INTRODUCTION TO ONCOLOGY

BY

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Definitions

Defining Cancer

Cancer is a term used for diseases in which abnormal cells divide and escape the body control.

Depressed immunity

These cells are able to:

1-Invade surrounding tissues

To exclude Benign tumors

2-Send distant metastases.

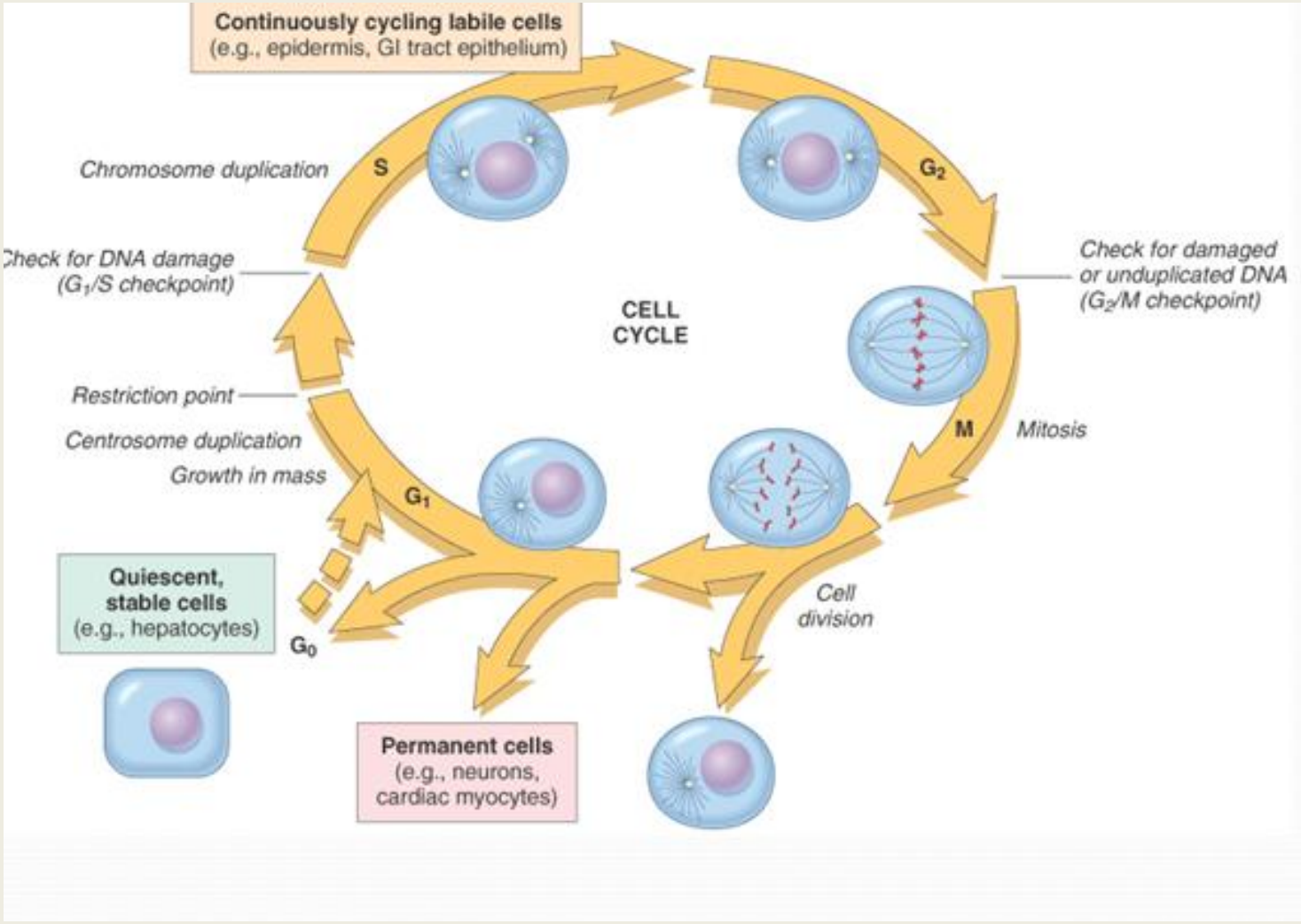
To exclude locally malignant

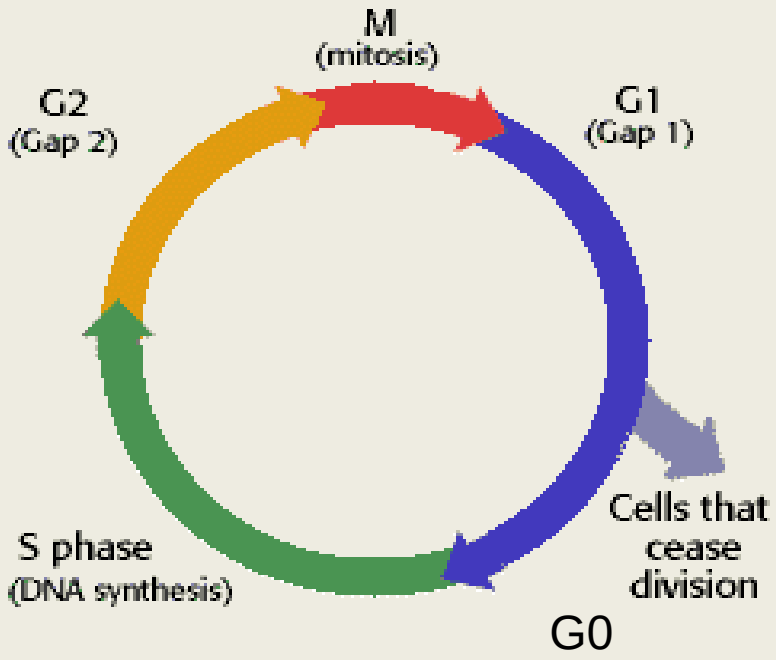
3- Lost their functions

The cell cycle

- Labile cells
- Permanent cells
- Stable cells

- Stem cells?





