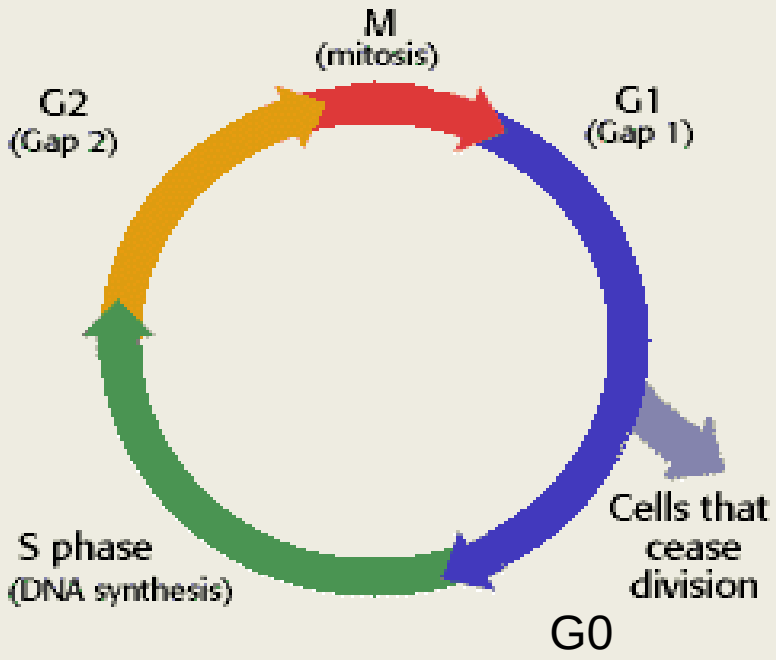
COMMON SOLID TUMORS

BY

PROFESSOR AHMED ABDELWARITH

FEB 2012



- Constantly dividing cell types include

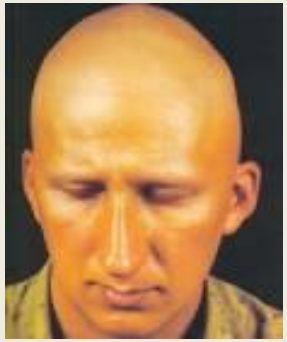
  1- skin cells, 2- GIT

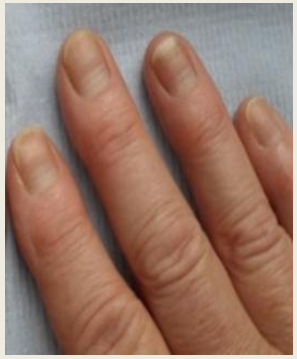
  3-blood cells in the bone marrow.
- Constantly dividing cells have a **higher risk of becoming malignant and** develop **cancer**, dividing uncontrollably

DIVIDING CELLS IN HUMAN BODY

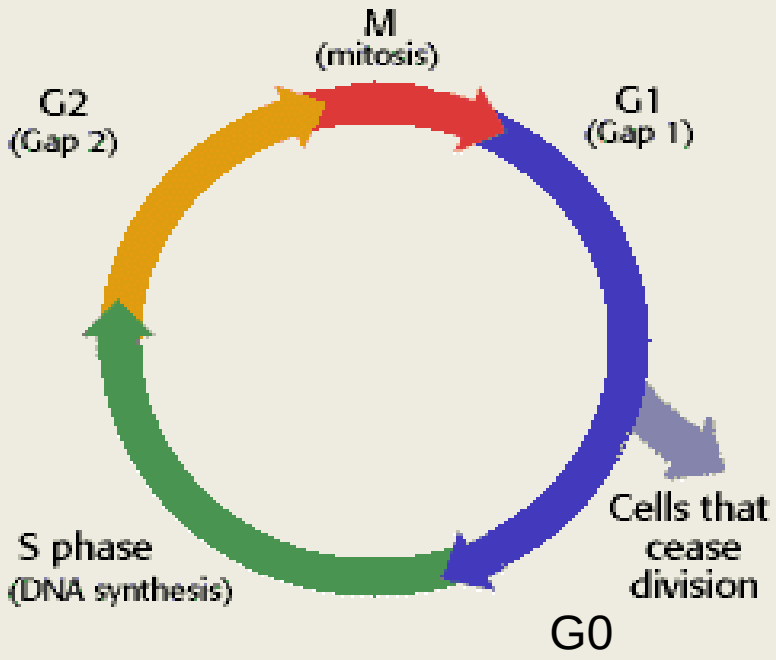
- cytotoxic drugs, such as used in treatment of cancer, work by inhibiting the proliferation of dividing cells, the malignant cells as the desired target .

