PATIENT & CAREGIVER EDUCATION

Cyclosporine (Systemic

This information from UpToDate® Lexidrug™ explains what you need to know about this medication, including what it's used for, how to take it, its side effects, and when to call your healthcare provider.

Brand Names: US
Gengraf; Neoral; SandIMMUNE

Brand Names: Canada
Neoral; SandIMMUNE IV; SANDOZ CycloSPORINE

Warning
All products:

- Your child may have more chance of getting an infection. Some infections have been deadly. Have your child wash hands often. Have your child stay away from people with infections, colds, or flu.
- Lymphoma and other cancers have happened in people who take this drug or drugs like it. This has been deadly in some cases. Talk with the doctor.
- If this drug is given with other drugs that work on the

immune system, it can add to the chance of getting an infection or lymphoma or other cancers. Call your child's doctor right away if your child has a change in color or size of a mole; a lump in the armpit, groin, or neck; or any new or changing skin lump or growth. Talk with the doctor.

- Call your child's doctor right away if your child has any signs of infection like fever, chills, flu-like signs, very bad sore throat, ear or sinus pain, cough, more sputum or change in color of sputum, pain with passing urine, mouth sores, or a wound that will not heal.
- This drug may cause kidney problems in some patients. Talk with the doctor.
- High blood pressure has happened with this drug. Have your child's blood pressure checked as you have been told by the doctor.
- Have your child's blood work and other lab tests checked as you have been told by the doctor.
- There are different brands and forms of this drug. Do not switch between different products without talking to the doctor who ordered this drug. Switching products the wrong way may lead to more side effects or this drug not working as well.

Sandimmune®:

- This drug may be given with a steroid drug like hydrocortisone. Do not use with other drugs that are used to weaken the immune system. If you have questions, talk with the doctor.

Gengraf® or Neoral®:

- If your child is taking this drug for psoriasis AND your child got other drugs to treat this health problem, your child's chance of skin cancer may be higher.

What is this drug used for?

- It is used to keep the body from harming the organ after an organ transplant.
- Some products are used to treat psoriasis or rheumatoid arthritis.
- It may be given to your child for other reasons. Talk with the doctor.

What do I need to tell the doctor BEFORE my child takes this drug?

For all patients taking this drug:

- If your child is allergic to this drug; any part of this drug; or any other drugs, foods, or substances. Tell the doctor

about the allergy and what signs your child had.

- If your child has any of these health problems: Cancer, high blood pressure, or kidney problems.
- If your child is taking any of these drugs: Aliskiren, amiloride, bosentan, dabigatran, orlistat, spironolactone, or triamterene.

Psoriasis:

- If your child has psoriasis and is using other treatments like other drugs or radiation.

This is not a list of all drugs or health problems that interact with this drug.

This drug interacts with many other drugs. The chance of severe, life-threatening, or deadly side effects may be raised. Tell the doctor and pharmacist about all of your child's drugs (prescription or OTC, natural products, vitamins) and health problems. You must check to make sure that it is safe to give this drug with all of your child's other drugs and health problems. Do not start, stop, or change the dose of any drug your child takes without checking with the doctor.

What are some things I need to know or do while my child takes this drug?

- Tell all of your child's health care providers that your child is taking this drug. This includes your child's doctors, nurses, pharmacists, and dentists.
- Have your child avoid tasks or actions that call for alertness until you see how this drug affects your child. These are things like riding a bike, playing sports, or using items such as scissors, lawnmowers, electric scooters, toy cars, or motorized vehicles.
- If your child has high blood sugar (diabetes), you will need to watch your child's blood sugar closely.
- If your child is taking a salt substitute that has potassium in it, a potassium-sparing diuretic, or a potassium product, talk with your child's doctor.
- This drug has alcohol in it. Talk with the doctor.
- There is a chance of skin cancer. Avoid lots of sun, sunlamps, and tanning beds. Use sunscreen and dress your child in clothing and eyewear that protects from the sun.
- Have your child's skin checked often. Talk with the doctor.
- Some people treated with this drug have had severe kidney problems caused by a certain viral infection (BK

virus). In people who have had a kidney transplant, BK virus infection may cause loss of the kidney. If you have questions, talk with the doctor.

- Talk with the doctor before your child gets any vaccines. Use of some vaccines with this drug may either raise the chance of very bad infection or make the vaccine not work as well.
- Take care of your child's teeth. See a dentist often.
- Avoid giving your child grapefruit and grapefruit juice.
- Watch for gout attacks.
- If the patient is a child, use this drug with care. The risk of some side effects may be higher in children.

If your child is pregnant or breast-feeding a baby:

- This drug may cause harm to the unborn baby if your child takes it during pregnancy. If your child is pregnant or gets pregnant while taking this drug, call the doctor right away.
- Tell the doctor if your child is breast-feeding a baby. You will need to talk about any risks to the baby.

What are some side effects that I need to call my child's doctor about right away?

WARNING/CAUTION: Even though it may be rare, some people may have very bad and sometimes deadly side effects when taking a drug. Tell your child's doctor or get medical help right away if your child has any of the following signs or symptoms that may be related to a very bad side effect:

- Signs of an allergic reaction, like rash; hives; itching; red, swollen, blistered, or peeling skin with or without fever; wheezing; tightness in the chest or throat; trouble breathing, swallowing, or talking; unusual hoarseness; or swelling of the mouth, face, lips, tongue, or throat.
- Signs of high blood pressure like very bad headache or dizziness, passing out, or change in eyesight.
- Signs of kidney problems like unable to pass urine, change in how much urine is passed, blood in the urine, or a big weight gain.
- Signs of electrolyte problems like mood changes; confusion; muscle pain, cramps, or spasms; weakness; shakiness; change in balance; an abnormal heartbeat; seizures; loss of appetite; or severe upset stomach or throwing up.
- Any unexplained bruising or bleeding.