- Constantly dividing cell types include

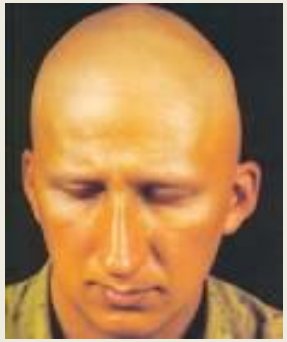
  1- skin cells, 2- GIT

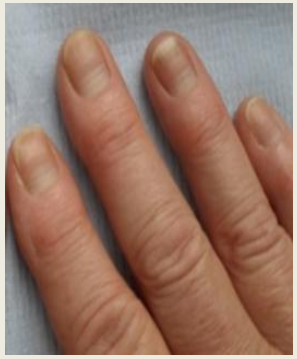
  3-blood cells in the bone marrow.
- Constantly dividing cells have a **higher risk of becoming malignant and** develop **cancer**, dividing uncontrollably

DIVIDING CELLS IN HUMAN BODY

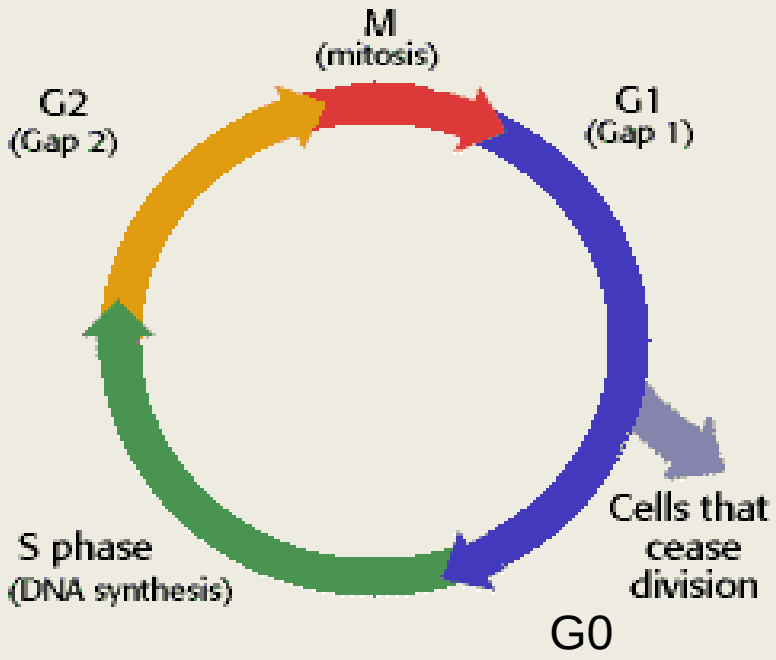
- cytotoxic drugs, such as used in treatment of cancer, work by inhibiting the proliferation of dividing cells, the malignant cells as the desired target .

However, this has the **adverse effect** against the cells normally dividing in the body, and **Hair, skin, GI tract and bone marrow.**

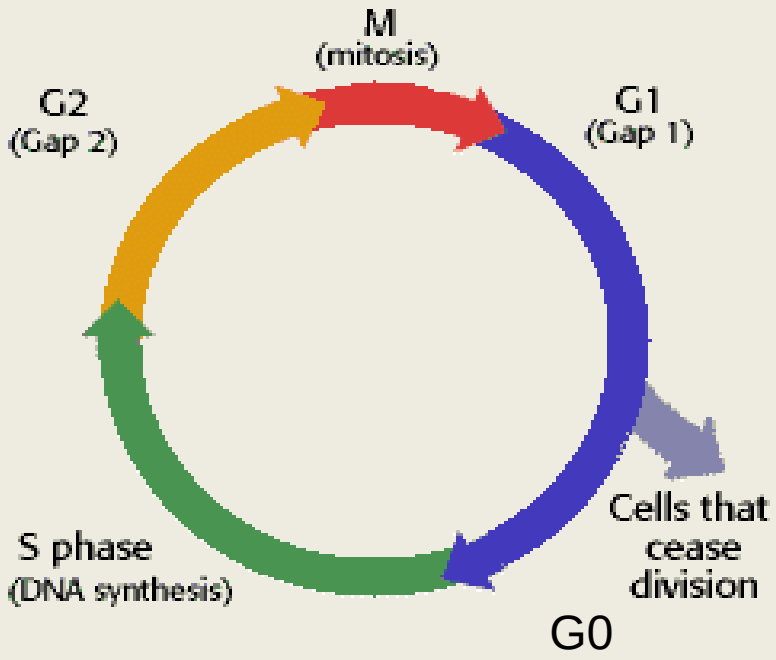




MYELOSUPRESSION



- **Stable cells :** multiply only when needed.
- most of the time in the quiescent G0 phase
- but can be stimulated to enter the cell cycle when needed.
- Examples include: the liver,



