



MEDAXIOM
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A ROADMAP TO EXCELLENCE:

IMPLEMENTING SHARED CARDIAC PET SERVICES

MAY 2025



ROADMAP

With Support From:



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INTRODUCTION

Positron emission tomography (PET) and combined PET/computed tomography (PET/CT) imaging have fundamentally transformed diagnostic capabilities in radiology and cardiology. These advanced imaging modalities offer unparalleled insights into various diseases' anatomical and functional aspects, enabling more accurate diagnoses and personalized treatment plans. As healthcare administrators contemplate implementing a shared PET program to provide cardiac PET imaging, it is essential to recognize the synergistic potential of such collaboration. This integration not only enhances patient care but also significantly improves operational efficiency and financial sustainability.

The collaboration between radiology and cardiology through a shared PET program leverages the strengths of both specialties. Radiologists bring expertise in interpreting complex imaging data, while cardiologists contribute their in-depth understanding of cardiovascular physiology and pathology. This multidisciplinary approach ensures comprehensive diagnostic evaluations and optimizes patient management strategies.

A shared PET/CT program between radiology and cardiology departments offers numerous benefits:

- **Operational Efficiency:** Optimal utilization of expensive imaging equipment, reducing idle time and maximizing return on investment.
- **Synergistic Expertise:** Leveraging the unique strengths of both specialties, with radiologists excelling in technological aspects and cardiologists bringing in-depth cardiovascular knowledge.¹
- **Cost Effectiveness:** Sharing resources and increasing scanner utilization can lead to cost savings and improved financial sustainability.²
- **Advanced Research Opportunities:** Fosters interdisciplinary research, potentially leading to innovative diagnostic and treatment approaches.
- **Streamlined Patient Experience:** Patients experience reduced wait times, fewer hospital visits and more comprehensive care in a single imaging session.²

By implementing a shared PET/CT program, healthcare institutions can position themselves at the forefront of advanced cardiac imaging while optimizing resource utilization. This document outlines best practices and provides a roadmap for successfully establishing and scaling such a collaborative initiative, ensuring that radiology and cardiology departments can harness the full potential of PET/CT technology for improved patient outcomes and operational excellence.



ADMINISTRATION POINT OF VIEW

Cardiac PET Shared Services Overview

A shared PET/CT program can be considered a strategic initiative to enhance an institution's diagnostic capabilities and patient care offerings. Before embarking on this journey, there are multifaceted benefits and operational considerations that must be understood. PET/CT imaging combines the metabolic insights of PET with the anatomical detail of CT, offering a powerful diagnostic tool particularly valuable in radiology and cardiology. By integrating these advanced imaging modalities into a shared service, institutions can leverage the strengths of both specialties, optimize resource utilization, and improve financial sustainability.

This section will provide a comprehensive guide to the initial steps, best practices and key considerations for successfully starting and scaling a shared PET/CT program, ensuring that healthcare providers can deliver cutting-edge diagnostic services while maintaining operational efficiency and cost-effectiveness.

Assessing Need and Feasibility

Assessing current imaging capabilities and demand is essential before implementing a shared PET/CT program. This involves evaluating existing infrastructure and utilization rates, as well as analyzing the demand for PET/CT imaging for cardiac and oncologic applications. This assessment will identify gaps and opportunities for improvement, as well as justify the addition of PET/CT capabilities given the growing need for these services.³

Analyzing Potential Volume and Referring Patterns

To ensure the feasibility of a shared PET/CT program, healthcare administrators must analyze potential patient volumes and referring patterns and take the following steps:

- ✓ Examine historical PET/CT scan referrals to project future demand.
- ✓ Analyze referral volumes from cardiology, oncology and other departments.
- ✓ Assess geographic catchment area and competitive landscape to anticipate growth trends.

