

Boosting Patient Experience and Practice Revenue with Diagnostic Imaging



IMAGEN
Rethink diagnostics

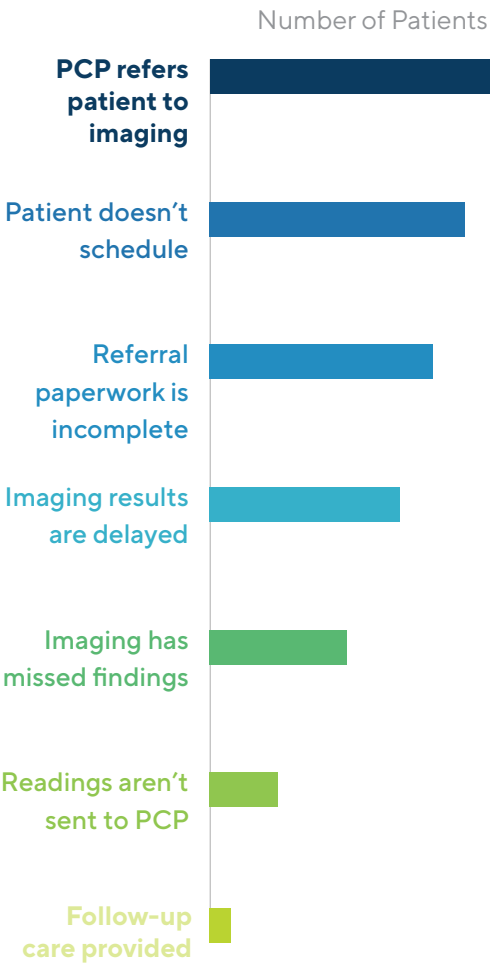
How Diagnostics as a Service (DaaS) Platforms Can Revolutionize Patient Care and Boost Practice Value

Diagnostic imaging has been a cornerstone of preventive and curative primary care for more than 100 years, since Wilhelm Conrad Roentgen discovered X-rays in the late 1800s. More than 1,000 scientific articles were published on the subject within just the first year after his discovery, and Roentgen was awarded the Nobel Prize in Physics only six short years later.¹ From there, new imaging technologies continued to emerge, eventually becoming the roster of imaging modalities that care providers rely on today: X-rays, mammograms, CT scans, MRIs, and ultrasounds, to name a few.

Today’s primary care physicians (PCPs) use imaging technology to help diagnose and build treatment plans for an ever-growing list of conditions, but the way that providers order and patients access imaging services hasn’t changed much: the PCP writes an order for either a screening or diagnostic imaging service, then sends the patient on their way. The onus is on the patient to fulfill the order. This may include scheduling an appointment at a separate clinic, confirming insurance coverage, and taking time off work. And it doesn’t end there. The PCP now must rely on the radiologist to provide an accurate interpretation, and the imaging office to deliver results in a timely manner, or do some “chart chasing” to get the interpretation. Finally, if all goes smoothly, the patient and provider reunite for a follow-up visit.

This process doesn’t sound simple, because it isn’t simple. Research published in the *Journal of the American College of Radiology* found that the overall adherence to follow-up imaging was only 58.14%, meaning that roughly 4 out of 10 patients don’t adhere to their physician’s referral to imaging.² And even when patients do have the time, resources, and transportation to fulfill their doctor’s request for imaging, results are often delayed, readings get lost between the radiology office and the PCP, or the patient doesn’t ever schedule a follow-up visit.

What’s more, even when patients do complete their imaging, clinical misses are still too common. In times when accuracy is paramount—when imaging shows abnormalities—30% are missed.³ So why is this still the standard of care?



1 Bercovich E, Javitt MC. Medical imaging: From Roentgen to the Digital Revolution, and Beyond [Internet]. Rambam Maimonides medical journal. U.S. National Library of Medicine; 2018 [cited 2023 Mar 15]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6186003/>

2 Mabotuwana T, Hombal V, Dalal S, Hall C. Determining Adherence to Follow-up Imaging Recommendations [Internet]. Journal of the American College of Radiology. [cited 2023 Mar 15]. Available from: [https://www.jacr.org/article/S1546-1440\(17\)31475-8/fulltext](https://www.jacr.org/article/S1546-1440(17)31475-8/fulltext)

3 Brady AP. Error and discrepancy in radiology: Inevitable or avoidable? [Internet]. Insights into imaging. U.S. National Library of Medicine; 2017 [cited 2023 Mar 15]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5265198/>

In this white paper, we'll argue that there's a better way to deliver higher-quality patient care by bringing imaging services closer to the point of care: in-office diagnostic imaging, made possible by a Diagnostics as a Service (DaaS) platform.



