Revolutionizing Breast Cancer Diagnosis: Quantifying the Impact of One-Stop Clinics on Health Provider Outcomes

FROST & SULLIVAN WHITEPAPER

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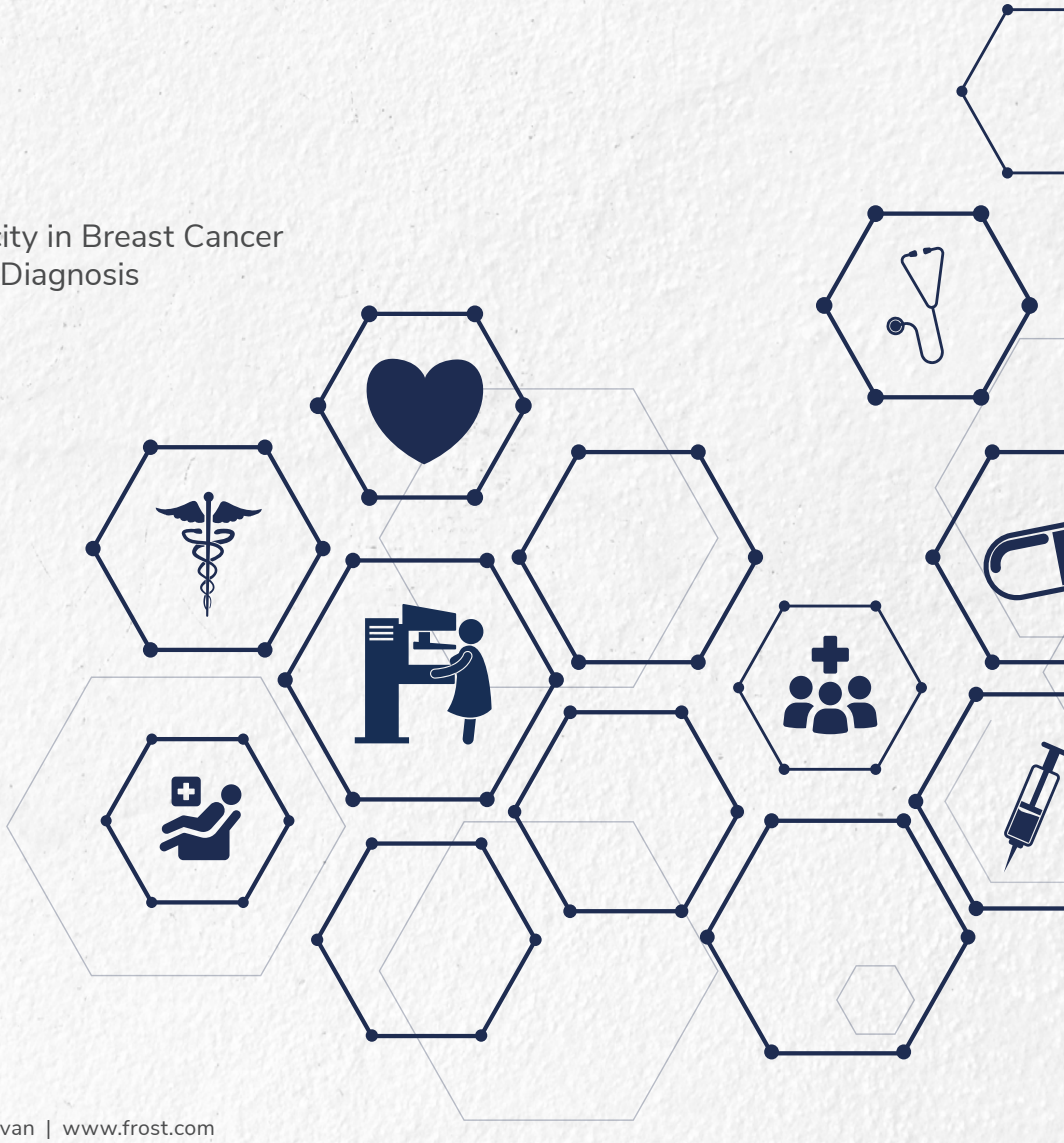


Introduction

Breast cancer is the 2nd most common cancer worldwide, with 2,296,840 new cases of breast cancer among women in 2022, and causing nearly 670,000 deaths.[1] In the United States, breast cancer is the second most common cancer among women, with an estimated 310,720 new cases in 2024, representing 15.5% of all new cancer cases. [2] Early detection continues to be the major focus in fighting breast cancer, with the goal of diagnosis and treatment in an early stage when the prognosis for long-term survival is best.