- **Permanent cells**: do not have a division potential

Neurons

Muscle cells

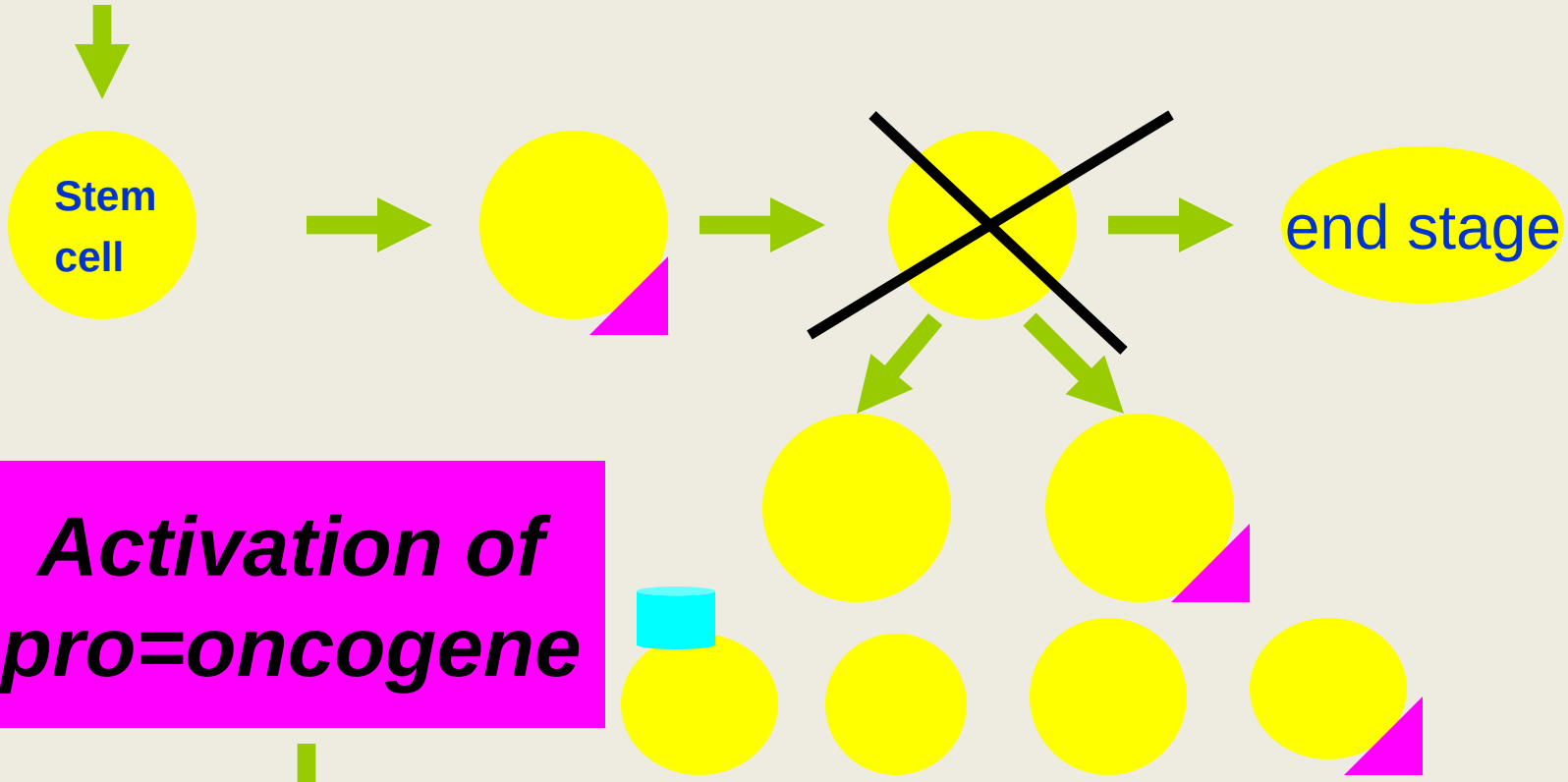
When damaged (by radiotherapy) they can not be replaced

What causes cancer?

- Cell devision is controlled by the genes which are formed of DNA
- Cancer arises from the mutation of a normal gene resulted from DNA defect

Mutated genes that cause cancer are activated pro-oncogene (genes related to cell division) called oncogenes.

Development of Malignant Disease



Activation of pro=oncogene

oncogenes

Cell Arrest & clonal expansion

Causes of Cancer

- • **DNA Mutations**
- – Radiation – and other environmental factors (Tobacco, Alcohol, Radon, Asbestos, etc)
- – Random somatic mutations
- – Inherited germ line mutations
- **Infectious agents**
- – **Viral**
- • HPV – cervical cancer
- • Hepatitis – liver cancer

What should you know as an oncologist ?

- 1-When to suspect cancer?
- 2-How to diagnose cancer?
- 3-What the essential work up for staging?
- 4-How to treat cancer?
- 5-What is the prognosis of your patient?

When to suspect cancer?

Cancer Signs and Symptoms

-Cancer gives most people **no** symptoms or signs that **exclusively** indicate the disease.

-Unfortunately, every complaint or symptom of cancer can be explained by a harmless condition as well.

1- When to suspect cancer?

Cancer Signs and Symptoms

What are the clues???????

-Persistent P

-Progressive P

-Disabling D

Cancer Signs and Symptoms

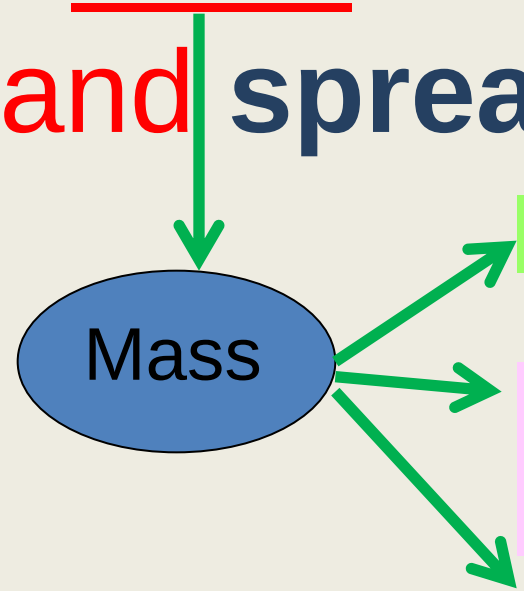
What are the clues???????

