

# UNIDAD EDUCATIVA PARTICULAR JAVIER BACHILLERATO EN CIENCIAS

### MONOGRAPH

## "CHEMOTHERAPEUTIC TREATMENT IN AMERICA IN THE LAST DECADE"

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## Gratitude

Before I begin this monographic, I want to say thank to my family, and friends, that there are support me during this time, to help me with my monographic saying me ideas and give me hope that I'm going to do very well this work, I want to give thanks to my professors, Patricia Sánchez and Javier Zambrano, this two persons have always helping me in the moments that I most needed, and correcting my mistakes, so that I taken a better note.



#### Summary

In this monographic work whose theme is the chemotherapeutic treatment in America in the last decade and is addressed to all people who want to know more about this treatment or have a family member with cancer, in which they will be able to understand and have a knowledge of how chemotherapy was created, why it is so important, and what are its side effects, which are many. In the first chapter you can read about how chemotherapy was created, its beginnings and what was the reason why it is still so important in our decade, in addition to its operation, in the second chapter you can read about the different forms of administration of chemotherapy, and the different types of cancer that can cure which are the majority and in the third chapter they talk about their side effects, which are very feared by patients due to many complications that these side effects cause because Chemotherapy despite eliminating cancer cells, also eliminates good cells which causes these side effects such as headache, hair loss, among others. Chemotherapy is also a process of chemicals which are administered in your body to reduce a large tumor or a small or normal-sized tumor, thanks to chemotherapy that tumor can be removed and thus try to save the patient's life, but There are other complications, such as not reducing the tumor in the worst case, or returning the tumor due to cancer cells, all this is detailed in this monograph, in addition to giving a better concept of whether It is a good option to administer it or not, the purpose of this monograph here is to imply that chemotherapy is good for many cancer patients, despite its complications with side effects, and the different types of administration, and its price, is very viable to be able to cure cancer.



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#### Introduction

For the next monographic that is going to be presented and whose them is *The chemotherapeutic treatment in America in the last decade*, it aims to publicize the chemotherapeutic treatment, to publicize how and where this treatment came out, which is very curious, to publicize how this treatment is administered, which can be in some ways, and publicize its side effects, which are many and know how they can be cured, the importance of the monograph here is that people who have a relative with cancer can read and understand what the treatment will be to your relative, so that your relative thinks if you want to do it or not.

The aim of the monograph is to publicize everything about chemotherapy, its importance in the lives of people with cancer, its functioning with each type of cancer and its different types of side effects depending on the type of cancer the patient has.

This monograph has taken the following authors which are Doctor Vallejos, Dr. Armstrong, Dr. Amador, Dr. Garcia, Dr. Muñoz, Dr. Hurtado, Dr. Pérez, which have taken studies like Dr. Amador's book that called what is chemotherapy? The studies or pdf that could be used in this monograph are called the chemotherapy and you, the chemotherapy and your secondary effects, American society of cancer (chemotherapy).

Chemotherapy in the past has not been very efficient, people died due to cancer since about 20 years ago chemotherapy did not have all the chemicals needed to reduce the tumor that the patient had, nowadays chemotherapy is still not Very efficient but it has better medications within it, which makes it much better with tumor reduction. In addition, people still do not trust much treatment but it has been shown that chemotherapy is one of the best ways to treat cancer.



The present monograph has 3 chapters, the first chapter has chemotherapy as its theme, and its subthemes are the definition, the beginning of chemotherapy, advantages and disadvantages of chemotherapy, the second chapter has as its theme the distribution of chemotherapy and the different types of cancer, and the third chapter has as its theme the side effects of chemotherapy and its subthemes are why it causes side effects?, Frequent effects after chemotherapy, can we cure it?



#### Chapter 1

## The chemotherapy

#### 1.1 Definition

Chemotherapy is a treatment that is normally used in people with cancer, as the name itself says, in this treatment only chemicals are used which are called chemotherapeutic or antineoplastic drugs. Then chemotherapy consists of the use of drugs to treat cancer, cancer also has other types of treatments such as surgeries, radiotherapy, and biotherapy (Vallejos, 2018). The main function of this treatment is to eliminate cancer cells that are in the circulatory system and helps the elimination of benign and malignant tumors, these tumors are characterized by having altered cells which multiply and begin to invade different parts of the body as the organs, this whole process is called metastasis which is a very important factor in cancer that can't be left without taking into account, because this is reproducing throughout the body. Armstrong (2014) states: "The goal of chemotherapy is to directly stop the cell growth of the tumor leaving them unable to duplicate or artificially initiating the normal process of cell death called apoptosis" (p.3). Apoptosis is the process that regulates the number of cells in our body, this gives us more cells just when they are needed, in the corresponding place.