Defining Diagnostics as a Service (DaaS)

Across many industries, “as a service” business models are making it easier for companies to deliver the products and services their customers need, without the need for massive upfront investment or a prolonged time to market. They also offer benefits in terms of scalability and integration, while also ensuring users always have access to the latest features. “As a service” offerings already have a place in primary care, in Electronic Medical Records (EMRs), patient relationship marketing, billing, and more. Yet they haven’t been widely utilized in actual frontline patient care—until now.

Diagnostics as a Service (DaaS), with its comprehensive set of hardware, software, services, and experts, is primed to improve the patient experience, enable better-quality care, and generate a new revenue stream for primary care practices.

DaaS at the Point of Care

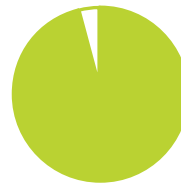
By putting diagnostics at the point of care—right in the PCP’s office—DaaS is part of a broader, data-driven movement toward point-of-care testing. Numerous studies have shown that point-of-care testing significantly increases compliance with referral orders.

A study called “Increasing Mammography Access” conducted at Massachusetts General Hospital and Beth Israel Deaconess Medical Center demonstrated that “pink slip programs” that enabled women to immediately access the onsite breast imaging center after seeing their PCP increased mammography screening compliance from 72% to 81% in just one year.⁴

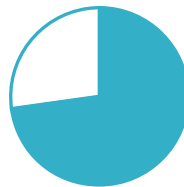
Similarly, “Improving Screening Lab Compliance in an Urban Pediatric Practice” chronicled a significant drop in the average lab completion rate—from 79% to 21%—when the practice relocated from a site with on-site phlebotomy to a site without.⁵ While other interventions were attempted, such as reaching out to families with incomplete labs via phone and providing public transportation routes to the lab, only when the new site added a phlebotomy lab did completion rates begin to increase again.

The value of point-of-care testing has been demonstrated across multiple populations, care settings, therapy areas, and modalities. And DaaS platforms are making it possible for PCPs to bring this same value within the walls of the clinic with in-house imaging services across the United States.

Making care more accessible is just the beginning. More screenings mean more opportunities for early intervention. On an individual patient level, that means breast cancer caught in Stage I, where outcomes are significantly better—when breast cancer is detected early and in the localized stage, the five-year survival rate is 99%.⁶ It means recognizing the signs of heart disease early, so a patient can be put on a preventive treatment regimen, instead of being caught unaware by a life-threatening heart attack.



96% of patients recommend physician practices with Imagen services.



Imagen’s DaaS solutions drove a **73%** relative reduction of life-threatening clinical misses with our FDA-cleared Chest-CAD⁷

Rethinking What it Means to Deliver Quality Care

Convenient and timely access to imaging and radiology results and interpretation is one piece of the puzzle in terms of delivering quality care. But there’s another often-overlooked component.

When a PCP has determined a patient is in need of imaging services—perhaps because it’s time for a mammogram, a

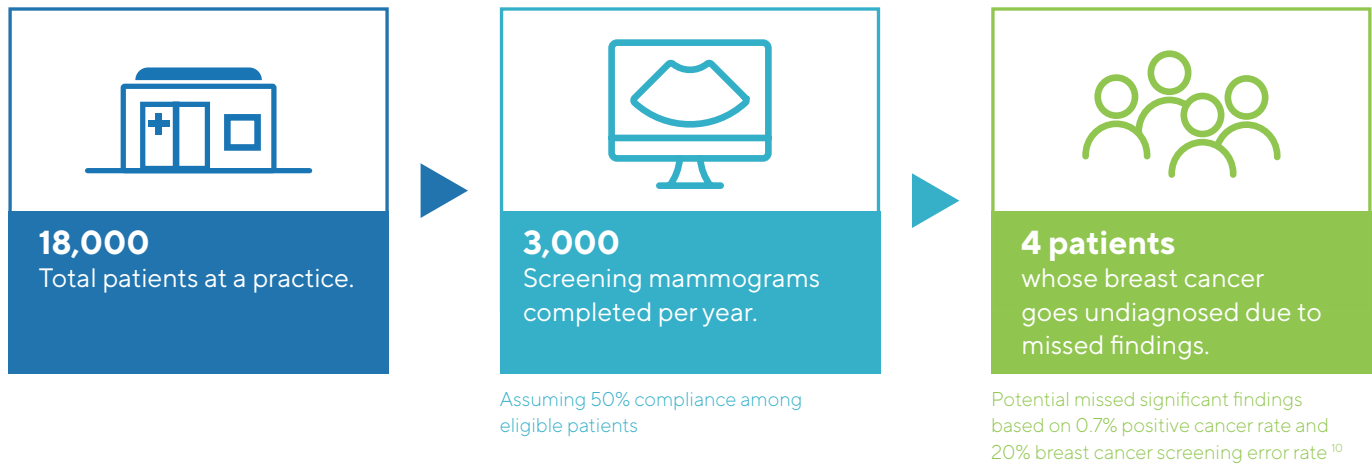
4 Increasing mammography access [Internet]. American College of Radiology. [cited 2023 Mar 15]. Available from: <https://www.acr.org/Practice-Management-Quality-Informatics/Imaging-3/Case-Studies/Patient-Engagement/Increasing-Mammography-Access>