- Symptoms & Signs changes according to the site of origin

Cancer Signs and Symptoms

Think about the pathology and site:

- Mass that is able to invade locally and **spread** distantly



lump

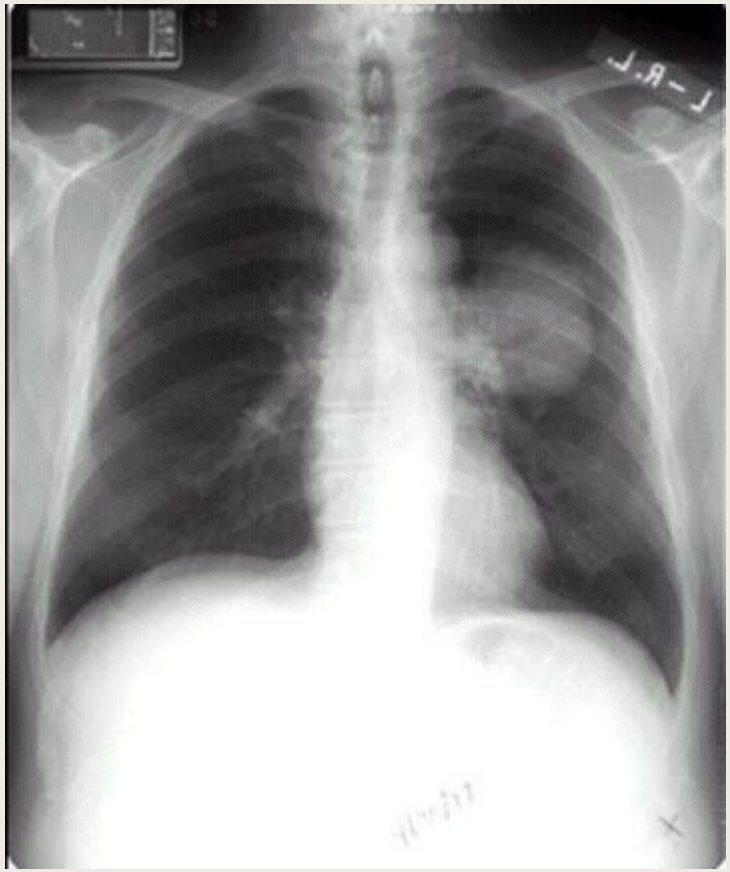
Pressure =on vital organs

Obstruction =of lumens

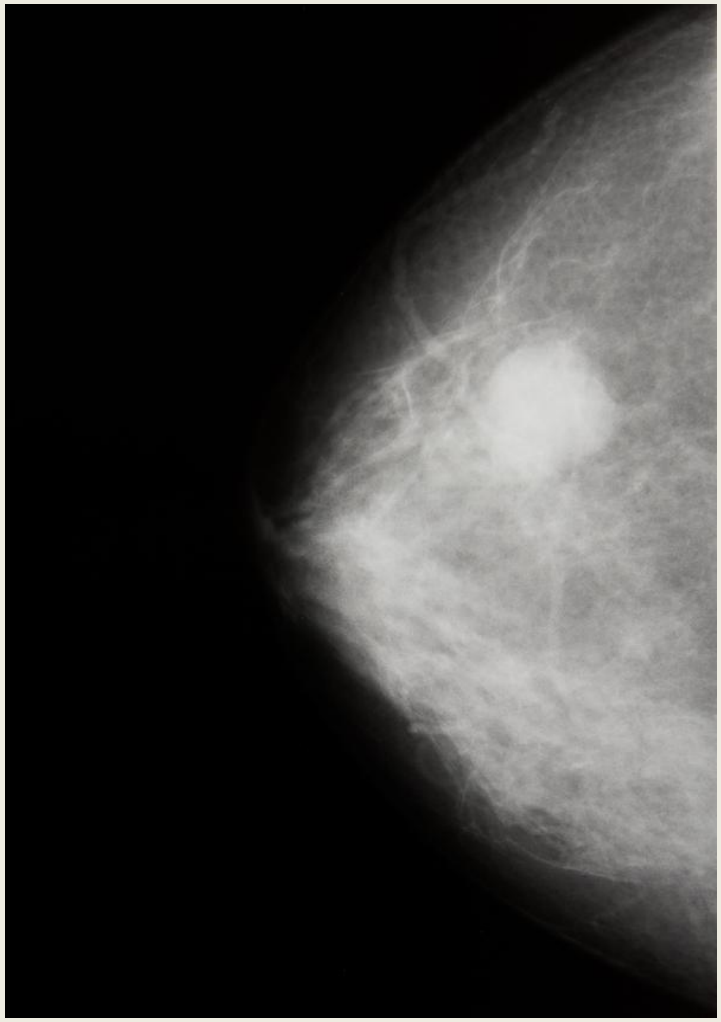
Blood vessels = bleeding
Nerves = pain

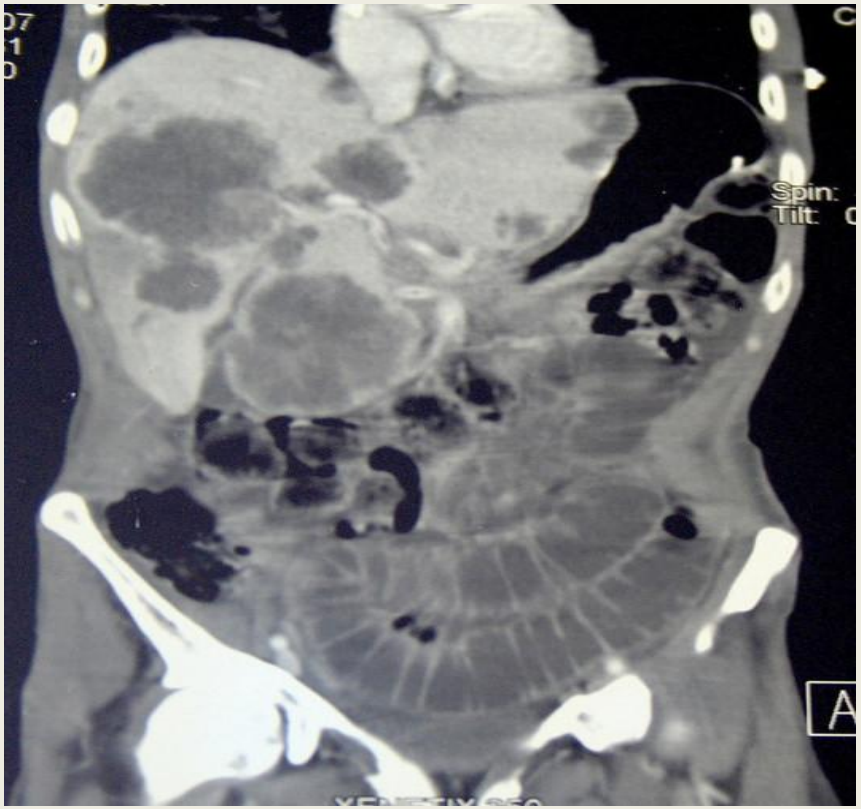
To bone, brain, lung, liver

2- How to diagnose cancer?



2- How to diagnose cancer?