In spite of the value of early detection, the diagnostic process can represent a significant delay in treatment, and place a burden on patients navigating its workflow which may include diagnostic mammography, ultrasound, magnetic resonance imaging, biopsy, completion of a definitive diagnosis, and development of a treatment plan.

The starting point for improving this process is in quantifying the current processes and outcomes, and measuring the impact of initiatives for improvement. At macro- and micro- levels, outcome measurement can quantify both underperformance (e.g., complication rates) and disutility of care (e.g. overmedicalization). Measuring processes and outcomes to establish a baseline and to quantify improvements is a simple first step that can ultimately lead to changes in strategy, culture, and operations.

For decades, Frost & Sullivan has tracked the development and use of new technologies that advance healthcare. For the present project, Frost & Sullivan partnered with GE HealthCare to survey healthcare administrators and clinical decision makers in small-to-medium-sized U.S. healthcare providers of breast cancer care on their diagnostic and biopsy workflows. The goals for this research were to:

01

Understand current methods for early detection, screening, diagnosis, treatment, and follow-up for breast cancer

02

Measure the time and effort required by the current workflows for breast cancer diagnosis, and

03

Definitively measure the advantages of a one-site breast cancer model for both patients and providers.

Methodology

Frost & Sullivan recently conducted a double-blinded, online survey of 40 administrative and clinical decision-makers from different healthcare facilities, with knowledge of the breast cancer care process in U.S. healthcare institutions — these respondents had:

> Experience in the diagnosis of breast cancer, which can include mammography, ultrasound and breast biopsy procedures

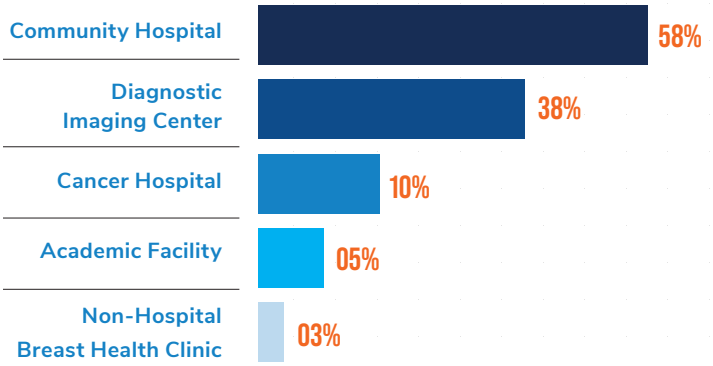
> Responsibilities for management of the clinical, operational and / or economic performance of a breast care program

These respondents reflected a wide range of perspectives, coming from a range of provider facility types [Figure 1]:

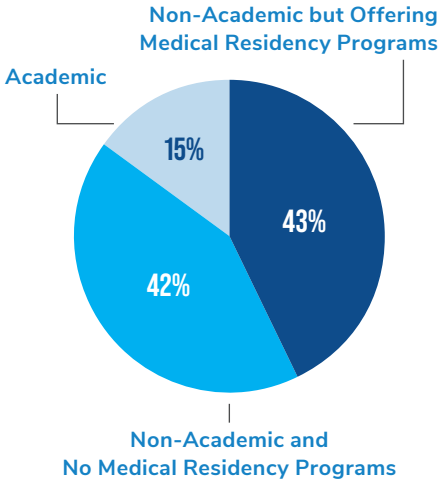
Figure 1: Demographics of survey respondents

% of Survey Respondents by Facility Type

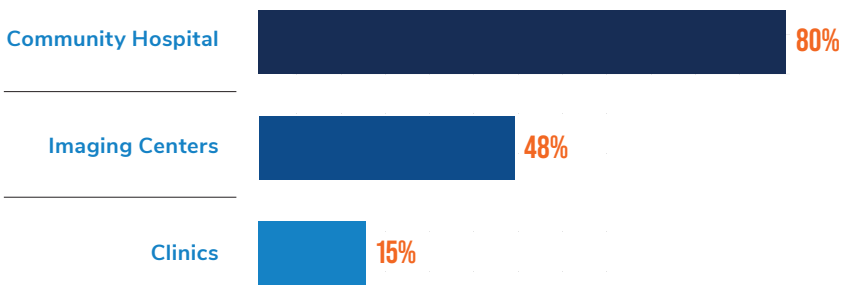
(Not Mutually Exclusive)