## 1.1.1 Use of drugs.

Chemotherapy is the use of drugs, but these drugs can be or very good which help you stop the tumor and make it go away, while eliminating cancer cells, or also being very bad because this can kills your cells good, this brings as consequences to the side effects of chemotherapy.



#### 1.2 The beginning of chemotherapy

The origin of the chemotherapy was all thanks to the mustard gas, which was used in the first and second world war, the soldiers used it as a lethal weapon, this make people almost blind and attacked the respiratory system due to the chemical products that That gas contained In 1919, Dr. Edward Krumbhaar realized that mustard gas had large increases in leukocytes, but also a large number of blood cells. Thanks to this discovery, investigations began until in 1942 an experiment was conducted with a person with lymphosarcoma with a dose of mustard gas. Good results were given, the tumor was drastically reduced, but there were many side effects regarding that. In the 1960s, after several studies, we saw the first chemotherapy combined with the MOMP protocol, this gave rise to many people with cancer who have a great chance to be able to cure, as well as we can confirm that, thanks to Chemotherapy we can find a way to cure this disease.

#### 1.3 Distribution

Chemotherapy is distributed in cycles, the cycles are repeated only if necessary, this means that if the tumor does not decrease or the cells are not eliminated, the cycle will have to be repeated, but there must also be a rest which allows your body to recover the good cells it lost during the first cycle and so on. "A cycle is, therefore, the period of treatment administrations and rest until the next administration". (Amador, 2017, p.7).

The administration of chemotherapy depends on the chemicals that will be used, some can be simply oral (by mouth), and others can be intravenous (veins) which is a longer process, the administration by mouth It is simpler, they are only compressed medications which are easily absorbed by the stomach or intestine. In the intravenous a process called infusion is applied, in



which a catheter is placed in the arm so that the medication goes direct through your circulatory system and thus the effect is faster and more effective, besides the catheter works so that there are no infections to what is a thin and flexible tube. Amador (2011) states: "you may think that wearing a catheter or a port-a-cath can be annoying.

However, the most common is that it does not cause any pain or unpleasant sensation "(p.8). This process can last a few hours, depending on the drugs. After several patients sometimes missing chemotherapy sessions. "It is not good to miss a chemotherapy treatment. But sometimes your doctor or nurse may change your chemotherapy program, this could be due to the side effects you are having "(Dr. Armstrong, 2014, p.9).

## 1.4 Advantages and disadvantages of the chemotherapy

In people with cancer the first option to treat this disease is chemotherapy, but do not believe that this is the cure, this is just a medical procedure to help the person to control their disease and there is a slowdown in their growth for all the body, there are also many people that this treatment has helped them to have a better life but there are others, which are the majority that has not helped them much and has made them worse due to their side effects.

One of the many advantages of chemotherapy is that as I said before it controls cancer cells, inhibits and/or eliminates them so that they do not circulate throughout the body, and that the tumors do not start their growth and do not invade other organs, this helps to prolong your life, making you enjoy every moment that you receive this treatment, chemotherapy helps to reduce the tumors that you have are malignant or benign, although it is easier in the benign ones. In the disadvantages of this treatment are that as it kills cancer cells, it also kills your good cells, this



brings to the side effects, which are what many people suffering from cancer and this treatment are afraid to feel many of these.

The full duration of chemotherapy depends on the type of tumor and phase of the treatment you are in. A neoadjuvant chemotherapy usually has a predefined duration, as well as adjuvant chemotherapy. However, the duration of chemotherapy for an advanced disease is unpredictable. (Amador, 2011, p.6)

The sessions for chemotherapy can be very long, they can last a few months, which will be very difficult.



#### Chapter 2

#### Different types of cancer and the administration of chemotherapy

### 2.1 Lung cancer

This type of cancer usually occurs in people who smoke cigarettes. Lung cancer is created by the trachea, bronchial tubes, bronchial tubes, these are part of the human's respiratory tree. In lung cancer there are different types of carcinomas, these are non-small cell lung carcinomas, advanced non-small cell lung carcinomas and there is also metastatic. In other cases, exists a microcytic lung cancer. García (2005) states: "Cancer consists of growth uncontrolled and a spread of abnormal cells in the body, which invade and damage tissues and organs. The process of transforming a healthy cell into a tumor cell is very complex" (p.9).