Conduct a Cost-Benefit Analysis

A comprehensive cost-benefit analysis (see sample form below) will justify the investment in a shared PET/CT program. By weighing these costs and benefits, healthcare administrators can make informed decisions about the financial viability of the shared PET/CT program. This analysis includes the following processes:

- ✓ Analyze direct (e.g. equipment purchase, maintenance, staffing) and indirect costs (e.g., staff training, infrastructure upgrades, installation downtime).
- ✓ Evaluate potential revenue from increased patient volumes, improved diagnostic accuracy and patient outcomes.

Cost Benefit Analysis

This cost-benefit analysis should not replace any clinical decision-making. The information herein does not constitute medical advice; clinical practice recommendations should be made by the clinician or healthcare provider onsite.

COMPANY NAME	DATE CONDUCTED	COMPLETED BY

PROPOSED PRODUCT / INITIATIVE / SERVICE

QUANTITATIVE ANALYSIS

NON-RECURRING COSTS	YEAR 1	YEAR 2	YEAR 3	TOTAL
Hardware				
Servers				
Desktop				
Telecommunication Equipment				
Software (Packaged or Custom)				
Computer Room Upgrades				
Furniture and Fixtures				
Project Organizational/Support Costs				
Planning (upon Approval)				
Procurement				
Contract Negotiations				
Labor				
Infrastructure				
Development				
Business Process Owners (Users)				
Management				
Training of Employees (Pre-Implementation)				
Transition Costs (Parallel Systems)				
Post-Implementation Reviews				
TOTAL NON-RECURRING COSTS				

RECURRING COSTS	YEAR 1	YEAR 2	YEAR 3	TOTAL
Hardware/Software				
Software Maintenance and Upgrades				
Computer Supplies				
Desktops (Incremental to the Project)				
Help Desk Support				
Ongoing Additional Labor				
IT Staff Costs (including Benefits)				
User Training				
Other				
Telecommunications				
Office Leases				
TOTAL RECURRING COSTS				
TOTAL COSTS				



QUANTITATIVE BENEFITS

REVENUES	YEAR 1	YEAR 2	YEAR 3	TOTAL
(Enter Revenue Sources Here)				
TOTAL REVENUES				

COST SAVINGS	YEAR 1	YEAR 2	YEAR 3	TOTAL
Decreased Cost of Services Provided				
Savings from Business Process Improvements				
Productivity Gains				
Savings from Structural Changes				
Savings from Optimized Information (or Flow)				
Decreased Information Publishing Cost				
Reduced Staffing Cost (including Overtime)				
Reduced Staff Turnover Costs				
TOTAL COST SAVINGS				

COST AVOIDANCE	YEAR 1	YEAR 2	YEAR 3	TOTAL
(Enter Cost Avoidance Here)				
TOTAL COST AVOIDANCE				

OTHER BENEFITS	YEAR 1	YEAR 2	YEAR 3	TOTAL
(Enter Other Benefits Here)				
TOTAL OTHER BENEFITS				

TOTAL BENEFITS				
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Certificate of Need (CON) Assessment

Facilities will need to determine if a Certificate of Need (CON) is required in their state prior to initiating a PET/CT program as these regulations can profoundly influence the establishment and operation of these services. CON laws that govern the creation or expansion of healthcare facilities and services vary in scope and intensity from state to state. Several states require healthcare providers to secure approval from state regulatory bodies before acquiring imaging equipment or introducing new services like PET/CT. This typically entails demonstrating a genuine community need for the proposed PET/CT program, considering factors such as population demographics, existing services in the area and potential impact on healthcare costs.

Administrators should be cognizant that these regulations can serve as barriers to opening a program, particularly for independent providers, and may influence where patients seek imaging services. It's essential to thoroughly investigate the specific CON requirements in your state, as they can significantly affect the feasibility, timeline and cost of establishing a new PET/CT program.

To find detailed CON information for a specific state, the most reliable source is typically the state's Department of Health website or the dedicated CON program page within the state government's official online resources.