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

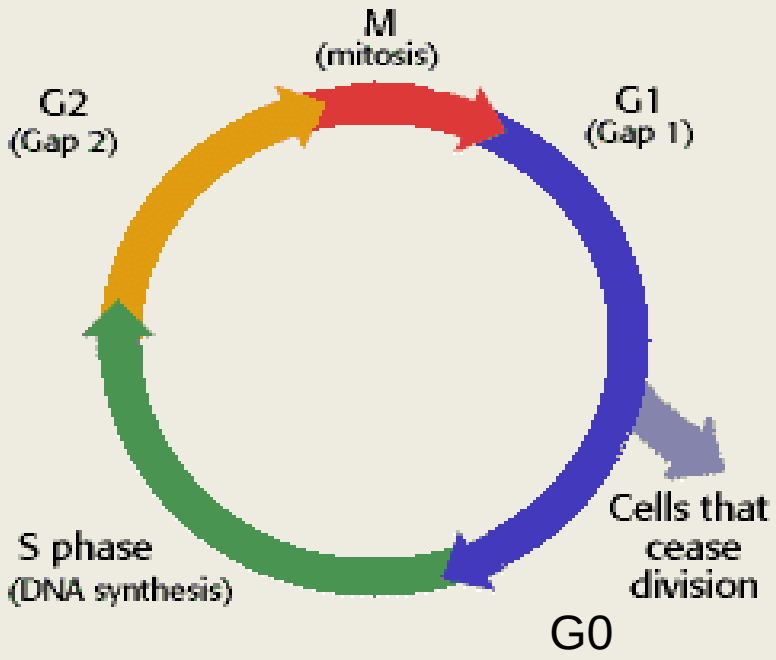




MYELOSUPRESSION



- **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

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

