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TechWatch

Diagnostic Imaging Tech Watch | Vol. 5, 2024

Top Trends Transforming Radiology

How AI is improving efficiency and patient care

Alzheimer's disease advancements in diagnosis and treatment

Introduction

Over the years and as a seasoned professional in the field of diagnostic imaging, I've witnessed remarkable advancements in diagnostic imaging. The pace of innovation has been mind-blowing, revolutionizing the way we approach patient care. From state-of-the-art equipment to groundbreaking procedures, diagnostic imaging has truly transformed the healthcare landscape.

When the COVID-19 pandemic presented a unique set of challenges, providers focused on immediate patient care. Routine operations like equipment replacement and new technology took a backseat. This shift in priorities left providers with aged equipment, limited visibility into equipment fleets and a reactive decision-making process.

In this edition of Diagnostic Imaging Tech Watch, my team and I address these challenges. This issue highlights the top ten industry trends, the shift to outpatient care, effective fleet management, reimbursement challenges, sustainable practices in radiology and the integration of new technologies. Additionally, we explore how diagnostic imaging supports other specialties such as cardiology, neurology and oncology.

As you delve into this issue, you'll recognize the profound impact that diagnostic imaging has on quality of care. From remote scanning to the use of artificial intelligence, the future of diagnostic imaging is filled with new possibilities and evolving quickly. With an aging population and technology advancements, the need for diagnostic imaging equipment will continue to grow. Our Capital Equipment Solutions Team is here to support you with all your equipment needs and opportunities that come with this growth.

On behalf of myself and all of us from the Capital Equipment Solutions Team, we hope you enjoy this latest issue of Diagnostic Imaging Tech Watch. Thank you for serving our communities and delivering quality care.

Best regards,

Adam Fairbourn

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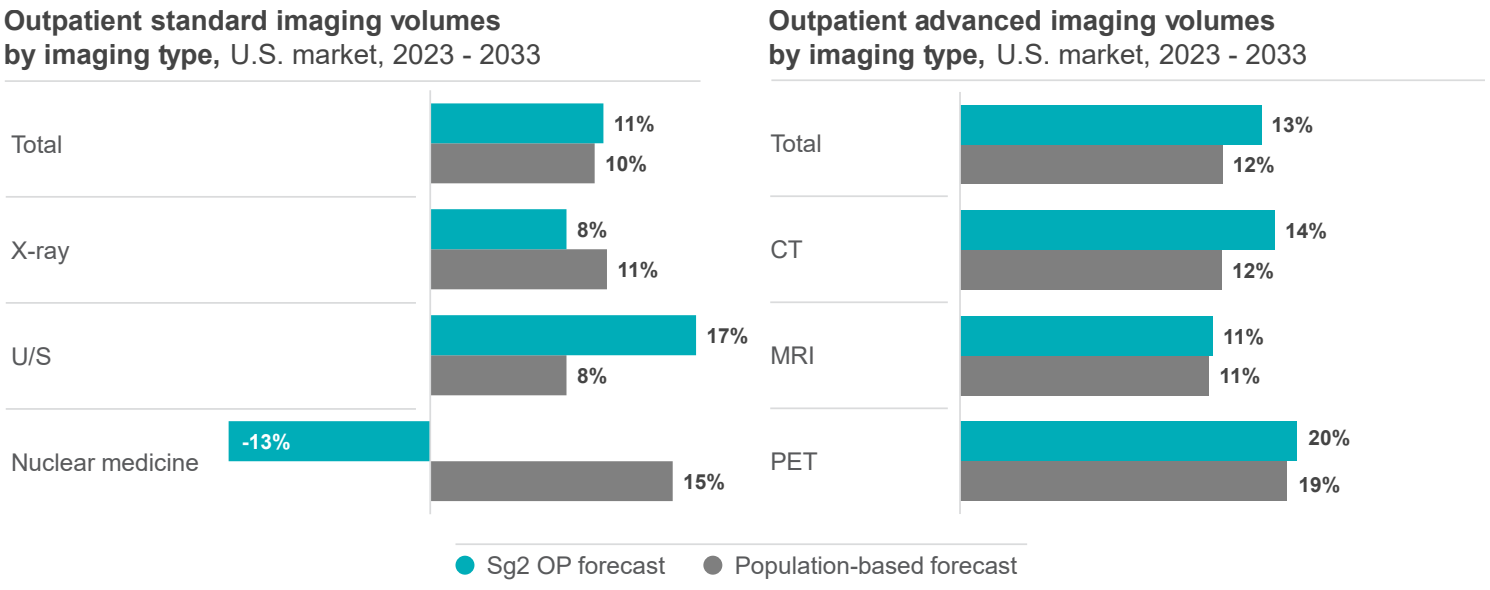
Contents

2024 diagnostic imaging top trends

While the shift of surgical and interventional cases from inpatient to outpatient (OP) facilities is expected to level out, imaging exams will likely continue to migrate toward lower-cost OP settings. Advanced OP imaging is forecasted to grow by 13% over the next decade, particularly computed tomography (CT) and positron emission tomography (PET) exams.

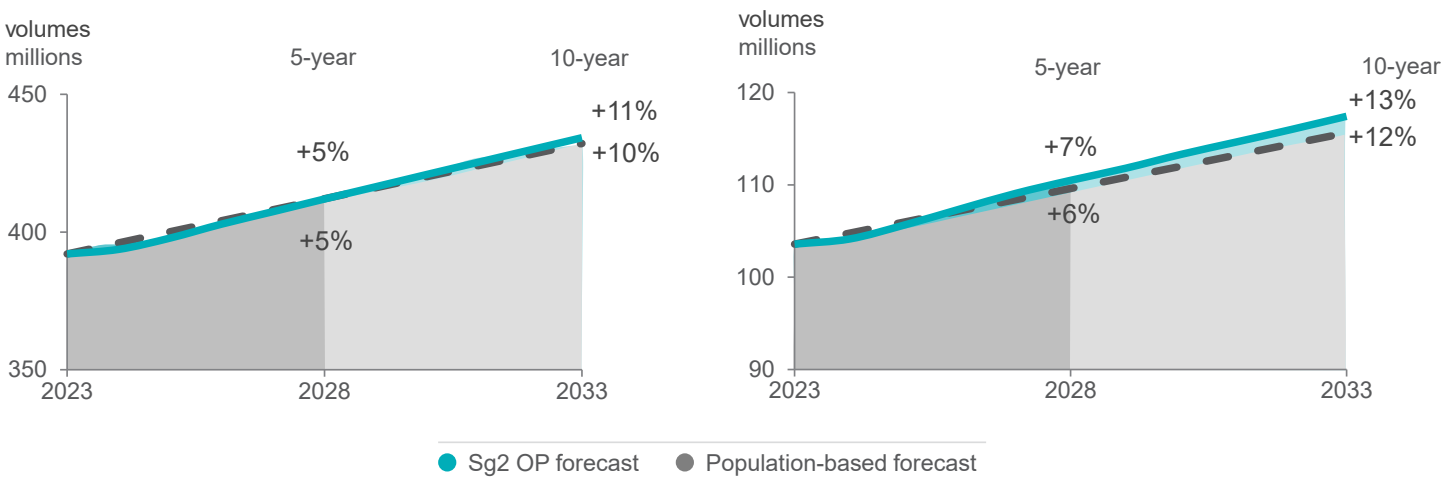
Sg2®, a Vizient company, forecasts double-digit growth in diagnostic imaging services over the next decade driven by increased population demand and technology advances.

Figure 1: Strong growth expected for nearly all imaging modalities



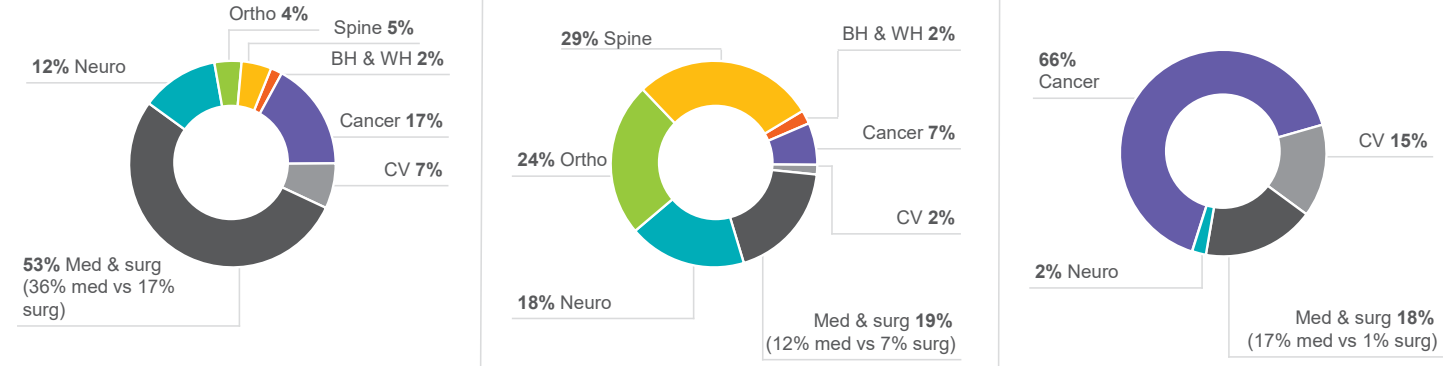
Note: Analysis excludes 0–17 age group. PET = positron emission tomography; U/S = ultrasound. Sources: Impact of Change®, 2023; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