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Planning and Implementation

Establishing a cardiac PET/CT program within a shared-service radiology department is multifaceted and requires careful planning and execution. It necessitates a strategic approach that encompasses several critical components, including:

1. **Forming a multidisciplinary team** to bring together stakeholders with diverse areas of expertise. Recommended team members include but are not limited to:
 - ✓ Dyad Leaders (A dyad leader is a member of a leadership team that pairs a clinical professional [typically a physician] with an administrative professional to co-lead or co-manage a specific area of responsibility within a healthcare organization). Examples include:
 - Radiology manager for PET/CT.
 - Cardiology imaging manager.
 - Imaging medical directors (radiology and cardiology).
 - ✓ Administration project champion.
 - ✓ Representative familiar with cardiology and radiology exam scheduling.
 - ✓ Electronic health record (EHR) analysts representing radiology and cardiology.
 - ✓ Picture archiving and communication system (PACS) administrator.
 - ✓ Nuclear medicine technologist (NMT) familiar with PET.
 - ✓ Revenue cycle/billing and coding specialist.
 - ✓ Pre-service financial clearance (authorization, insurance verification, co-pay determination) specialist
 - ✓ Project manager (if applicable)
2. **Providing staff training and education** to ensure all team members are proficient in the latest imaging techniques and patient care protocols. This includes PET/CT scanner operation, radiopharmaceutical handling, imaging quality assurance and interpretation, and radiation safety protocols.
3. **Selecting appropriate PET/CT equipment** that delivers high-quality diagnostic images, including facility design and construction considerations to accommodate the specific needs of a PET/CT suite, such as radiation safety and patient comfort.
 - ✓ Cardiac PET/CT requires additional needs for hardware and software beyond radiology PET/CT studies.
 - ✓ The cardiology team should have a seat at the decision table and be prepared to know what is offered and needed.
 - ✓ A shared PET/CT camera should be equipped with the appropriate hardware/software to meet both radiology and cardiology exam needs (i.e., gating hardware, post processing software, etc.).
4. **Developing comprehensive protocols, workflows, and schedules** to streamline operations and optimize patient throughput. This includes navigating regulatory and licensing considerations to ensure compliance with industry standards and legal requirements.
5. **Marketing and patient outreach efforts** to build awareness and encouraging patient engagement with the new service. A “build it and they will come” philosophy is not necessarily effective. A structured, targeted strategy should be developed and implemented for ordering providers. A decision guide can assist providers outside of cardiology in ordering PET/CT testing.

Operational Considerations

While a shared PET/CT service brings several advantages, there are unique operational aspects to be considered. Overlooking these factors can result in workflow disruptions, underutilization of expensive equipment, and potential conflicts between departments. To maximize the benefits of a PET/CT investment and minimize potential pitfalls, the areas in **Table 1** require careful planning and coordination when implementing a shared PET/CT service.

Table 1: Implementing a Shared PET/CT Service

Area of Focus	Key Steps
<p>Scheduling and Patient Management</p>	<ul style="list-style-type: none"> ✓ Developing an efficient scheduling system is crucial for maximizing scanner utilization while accommodating both cardiac and oncology/neurology patients. ✓ Implement a block scheduling approach, allocating specific time slots for cardiac studies) and oncology scans. ✓ Use scheduling software that allows both departments to view and book appointments with clear protocols for priority cases. ✓ Establish a centralized patient preparation area to streamline pre-scan processes, including intravenous (IV) placement, blood glucose monitoring for fludeoxyglucose (FDG) studies and patient education. ✓ Implement a robust system for managing contrast allergies and renal function screening across both patient populations. ✓ Consider extended hours of operation to improve access and reduce wait times, potentially offering evening or weekend slots for outpatients.
<p>Radiopharmaceutical Supply and Management</p>	<ul style="list-style-type: none"> ✓ Ensure a reliable supply of cardiac PET tracers. Oncology scans primarily use FDG but may require other specialized tracers. ✓ Evaluate the logistics of on-site radiopharmacy capabilities versus external suppliers, considering factors such as tracer half-lives, delivery schedules and back-up sources. ✓ Implement a comprehensive inventory management system to track usage, minimize waste and ensure compliance with radiation safety regulations. ✓ Develop clear protocols for dose preparation, quality control and administration that can be followed by both cardiology and radiology staff. ✓ Consider the potential for future expansion into novel tracers and plan accordingly for storage, handling and disposal requirements.

