INTRODUCTION TO HEMATOLOGY /ONCOLOGY

By

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OBJECTIVES

- TO PROVIDE THE BASIC KNOWEDGE IN ONCOLOGY FOR UNDERGRADUATE STUDENTS.

Objectives

Main :

- Aim at a better understanding and knowledge OF oncology
- To appreciate the importance of the concept of **multidisciplinary approach** in cancer treatment.

The Other : Be able to identify strengths, deficiencies, and limits in knowledge and needed expertise to practice oncology.

Defining Cancer

scienceblog.cancerresearchuk.org

Posted on October 14, 2010 by Kat Arney

Claims that cancer is only a 'modern, man-made disease' are false and misleading

This is not only scientifically incorrect, but misleading to the public and cancer patients

Cancer has always been with us, from ancient civilizations to today.

Definition of Cancer

- **Defining Cancer**

  Cancer is an abnormal cellular division inside the body:

Types of Tumors

Not all tumors are cancerous; tumors can be benign or malignant.

Defining Cancer

- **Primary Tumors**

  Represent de novo tumors in their initial site

- **Metastatic Tumors**

  Originate from the distant growth of the primary tumors

  Unknown primary

  When you have a metastatic tumor without identifying a primary after the basic work up.

Categories of malignant disorders

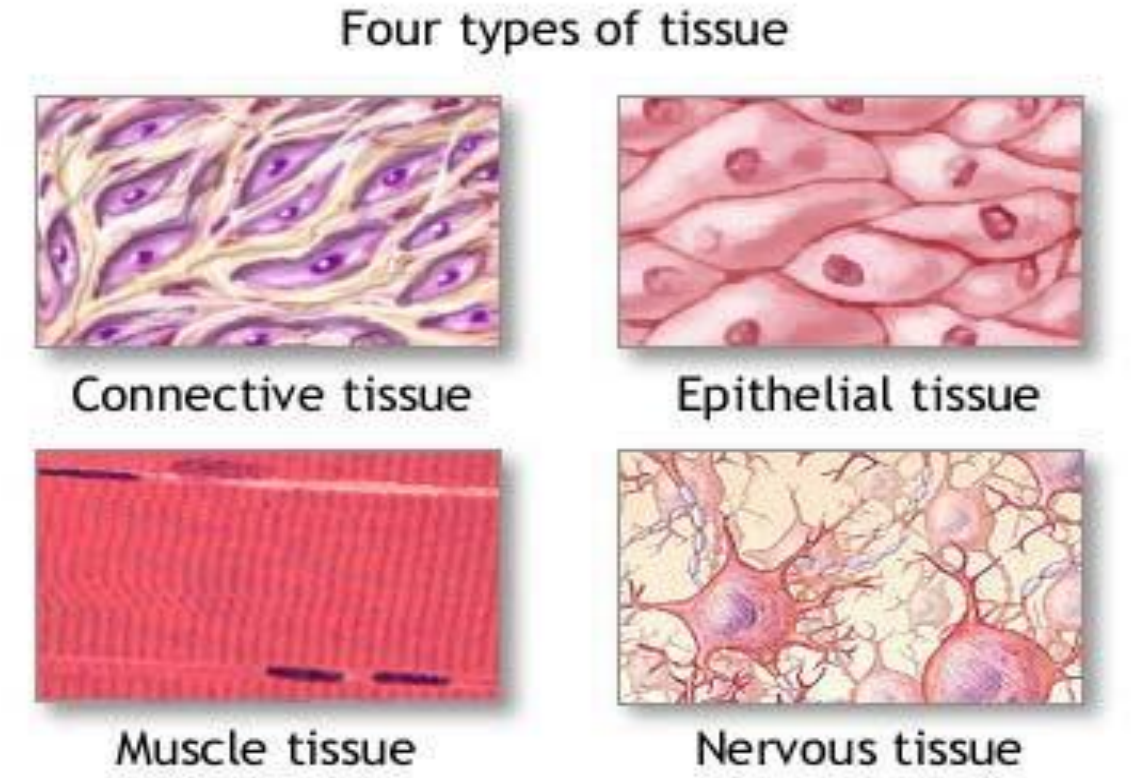
- Liquid malignancies

  1-Myeloproliferative disorders= leukemia (Acute and Chronic)

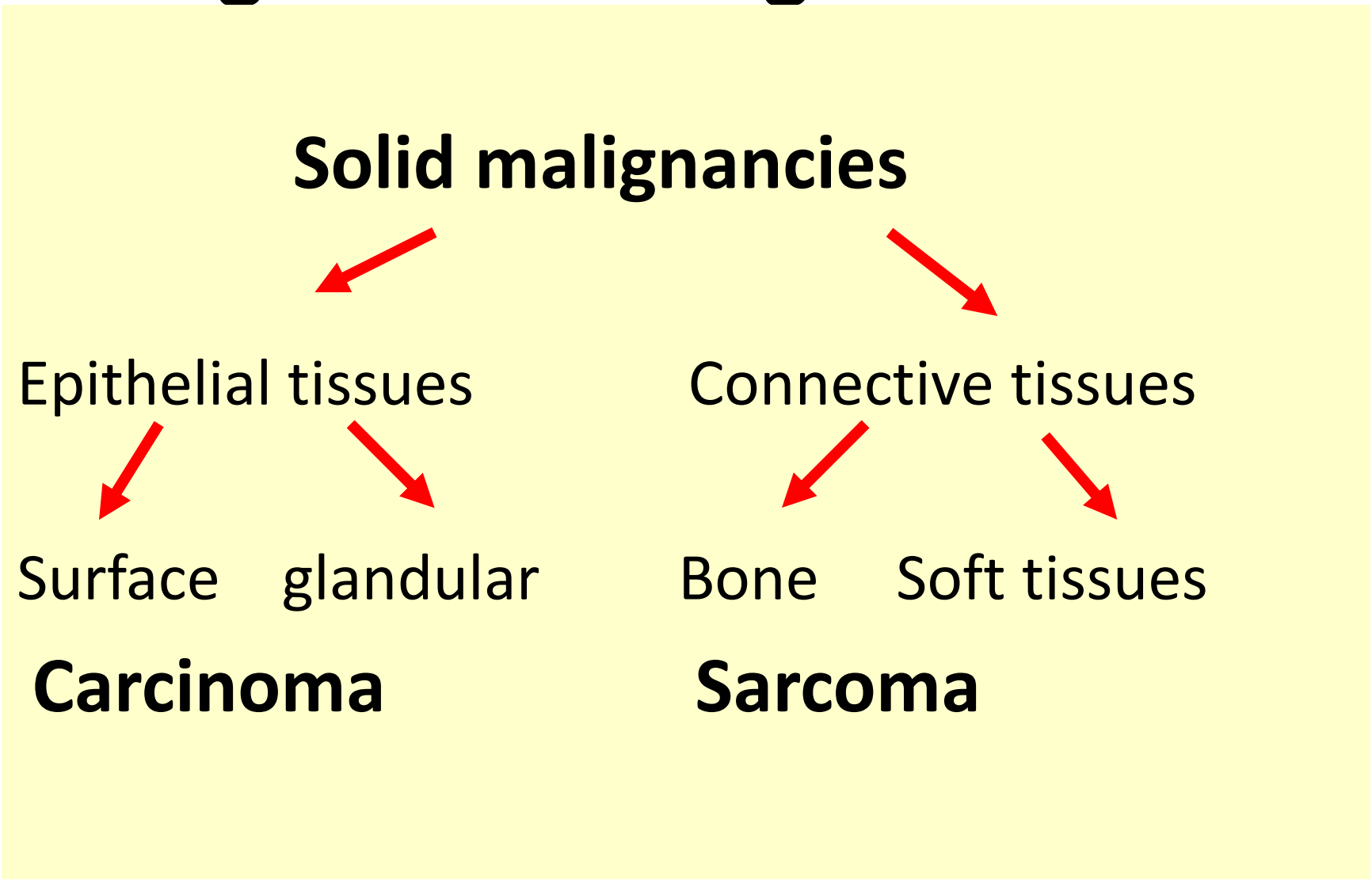
  2-lymphopoliferative disorders= leukemia (Acute and Chronic)