Cancer Signs and Symptoms

Do not forget the constitutional symptoms:

-Fatigue

-Fever

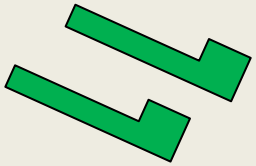
-Sweating

-Wt loss

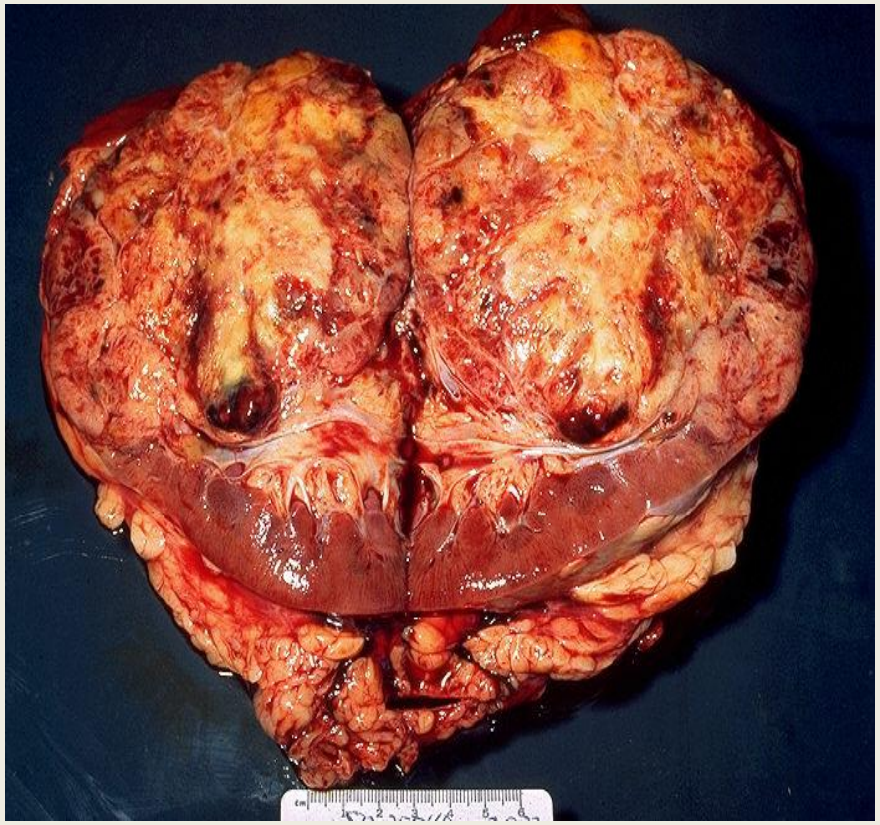
2- How to diagnose cancer?

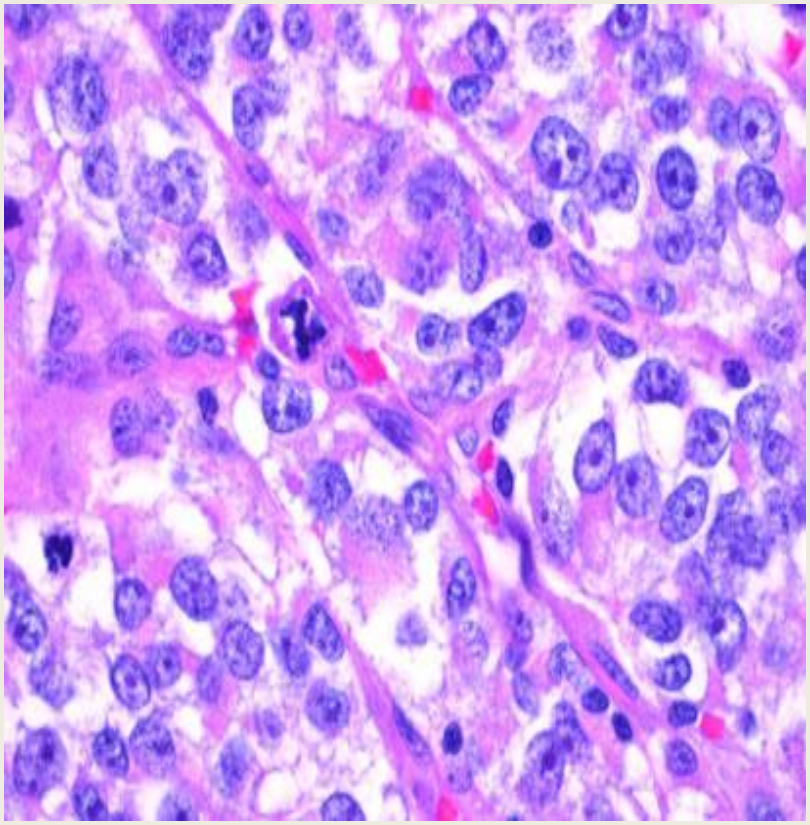
CANCER DIAGNOSIS

- IS **NOT** A CLINCAL DIAGNOSIS **X**
- IT IS **NOT** A RADIOLOLOGICAL DIAGNOSIS **X**
- IT IS **NOT** SEROLOGICAL DGNOSIS **X**
- IT IS A **PATHOLOGICAL** DIAGNOSI
- IT IS A **TISSUE** DIAGNOSIS-