<p>Quality Control and Image Interpretation</p>	<ul style="list-style-type: none"> ✓ Establish a rigorous quality control program that addresses the unique requirements of both cardiac and oncology imaging. This includes daily scanner calibration, regular phantom studies and ongoing assessment of image quality metrics. ✓ Develop standardized imaging protocols for cardiac and oncology studies to ensure consistency and facilitate accurate interpretation. ✓ Implement a peer review process for image interpretation, involving both cardiologists and radiologists to leverage their respective expertise. ✓ Consider investing in advanced post-processing software that can handle both cardiac quantification (e.g., myocardial blood flow, coronary flow reserve) and oncology applications (e.g., standardized uptake volume [SUV] measurements, tumor segmentation). ✓ Establish clear guidelines for handling incidental findings on cardiac scans and cardiac findings on oncology scans to ensure appropriate follow-up.
<p>Communication</p>	<ul style="list-style-type: none"> ✓ Schedule regular interdepartmental meetings to discuss operational issues, review complex cases, and stay updated on the latest developments in PET imaging. Collaboration between cardiology and radiology is essential for success. ✓ Consider implementing a joint reading space (physically or virtually) where cardiologists and radiologists can collaborate on challenging cases. ✓ Develop a unified reporting structure that incorporates input from both specialties when appropriate. ✓ Establish a continuous education program to keep staff from both departments current on advancements in PET/CT technology and clinical applications, fostering a culture of collaboration and mutual learning.
<p>Organizational Chart</p>	<ul style="list-style-type: none"> ✓ Establish an organizational structure that facilitates collaboration between cardiology and radiology departments. Design a reporting structure for staff that ensures accountability to both specialties, promoting effective communication and joint decision-making.



Financial Considerations

When planning a shared PET/CT program between cardiology and radiology departments, healthcare administrators need to thoroughly assess the financial landscape. The initial investment for a PET/CT scanner is significant, with new systems costing between \$1 to 3 million. While refurbished systems are available at a lower price, they may pose risks related to servicing and parts availability. Beyond acquiring the scanner, budgeting for facility modifications is equally important. This includes constructing or renovating a room with the necessary shielding, which can add considerably to upfront expenses. Additionally, annual maintenance contracts for PET/CT systems typically cost 10 to 12% of the equipment price.⁴

Reimbursement and billing strategies are pivotal for the financial viability of a shared PET/CT program. Medicare reimbursement for PET scans vary per study, and site of care private payor rates may differ, making it essential to negotiate favorable contracts that include new radiopharmaceutical agents with major insurers. To maximize reimbursement, it is vital to develop proper clinical documentation on why the PET is needed over SPECT and pre-authorization. Implementing a robust system for capturing clinical information from referring physicians can enhance billing efficiency and reduce claim denials.

Administrators should develop tactics to optimize scanner utilization and expand referral networks to foster program growth and sustainability.

TACTICS TO OPTIMIZE SCANNER UTILIZATION AND EXPAND REFERRAL NETWORKS

- Collaborating with oncology departments can increase PET/CT use in cancer staging and treatment monitoring, complementing cardiac applications.
- Building relationships with nearby hospitals or imaging centers lacking PET/CT capabilities can generate additional referral streams.
- Offering extended hours or weekend appointments can improve accessibility and boost scanner utilization.
- Monitoring key performance indicators such as scan volumes, reimbursement rates and operational costs can help identify areas for improvement.
- Investing in ongoing education and marketing efforts to raise awareness among referring physicians about the benefits of PET/CT imaging.



Scaling an Existing Program

There are several factors to consider for organizations with established shared PET/CT services between cardiac and radiology services looking to expand (Table 2).