Facility by Academic Status



% of Survey Respondents Supporting Women's Health Diagnostic Imaging Facility by Type



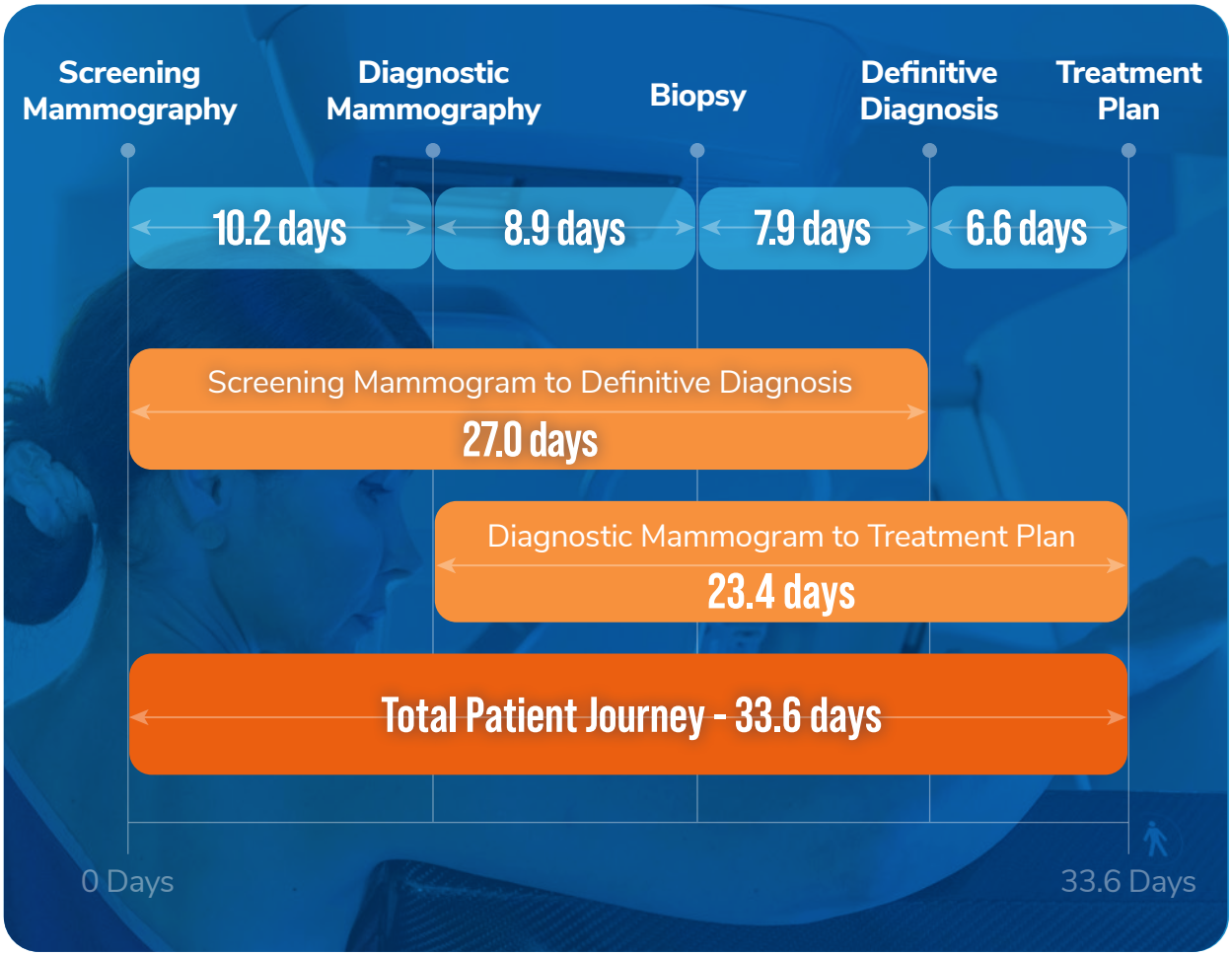
As a foundation for this research, Frost & Sullivan also interviewed leaders from a number of institutions that have experience with the One-Stop Clinic Model for breast.

