GE HealthCare

Operational and economic benefits of implementing ABUS

Case studies from four European countries

This paper reviews operational efficiencies and economic benefits associated with the implementation of automated breast ultrasound (ABUS) into patient care across a variety of practice types in four European countries, including Germany, Switzerland, Croatia and Spain. This includes private oncology hospitals, public hospitals, academic hospitals, and an obstetrics and gynecology practice, all dedicated to providing high quality breast health care.

Each case study outlines significant improvements in workflow and productivity achieved when implementing this technology, ranging from:

- Faster exam acquisition and reading times to support increased breast ultrasound patient volume.
- Enhanced reimbursement.
- Enhancing patient triage through the use of AI.

The power of ABUS to address operational challenges

Breast cancer remains the most common cancer amongst women across Europe, with an estimated 576,300 new cases in 2020.[1] The European Society of Breast Imaging (EUSOBI) attributes a 40% reduction in breast cancer mortality based on population-based screening.[2]

The healthcare industry is experiencing an increasing global shortage of radiologists,[3] and an uptick in overall demand is adding pressure on current healthcare providers, leading to clinical burnout.[3] In the coming years, it is anticipated that the demand for healthcare will continue to outpace the supply of healthcare professionals.[4] In breast care, this is no exception.

Mammography is the gold standard for screening; however, it does not work equally well for all women, particularly for the 40% of women who have dense breast tissue.[5]

In fact, studies show that mammography misses one-third of cancers in patients with dense breasts.[6] In addition to reducing the sensitivity of mammography, breast density is an important risk factor as 71% of breast cancers occur in women with dense breasts.[7]

The European Society of Breast Imaging (EUSOBI) recommends that women should be informed about their breast density. In light of the available evidence, in women aged 50 to 70 years with extremely dense breasts, the EUSOBI now recommends offering screening breast MRI every 2 to 4 years. Where MRI is unavailable, ultrasound in combination with mammography is recommended as alternative.[8]

Efficient, effective cancer detection with ABUS

Multiple studies have demonstrated the clinical power of ABUS in dense breasts to find mammography occult, invasive cancers at an early stage – small and node-negative[9,10] while maintaining a low recall rate well within the recommendations of the European guidelines for quality assurance in breast cancer screening and diagnosis. This has the potential to reduce unnecessary biopsies.[11]

Sites at a glance

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Efficient, effective cancer detection with ABUS

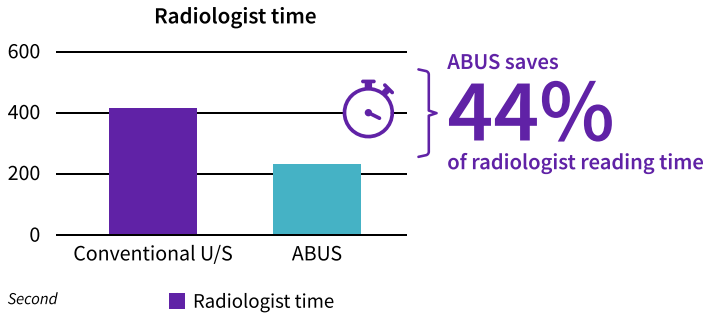
The paper, "**Best practices for integrating ABUS**" outlined the clinical benefits of adopting ABUS for screening and diagnostic applications. This includes improving early cancer detection, particularly among women with dense breasts. Dense breast tissue can overlap and mask small lesions, which can go undetected in a mammogram. In some cases, the tissue and cancer can show up as white on a mammogram making a diagnosis more challenging.

The emergence of patient-friendly, easily-accessible ultrasound technology like ABUS can help bridge the gap between the increased demand for comprehensive breast care and provide clinicians with much needed support. Designed especially for screening, the Invenia™ ABUS from GE HealthCare is a standardized, supplemental examination that increases the detection of breast cancer, specifically in dense breasts.