Table 2: Scaling an Established Shared PET/CT Program

Areas of Focus	Key Steps
<p>Existing Program Analysis</p>	<ul style="list-style-type: none"> ✓ Review utilization rates, wait times, and referral patterns to identify bottlenecks and unmet demand. ✓ Analyze patient demographics and referring physician specialties to uncover potential growth areas. ✓ Assess staff workload and equipment uptime to determine if current resources are optimized. ✓ Implement scheduling software to track these metrics in real-time, allowing for data-driven decision-making
<p>Budget and Capital Investments</p>	<ul style="list-style-type: none"> ✓ Upgrade to a newer generation PET/CT scanner with improved resolution and faster acquisition times. ✓ Budget for facility renovations to accommodate increased patient volume, such as expanding waiting areas or adding changing rooms. ✓ Factor in costs for additional workstations and software licenses for image analysis. ✓ Exploring leasing options or phased implementation of new equipment to assist in managing cash flow. ✓ Consider partnering with equipment vendors for training and support packages, to optimize the use of new technology and potentially reduce long-term maintenance costs.
<p>Reimbursement and Billing Considerations</p>	<ul style="list-style-type: none"> ✓ Implement a robust pre-authorization clinical documentation process on patient medical necessity to reduce claim denials.⁴ ✓ Ensure your existing payor contracts are updated to include all radiopharmaceutical agents in your program to avoid denials.⁴ ✓ Consider hiring or training dedicated staff for PET/CT billing to ensure accurate coding and maximum accurate reimbursement seek manufacturer support and coding resources.⁴ ✓ Consider reaching out to the manufacturer for coding and authorization support services.⁴ ✓ Stay informed about changes in reimbursement rates for both cardiac and oncologic PET/CT studies, as these can vary significantly.⁴ ✓ Develop strategies to capture additional billable services.⁴ ✓ Conduct regular billing practices audits to identify areas for improvement and ensure compliance with evolving regulations.⁴

<p>Expand Service Offerings</p>	<ul style="list-style-type: none"> ✓ Collaborate with oncology departments to increase utilization for cancer staging and treatment monitoring. ✓ Explore opportunities to participate in clinical trials, which can provide additional revenue streams and establish your program as a leader in advanced imaging.
<p>Increase Operational Efficiency</p>	<ul style="list-style-type: none"> ✓ Implement lean processes to reduce patient turnaround times and increase scanner utilization. ✓ Consider offering extended hours or weekend appointments to improve accessibility and increase scanner utilization. ✓ Invest in staff training to ensure efficient operation of new equipment and software.
<p>Enhance Collaboration and Networking</p>	<ul style="list-style-type: none"> ✓ Develop outreach programs to educate referring physicians about the benefits of PET/CT imaging, particularly in complex cardiac cases. ✓ Establish relationships with nearby hospitals or imaging centers that lack PET/CT capabilities to create additional referral streams. ✓ Foster collaboration between cardiology and radiology departments through regular joint conferences and shared reading sessions.
<p>Ensuring Financial Sustainability</p>	<ul style="list-style-type: none"> ✓ Benchmark program performance against national standards and peer institutions. ✓ Develop a comprehensive financial model that accounts for all costs, including equipment depreciation, maintenance and staffing. ✓ Consider implementing a patient financial counseling service to help manage out-of-pocket costs and improve collection rates. ✓ Explore innovative payment models, such as bundled payments or risk-sharing agreements with payors.



NUCLEAR MEDICINE TECHNOLOGIST POINT OF VIEW

NMTs play a crucial role in the success of a shared PET/CT program between cardiology and radiology departments. As primary operators of the imaging equipment and key providers of patient care during scans, NMTs must possess a unique blend of technical expertise, clinical knowledge and interdisciplinary communication skills. This section explores essential considerations for NMTs involved in a shared PET/CT service, covering a range of topics from training and certification requirements to the intricacies of managing diverse imaging protocols and radiopharmaceuticals.

By thoroughly understanding these aspects, NMTs can significantly enhance a program's efficiency, image quality and overall success. This section also offers comprehensive guidance on key areas that NMTs must navigate when establishing or operating within a shared cardiac and oncologic PET/CT imaging environment.