Figure 2: Imaging services to grow double digits over the next decade



Note: Analysis excludes 0–17 age group. Standard imaging includes nuclear medicine/SPECT, CT, U/S and x-ray. Advanced imaging includes CT, MRI and PET. PET = positron emission tomography; SPECT = single photon emission computed tomography; U/S = ultrasound. Sources: Impact of Change®, 2023; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

Figure 3: Service line imaging utilization varies by modality



Note: Analysis excludes 0–17 age group and includes all service line groups. CV= cardiovascular; BH= behavorial health; WH= women's health; PET = positron emission tomography. Note that for PET scans, the combined total for orthopedics,spine, WH, and BH was < 1%. Sources: Impact of Change®, 2023; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

Systemness

Radiology departments, across provider networks, are realizing that by working together they can help overcome staffing challenges, complicated payment processes and adapt to changes in how care is provided. This type of collaboration allows for joint resources, expertise and technology to better overcome these challenges. Acting as a system places a governance structure in place to optimize resources across sites of care and enables procedures to be available in more locations. A good example of how imaging providers are achieving systemness is using remote scanning platforms. These platforms allow expert clinicians to operate imaging equipment from a different location.

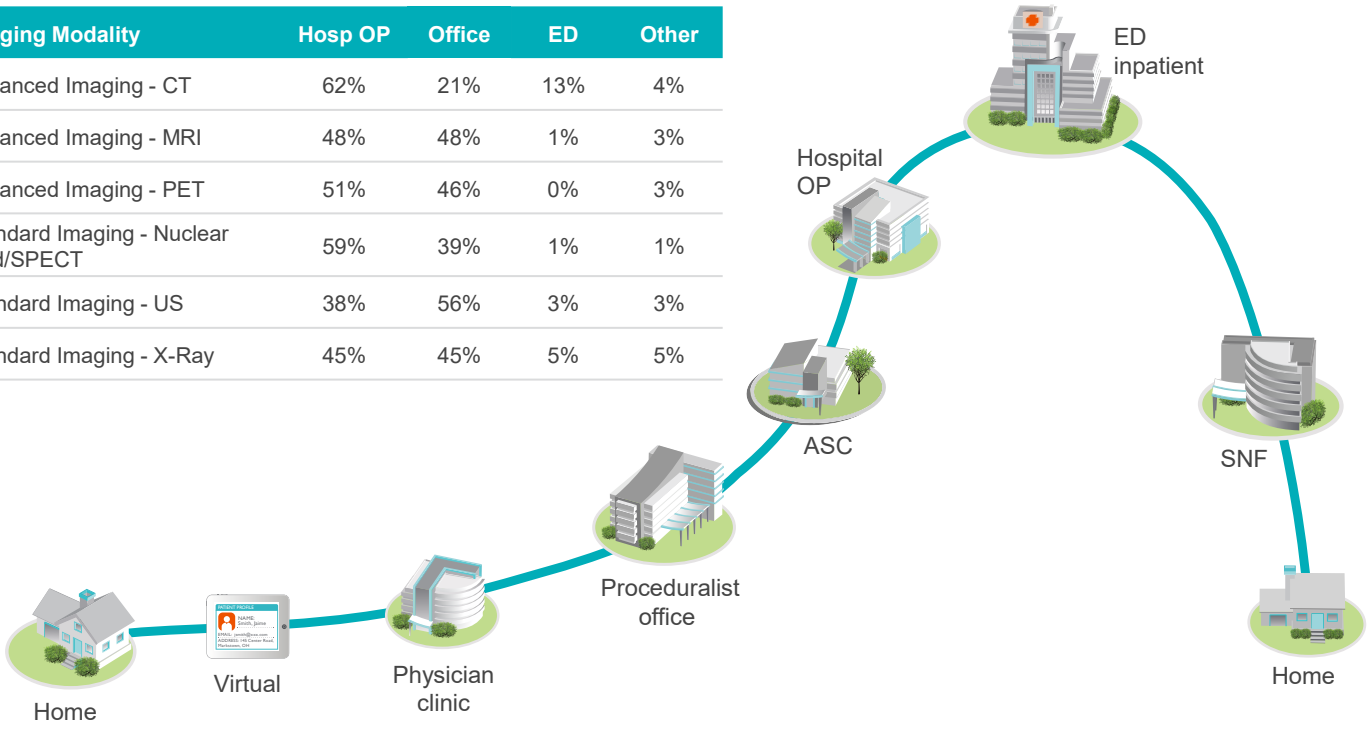
The Vizient Capital Equipment Solutions team offers market-leading expertise to align cost, quality and market performance in the capital equipment space. Imaging providers are working toward systemness, data-driven insights and best practices crucial to driving results. From service line strategy to equipment planning, lifecycle management and procurement, Vizient is helping providers achieve best in class operational and financial outcomes at the enterprise level.

Diagnostic imaging companies are responding to the trend of working together systematically, by helping providers expand collaboration across the care continuum. For example, some dual-source CT systems offer the capabilities for more complex cardiac exams with guidance for less experienced technologists — but at a more cost-effective installation compared to other dual-source CT systems. Imaging suppliers are also enhancing digital product portfolios. These portfolios allow for more synchronous and standardized processes for image reconstruction, archiving and sharing between clinician care teams.

Acting as a system puts a governance structure in place to optimize resources across sites of care and enables procedures to be available in more locations.

Figure 4: Imaging utilization varies by modality across the care continuum

Imaging Modality	Hosp OP	Office	ED	Other
Advanced Imaging - CT	62%	21%	13%	4%
Advanced Imaging - MRI	48%	48%	1%	3%
Advanced Imaging - PET	51%	46%	0%	3%
Standard Imaging - Nuclear Med/SPECT	59%	39%	1%	1%
Standard Imaging - US	38%	56%	3%	3%
Standard Imaging - X-Ray	45%	45%	5%	5%



Note: Analysis excludes 0–17 age group and includes all service line groups. Other includes home and urgent/retail site of care. Baseline data is from 2023 IoC Forecast update. Standard imaging includes nuclear medicine/SPECT, CT, U/S and x-ray. Advanced imaging includes CT, MRI and PET. PET = positron emission tomography; SPECT = single photon emission computed tomography; U/S = ultrasound. Sources: Impact of Change®, 2023; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023

Workforce challenges

Radiology staffing challenges hinder diagnostic services. Factors contributing to these challenges include an aging radiology workforce, a limited pipeline of residency and technologist program graduates and the growing complexity of imaging studies. Additionally, the geographic distribution of radiologists can be uneven, with rural areas often experiencing more severe shortages.

To address these challenges, healthcare organizations are exploring various strategies. These strategies include implementing remote diagnostic reading programs, applying advanced technologies like artificial intelligence to assist with image interpretation and offering competitive compensation packages to attract and retain radiologists. Investing in AI-guided technology, remote working options and other recruitment efforts can all help with the shortage. A resurgence of accredited radiology technologist programs along with investing in recruitment of high school and college students may help bolster a pipeline of technologists.[1] With diagnostic imaging volumes expected to grow, securing a sufficient workforce and adoption of workforce enhancing technology is imperative.

Capital asset management

The Vizient Capital Asset Management solution has helped organizations achieve market-leading financial value in the past fiscal year. By Leveraging data-driven insights and best practices, Vizient provider customers are achieving efficiency gains and potential savings of up to 15% across their capital equipment programs.

Provider capital equipment committees require clear insights to achieve their strategic objectives across their organization, as they navigate the balance between replacing aging equipment fleets and meeting requests for modern technology. Larger provider networks are aligning capital equipment strategies across care sites to capitalize on standardization, increase spending power and optimize financing options. When considering the latter, providers must consider factors like capital commitment amount, lifespan, technology changes, terms and conditions, liquidity and use, cost of capital and credit impact to determine financing options.

Smart providers are including capital equipment plans in their long-term clinical strategies to ensure they have the right technology for the future. Harnessing these insights to plan objectively enhances the organization's ability to plan funding options that best suit the financial performance of the organization.

