



Case study: Medical University of South Carolina, USA

Sustainable improvements in PET-CT operational performance and transparency

Enabled by ActExcell

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Executive summary

Improving PET-CT operational performance to serve more patients

The Medical University of South Carolina (MUSC), USA, sought to improve throughput and efficiency in its imaging operations. This task was complicated by an ongoing staffing shortage, which itself was exacerbated by the COVID-19 pandemic. Fortunately, MUSC had already entered a Value Partnership with Siemens Healthineers to transform care delivery and drive innovation.

The specific solution for the PET-CT program was ActExcell, a comprehensive digitally-enabled service designed to transform data and analytics into actionable insights that

support clinical and operational innovation and decision-making. A team of Siemens Healthineers advisors focused on identifying opportunities and driving transformation to provide tangible results.

Working together, MUSC and Siemens Healthineers were able to create substantial, sustainable improvements in operational efficiency and transparency. In particular, MUSC was able to perform PET-CT services for thousands of additional patients – an estimated 5,000 incremental scans above baseline over the course of four years.

The customer

Medical University of South Carolina:
a regional leader in care delivery and education



The Medical University of South Carolina (MUSC), headquartered in Charleston, SC, USA, is the state's only comprehensive academic medical center. Founded in 1824, MUSC is also the oldest medical school in the southern USA.

MUSC serves patients across the state with more than 100 outreach sites, 325 telehealth locations, and 16 hospitals with approximately 2,700 beds.

On the education side, MUSC is home to more than 3,000 students and 800 medical residents. This nationally recognized healthcare system is dedicated to changing what's possible in healthcare through its ongoing mission to provide excellence in patient care, teaching, and research.

About Medical University of South Carolina (MUSC), USA

- 16 hospitals with 2700 beds
 - 750+ outreach locations
 - 3000+ students
 - 850+ residents
-



The challenge

Changing conditions require flexibility

A healthcare enterprise of the scope and complexity of MUSC stands to benefit from streamlined and standardized processes across the entire system. However, like many medical systems, MUSC has grown rapidly and, in part, via acquisition. This pattern can introduce conflicts when an acquired institution must integrate with the wider system; legacy instruments and technology may present challenges to integration.

The desire to operate more efficiently, in order to deliver optimal care to more patients in the region, was one of the drivers behind the formation of a Value Partnership between MUSC and Siemens Healthineers. This long-term, performance-oriented relationship provides a broad and flexible framework that enables MUSC to quickly adapt to changing conditions and needs in the community.

COVID-19 challenges MUSC radiology operations

In early 2020, the COVID-19 pandemic washed over the world. Most non-urgent clinical operations at MUSC – like almost everywhere else – came to a halt. Non-emergency radiology services were drastically reduced; PET-CT operations, for example, were reduced by about 50% in the early days of the pandemic.

Eventually, for the health of the community, the decision to resume non-emergency imaging operations – with appropriate protections in place – was made.

The pandemic worsened an already growing labor crisis within radiology. Older technologists were retiring, and there were not enough graduates to take their places. The pace of retirements increased drastically when the pandemic struck, and training programs for technologists were shuttered for up to 18 months, making a difficult situation much worse. These challenges were particularly acute in PET-CT imaging, which requires highly specialized technology and technologists. Improved efficiency in PET-CT and other imaging modalities can help physicians improve the health of many patients in the communities served by MUSC. This paper describes the ways in which ActExcell was used to improve PET-CT operations.

The need for greater efficiency in PET-CT scanning

Against this background, MUSC was striving to improve efficiency and throughput in its PET-CT operations. Like most imaging modalities, there has been a steady increase in PET-CT demand, and MUSC, even in pre-pandemic 2019, had developed a median 35-day backlog for PET-CT appointments. This was unacceptable to patients and to MUSC, which set an ambitious goal of a 72-hour turn-around from PET-CT exam scheduling to completion.

MUSC administrators knew there were opportunities for improvement in terms of operational transparency and standardization of protocols and pre-exam processes. They looked to their partner, Siemens Healthineers, to help identify opportunities and implement strategies to improve performance and efficiency.



