 to 7,915 surgeries. The data for 2022 is not available yet, therefore, the trends from the previous four years were used to forecast the expected inpatient surgeries in Fox Chase’s market

for the years 2022 to 2025. As shown in the graph, breast cancer is forecasted to go down from 7,997 in 2021, to 7,915 in 2022. While lung and prostate cancer are expected to increase. However, the following year, the number of breast cancer surgeries is expected to decrease while



prostate and lung cancer both increase. While the same trend will continue for the next two years with lung and prostate cancer going in the opposite direction as breast cancer as shown in the graph.

While breast cancer will once again reach where it was prior to Covid and even surpass the number of in-patient surgeries from 2018 in 2025, prostate and lung cancer is projected to stay below the volumes from 2018 and 2019. However, it is important to know that they are both slightly increasing, but not at the same rate they were previously before Covid. That information does agree with the City of Philadelphia’s Department of Health’s report on the decrease in the incidence rates of cancer over the last few years, which is mentioned above. These are conservative estimates as hospitals continue to bounce back from the effects of the pandemic.

Market Share Forecast

Examining the trends in the demand for inpatient cancer surgeries in the market over the past two years and Fox Chase's supply, it is estimated that Fox Chase has held between 7-10% of the market. With the current forecasted demand and supply for both the market and Fox Chase as shown in the OVF and MVF graphs, Fox Chase is forecasted to continue to hold about 8% of the market.

For example, in the year 2023, the market demand (statewide) will be 25,138 inpatient surgeries. In order to hold an 8% market share, FCCC would have to perform 2,011 surgeries; they are forecasted to perform 2,023 surgeries in the OVF. Therefore, they will be able to continue to maintain their market share. The same is true for the two following years, 2024 and 2025.

Please feel free to [click](#) on the link below to view the data/formulas that were used to compute the above information.

Gap Analysis

Fox Chase currently is at a standstill with regard to inpatient surgical admissions. They operate consistently at full capacity in their inpatient wing due to the possession of only 100 inpatient beds, but are unable to expand and create room for more patients. Fox Chase does not have the space to create additional inpatient beds, but also does not hold enough resources or funding needed to construct a larger inpatient wing. In order to receive funding to expand, Fox Chase needs to increase efficiency. With this inability to expand and allow more patients to be treated at a time, they cannot increase their inpatient volume. The organizational volume forecast showed a decrease in the amount of inpatient surgeries while the market volume forecast showed that Fox Chase needs to stay at a consistent rate of providing care or higher in order to maintain their market share of about 8%. By increasing their efficiency they will be able to increase their inpatient volume and increase their market share. The end goal is to improve efficiency in order to increase inpatient volume at Fox Chase. The issue

at hand is resolving this gap between where Fox Chase currently stands and where they aspire to be.

Efficiency in healthcare is a measure of the quality and/or quantity of output for the given input; operating at an inefficient pace can affect a hospital's revenue immensely. In Fox Chase's case, inefficiency in their inpatient sector can be attributed, somewhat, by their readmission rate for specific surgeries. High readmission rates affect many aspects of hospital operations. Possessing consistently high readmission rates could defer potential patients from receiving care from their hospital and can lead to bad reputations for the hospital (Upadhyay, 2019). Benefits of reducing readmission rates include lowered patient stress, lower mortality rates, greater patient satisfaction and improved outcomes, lower healthcare costs, higher efficiency, and a more positive reputation (Regis College). These factors alone give hospitals an incentive to keep readmission rates low, but there isn't always an easy solution.

As aforementioned, the three most treated cancers at Fox Chase are breast, prostate, and lung Cancer, because of this these are the cancers being analyzed in this scenario.