- Solid malignancies

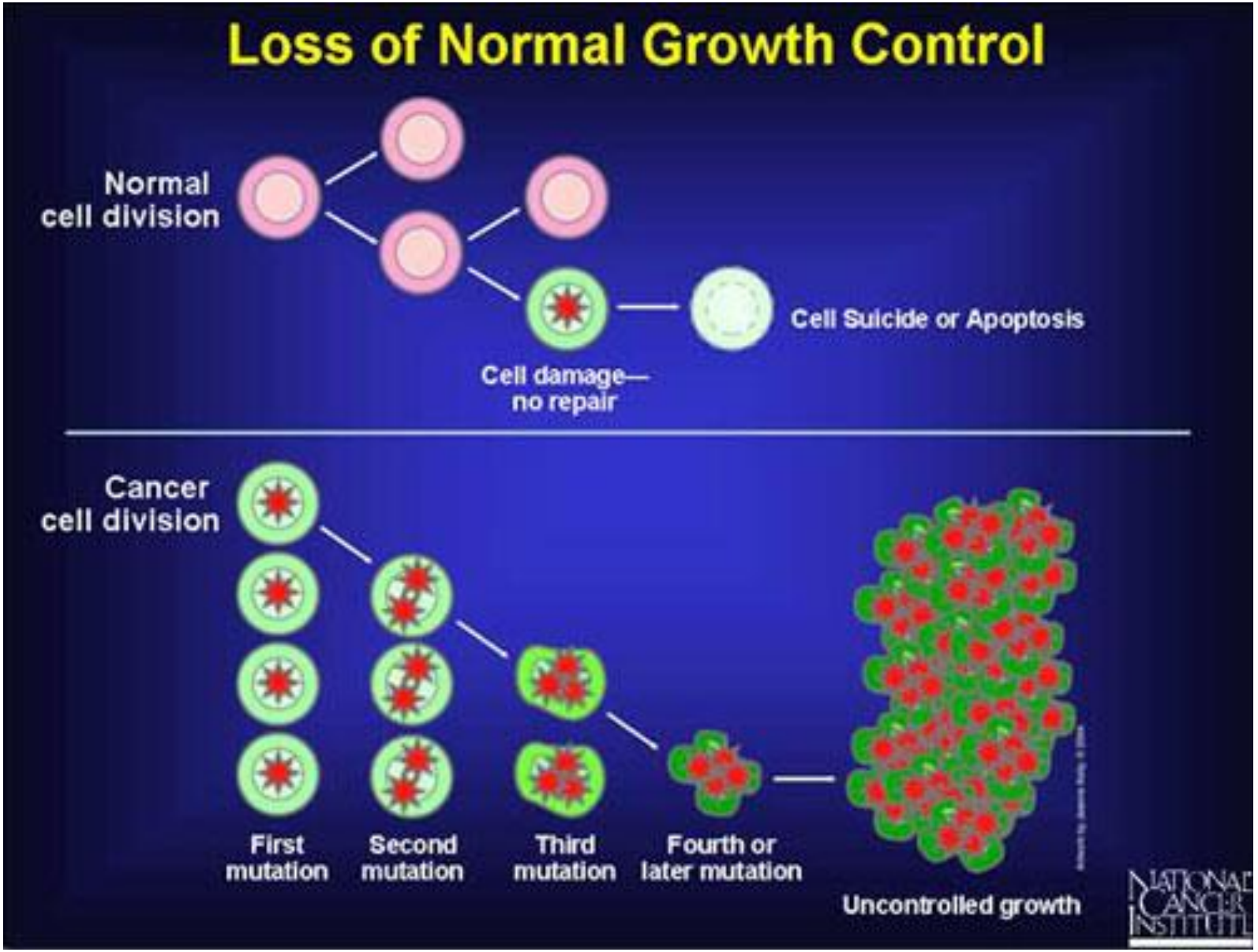
Types of Tissues



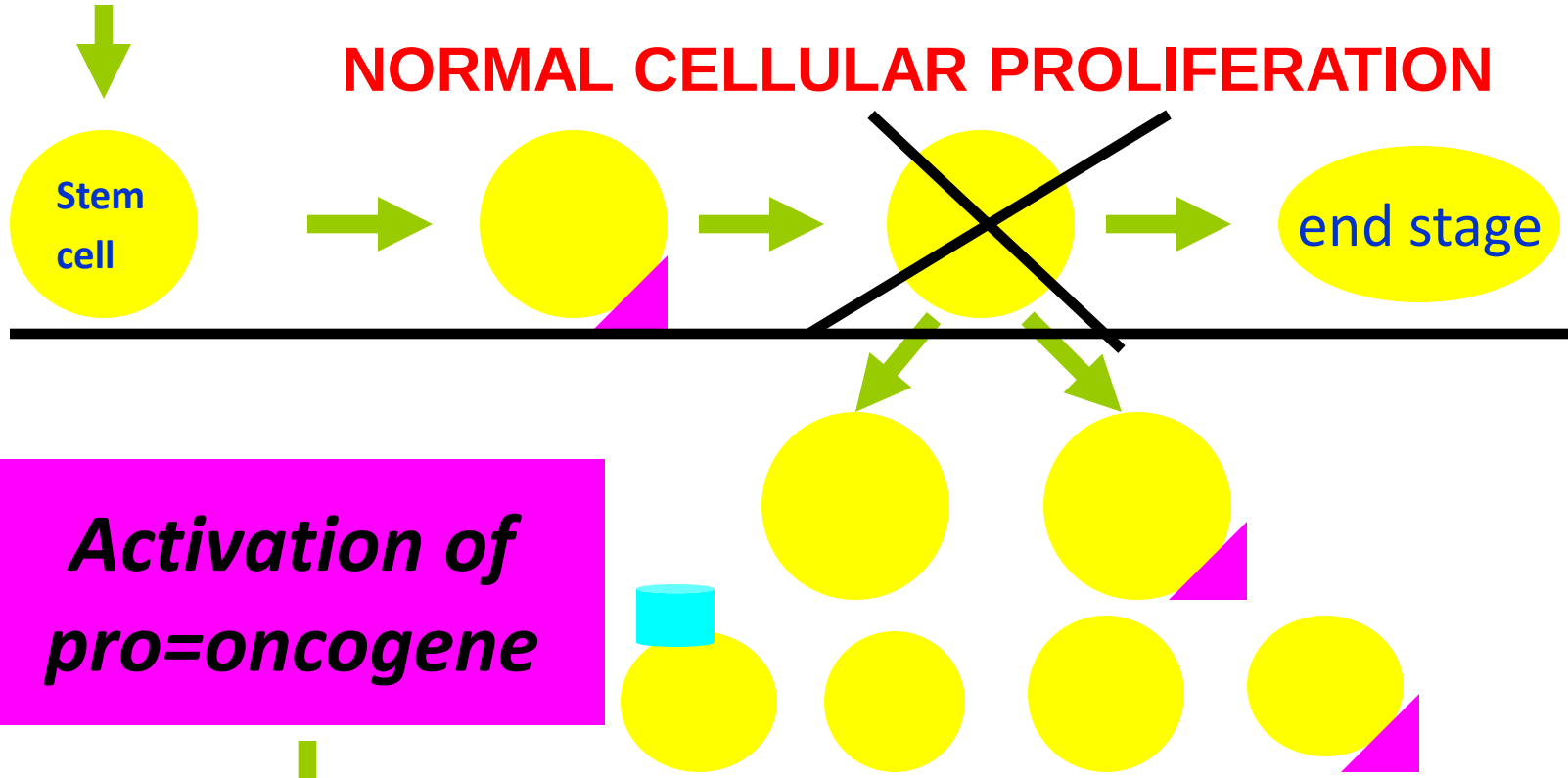
Categories of malignant disorders



What causes cancer?


Loss of Normal Growth Control
Normal cell division
Cell Suicide or Apoptosis
Cell damage— no repair
Cancer cell division
First mutation
Second mutation
Third mutation
Fourth or later mutation
Uncontrolled growth
NATIONAL CANCER INSTITUTE

Development of Malignant Disease



Activation of pro=oncogene

Genetic mutation

Cell Arrest & clonal expansion

What causes cancer?

Cancer arises from the mutation of a normal genes (proto oncogenes).

Mutated genes that cause cancer are called oncogenes.