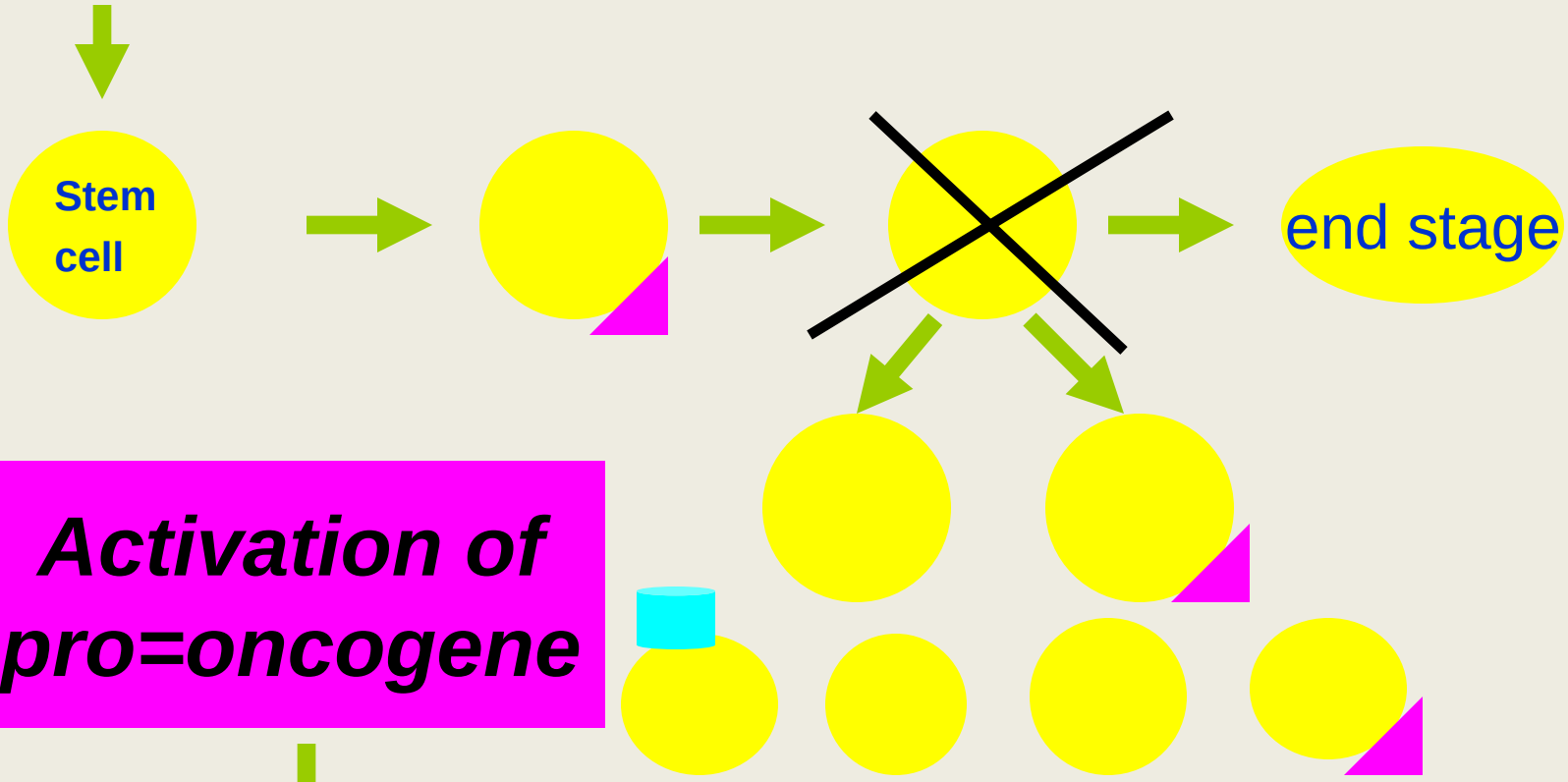
3- Lost their functions

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

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

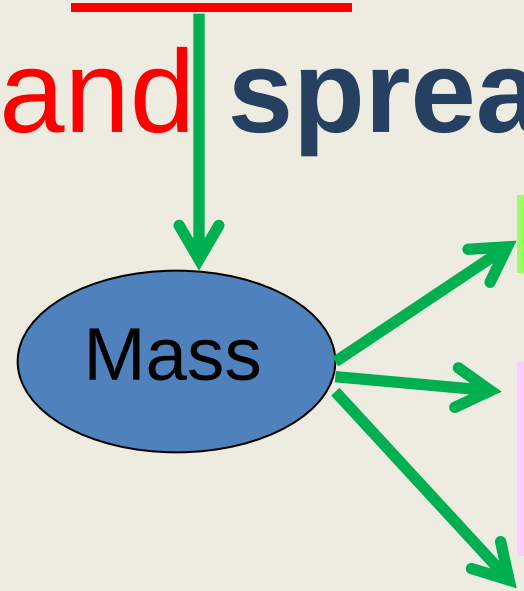
What are the clues???????

