Ready to start planning your care? Call us at 800-525-2225 to make an appointment.
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MSK experts have written more than 500 scientific papers and books about retinoblastoma. Most of the important discoveries about this cancer, its treatment, and its long-term problems comes from our research.



MSK Kids has the world's oldest and most successful program for treating retinoblastoma.

At MSK Kids, we offer a cure for retinoblastoma in children

Retinoblastoma is a very serious cancer and a threat to life. Worldwide, almost half of children who get retinoblastoma die before the age of 5. At MSK, nearly all (99 out of every 100) children with retinoblastoma survive because of the treatments we pioneered.

Do all children with retinoblastoma have to have their eye removed by surgery?

At MSK, about 95 out of every 100 of our eye cancer patients do not need the eye removed. That's because MSK retinoblastoma experts offer other treatments.

In the past, surgical removal of the eye (enucleation) was the most common way to cure the disease. In some countries, this operation is still the most common way to treat retinoblastoma. MSK still offers this surgery.

Can the vision in an eye with retinoblastoma be saved?

Nine out of 10 children treated at MSK keep 20/20 vision. They often keep the same vision they had before treatment, even if we must remove an eye.

Ophthalmic (off-THAL-mic) artery chemosurgery (OAC) can return some vision in 1 out of every 4 eyes that were blind. In rare cases, the eye's vision returns to normal.

How we treat retinoblastoma in children and infants

Many hospitals treat all children with retinoblastoma the same way. But at MSK, we choose the retinoblastoma treatment that's best for your child. MSK offers the latest eye cancer treatments, including ones that are not available anywhere else in the world.

MSK experts in retinoblastoma will do a thorough exam, while your child is under anesthesia (medicine to make them sleep). Next, we will talk with you about the best treatment, guided by our deep experience treating children with this disease. We will talk with you about the risks and benefits of each treatment.

Except for radioactive plaques, all treatments are done in an outpatient setting. That means your child will not have to be admitted to a hospital.

The best treatment for retinoblastoma is based on:

- Your child's age.
- Whether the cancer is in 1 eye, or both eyes (bilateral retinoblastoma).
- Whether the cancer has spread to other areas.

Chemotherapy in the eye: ophthalmic artery chemosurgery (OAC)

MSK experts pioneered, developed, and introduced ophthalmic artery chemosurgery (OAC) in 2006. This innovative new way of giving chemotherapy drugs to the eye changed how the world treats retinoblastoma.

What is intraarterial chemotherapy for retinoblastoma?

OAC is also called intraarterial chemotherapy. We put a high concentration of chemotherapy right into the eye through the ophthalmic artery. The procedure takes an hour and has few, if any, side effects.

How intraarterial chemotherapy is delivered

Your child will have anesthesia (medicine to make them sleep) for this procedure.

Our team will first find a femoral artery (blood vessel) in your child's groin area. We will thread a tiny catheter up through the blood vessels. A catheter is a small, flexible tube thinner than angel hair pasta. It will reach the artery of the eye.

Next, we will use the catheter to give a small amount of chemotherapy to the eye. We then remove the catheter.

After the procedure, we will closely watch the femoral artery site for bleeding. Your child will go home the same day, with a small dressing over the groin area. This process is repeated every month, for 2 to 4 treatments.

MSK's experts in intraarterial chemotherapy for retinoblastoma

We invented this procedure and have done it more than 2,500 times. That's more than any other hospital in the world. We can save 95 out of every 100 eyes we treat. OAC lets us save eyes that in the past were removed by surgery.

We've done clinical trials and research studies to compare OAC with other treatments, used worldwide now and in the past. We learned OAC saves more eyes and vision than any other type of chemotherapy, with fewer side effects.

Radioactive plaques for retinoblastoma

Radioactive plaques are disks of radioactive material. During surgery, they're attached to the outside of the eye. They let us focus radiation on the eye tumor while keeping the skin, bones, and brain safe.

Your child will be in the hospital while we put in the plaque, and during treatment. We will take out the plaque 3 days later, and then your child can go home.

