



**PHILIPS**

Image guided therapy

Neuro suite

Azurion

# Neuro suite

Neuro decisions are based on what you see,  
so see more

# Defining the future of Image Guided Therapy

## Innovative solutions across the health continuum

At Philips, we're here to support you in providing optimal care to your patients. Across the health continuum, we cover the full range of consumer and patient needs, from living healthily, to being diagnosed and treated for an illness, to recovery or chronic care at home. We look across the health continuum because when it comes to health, it's the only way you can see.

The areas of diagnosis and treatment are the focus of Philips Image Guided Therapy. They account for 70% of all healthcare costs, and this landscape is rapidly evolving. The expansion of interventional procedures and the development of new technologies continue to open up new possibilities and applications. This in turn opens the way for more targeted diagnosis and new, more complex treatment options.



## Clinical demands are getting more specific. So are we.

During an interventional procedure you are focused on making the best decisions you can for each patient. Each patient and each disease has very specific challenges, complexities, and needs. As the number of procedures and patients goes up, you can see the need for better forms of image guidance and interventional devices for effective treatment and decision making. At the same time, optimized workflows are key to improving efficiency. That's why we created clinical suites; a flexible

portfolio of integrated technologies, devices and services for a broad range of interventional procedures.

Each of our clinical suites offers specific image guided therapy solutions to provide more choice and flexibility for exceptional care. So you can be confident in your performance and in the fact your patients are receiving exceptional care. Together we aim to create the future of image guided therapy.

<b>Coronary suite</b> Transforming complex PCI procedures into confident care	<b>EP suite</b> Seamless integration drives EP excellence	<b>SHD suite</b> From planning to live guidance for SHD procedures	<b>Vascular suite</b> Redefine the outcome for vascular treatment	<b>Neuro suite</b> Neuro decisions are based on what you see, so see more	<b>Onco suite</b> Critical insights for superior care in Interventional Oncology	<b>Spine suite</b> Perform spine surgery with confidence and precision