- 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

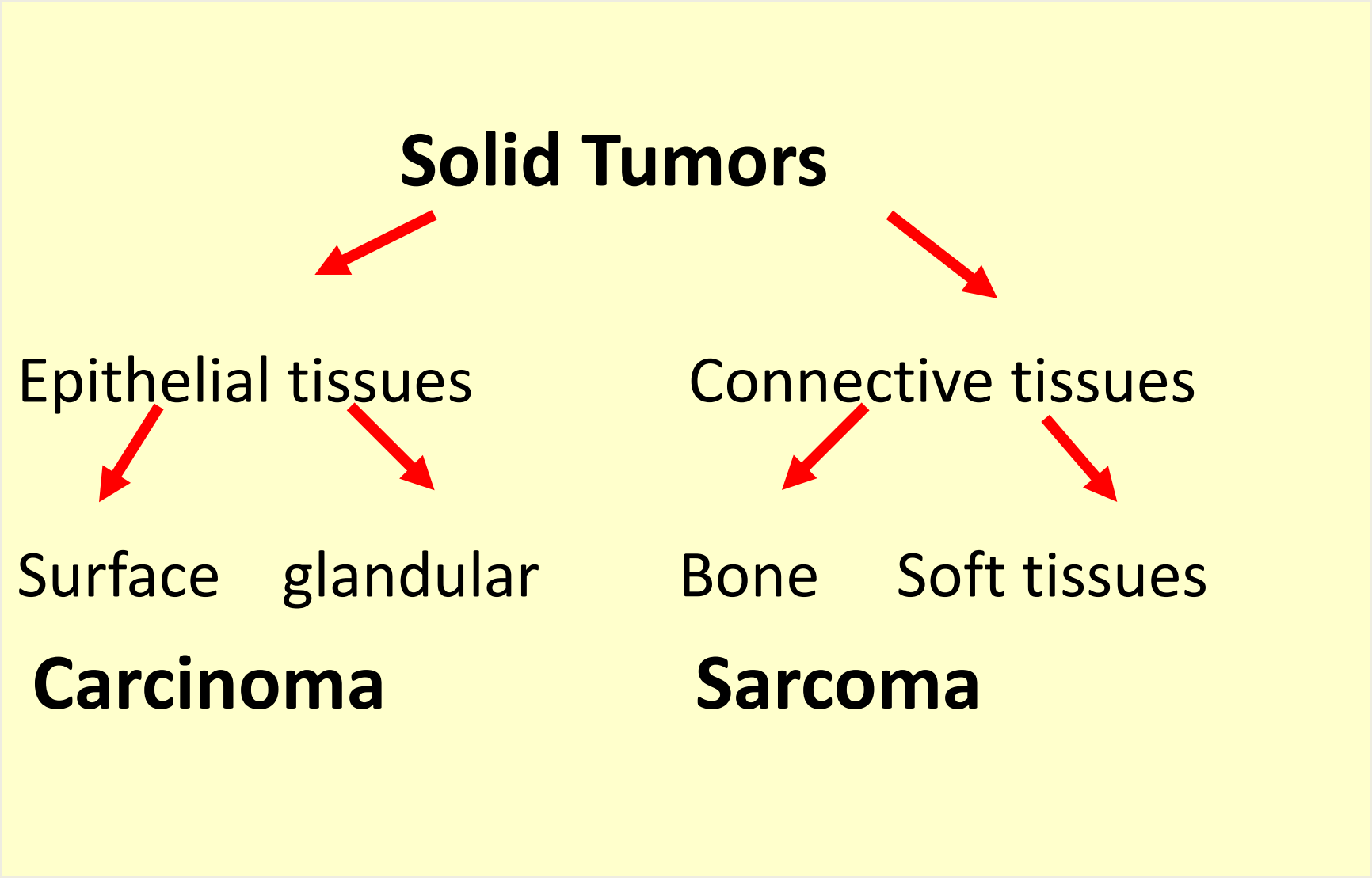
Pressure =on vital organs

Obstruction =of lumens

Blood vessels = bleeding
Nerves = pain

To bone, brain, lung, liver

Classification Of Solid Tumors



Cancers are classified by the Type of cell

that the tumor cells presumed to be originating from.

- Carcinoma: Cancers derived from epithelial cells. This is the most common cancers, breast, prostate, lung, pancreas, and colon.
- Sarcoma: Cancers arising from connective tissue (i.e. bone, cartilage, fat, nerve), each of which develop from cells originating in mesenchymal cells outside the bone marrow.