## 2.1.1 Non-small lung carcinoma

In this type of carcinoma, the adjuvant chemotherapy method is used after surgery to remove the tumor that is in the lung, this type of chemotherapy helps destroy cancer cells that remained in the body after having performed surgery, also helps that the cancer does not appear again. This is done with the help of typical medications used in chemotherapy. This type of chemo is used when the patient is between grade 2 or 3 of lung cancer.

### 2.1.2 Locally advanced non-small cell lung carcinoma

In this case, patients who are in grade 3 are sent to neoadjuvant chemotherapy which is administered before surgery so that the tumor is reduced and its extraction is not so extensive, but there have been many cases in which the tumors are not they have reduced and had to opt for other treatments so that the tumor shrinks.



#### 2.1.3 Non-small cell metastatic lung carcinoma

This type of carcinoma is the most serious and the riskiest because metastasis is a spread of the tumor, which creates more tumors or causes the disease to run on other sides of the body, which causes more damage to the body and its organs in this case, cisplatin-based chemotherapy is used.

## 2.1.4 Small cell lung cancer

In these cases, this type of lung cancer is the worst for the life of the human because it is considered as a terminal cancer, the chemotherapy used is a combination of a platinum with etoposide, for the human being this would only help to prolong the patient's life.

#### 2.2 Breast cancer

Breast cancer is one of the types of cancers most seen in women, because the mammary glands degenerate, and they become tumors, this is caused by some factors such as age, early menstruation, a diet unbalanced, among others.

The incidence of breast cancer accounts for between 20 and 25 percent of cancers in women and less than 1 percent in men. Cure is possible in most cases, if diagnosed at an early stage, if it is not checked, it warns early (Muñoz, 2016, p.4)

In breast cancer the chemotherapy used is the adjuvant, and the neoadjuvant, because the adjuvant helps to eliminate those cancer cells that were left after the tumor was removed from the breast, and the neoadjuvant helps that when it is a larger tumor, reduces to be able to extract it and that the extraction becomes easier.

## 2.2.1 Types of medications used in the chemo

The types of medications used in adjuvant and neoadjuvant chemotherapies are taxanes, carboplatin, anthracyclines and cyclophosmadide. In other cases, in advanced breast cancer,

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there are other types of medications used such as vinorelbine, capecitabine, anthracyclines, gemcitabine and other agents that have platinum.

### 2.3 Prostate cancer

Prostate cancer happens only in men, since our semen formation is processed in the prostate, it has a very small size and is under the bladder. This type of cancer happens more frequently after having turned 40 but it is not known very well because this cancer is created in the prostate.

There are some studies that hormones are important factors for the creation of this type of cancer.

### 2.3.1 Use of chemotherapy on this type of cancer

The chemotherapy in this type of cancer is used to control the cancer cells that are in the prostate, and it can shrink the tumor, it can also be administered with hormonal therapy so that the results are better and can get to extract the tumor because the chemotherapy had a good effect killing the cancer cells and slowly reducing the tumor.

#### 2.4 Colorectal cancer

Colorectal cancer is one of the types of cancers with more deaths caused worldwide, due to its ease of formation, this begins with a growth inside the rectum or colon called polyps, these can take many years to grow and transform into Cancer. This type of cancer happens more in people w5ho pass 57 years of age due to the late growth of polyps in the colon or rectum, it also happens in people who have a very bad diet which only ingests fat and low fiber and You can also get this type of cancer due to family inheritance.

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In colorectal cancer again adjuvant and neoadjuvant chemotherapy is used, since colon cancer is based on tumors that appear in the colon and rectum, as well as in lung, breast and prostate cancer.

#### 2.5 Leukemia or blood cancer

Leukemia is one of the types of blood diseases and is also known as blood cancer. Hurtado (2016) it refers to the fact that the term leukemia has to do with blood diseases and that the best thing you can do is go to an oncological doctor to get an early diagnosis and thus apply medications faster. This disease causes the bone marrow to create abnormal white globules, which reproduce and kill the common white blood cells, this may lead to bleeding.

#### 2.5.1 Administration of chemotherapy

In this type of cancer, the type of administration is the induced one, which is very intense and lasts about 1 month, the other type of administration is called consolidation which lasts 2 months and is also categorized as intense, and the last one is called maintenance and this is less intense which can last two years. You always have to go to appointments for the application of chemotherapy.