FCCC: January 2023 ACS NSQIP SAR Case period July 1, 2021 to June 30, 2022

Decile Ranking	All Cases	General	Distal Pancreatectomy	Whipple Pancreatectomy	Partial Hepatectomy	Major Hepatectomy	Colorectal Targeted	Colectomy	Proctectomy	Gynecology	Cancer Hysterectomy	NONCancer Hysterectomy	Otolaryngology	Thyroidectomy	Thoracic	Esophagectomy	Lung Resection	Urology	Nephrectomy	Cystectomy	Prostatectomy	Plastics	Flap	
Number	1377	205	8	25	16	5	137	126	11	253	136	117	89	76	174	2	172	637	240	71	326	19	42	
Mortality	1	2	4	3	3		2	2									1	1	4	1		10	10	
Morbidity	5	6	4	5	2	3	8	8	3	6	9	7	9	8	8	6	8	4	4	1	8	4	2	
Cardiac	1	3	5	9	5		2	2	6	9			1		4	8	2	1	1		1			
Pneumonia	3	3	10	2	2	6	4	5		1	1	5	1	3	9	8	8	1	8	2		1	1	
Unplanned Intubation	1	3	3	2	3		7	6	5	1			9	3	2	5		1					10	
Vent > 48h	1	2	3	2	5	7	3	3					10		1	6		1					10	10
VTE	6	7	10	7		5	7	7		2	8	3	10	10	9	7		1		1		2	1	
Renal Failure	7	6	9	2	4	5	7	7	3	3	8	3			10	7	10	9	9	1	9	1	1	
UTI	7	9	5	1	3	6	10	10	2	8	10	8	2		10		10	4	1	3	7	3		
SSI	6	5	6	7	4	3	5	3	4	5	8	3	10	10	1	5	1	9	3	2	10	7	8	
Sepsis	5	5		2	8	4	7	8	2	9	10	8	10		5	5		2	7	1		9	10	
C.diff	8	8			3	6	7	7		10		10	2		1		1	9	1			1		
ROR	2	6		8		5	6	7	2	8	9	3	5	1	1	5	1	2	7	1		7	9	
Readm	10	9	7	8	4	7	8	8		10	10	10	7	3	10		10	10	10	9	10	7	8	
LOS			8	5	8	8	9	8	10							4	6		8	10				
Exemplar			1																					
Decile 1, 2, 3			1	2	3																			
Decile 4, 5, 6			4	5	6																			
Decile 7, 8, 9			7	8	9	10																		
Needs Improvement			10																					

Table 1 depicts the Fox Chase National Surgical Quality Improvement Program comparison for the fiscal year 2021 to 2022 (American College of Surgeons NSQIP). This chart shows how Fox Chase compares to similar hospitals through the aftereffects of inpatient surgeries. This includes many factors such as surgical site infections, morbidity, mortality, readmission rates and length of stay. Looking at readmission rates for surgeries performed for the chosen cancer, prostatectomy and lung resection are rated as a 10. This means that Fox Chase, compared to other hospitals, has a high rate of readmissions for these specific surgeries. Fox Chase also rates a 10 for all case readmissions. This discovery highlights the gap in Fox Chase’s inpatient performance and allows for an analysis of their surgical course of action. In order to improve Fox Chase’s inpatient efficiency, the high readmission rates need to be resolved first.

Strategic Identification

In order to decrease readmission rates, Fox Chase will implement a comprehensive discharge planning technique. Along with this measure will include three clinical liaisons to facilitate the change. The liaisons will be working with the hospitalists Fox Chase already employ. We chose to proceed with hiring liaisons as opposed additional hospitalists because they are more cost-effective, however, they will work alongside each other to address the readmission rates. These liaisons would be assigned inpatient surgical patients from the top three cancers Fox Chase provides treatment for: prostate, breast, and lung cancer. The liaison's responsibilities will include check-ins with patients after they receive their surgery, facilitating and implementing a comprehensive discharge planning program, communicating individualized discharge and recovery plans with patients, attending meetings to discuss progress and changes with hospitalists, liaison's, operating, financial and communication committees, ensuring that patients have access to any type of follow-up care needed post-surgery, and estimating patient risk for readmission within 30 days of their discharge date. The goal of the liaisons is not only to decrease the readmission rates, but to also locate potential risks and similarities between patients, then be able to address these issues.