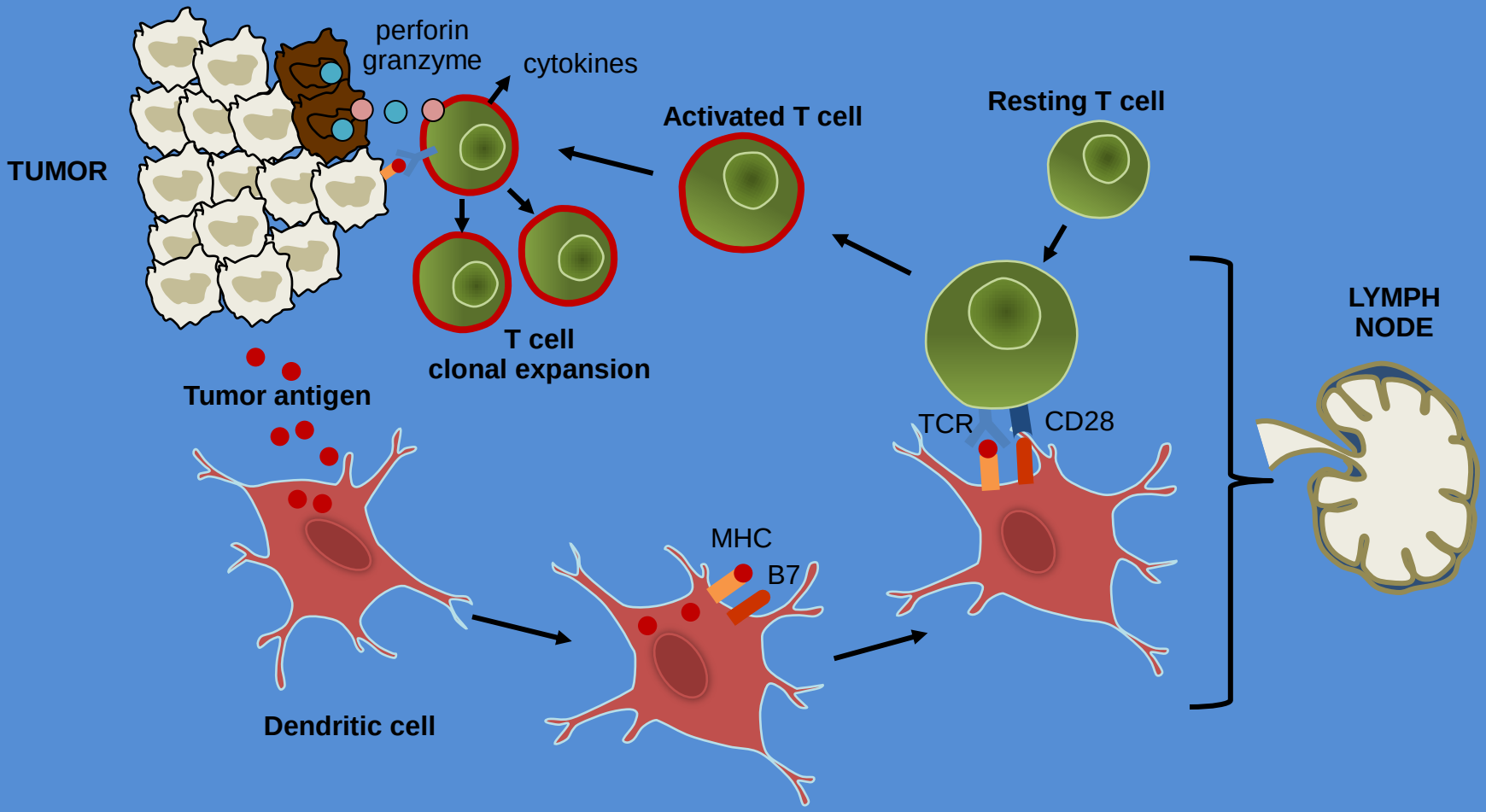
Causes of Cancer or DNA mutation

- • **DNA Mutations**
- – Radiation – and other environmental factors (Tobacco, Alcohol, Radon, Asbestos, etc)
- – Random somatic mutations
- – Inherited germ line mutations

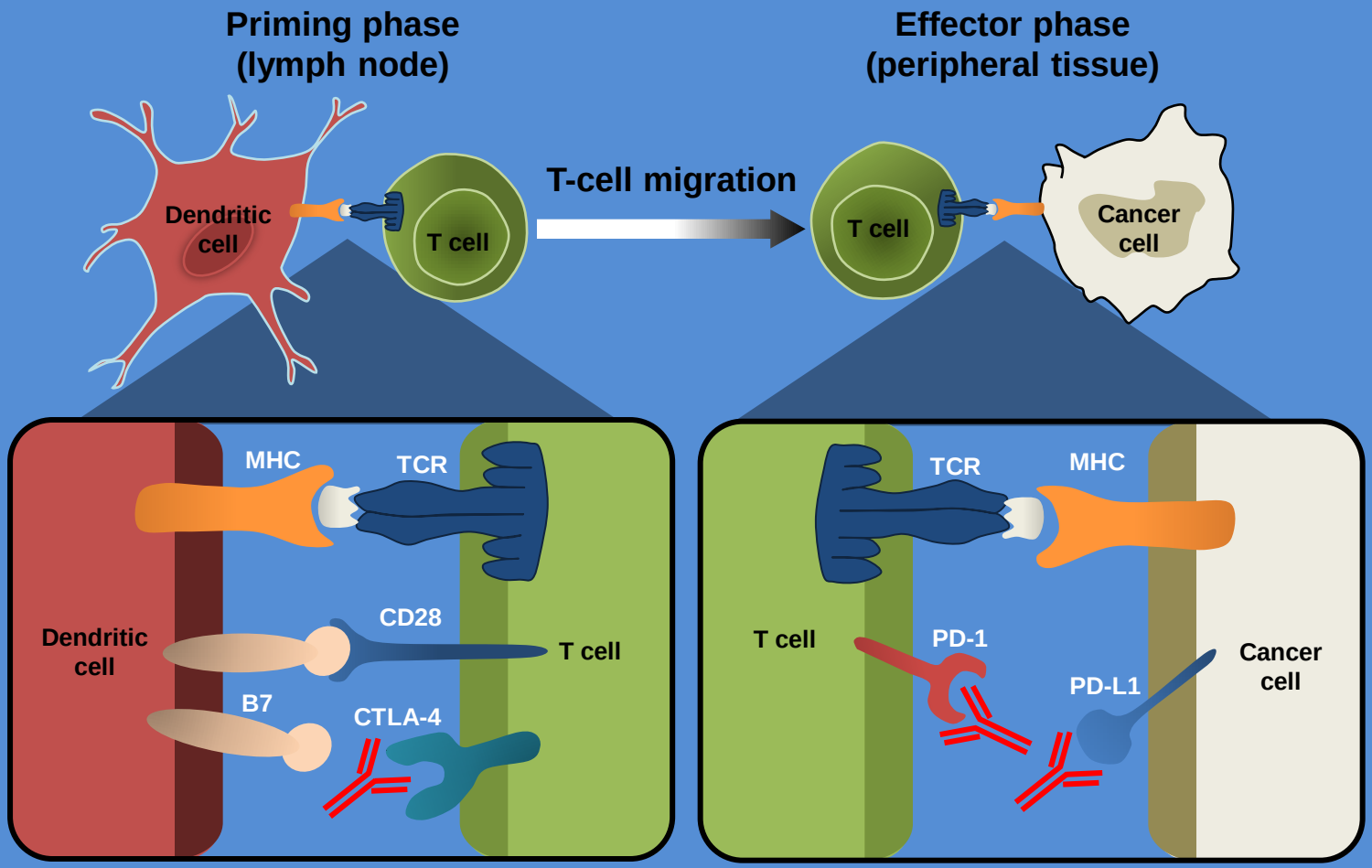
Causes of Cancer

- • **Genetic predisposition-**
- – Rb, p53, APC, CDKN2A, BRCA1, BRCA2
- • **Infectious agents**
- – **Viral**
- • HPV – cervical cancer
- • Hepatitis – liver cancer
- *EBV - Lymphoma*
- **–Bacterial**
- • *H. pylori – stomach cancer*

Tumor Immunology: Overview



CTLA-4 and PD-1/L1 Checkpoint Blockade for Cancer Treatment



Ribas A. N Engl J Med. 2012;366:2517-2519.

If you decided to be an oncologist
What should you know?

- 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?

1- When to suspect cancer?

1- 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.

Be clear with your patient !!!!

1- When to suspect cancer?