The solution

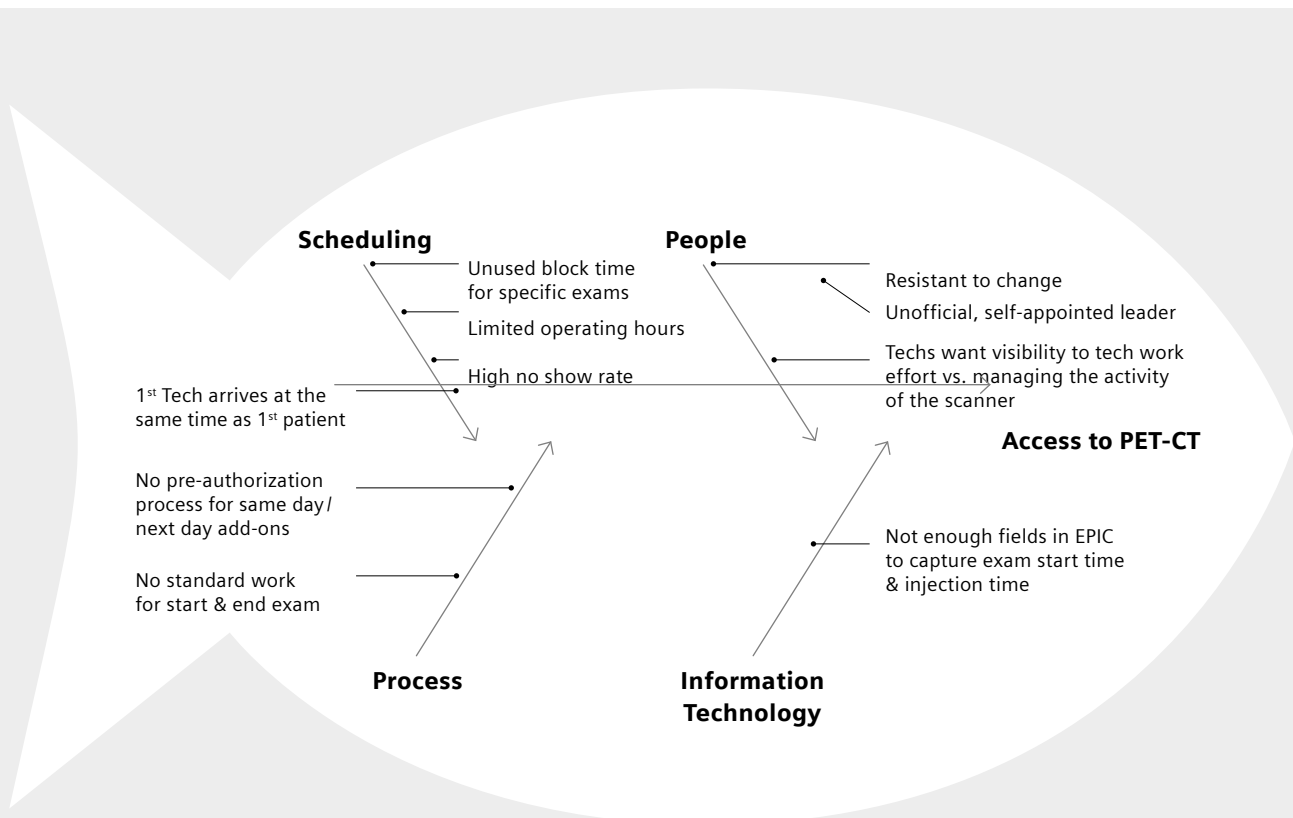
ActExcell: transforming data and analytics into actionable insights

Fortunately for MUSC, Siemens Healthineers had started working on an improvement plan for PET-CT operations at MUSC before the pandemic hit. This project leveraged ActExcell, a digitally-enabled service from Siemens Healthineers that combines data-driven insight with experienced healthcare advisors to drive a continuous stream of meaningful improvements.

Current state analysis sets the stage for improvement

The Siemens Healthineers team oversaw the tailored deployment of the ActExcell dashboard, powered by teamplay Insights. This dashboard collects and analyzes data from a wide range of relevant sources (EHRs, RIS, etc.) and enables identification of potential areas of improvement.

Several key baseline metrics and challenges emerged. Excessive scheduling holds and an 8% same-day cancellation rate contributed to the 35-day backlog. In addition, the ActExcell team performed extensive observations of the PET-CT workflow and identified opportunities to streamline and standardize. They were confident that the 155-minute average exam time they had observed could be reduced significantly without reducing the quality of the images generated or the patient experience. In turn, this would lead to an increase in capacity from the baseline median of 10 PET-CT exams per day.



Rapid improvement event delivers immediate results

A rapid improvement event is the application of Lean principles over a short, defined timeframe to generate quick results. Based on insights revealed by ActExcell, MUSC and Siemens Healthineers undertook a rapid improvement event to upgrade performance of PET-CT operations.