Research Results Regarding Current Process

Delay Inherent in Traditional Diagnostic Workflow

One of the primary objectives of the research was to quantify the duration of a traditional breast cancer diagnostic process. These providers were asked to estimate the average number of days between the key steps in the diagnostic process. Across all facilities on average, the current patient's journey from screening mammography to treatment plan takes more than one month, and over 23 days from diagnostic mammogram to treatment plan [Figure 2]:

Figure 2: Timeline of current patient journey from screening mammography to treatment



Average time for each phase based on estimates from respondents (N = 40) [3]
Based on Frost & Sullivan double-blinded survey of 40 respondents (2023). Data on file.

This workflow also requires a significant number of separate medical appointments in order to receive a definitive diagnosis. These respondents estimated that, on average, patients needed to schedule and arrive at approximately 4 distinct medical appointments – separate trips to on different days, often to different providers and locations – to receive a definitive diagnosis.

4.0

Average number of medical appointments for patient to receive definitive diagnosis

The One-Stop Clinic Model for Breast Care

In contrast to this workflow, some healthcare systems are exploring an optimized "One-Stop Clinic Model" for breast cancer diagnosis and treatment planning. This model has been pioneered by a number of health systems that recognized the limitations of this traditional workflow and have pioneered a "One-Stop" approach.

One example is the Institut de Cancérologie Gustave Roussy, which was the first in France and a first in the world dedicated One-Stop Clinic for Breast Cancer, pioneered and led by Dr. Suzette Delaloge, medical oncologist and Director of the Interception Program:

The One-Stop breast clinic model reflects an overall approach to diagnosing and treating breast cancer care that emphasizes the creation of an integrated, streamlined, and comprehensive diagnosis and treatment development program. Such a model can be implemented in many ways, but for our research purposes was defined as:

A "One-Stop" rapid breast clinic model dedicated to the early detection, diagnostics, biopsy, treatment planning and even potential treatment of patients within hours or days.

All care would be provided in a single-site where all necessary staff, tools and skills are available, including breast imaging, biopsy, and more.

The clinic would be multidisciplinary including oncology, radiology, mental health, surgery, cytopathology, pathology, and, possibly, radiotherapy and others.

Patients would be scheduled for a day of care one day of the week where they would be evaluated by a multidisciplinary team in order to present to patients a final diagnosis and a care plan started by the end of the day's visit.

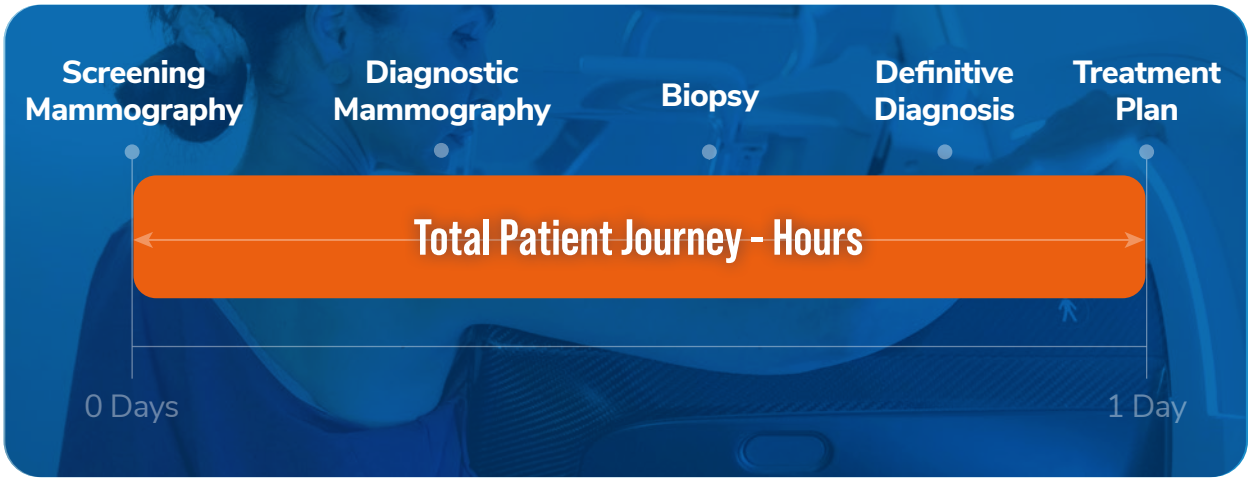
Patients with suspect lesions would undergo appropriate diagnostics.

If lesions were identified, a biopsy would be performed with image-guided biopsy on the same day or within 48 hours maximum.