Radioactive plaques have been used since the 1930s to treat retinoblastoma. Iodine-125 is the most common radioactive treatment. The plaques are built just for each child.

Laser therapy for retinoblastoma

MSK has more experience with laser treatments than any other hospital in the world. We've offered laser therapy longer and done more laser treatments than anyone else.

We only try to choose treatments that are minimally invasive. These methods do less harm to the body.

We can do laser therapy for a smaller retinoblastoma tumor in our outpatient clinic instead of at the hospital. Your child will have anesthesia (medicine to make them sleep) during the exam. They will feel little or no pain.

We direct light from the laser to the tumor through the pupil (center) of your child's eye. The laser kills the tumor with high heat.

Cryotherapy for retinoblastoma

Another outpatient treatment is cryotherapy. This uses a pen-like tool to apply freezing temperatures to the eyeball. Very cold temperatures kill tumor cells. This treatment is also done under anesthesia.

Your child may need cryotherapy more than once to kill all the cancer cells. A side effect of this treatment could make the eye and eyelids swell for 1 to 5 days. This is normal, and will go away in time. Your doctor may give you eye drops, ointment, or both.

Eyeball removal surgery (enucleation) for retinoblastoma

Enucleation (ee-NOO-klee-AY-shun) is surgery to remove the eye with cancer. At MSK Kids, only a few children (5 out of every 100) need enucleation for retinoblastoma. We are able to treat many children with OAC, and far fewer children need enucleation.

What happens during enucleation surgery?

Enucleation is done in the main operating room. Your child will get general anesthesia (medicine to make them sleep) during the surgery. We will remove the affected eye. We also will remove most of the optic nerve, which is attached to the back of the eye.

Enucleation surgery takes less than 1 hour. There's little or no pain after, just some normal swelling and bruising. The surgery does not affect your child's blinking, tearing, or eyebrow movement. Your child can go home the same day.

Offering the latest options for eye replacement after enucleation

Four weeks after enucleation, after your child has healed, they can be fitted for an ocular prosthesis (pros-THEE-sis). This is an artificial (fake) eye. It is a plastic shell that covers the eye socket. It will look just like the other eye.

At MSK, we have experts who make all prostheses. We will fit your child for the prosthesis during an exam, using anesthesia. There's no need for another surgery.

Our retinoblastoma team also is developing a new type of prosthesis. It appears to move just like a real eyeball. But a little screen with an image of the eye is what moves. Our inventors have a patent for this device and hope to have a product available soon.

Treating metastatic retinoblastoma

In the United States, 4 out of every 100 children with retinoblastoma develop metastasis (cancer that spreads). In the past, all of these children would not have survived.

MSK is able to provide early treatment. There's less chance retinoblastoma will spread and grow outside of the eye, in the bone marrow, limbs, or brain.

The treatment is complex. It involves high-dose chemotherapy and often radiation therapy as well. Our pediatric oncologists (cancer doctors for children) and radiation oncologists (doctors who use radiation to treat cancer) are experts in managing metastatic retinoblastoma.

Follow-up care for children with retinoblastoma

The people we treat for retinoblastoma are followed by MSK specialists for most of their lives. Our ophthalmic oncologists (eye cancer doctors) will do an eye exam each year. As your child gets older, there's no need for anesthesia during their exam.

We recommend protective eyewear for all children who have poor vision in 1 eye or whose eyeball was removed. Your child should wear protection during sports and other activities, even when they're adults. We also always encourage them to wear sunglasses.

We also encourage all survivors of retinoblastoma to get follow-up care through the MSK Kids long-term follow-up program. Our experts offer complete exams. They will assess your child carefully. They will look for the kind of problems treatment can cause.

Our social workers provide counseling, offer information and support, and can guide you to resources. Child life specialists, teachers, and others on the MSK Kids team work together to meet your child's needs beyond treatment.

New Patient Appointments

Call 833-MSK-KIDS Available Monday through Friday, 9 a.m. to 5:30 p.m. (Eastern time)

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