OTHER TUMOR TYPES

- Germ cell tumor: Cancers derived from pluripotent cells, in the testicle or the ovary (seminoma and dysgerminoma, respectively).

- Blastoma: Cancers derived from immature "precursor" cells or embryonic tissue.

  most common in children.

  blastoma as a suffix, with the Latin or Greek word for the organ or tissue of origin as the root. hepatoblastoma,

General Staging of solid malignancies

Early

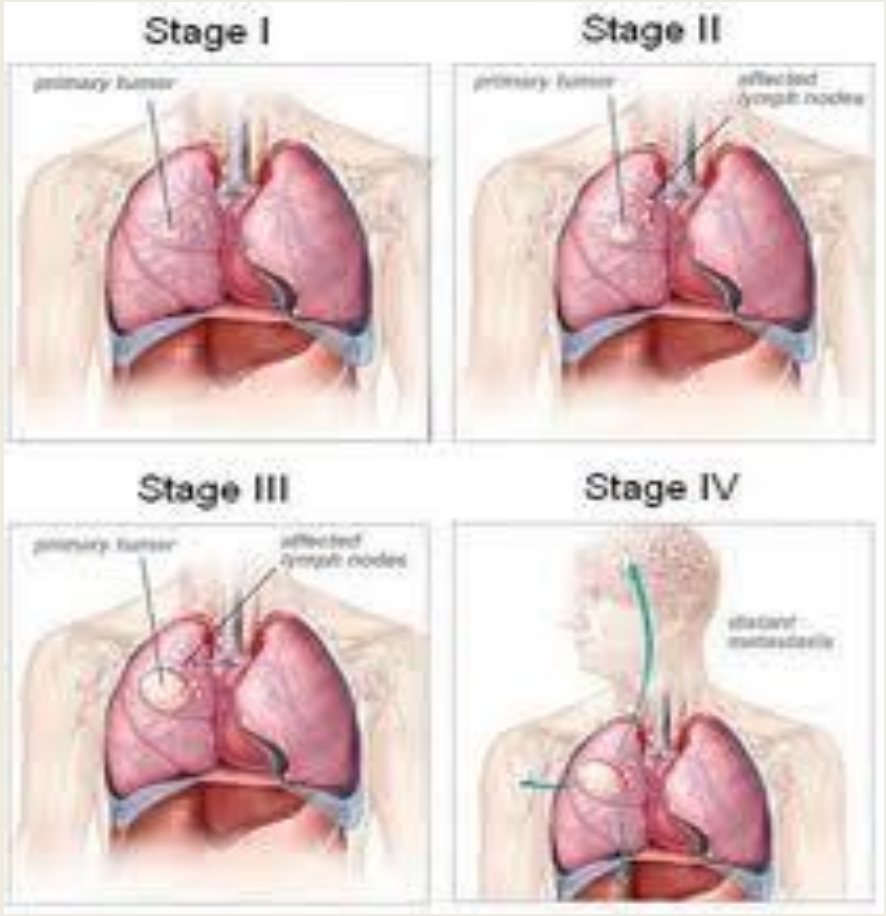
Locally Advanced

Metastatic

Staging of Lung Cancer

Early

Locally Advanced

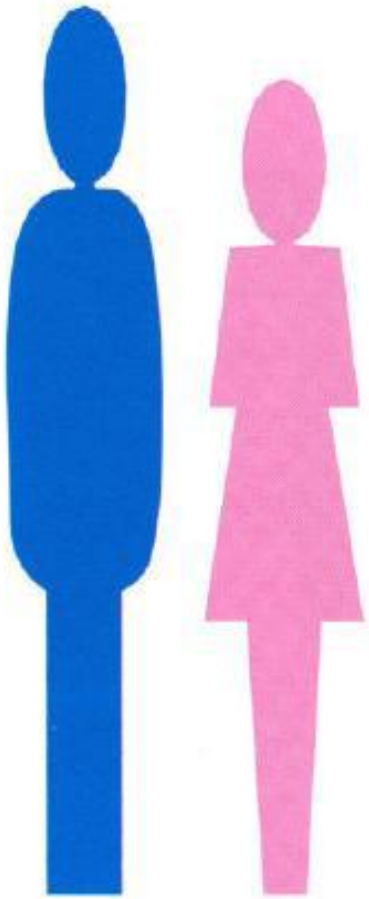


Metastatic

COMMON SOLID TUMORS

COMMON SOLID TUMORS IN KSA

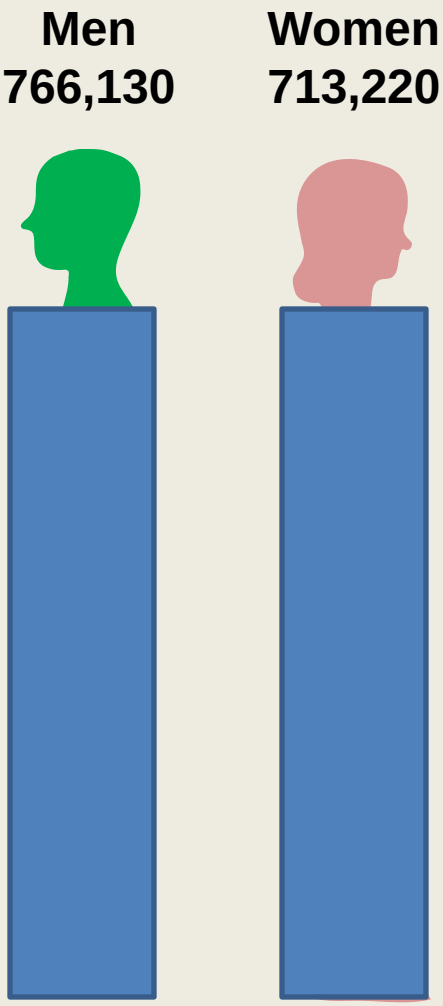
Male	3898	
Colo-rectal	414	10.6%
NHL	351	9.0%
Leukemia	296	7.6%
Liver	291	7.5%
Lung	232	6.0%
Prostate	228	5.8%
Skin	193	5.0%
Hodgkin Disease	173	4.4%
Bladder	169	4.3%
Stomach	162	4.2%



Female	4156	
Breast	981	23.6%
Thyroid	424	10.2%
Colo-rectal	370	8.9%
NHL	234	5.6%
Leukemia	212	5.1%
Corpus Uteri	140	3.4%
Skin	134	3.2%
Ovary	132	3.2%