When the purpose of treatment is to regain health. Adjuvant chemotherapy can closing four to six months. Adjuvant chemotherapy is common in breast and colon most cancers. In testicular cancer, Hodgkin and non-Hodgkin lymphoma and leukemias, chemotherapy remedy can be prolonged for up to 12 months

#### 2.5.2 Types of medications used in the chemo

The medicines used are mixed to make more effect, and these drugs used in chemotherapy for leukemia are cyclophosphomides, metroxates, nelabarin, cytarabine, dexamethasone and

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vincristine. In many cases, chemotherapy pills are given in aggregate, that is, you obtain two or 3 unique medicines at the equal time. These mixtures are called chemotherapy remedies. In instances of early-stage breast cancer, popular chemotherapy treatments reduce the chance of cancer recurrence. In cases of superior stage breast most cancers, chemotherapy remedies are administered with the goal of lowering or disappearing the tumor in 30% to 60% of treated patients. You need to remember that each tumor reacts in a different way to chemotherapy.



#### Chapter 3

## Side effects of the chemotherapy

### 3.1 Why the chemotherapy causes side effects?

Cancer cells develop rapidly, and chemotherapy tablets eliminate hastily growing cells.

However, because those medications circulate in the course of the body, they can affect healthy and normal cells that also develop unexpectedly. The motive of facet effects is damage to wholesome cells. Side effects aren't usually as severe as you may count on, but many people worry approximately this part of cancer remedy.

Some chemotherapy drugs can damage the cells of the coronary heart, kidneys, bladder, lungs and nervous system. Sometimes, medicinal drugs may be taken along with chemotherapy to help defend normal frame cells. There also are remedies to alleviate aspect results, and doctors try and administer chemotherapy at tiers high enough to deal with cancer, however maintaining the facet consequences to a minimum. They additionally attempt to keep away from using more than one medicines which have similar facet consequences.

## 3.2 Frequent effects after chemotherapy

Since chemotherapy kills the good cells of our body, there are many forms of commonplace aspect effects that may appear to us due to the fact our defenses are low thanks to the radiation of chemotherapy and additionally its medicinal drugs, those are the different styles of facet results that can occur to us.

### 3.2.1 Fatigue.

Many sufferers often file that they experience a loss of power, which ends in a decrease in hobby, with lack of energy that isn't always they get better with relaxation.



Lack of motivation and reluctance is not unusual, and may occasionally lead to lack of social sports, these signs and symptoms can be as a result of exclusive reasons, each Physical as psychological. It is important that your oncologist is aware of you been to treat your trouble more efficiently. Pérez (2006) states: "The side effects that may arise during treatment with chemotherapy may involve various organs or tissues, one of the objectives in the treatment of the oncological patient is to prevent or mitigate these effects" (p.2).

#### 3.2.2 Nausea and vomiting.

The vomit is a high-quality herbal protection mechanism which lets in the body to cast off poisonous substances to feel better, however in chemotherapy it's miles one of the maximum frequent and really vital toxicities that arise in the administration of chemotherapy.

These nausea and vomiting prompted by using chemotherapy are very commonplace in patients due also to the type of remedy, the combinations of drug treatments used and also depends at the traits of the patient

## 3.2.3 Pain.

In most instances, chemotherapy reasons many pains, those forms of pains are commonplace in humans normally, but for folks that are given chemotherapy, the rigors may be more extreme, these can be headaches, muscle aches, pains Stomach and aches resulting from harm to the anxious device, these pains can be as burning or numbness and those are commonly in the hands. Most types of pain related to chemotherapy enhance or go away among remedies. However, nerve harm worsens with each dose. Sometimes when this occurs, the drug that causes nerve damage ought to be stopped. It may additionally take months or years for the chemotherapy nerve harm to enhance or disappear. In a few humans, it in no way disappears.



#### 3.2.4 Diarrhea.

This is a reaction which is common in sufferers who are given stomach or pelvic chemotherapy.

The incidence of diarrhea causes the affected person's existence to be decreased due to the fact this will result in complications due to the loss of quantity in his frame and electrolytes are altered because the body turns into dehydrated.

If the diarrhea is mild or moderate, without other risk factors such as fever, vomiting, neutropenia, bleeding in the bowel movement, abdominal pain or dehydration, patients can be treated on an outpatient basis, with general non-pharmacological measures, drink plenty of fluids, diet astringent and treatment with oral antidiarrheics such as loperamide. (Pérez, 2006, p.6)

So, the essential factor is to decide the degree of severity of diarrhea to perform the perfect technique for treatment.

#### 3.2.5 Hair loss.

One of the issues that people most hate about chemotherapy is hair loss that is resulting from strong medicines that assault fast-growing cancer cells in which in addition they do exceptional damage to the rapid increase of hair roots. Chemotherapy no longer best causes scalp hair loss, however additionally in different parts of the body which include eyebrows, fingers, eyelashes, and so on. But there may be no purpose to fear an excessive amount of approximately this because after finishing chemotherapy or chemotherapy periods, after a few months your hair grows returned however you still have to attend to yourself.