Training, Certification and State Requirements

NMTs working in a shared PET/CT program must possess specialized cardiac and oncologic imaging knowledge. While many NMTs may have experience in general nuclear medicine or nuclear cardiology, additional training in PET/CT procedures is often necessary to gain an understanding of PET physics, instrumentation and clinical applications.

Certification requirements may vary, but most facilities require NMTs to hold certification from either the Nuclear Medicine Technology Certification Board (NMTCB) or the American Registry of Radiologic Technologists (ARRT) in nuclear medicine. Additionally, technologists can consider obtaining post-primary PET specialty certification from the NMTCB, which requires documented clinical experience and completion of specific didactic coursework. State licensure requirements for NMTs vary, so technologists must ensure they meet all local regulations for practicing in both nuclear medicine and PET/CT.

The requirements for NMTs to perform CT imaging vary significantly from state to state. In general, many states require NMTs to hold additional certification or licensure specifically for CT imaging beyond their primary nuclear medicine credentials. For example, some states mandate that nuclear medicine technologists pass the ARRT CT examination or the NMTCB CT examination to be eligible to operate CT scanners. Other states may require completion of documented CT clinical hours or specific CT education courses. Some states, like California, have implemented a "fusion imaging" license that allows NMTs to perform CT for attenuation correction and anatomical localization in hybrid imaging, but not diagnostic CT. Conversely, states like Connecticut allow certified NMTs to fully operate the CT portion of hybrid imaging systems without additional certification, provided they have completed appropriate training as defined by their supervising physician. Given the variability in requirements, it's crucial for NMTs to carefully review their state's specific regulations and licensing board requirements before performing CT imaging, as non-compliance could result in legal and professional consequences.

Facility and Equipment Considerations

Involving technologists in facility planning helps to anticipate optimal workflow and patient safety. The PET/CT suite should be designed with both cardiac and oncologic imaging in mind, including appropriate shielding, patient preparation areas and hot labs for radiopharmaceutical handling. Facility design should include separate waiting areas for patients receiving cardiac stress tests and oncologic scans to manage patient flow effectively.

Technologists should advocate for PET/CT scanners with high resolution and sensitivity, as well as advanced cardiac imaging capabilities such as ECG gating and motion correction. The acquisition of specialized equipment like treadmills or pharmacological stress test systems for cardiac studies should also be considered.

Hardware/Software

Technologists should be familiar with the specific hardware and software requirements for both cardiac and oncologic PET/CT imaging. This includes understanding the capabilities of the PET/CT scanner, workstations and image processing software. Specialized cardiac analysis software may be necessary for quantitative assessment of myocardial perfusion and viability. Technologists should also be proficient in using oncology-specific software for tasks such as SUV measurements and tumor segmentation.

Imaging Protocols and Patient Preparation

Technologists should participate in the development of standardized imaging protocols for both cardiac and oncologic PET/CT studies. Imaging protocols are essential for consistent, high-quality results and should include acquisition parameters, reconstruction algorithms and post-processing techniques for cardiac versus oncologic scans. Patient preparation protocols should also be established, considering the unique requirements for cardiac stress testing and the fasting/glucose management needs for FDG-PET studies.

Interdepartmental Collaboration

Inviting technologists to participate in regular interdepartmental meetings to discuss workflow optimization, image quality and protocol updates promotes collaboration between cardiology, radiology and nuclear medicine. Cardiologists and radiologists must have clear communication channels to use patient scheduling, imaging protocols and reporting to meet the needs of each specialty.

Schedule Considerations

Managing the schedule for a shared PET/CT program requires careful planning to accommodate both cardiac and oncologic studies. Technologists should work with scheduling staff to develop a system that allows for efficient use of the scanner while meeting the unique timing requirements of different study types. For example, cardiac stress tests may need to be scheduled in the morning when patients are fasting, while oncologic FDG-PET scans might be better suited for afternoon slots. Consider implementing a block scheduling approach to balance the needs of both specialties.