GROSS AND MICROSCOPIC PICTURE OF RCC





Categories of malignant disorders

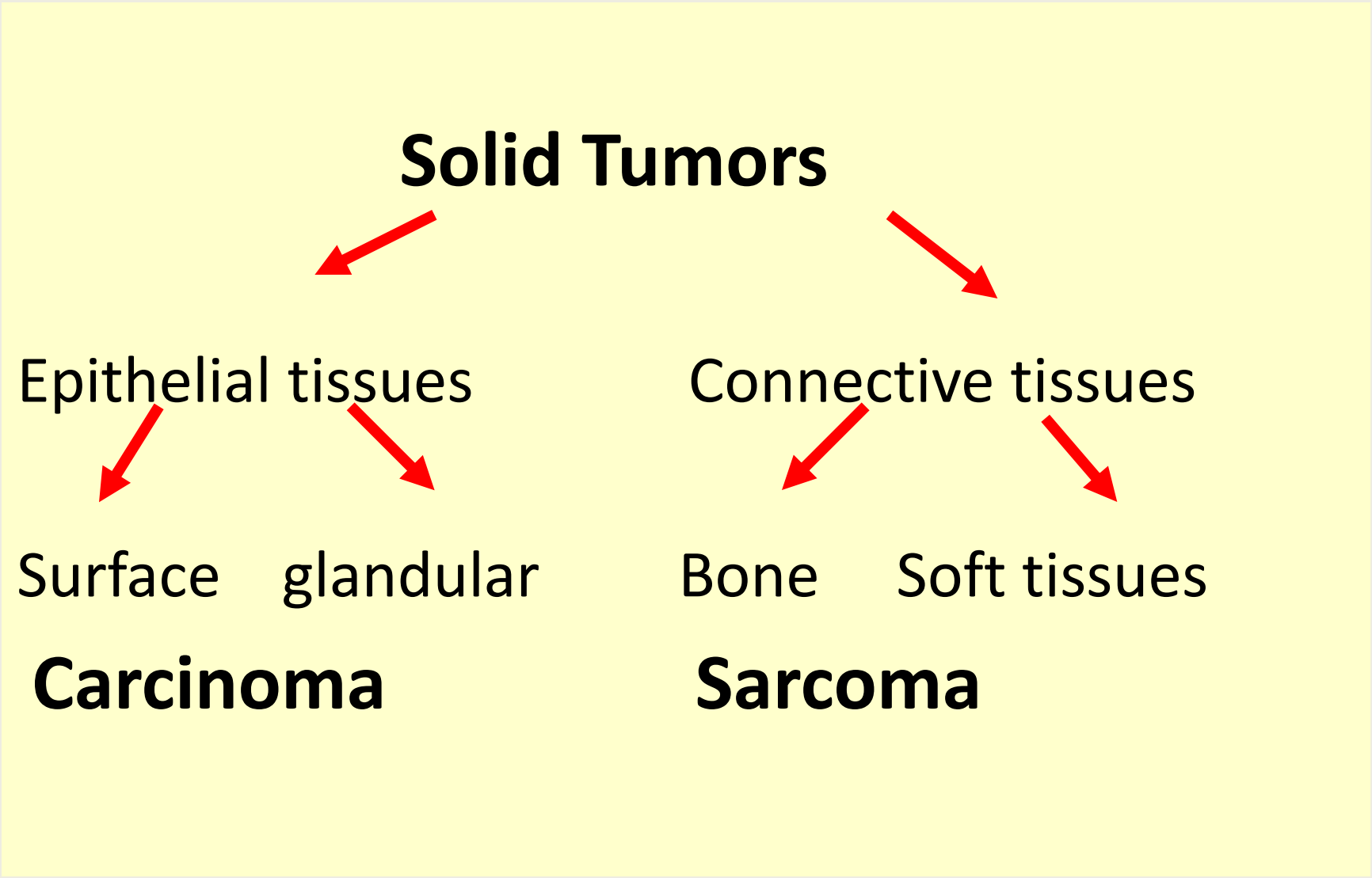
- Liquid malignancies

  1-Myeloproliferative disorders= leukemia

  2-lymphopoliferative disorders= leukemia

- Solid malignancies

Classification Of Solid Tumors



3- What the essential work up for staging?

