Accipio Ix: Identifies Missed ICH in Head Trauma Patient. Capital Health: A Case Study

As the magnitude of the patient care load increased at Capital Health hospital in New Jersey, MaxQ AI's Accipio Ix has proven to be a seamless, powerful, and simple solution assisting the skilled physician team. For one patient, this trusted solution could have made a major difference.

Introduction

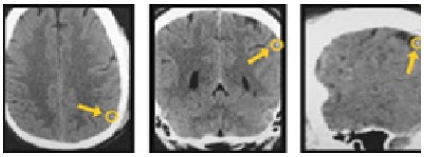
The number of head trauma and stroke cases annually admitted to an Emergency Department (ED)—whether at a small or large facility—are growing in volume. Hospital admissions for intracranial hemorrhage (ICH) have increased by 18% in the past 10 years*. Capital Health was no exception. They sought after a solution to manage the case volume more efficiently, while preventing burn-out.

With over 1,000 head CT scans per month,
the chances of a missed ICH, a "never event," was real.

This is where MaxQ AI's Accipio Ix—providing automatic, rapid, highly-accurate identification, and prioritization of ICH—becoming a trusted solution can play a role. Accipio Ix is part of the comprehensive, seamless, and secure ACCIPIO Platform, comprised of Accipio Ix, Accipio Ax, and Accipio Dxg.

The Case

A non-responsive man was found on the ground outside a bar at 2:00 am and transported to the ED as a trauma alert patient. Due to his impaired state and inability to respond, the clinicians were concerned of possible head trauma due to the fall. They executed an immediate non-contrast head CT to determine if an ICH was present. *The initial read by the teleradiologist was negative for ICH.*



The following morning, the attending physician, according to the facility's overread quality process of the prior evening teleradiology findings, reviewed the CT scan in order to determine agreement with the original teleradiology interpretation. The physician determined the case was not negative and *reported it as positive for suspected ICH*.

"9%"	Roughly 9% of cerebrovascular events are missed at initial ED presentation.*

About MaxQ AI®

MaxQ AI is at the forefront of medical diagnostic artificial intelligence (AI). Our mission is to reinvent patient diagnosis through artificial intelligence (AI), improved triaging and diagnostics processes, and reduction of avoidable medical errors and costs. MaxQ AI's solutions are seamlessly integrated and globally deployed through trusted global healthcare OEM partners, cyber-secure with leading 3rd party validated certification. At MaxQ AI, we have developed a comprehensive workflow software platform, ACCIPIO (meaning "to learn" in Latin), that uses artificial intelligence to interpret medical images, such as non-contrast head computed tomography (CT) scans and surrounding patient data. Our platform will provide real-time triage, rule out, annotation, quantification, and notification in the acute care setting, where every minute counts. Our AI solutions are well-suited to help acute care physicians, who are under extreme pressure to make quick and accurate decisions while treating a large number of patients, reach faster, more accurate decisions when diagnosing stroke, head trauma, and other life-threatening conditions.

The ACCIPIO Platform

Accipio Ix™
Provides automatic, rapid, highly accurate identification and prioritization.

Accipio Ax™
Provides automatic, rapid, highly accurate slice-level annotation and prioritization.

Accipio Dxg™
Automatic, Rapid, Highly accurate triage for suspected ICH presence or High NPV absence.

To learn more, visit www.maxq.ai or follow us on LinkedIn.

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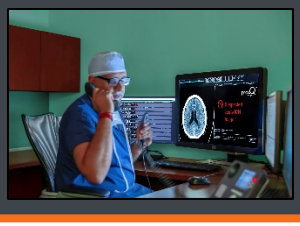
Why ACCIPIO?

MaxQ AI will support the complete ACCIPIO Clinical Platform with INSIGHT™. It will support the Radiology Department, Emergency Room, Neuroradiology, and the Stroke teams with a fully automated solution. The ACCIPIO platform will provide tools for suspected positive ICH triage and prioritization (Ix), slice-level annotation (Ax), lesion-level annotation (Ax Plus) and quantification (Ax Pro), triage of suspected positive and negative ICH triage (Dxg), and diagnostic rule-out (Dx).

Accipio Ix

Provides automatic, rapid, highly accurate identification and prioritization of ICH



The Solution

Notably, this case was initially diagnosed as negative for ICH, however during the overread the next morning, near six hours later, it was correctly identified as positive for suspected ICH. When this case was read retrospectively by Accipio Ix; Accipio automatically provided the same finding as the physician, in seconds.