# Neuro suite

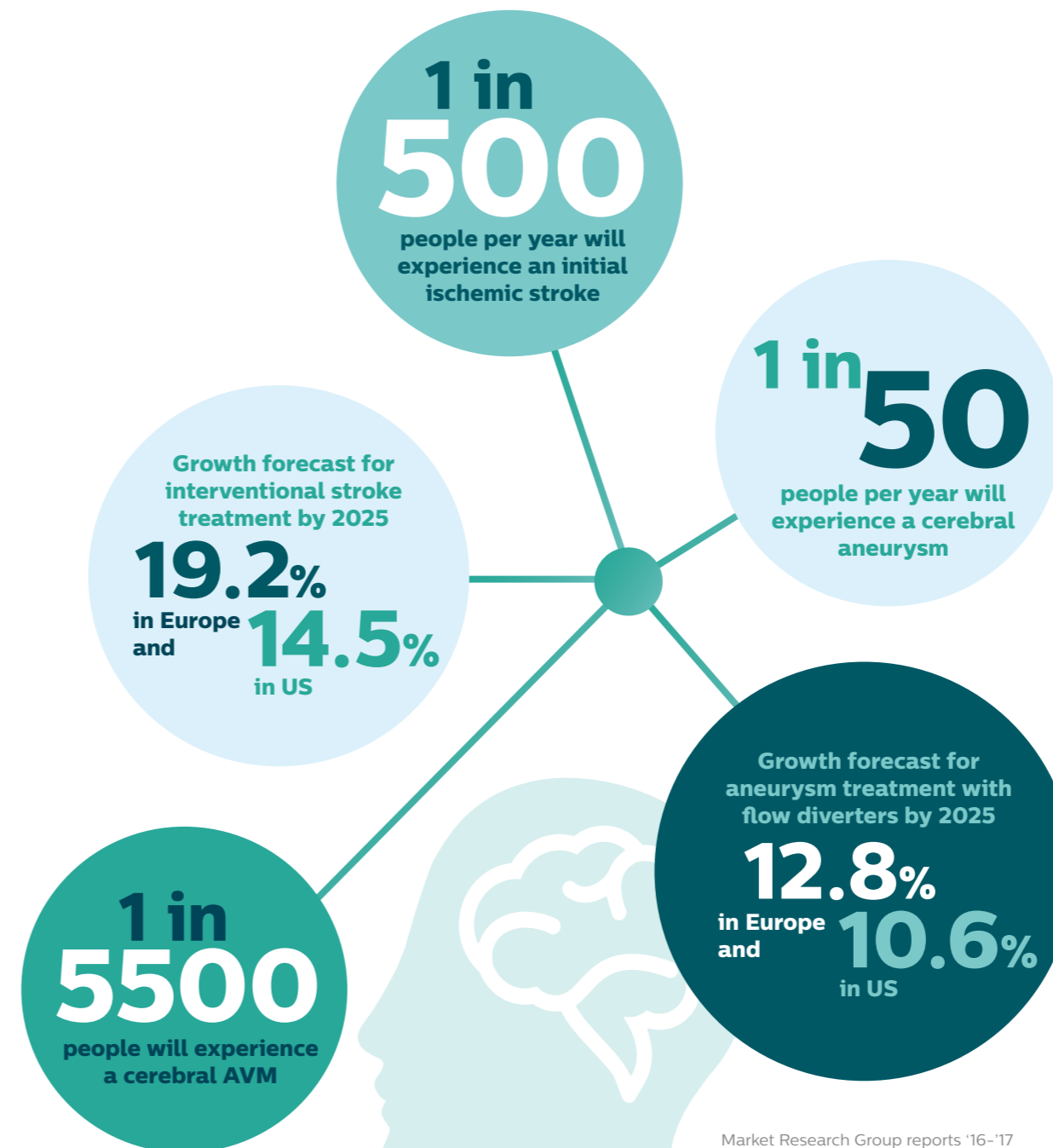
Neuro decisions are based on what you see, so see more

The field of neuro intervention is changing rapidly as more diseases are treated with less invasive techniques. New devices offer new treatments, but smaller and less radio opaque devices also present new challenges when it comes to placement and treatment assessment.

Time is a critical aspect of clinical outcome in acute ischemic stroke treatment. To reduce the door-to-reperfusion time for these patients, we see the need for rapid triage and CT-like imaging in the interventional suite. In elective neuro interventions, such as cerebral aneurysm treatment, new, more complex devices become available. For this, quality imaging in 2D and 3D is essential for accurate treatment planning, device navigation, and assessment of device placement. During complex AVM procedures, real-time guidance is invaluable for developing the correct treatment plan and mitigating risk during the procedure.

Enter our Neuro suite. Based upon the Azurion platform, it's superior imaging puts you in firm control whether you're treating an acute stroke patient, visualizing the smallest intracranial vessels, precisely placing a flow diverter, or working slowly through a complex AVM. You can work with the confidence that comes from using sophisticated imaging technologies and neuro options that are the result of intensive research with clinical leaders and industry pioneers in neuro interventions.

Our Neuro suite with Azurion can simplify your workflow can help shorten procedure time, and manage radiation dose, and that means everything when your patients' care.



Market Research Group reports '16-'17

## Key benefits

- Supports high-precision diagnosis and treatment of ischemic stroke in the same room
- Enhances neuro workflow and patient handling to promote efficiency and consistency
- Displays vessel anatomy and device apposition to the lumen in never-before-seen detail
- Elevates treatment confidence with dynamic live image guidance through complex vascular lesions