Potential Patient Impact of the One-Stop Model

As described above, the traditional workflow for the diagnosis of breast cancer, from diagnosis to treatment plan, requires an average of 23.4 days, with an average of 4 medical appointments required to receive a definite diagnosis.

Compare this to the potential of the One-Stop Model, with all of these steps reduced to a single visit.



The results of this survey can be extrapolated, using a variety of modeling assumptions detailed in the accompany table and footnotes, to demonstrate the potential scale of impact that a One-Stop adoption could have on the breast cancer care paradigm [Table 1]. Focusing solely on the total U.S. breast cancer population diagnosed in 2023, and assuming survey results are generalizable to the broader U.S. healthcare system:

Table 1: Potential impact of One-Stop model on time from diagnostic mammography to treatment plan in U.S. breast cancer population

Objective	Assumptions	Potential Impact of One-Stop Model
Delay Between Diagnostic Mammography and Treatment Plan	✓ 240,000 breast cancer diagnoses [5] ✓ 23.4 reported days of delay	**Reduction of 5,376,000 days**

Average estimate based on survey responses

Modelling the impact on patients at an institutional level, Frost & Sullivan analyzed survey data from the 23 administrators and clinical decision-makers representing community hospital, combined with secondary research assumptions[8] to model the potential impact of the One-Stop breast cancer model on a 170-bed community hospital in the United States [Table 2].

Table 2: Potential days of delay avoided with One-Stop model at different points in the diagnostic pathway for a 170-bed U.S. community hospital

Diagnostic outcome	# Patients (Hypothetical)	Assumptions (per 2023)	Potential Days of Delay avoided with One Stop model
Total Diagnostic Mammographies	309	✓ 2,809 screening mammographies# ✓ 11% patients sent for diagnostic mammography #	3,665
Negative Diagnostic Mammographies	244	✓ 10 days of delay between screening mammography and diagnostic mammography results* ✓ 21% diagnostic mammographies requiring biopsy #	2,440
Negative Biopsy Results	45	✓ 69% negative biopsy result (CNA) # ✓ 17 days of delay between diagnostic mammography and biopsy result*	761
Positive Biopsy Results	20	✓ 31% breast cancer diagnoses (CNA) # ✓ 23 days of delay between diagnostic mammography and treatment plan*	463

Average estimate based on survey responses

* Potential days of delay avoided calculated based on hypothetical scenario and assumptions based on survey results, to reflect difference between one-day care model and survey average

Although this accelerated workflow has significant benefits for women finally diagnosed with breast cancer, these results emphasized the benefits of the One-Stop Clinic model for breast patients who eventually receive negative results.

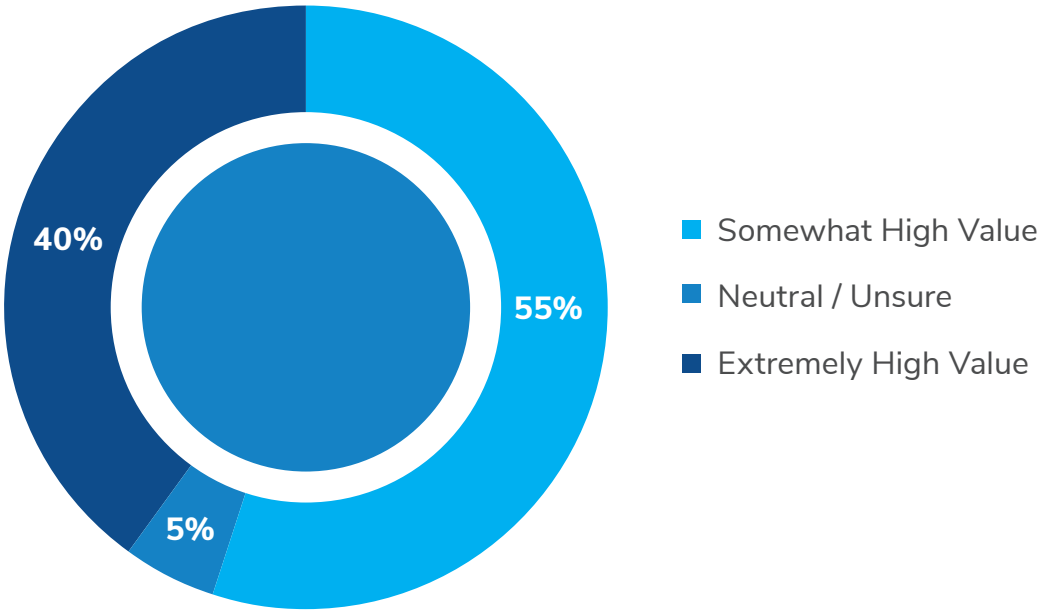
> For the 94% of patients currently receiving diagnostic mammograms who ultimately receive negative results, that period of anxiety may represent the greatest toll of the process, and dramatically reducing this period is one of the greatest benefits of the One-Stop Clinic model.

