

Acute Promyelocytic Leukemia (APL): Treatment



What is acute promyelocytic leukemia (APL)?

Acute promyelocytic leukemia (APL) is a subtype of acute myeloid leukemia (AML). This subtype is treated with different medicines than other types of AML. This is because the leukemia cells in APL are often very sensitive to medicines called differentiating agents. APL is one of the most curable forms of leukemia.

What are differentiating agents?

Differentiating agents are not the same as standard chemotherapy (chemo) medicines. Chemo normally works by killing cells that grow quickly, such as leukemia cells. Differentiating agents don't kill the leukemia cells. Instead, they cause them to change (differentiate) into more mature, working cells, so they're no longer leukemia cells.

These medicines have different and often less severe side effects than chemotherapy.

These medicines are used to treat APL:

- **All-trans retinoic acid (ATRA).** This is also known as tretinoin. It's a form of vitamin A. It's taken as a pill.
- **Arsenic trioxide (ATO).** This medicine is a form of the chemical arsenic. It's given daily as a liquid put into your blood through a vein by IV (intravenously).

These medicines may be used alone or together. In some cases, they may be used along with certain chemo medicines. They are not used to treat other subtypes of AML.

When these medicines are used

Differentiating agents are part of the standard treatment for all people with APL. Here is an example of how these medicines may be used:

- **Induction.** This is the first phase of treatment. The goal is to try to lower the number of leukemia cells and put APL into remission. Remission is when there are no signs of leukemia in the body. In this phase, ATRA is given, often along with either a chemotherapy medicine, targeted therapy, or ATO. (ATRA and ATO are preferred if there's a low risk of the leukemia coming back.) About a month after starting treatment, tests are done to check for remission.
- **Consolidation.** This second phase is used to keep the leukemia in remission and kill any APL cells that may be left in the body. This phase lasts for several months. The medicines used are often the same as those used for induction. Sometimes the doses and timing are a little different.
- **Maintenance.** Some people continue to take ATRA for a year or 2 to keep any leukemia cells under control. This is often the plan for people with a high chance that the leukemia will come back. The goal is to maintain the remission. Sometimes chemo medicines may be given, too.

ATO can also be used if the leukemia comes back (relapses) after treatment with ATRA. Or it can be used for leukemia that doesn't go into remission by the end of consolidation.

Possible side effects

The possible side effects of ATRA include:

- Fever

- Headache
- Feeling tired and weak
- Bone pain
- Skin rash
- Swollen feet
- Dry skin, dry mouth, or cracking at the corners of the mouth
- Nausea and vomiting
- Sores in the mouth and throat
- Eye irritation

The possible side effects of ATO include:

- Feeling tired
- Nausea or vomiting
- Swelling
- Diarrhea
- Belly pain
- Nerve damage (neuropathy), which can cause numbness, tingling, or pain in the hands or feet
- Changes in heart rhythm

What is differentiation syndrome?

In the first few weeks of treatment, these medicines can sometimes cause a group of side effects known as differentiation syndrome. It's caused by chemicals the leukemia cells release into the blood. This syndrome can be life-threatening. Symptoms can include:

- Fever
- Breathing problems or cough due to fluid in the lungs and around the heart
- Low blood pressure
- Kidney damage
- Severe fluid retention

If you have symptoms of differentiation syndrome, your healthcare provider may put you on steroids or have you stop treatment for a few days.

You may be put on a steroid at the start of treatment to help prevent differentiation syndrome if:

- You have a high white blood cell count (above 10,000)
- You are getting both ATRA and ATO

Working with your healthcare providers

It's important to know which medicines you're taking. Write down the names of your medicines. Ask your healthcare team what they're for, how they work, and what side effects they might cause.

Talk with your healthcare providers about what side effects to watch out for, and when to call them. Make sure you know what number to call with problems or questions, even on evenings, holidays, and weekends.

It may be helpful to keep a diary of your side effects. Write down physical, thinking, and emotional changes. A written list will make it easier for you to remember your questions when you go to your appointments. It will also make it easier for you to work with your healthcare team to make a plan to manage your side effects.

© 2000-2027 The StayWell Company, LLC. All rights reserved. This information is not intended as a substitute for professional medical care. Always follow your healthcare professional's instructions
This information is not intended as a substitute for professional medical care. Always follow your Healthcare professional's instructions. Copyright Krames LLC.