# Be ready to take on new challenges in ischemic stroke treatment

The stroke landscape has changed dramatically in recent years based in part on the many studies that have shown the efficacy of thrombectomy in combination with iv-tPA as a first line treatment for ischemic stroke. The number of comprehensive stroke centers is rising rapidly, driven by better clinical outcomes and the logistical benefits compared to primary stroke centers. We are also seeing a shift from time-based to image-based patient selection for ischemic stroke treatment. As diagnostic imaging in the interventional suite becomes more sophisticated, we see opportunities for image-based patient selection to dramatically shorten stroke workflows.<sup>1</sup>

Our Neuro suite has been developed to address these trends. It provides workflow options, dedicated interventional neuro tools, and neuro accessories to support high levels of procedural efficiency and redefine outcomes for your stroke patients. The Azurion system support each step of your procedure – as you decide, guide, treat, and confirm treatment results.

**12% reduction in in-lab preparation time supported by ProcedureCards<sup>2</sup>**

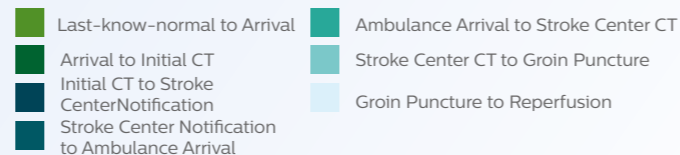
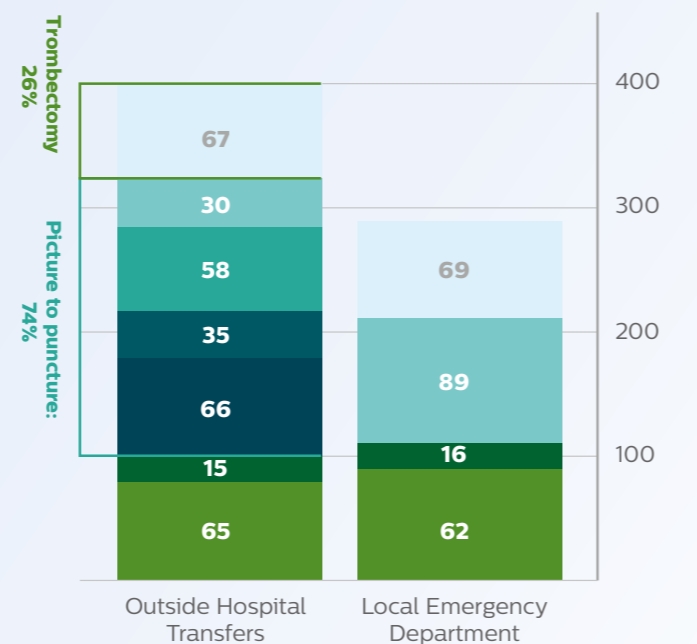


## Acute Ischemic Stroke

The need of rapid triage and intervention “Delays in the workflow cause onset-to-reperfusion times of multiple hours. Long imaging-to-groin puncture times contribute significantly to the total ‘delay’”.

### Last known Normal To Reperfusion (min)

From Sun et al; Circulation, 2013 127(10): 1139-48  
Data courtesy of Grady Memorial Hospital, Atlanta (GA)



## Workflow options that can help you optimize lab performance

**Instant Parallel Working**  
Allows team members to work on different tasks at the same time without interrupting each other to shorten procedure times for critical stroke patients.

**FlexVision Pro**  
Gives you instant access and full control of pre-operative diagnostic scans, patient information, planning tools at table side.

**Neuro headrest**  
Can be used to restrain restless patients under conscious sedation to help reduce motion artefacts during the procedure

**Touch screen module Pro**  
Allows table side control of images and applications with tablet ease to save time and unnecessary walking in and out of the sterile area.

**ProcedureCards**  
streamline and standardize system set-up and reduce preparation errors in acute ischemic stroke procedures. Hospital specific stroke protocols and/or checklists can be added

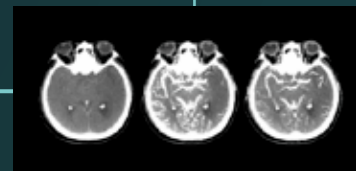
Azurion offers a number of workflow innovations designed to help on-call staff work efficiently and easily, while maintaining a single-minded focus on the patient during acute ischemic stroke interventions.