5 Madhuri G. Dave DO, Background Screening laboratory evaluations are important components of pediatric primary care. Current AAP guidelines recommend hemoglobin and lead screening at 12 months as well as lipid screening between 9-11 years. Health disparities. 103. Improving screening lab compliance in an urban pediatric practice [Internet]. Academic Pediatrics. Elsevier; 2019 [cited 2023 Mar 15]. Available from: <https://www.sciencedirect.com/science/article/pii/S1876285919302438>

6 Breast cancer early detection [Internet]. National Breast Cancer Foundation. [cited 2023 Mar 15]. Available from: <https://www.nationalbreastcancer.org/early-detection-of-breast-cancer/>

7 Based on the clinical trial for Chest-CAD, an FDA-cleared Chest X-ray detector

Breast cancer early detection: by the numbers



bone fracture is suspected, or a chest X-ray is needed to rule out pneumonia—it's often assumed that all radiology interpretations are created equal. Just as a PCP is likely to trust the findings of a lab report on blood work, they may also inherently trust the accuracy of a radiology report.

But here's a sobering fact: errors and oversights in radiology interpretations are more common than one might expect. A study published in the *American Journal of Roentgenology* notes that 30% of abnormal diagnostic exams have errors or missed findings.⁸

When you apply these statistics to the patient population of a primary care clinic, it all adds up to missed diagnoses that can have real and serious impacts on a patient's health and quality of life. It also impacts the physician's ability to deliver the highest-quality care to patients.

Delivering Better Patient Care with Imagen's DaaS Platform

Our DaaS platform takes the promising findings of point-of-care testing research and creates a new standard in primary care: one where frontline imaging, expert radiographic interpretation, first-of-its-kind AI, and more come together to revolutionize patient care, delivering on three key promises.

Better Patient Experience

When imaging services are across the hall instead of across town, patients enjoy increased convenience and fewer hurdles to accessing the imaging their PCP has recommended. Additionally, patients may feel more comfortable receiving care in a familiar setting. This streamlined experience can lead to increased patient satisfaction and loyalty.

Having on-site imaging can also make a practice more appealing to new patients. A recent study found that point-of-care ultrasound imaging increased patient trust, improved understanding of health issues, and made patients feel more secure in their primary care.⁹ Multiple studies across point-of-care administration further support the benefits.

There are some logistical and financial benefits for patients too. Patients with on-site imaging may only have to deal with a single bill from the clinic, instead of separate facility and interpretation fees. And some patients may enjoy lower out-of-pocket costs when imaging is done at the point of care, rather than through a referral process.

Higher-Quality Care

Providing the highest-quality care is of the utmost importance for PCPs, but truly high-quality care can't be provided when imaging findings are missed and errors are all too common. Imagen offers a multi-faceted approach to improving quality, from the moment an image is generated through the findings report.

⁸ Brady AP. Error and discrepancy in radiology: Inevitable or avoidable? [Internet]. Insights into imaging. U.S. National Library of Medicine; 2017 [cited 2023Mar15]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5265198/>

⁹ Andersen CA, Brodersen J, Rudbæk TR, Jensen MB. Patients' experiences of the use of point-of-care ultrasound in general practice – a cross-sectional study - BMC primary care [Internet]. BioMed Central. BioMed Central; 2021 [cited 2023Mar15]. Available from: <https://bmcpriamcare.biomedcentral.com/articles/10.1186/s12875-021-01459-z>

¹⁰ Mammograms [Internet]. National Cancer Institute. [cited 2023Mar15]. Available from: <https://www.cancer.gov/types/breast/mammograms-fact-sheet>

First, we hire radiologists based on their ability to successfully pass a comprehensive, clinically-validated exam, thereby proving their ability to spot even the smallest findings in images. Then, our robust quality control and continuous improvement programs ensure their skills stay sharp.