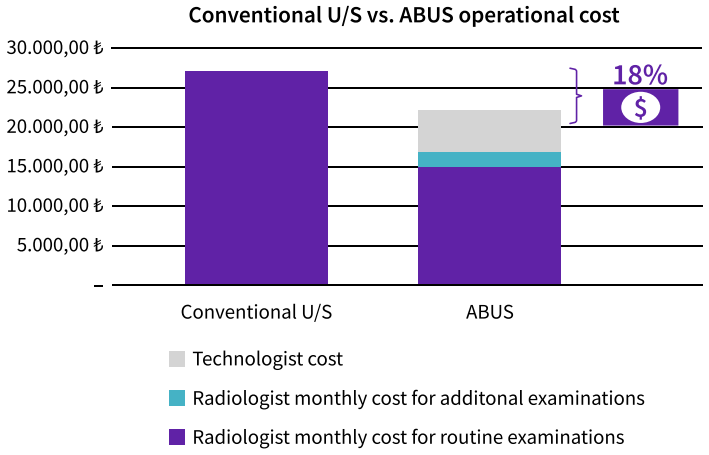
In addition to the many clinical benefits it offers, Invenia ABUS is designed to address operational challenges not being served. The separation between image acquisition and interpretation improves reproducibility and reduces operator dependency, enabling batch reading and remote reading of ABUS and allowing a comparison with previous volumes.[12] This reduces radiologist workload and increases patient throughput, resulting in significant improvements in workflow and efficiency, including:

- Reduce the overall amount of time required by radiologists since technologists are now able to perform the scans themselves.
- Achieve time savings by enabling a targeted exam acquisition.
- In many European countries, HHUS exams must be acquired by physicians, which can often take up to 15-20 minutes. In contrast, 3D ABUS exams can be performed by a technologist or trained medical assistant. Shorter read times[13] free up physicians' time for more complex examinations and interpretations, while providing standardized images that can be evaluated once the patient leaves and during less busy times at the clinic.
- Achieve cost savings based on the ability to evaluate the exams after the patient leaves, resulting in a noted reduction in radiologist and technologist time.

To successfully implement ABUS into clinical practice, radiologist training is very important, which is why GE HealthCare provides online, peer educator and case review training support for all users. The ability to archive and review ABUS data at any time, which is common in mammography, enables junior and senior radiologists to discuss the images. This collaboration provides important training opportunities, as well as helps maintain quality and accuracy through systematic and objective assessment of the findings, even retrospectively.



GE HealthCare Case Study: Implementation of Invenia ABUS provided operational and economic benefits. Prof. Aribal, Acibadem Hospital. JB21392XX



GE HealthCare Case Study: Implementation of Invenia ABUS provided operational and economic benefits. Prof. Aribal, Acibadem Hospital. JB21392XX

As demand for breast imaging increases, technological solutions must deliver both clinical and operational advantages. ABUS has been shown to deliver clinical benefits for both screening[9-11,14] and diagnostic applications[15-17] while delivering significant improvements in workflow and efficiency that reduce radiologist workload and increases patient throughput.[18] The following cases demonstrate how GE HealthCare's Invenia ABUS, the first FDA-approved ultrasound supplemental screening tool specifically designed for detecting cancer in dense breasts, is transforming breast cancer care.

Maja Prutki, PhD, Radiologist

Head of Clinical Department of Diagnostic and Interventional Radiology, Clinical Hospital Centre Zagreb, Zagreb, Croatia

At a glance

Practice setting – Public University Hospital

Breast imaging staffing – 4 radiologists, 3 residents, 12 technicians

Modalities – DBT, ABUS, HHUS, MRI

Patient volume – 8 biopsies, 15 HHUS and 15 ABUS per day

Coverage/reimbursement

- Public insurance for screening/private insurance for supplemental imaging
- HHUS – $40 per exam; ABUS – $75 per exam

ABUS reading procedure – Sectra PACS; remote reading

Acquisition times – 15 minutes room time

Reading times – 2-3 minutes per patient

The site

The **University Hospital Centre** in Zagreb, Croatia, is the largest hospital in the country. The publicly funded teaching hospital serves most of Central and Northern Croatia. **Maja Prutki**, Radiologist at Clinical Hospital Centre Zagreb, is the head of Clinical Department of Diagnostic and Interventional Radiology. The dedicated breast imaging department specializes in breast imaging, working in a multidisciplinary fashion with breast surgeons, oncologists and pathologists to provide breast care.