Sustainable imaging: pioneering environmental responsibility in radiology

Sustainable radiology (or green radiology) has been identified as an area of opportunity for collective action to impact environmental sustainability. As the healthcare sector works toward reducing its carbon footprint, radiology departments are being urged to invest in sustainable practices. These practices aim to decrease energy consumption, minimize waste and promote the use of renewable energy. Imaging suppliers are also investing in programs to reduce carbon emissions and waste. Providers are leveraging federal programs and industry support from manufacturers to aid their efforts toward a greener and more sustainable practice in radiology.

Technology user-ability

Diagnostic Imaging technology has experienced a great deal of innovation over the last decade that's expanded capabilities to a wide range of complex exams. Shifting sites of care, workforce challenges and increased patient volumes have resulted in more users, with varying level of expertise, who need training to maximize technology capabilities across the continuum of care. Diagnostic imaging equipment manufacturers have created equipment that helps healthcare professionals provide high-quality patient care, regardless of their workload or experience level. Features like embedded AI programs, automatic patient positioning, portable and remote scanning and workflow guidance applications help clinicians improve efficiency, quality of care and satisfaction for both providers and patients.

Rise of remote imaging and expert technologists

Remote scanning is a technology for operating diagnostic imaging equipment through a network connection. In the U.S., its adoption has been limited due to regulations and policies. However, providers are now using remote scanning to address staffing challenges by pooling resources and implementing it as a solution.

The demand for imaging procedures is growing throughout organizations, and providers are recognizing the need to efficiently share the expertise of highly trained, expert technologists. Experienced technologists (also known as scan managers) can oversee and help in complex imaging procedures via remote scanning.[2] These individuals guide less trained individuals, who are present on-site, in positioning and preparing the patient. Not only does this enhance quality and access for patient care, but it multiplies the training opportunities for less experienced technologists.

Remote scanning can retain experienced technologists by offering remote work options. Providers should consider compliance risks, but many still turn to remote scanning out of necessity.

Artificial intelligence

The Food and Drug Administration (FDA) has established criteria for evaluating and approving artificial intelligence (AI) applications. However, there is currently no standard method in the industry for evaluating the impact of these applications on quality patient care, which is needed to advance reimbursement. Even so, providers are steadily adopting radiology AI, even though widespread reimbursement is limited.

Providers evaluate their return on investment (ROI) based on their organization's clinical goals. For AI applications that don't receive reimbursement, the ROI is typically measured in terms of efficiency and quality improvements rather than direct cost savings. AI vendors are working to make it easier for their offerings to be implemented, which can positively impact ROI. For example, AI vendors are partnering with platforms that vet AI applications, deploy them safely within a provider's network and track usage and ROI metrics. Reimbursement could be on the horizon for radiology AI applications, but for now, transformative gains in efficiency, accuracy and provider satisfaction can still be measured.

Reimbursement pressure

Despite an increasing demand for diagnostic imaging services, a downward pressure on reimbursement for most areas of radiology continues to be the standard. Radiology was set to receive a 4.5% payment cut from the Centers for Medicare and Medicaid Services (CMS) in 2023 that was reduced to about 2% following an intervention from U.S. Congress.[3] For 2024, CMS finalized a 3.4% cut to the physician fee schedule, with interventional radiology facing a 4% cut in the total. [4,5]

Several professional societies, such as the American College of Radiology (ACR), are urging lawmakers to address the ongoing and unsustainable cuts to reimbursement. There's growing concern that if these reductions continue, patient access to radiology services will suffer, especially in rural areas that are already underserved.

Value-based procurement

In the past, radiology suppliers have sold their products to providers without being held accountable for the impact on care quality and operational metrics. Providers want suppliers to demonstrate how their products can help achieve clinical and operational goals. They also want suppliers to share in the risk if these goals aren't met.

Providers are changing how they evaluate equipment purchases and collaborate with suppliers post-purchase. Suppliers need innovative solutions to adapt. Providers need a network of resources to fully use and measure the value of these solutions over time.

Mergers and acquisitions

The imaging market is highly competitive and fragmented, with the top 100 practices representing less than 20% of the total market.[6] The industry is experiencing a broad shift in volumes from hospital settings to OP centers, with OP imaging growth outpacing the overall radiology market. Forty percent of radiology volume is now performed at OP imaging centers and clinics.[7]

Mergers and acquisitions (M&A) in the radiology market have been gaining momentum over the past decade, and the COVID-19 pandemic has accelerated M&A activity, especially among smaller imaging centers.

"Coming out of the pandemic, smaller imaging centers find themselves in a vulnerable financial position," said Kris Blohm, a managing director in Kaufman Hall's Mergers & Acquisitions practice. "Private equity, hospitals and larger imaging center networks all continue to invest and acquire across the U.S., with many of the larger imaging chains demonstrating aggressive acquisition strategies. Not-for-profit health systems are also partnering in joint ventures with some of the larger imaging and radiology players, many of which have private equity backing."

The diagnostic imaging industry in the U.S. is estimated to have generated more than $140 billion in revenue over 2023. This industry is projected to grow at a compound annual growth rate (CAGR) of 4.25% from 2024 to 2030, indicating a moderate level of growth.[6]

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Market dynamics and advancements in cardiovascular imaging

The demand for cardiac imaging is increasing. This includes the need for various imaging specialties such as CT, magnetic resonance imaging (MRI) and ultrasound, among others. This increase in demand is likely due to a rising prevalence of cardiovascular diseases, driven by aging populations, unhealthy lifestyles and rising obesity rates. The growing emphasis on early diagnosis and personalized medicine has also increased the demand for accurate and comprehensive cardiac imaging. At the same time, technological advancements have made cardiac imaging better for patients. The images are clearer, the process is faster and there's less radiation exposure.

To meet this need, advancements in cardiovascular imaging continue to revolutionize the diagnosis and management of heart conditions. This article will explore:

- Trends in CT—including the evolving cardiac imaging landscape
- Increases in usage of MRI and ultrasound
- Innovative software applications that empower technologists to achieve exceptional image quality

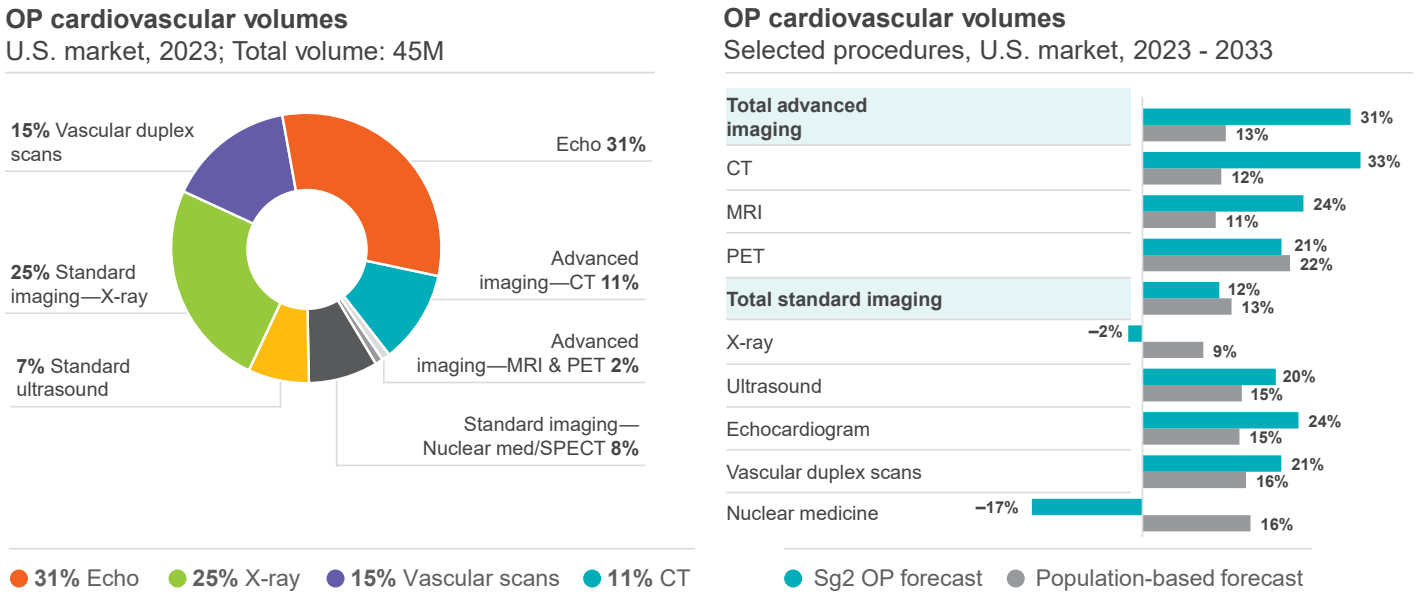
Trends in cardiac CT imaging

In recent years, there have been significant advancements in CT technology that have made it even more valuable in cardiac imaging. These advancements have revolutionized the screening, diagnosis and management of cardiovascular diseases. Adopting new technology is more important than ever as volumes are projected to grow and will be compounded by a shortage of technologists. Here are three innovations and trends in CT impacting healthcare providers and the patients they serve:

1. Less invasive alternatives

One major trend in CT is the move away from invasive coronary angiography (ICA), or diagnostic catheterization, to noninvasive coronary imaging with CT. In ICA, a catheter is inserted into the coronary arteries and a contrast agent is injected into the blood vessels. It's an invasive procedure that can cause complications, such as bleeding, infection or damage to the artery. CT coronary angiography (CTA) is a noninvasive alternative that uses CT technology to create detailed images of the coronary arteries without the need for a catheter. CTA is faster, cheaper and more patient-friendly than ICA, making it the preferred choice for many patients. For these reasons, Sg2®, a Vizient company, is projecting a 33% increase in outpatient cardiovascular volumes for CT over the next 10 years.[1]

Figure 5: Advanced Imaging Growth Driven by Updated Chest Pain Guideline Emphasis on CT; Standard Imaging Driven by Structural Heart



Note: Analysis excludes 0–17 age group. Vascular duplex scanning includes duplex scan of extracranial arteries, duplex scan of extremity arteries and duplex scan of extremity veins. Ultrasound volumes include non-echo and non-duplex scans, such as breast ultrasound, and Level 2 fetal ultrasound. Percentages may not add to 100 due to rounding. Echo = echocardiogram; med = medicine; SPECT = single photon emission computed tomography. Sources: Impact of Change®, 2023; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

Organizations can benefit by upgrading their current systems to include advanced cardiovascular capabilities. This will enable care delivery to a larger number of patients as the demand for cardiac imaging continues to increase.

2. Smaller systems

A new trend in CT technology is the development of CT systems with an integrated power generator. These machines offer a more cost-effective solution over the course of their lifetime and take up less physical space due to the lack of need for a technical room compared to traditional systems. This development holds significant importance in promoting health equity, as it enhances the accessibility and affordability of CT scans for patients living in underserved or rural communities. Additionally, this technology can benefit facilities in the outpatient setting, which can alleviate some of the backlog being experienced in hospital radiology departments. Notably, the introduction of smaller, air-cooled systems, like the Siemens Pro.Pulse, has simplified the installation process by eliminating the need for expensive structural modifications. This innovation not only reduces the financial burden on healthcare facilities but also facilitates the provision of high quality, dual source CT imaging services to a wider population.

3. Staffing shortages

The shortage of skilled cardiac CT technologists poses a significant challenge in providing patients with access to high-quality imaging. The demand for these professionals has been growing, but the supply hasn't kept up.[2] This shortage can be attributed to the specialized training and experience required for accurate cardiac CT scans. To solve this problem, healthcare organizations and educational institutions need to work together. The importance around developing a comprehensive training program and incentives to attract and retain technologists in areas where there's a shortage should be a top priority. By addressing this issue, healthcare facilities can improve their ability to provide accurate and timely cardiac CT imaging. This leads to better patient outcomes and increased access to quality care.[2]

4. Software applications and technology for new technologists in cardiac CT imaging

There are new and evolving operational applications and software to support cardiac CT. These applications can be used to optimize workflow, reduce radiation dose, assist with image reconstruction or to identify specific features on an image. As the CT-first protocol for evaluation of patients with stable chest pain gains in popularity, providers are going to need to lean into use of these applications to reduce technologist and radiologist fatigue.

Additional ways technology and software can improve care:

- Simplifies the process of performing a cardiac CT. This allows clinicians to focus on the patient and ensure consistent, high-quality images without having to remember each manual step in the examination process.
- Assists in the identification and measurement of plaques in the heart. This software can accurately detect and quantify atherosclerotic plaques in the coronary arteries, providing valuable information for assessing the risk of coronary artery disease.
- Visualizes cardiac structures in 2D or 3D to help radiologists better understand the anatomy of the heart and to identify abnormalities. Three-dimensional visualization can also help surgeons plan surgical procedures, such as coronary artery bypass grafting.
- Creates annotated images and videos of the cardiac structures. These can be shared with other physicians to aid in diagnosis and treatment decisions.

The rise of cardiac imaging in other modalities: MRI and ultrasound

In addition to improvements in CT scans, there have been significant advancement in magnetic resonance imaging (MRI) and ultrasound. Each modality offers unique advantages and plays a crucial role in the assessment of various cardiac structures and functions.

Cardiac imaging modality comparisons

Modality	Assessment role	Advantages
MRI	Visualization of heart and surrounding anatomy	• Lack of ionizing radiation • Exceptional soft tissue contrast
Ultrasound	Sound waves to generate real-time images of the heart	• Widely accessible • Cost effective

MRI, with its exceptional soft tissue contrast and lack of ionizing radiation, provides unparalleled visualization of the heart and its surrounding anatomy. Cardiac MRI excels in evaluating cardiac function, including ventricular volumes and ejection fraction, as well as detecting abnormalities such as myocardial scarring, inflammation and valvular diseases. Furthermore, MRI offers unique insights into tissue characterization, allowing clinicians to differentiate between different types of myocardial diseases. In recent years, suppliers have made advancements in the speed of image acquisition. This, combined with artificial intelligence (AI) or deep learning algorithms, enables systems to not only achieve a higher signal-to-noise ratio but also provides the ability to reconstruct sharper, more accurate images. Additional advances include highly automated tools that can perform a comprehensive cardiac MRI examination in under 30 minutes. This is about one-third of the time it takes with traditional scanning methods.[4]

Ultrasound, a widely accessible and cost-effective imaging modality, uses sound waves to generate real-time images of the heart. Its notable strength lies in its ability to assess cardiac structures and functions in motion. However, despite its broad availability, there remains a shortage of skilled echo technologists, particularly those trained in complex scans. Therefore, organizations should focus on establishing pipelines for recruitment and training to address this gap. While AI holds promise in expanding access to ultrasound for more patients, it still requires a workforce to support its implementation. This is especially crucial as new interventional procedures using transesophageal echo (TEE) continue to emerge. In addition, there have been advancements in the cardiac field, such as fusion imaging. This technique combines CT or MRI images with echocardiography to help with planning and guiding procedures.[5]

Conclusion

As technology advances and clinical expertise deepens, cardiac imaging will play an increasingly significant role in diagnosing, treating and monitoring cardiovascular conditions. By integrating the latest cardiac imaging technologies, along with artificial intelligence and machine learning algorithms, the value of cardiac care will be further enhanced, leading to improved patient outcomes. However, the shortage of skilled cardiac CT technologists remains a challenge. To address this, it's important to adopt advanced technology, comprehensive training programs and incentives to attract and retain professionals in underserved areas.

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Sustainable imaging: pioneering environmental responsibility in radiology

Climate change has far-reaching impacts on healthcare, affecting both physical and mental health as well as the healthcare system itself. More frequent and extreme weather events, such as heatwaves, storms and wildfires, put people's health and safety at risk, causing injuries, illnesses and even death. Climate change also exacerbates air pollution, which can result in respiratory and cardiovascular diseases. It contributes to the spread of infectious diseases and can lead to food and waterborne illnesses.[1]

Furthermore, climate change disproportionately affects vulnerable populations, deepening existing health inequities.[2] Climate change can lead to shortages of medical supplies, power outages and damage to healthcare facilities, making it more difficult to deliver care effectively.[3] In a national survey of 1,001 clinicians, about four out of five clinicians (79%) said their hospitals should be engaged in climate change and they feel it's tied to their overall mission.[4]

As the healthcare industry tries to be more environmentally friendly, radiology departments are being encouraged to adopt sustainable practices. This includes using less energy and water, using biodegradable materials and reducing waste. Sustainable radiology, also known as green radiology, is a key area in healthcare where providers can work together to make a positive impact. There's growing recognition of the importance of environmentally friendly practices in healthcare, and medical imaging has a large environmental footprint. Magnetic resonance imaging (MRI) and CT scanners produce a large amount of carbon emissions and up to 4% of a hospital's total energy.[5]

Beginning with energy efficiency management

Energy efficiency is a critical aspect of green radiology. This involves the use of advanced diagnostic technologies that consume less power, as well as optimizing the energy usage of imaging facilities. Also, using energy management systems and switching to renewable energy sources such as solar power can greatly reduce the carbon footprint of radiology operations. Strategies to reduce energy use include:

- Energy reduction measures: schedule non-critical medical imaging equipment (MIE) auxiliary system loads like screens and lights to turn off during unoccupied hours and find significant energy savings.
- Equipment upgrades: newer MIE units are known for efficient energy consumption and improved imaging quality and can bring reduced energy consumption and operational costs.
- Standby mode management: changing MIE from idle mode to off or low-power mode when the standby or idle functionality isn't needed can also lead to energy savings.
- Metering studies: identifying opportunities to measure and reduce MIE energy consumption through metering studies can help in understanding and managing energy use more effectively.