# Comprehensive diagnostic and treatment

support for ischemic stroke patients

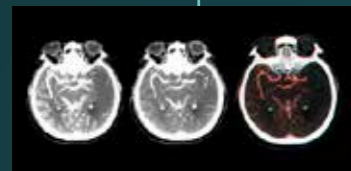
## Decide

Identify if the patient has an ischemic or hemorrhagic stroke, locate the affected area and assess the state of the penumbra and amount of salvageable tissue.



### Comprehensive stroke diagnosis based on three XperCT Dual (CT-like) scans

- Non-contrast XperCT aids detection of early ischemic changes
- Early phase XperCT helps to identify the proximal occlusion
- Late phase contrast enhanced XperCT aids detection of collaterals



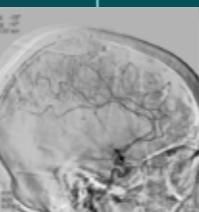
### XperCT Dual View to see collateral filling

Viewing early and late phase XperCT Dual volumes side by side enhances identification of penumbra and enables visualization of collateral filling



### VasoCT to check location and length of a clot

VasoCT allows visualization beyond the clot with peri-procedural imaging of the distal vessel aspects in ischemic stroke. By retrograde filling, vessel structures before and after the clot become visible. The VasoCT 3D roadmap can be used to visualize clot retrieval devices.



### Maintain sharp images using 2D DSA with ClarityIQ technology

Automatic Motion Compensation during real-time DSA maintains sharp images of the vessel to support confident decision making throughout stroke procedures.



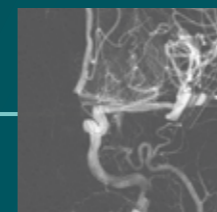
### Gain anatomical references with 3D-RA and 3D Roadmap

The 3D Roadmap provides anatomical references to support precise navigation of guidewire, catheter, and device to the clot.

## Guide and Treat

### Guide and Treat

When navigating and treating stroke pathology, clinicians need to be able to visualize the exact location of the clot and assess if and how the clot can be reached.



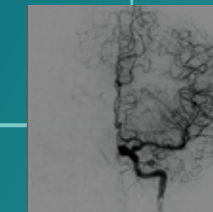
### Enhance visualization of vasculature with Roadmap Pro

This advanced double contrast roadmap helps enhance visualization of overlapping vessels while balancing radiation exposure to make informed decisions about whether the clot can be reached and which route to use.

## Confirm

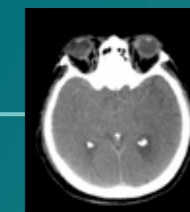
### Confirm

After stroke treatment, there is a need to confirm if all clot material has been removed and to check for bleedings while the patient is still in the interventional lab.



