

MEK Inhibitors

Patient Information Sheet

This resource provides general information for individuals considering MEK inhibitors for treatment of Neurofibromatosis type 1 (NF1) associated tumors.

Basic Overview of MEK Inhibitors for NF1

MEK inhibitors are a class (or group) of medications that have most often been used in melanoma (skin cancer) and other types of tumors. These medications are still being studied in the tumors associated with NF1. In the studies completed so far, MEK inhibitors have been shown to shrink (but not make go completely away) tumors in the majority people who take them. For NF1 patients on MEK inhibitors, changes in the tumor often do not start until a patient has been on the medication for several months. MEK inhibitors are considered a type of chemotherapy that is taken by mouth.

Why MEK Inhibitors in NF1?

MEK is one of the components of the signaling pathway that is overactive in people born with NF1. It is the loss of function of the *NF1* gene and the activity of this pathway that is associated with tumor growth. The goal of MEK inhibitors is to block MEK signaling and therefore block the pathway. In clinical trials in two tumor types associated with NF1, plexiform neurofibromas and low grade gliomas (benign tumors in the brain), the majority of patients taking MEK inhibitors have had their tumors shrink. Studies of MEK inhibitors in other NF1 tumors are currently ongoing.

Types of MEK Inhibitors Used in NF1

There are a variety of MEK inhibitors, each made by a different pharmaceutical company, and each has slightly different chemical properties. Mirdametinib and selumetinib were the first MEK inhibitors tested in patients with NF1 and tumors, followed by binimetinib and trametinib. Clinical trials comparing each of the MEK inhibitors to each other in patients with NF1 has not yet been done. All of the MEK inhibitors have similar side effects, but the frequency of each is slightly different for each MEK inhibitor.

Important Safety Information When Using MEK Inhibitors

Ask your healthcare provider about safety information about the specific MEK inhibitor you may begin.

The most common side effects of MEK inhibitors include:

Common side effects (>20% of patients experience) include:

- Fatigue
- Skin rashes – including acne-like rashes
- Infections of the nail (called paronychia)
- Diarrhea
- Abdominal pain or nausea
- Peripheral edema (or swelling)

Rare side effects

(<5% of patients experience) include:

- Cardiac (heart) toxicity
- Eye toxicity including retinal detachment or blockage of the retinal vein
- Intestinal blockage
- Blood clots
- Lung toxicity including pneumonia and pneumonitis

Depending on the type and severity of side effects that are experienced, some individuals need to reduce dosage of medication or stop treatment completely. Most side effects, such as the rash, can often be managed with medications, some of which may be started prior to starting the MEK inhibitor.

Monitoring During MEK Inhibitor Treatment

Because of the known side effects of MEK inhibitors, your doctor will recommend ongoing surveillance while you are receiving treatment. Ongoing surveillance will likely include physical examinations by your medical team including examination of your skin, as well as blood work, evaluation of your heart function with an echocardiogram, MRI evaluation or your tumor and visits to your eye doctor. Most side effects of MEK inhibitors are reversible if identified and managed early, so it is important to attend all recommended follow-up appointments.

Things to Consider Prior to Using MEK Inhibitors

Your doctor will determine if MEK inhibitors are appropriate for you. If MEK inhibitors are an option, there are many factors to consider in deciding whether to begin treatment.

- Side effects and toxicities
- Financial costs of medical treatments and ongoing monitoring
- Time and costs of multiple appointments
- MEK inhibitors only work for certain tumor types, and may not work for everyone

Remember that not all patients will elect to start a MEK inhibitor – each individual should discuss with his/her physician to make a decision based on what is best for their situation.

Communicating with Your Health Care Provider

Contact your doctor about any questions or concerns you have about your health or treatment. Prior to starting any new medications or treatments, be sure your doctor is aware of any medications you take, including prescribed, over-the-counter, vitamins and herbal supplements.

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