The MUSC and Siemens Healthineers team, thanks to ActExcell, had a clear understanding of all the factors that could hamper PET-CT throughput. The initial effort streamlined and improved transparency around prior authorization and pre-registration, which led to fewer denials from payers and fewer same-day cancellations. This effort to improve transparency and eliminate non-value-add work led to a near immediate increase in capacity of one additional exam per day.

Sustained improvement efforts

Following the initial success of the rapid improvement event, the team implemented the future state for PET-CT documentation in the RIS. More clearly defined processes and associated times, coupled with ongoing workflow efficiency monitoring and improvement, enabled staff to block appropriate lengths of time for exams, which increased capacity – and thus access – and helped drive down the backlog for scans.

These changes were possible because of the close coordination and trust between MUSC and Siemens Healthineers. This partnership effort leveraged the strengths of each party to create tailored solutions that were based on data, insights, and observations of MUSC in action.





The results

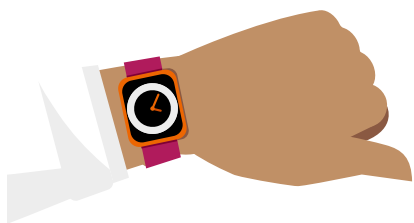
More efficient PET-CT operations to serve more patients

In the roughly four years since the initiation of the PET-CT project, Siemens Healthineers has helped MUSC reap substantial and sustained benefits. The average exam duration fell from 155 minutes to 40 minutes, thanks to increased efficiency and transparency of actual PET-CT scanner utilization. Same-day cancellations dropped to 6% from 8%. Median exams per day rose 50%, from 10 PET-CT scans to 15 per day.

And the median wait for PET-CT appointments went from 35 days to 21 days.

Most importantly, these benefits have proven to be durable. Over the last four years, MUSC has performed about 5,000 additional scans compared with the baseline rate, meaning better access for the community and increased revenue potential for MUSC.

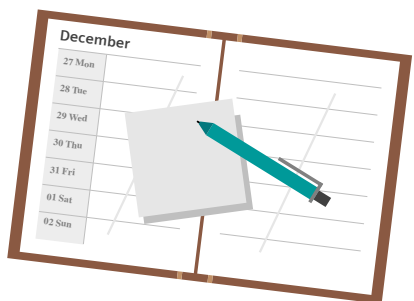
Key results:



-74% Median exam duration fell from 155 minutes to 40 minutes



+50% Increased median capacity from 10 to 15 exams per day



-40% Median wait for appointments decreased from 35 days to 21 days



5,000 5,000 incremental scans performed vs. baseline rate

The future

The Value Partnership under which the ActExcell service operates has been in place for five years. ActExcell has delivered positive results for MUSC across a number of imaging modalities.

Through the ActExcell service, MUSC has, to date, seen strong and sustained improvement in PET-CT operations. The sustained performance improvement is the result of continuous monitoring via the customized dashboard and the applied expertise of the Siemens Healthineers team to leverage those operational insights, combined with their observations of workflow in the department.

The COVID-19 pandemic and the seismic shifts it caused in employment and healthcare did not derail that improvement, even with added precautions and an exceptionally tight labor market. ActExcell will continue to help MUSC pursue its mission to provide excellence in patient care.

The success of ActExcell at MUSC also enables data-based conversations with senior decision-makers. It has allowed them to put together business plans with proven ROI that enables senior leadership to make more profound decisions. This way ActExcell has helped move decision-making on large financial questions – new technology, staff, procedures, etc. – to a more rational and data-based level.

ActExcell can be viewed as a powerful tool in the ongoing MUSC mission to deliver the best possible care to the patients it serves. Solutions like ActExcell will be ever more important in the coming years as health systems around the world cope with rising demand for services and shortfalls in staffing to deliver those services.



Want to learn more about ActExcell?

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About ActExcell by Siemens Healthineers

ActExcell is a comprehensive advisory service designed to overcome operational challenges.

The digitally enabled service from Siemens Healthineers combines data-driven insights with experienced healthcare advisors to drive a continuous stream of meaningful improvements. ActExcell service empowers you to convert data into actionable insights, providing demonstrable and sustainable results like better understanding the utilization of existing imaging technology, acting promptly and effectively on available data, and increasing productivity, access to care, and patient experience constantly. ActExcell powers ongoing value-creation, enabling you to discover previously unseen opportunities.

Actionable Excellence providing real outcomes.

Disclaimer

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The outcomes achieved by the Siemens Healthineers customer described herein were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that others will achieve the same results.

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