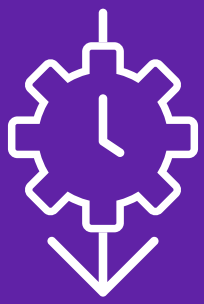
Higher patient volume with optimized workflow

According to Dr. Prutki, the department's greatest challenge is also one of its strongest opportunities. "In Croatia, women like breast ultrasound and understand it's value in breast cancer screening. Implementing automated breast ultrasound (ABUS) enabled us to speed up exam acquisition time and almost eliminate patient backlog. However, this quickly attracted patients from across our city of 1 million people. As a result, even though we can scan more patients faster, we have a longer waiting list now because we are doing patients from other clinics and hospitals across Zagreb."

The breast department uses ABUS for both screening, diagnostic and supplemental imaging. According to guidelines from the national screening program, all patients with breast density BI-RADS® C and D are recommended for a supplemental ultrasound exam. Oncologic patients are directed to hand-held ultrasound (HHUS), and all other patients are scanned with ABUS.

Key operational take-aways:

- ABUS has enabled higher patient volumes with an optimized workflow.
- The ABUS exam generates higher reimbursement compared to traditional breast ultrasound
- Less resources needed, as ABUS provides fewer false negatives and recalls.



Reduced time and resources

Improved workflow to handle higher patient volumes

ABUS is reimbursed at a higher rate than HHUS

ABUS enhances operational efficiency and improves reimbursement

As the breast department archives ABUS exams on the PACS system, previous exams are always available for comparison. The PACS also enables remote reading and reporting. According to Dr. Prutki, “we have one radiologist who reads from 200 kilometers away from the hospital. This ability helps manage our resources and improve turn-around time for patients.”

The breast department has been able to optimize workflow due to fewer false positive results from ABUS. As a result, they have been able to reduce the time and resources spent following up on benign findings. According to Dr. Prutki, in addition to improving workflow to handle higher patient volumes, ABUS is also reimbursed at a higher rate than HHUS, $75 to $40, respectively.

“Ultimately, our experience is that ABUS has many advantages. The learning curve is short, the system is easy to use and can be read and reported remotely. Not only has it helped reduce costs with fewer false positive results, ABUS carries higher reimbursement, delivering significant economic benefits to the hospital,” concluded Dr. Prutki.

“The first advantage is that our radiologists can perform other clinical duties while technicians perform the ABUS acquisition protocol quickly and consistently.”

“The second advantage is speed, acquired by how our technicians can quickly perform the ABUS acquisition protocol. The coronal images shorten the reading time for Radiologists, ranging from 90 seconds for a negative exam, to three minutes for more complicated cases.”

The information described here is based on Dr. Prutki’s own opinions and on results that were achieved in her unique setting. Since there is no “typical” hospital and many variables exist, i.e., hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

Thomas Frauenfelder, MD, Prof. Dr. med., Radiologist

Director Institute for Diagnostic and Interventional Radiology, Universitätsspital Zürich, Zürich, Switzerland

At a glance

Practice setting – Public University Hospital

Breast imaging staffing – 4 radiologists, 7 technicians

Modalities – Mammography, ABUS, HHUS, Breast CT, Breast MRI

Patient volume – 7,500-8,000 mammograms per year (75% screening; 25% diagnostic); 3,200 breast ultrasound; 1,950 ABUS exams

Coverage/reimbursement – Compulsory health insurance, out-of-pocket/ top-up insurance

ABUS reading procedure – Dedicated ABUS workstation on site

Acquisition times – 10-15 minutes

Reading times – 2-3 minutes for expert; 5 minutes for junior radiologists

The site

University Hospital Zürich is an independent, public University hospital. The Institute for Diagnostic and Interventional Radiology, led by Prof. Dr. med. Thomas Frauenfelder includes specialties in most imaging sections, excluding pediatric and neuroimaging. The Institute, with four dedicated breast radiologists, performs 7,500-8,000 mammograms per year.

