Customer case study

Peer Learning: How to increase CT capacity in emergency care settings

Denver Health shares how they expanded care access with *syngo*.via solutions ALPHA and Rapid Results Technology

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Denver Health, Denver, CO, has been a cornerstone of the community for more than 160 years. It serves as the region's critical safety net institution and has a catchment area extending into Wyoming, New Mexico, Texas, and beyond.

With more than 100,000 patient visits annually in its Emergency Department and a Level I Trauma Center, the demand for CT imaging services at Denver Health is constant—and growing. The volumes meant the Radiology Department faced a pressing challenge: How to expand patient access while maintaining high-quality care in an already overburdened system.

The struggle behind surging demand

As the diagnostic test of choice for trauma and critically ill patients, CT imaging increased almost 45% in the ED over just five years. In 2023 alone, the hospital performed nearly 40,000 CT exams for ED patients. As dedicated caretakers of the community, it was important for Denver Health to not only keep pace with this rising demand but also support the efficiency of their care teams and the quality of patient outcomes.

However, they faced significant challenges. Stretched thin by the lingering effects of the pandemic and operating with a lean staffing model—one technologist per CT scanner—it was clear that additional staff wasn't an option. Faced with a nationwide shortage of CT technologists, Denver Health needed a solution that would increase capacity without more staff, ideally making the work of CT techs easier and more efficient. The team was confident that, with the right partner, they could find this solution.

"We needed to innovate to find a new, better way. Fortunately, Denver Health has an incredible commitment to patient care and a history of innovating as demonstrated by being the first healthcare system in the world to win the Shingo Prize for operational excellence," says John McMenamy, MD, MBA, Associate Chair of Radiology, Denver Health and Hospital Authority. "I knew, with the right partner, Denver Health could do it."

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John McMenamy, MD, MBA,
Associate Chair of Radiology, Denver Health and Hospital Authority

A CT workflow makeover—how they did it

The Denver Health team decided to design a new CT workflow to address these growing challenges. Dr. McMenamy and Tony Lucero, CT Tech Supervisor at Denver Health, collaborated with Siemens Healthineers to reshape the entire imaging workflow for all CT studies at Denver Health.

To empower and support their existing staff, the team sought to leverage technology that could standardize and automate image creation, and AI that could automatically detect anatomical landmarks and structures in CT images. This meant integrating their workflow with two *syngo*.via solutions imaging modules:

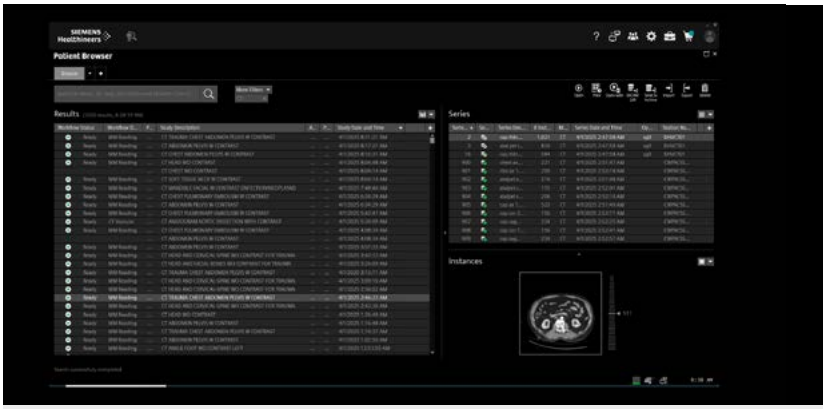
- **Anatomic Landmarking and Parsing of Human Anatomy (ALPHA)[1],** which automatically correlates studies based on individual organ recognition and aligns them for more precise registration and easier evaluation
- **Rapid Results Technology (RRT)[2],** which fully automates post-processing and sends results directly to PACS

These new additions to the workflow enabled the Radiology Department to meet the increasing demands of their ED while also improving performance, reducing the burden on CT techs, and doing so with minimal cost to the institution. With its rules-based automation, RRT uses data from thin image datasets to determine which final series should be created and sent to PACS. This can alleviate time-consuming manual tasks and support more standardized, reproducible images. Similarly, ALPHA can help drive efficiency by working in tandem and aligning anatomy, optimizing the display field of view (DFOV), and generating 3D renderings in real-time.

These are their results

By off-loading significant image creation tasks from the CT console to *syngo*.via solutions, Denver Health was able to decrease CT console occupied time by 56-75% on common critical exams, saving 6 to 12 minutes per exam. This reduction resulted in a 36% decrease in median CT exam times from 14 minutes to 9 minutes, enabling the CT scanners to be ready for the next patient much faster, which in turn increased overall CT capacity. The results were published in "Off-Console Automated Artificial Intelligence Enhanced Workflow Enables Improved Emergency Department DT Capacity" in Emergency Radiology.

In total, these time savings were especially crucial in a high-pressure environment like the ED. Lucero says, "*syngo*.via solutions have reduced tech time on the console by 2 to 3 minutes per exam, more so on major trauma scans."



***syngo*.via[3] solutions are a family of intelligent, integrated imaging software built to speed up daily routines. They offer multimodality reading and fast 3D results, streamlining processes across various clinical settings. With the latest innovations and AI-enabled features, it can take your imaging reading to the next level.**

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By leveraging *syngo*.via solutions ALPHA and RRT, Denver Health was able to truly transform its CT imaging workflow, increase capacity, and strengthen care delivery—all while reducing strain on its staff and resources. This innovative solution not only improved operational efficiency but also reinforced Denver Health's commitment to providing exceptional care to its community.

"While this was a new and unique use of their software, Siemens Healthineers has been very supportive and responsive throughout the entire process," says Dr. McMenamy. "The education team provided training and real-time collaborative problem solving, and the support from the service team was invaluable."

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Tony Lucero
CT Tech Supervisor, Denver Health

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Our portfolio, spanning in vitro and in vivo diagnostics to image-guided therapy and cancer care, is crucial for clinical decision-making and treatment pathways. With the unique combination of our strengths in patient twinning*, precision therapy, as well as digital, data, and artificial intelligence (AI), we are well positioned to take on the greatest challenges in healthcare. We will continue to build on these strengths to help overcome the world's most threatening diseases, enable efficient operations, and expand access to care.

We are a team of more than 73,000 Healthineers in over 70 countries passionately pushing the boundaries of what is possible in healthcare to help improve the lives of people around the world.

** Personalization of diagnosis, therapy selection and monitoring, aftercare, and managing health.*

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References

McMenamy J, Kochkine S, Bernstein M, Lucero A, Miles R, Schwertner A, Thaker A, Naeger D. Off-Console Automated Artificial Intelligence Enhanced Workflow Enables Improved Emergency Department CT Capacity. Emergency Radiology. December 2024.

Disclaimers

1 Automated and standardized reconstructions; one-click segmentation of heart, lung, aorta; Anatomical Range Presets; AutoView with one-click access to the right anatomical view; CT and MR presets for auto ranges (musculoskeletal, cardiovascular, body regions, organs)

2 Rapid Results Technology for standardized and automated anatomical ranges creation and archiving, triggered from the CT scanner.

3 syngo.via solutions consist of a broad variety of software options, which are medical devices in their own right. syngo.via solutions-based software options are not commercially available in all countries. Due to regulatory reasons, their future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

Note: The data in this customer case study was obtained in 2022-2023.

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