Cancer Signs and Symptoms

What are the clues???????

-Persistent

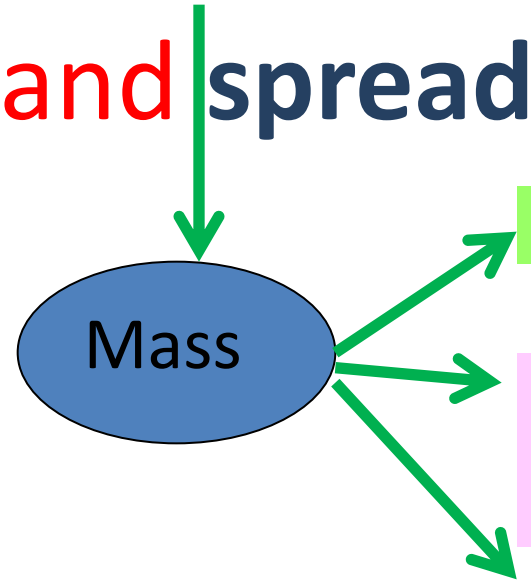
-Progressive

-Disabling

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

Cancer Signs and Symptoms

Cancer is a systemic disease

Do not forget the constitutional symptoms:

-Fatigue

-Fever

-Sweating

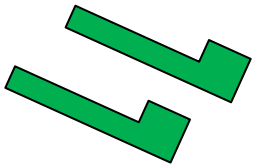
-Wt loss

THANK YOU SEE U LATER

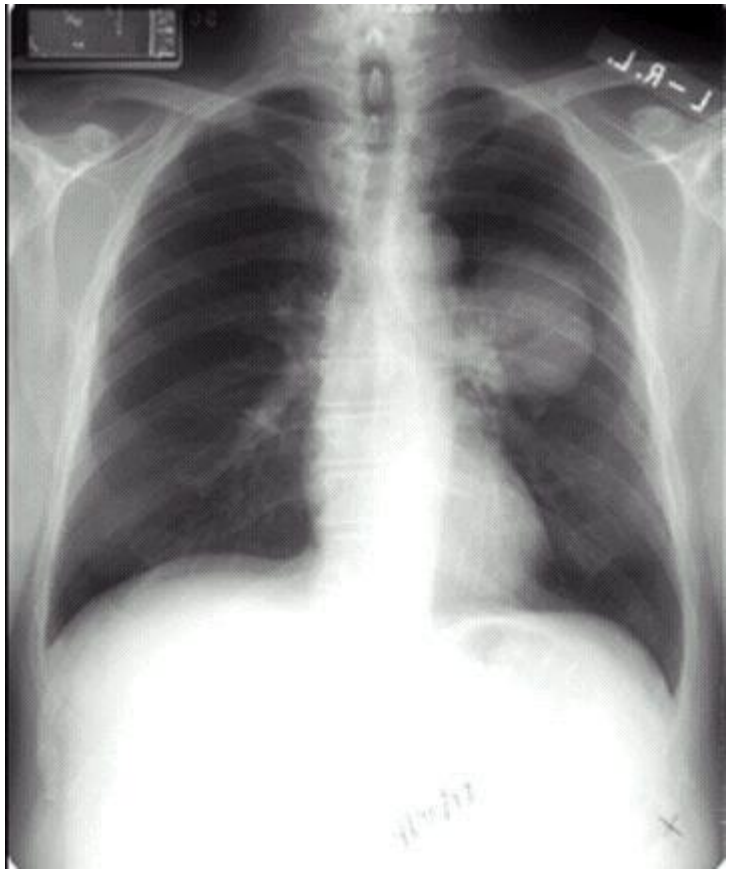
2- How to diagnose cancer?

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-



2- How to diagnose cancer?



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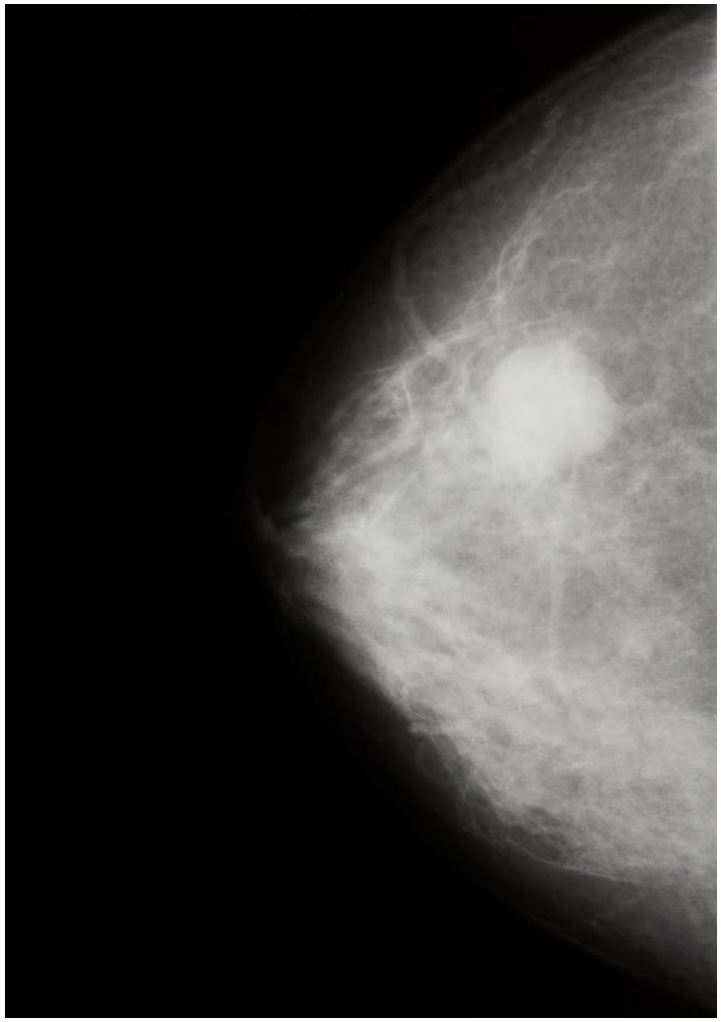
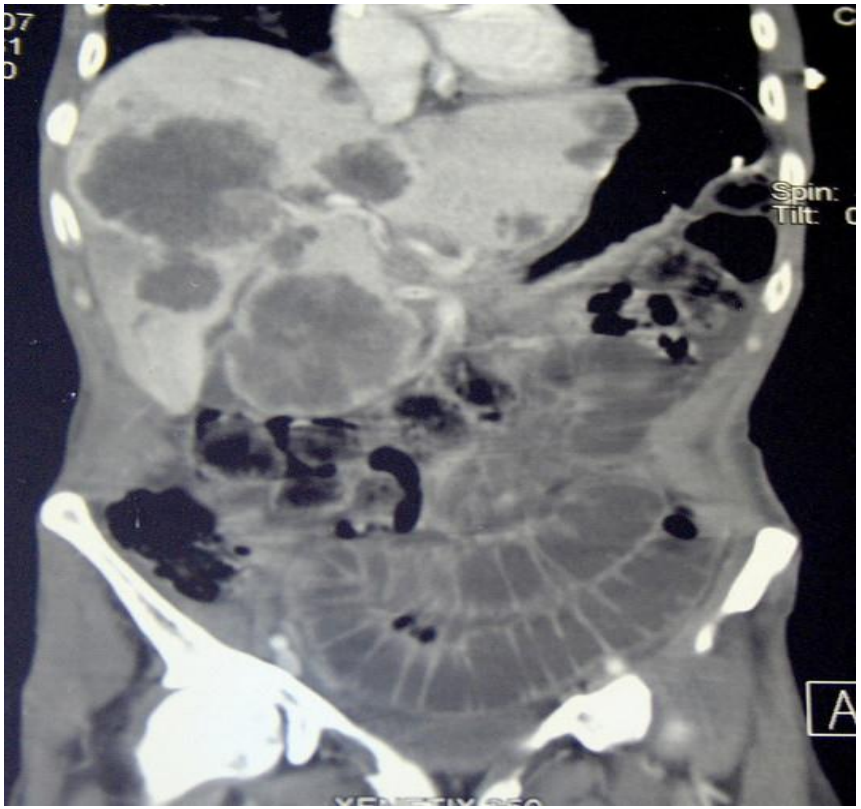