What's more, our radiologists' expertise is augmented by proprietary, FDA-cleared AI devices, allowing them to use best-in-class machine learning to spot even the most localized findings.

We've also created a standard reporting format to ensure that every report PCPs receive is clear, consistent, and a valuable tool for crafting treatment plans. And in addition to the reports, PCPs have access to the actual images for reference, integrated right into their EMR system.

Improved Practice Economics

DaaS platforms are particularly impactful because they improve practice economics in *both* fee-for-service (FFS) and value-based payment (VBP) models.







In FFS models, DaaS platforms create a new revenue stream that is immediately profitable to the practice, in addition to reducing staff time spent coordinating and following up on patient referrals.

In VBP models, DaaS platforms enable practices to capture and treat accurate diagnoses earlier and more often, leading to higher risk-adjusted revenues and lower total cost of care, which, when combined, generate significant financial ROI for the practice.





The graphic below illustrates the potential benefits of deploying a DaaS platform to a typical FFS practice and a typical VBP practice.

*Every report is clear, consistent,
and a valuable tool for crafting
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Illustrative fee-for-service group (20k patients)

 Screening mammography	+ \$100k
 Automated breast ultrasound ("ABUS")	+ \$30k
 Ultrasound	+ \$20k
 Echocardiography	+ \$20k
 Diagnostic mammography	+ \$15k
 Fundoscopy	+ \$5k
Total annual profit impact¹	+ \$185k
\$18k additional profit per doctor²	

Illustrative value-based care group (5k Medicare Advantage patients)

 Accurate disease documentation to enable early intervention	+ \$2.6m
 Reduced ED visits & hospital admissions	+ \$370k
 Reduced specialist visits & unnecessary testing	+ \$355k
 Avoided 3rd party imaging	+ \$320k
Total annual profit impact¹	+ \$3.1m / \$52MPM
\$315k additional profit per doctor²	

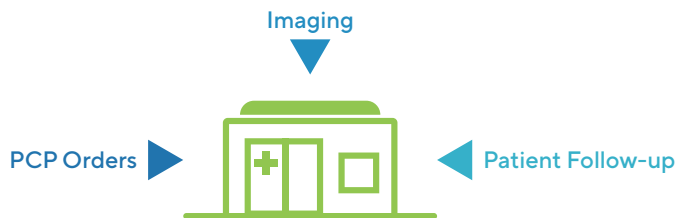
¹Net of Imagen fees.

²Assumes 10 PCPs for a 20k FFS chart practice and 10 PCPs for a 5k MA chart practice.

Join Us in Ushering in a New Era of Innovation in Imaging

At Imagen, we're helping quality-minded PCPs reject the status quo and usher in a new era of better patient care by harnessing the power of DaaS.

Within the Same Building



Our DaaS platform includes everything practices need: the diagnostic tests and the staff to operate them; specialists to interpret the diagnostics, powered by proprietary and FDA-cleared AI software; and all the supporting IT and clinical workflow integration, accreditation, marketing, and scheduling services needed to ensure success.

Imagen's radiologists are hired for the accuracy of their readings, going through a rigorous, validated test prior to joining, and participating in an ongoing quality management program once on board.

What's more, they're aided by proprietary, FDA-cleared software and first-of-its-kind AI technology, ensuring that you can feel confident in the imaging interpretations you receive.

Imagen's DaaS offerings turn the barriers of frontline diagnostics into a source of revenue and value for proactive providers and practices:

Cost: Imaging machines can be prohibitively expensive, both in upfront costs and ongoing maintenance. With Imagen, most of the significant costs are covered, and the resources to install, set up, and integrate an imaging suite are handled for you—by a partner with real-world experience with practices large and small. Once set up, your practice benefits from being able to improve the patient experience, provide better care, and increase profit through on-site imaging.

Logistics: Imagen takes care of installing your entire system, from lead lining in the walls to ensuring proper electrical and power sources.

Licensure & Credentialing: Imagen manages all radiologist licensure, credentialing, and ongoing educational requirements.

Staffing: We staff only the most qualified radiologists to interpret patient imaging, and all of our radiologists undergo a rigorous screening process and ongoing quality control reviews.

Join our movement to create a new standard in primary care through a revolutionary DaaS platform that puts more accessible, more accurate imaging where patients are.

Imagen Diagnostics as a Service Platform Includes:



Learn more at imagen.ai ►