

Chemotherapy is one of the main methods of treating cancer. But the same chemotherapy that treats the cancer won't help if it is not made properly. Improperly made chemotherapy can even be harmful.

Specially trained pharmacists and pharmacy technicians prepare chemotherapy.

The technician or pharmacist stands in front of a piece of equipment called a Biological Safety Cabinet to make the chemotherapy. The chemotherapy is made inside this cabinet for two reasons. The first reason is to keep the chemotherapy preparation sterile (germ-free). The second reason is to limit the contact between the chemotherapy particles and the pharmacy staff.

All Chemotherapy preparations must be STERILE, ACCURATE, and TIMELY.



The chemotherapy must be **sterile** (germ-free), so you do not get infected by the chemotherapy as it is administered into your body.

The chemotherapy must be made accurate, which means that it is made exactly as your doctor orders. It must be the right drug and the right dose. The fluid that contains the drug must be right. Also, the chemotherapy must be labeled accurately to include the necessary information.



The chemotherapy must be made in a timely manner that also guarantees sterility and accuracy. Remember, timely does not mean "as fast as possible." Timely means the least amount of time that still produces an accurate and sterile product.



What's involved in making chemotherapy?

There are many steps involved in making your chemotherapy. Some of them are:

The doctor orders your chemotherapy. Your doctor must assess your status, your blood work, and your body's ability to handle the chemotherapy before he/she orders a treatment. Your doctor prescribes the name of the drug, the dose, the dates of treatment, the method of administration, the type of fluid to contain the drug, and the duration of the treatment.

The infusion nurse reviews the order and delivers it to the pharmacy. After your doctor writes the order, your infusion nurse reviews the order for completeness. The infusion nurse then delivers the order to the pharmacy.

The pharmacist reviews the order for accuracy and completeness. The pharmacist reviews your doctor's order completely, and then recalculates the dose.

The pharmacist enters the order into the computer system. The pharmacist types the order into a computer system. The computer system then prints a label, which is eventually attached to the bag or syringe of chemotherapy.

The technician reviews the label and gathers the supplies. To make the chemotherapy in the Biological Safety Cabinet, the technician gathers the supplies, including needles, syringes, alcohol

wipes, and the containers of chemotherapy. These containers are called vials.

If the drug comes as a powder, the technician adds another solution to dissolve the powder. The technician uses a syringe to remove the exact amount of chemotherapy from the vial. The technician then adds the chemotherapy to a bag of fluid or to a syringe and places the label onto the bag or syringe.

What happens after the chemotherapy is prepared and checked? After the drugs are prepared and checked in the pharmacy, your infusion nurse performs a final check to make sure that it's your chemotherapy and that the label matches your doctor's order.

Special note: It can take between 20 minutes and 40 minutes to make one dose of chemotherapy depending upon the type of chemotherapy. Some drugs are powders and need time to dissolve. Also, many patients receive more than one type of drug. It is not unusual for a patient to get up to six separate drugs.

Additional Safety Precautions:

Each pharmacist processes one order at a time, so each order gets his/her full attention. When the pharmacist receives more than one order at the same time, the second order waits until the first is done. It's like waiting in line at the grocery store. Each clerk can only wait on one customer at a time.

Why does making a dose of chemotherapy take longer than making a milkshake?

First, a mistake in making a milkshake is not harmful. But your chemotherapy is not a milkshake. In making a milkshake, using vanilla ice cream instead of chocolate ice cream might not be what you want, but it will not harm you. With chemotherapy, there is no room for error. The pharmacist must be 100% correct, and accuracy takes time.

Second, your milkshake must be clean, but it does not have to be germ-free. But your chemotherapy is not a milkshake. Your chemotherapy must be germ free. It must be prepared in the biological safety cabinet using sterile supplies and using a special technique to keep it sterile.

Third, if milkshake ingredients spill on the clerk, it is messy and uncomfortable, but not harmful. But your chemotherapy is not a milkshake. Most experts believe that it is unhealthy for health care personnel to be in regular contact with even small amounts of chemotherapy. The same chemotherapy that may prolong or save your life can harm someone without cancer.



Why can't the chemotherapy be ordered and prepared ahead of time?

Your doctor needs to examine you and look at your lab values before he/she orders the chemotherapy. Based on this examination, your doctor decides if you should receive a different dose of the same drug, a different drug, or perhaps receive no treatment at all. Therefore, the chemotherapy cannot be made until your doctor sees you and checks the lab values.

Please remember: "Timely" does not mean fast. Timely means no more time than is required to make sure that your chemotherapy is carefully made—that it is accurate, sterile, and safe for you and the staff.

Your patience is appreciated.

Sincerely,

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What's taking so long?



Why preparing your chemotherapy is not like preparing a milkshake