Targeted Outcomes

The Key Performance Indicator to ensure the quality and outcomes of this project is the observation of the decrease in readmission rates. This is going to be completed using two different indicators. The first indicator is monitoring the NSQIP data and rating system. By the end of the first year is it estimated that the rating should be decreased to 5 from the current 8. By the end of the second year it is estimated that the rate should be decreased to 6.5 from 8, and by then end of the last year it is estimated that the rate should decrease to 5. The percentage of readmissions is going to be the second indicator monitored. The percentage is estimated to decrease by 1% per year bringing the current percentage rate to 7% by the end of the third year.

People

As stated before, Fox Chase is a destination employer and their staff who choose to work there are very intentional with how they are caring for the patients. With a lowered readmissions rate Fox Chase will be able to accommodate an increased number of surgical patients and the staff will be able to continue to provide high quality of care to the patients as they come in. This will ensure that the staff's time and Fox Chase resources are being used in an efficient and effective manner. In return they will continue to advance closer to achieving their goal of increasing revenue through inpatient surgeries performed, while ensuring they are providing quality care.

Growth

Utilizing this program to reduce readmissions of prostate, breast and lung cancer surgeries has the potential for growth in multiple aspects of Fox Chase's operations. As stated throughout this report, Fox Chase ultimately wants to grow their inpatient operations. By reducing their surgery readmissions, Fox Chase would have an influx of inpatient beds that would typically be taken by a readmitted patient. In the 2021 fiscal year, there were 2,864 patients admitted for prostate, breast and lung cancer surgery. Of these patients, about 8% or 269 patients were readmitted. With a decrease of 1% per year, Fox Chase would have approximately 100 patients admitted per year that would fill the beds of those who were previously readmitted after prostate, breast or lung surgery by the end of year three. This allows Fox Chase to increase their inpatient volume slightly and for more revenue. This project also allows Fox Chase improved patient outcomes. These improved outcomes not only allow them to treat patients better but also have a better reputation for surgical procedures.

Quality

In order to maintain Fox Chase's quality throughout this program, there are multiple factors that need to be monitored. First is the rate of morbidity, currently prostatectomy rates a 10 for morbidity. This issue must be observed along with readmission rates as the NSQIP data is available. If morbidity does not decrease alongside readmission, this will highlight a new issue within prostate cancer surgery.

The NSQIP data is to be utilized to benchmark the quality of the program and to observe any change being made. Staffing should remain the same throughout the process of the comprehensive discharge planning, if for any reason there are detrimental changes in staffing there could be multiple issues to arise. Lastly, all quality must be maintained according to the current NSQIP data, this means that the ratings of 5 or below will be measured and kept the same, while targeting the readmissions rates.. The only changes being made should be to ongoing issues highlighted by the chart. If quality of care is shown to decrease through the NSQIP data, there could be other issues at hand that would affect the integrity of the discharge program.

Finance

Hiring three liaisons to handle the comprehensive discharge planning would cost Fox Chase about \$630,000 per year. At their current rate, Fox Chase loses approximately \$2,016,600 per year on prostate, breast, and lung cancer patients being readmitted to their facility. Readmitts utilize inpatients beds, this means that when a patient is readmitted they are taking up a bed that could be utilized for another patient and not bringing the hospital any revenue throughout their readmitted stay. Utilizing the target change within the next three years of decreasing the current readmission rate (8%) to 5%, Fox Chase will be making about \$757,000 from new patients.. This \$757,000 in yearly revenue is larger than the salaries of the three liaisons (\$630,000) meaning Fox Chase will have an influx of about \$130,000 per year at the end of year three. When calculating the bed utilization after three years, approximately 169 patients from breast, lung, and prostate surgery patients will be readmitted yearly compared to the current 269 patients being readmitted yearly between these three cancers. This difference makes for about 100 inpatient surgical beds per year becoming open to new patients by 2026.

Job Description

The three liaisons Fox Chase chose to move forward with to support this strategy will facilitate and implement a new comprehensive discharge planning technique to assess the needs of prostate, breast, and lung cancer patients before they are released from surgery. The liaisons will communicate

individualized discharge and recovery plans with patients and their families to include instructions on proper at-home care and answer any questions they may have prior to being discharged. They will attend bi-annual meetings with the nursing managers and other staff involved in the strategic plan to share updates on what is going well or needs to be updated. The liaisons will ensure that all relevant discharge information is recorded accurately and processed in a timely manner. In addition, the liaisons will work with the nursing team and hospitalists to develop discharge skills for staff development (the nurses already have a discharge plan in place, tips will be given by liaisons to ensure that they are effective and aligned with the liaisons' plan to decrease the readmission rates). Lastly, the liaisons will ensure that the patients have access to any type of follow up care that may be needed post-surgery, while estimating patient's risk for readmission within 30 days of their discharge and following up as necessary.