#### 3.2.6 Mucositis.

Mucosal cells divide rapidly, so they are very touchy to the consequences of chemotherapy, alterations within the oral mucosa and higher gastrointestinal tract may additionally seem in more than 1/2 of sufferer's present process chemotherapy.

The maximum frequent alteration of the mucosa of the mouth during remedy is mucositis. It consists of an irritation of it accompanied by way of painful sores or ulcers, which could every so often bleed and over infect.

The mouth is a place of the body with an extended level of microorganism and fungi. When the mucosa is altered and destroyed, as in the case of mucositis, it's miles easily inflamed making it difficult to therapy and favoring the passage of microorganism to the blood, causing infections, especially if the patient has faded defenses.

### 3.3 Duration of the side effects

Side effects sometimes take many years to disappear and even more if chemotherapy is still being administered but, in most cases, they disappear and are rapid although they are months of much pain. Pérez (2006) refers that many of the side results disappear pretty quickly after finishing the treatment, even though a few take months or even years to vanish completely. The time it takes to conquer the aspect consequences and regain power varies in anybody.

#### 3.4 Can we cure it?

Yes, your healthcare team assist you to save you or deal with many facet results. Currently, there are numerous more medicines to deal with aspect outcomes than inside the past. The prevention and treatment of side effects, called palliative care, is a crucial factor of most cancers remedy.



Nowadays doctors and scientists try to work in drugs that increasingly avoid the side effects of chemotherapy, so now this treatment is less harmful than years ago, due to the new drugs that have been created and will continue to be created to further guarantee its effectiveness.

Before beginning remedy, you may speak with your oncologist what aspect outcomes may additionally appear with the form of chemotherapy that you will be given. If you have already commenced with the cycles, do now not hesitate to suggest any symptoms which you recognize, in order that I can add the most suitable treatment so that it disappears or becomes more tolerable.



#### Conclusions

At the end of this monographic work it is concluded that:

- Just considering chemotherapy can every now and then be something we don't like given that chemotherapy is very associated with most cancers, or just because of the easy fact that its value may be very high, however that isn't so important both, the worst They also can be their facet results which maximum patients deliver them, due to the fact chemotherapy kills each most cancers cells and exact cells, this causes the patient to suffer many discomforts, but this is also now not in comparison to pain of dwelling with this ailment which many people have in those times.
- As is standard to recognize approximately matters, however without knowing its records,
  the general public did not recognize chemotherapy so deeply, they knew much less about
  its history, for this purpose it's miles what I try this work to make recognized things that
  others did now not know of chemotherapy.
- It may be that chemotherapy is handiest recognized to medical doctors, folks that be afflicted by this disease and the people round it; It is not so well referred to as to distinguish it from radiotherapy, as I stated before it's miles very not unusual to confuse those treatment plans due to the importance it has against most cancers, but the cause of this information became to present more understanding to people who undergo
- This remedy or which have circle of relative's participants who go through this
  procedure, to raise attention amongst humans associated with this issue and to have more
  recognition in case it involves the case of suffering from this ailment.



- After all, many human beings should know more about this subject with a view to have at
  the least one more expertise, widespread subculture type because an increasing number of
  cases are being visible with humans with cancer, whether it is breast, kidney or lung most
  cancers.
- This would assist the man or woman to understand what the treatments that would be done if at some point suffered from this horrible disorder or if a family member suffered from cancer. Chemotherapy is a good cancer treatment; you just have to take good care of yourself and always go to your doctor's appointments.



#### Recommendations

- At the end of this monograph it is recommended that people who like medicine, take note of the different chapters that this monograph contains, since it would help a lot to have a better learning and this would also help people who want to specialize in oncology, because chemotherapy enters the branch of oncology, and also of different medical specialties such as surgeon, general practitioner, etc.
- Another recommendation that can be given to be able to read this monograph is to be in a comfortable place, without noise, to be able to concentrate more, also to have a dictionary to investigate a meaning of any word or term that you do not understand or have never seen. Keep in mind that this monograph is written in English, if you do not understand English you can use a translator to be able to satisfy your reading and to know what chemotherapy is and all its other functions.
- Some last recommendations, keep in mind that chemotherapy is not 100% effective, it
  does not always work, but it is best to try and find any method or way to cure and / or
  save from that disease, the last recommendation would be to read the topic with
  Seriously, do not leave it lightly and pay attention to the chapters.



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