Cancer diagnosis

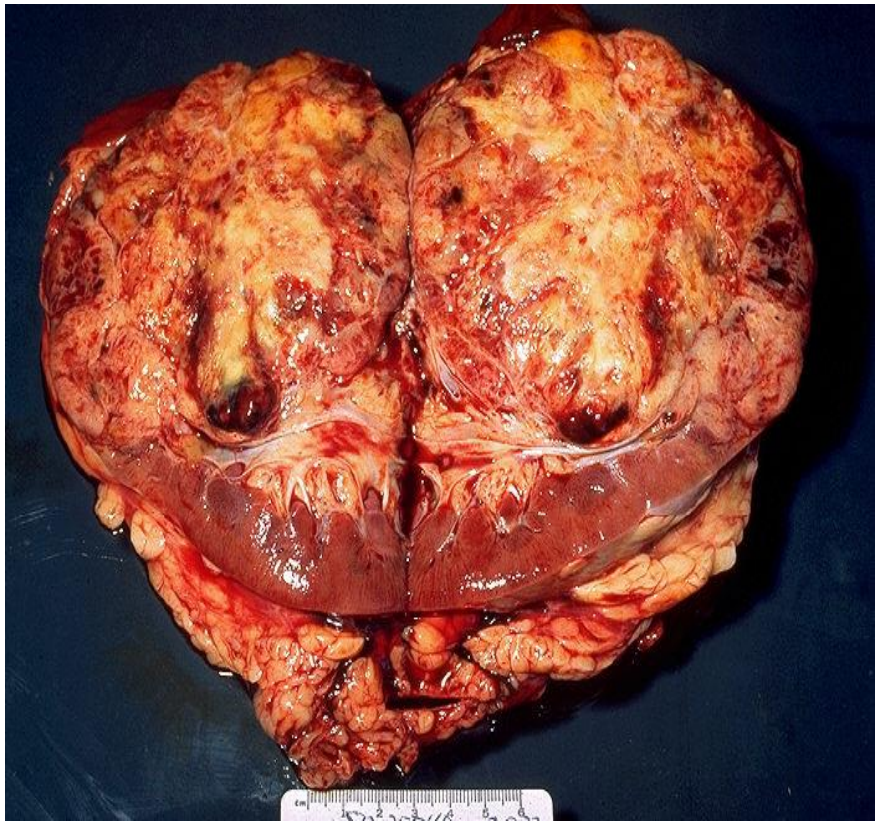
Efforts to get tumor tissues for pathological Diagnosis:

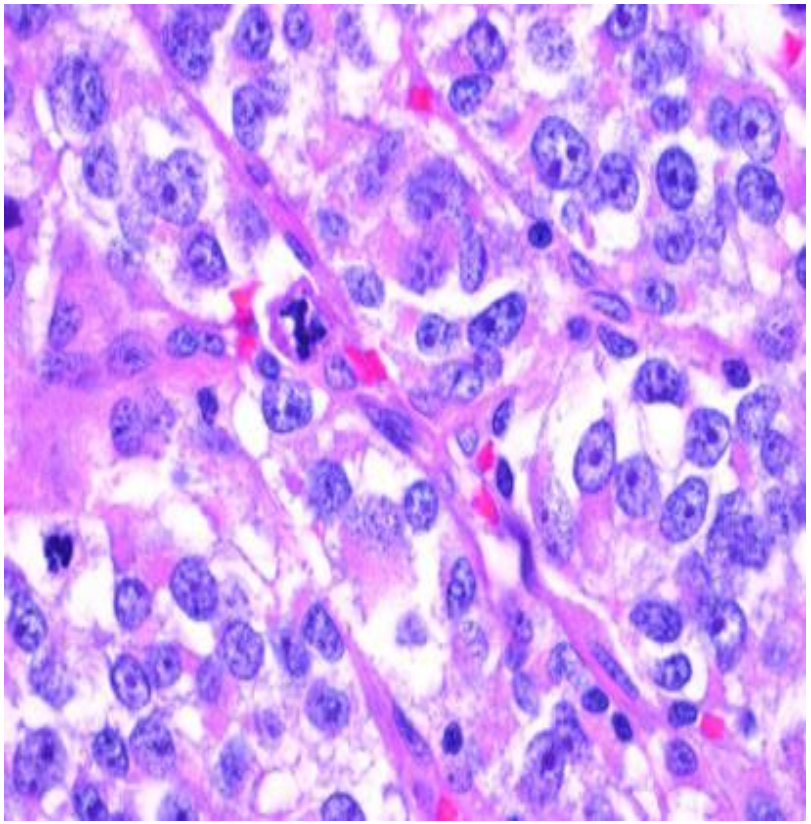
- Surgical biopsy

- Intervention radiology

FNA ---- TRUE CUT

GROSS AND MICROSCOPIC PICTURE OF RCC





3- What the essential work up for staging?

T= tumor
N= Node
M= Metastases

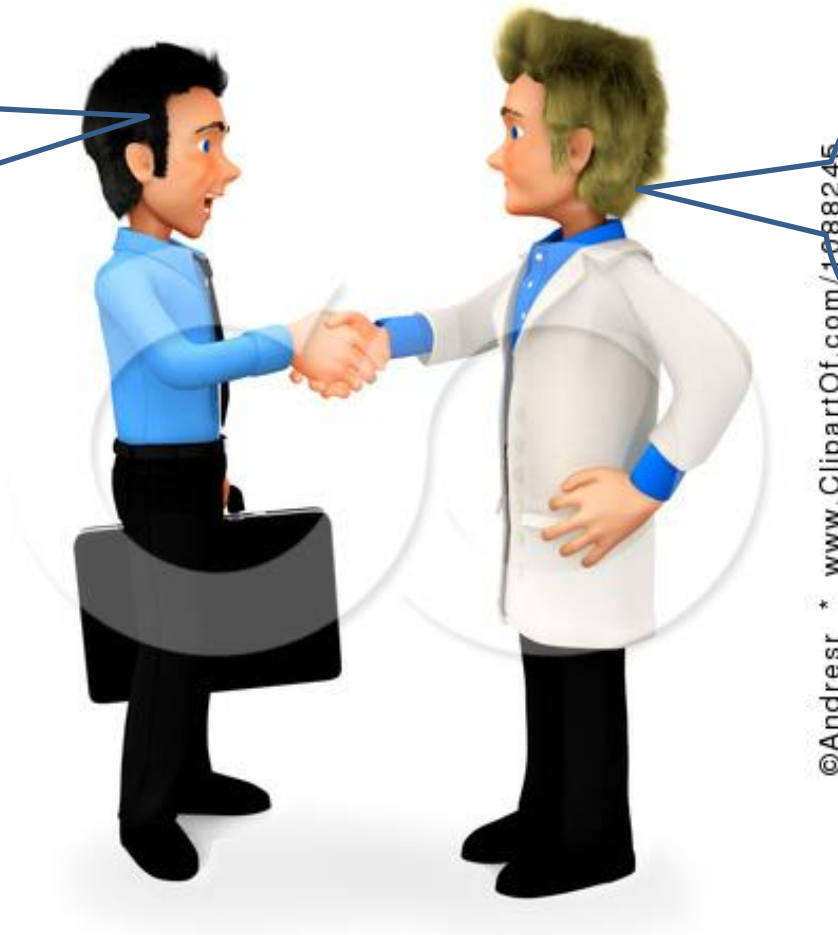
Clinical TNM
Radiological TNM
Pathological TNM

