YOUR GUIDE TO **ZAP-X®**

THE LATEST ADVANCE IN NON-INVASIVE RADIOSURGERY

ZAP-X® GYROSCOPIC RADIOSURGERY®

THIS IS A GUIDE FOR PATIENTS AND THEIR FAMILIES TO BETTER UNDERSTAND AN ADVANCED NEW TREATMENT FOR BRAIN CANCER AND OTHER CRANIAL CONDITIONS.

ABOUT RADIOSURGERY

Radiosurgery, also commonly referred to as SRS (stereotactic radiosurgery), is well recognized as an alternative to surgery for effectively treating many brain tumors, brain metastases, meningiomas, as well as other vascular and functional diseases within the head.

Unique from surgery however, radiosurgery requires no incision or anesthesia, and is painless. SRS is typically delivered in one to five brief outpatient visits and patients often return to normal activity the same day as the procedure.

ABOUT ZAP-X GYROSCOPIC RADIOSURGERY

As the first new dedicated radiosurgery technology developed in nearly half a century, ZAP-X looks to set new standards in surgical robotics, radiosurgical safety and efficacy, as well as patient comfort and convenience.

ZAP-X GYROSCOPIC RADIOSURGERY

ZAP-X at the European Radiosurgery Center
Munich, Germany

ZAP-X ADVANTAGES

TREATMENT EFFICACY

ZAP-X was designed to transform modern radiosurgery with a ground-breaking gyroscopic design which delivers hundreds of uniquely angled radiation beams with exquisite precision. The goal: deliver the full prescribed radiation dose to the target, while simultaneously avoiding surrounding healthy tissue.

RISK MITIGATION

Using a multitude of unique angles to deliver the prescribed radiation dose, ZAP-X strictly controls incidental radiation exposure to critical structures such as the brain stem, eyes, and optic nerves. ZAP-X's pioneering approach also reduces clinically significant healthy brain tissue exposure — thus mitigating the possibility of affecting patient cognitive function, as traditional whole brain radiation is documented to do.

PATIENT COMFORT

To maintain extreme accuracy throughout the treatment, ZAP-X utilizes a fully integrated high-definition imaging system which continually detects and corrects potential target movements or shifts. This novel capability eliminates the historical use of invasive and often painful patient headframes during treatment delivery.

PATIENT CONFIDENCE

Being the first and only "vault-free" radiation delivery technology, ZAP-X also eliminates the long-standing need for prolonged patient isolation in a 2–3-million-pound concrete bunker during treatment. Instead, ZAP-X now allows the clinical team, and in some instances, family members to be immediately adjacent the patient during treatment, creating a more confident and comfortable patient experience.

Photo courtesy of Barrow Brain & Spine, Phoenix, AZ, USA
(Credit: Tony Greaves)

HOW PATIENTS WILL BENEFIT BY TREATMENT WITH ZAP-X

COMFORT & CONVENIENCE

- Simple outpatient procedure
- No scalpels or incisions
- No pain or discomfort originating from the SRS treatment
- No invasive and often painful head frames
- Most patients experience little or no recovery time
- Patients often return to normal activity the same day as the procedure
- “Vault-free” design eliminates the historical need for prolonged patient isolation in a concrete radiation bunker during treatment

SAFETY

- Novel gyroscopic beam mobility strictly controls incidental radiation exposure to critical structures such as the brain stem, eyes, and optic nerves.
- Ground-breaking design aims to reduce clinically significant healthy brain tissue exposure, thus mitigating the possibility of affecting patient cognitive function.

ZAP-X TREATMENT PROCESS

1 NON-INVASIVE IMMOBILIZATION

Made of a semi-rigid, breathable material, a thermoplastic mask is warmed and custom-fitted to the patient's head. Once cooled, the mask becomes rigid to hold the patient in a comfortable and consistent position during both patient imaging as well as treatment delivery.

2 PATIENT IMAGING & TARGET VISUALIZATION

Before treatment the clinical team will use highly specialized CT imaging, and often additional MR imaging, to visualize the size, shape, and location of the tumor or target.

3 TARGET LOCALIZATION & TREATMENT PLANNING

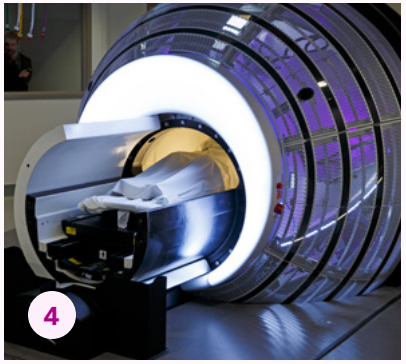
Relying on previously acquired images, the clinical team develops a customized treatment plan which identifies the precise locations and contours of both the tumor or target (where prescribed radiation should be delivered) as well as nearby critical organs or radio-sensitive areas (where radiation must be avoided or strictly controlled). This treatment plan provides the ZAP-X platform the necessarily details for the patient treatment.

4 TREATMENT DELIVERY

On the day of treatment, the patient lies on the treatment table and is immobilized using the previously fitted thermoplastic mask. Then relying on the defined treatment plan, ZAP-X automatically aligns the patient, the gyroscopic robot is positioned, and treatment will begin. The patient feels nothing during the treatment.

5 FOLLOW-UP

In the weeks following treatment, the clinical team will remain in contact with the patient and assess how they are responding to treatment by using additional diagnostic imaging.



FREQUENTLY ASKED QUESTIONS

Can I breathe with the thermoplastic mask on?

The mesh material of the thermoplastic mask is comprised of many small holes which allow for free breathing. Additionally, the nose and/or eyes of the mask are often open and remain uncovered by the thermoplastic material.