Same-day supplemental ABUS screening

While there is a breast cancer screening program in French-speaking Switzerland and in the East, there is not one in Zürich. Therefore, the Institute performs opportunistic, or personalized, screening. That means women in Zürich receive a mammogram due to their risk-profile, symptomatic complaints, or based on a personal request. Using the personalized approach, the Institute offers supplemental exams, such as ABUS, in 60% of opportunistic screening cases.

ABUS is used for a variety of screening and diagnostic indications, including lesions palpated by the patient or the gynecologist, and known lesion follow up for breast implants and women with breast density BI-RADS C and D after mammography.

At the beginning of the implementation, technologists at the Institute were unsure which women should receive an ABUS exam. This caused a temporary workflow challenge to verify each patient. The Institute now uses AI technology to help triage the right patients to ABUS based on density and other risk factors. This has improved technologist workflow and efficiency.

Key operational take-aways:

- Quality of breast ultrasound increased with standardized, objective reading method.
- Higher productivity; increased number of patients getting same day exams with existing staff.
- Using AI to help triage correct patients to ABUS.
- Double reading available for junior physicians; archived ABUS results enable consult at later stage with senior physicians.

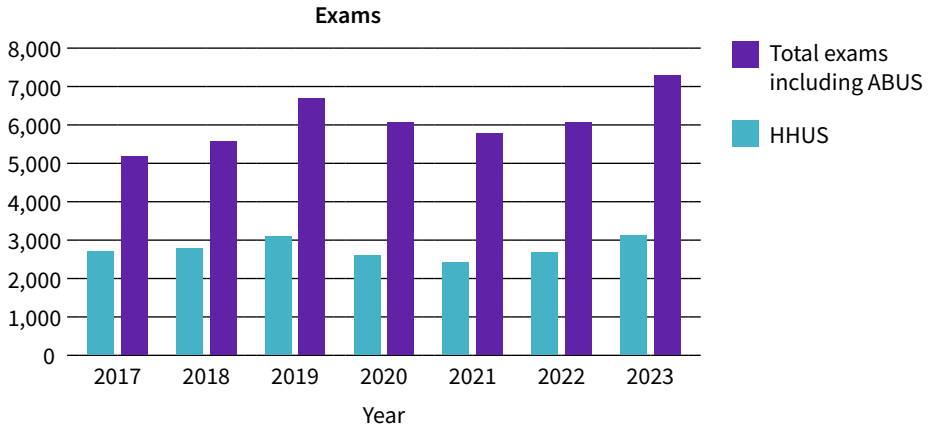
AI technology selects the right patients.

Double reading available for junior physicians.

High qualitative breast ultrasound.

Standardized exam improves quality and productivity

According to Prof. Frauenfelder, the overall quality of breast ultrasound, especially on BI-RADS 3 lesions, increased with standardized, objective method, equal measurements and reduced the number of follow-up exams. After implementing ABUS, the Institute achieved higher productivity, increasing the number of patients receiving same day supplemental imaging with the same staff. In fact, the Institute has increased breast ultrasound exam volume by 20% as a result of the ABUS implementation.



As illustrated in this chart, the total number of exams increased at a faster rate than the number of HHUS exams. This is attributed to the improved quality with ABUS, a reduction in BI-RADS 3 lesions and, consequently, fewer patient recalls.

The standardized exam method also delivers benefits to improve reading and reporting times. Eliminating inconsistent lesions measurements and subjective lesion descriptions significantly increases reading efficiency. Radiologists at the Institute consistently read and report ABUS cases in two to three minutes.

Prof. Frauenfelder notes “when I speak to peers considering ABUS, I emphasize how ABUS helps perform efficient and effective breast imaging every day.” He goes on to say, “a learning curve is natural, but with proper training, our radiologists, residents and technologists deliver consistent and accurate ABUS results to the women of Zürich.”

“Offering supplemental imaging immediately following the mammogram, ideally the same day, allows us to come to a diagnosis more quickly. While our goal is to provide personalized screening for each patient, we follow the quality standards associated with systematic screening.”