As Dr. Sebastian Diaz Botero, previously at the Clinica Universidad de Navarra in Madrid and the One-Stop Clinic in Medellin, Colombia, described in our interview, "We were providing a diagnosis in one day. That is the difference. The current standard of care is probably a couple of weeks for getting diagnosis. We were reducing weeks to hours. For a patient having a biopsy today, that whole week, two weeks, they are worried. Cutting that to **one day is everything**."

For those who have pioneered the One-Stop model, increased patient satisfaction is a key benefit of the program. As described by Philippe Vielh, MD, PhD, cytopathologist and a co-founder of the One-Stop model at the Institut de Cancérologie Gustave Roussy in France. "Satisfaction of patients with the model is very high. When we have talked with patients, two groups of 100 patients who went through the One-Stop program, 90% of patients were highly or very satisfied."[14]

As shown in Figure 3, the respondents surveyed here have similar expectations — nearly all believed patients would benefit from a One-Stop Clinic Model.

Figure 3: Physician perceived value to patients of a One-Stop Clinic Model [3]



Provider Impact of the One-Stop Model

Based on these survey results, and assumptions based on secondary research, Frost & Sullivan's modeling estimates that U.S. healthcare providers could:

save $1.12 Billion in labor costs

add $1.31 Billion in incremental revenue

if breast case were being delivered under the One-Stop Clinic Model

In addition to the clinical and other patient benefits of the One-Stop model, providers could experience significant cost savings practicing under an accelerated diagnostic model. As Michele Brands, Network Director for Women's Imaging at St. Luke's University Heath Network explained.

> **"You're cutting cost in half operationally because you touch a patient once. It may be hard to quantify, because of all the different departments, but in its simplest form you cut operational costs in half."**

Table 3: Potential impact of One-Stop model on labor costs for care of U.S. breast cancer population

Objective	Assumptions	Potential Impact of One-Stop Model
Reduce Labor Costs	✓ Est. 15% labor cost reduction per provider # ✓ $26.2 billion in medical services costs for breast cancer to payors [7] ✓ 3.5x mark up of labor to payor charges[11]	$1.12 Billion

Average estimate based on survey responses * Reduced labor costs calculated based on survey results

In addition, the One-Stop model could generate incremental revenue for a hospital by increasing the percentage of patients receiving their diagnostic follow-up. [Table 4]

Table 4: Potential impact of One-stop model on provider revenue (U.S. breast cancer population)

Objective	Assumptions	Potential Impact of One-Stop Model
Increasing Revenue	✓ Est. 5% more revenue per provider # ✓ $26.2 billion in medical services [7]	$1.31 Billion

* Increasing revenue calculated based on survey results

Again, from the perspective of a 170-bed community hospital in the United States, the financial benefits of the One-Stop model could be significant.[6]

Table 5: Potential financial impact of One-stop model on hospital revenue

Objective	Assumptions	Potential Impact of One-Stop Model
Reduce Labor Costs	✓ $26.2 billion in medical services costs for breast cancer to payors [7] ✓ 3.5x mark up of labor to payor charges* ✓ 20 breast cancer diagnoses per hospital ✓ Estimated 12% labor cost reduction associated with greater efficiency of communication and scheduling #	$75,289
Increasing Revenue	✓ Estimated 11% more revenue per provider through increases in volume of diagnostic patients #	$234,000

Average estimate based on survey responses

* Model used to calculate labor costs of $31,190 and medical services costs of $109,167 per breast cancer diagnosis

Finally, survey respondents were asked to evaluate the importance of 24 different organizational goals related to breast cancer care, and how likely they thought the One-Stop model could help them to achieve each goal. Survey results indicated that many of the primary benefits of the One-Stop model align with the most important provider goals that they are challenged to achieve under their current practice models. Reducing delays to initiate treatment, reducing time to diagnosis, ensuring patients are not lost in the care pathway, and improving diagnostic accuracy were identified by most respondents as significant areas for improvement. These same goals were identified as ones where respondents believed a One-Stop model would be able to deliver benefits to their organizations.