Radiopharmaceutical Options

Technologists must be knowledgeable about the various radiopharmaceuticals used in cardiac and oncologic PET/CT imaging. For cardiac studies, technologists should be familiar with perfusion tracers and FDG for viability studies. Oncologic imaging primarily uses FDG, but technologists should also be aware of emerging specialized tracers for specific cancer types. It is crucial for technologists to understand the logistics of radiopharmaceutical production, delivery and storage, and half-life timelines for each isotope.

Pre-Authorization, Reimbursement and Insurance

Technologists should be familiar with the pre-authorization and billing requirements for both cardiac and oncologic PET/CT studies. This includes understanding the appropriate use criteria for different scan types and assisting in gathering necessary clinical information to support insurance approvals. Knowledge of CPT codes and reimbursement rates for various PET/CT procedures can help technologists contribute to the financial success of the program. Staying informed about changes in insurance policies and reimbursement guidelines is essential for maintaining a viable shared service.

Continuing Education

Technologists should pursue ongoing education and training opportunities to maintain proficiency in cardiac and oncologic PET/CT imaging. This may include attending conferences, participating in webinars, or completing online courses focused on advanced PET/CT applications. Technologists should also stay informed about emerging technologies and radiopharmaceuticals that may impact the shared program. Establishing a journal club or regular in-service training sessions is one way to keep all technologists up-to-date on the latest developments in both cardiac and oncologic PET/CT imaging.

CASE STUDY: NORTON HEALTHCARE

Program Overview

Norton Healthcare is a not-for-profit healthcare system serving patients throughout greater Louisville, Southern Indiana, and across the state of Kentucky. Their strong cardiovascular service line provides care across eight hospitals. Cardiac PET services are available at a single location in Louisville. Norton Heart and Vascular Institute is the area's leading provider of cardiovascular care, with more than 100 physicians and APP heart and vascular specialists treating a full range of cardiovascular conditions.

Background

When the cardiology practice (Cardiovascular Associates Psc) integrated with Norton Healthcare in 2011, their cardiology PET program was incorporated with radiology services. This new shared service arrangement required a collaborative effort to balance the needs of both departments and the patients they serve. With advancements in cardiac PET technology that have enhanced diagnostic quality and clinical utility, the demand for cardiac PET has grown, requiring a focused effort to address the challenges it presents for shared PET services.

Challenges and Solutions

Shared Service and Interdepartmental Collaboration: Norton Healthcare recognized the need for communication between departments "early and often" to understand each department's needs. Developing a partnership and being willing to think out of the box on how best to maximize resources was essential. Clinical and administrative dyad leaders who understand and balance the needs of cardiovascular, oncology, neurology and other patients is key.

EHR and PACS Integration: Norton Healthcare worked closely with IT and the appropriate EHR analyst to ensure a clear understanding of the needs of all stakeholders and data integration across the EHR and PACS for both radiology and cardiology. Norton has an integration team that facilitates communications between systems.

Scheduling: While centralized scheduling is used for many areas at Norton Healthcare, a specialty scheduler in the center manages PET appointments to ensure testing times are appropriate to the requested study. Norton created a decision tree within Epic to provide appropriate notes and instructions based on specific test types, such as cardiac sarcoid, and shadow scheduling between radiology and cardiology to avoid overbooking.

Testing Supervision: To address cardiac testing supervision, Norton Healthcare uses an APP to work in the PET center. This APP serves dual roles of patient care and testing supervision. This approach was used as a radiologist was only available to supervise testing for non-cardiac PET. If a radiologist or cardiologist became available, the center acknowledged they would use a nurse in this role.

Summary

Norton Healthcare's successful approach to integrating and managing their cardiac PET program within their larger healthcare system has been led by engaged and informed CVSL clinical and administrative leaders. The shared service arrangement has required strong, on-going collaboration between radiology and cardiology departments to meet patient and facility needs. With this approach, Norton Healthcare has successfully addressed the challenges of managing a shared cardiac PET program, ensuring efficient service delivery and improved patient care.

