

# CANCER TREATMENT EDUCATION



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## CYTOKINE RELEASE SYNDROME (CRS)

### What is cytokine release syndrome (CRS)?

- Cytokine release syndrome (CRS) is a side effect that can occur after certain types of immune therapy treatments.
- These therapies cause T cells to release proteins called cytokines, which gather immune cells to help kill cancer cells.
  - Cytokines cause inflammation, which is similar to when your body is fighting a severe infection.

### What should I know about CRS?

- For most patients, CRS usually starts within one week after treatment, depending on which type of therapy you receive. It often begins with fever and flu-like symptoms but can worsen quickly and cause serious illness.
- Common signs and symptoms of CRS are fever of 100.4 °F (38 °C) or higher, fatigue, feeling unwell, shortness of breath or low oxygen levels, nausea, vomiting, chills, rapid heartbeat or changes in heart rhythm, rash, headache, muscle and joint aches, changes in kidney function, and low blood pressure.

### What puts me at risk of experiencing CRS?

- CRS is a known side effect of certain types of immune therapy treatments, and your care team will be prepared for CRS if it happens. Your risk for CRS can increase if you have an active infection or have large amounts of cancer in your body.

### How is CRS diagnosed?

- Your care team will monitor your vital signs frequently such as temperature, blood pressure and oxygen levels.
  - They will perform an examination daily and ask you about your symptoms.
  - They may also run a variety of tests, including blood tests or imaging tests (e.g., x-rays, CT scans, MRI scans).

### What are the complications of CRS if my symptoms are not managed?

- In mild to moderate cases, CRS will cause uncontrolled fevers, shortness of breath, and low blood pressure if symptoms are not treated.
- In severe cases, CRS can cause organ failure and even death.

### What can I do to prevent or minimize CRS?

- Check your temperature regularly or whenever you feel unwell and report any fevers immediately.
- Let your doctor know if you experience any signs or symptoms of fever, such as chills, shivering, sweating, or weakness.
- Let your doctor know if you experience any signs or symptoms of infection, such as cough, runny nose, sore throat, or diarrhea.
- Check your blood pressure regularly or whenever you feel unwell and report low blood pressure readings immediately.
- Let your doctor know if you experience any shortness of breath, difficulty breathing, or changes in your heart rhythm.
- Avoid taking any over-the-counter pain medications (e.g., acetaminophen [Tylenol®], ibuprofen [Advil®], naproxen [Aleve®]) unless instructed by your doctor.

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### What can I do to treat or manage CRS at home?

- CRS may need to be treated in the hospital, depending on the severity of your symptoms.
- Call your oncologist or go to the emergency department right away if you have any symptoms of CRS, including fever, shortness of breath, or low blood pressure.
- Your care team may provide you with a wallet card to remind you of the signs and symptoms of CRS and when to seek immediate medical attention.
  - You can share this card with any care team provider to inform them of the treatment that you received and when to contact your oncologist.

### What might my care team provide to help?

- Your care team will monitor you closely for fevers, low blood pressure, or shortness of breath.
- Treatment for CRS includes fever-lowering medications, IV fluids, or oxygen to control symptoms.
- Some patients may need to be treated in the hospital and receive additional medications, such as steroids or medications that help block the effects of cytokines.
  - For severe cases, patients may need treatment in the intensive care unit.

### When should I call my care team?

Call your care provider or get emergency help right away if you experience any of the following:

- Difficulty breathing.
- Fever (100.4°F/38°C or higher).
- Chills or shivering.
- Confusion.
- Dizziness or lightheadedness.
- Shaking or twitching (tremor).
- Fast or irregular heartbeat.
- Severe fatigue.
- Severe nausea, vomiting, or diarrhea.

### How can I tell if my CRS is getting better?

Signs that CRS is getting better include:

- Less frequent fevers and lower fever temperatures.
- Improved shortness of breath and/or decreased need for oxygen.
- Improved or normalized blood pressure readings.

### What questions should I ask my care team about constipation?

- How long will I have to stay at or near a hospital?
- Do I need a caregiver?

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## CYTOKINE RELEASE SYNDROME (CRS)

- How closely should I be monitored after my treatment?
- Is it helpful for me to track my symptoms? What do you recommend?
- Who should I contact if I experience any symptoms of CRS or have any questions?
- When should I go to the emergency department if I experience any symptoms of CRS?
- How will you or my caregiver know I am having symptoms of CRS?
- How will you treat CRS?
- Are there any medications or activities I should avoid while receiving therapy?
- Will I receive a wallet card? What do I need to do with it?

### Additional instructions

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**Important notice:** The Association of Community Cancer Centers (ACCC), Hematology/Oncology Pharmacy Association (HOPA), National Community Oncology Dispensing Association, Inc. (NCODA), and Oncology Nursing Society (ONS) have collaborated in gathering information for and developing this patient educational supplement. This summarized information represents a brief summary of supportive care information and other resources. This supplement does not cover all existing information related to the possible directions, doses, precautions, interactions, adverse effects, or risks associated with specific medication or adverse events and should not substitute for the advice of a qualified healthcare professional. Provision of this supplement is for informational purposes only and does not constitute or imply endorsement, recommendation, or favoring of this side effect management by ACCC, HOPA, NCODA, or ONS, who assume no liability for and cannot ensure the accuracy of the information presented. The collaborators are not making any representations with respect to the clinical information presented whatsoever, and any and all decisions, with respect to such patient management, are at the sole risk of the individual consuming the medication. All decisions related to education and managing adverse events should be made with the guidance and under the direction of a qualified healthcare professional.

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