Table 6: Respondents evaluation of organizational breast cancer care goals and potential benefits of One-Stop model

Goal	Importance (% Somewhat/ Extremely Important) #	One-Stop Benefit (% Somewhat/ Extremely likely) #
Ensuring patients are not lost in the care pathway	100%	90%
Improving diagnostic accuracy	98%	80%
Reducing delays toward receiving treatment, which has been shown to improve patient outcomes	**98%**	**95%**
Reducing rates of false positives in screening mammography	**98%**	**68%**
Reducing the time to diagnosis following screening	**98%**	**95%**
Operating as a single, unified, multidisciplinary clinical team	95%	100%
Ensuring patients return after screening for recommended diagnostic follow-up	95%	95%
Reducing cost of patient care	95%	83%
Reducing the number of unnecessary biopsies performed	**93%**	**73%**
Improving patient Quality of Life - QOL	93%	90%
Improving patient reported outcome measures (PROMs)	93%	88%
Reducing the number of individual appointments scheduled for patients in order to receive a definitive diagnosis	93%	90%

Goal	Importance (% Somewhat/ Extremely Important) #	One-Stop Benefit (% Somewhat/ Extremely likely) #
Improving physician and staff engagement	88%	98%
Delivering all patient services in a single clinic location	88%	100%
Reducing unnecessary diagnostic breast imaging exams	88%	80%
Reducing internal labor costs	85%	70%
Reducing the number of patients asked to wait over a weekend to receive their diagnostic breast imaging results	85%	90%
Reducing the number of patients asked to wait over a weekend to receive their biopsy results	85%	98%
Making staff scheduling easier	78%	65%
Improving our Healthcare Effectiveness Data and Information Set (HEDIS) or other quality scores	78%	75%
Attracting more physicians and staff to work at our organization	68%	60%
Being more competitive under value-based care arrangements with payors	68%	68%
Being more competitive in our market against other breast cancer providers	68%	80%
Increasing patient volumes	58%	85%

Based on responses to a 5-point rating scale of (1) organizational importance of goal and (2) likelihood that the One-Stop model would benefit goal.
* Based on Frost & Sullivan double-blinded survey of 40 respondents (2023). Data on file.

Overcoming Obstacles to Adopting the One-Stop Model

Not surprisingly, based on these clinical and financial advantages, over 80% of respondents said their organization would adopt a One-Stop breast clinic model as described, and nearly all believed it would deliver value to both patients and their organization.

81%

Organization Extremely or Somewhat Likely to Adopt One-Stop Model

Survey results and interviews with clinicians who had adopted a One-Stop model suggested critical best practices for implementing a One-Stop program successfully:

1) Adopt a patient-centric culture that aligns operations with patient experience

> **"This model requires a different mindset. With the One-Stop model you really start to prepare them that this could be a defining moment in their lives."**
>
> —Michele Brands, St Luke's

2) Ensure commitment across the organization to implementing One-Stop

> **In terms of organization, there has to be willingness of the entire team for a One-Stop model on that one day (or more) every week. They have to be willing to try to make things better for the patient, and not just the doctors."**
>
> —Philippe Vielh, MD, PhD

In addition, many project participants highlighted the advantages of partnering with an external party to implement such a program. Overcoming those challenges may require a partner like GE HealthCare, whose expertise in running similar programs can support providers at any stage of their One-Stop transformation with:

- A comprehensive portfolio of digital, breast cancer screening, diagnostic and treatment planning tools
- Strong consultative capabilities leveraging Lean, Six Sigma and process optimization, and
- Expertise in coordinated and integrated oncology care

Conclusion

Women will have vastly different experiences after receiving an abnormal screening exam, depending solely on the diagnostic workflow offered by their provider. They could have 4 or more different medical appointments and wait over 24 days before even getting their diagnostic results … or potentially complete that entire process in one appointment, on one day, if cared for under the One-Stop Model.

Frost & Sullivan's recent research suggests that if a similar model was applied across the 240,000 cases of breast cancer diagnosed each year, that the result could be a savings of more than 5.7 million days of delay!

Leaders in oncology care have already recognized the value of the One-Stop model and have transformed to deliver these benefits to patients, and their bottom line. Hospitals treating women with breast cancer and that haven't yet undergone this change might benefit from partnering with a company like GE HealthCare in order to boost care quality, increase employee morale, and enhance patient outcomes.