### Confirm treatment success with DSA run-off

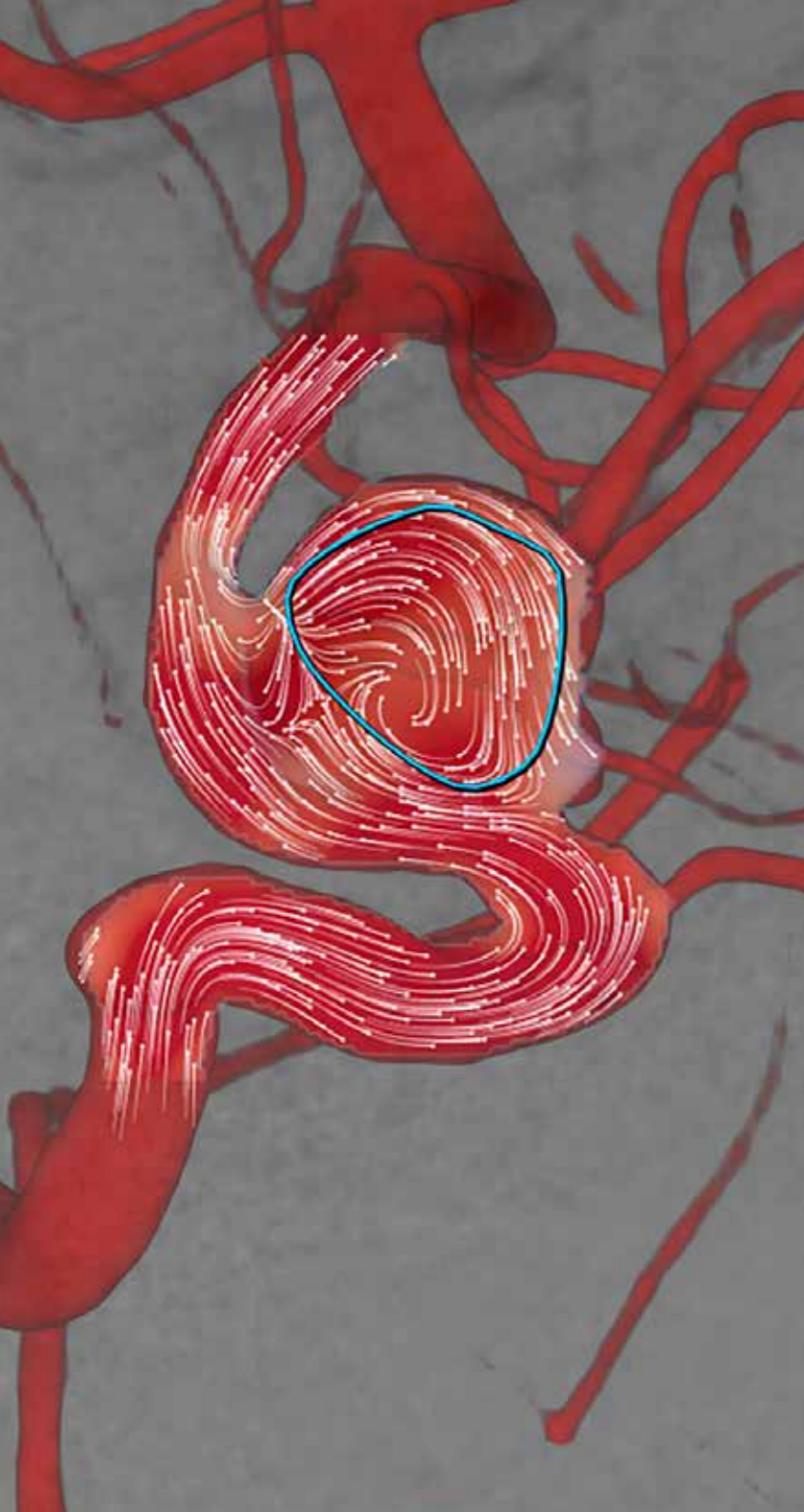
High quality DSA visualizations allow you to assess if you have retrieved the complete clot and if pieces of clot have been dispersed distally in the brain. You can evaluate the restoration of blood flow to the penumbra and check for peri-procedure bleedings.



### Peri-procedure check of bleedings with XperCT Dual

Use CT-like images in the interventional suite to check treatment success and bleedings.





## See clearly and navigate effectively when **treating cerebral aneurysms**

Flow diverter (FD) stenting has become an established technique for treating cerebral aneurysms. New techniques and devices inspired by the flow diversion principle are being used more often, and new coil technologies are increasingly taking ground over traditional coiling. For bifurcation aneurysms, intrasaccular embolization devices are becoming mainstream. Visualizing these new, less opaque devices present new challenges during treatment planning and device placement. In this dynamic area, superb 2D and 3D imaging is crucial to guide treatment decisions and device placement, while managing radiation dose efficiently.