Key Considerations for CV Leaders

- Equipment and technology.
- Facility planning.
- Staff/training.
- Clinical protocols.
- Radiopharmaceutical management.
- Quality control and image interpretation.
- Regulatory compliance.
- Financial considerations.
- Collaboration between cardiology and radiology.
- Reimbursement and billing considerations.
- Staying current with technological advancements.

FUTURE TRENDS IN SHARED PET/CT SERVICES

The field of molecular imaging is rapidly evolving with novel radiopharmaceuticals opening new possibilities for both cardiac and oncologic imaging. By staying informed about these trends and preparing for their implementation, technologists can help ensure that shared PET/CT services remain at the forefront of diagnostic imaging, providing high-quality care for both cardiac and oncologic patients (Table 3).

Table 3: Anticipating Future Trends for a Shared PET/CT Program

Areas of Focus	Key Considerations
Emerging Applications and Expanding Clinical Utilization	<p>Cardiology: Agents targeting myocardial perfusion, inflammation, and fibrosis are showing promise for more precise diagnosis and risk stratification of coronary artery disease, myocarditis and cardiomyopathies.</p> <p>Oncology: Advancements in tumor-specific tracers may necessitate adjustments to imaging protocols and interpretation skills.</p>
Technological Advancements	<p>Next-generation PET/CT scanners that improve sensitivity and image resolution. Digital PET detectors, larger axial fields of view and improved time-of-flight capabilities are enabling faster scans, lower radiation doses and enhanced image quality, allowing for dynamic imaging protocols and more quantitative assessments in cardiac and oncologic applications.</p>
Operational Efficiency	<p>As demand for PET/CT imaging grows, optimizing workflow becomes paramount. Advanced scheduling algorithms, patient preparation protocols, and automated image processing tools can help maximize scanner utilization and reduce wait times. Technologists should be prepared to adapt to new software platforms and workflow management systems.</p>
Market Growth and Demand	<p>The PET/CT market is projected to experience significant expansion with estimates suggesting a compound annual growth rate of 6.6% through 2028. This growth is driven by increasing cancer prevalence, advancements in radiopharmaceuticals, and expanding applications in cardiology. Shared services should anticipate potential increases in scan volumes and plan for scalability.⁴</p>
Integration of Multimodal Imaging	<p>The trend towards comprehensive diagnostic imaging may lead to increased integration of PET/CT with other modalities. PET/MRI is primarily used in research settings but is gaining traction in clinical practice, particularly for neurological and pediatric applications. Technologists should be prepared for potential hybrid imaging scenarios by understanding the complementary strengths of different modalities.</p>
Artificial Intelligence (AI) Impact	<p>AI and machine learning algorithms are poised to revolutionize image reconstruction, analysis and interpretation. These tools may assist in lesion detection, quantification and risk stratification. Technologists should be ready to work alongside AI-powered systems, understanding their capabilities and limitations.</p>

CONCLUSION

Establishing a shared PET/CT service between cardiology and radiology departments offers a strategic opportunity to enhance diagnostic capabilities and improve patient care. By combining the expertise of both specialties, healthcare facilities can deliver comprehensive imaging services that address the specific needs of cardiac and oncologic patients. The successful implementation of such a program requires careful planning and coordination, including financial considerations, regulatory compliance and operational efficiency.

Nuclear medicine technologists are essential to this effort, requiring specialized training and collaboration across departments to ensure seamless integration and optimal workflow. As the field of medical imaging continues to advance, staying informed about emerging trends, technological developments and clinical applications will be important for maintaining a competitive edge and delivering high-quality care.

Ultimately, the shared PET/CT program not only enhances diagnostic precision but also fosters a collaborative environment that encourages innovation and continuous improvement. By embracing these opportunities and challenges, healthcare administrators and technologists can position their institutions as leaders in advanced imaging, driving better patient outcomes and contributing to medical science's overall advancement.





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ADDITIONAL RESOURCES:

- Canadian Medical Imaging Inventory Service. The Implementation Considerations of PET-CT. Canadian Association of Radiologists; 2022. Available from: https://www.cda-amc.ca/sites/default/files/attachments/2022-01/implementation_considerations_of_PET-CT.pdf