Powering our facilities: integrating renewable energy sources into healthcare facilities

Integrating renewable energy sources into healthcare facilities can significantly reduce their environmental impact and contribute to combating climate change. By using solar power, wind energy and other renewable sources, healthcare facilities can rely less on fossil fuels. This helps to reduce carbon emissions and leads to a greener operational footprint. The transition not only helps in reducing the environmental impact but also fosters innovations in medical technologies, ensures uninterrupted power supply and can lead to cost savings.[6] Furthermore, using renewable energy sources in healthcare facilities has been shown to improve public health. It reduces air pollution, benefiting both patients and healthcare workers. Using sustainable energy solutions in healthcare can make the community healthier by improving air quality. It also helps to lower healthcare costs and create jobs, which boosts the economy.[7]

Drawing from collaborative partnerships with suppliers

Companies like GE Healthcare, Philips Healthcare and Siemens Healthineers are working hard to be more sustainable. They are taking steps to reduce greenhouse gas emissions, creating imaging equipment that's healthier for the environment and making their operations more energy efficient. These initiatives include implementing energy efficiency measures to reduce the carbon footprint and cost savings and adopting sustainable practices in the delivery of care.

Philips Healthcare and Vanderbilt University Medical Center (VUMC) are working together to find alternative ways to do business. They are exploring circular business models, to make imaging systems more affordable and reduce their impact on the environment. Their efforts have resulted in cost savings and environmental benefits. They've reduced the cost of owning imaging systems by up to 23% and cut carbon emissions by 17% for magnetic resonance (MR) systems. Additionally, they've achieved nearly a one-third reduction in carbon emissions for CT systems.[8]

The University of California, San Francisco (UCSF) and Siemens Healthineers are working together to track how much energy imaging devices use. Their goal is to create imaging services that don't harm the environment and to explore the use of low-field MRI imaging. Moreover, the company is dedicated to continuously enhancing the environmental performance of its products and encourages feedback and collaboration to achieve this goal.[9]

Leading sustainability with high-impact leadership

It's important for healthcare to address its environmental footprint not only to minimize its contribution to climate change but also to promote public health, reduce healthcare costs and demonstrate a commitment to environmental responsibility. By working together, healthcare facilities and their partners can drive meaningful progress toward a more sustainable and resilient healthcare system. The following approaches can help address challenges and facilitate the adoption of eco-friendly practices in radiology:

- Leadership and staff engagement — strong leadership and staff engagement are essential to driving the transition to sustainable radiology. Leaders can promote a culture of environmental responsibility and provide the necessary support and resources for staff to embrace green practices.
- Addressing misconceptions and resistance to change—it's important to address misconceptions regarding infectious risk and negative staff attitudes that may hinder the adoption of sustainable technology. Education, training and open communication can help overcome resistance to change.[10]
- Financial considerations—upfront costs of sustainable technology can be substantial. However, healthcare facilities can investigate funding opportunities, like federal climate funding, tax credits for renewable energy projects and energy efficiency incentives. These opportunities can help offset the upfront costs and make sustainable technology more affordable.
- Regulatory support—advocating for regulatory provisions that prioritize sustainability alongside diagnostic accuracy and patient safety can help create an enabling environment for the adoption of more eco-friendly practices in radiology.
- Collaborative partnerships — healthcare facilities can collaborate with industry leaders like GE HealthCare, Philips Healthcare and Siemens Healthineers, to assist with their sustainability efforts. These partnerships provide access to expertise, resources and innovative solutions that can make their radiology practices more environmentally friendly.

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Revolutionizing radiology: how AI and cutting-edge technology enhance efficiency, job satisfaction and patient care

Given the ongoing labor challenges in healthcare, it is now more important than ever to find ways to work more efficiently, simplify processes and increase job satisfaction. As healthcare systems deal with staff shortages and growing demands, it's crucial to have efficient workflows. By using strategies to work smarter and faster, healthcare organizations can better handle their workload, reduce burnout and strengthen their team.

Improving job satisfaction, is crucial for attracting and retaining skilled professionals. This creates a positive work environment, which is essential for providing high-quality patient care. In this climate of ongoing staffing issues, the pursuit of operational excellence not only benefits healthcare providers but also directly impacts the well-being and outcomes of the individuals relying on the healthcare system.

Remote scanning tools like Siemens Healthineers' Virtual Cockpit, Philips' Radiology Operations Command Center (ROCC) and GE HealthCare's Digital Expert Access allow healthcare professionals to provide real-time assistance and expertise for CT and magnetic resonance (MR) imaging. [1,2,3] With these technologies, a clinician guides and supervises the patient, while a virtual imaging specialist with advanced imaging skills, helps through text, talk, screen sharing or video stream. Phillips' Collaboration Live and GE HealthCare's Digital Expert Connect is the virtual collaboration solution for ultrasound. These collaborative approaches improve patient care by aiding in the elimination of barriers that hinder access. Real-time screen sharing, instant messaging, teleconferencing and online chats allow clinicians to confidently deliver efficient patient care anytime, anywhere.

Not only do remote scanning and collaboration tools improve access to care, help with training, protocol management and collaboration, but they also emerge as a strategic solution to address temporary staffing issues, enhance job satisfaction and achieve a better work-life balance within the field. In the face of fluctuating staff availability, these technologies enable healthcare organizations to provide around-the-clock assistance. Using technology for continuous patient care offers radiology professionals the flexibility to work remotely, mitigating the impact of temporary staffing shortages.

Remote scanning and virtual collaboration make it easier for clinicians to connect with colleagues, seek second opinions and make decisions together. [5]

Patient safety is of utmost importance in medical imaging. However, technologists oftentimes must take their eyes off patients to complete tasks during exams, compromising safety. To address this issue, manufacturers have developed patient live-streaming video and camera technology. This technology allows healthcare providers to monitor patients even when they aren't in the same room, ensuring continuous observation and reducing the risk of adverse events. By keeping a constant eye on the patient, rejection rates, due to patient positioning errors, can be significantly reduced. Additionally, using virtual collimation to limit the radiation exposure to the area of interest and precise isocenter positioning for CT scans can help reduce radiation exposure, making it safer for patients. Furthermore, using live-streaming video and camera technology for patients can speed up exam time and make sure that the correct body part is being scanned, making the process more efficient and accurate.

Traditionally, most imaging equipment has been in fixed and dedicated rooms, limiting accessibility and flexibility. However, the introduction of portable CT and MR scanners has revolutionized the field. By using these portable systems, healthcare providers can perform imaging studies right at the patient's bedside or in remote locations. This mobility facilitates patient care by bringing imaging services closer to the point of care, thereby minimizing the necessity for patient transfers and enhancing diagnostic precision. The use of portable systems can be cost-effective due to their ability to optimize resource utilization. Traditional imaging rooms may encounter periods of inactivity while awaiting critical patients. Portable systems can be quickly setup to manage urgent cases without disrupting the regular operations of the main imaging suite. Additionally, movable equipment provides cost-effective solutions for healthcare facilities facing constraints in space and resources.

Artificial intelligence (AI) is changing how medical imaging works by using advanced algorithms to analyze large amounts of data, enabling quicker and more accurate diagnostics and augmenting the capabilities of healthcare professionals. The Siemens Healthineers myExam Companion is an AI-powered software that guides technologists through exams and post-processing. By providing step-by-step instructions and automating certain tasks, this technology reduces exam time and increases productivity. Integrating artificial intelligence algorithms into point-of care ultrasound devices enables real-time image analysis, aiding clinicians in rapid and accurate decision-making at the patient's bedside. These advancements not only improve the quality of point-of-care diagnostics, but also empower healthcare providers to deliver more personalized and timely care. [4] GE Healthcare's acquisition of Caption Health led to clinicians in acquiring cardiac diagnostic imaging and obtaining preliminary diagnoses using AI algorithms. This technology expands access to care and addresses staffing issues by empowering novice users and aiding physicians in interpretation.

The integration of AI and innovative technologies in radiology has ushered in a new era of efficiency, job satisfaction and patient care. These advancements empower clinicians to streamline diagnostic processes, making the best use of their expertise while minimizing delays. Being able to assess images remotely and use portable equipment not only gives healthcare professionals more flexibility but also makes their work environment more versatile and dynamic, leading to increase job satisfaction. In the end, patients benefit from faster diagnoses and personalized care, which represents a notable change toward a more efficient and patient-centric approach in radiology.

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Alzheimer's disease: exploring the latest trends in diagnosis and treatment

As the population ages, the prevalence of neurodegenerative disorders, such as Alzheimer's disease, continues to grow, making it a significant public health concern. Recent advancements have emerged in the field, promising progress in diagnosis, treatment and reimbursement. This article explores how advancements in therapy affect diagnostic reimbursement, the emergence of blood-based biomarker tests, the potential role of artificial intelligence (AI) in detecting Alzheimer's disease and what the future holds for treatment.