Neuro suite provides workflow options, dedicated neuro interventional tools, and neuro accessories to improve procedural accuracy and reduce radiation exposure for staff and patients during aneurysm interventions. They support each step of your procedure – as you decide, guide, treat, and confirm treatment results.

Decide

Guide

Treat

Confirm

## Innovative neuro interventional workflow

**Neuro headrest**  
Can be used to help reduce motion artefacts during the procedure.

**Clarity IQ**  
ClarityIQ technology provides high quality imaging for a comprehensive range of clinical procedures, achieving excellent visibility at low X-ray dose levels for patients of all sizes. ClarityIQ automatic motion compensation removes skull and motion artifacts which is key when placing small devices at the base of the skull.

**Zero Dose Positioning**  
Helps you manage dose by positioning the system or table on Last Image Hold so you can prepare your next run without using fluoroscopy.

**ProcedureCards**  
Streamline and standardize system set-up and reduce preparation errors. Select the Aneurysm ProcedureCard and the system is set-up the way you want. Hospital specific aneurysm protocols and/or checklists can be added to ProcedureCards and displayed on monitors to support consistent workflow.

**Touch screen module Pro**  
Easily review large data sets from table side with the tablet ease of the Touch Screen Module Pro. Collimate on clinical images with a fingertip and pinch, zoom, pan and flag images for processing.

**Full table side control with FlexVision Pro**  
FlexVision Pro gives you full control of all connected applications and interventional tools at table side to save time and unnecessary walking in and out of the sterile area.

Our Neuro suite with Azurion offers a number of workflow innovations designed to simplify your workflow, shorten procedure time, and manage radiation dose during aneurysm interventions:



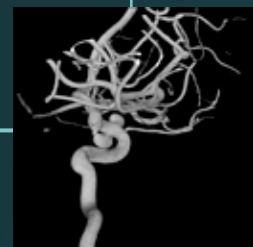


# Clinical solutions

that support efficient decision making and treatment of cerebral aneurysms

## Decide

Obtain insight in the vasculature and visualize the location, size and neck of the aneurysm to optimize treatment planning.



**3D visualization of tortuous pathologies with 3D-RA**  
3D-RA provides a volumetric view in a few seconds to assist with assessment of location, size, neck, and severity of aneurysm for treatment planning. 3D-RA provides high spacial resolution volumes and automatically compensates for patient movement.

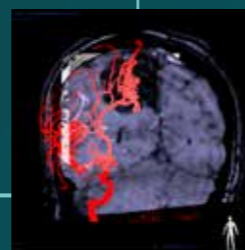


**Visualize lesion boundaries and corresponding vascularization with MR-CT Roadmap**  
Overlay a previously acquired CT angio or MR angio scan with live fluoroscopy to visualize lesion boundaries and corresponding vascularization for risk assessment. Re-using pre-acquired data helps you manage X-ray dose and contrast medium.

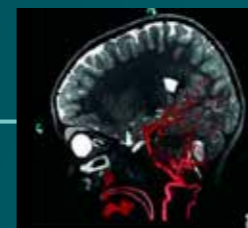
## Guide

### Guide and Treat

New technologies and devices make it more challenging than ever to efficiently navigate to the feeding vessel and accurately position devices - all while avoiding arterial dissection and spasms and managing contrast agent and radiation use.

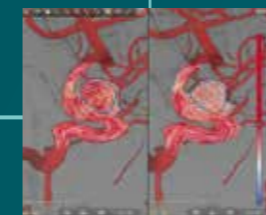


**Dynamic 3D image guidance through neurovascular structures**  
3D Roadmap enhances visualization of overlapping vessels to support precise navigation of guidewire and catheter through complex vasculature. Offers a high level of precision with real-time compensation for gantry, table, and small patient movements.

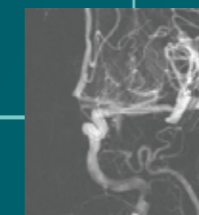


**Support precise guidance of devices with MR-CT Roadmap**  
Visualize lesion boundaries and corresponding vascularization to enhance accurate navigation through challenging pathologies, while managing unnecessary contrast and X-ray dose.