Strategic Execution

The first phase of the strategic execution is the permissions to go through with the plan through the Board of Directors then Human Resource staff, and Administrators of the inpatient sector who then communicate the plan to all other physicians, nurses and supporting staff. From the initiation of communication, the plan will then begin the hiring phase. This hiring process will be conducted by the human resource staff who will create job postings and look internally at any supporting staff, receptionists, and office assistants that potentially meet the criteria for the liaison position. This position will require a bachelor's degree in Healthcare Management, Social Work or a related field or 2+ years of social work experience. Once the hiring has been completed and Fox Chase has three qualified liaisons, the liaisons will then take the reins on their discharge planning. Liaisons will run their discharge planning and spend time with patients who have undergone prostate, breast or cancer surgery. An increase in the amount of time spent with each patient will allow for medical errors or any health concerns to be detected and dealt with before discharge. This will allow for more observation of each patient at high-risk of being readmitted within 30 days.

The second phase of this strategy is going to be implemented by the liaisons. Once the liaisons have had time to adjust to their positions, they will then start to make note of their observations of each patient they perform a needs assessment on. They will meet weekly together to discuss their findings, like health risks, and any similar problems that occur between the patients receiving those three surgeries. They will bring these findings to administrators or managers who will utilize this data. This data will be used to discover continuous problems between the patients, which will then be utilized to advance the way care is provided at Fox Chase. If there are many similar problems between patients, for example urinary problems, this data will be utilized to either treat patients in a way that is less likely to result in urinary issues, or create a protocol to treat these issues before the patient leaves the premises.

These protocols will be evaluated and overseen by rollout staff, especially the operation leader, M. Silver, and J. Helstrom whom the liaisons will report to. The work conducted by the liaisons and data from NSQIP as well as the readmission rates will be inspected every six months to identify if the change is decreasing the readmission rates.

Tactical Plan

Goal	Key Actions	Target Date	Required Resources	Responsibility	Projected Change	Success Metric
5% Readmissions	Onboard Liaisons	July 2023	Financial (Salary), Human Resources	Financial Committee, M. Green	Decrease in Readmission Rate by 2026	Readmission Rate
Rated 5 Readmission from NSQIP Data	Comprehensive Discharge Planning	May 2026	Liaisons, Operations Committee	Liaisons, Hospitalists	Decreased Readmission Rating by 2026	NSQIP Readmission Rating

Communication Plan

The first step of the communication plan for the comprehensive discharge planning strategy is to acquire formal approval from the current Board of Directors. It is crucial that the senior leadership team understands the need to address the current readmissions rates Fox Chase has been experiencing and is on

board with the new strategic plan to do so. Upon meeting with the Board Of Directors and getting their formal approval using their signatures we will be able to move on with the communication plan to get everyone who will be involved or impacted informed. The following is the list of the board members that are expected to participate and share their approval in order to move on to the next stage of the communication process: L. Gould (Board Chair), Glickman, S. Hamon-Weiss T. Hoffman, J. Marshall, W. Federici, D. Morel , L. Moulder, T. Pidgeon, D. Marshall, and C. McNichol. This list consists of the chair's board, the professional affairs committee, several representatives from the finance committee, the executive committee and the board's vice chair representative.

Once the initial communication with the Board of Directors (BOD), which may involve several meetings, is completed, letters and emails will be sent out to the head of human resources, inpatient care administrators, managers, and specific board of directors who will be involved in the direct implementation for another information meeting. This meeting will inform the people listed of the new change that will be implemented, the reason, and their role/impact on it. While it is not expected that everyone will be onboard and receptive to the idea, it is important that everything is shared, and there are opportunities for the staff to share their opinions and possible concerns.