Capital Health recognizes the value of the ACCIPIO platform and is now rolling out the Accipio Ix ICH identification and prioritization solution across their enterprise. Each month, Accipio Ix processes nearly one thousand head CT scans, including upward of 30 stroke cases per week. **"This solution is crucial to the ongoing improvement of our efficiency and accuracy, making each minute count and preventing burnout by our talented physician team"** Ajay Choudhri, M.D. Chairman of the Department of Radiology Capital Health Hospitals in New Jersey.

Fast Answers with AI on Intel:

To handle the demands of the acute care environment, MaxQ AI chose Intel AI technologies for cost-effective performance in a flexible and easily managed platform. The company's machine-learning experts optimized the solution's performance by working with the Intel® AI Builders program, which brings together a range of companies and organizations committed to fulfilling the potential of AI. The collaboration paid off. MaxQ AI's optimizations produced a 3x improvement in the image processing time for Accipio Ix without compromising accuracy, according to Steve Kohlmyer, vice president of research and clinical collaborations at MaxQ AI.7 "The original product release of Accipio Ix took an average of 4.1 minutes to process a radiology exam," he said. "The average processing time for the first 4,000 exams at Capital Health has been 1.4 minutes. That improvement reflects the optimization we did through the Intel AI Builders partnership." MaxQ AI has taken advantage of a broad range of Intel® tools and technologies. It uses the Intel® Math Kernel Library for Distributed Neural Networks (Intel® MKL-DNN) to fine-tune model performance on Intel processors. MaxQ AI also deploys the Intel Distribution of OpenVINO toolkit to speed up image recognition applications on Intel® architecture-based platforms.

Conclusion

Capital Health is a comprehensive stroke center that manages 10–30 stroke patients per week. Accipio Ix correctly identified suspected ICH in cases found with missed ICH on initial teleradiology physician interpretation. Capital Health is rolling out ACCIPIO across the enterprise and now processes over 1,000 non-contrast head CTs per month, assisted by ACCIPIO.

MaxQ AI's Regulatory & Quality Compliance

MaxQ AI is a healthcare technology company developing innovative medical diagnostic artificial intelligence software to augment emergency room physicians in their daily practice. We prioritize absolute rigor in all certifications, systems, security, and compliance to ensure the company behind the platform leads by example.

- **ISO 27001 Information Management Security System Certification**
- **Multiple FDA, CE, Australia regulatory approvals**
- **ISO 13485 certified (medical manufacturing)**
- **Supports HIPAA compliance (patient privacy)**
- **FDA Breakthrough Status (awarded to a single company for a single indication)**
- **FDA Pre-Certification Member (standards –shaping of the future)**

To learn more, visit www.maxq.ai or follow us on LinkedIn.

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What if Accipio Ix was assisting the physician in real time?

Without ACCIPIO		With ACCIPIO
	2:00 am	
A non-responsive man was found on the ground outside a bar.		
	2:35 am	
Patient arrived at ED.		
	2:50 am	
Patient given non-contrast head CT.		
	2:50 am	BLEED DISCOVERED

Accipio Ix™

Identification & Prioritization

Scan interpreted by ACCIPIO and bleed discovered. Case moved to top of stack for Radiologist overread.

	3:00 am	
Scan read by radiologist, who determined **negative for ICH.**		

Nearly 6 Hours Later

BLEED DISCOVERED	8:45 am	
Scan re-interpreted by attending physician and MaxQ AI ACCIPIO. Both the physician and Accipio Ix flagged the case as suspected ICH.		

Time is Brain

maxQ® Artificial Intelligence

Accipio Ix™: FDA 510(k) Cleared, CE Marked, TGA Approved, IMOH Approved
Accipio Ax™: CE Marked, TGA Approved; U.S. Investigational Use Only*, Not Available for Sale in the U.S.
Accipio Ax Plus™: Investigational Use Only*, Not Available for Sale
Accipio Ax Pro™: Investigational Use Only*, Not Available for Sale
Accipio Dxg™: FDA 510(k) pending, Not Available for Sale
Accipio Dx™: Investigational Use Only*, Not Available for Sale. *CAUTION- Investigational Device, Limited by Federal Law to Investigational Use

*References available upon request: 79, 165, 172

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