T= tumor
N= Node
M= Metastases

Clinical TNM
Radiological TNM
Pathological TNM

- RADIOLOGY:
XRAY
MRI
CT
US

SURGICAL STAGING

General Staging of solid malignancies

Early

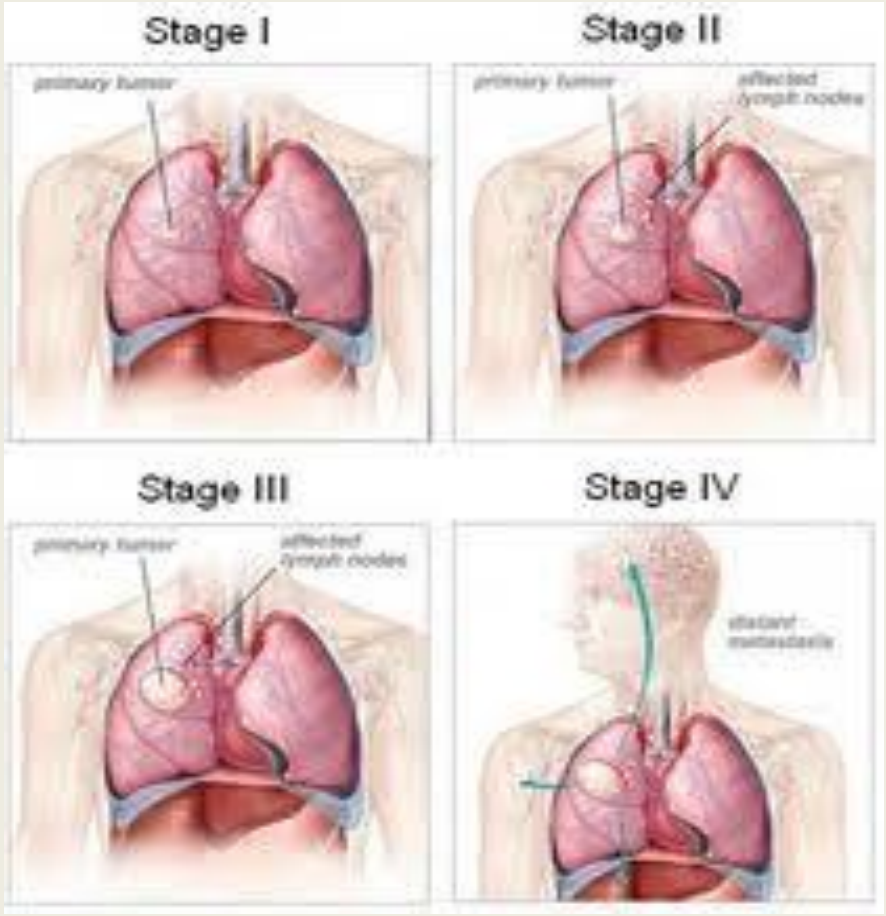
Locally Advanced

Metastatic

Staging of Lung Cancer

Early

Locally Advanced



Metastatic

4- How to treat cancer?

Patient with Established Cancer diagnosis

Answer the following questions:
1-Does the patient have cancer?
2-What type of cancer?
3-What stage of cancer?

Management Multidisciplinary

SURGERY

RADIATION

MEDICAL ONC

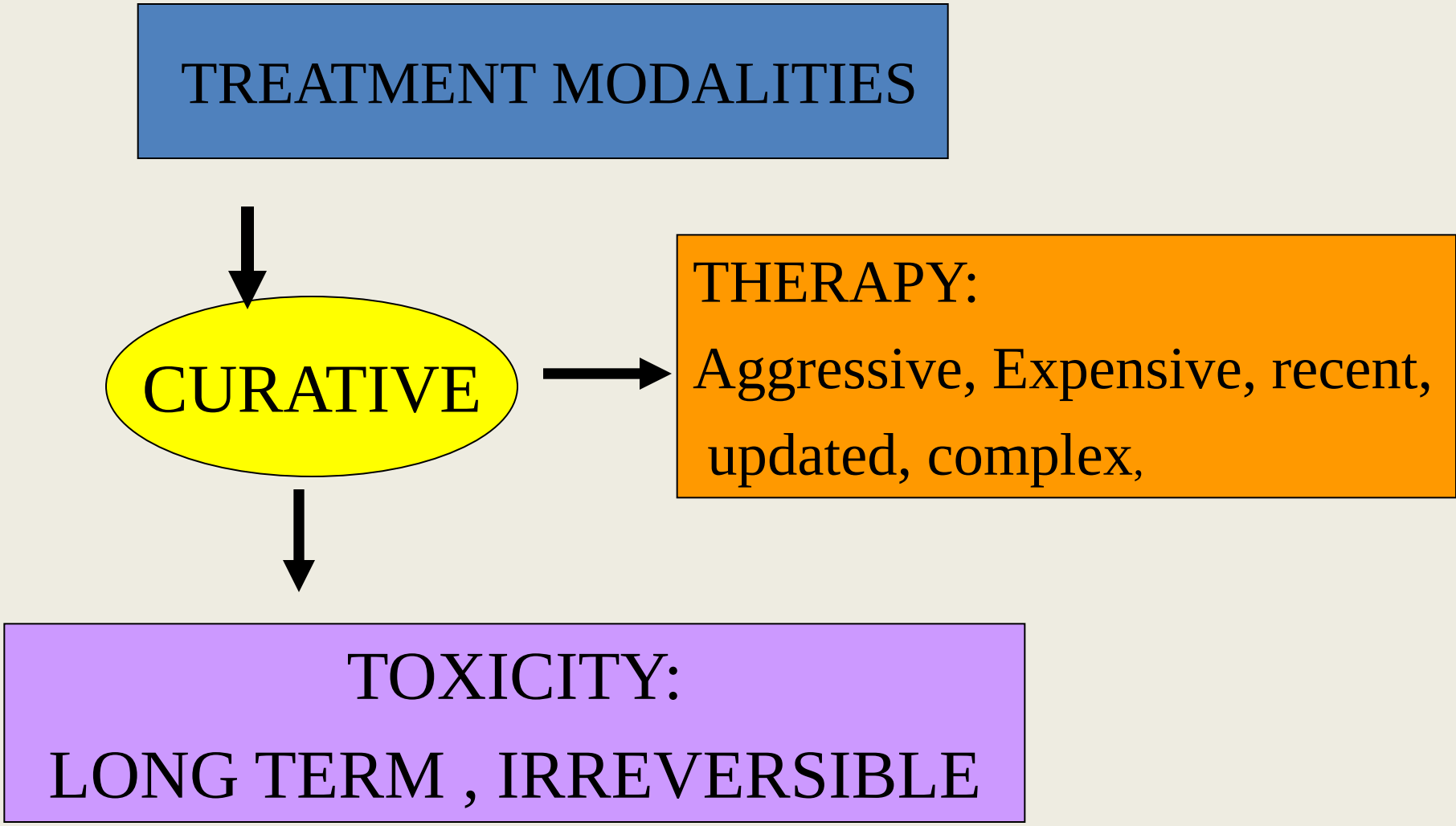
- **Other Disciplines.**
  Radiology, Pathology, Lab
- **Combined clinics**
- **Tumor board**