M. Silver and J. Maddox will then ensure a line of continuous communication with the department managers and inpatient administrators to explain their roles in the implementation process. Once everyone understands the process, then the next stage of the communication process is to inform the subordinates. This is very crucial that it is done in a timely manner to ensure that they are receiving this information first-hand where we can make sure they are receiving accurate details.

Lastly, once the program has been proven to be effective it will be shared with the community via Fox Chase's website. This will ensure that the community/patients are not only aware of what is happening, but it will also serve as an advertisement of the conscious decision Fox Chase is taking to ensure that their patients are receiving the best quality of care..

Supporting Plans

Financial

The financial plan will be supported by multiple Fox Chase financial officers. The head financial supporter will be J. Mathett, who is the Chief Financial Officer. He will be responsible for overseeing the financial aspects of this strategic plan as well as evaluating the financial start-up burdens, if any, as well as the progress and profitability of this plan. Along with J. Mathett, M. Silver, the senior director of operations will evaluate the financial aspects of this strategic plan and meet bi-monthly to review the financial aspects. The funding for this strategic plan (\$630,000/year) will be derived from the current funding Fox Chase is receiving for their inpatient sector, although Fox Chase does not have enough funds to expand, they still are receiving funding towards the operations of inpatient. The initial money will be utilized from this funding, but as the plan becomes profitable at the end of year three, all profits will be recycled back into this fund.

Operating

The operating supporting plan will be led by M. Silver (head) along with the chief nursing officer, A. Rodriguez and J. Helstrom, the chief medical officer. These three staff will work along Senior Human Resources Partner, M. Green to oversee the operations of the strategy. Green will be the one in charge of hiring and onboarding the three liaisons as well as checking in on them and their findings weekly. M. Silver will oversee the hiring process as well as meet with M. Green bi-monthly to discuss any issues and the state of the plan. In addition to the leadership staffing, the daily operations of this project will include the liaisons, hospitalists, physicians, administrative staff who will work together to ensure success of this plan. All members of the operating committee will meet monthly to discuss everything encompassed within the program and how it is performing as well as any changes needed to be made both internally and externally.

Communication

The communication plan will also be led by M. Silver along with J. Maddox, as the general council. They will communicate with administrators and department managers as well as the other heads of the financial and operating committees who will then meet with their respective departments of physicians, nurses, and supporting staff.

Please see Table 2 below for respective Staff Implementation Assignments:

Staff Name & Title	Role In Implementation
M. Silver- Senior Director of Operations	-Head of Strategic Initiative (Operations) -Communications Enforcement -Finance Advisor
A. Rodriguez- Chief Nursing Officer	-Operations (Overseer)
J. Helstrom- Chief Medical Officer	Operations (Liaison’s Contact Person)
J. Maddox- General Counsel	Head of Communications
J. Matthet- Chief Financial Officer	Head of Finance
Hospitalists/Liaisons/Support Staff	Daily Operations
M. Green- Human Resources	Hiring/ Onboarding Liaisons

Identification of Potential Barriers

There are a few obstacles to this program.. There is also a possibility that Fox Chase is unable to find qualified employees to hire for the liaison title. According to the Zippia article, *Clinical Liaison Projected Growth And Trends In The US*, the demand for clinical liaisons has a projected growth of 12% from 2018 to 2028. Currently there are almost 250,000 clinical liaison job openings in the United States (Expert). This could mean that there is more demand than supply in this industry, making it difficult for Fox Chase to hire qualified staff for these positions. This has the potential to be an even greater obstacle if Fox Chase was to decide to only seek clinical liaisons with oncology and oncologic background, as are

their nurses. Lastly, there could be a difficult time receiving the resources for this program. Although there are not many resources needed to complete this project, Fox Chase is very limited when it comes to resources and funding. They may not be able to acquire what is needed to perform the duties of this program.