Understanding Alzheimer's disease

Alzheimer's disease (AD) is an irreversible, progressive neurodegenerative disease that has a profound impact on the lives of those it affects. It's the leading cause of dementia among the aging population, accounting for 60–80% of dementia cases and is the sixth leading cause of death in the United States.[1] AD is characterized by a decline in cognitive function, including memory loss, impaired judgment and changes in personality and behavior. As the disease progresses, individuals may experience difficulties with language, problem-solving and spatial orientation, ultimately leading to a complete loss of independence.[2]

Around 6.5 million individuals in the United States and 30–35 million worldwide, are affected by Alzheimer's disease. The number of cases is expected to increase, with projections suggesting it could reach 13.8 million in the U.S. and 150 million globally by 2060. Age is the most significant risk factor for developing AD, with the likelihood of developing the disease increasing with advancing years. Individuals over 65 years of age have an 11% chance of developing AD, while those over 85 years have a 33% risk.[1]

Women are slightly more likely to be diagnosed with AD than men, with a 1.17 times higher prevalence among women compared to men. Moreover, certain ethnicities are disproportionately affected by AD. Hispanic and African American individuals are 1.5 to 2 times more likely to develop AD compared to their White counterparts.

Additionally, lifestyle factors such as smoking, poor diet, lack of exercise and excessive alcohol consumption can contribute to an increased risk of AD. Certain co-occurring medical conditions, including sleep disorders, diabetes, cardiovascular disease and obesity, have also been linked to a higher likelihood of developing AD.

Advancements in therapeutics expand diagnostic reimbursement

The medical landscape is experiencing a surge in therapeutic advancements, particularly in the realm of dementia care. While numerous therapeutic interventions have been explored, the recent approval of lecanemab (Leqembi) by the U.S. Food and Drug Administration (FDA) has sparked renewed hope in the fight against this debilitating condition. Leqembi, a breakthrough antibody intravenous (IV) infusion therapy, holds immense promise in effectively targeting and removing beta-amyloid from the brain, a key pathological hallmark of Alzheimer's disease.[3] In addition to Leqembi, the FDA is expected to grant full approval to Donanemab in 2024.[4] While these therapeutics represent a significant advancement in Alzheimer's treatment, it's important to note they aren't a cure for the disease.

This wave of innovation has fueled a corresponding expansion in diagnostic reimbursement, paving the way for more comprehensive evaluations of progressive neurological disorders. In 2022, the Centers for Medicare & Medicaid Services (CMS) made significant adjustments to its national coverage determination (NCD) for positron emission tomography (PET) scans in dementia and neurodegenerative diseases.[5] This notable change enabled one scan per beneficiary during their lifetime.

In October 2023, the NCD was completely removed, eliminating the one-scan limitation and relinquishing coverage determination decisions to local Medicare administrative contractors. This represents a significant shift in the reimbursement landscape and offers several potential advantages. Firstly, it allows broader access to beta-amyloid PET scans for individuals with suspected dementia or neurodegenerative disease. By removing the one-scan limit, patients can obtain multiple scans during their lifetime, allowing for more comprehensive and accurate diagnosis and monitoring of disease progression. Secondly, it increases the likelihood of early detection of Alzheimer's disease, enabling timely intervention and management strategies. Early diagnosis can help optimize patient care, improve outcomes and potentially slow disease progression.

Thirdly, the elimination of the NCD aligns coverage policies for beta-amyloid PET scans with other diagnostic imaging techniques routinely used in clinical practice. By treating beta-amyloid PET scans similarly to other diagnostic tools, Medicare recognizes the clinical value and necessity in diagnosing Alzheimer's disease. The expanded coverage for beta-amyloid PET scans signifies a positive step forward for patients.

Amyloid imaging: visualizing the hallmarks of Alzheimer's disease

Neuroimaging is a powerful tool that doctors use to look inside the human brain to understand how it works. Among the various neuroimaging techniques, PET scans and amyloid imaging stand out as powerful modalities for visualizing brain activity and detecting the hallmarks of neurological diseases.

Amyloid imaging holds immense significance in the study and diagnosis of AD. This specialized neuroimaging technique uses radioactive tracers to specifically target and visualize the accumulation of amyloid-beta plaques in the brain. These plaques are considered a defining characteristic of AD and are intricately linked to its progression.

The ability to visualize amyloid-beta plaques in the brain has given doctors a unique window into the pathological processes underlying AD. This enables a more accurate diagnosis, empowering healthcare professionals to intervene promptly and potentially slow the progression of the disease. Furthermore, amyloid imaging serves as a valuable tool in monitoring the effectiveness of treatments, providing crucial insights into the response of the brain to various therapeutic interventions.

GE Omni Legend

The Omni Legend PET/CT system is a revolutionary technology that combines ultra-high sensitivity and spatial resolution. It allows for whole-body scans to be completed in just 4 minutes, reducing patient dose, and maintaining image quality. The system also features MotionFree, a deviceless respiratory gating technology, and an AI-powered patient positioning camera system for precise and safe scans. Additionally, the Omni Legend includes CT metal artifact reduction as a standard feature, benefiting patients with metal implants or clips in their brain. Overall, this system offers significant advancements in speed, accuracy and patient comfort in neurology and oncology imaging.

The capability of seeing amyloid beta plaques in the brain has revolutionized the field of AD research. It's facilitated a deeper understanding of the disease's progression, enabling researchers to pinpoint the earliest stages of plaque accumulation and track their spread over time. This knowledge has paved the way for the development of targeted therapies aimed at combating the disease at its root cause, offering hope to millions of patients and their families.

This advanced technology is changing how doctors diagnose and treat AD. It helps them do a better job of managing the condition, leading to more accurate and effective treatments. Ultimately, it improves the lives of people affected by this terrible disease.

Promising areas for future research and development

Neuroimaging plays a crucial role in early diagnosis and treatment monitoring of neurological diseases, including Alzheimer's. Future directions in neuroimaging include the development of more sensitive tracers, advancements in imaging techniques, integration with other modalities and computational methods for data analysis. These advancements have the potential to revolutionize our understanding and treatment of neurological diseases.

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SUPPLIER-CONTRIBUTED ARTICLE
Philips

Innovating for more accessible care

Innovating for more accessible care

Healthcare is a fundamental human right. As humans, it's all but inevitable that we'll suffer injury or illness and at some point and need professional care. For many, access to healthcare and treatment isn't a concern. However, more than half of the global population doesn't have access to essential health services. The right to healthcare for all people means that everyone should have access to the health services they need, regardless of financial status or location.

In the delivery of healthcare, it's not just new medicines or more devices that are needed to improve the lives of those in underserved communities. It's innovative and expanded approaches to care. The use of digital technology in healthcare, with a strategic and inclusive approach, can help reduce inequalities and improve access to healthcare for all.

Health technology innovation and the mobility of care

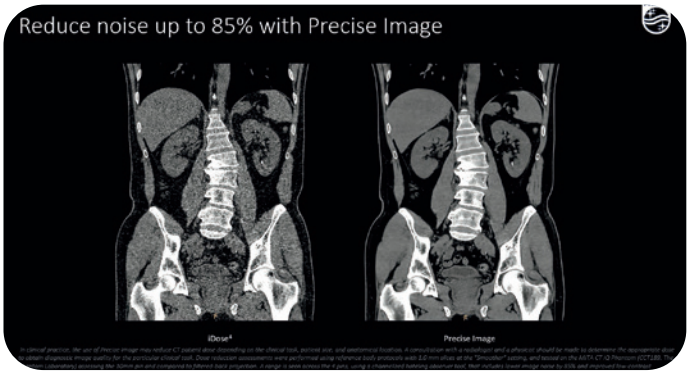
Innovations in technology and digital connectivity help people play a more active role in the management of their own health and can help optimize care delivery along the continuum. They also help reach patients in rural and other underserved communities, providing, for example, the opportunity for mobile cancer screenings, remote ultrasounds and teleconsultations.

Using health technology to expand access to care has two major components: meaningful innovation and impactful location.

First, we need to create sustainable solutions that use advanced technology like artificial intelligence (AI) to make better decisions and work more efficiently. By combining the power of AI with deep clinical knowledge, Philips' technology can bring predictability to an unpredictable world and enhance the human experience in healthcare.

The second component requires expanding patients' access to these mobile technologies by reaching people where they are, particularly those lacking access to care within their communities. Setting specific targets in these areas helps to make sure that we make a meaningful impact where care is needed.