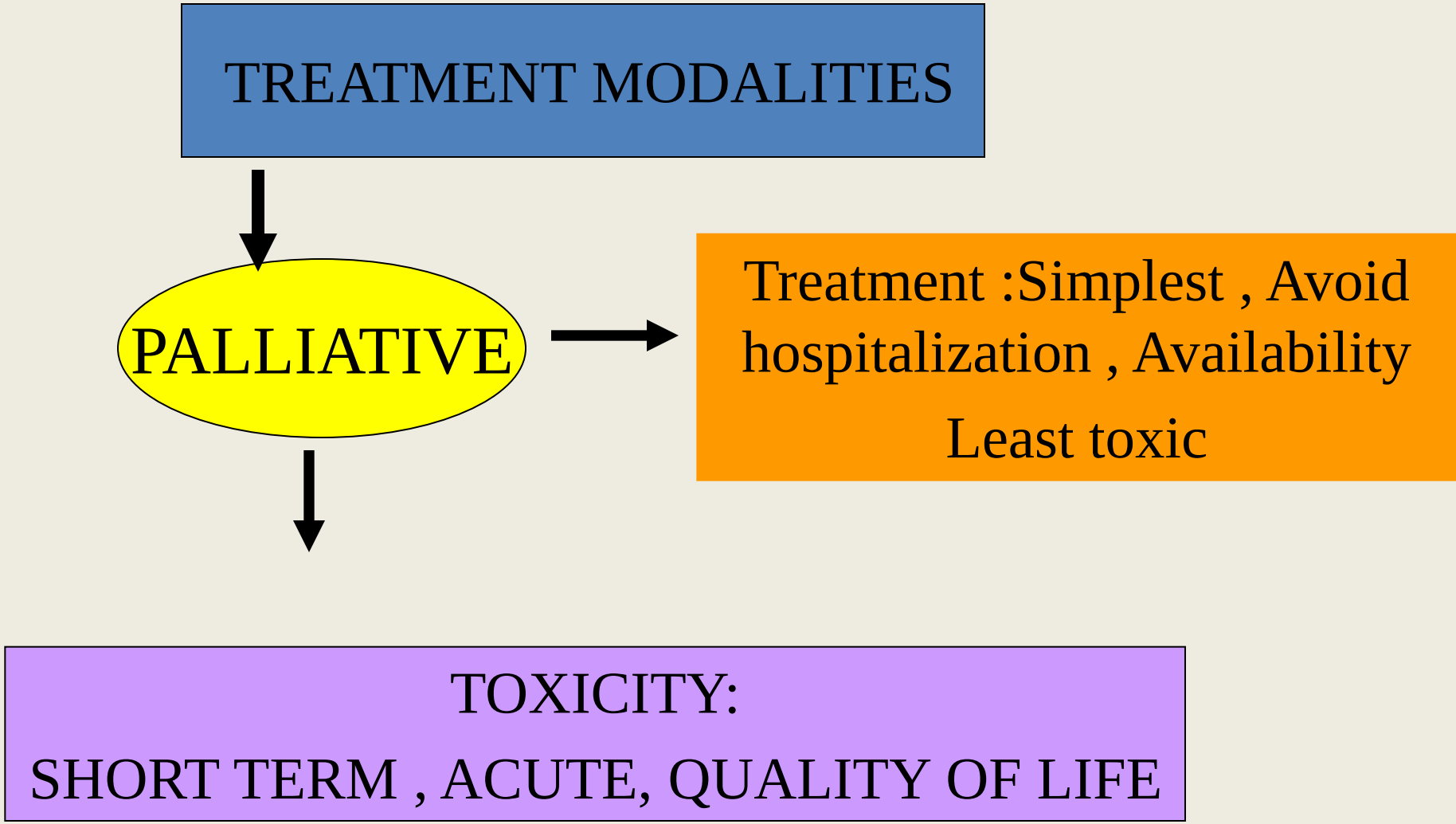
MANAGEMENT

DETERMINE THE TREATMENT OBJECTIVE?

CURATIVE

PALLIATIVE


TREATMENT MODALITIES
CURATIVE
THERAPY:
Aggressive, Expensive, recent,
updated, complex,
TOXICITY:
LONG TERM , IRREVERSIBLE


TREATMENT MODALITIES
PALLIATIVE
Treatment :Simplest , Avoid hospitalization , Availability
Least toxic
TOXICITY:
SHORT TERM , ACUTE, QUALITY OF LIFE

Different Treatment Modalities

- Local therapy = Surgery & RTH

- Systemic therapy = Cth
  Hormones
  Biologicals

Categories of malignant disorders

- Liquid malignancies

  1-Myeloproliferative disorders= leukemia

  2-lymphopoliferative disorders= lymphoma

  Systemic therapy

- Solid malignancies

  According to stage

General Staging of solid malignancies

Early

local
+/- Systemic

Locally Advanced

- **local**
& Systemic

Metastatic

Systemic
+/- Local

5-What is the prognosis of your patient?

What can medicine offer the cancer patient?

1-The cancer type & extent (stage)

2-The host factors (age , sex , co morbidities)

3- The available tools

5-What is the prognosis of your patient?

1- Tumors that can be cured:
lymphomas, leukemia, early solid tumors
2- Tumors that can have prolonged survival:
Locally advanced and some of
the metastatic tumors
3- Tumors that can be palliated:
Metastatic solid tumors