- RADIOLOGY:
XRAY
MRI
CT
US

SURGICAL STAGING

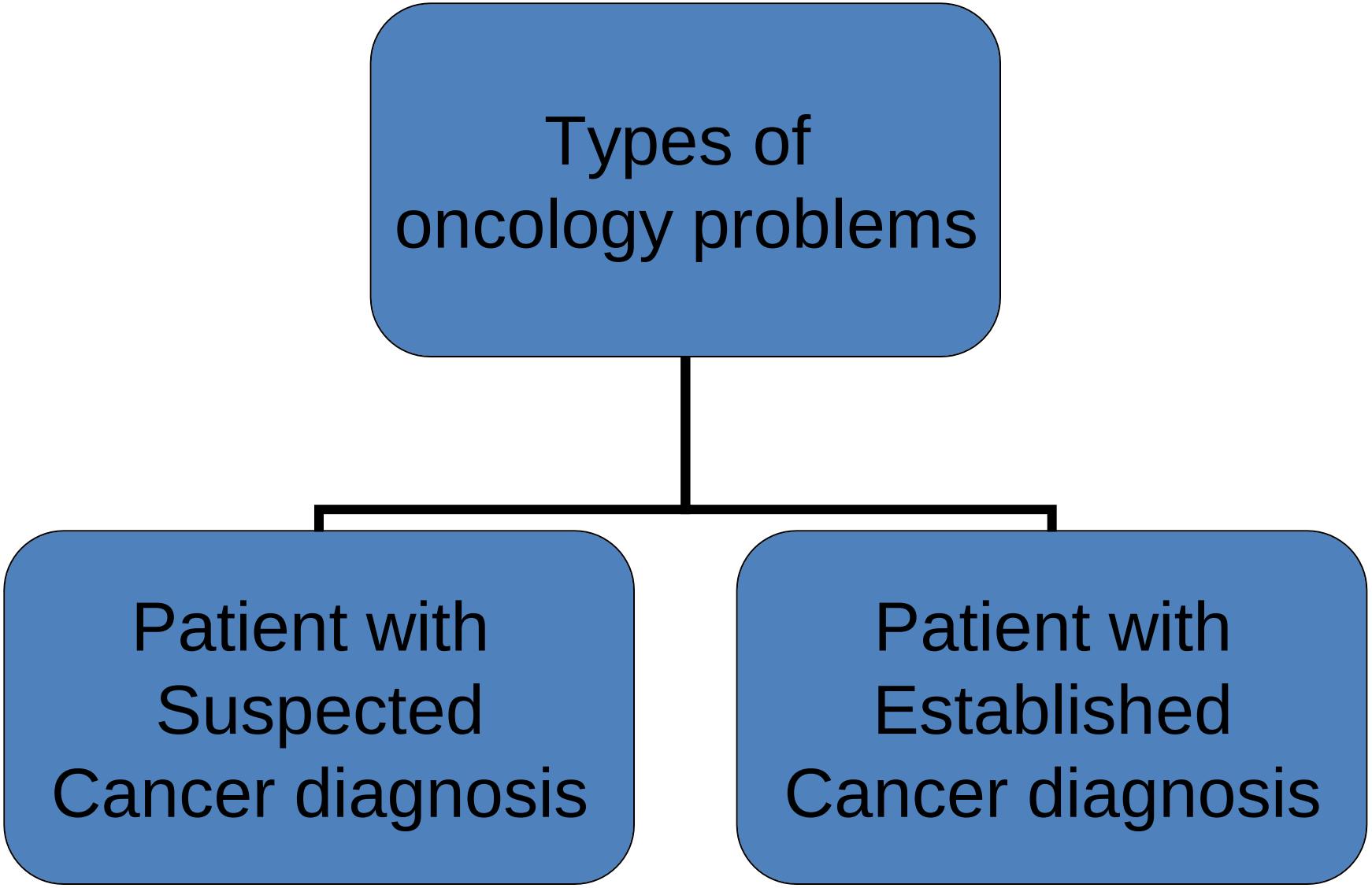
THANK YOU SEE U LATER !!!!!

HERE IS THE
-DIAGNOSIS
- & STAGING
STEP IN PLS



FINE

4- How to treat cancer?


Types of oncology problems
Patient with Suspected Cancer diagnosis
Patient with Established Cancer diagnosis

Patient with Suspected Cancer diagnosis

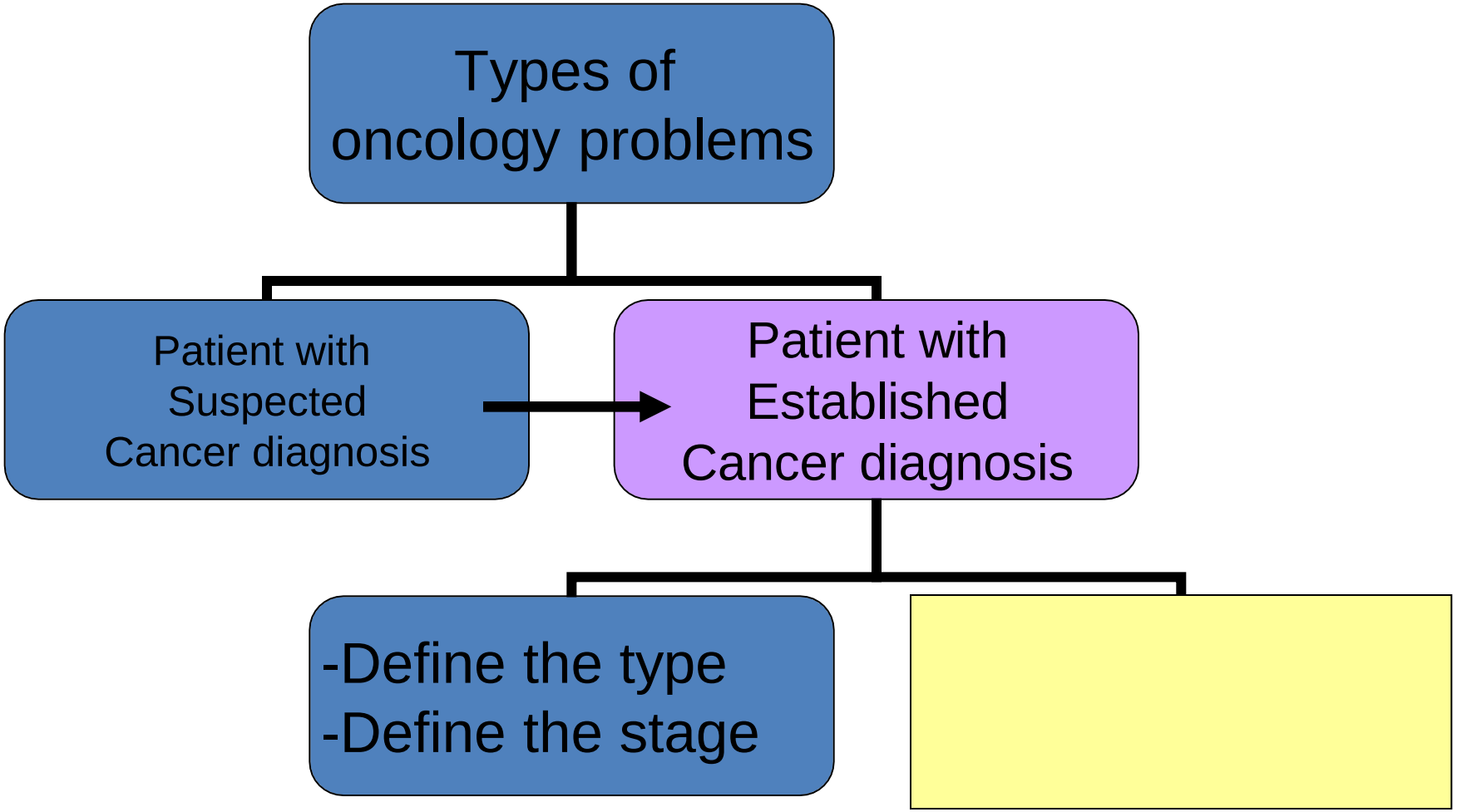
↓

Answer the following questions:

1-Does the patient have cancer?

2-What type of cancer?

3-What stage of cancer?