Meaningful integration of AI into Philips CT scanners



At Philips, we believe in working collaboratively with industry partners to break down boundaries, deliver quality care to more patients in many places around the world. In imaging specifically, that means connecting data, technology and people in a seamless, meaningful fashion. To achieve this, we've equipped our CT 5100 Scanners with our latest innovations, including the Philips CT Smart Workflow with AI-enabled tools. These tools help to increase speed, consistency and deliver greater diagnostic confidence.

Some of these many AI-powered features include reconstruction of Precise Image for improved confidence at lower dose levels, and Precise Cardiac, an automatic technique designed to improve high heart rate cardiac imaging by compensating for cardiac motion.

However, AI is only as strong as the human experience it supports. This is our guiding principle in the innovation of machine learning and the reason we strive to help bring CT machines equipped with AI to areas that need imaging the most.

Over the past several years, we've identified underserved communities across the world that lack care and developed strategies that put Philips' innovative, AI-driven health technology on the road and in the hands of more communities.

A mobile mission for life-saving cancer screenings

Early detection is huge in the fight against cancer, particularly lung cancer. Unfortunately, in the United States, only 6% of people who are at high risk for lung cancer are being screened for it, according to the American Lung Association.[1] As well, certain pockets of the nation experience incidence of lung cancer at a much higher rate than others. This was the case in Buffalo, NY, which has about a 35% higher rate of lung cancer compared to the rest of the state.[2]

To combat these statistics, Philips teamed up with a local healthcare system to bring mobile lung cancer screening to at-risk populations in the region. They launched Eddy — "Early Detection Driven to You" – a lung cancer screening clinic on wheels.

Local firefighters were one of the first to sign up for the Project Eddy screening program in 2022. Due to increased exposure to carcinogens, such as asbestos fibers and radon gas, firefighters are 60% more likely to develop lung cancer than the general population.[3]

Project Eddy continues to bring screenings directly into the community, so that eligible individuals can get the care they need in a convenient and timely manner. They focus on reaching populations that have limited access to medical services and come from diverse backgrounds.

The Project Eddy mobile screening trucks have special imaging equipment, including the latest Philips Incisive CT. This is the only mobile truck of its kind in the country.

Australia's hospital on wheels

Addressing lung cancer and other health disparities sometimes means reaching underserved communities in some of the most remote locations in the world. For example, miners and their immediate families in isolated locations of the Australian outback have a higher incidence of lung cancer than the rest of the country.[4]

The Australian outback has rough terrain and remote living areas where miners and their families live. These locations lack a stable electricity supply, making it challenging for medical service providers to reach them.

Philips' engineering team helped the region's health service provider by designing the world's first solar and battery-powered low-dose CT scanner. They also created special housing, in a ruggedized 26-meter B-double truck, for the scanner to make it possible to reach remote and unforgiving landscapes of the outback.

In its first year, the mobile CT unit provided medical consultations to over 2,500 patients, conducted more than 2,500 X-rays, performed more than 500 CT scans and diagnosed 159 cases of respiratory disease.

Sustainability meets mobility

For people to be truly healthy, they need a healthy world to live in. Climate change and biodiversity loss threaten the lives and livelihoods of hundreds of millions of people around the world. The healthcare sector alone is responsible for as much as 4.6% of total greenhouse gas (GHG) emissions worldwide.[5] One of the largest emitters of carbon in healthcare comes from magnetic resonance imaging (MRI) systems.[6]

In response, Philips developed the world's first mobile MRI system with helium-free operations. BlueSeal MR Mobile is a carefully designed and sustainable MRI unit rolling on eight wheels.

The truck's MRI system is equipped with a Philip's BlueSeal 1.5 trillion fully sealed magnet, which, unlike traditional non-sealed magnets in MRI machines, results in no helium loss.

With more than 1,000 systems installed globally, MRI scanners equipped with BlueSeal magnet technology have saved more than 1.9 million liters of helium since 2018. It's exciting to consider the prospect of bringing this sustainable health technology anywhere the road will lead.

No time to lose

Companies like Philips are addressing this need through innovative solutions like the hospital on wheels and mobile lung care screenings in the effort to deliver long-term value while acting responsibly toward our planet and society. Everyone deserves a healthy life, no matter who they are or where they live. When it comes to making the world healthier and more sustainable, there's simply no time to lose.

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SUPPLIER-CONTRIBUTED ARTICLE

GE HealthCare

A new era in digital oncology

Prostate cancer has long been one of the top two most prevalent malignancies affecting men worldwide. Fortunately, in recent years, significant progress has been made in diagnosing and staging the disease. Advanced imaging has increased understanding of prostate cancer and has changed the way clinicians diagnose tumors, allowing for better outcomes for patients.

The crucial role of detection and precision diagnosis in prostate cancer management cannot be understated. New advancements in diagnostics and imaging techniques like magnetic resonance imaging (MRI) and positron emission tomography (PET) has improved the ability to diagnose the disease and accurately characterize lesions, laying the groundwork for greater personalization in treatment selection for patients.

GE HealthCare is a global medical technology company that works with healthcare providers, medical professionals and others from all over the world. “From my own observations,” says a radiologist in Poland, “the use of MRI for prostate cancer diagnosis is rising. Specifically, using multiparametric MRI allows both morphologic and functional assessment of the prostate gland. It is a highly reliable imaging method to diagnose clinically significant prostate cancers. The method’s capabilities in terms of precision and objectivity are key for us to be able to make better assessment of options for our patients.”

“Years ago, we were not able to accurately visualize prostate cancer tumors, thus our diagnostic capabilities were limited,” explains a urologist from a medical university in Austria. “The introduction of the prostate-specific antigen (PSA) was helpful, but it’s not exactly a tumor marker. It is an organ-specific biomarker, therefore patients with other conditions may also express higher levels of PSA. I was performing brachytherapy treatments when we were relying solely on ultrasound imaging, but really had no ability to localize the lesion. Now, with high-end MRI and even PET advanced imaging, I can see a five mm lesion in a transitional zone of the prostate, helping me to do brachytherapy while minimizing potential adverse effects for my patient.”

Clinical leaders can use the SIGNA PET/MR AIR technology for personalized prognostic treatment selection and planning. By combining anatomical and functional information, it aids in precise diagnosis, therapy choice and monitoring.[1]

The strive to reduce the burden of cancer propels oncologists to embrace novel therapies. Treatments that offer clinical efficiency along with the ability to selectively target tumorous cells are front of mind. Also, the idea for targeted use of radioactive isotopes, which came to life in the late 1930s, when it was successfully used in radioactive iodine treatment of thyroid carcinoma, is opening new opportunities to fight other types of cancer, including prostatic carcinoma.[2]

A new and exciting approach in cancer treatment called Theranostics, combines diagnostic imaging with an assessment of how well a chosen therapy is working. This approach holds great potential for personalized and targeted, management of the disease. This type of medical treatment by radiopharmaceuticals, based on precise evaluation of tumor features, is called radiotheranostics.[3]

To date, radiopharmaceutical therapy agents using Lutetium-177 PSMA (LuPSMA) are approved for use in metastatic prostate cancers, but many others are in the discovery and trials pipeline, with many more molecules choices widely anticipated.[4]

"Radiopharmaceutical therapy is helping improve prostate cancer management," says a radiologist from a medical center in The Netherlands. "We choose this therapy for patients when, based on the information we have about their cancer, we are sure that the treatment will be successful. As we continue to improve treatment strategies for prostate cancer patients, the importance of evidence for therapy selection and the accuracy offered by dosimetry cannot be underestimated."

"We are standing on the threshold of a new era in oncology, as well as the pivotal moment for radiology, where imaging becomes more than just the tool to see something," says Dr. Ilya Gipp, the Oncology Clinical Leader at GE HealthCare, and a radiologist. "Clinicians expect more than just images – they require objective, actionable data insights to support them in making better decisions. Theranostics, and particularly radiotheranostics in prostate cancer, is the prime example of a connected care approach at its best, where radiologists, nuclear medicine physicians and oncologists are teaming up in delivering greater care to their patients."

While there have been advancements in prostate cancer treatments, especially with these novel therapies showing promising results, the complexity of care management continues to increase. Healthcare providers now need a combination of imaging, pathology, molecular and other data to choose the most effective treatments for each patient. They also must perform an assessment of the therapy to ensure successful outcomes. Healthcare industry partners, such as GE HealthCare, recognize the impact that improving the coordination of prostate cancer care can have on positive patient outcomes. GE HealthCare is working closely with top oncology programs' clinicians toward making prostate cancer care better through the development of advanced new technologies while simplifying the implementation of such concepts as precision medicine and connected care.