- Feeling very tired or weak.
- A burning, numbness, or tingling feeling that is not normal.
- Chest pain or pressure or a fast heartbeat.
- Gum changes.
- Hearing loss.
- Shortness of breath.
- Shakiness.
- Swelling.
- Mouth irritation or mouth sores.
- Liver problems have happened with this drug. Sometimes, these have been deadly. Call the doctor right away if your child has signs of liver problems like dark urine, tiredness, decreased appetite, upset stomach or stomach pain, light-colored stools, throwing up, or yellow skin or eyes.
- A severe brain problem called progressive multifocal leukoencephalopathy (PML) may happen with this drug. It may cause disability or death. Tell the doctor right away if your child has signs like confusion, memory problems, depression, change in the way your child acts, change in strength on 1 side is greater than the other, trouble speaking or thinking, change in balance, or

change in eyesight.

- A very bad and sometimes deadly brain problem called posterior reversible encephalopathy syndrome (PRES) has happened with this drug. Call the doctor right away if your child has signs like feeling confused, lowered alertness, change in eyesight, loss of eyesight, seizures, or very bad headache.

What are some other side effects of this drug?

All drugs may cause side effects. However, many people have no side effects or only have minor side effects. Call your child's doctor or get medical help if any of these side effects or any other side effects bother your child or do not go away:

- Headache.
- Feeling dizzy or sleepy.
- Diarrhea, stomach pain, upset stomach, or throwing up.
- Gas.
- Hair growth.
- Pimples (acne).
- Flushing.
- Signs of a common cold.
- Joint pain.

- Leg cramps.

These are not all of the side effects that may occur. If you have questions about side effects, call your child's doctor. Call your child's doctor for medical advice about side effects.

You may report side effects to your national health agency.

How is this drug best given?

Give this drug as ordered by your child's doctor. Read all information given to you. Follow all instructions closely.

All oral products:

- Give this drug with or without food but give it the same way each time. Always give with food or always give on an empty stomach.
- If your child is taking sirolimus, give it 4 hours after giving this drug.
- Keep giving this drug to your child as you have been told by your child's doctor or other health care provider, even if your child feels well.
- Give this drug at the same time of day.

Liquid (solution):

- Measure liquid doses carefully. Use the measuring device that comes with this drug.
- Do not rinse the syringe that comes with this drug before or after giving your child a dose. If you need to wash it, be sure it is completely dry before using it again.

Gengraf® or Neoral®:

- Mix solution in glass with orange or apple juice at room temperature and have your child drink it right away. Rinse glass with more liquid and have your child drink.

Sandimmune®:

- Mix solution in glass with 1 cup of milk, chocolate milk, or orange juice at room temperature and have your child drink it right away. Rinse glass with more juice or milk and have your child drink.

Injection:

- It is given as an infusion into a vein over a period of time.

What do I do if my child misses a dose?
All oral products:

- Give a missed dose as soon as you think about it.
- If it is close to the time for your child's next dose, skip

the missed dose and go back to your child's normal time.

- Do not give 2 doses at the same time or extra doses.

Injection:

- Call your child's doctor to find out what to do.

How do I store and/or throw out this drug?

Capsules:

- Store in the original container at room temperature.
- Store in a dry place. Do not store in a bathroom.

Liquid (solution):

- Store at room temperature. Do not refrigerate or freeze.
- Store in original container.
- After opening, throw away any part not used after 60 days.
- Store in a dry place. Do not store in a bathroom.

Injection:

- If you need to store this drug at home, talk with your child's doctor, nurse, or pharmacist about how to store it.

All products:

- Keep all drugs in a safe place. Keep all drugs out of the reach of children and pets.
- Throw away unused or expired drugs. Do not flush down a toilet or pour down a drain unless you are told to do so. Check with your pharmacist if you have questions about the best way to throw out drugs. There may be drug take-back programs in your area.

General drug facts

- If your child's symptoms or health problems do not get better or if they become worse, call your child's doctor.
- Do not share your child's drug with others and do not give anyone else's drug to your child.
- Some drugs may have another patient information leaflet. If you have any questions about this drug, please talk with your child's doctor, nurse, pharmacist, or other health care provider.
- If you think there has been an overdose, call your poison control center or get medical care right away. Be ready to tell or show what was taken, how much, and when it happened.

Consumer Information Use and Disclaimer

This generalized information is a limited summary of diagnosis, treatment, and/or medication information. It is not meant to be comprehensive and should be used as a tool to help the user understand and/or assess potential diagnostic and treatment options. It does NOT include all information about conditions, treatments, medications, side effects, or risks that may apply to a specific patient. It is not intended to be medical advice or a substitute for the medical advice, diagnosis, or treatment of a health care provider based on the health care provider's examination and assessment of a patient's specific and unique circumstances. Patients must speak with a health care provider for complete information about their health, medical questions, and treatment options, including any risks or benefits regarding use of medications. This information does not endorse any treatments or medications as safe, effective, or approved for treating a specific patient. UpToDate, Inc. and its affiliates disclaim any warranty or liability relating to this information or the use thereof. The use of this information is governed by the Terms of Use, available at https://www.wolterskluwer.com/en/know/clinical-effectiveness-terms.

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If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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