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Mitigating Time Toxicity in Breast Cancer by Reducing Time to Diagnosis

A Critical Component of Patient-Centered Care

Ilya Gipp, Celeste Slade

> **I found out about my 'abnormal mammogram' through a voicemail and couldn't speak to my GP until three days later. Then I had to wait four weeks for a biopsy and to finally see a surgeon. During that time, I lost almost 10 pounds due to agonizing anxiety."**
>
> —Ellyn Winters-Robinson (Breast cancer survivor)

While our arsenal of weapons to battle breast cancer is constantly increasing, and clinicians are now better than ever equipped to cure the disease, new challenges arise. Along with the necessity of eliminating treatment-related toxicity and resolving the financial distress caused by cancer, there is a great need to reduce time toxicity.

Patient anxiety during their cancer journey often leads to fatigue, trouble sleeping, and depression. This anxiety complicates diagnostic and therapeutic procedures, reduces adherence to recommendations, and negatively impacts communication and overall well-being. Numerous studies have shown that stress can not only contribute to cancer initiation and impair treatment effectiveness but can also promote cancer growth and the development of metastases[1]. To achieve better overall outcomes in oncology, it is imperative to identify additional sources of stress in cancer patients and address them effectively.

We want to reduce the time during which patients experience unavoidable anxiety.

We broadly refer to this as reducing time toxicity in oncology care by mitigating the negative impact on a patient's quality of life caused by the time demands associated with cancer detection, diagnosis, treatment, and recovery. Time toxicity affects patients' daily routines, employment, social interactions, and emotional well-being, and may also have financial implications. It is a significant contributor to frustration, anxiety, and stress[2].

Quality of care standards, including timing requirements for breast cancer treatment, are often established and sometimes enforced by national health authorities and professional organizations to ensure timely and appropriate care. These standards can vary significantly by country but generally include specific, mandatory timelines that healthcare providers are expected to follow, with a primary focus on time-to-treatment metrics.

However, breast cancer care is complex, and even within the context of time-to-treatment, many factors can contribute to delays, such as scheduling appointments, patient navigation, and data management. While it may be challenging to assess the relative burden of time toxicity at different stages of cancer care, there is strong evidence supporting the need to improve time to diagnosis.

Time to diagnosis in breast cancer care is the interval between when a patient first presents with symptoms or an abnormal screening result (such as a suspicious mammogram, for example) and the confirmation of a breast cancer diagnosis through a biopsy or other diagnostic tests.

Keeping in mind that tumor doubling time in breast cancer (an indicator of disease progression), can be as short as 25 days, this can result in the transition from a Stage 1 to Stage 2 cancer potentially occurring within just a few months[3]. This period is critical not only because it directly affects the timely initiation of treatment and can directly influence the overall prognosis and outcomes for the patient.

The level of stress experienced by breast cancer patients varies individually throughout their care journey, but research and clinical observations suggest that certain key moments are associated with higher levels of stress[4]. Notably, women with suspected breast cancer experience greater anxiety during the diagnostic period than those with an established diagnosis. For example, stress levels are significantly higher when patients are notified about a breast biopsy and during the wait before the biopsy, compared to after receiving the biopsy results[5].

Data from 419 centers covering 1,805,515 U.S. patients submitted to The National Quality Measures for Breast Centers between 2005 and 2019 indicates that the average time from a screening mammogram to a biopsy procedure was 13 business days, with a maximum time of 26 business days[6]. When factoring in the pathology report turnaround time and scheduling a follow-up appointment, the total delay to diagnosis for a women can extend to over a month. It is not surprising that the emotional and mental toll of waiting, resulting from dissatisfaction with the timelines for various parts of the diagnostic process, is among the top patient-reported concerns regarding the timeliness of breast cancer procedures[7].

Breast cancer care is multidisciplinary, with patients often interacting with multiple doctors and specialists across different locations. While individual departments may perform well in terms of turnaround times, cumulative delays across the entire care pathway can still be significant. Therefore, professional coordination of care is essential to minimizing these delays.

And during the detection and diagnosis phase of breast cancer, where it is already not possible to prevent the disease, reducing the patient's stress and setting a solid foundation for better overall outcomes can be achieved by reaching a definitive answer as quickly as possible. This approach is the first step in addressing time toxicity, which is essential for improving the overall experience with care for breast cancer patients and ensuring that the benefits of treatment are not overshadowed by the burden of time.

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