Advanced medical imaging technologies and targeted treatments have improved the accuracy of early detection and management of prostate cancer. These innovations have had a transformative impact on how the disease is treated, making it more effective and less invasive. As one example, oncology programs can confidently integrate the Omni Legend PET/CT into their Theranostics programs. Advanced imaging technology is flexible making it easier to diagnose the disease, imaging with short-life tracers and executing dynamic protocols.[5] Through precise characterization of tumors, clinicians are now able to tailor personalized treatments based on the patient's unique disease profile. By helping health systems adopt a more individualized approach to prostate cancer care, outcomes can be improved, side effects minimized and enhanced the quality of life for patients.

The power of medical imaging extends beyond diagnostic use, navigating therapies, monitoring treatment and assessing response. Advanced imaging techniques give clinicians the power to make timely adjustments when needed, which increases the chances of fighting prostate cancer successfully.

***DISCLAIMER**: Not all products or features are available in all geographies. Check with your local GE HealthCare representative for availability in your country.*

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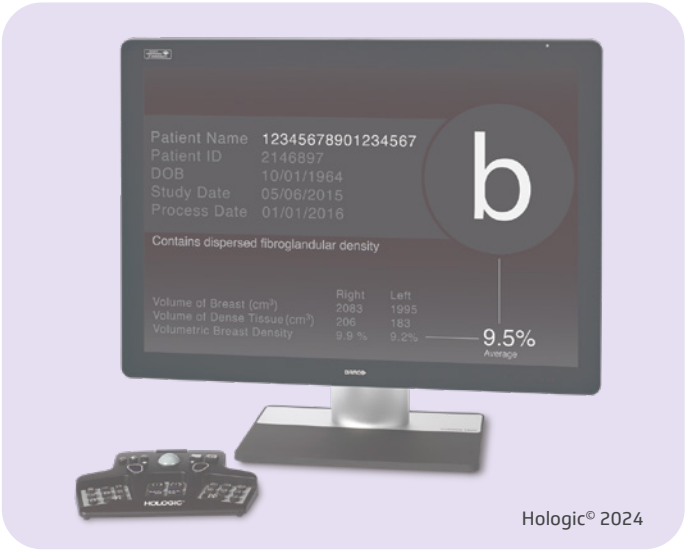
SUPPLIER-CONTRIBUTED ARTICLE

Hologic

Seamlessly adapting to the new Mammography Quality Standards

Women's breasts are composed of a unique mix and pattern of different types of tissue, including fat, milk glands, ducts and fibrous tissue. Women with a higher number of glands and fibrous tissue have what are known as dense breasts. Nearly half of women over the age of 40 have dense breasts. While dense breasts are normal and common, having dense breasts increases the risk of developing breast cancer and increases the risk of missing a cancer using routine mammography.[1] As a result, there are growing efforts to inform women if they have dense breast tissue. Also, women with dense breasts should talk to a healthcare professional to understand if additional imaging beyond mammography is recommended. While many states mandate reporting breast density in some fashion, the specific reporting requirements vary. However, this is set to change.



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On March 10, 2023, the U.S. Food and Drug Administration (FDA) issued a national requirement for dense breast reporting to patients and their referring providers.[2] As this requirement comes into practice, patients must receive a notification stating "not dense" or "dense" included in the written lay summary.[2] This assessment of breast density will classify the patient as one of the following using the BI-RADS (Breast Imaging Reporting and Data System) system:

A. "The breasts are almost entirely fatty"

B. "There are scattered areas of fibroglandular density"

C. "The breasts are heterogeneously dense, which may obscure small masses"

D. "The breasts are extremely dense, which lowers the sensitivity of mammography" [3,4]

Of particular relevance, FDA noted, "... for some patients there may be some degree of variability in the determination of breast density due to interobserver and intraobserver variability"..." there have been advancements in technology (e.g., density classification software devices) that may help mitigate such variability in assessment." [3]

The Mammography Quality Standards Act (MQSA) focuses on providing breast density information to patients. Here are some important solutions that can help radiologists work more efficiently, find invasive cancers and feel more confident in their clinical decisions.

Women of average risk should get an annual 3D mammogram. Mammography is the only way to assess density

Take the guess work out of it

Hologic's Quantra® 2.2 Breast Density Assessment Software enables radiologists to assess breast density quickly and accurately, helping to standardize reporting and optimize the level of care across a practice. The Quantra® 2.2 software uses a software algorithm powered by machine learning that analyzes a patient's breast density. The software is designed to analyze the pattern and texture of the patient's breast tissue and segregate the patient's breast density into four categories. This automation scoring method helps radiologists overcome the fatigue of visually assessing breast density (based on BI-RADS 5th edition), eliminating inter and intra-radiologist variability.

Remove subjectivity by automating breast density assessment in annual mammography exams (based on BI-RADS 5th edition)

Enhance Quality and Efficiency

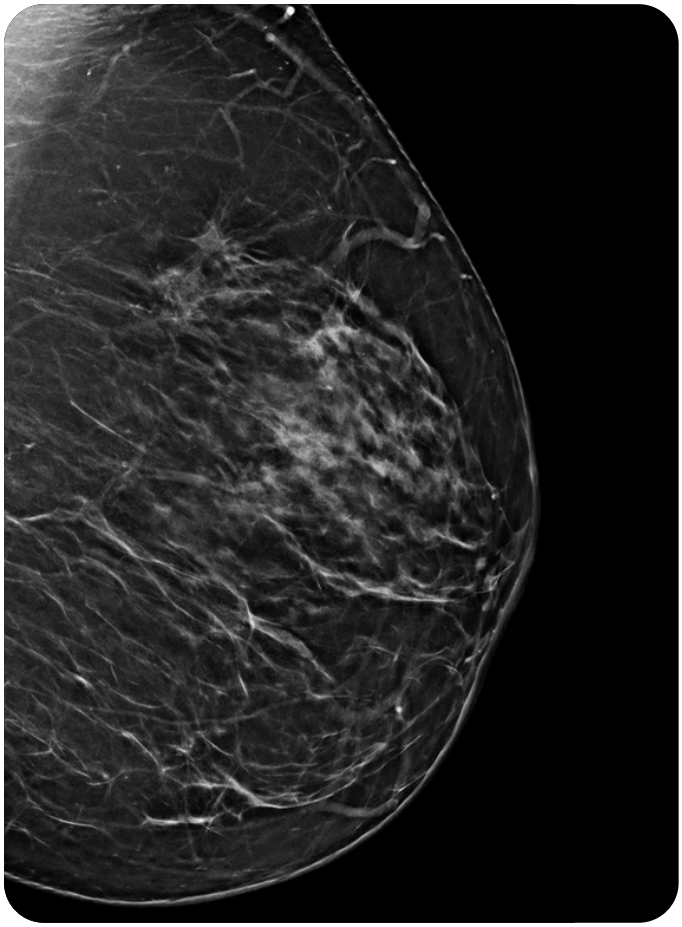
Hologic Clarity HD® Imaging Technology has exceptional speed and high-resolution. Designed to clearly see subtle lesions and fine calcifications to help pinpoint cancers early. The Hologic Clarity HD® Imaging Technology package provides 70-micron high-resolution 3D data that provides sharp, smooth 1 mm tomosynthesis images for increased diagnostic confidence, including in large breasts.[12,13,14,15,16] As noted by MQSA, "poor quality images or inaccurate interpretations can lead to a false positive diagnosis when normal tissue is misinterpreted as abnormal. This could lead to needless anxiety for the patient, costly additional testing, and unnecessary biopsies."[2]

Poor quality images or inaccurate interpretations can lead to a false negative (or positive) diagnosis and needless anxiety for the patient.[2]

Importance of annual 3D Mammography exams

The presence of dense tissue isn't unusual and can change over time. Nearly half of all females eligible for screening have "dense" breast tissue.[4] Annual screening with the 3D Mammography exam plays a critical role in early detection. While dense tissue can make it harder to identify a cancer, studies have shown that the 3D Mammography™ exam is better than 2D mammography for women with dense breasts.[5,6]

The Hologic Genius® 3D MAMMOGRAPHY™ exam is the only mammography system that has FDA approved claims for superior imaging for dense breasts as compared to 2D alone.[6,7] The Genius 3D MAMMOGRAPHY™ exam was designed for a better 3D breast screening experience for everyone—from radiologists and technologists to patients. Breakthrough improvements transform the patient experience without compromising speed or accuracy. These improvements detect 20–65% more invasive breast cancers compared to 2D alone.[5-6,8, 9,10,11] The innovative design of the Genius® 3D MAMMOGRAPHY™ exam is meticulously crafted to enhance diagnostic confidence by capturing fine details with exceptional clarity. Additionally, the system empowers technologists with efficient exam capabilities and allows radiologists to read them faster, making the whole process quicker and smoother. Overall, this accelerates the diagnostic process and contributes to streamlining workflow, advancing the overall efficiency of breast imaging practices.



Source: Image taken from Hologic R&D cases. Copyright @ 2024 Hologic© , Inc. Image on file at Hologic (MRN: RSNA2019, 105_M)

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