Dashboard

KPI	Actual	Expected
Readmission Rates	8% as of 2022	5% as of 2026
NSQIP Data	Rated 10 as of 2022	Rated 5 as of 2026
Quality	Current Rating in NSQIP Table	Ratings stay the same or better since period July 1, 2021 to June 30, 2022
Finance	Losing Revenue to Readmissions	Making Profit of about \$100,000 per year by 2026

Contingency Plan (PDCA)

The Plan Do Check Act or PDCA follows the plan of utilizing the liaisons, checking by multiple sources (NSQIP and total readmission rate), and then revising if necessary. If after the first check-in at 6 months there is little to no change observed, there will be a revision to the plan performed and that revised plan will be put into action. This plan is determinant on how the program is going at the time of check-in.

PLAN	<ol style="list-style-type: none"> 1. Search for qualified liaisons externally and internally 2. Prepare for communication of strategic plan to all inpatient staff 3. Educate staff on current readmission rates and the problems that come with them
DO	<ol style="list-style-type: none"> 1. Document current readmission rates 2. Hire liaisons and assign roles 3. Ensure necessary staff have been onboarded to strategic plan and communicate weekly
CHECK	<ol style="list-style-type: none"> 1. Monitor readmission rates utilizing biannual NSQIP data 2. Ensure rates are decreasing at 1% per year
ACT	<ol style="list-style-type: none"> 1. If rates are decreasing as projected, continue to monitor and communicate weekly 2. If rates are not decreasing, readjust implementation strategy or overall goal

Executive Summary

Overviewing Fox Chase's mission, vision, and values, it can be noted that the organization cares deeply about treating cancer effectively. The plan to increase inpatient volume through decreasing readmissions is a reflection of these values. As stated multiple times throughout, a facility can become more efficient through addressing an issue that is causing for preventable physician time to be utilized on patients that have already been treated. As addressed in the SWOT analysis, Fox Chase has readmission rates that are not ideal according to the NSQIP data detailed in this report and the Fox Chase Quality and Accountability Report FY23. This data allowed for the establishment of this plan. Fox Chase, throughout the process has been focused on increasing their inpatient volume. They initiated this semester detailing the issue being faced, only having 100 inpatient beds, consistently being at capacity, but possessing no funding for an expansion that is well needed. From this issue and the data collected came the idea of decreasing readmission rates in order to increase volume utilizing a comprehensive discharge planning service and liaisons to facilitate said service. This program is set to decrease readmission rates by 1% per year for three years to reach the goal of 5% readmissions. There will be multiple evaluations utilized in order to decide the efficacy of this program and how the patients feel about it. The first of these evaluations will be consistent meetings between liaisons and existing hospitalists, as well as meetings bi-monthly with all participating staff. This will allow for concerns, issues, and feedback to be addressed consistently. There will also be patient evaluations where we will allow for patients or family of patients to provide us with feedback of how they feel the program is going, is it helping them, do they have anything to add, etc. The goal is to keep the community aspect of Fox Chase alive throughout this program and make sure that everyone involved feels that their thoughts are expressed and heard.

This program has utilized many different sources, as well as thoughts from many individuals both working in healthcare and not. We want to take this time to thank everyone who has made the completion of this plan possible. Specifically we would like to thank Delinda Pendleton who has been our contact at Fox Chase and provided us with much of the necessary information to come this far. We also want to thank

M. Silver, J. Matthet, and J. Maddox which are our heads of Finance, Communication, and Operations. We are so grateful to have worked with this exemplary group of people throughout the creation of this plan and for the funding we have received to make this possible.

Conclusion

The creation of this plan has been a learning experience for many of those involved. With the right information and resources, it is possible to find an issue that could be causing problems in other areas. This plan has shown how much such a small problem can actually cause when looking at the financial and physical implications. This strategic plan, although it seems practical throughout this paper, started as basic research. It was then created out of a few statistical charts about the organization and was able to become a comprehensive tactical plan. Some involved in the creation did not believe that readmission rates were a true problem in this organization, but when looking at how much is lost financially, it is an identifiable issue. Sometimes bigger issues can be solved by finding a small problem to address. Many large issues are so overwhelming and solving them brings immense pressure and stress. However in this instance, just by identifying and addressing the readmission issue, Fox Chase will be able to make more profit to serve their inpatient sector. This profit will hopefully be set aside to address their largest issue at hand, expanding their inpatient wing in order to increase their volume.

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