How many treatments does ZAP-X require?

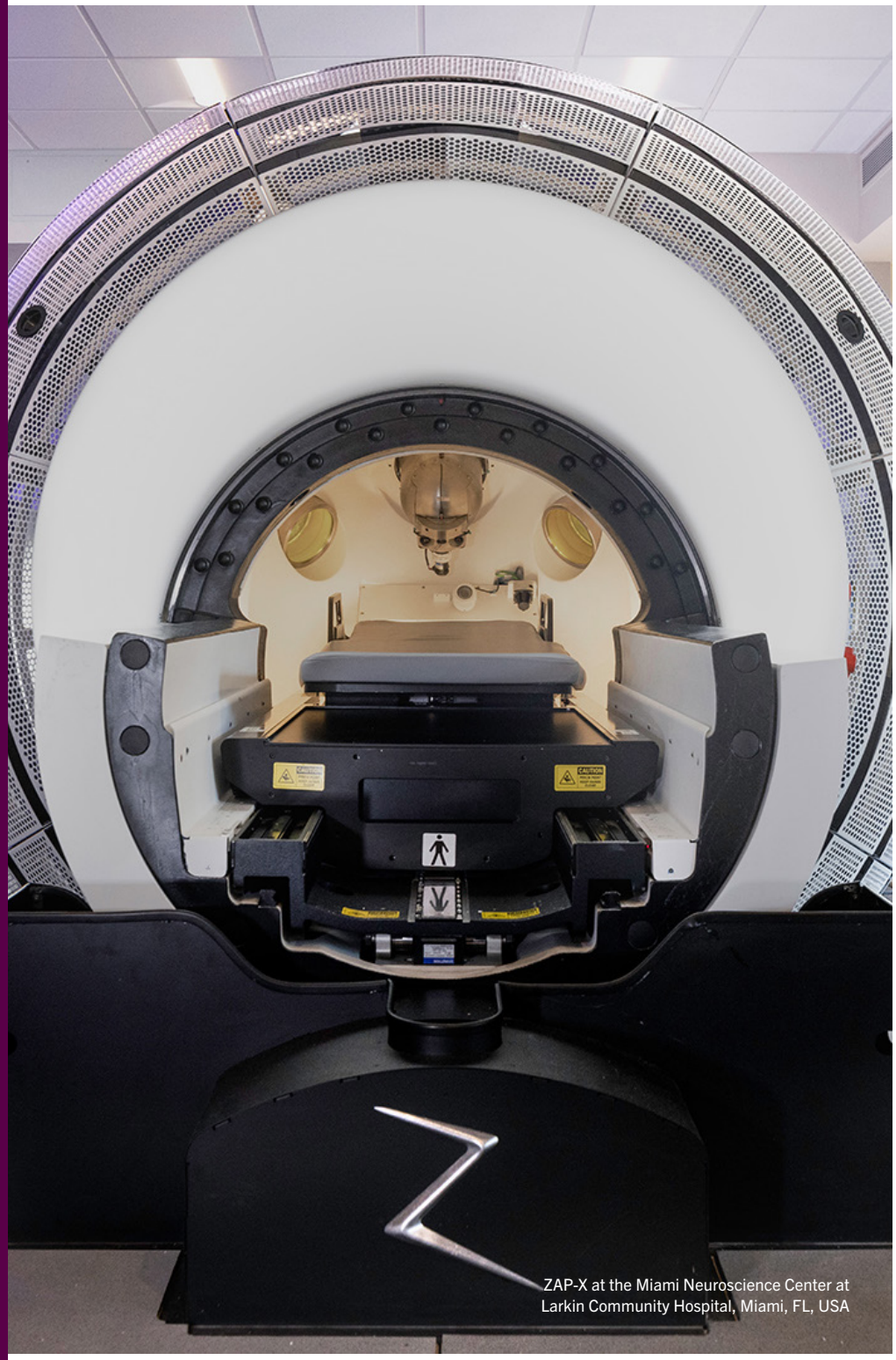
ZAP-X is often delivered in a single treatment session. However, depending on the proximity of nearby radio-sensitive anatomy, SRS may be delivered in up to 5 treatments. Please consult your clinical team for details related to your specific case.

How long does each treatment take?

Depending on the shape and size of the radiation treatment area(s), each treatment may take anywhere from several minutes to an hour or more. Please consult your clinical team for details related to your specific case.

Will I feel discomfort or pain during treatment?

No. You will not hear, see, or feel the radiation during treatment delivery. SRS is a painless procedure. However, you will occasionally see and hear the robotic beam delivery system reposition itself throughout the treatment process.



ZAP-X at the Miami Neuroscience Center at Larkin Community Hospital, Miami, FL, USA

ABOUT ZAP SURGICAL

ZAP was founded by John R. Adler, MD, neurosurgeon at Stanford University and renowned stereotactic radiosurgery pioneer. Focused on finding smarter brain care solutions for physicians and patients, Dr. Adler invented the CyberKnife® Radiosurgery System prior to developing the ZAP-X platform. In 2018, Dr. Adler was awarded the American Association of Neurological Surgeons (AANS) Cushing Award for Technical Excellence and Innovation in Neurosurgery. Today, ZAP Surgical Systems is defining the next frontier of gyroscopic radiosurgery, while addressing the limitations of the past to treat more people in more places.

www.ZapSurgical.com

ZAP Surgical Systems, Inc., 590 Taylor Way, San Carlos, CA 94070.
The ZAP-X® Gyroscopic Radiosurgery® platform received FDA 510(k) clearance in September 2017. It is currently not available in all markets. ZAP® and ZAP-X® are trademarks of ZAP Surgical Systems, Inc. Document Control: MK-20477