Types of oncology problems
Patient with Suspected Cancer diagnosis
Patient with Established Cancer diagnosis
-Define the type
-Define the stage

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

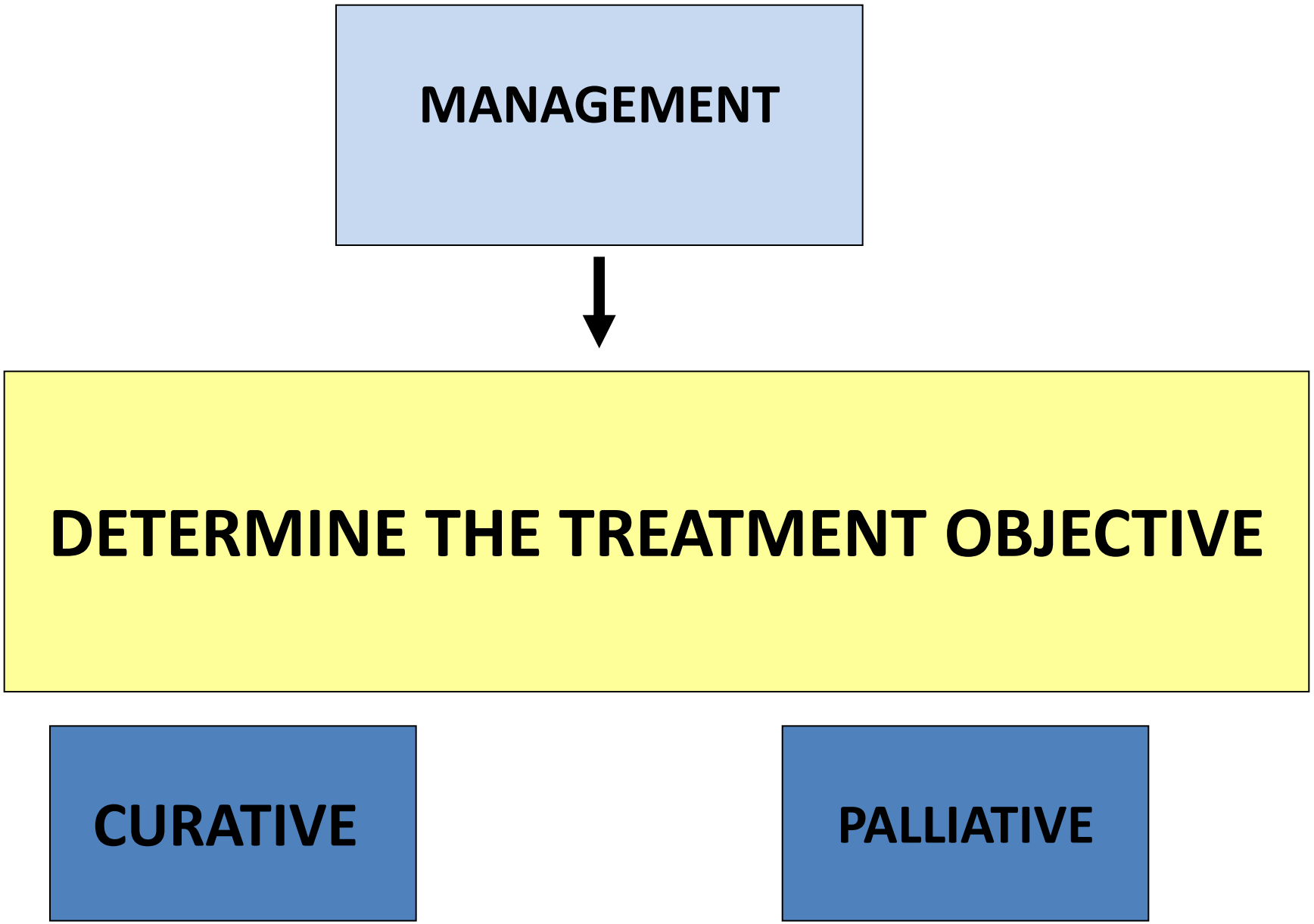
Management Multidisciplinary

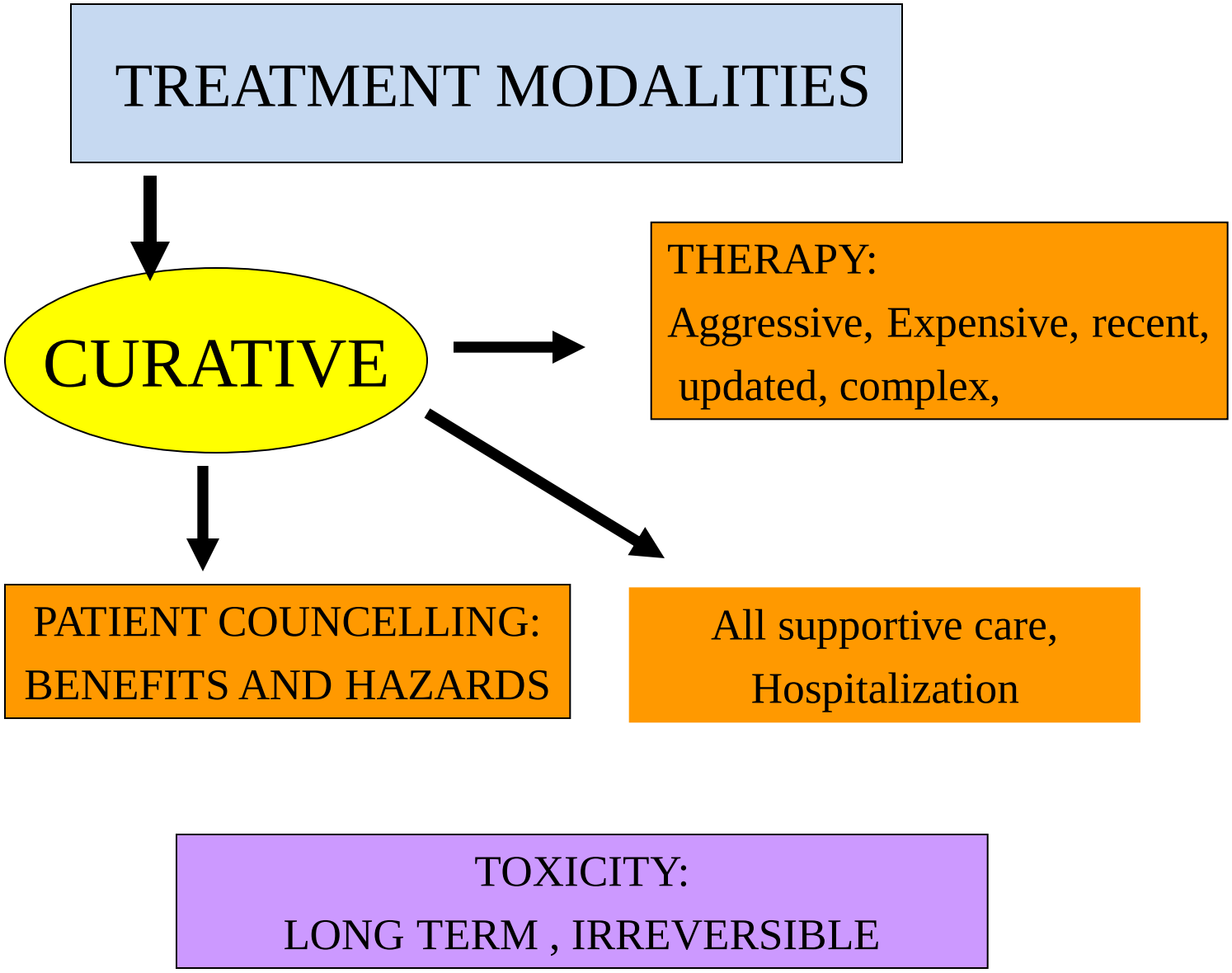
SURGERY

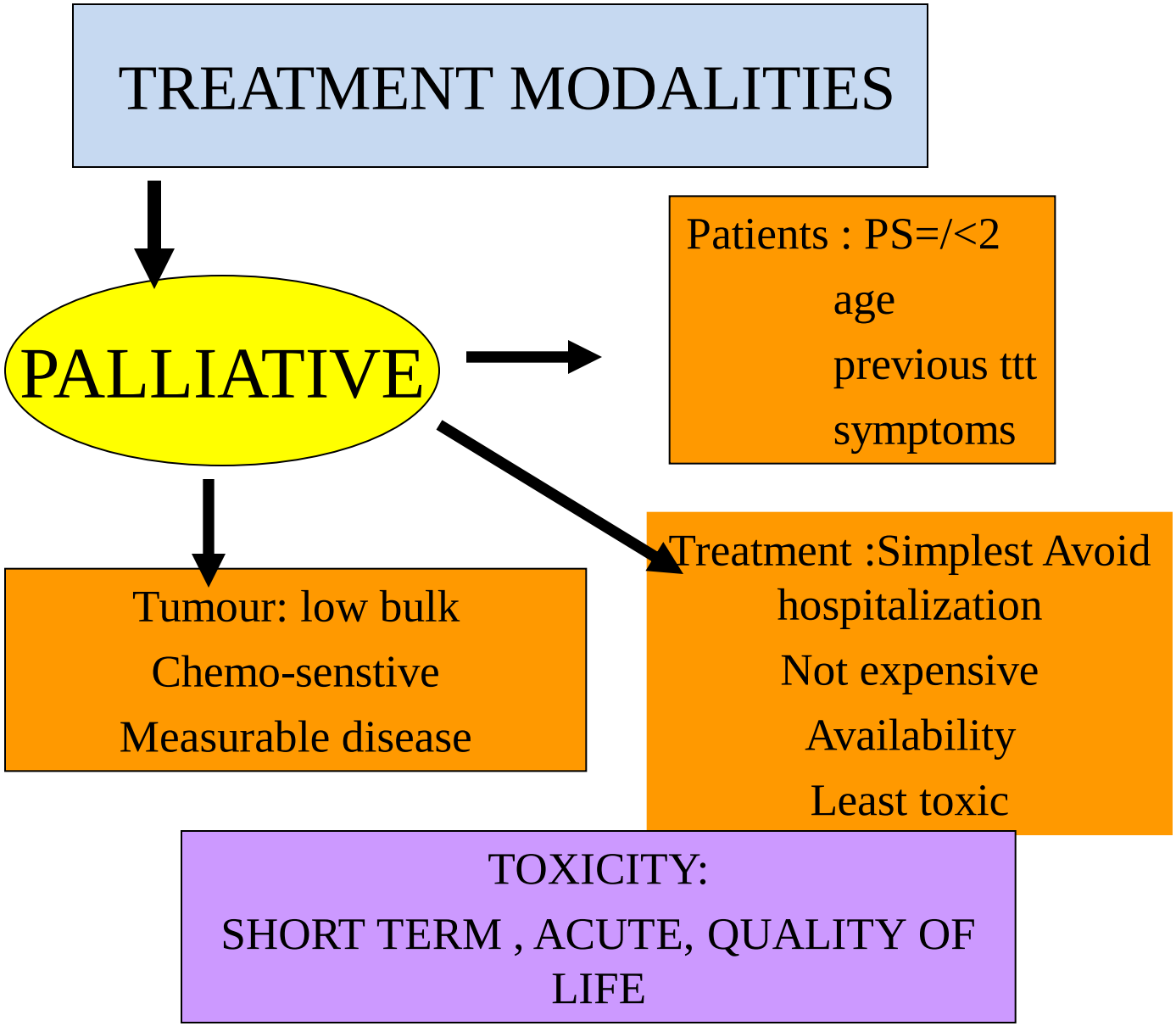
RADIATION

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,
PATIENT COUNCELLING:
BENEFITS AND HAZARDS
All supportive care,