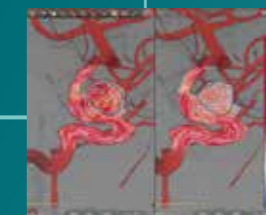
## Treat



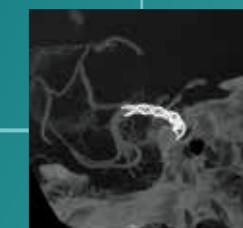
**Visualize blood flow patterns with Aneurysm Flow**  
Visualize and quantify blood flow patterns in the parent vessel and aneurysm sac to obtain key information that can assist deployment of flow diverters and other embolization devices.



**Enhance visualization of cerebral vasculature with Roadmap Pro**  
This advanced roadmap helps enhance visualization of overlapping vessels while balancing radiation exposure. It can be customized to see advancement during coil placement.



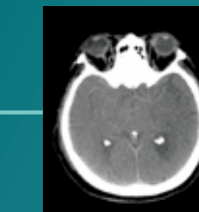
**Post-treatment flow calculations with AneurysmFlow**  
Evaluate changes in blood flow in the aneurysm pre and post, by calculating the change in Mean Aneurysm Flow Amplitude (MAFA ratio) before and after flow diverter placement.



**Enhance imaging of vessels and devices in the brain with VasoCT IA**  
VasoCT IA is an acquisition technique that combines a high resolution XperCT with a contrast injection to enhance visualization of endovascular stents, flow diverters, and other devices and of vessel morphology down to the perforator level. It is increasingly used for follow-up of aneurysms treated with flow-diverter stents to check device positioning.

### Confirm

After aneurysm treatment, check proper device placement and deployment in the context of the feeding vessel, the neck, and the sac of the aneurysm. Efficiently measure the effect of the device placed and check for possible arterial dissections while the patient is still on the table



**Peri-procedure check of bleedings with XperCT Dual**  
Use CT-like images in the interventional suite to check treatment success and identify bleedings.

## Confirm



# Create your perfect Neuro suite

## System platform

Azurion 7 B20/15, 7 C20  
ClarityIQ technology

## Dedicated neuro products

AneurysmFlow  
2D Perfusion  
VasoCT  
XperCT Dual  
MR/CT Roadmap  
3DRA  
3D Roadmap

## Integrated tools

CX50x Matrix ultrasound  
DoseWise Portal  
DoseAware

## Accessories

Neuro head holder  
Neuro table top

## Integrated tables

Our image guided therapy Neuro suite is the result of our ongoing investment in neurovascular imaging technology and our partnerships with clinical leaders and industry pioneers on research and clinical studies to support more informed decision making for neurovascular interventions. Neuro suite is a combination of the Azurion platform, interventional solutions, workflow options, accessories, education, and services. We also offer room solutions and support to create a leading-edge Hybrid OR. Since all solutions are integrated, you have the flexibility to configure a treatment environment that matches your clinical challenges and requirements.

### Azurion – one platform, an endless array of clinical possibilities

Based on the three principles of superior care, lab performance, and unique user experience, Azurion helps to provide a consistent standardization of care. Backed by our clinical suites, it's an invaluable platform to improve workflows and provide new treatment options.

### What makes Azurion so unique?

With its wide range of intervention tools, Azurion is designed to help you perform procedures more efficiently and consistently with fewer complications. It also offers greater user customization and control over every aspect of interventions.





- 1 Ribo M, et al. (2017) Direct transfer to angiosuite to reduce door-to-puncture time in thrombectomy for acute stroke. J Neurointerv Surg. 2017 Apr 26. pii: neurintsurg-2017-013038. doi: 10.1136/neurintsurg-2017-013038.
- 2 The impressive results achieved in this first Azurion lab performance study have been verified by an independent third party. Results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions.

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