“As a teaching hospital, short rotation times for residents can create challenges in achieving standardized exams with ultrasound. One key motivation behind the ABUS implementation was to ensure consistent, standardized exams like mammography or Breast CT.”

“Double reading possibility on complex cases by senior radiologists is key in our teaching hospital to improve confidence for young physicians.”

The information described here is based on Prof. Frauenfelder’s own opinions and on results that were achieved in his unique setting. Since there is no “typical” hospital and many variables exist, i.e., hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

Monika Provenzano, MD
Gynecologist

Frauenarztzentrum
Provenzano,
Lindlar, Germany

At a glance

Practice setting – Private OB/GYN practice

Breast imaging staffing – 1 gynecologist, 3 medical assistants – 2 training on ABUS

Modalities – ABUS, HHUS

Patient volume – 5,200 patients per year; 20 ABUS per week

Coverage/reimbursement – Private insurance

ABUS reading procedure – Batch reading nightly

Acquisition times – 15 minutes exam time, 20 minutes room time

Reading times – 2-3 minutes

The site

Monika Provenzano, MD, has operated Frauenarztzentrum Provenzano, a private OB/GYN practice in Lindlar, Germany for 15 years. Providing women's health and breast healthcare to 1,300 patients per quarter, Dr. Provenzano offers traditional and holistic medicine, including alternative methods and innovative treatments.

Improved efficiency, better patient care

Adopting ABUS in 2021, Dr. Provenzano was looking for a way to enhance preventive breast healthcare, improve efficiency and increase job satisfaction among the staff, including herself. Working in coordination with mammography screening sites, Dr. Provenzano provides ABUS as a supplement to mammography for patients she regularly sees for OB/GYN exams.

The primary indication for breast ultrasound in the practice is preventive breast cancer screening with regular imaging and palpation exam. While this accounts for about 70 percent of breast ultrasound, ABUS is now used for tumour follow-up, and evaluation of remaining tissue after mastectomy and breast reconstruction therapy.

Prior to ABUS implementation, handheld Breast ultrasound (HHUS) was regularly performed as women underwent screening. With the introduction of ABUS, HHUS is performed only for targeted review of abnormal findings with ABUS or with clear palpable findings during physical exams. "Now, after the learning curve and great adoption of ABUS, very few follow-ups are needed with HHUS; on average, it is now one out of 20 ABUS exams," noted Dr. Provenzano.

In addition to the clinical benefits, the introduction of ABUS allowed the practice to implement changes to optimize workflow, resulting in significant time savings, which freed up Dr. Provenzano for more comprehensive care for other patients.

In Germany, like many European countries, HHUS exams must be acquired by physicians, which can often take up to 15-20 minutes. "Traditional breast ultrasound exams require high concentration, which is challenging when you're also talking to the patient and explaining what is going on at the same time," said Dr. Provenzano. "Additionally, as the images are not archived for review after the exam, it puts additional pressure on the diagnostic process."

Key operational take-aways:

- Patient care improvements coupled with financial revenue increases.
- Workflow improvements resulted in time savings, offering ability for more comprehensive care for patients.
- Overall higher satisfaction for Dr. Provenzano and her entire staff. No burnout. Joy in the job.

Now, medical assistants are responsible for ABUS scheduling and performing standardized ABUS exams without direct supervision from Dr. Provenzano. The ability to separate the acquisition and reading of the ABUS exam enables practice medical assistants to focus quality attention on all of the patient's health needs, including performing breast imaging, blood tests, lab tests and other gynaecological exams. Dr. Provenzano batch reads the ABUS exams every evening taking 2-3 minutes to review each exam.

When the patient returns one week later for a second appointment with Dr. Provenzano, all results are available for a focused and holistic discussion with the patient. "This second appointment is pure quality time between me and my patient – the patients are dressed and well-prepared with potential questions and can concentrate on their health," said Dr. Provenzano. "The result is a more efficient and structured daily routine."

Higher satisfaction. No burnout. Joy in the job.