Hospitalization
TOXICITY:
LONG TERM , IRREVERSIBLE


TREATMENT MODALITIES
PALLIATIVE
Patients : PS=/<2
age
previous ttt
symptoms
Tumour: low bulk
Chemo-senstive
Measurable disease
Treatment :Simplest Avoid hospitalization
Not expensive
Availability
Least toxic
TOXICITY:
SHORT TERM , ACUTE, QUALITY OF LIFE

5- What is the prognosis of your patient?

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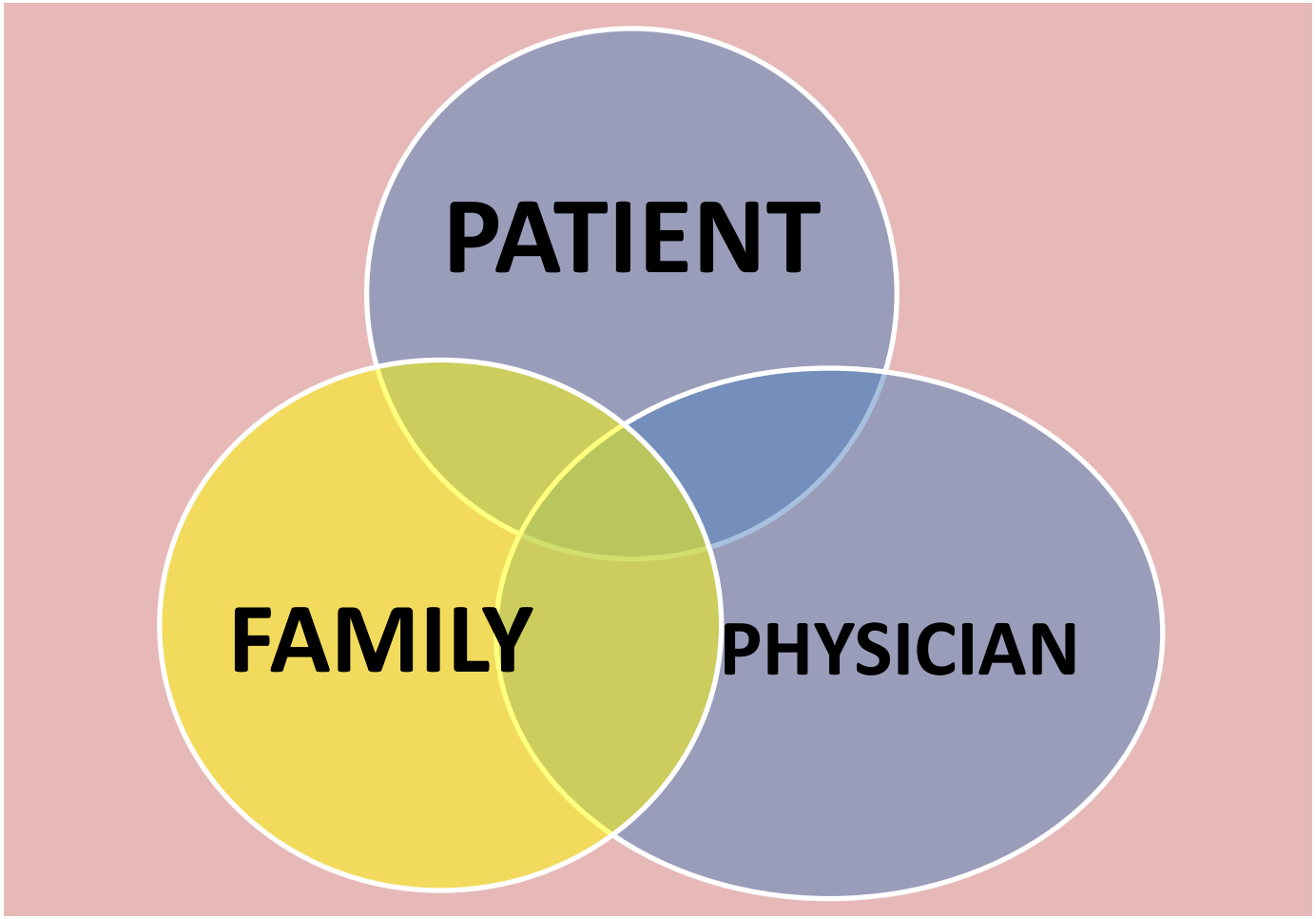

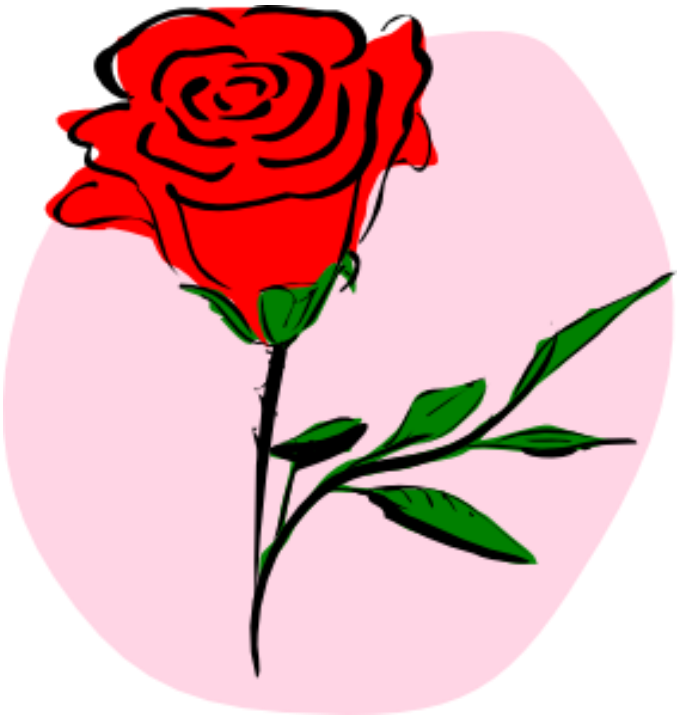

Thank you