When Dr. Provenzano launched the ABUS program, she informed each patient personally, explained the technique and the clinical benefits. Practice staff promoted the new capabilities during scheduling conversations and directed patients to educational content and videos on the website. Patient response was strong among existing patients, as well as generated new patients interested exclusively in ABUS. Previously, the practice performed 8 HHUS per week compared to 20 ABUS exams per week now. In addition to the patient volume increase, the practice is seeing individual health services (IGEL) and private payments increase by about a third above statutory health insurance.

"I couldn't be happier with our ABUS implementation – it's been a win-win on all levels. It has been a strong, competitive advantage for us compared to other gynaecology practices, we're seeing more patients, patient care has improved, our revenue has increased, and our staff is more efficient and more satisfied – leading to better retention of staff as well as patients."

The information described here is based on Dr. Provenzano's own opinions and on results that were achieved in her unique setting. Since there is no "typical" hospital and many variables exist, i.e., hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

Sivila Pérez Rodrigo, MD, Radiologist

Head of the Breast Radiology,
MD Anderson Cancer Center Madrid,
Madrid, Spain

At a glance

Practice setting – Private oncology hospital

Breast imaging staffing – 8 radiologists (2 full time; 6 remote), 3 technicians

Modalities – Mammography, DBT, ABUS, HHUS, MRI

Patient volume – 50 ABUS per day

Coverage/reimbursement – Private insurance

ABUS reading procedure – Diagnostic exams read immediately; Screening to remote readers

Acquisition times – 10 minutes exam time; 15-20 minutes room time

Reading times – 2-3 minutes

The site

MD Anderson Cancer Center Madrid opened in 2000 as the first offshoot of the prestigious oncology center based in Houston, Texas. The private hospital is dedicated solely to cancer care. Dra. Silvia Pérez Rodrigo, Head of the Breast Radiology Section, part of the Multidisciplinary Breast Unit, is responsible for offering patients advanced diagnostic and imaging techniques, including tomosynthesis, ABUS and breast MRI.

Enhanced workflow to support performing 40-50 ABUS exams per day

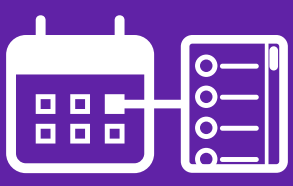
Most patients served by MD Anderson Cancer Center Madrid have a history of breast cancer, so the majority of imaging exams performed by the Breast Radiology Section are diagnostic. The section also performs public breast cancer screening for the government and offers private screening exams.

Every patient that receives mammography also has ABUS and HHUS for work-ups and dense breast screening. ABUS is used for diagnostic follow-ups and to evaluate treatment response for surgical planning. Averaging three patients per hour in the morning, and four per hour in the afternoon, the Section performs 40-50 ABUS exams per day.

"We are doing more screening with ABUS, so it's expected that most examinations are normal. For the diagnostic cases, the protocol is to perform MRI for recalls. At that stage, if we've done the biopsy or are going to do a biopsy, MRI provides more value than HHUS," added Dra. Pérez Rodrigo.

Key operational take-aways:

- Technologists acquiring ABUS screening and diagnostic exams improved workflow and reduced wait times.
- ABUS supports ability to remote reading to help with radiologist shortage.
- Patient can self-select ABUS and weekend appointments online; serves as strong retention tool.



40-50 ABUS exams per day

Overall quicker review time

Screen exams can be batched for later review

ABUS improves workflow, reduces waitlist

To address the increasing patient volume and waitlist issues, the Cancer Center decided to implement an ABUS program and train technicians to scan for both screening and diagnostic exams. Workflow improved as technicians shortened ABUS time to 15-20 minutes. According to Dra. Pérez Rodrigo, reading a screening exam is pretty fast, around 2-3 minutes. Diagnostic cases take a bit longer, as you read the history and review prior images, as well as measure and document the lesions.

"The results have been great. Our technicians are very well trained and they do all types of exams. There are other hospitals where technicians perform screening, but ours are performing screening and diagnostics," said Dra. Pérez Rodrigo. "The other advantage is that the ABUS exams can be read and reported by external, remote radiologists. Diagnostic exams can be read immediately so the clinician is not waiting for the results and screening exams can be batch read later as they do not require immediate results."

Building on patient education, the Section started weekend ABUS appointments to further reduce the waitlist. "Patients could self-select ABUS and weekend exam slots, enabling them to get in quicker and avoid losing them to other hospitals," said Dra. Pérez Rodrigo.

"The challenge with performing so many HHUS exams in Spain is that it is difficult to find and hire breast radiologists that want to go into the hospital to do the scanning. Many radiologists only want to work remotely, reporting MRIs or mammograms. One day, when I was completely alone without any help, it hit me; I couldn't physically do all of the ultrasound exams and keep the waiting list from growing. I knew we had to act."

"With the success of the ABUS program and technician training, the Section has been able to reduce the waitlist to about 1-2 weeks of waiting list for ABUS and 3 weeks for HHUS,"

The information described here is based on Dra. Pérez Rodrigo's own opinions and on results that were achieved in her unique setting. Since there is no "typical" hospital and many variables exist, i.e., hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

1. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F (2020). Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for International Agency for Research on Cancer. Latest global cancer data: Cancer burden rises to 19.3 million new cases and 10.0 million cancer deaths in 2020. Press release 292. 15 December 2020.
2. Sardanelli, F., Aase, H.S., Álvarez, M. et al., Position paper on screening for breast cancer by the European Society of Breast Imaging (EUSOBI) and 30 national breast radiology bodies from Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Israel, Lithuania, Moldova, The Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland and Turkey, Eur Radiol (2016). doi:10.1007/s00330-016-4612-z.
3. Radiology Facing a Global Shortage. RSNA News. 10 May 2022. **https://www.rsna.org/news/2022/may/global-radiologist-shortage**.
4. Health Workforce Reform, Stat: Demand for Care Outpacing Supply of Workers. National Conference of State Legislatures. 28 November 2023. **https://www.ncsl.org/state-legislatures-news/details/health-workforce-reform-stat-demand-for-care-outpacing-supply-of-workers**.
5. Pisano et al. NEJM 2005; 353: 1773.
6. Boyd, et al: Mammographic density and the risk and detection of breast cancer, NEJM Jan 2007.
7. Arora N, King TA, Jacks LM., Ann Surg Onc, 2010; 17:S211-18.
8. Ritse Mann et.al., Breast cancer screening in women with extremely dense breasts recommendations of the EUSOBI. Eur Radiol. 2022 Mar 8;32(6):4036–4045. doi: 10.1007/s00330-022-08617-6.
9. FDA PMA P110006 summary of safety and effectiveness.
10. Wilczek, Leifland, et.al. Adding 3D Automated Breast Ultrasound to mammography screening in women with heterogeneously and extremely dense breasts. European Journal of Radiology 85 (2016) 1554–1563.
11. Wenhui Ren, MPH, & Youlin Qiao, MD, PhD, Fanghui Zhao, MD, PhD et al. 2023 The Association of University Radiologists. Published by Elsevier Inc. **https://doi.org/10.1016/j.acra.2023.02.026**.
12. ARRS 2012 Breast Imaging: Screening/Emerging Technologies Oral Abstract; Radiologist Interpretation Time for 3D Automated Breast Ultrasound Screening, R. Brem.
13. A. Huppe et.al., ABUS Interpretation Times – A Reader Performance Study, Academic Radiology Volume 25/12, P1577-1581, December 2018.
14. Stempel et.al., Journal of Breast Imaging 2024, Vol XX, No. XX, 1-10.
15. Grady, et al: Sonographic tomography for the preoperative staging of breast cancer prior to surgery. Elsevier, Journal of Ultrasound, 10.1016/j.jus.2010.07.005.
16. C. Lehman, Mass General Breast Care Program, Oral Presentation RSNA 2021.
17. Athina Vourtsis et.al., European Radiology Volume 28, pages 592–601 (2018).
18. GE HealthCare Case Study: Implementation of Invenia ABUS improves operational and economic benefits. Prof. Aribal, Acibadem Hospital. JB21392XX.

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