Liver	125	3.0%
Hodgkin Disease	120	2.9%

Figure 2.3 Ten Most Common Cancers among Saudis by Sex, 2006

2009 Estimated US Cancer Cases*



Prostate	25%	27%	Breast
Lung & bronchus	15%	14%	Lung & bronchus
Colon & rectum	10%	10%	Colon & rectum
Urinary bladder	7%	6%	Uterine corpus
Melanoma of skin	5%	4%	Non-Hodgkin lymphoma
Non-Hodgkin lymphoma	5%	4%	Melanoma of skin
Kidney & renal pelvis	5%	4%	Thyroid
Leukemia	3%	3%	Kidney & renal pelvis
Oral cavity	3%	3%	Ovary
Pancreas	3%	3%	Pancreas
All Other Sites	19%	22%	All Other Sites

***Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.**
Source: American Cancer Society, 2009.

COMMON SOLID TUMORS

- In the U.S., The three most common cancers:
- **Men**: Prostate, lung, colorectal
- **Women**: Breast, colorectal, lung

- In the KSA., The three most common cancers:
- **Men**: colorectal, Lymphoma, leukemia
- **Women**: Breast, Thyroid, colorectal,

STUDY OF SOLID TUMORS

- EPIDEMILOGY
- AETIOLOGY
- PATHOLOGY
- CLINICAL PRESENTATION
- STAGING
- MANGEMENT
- PROGNOSIS

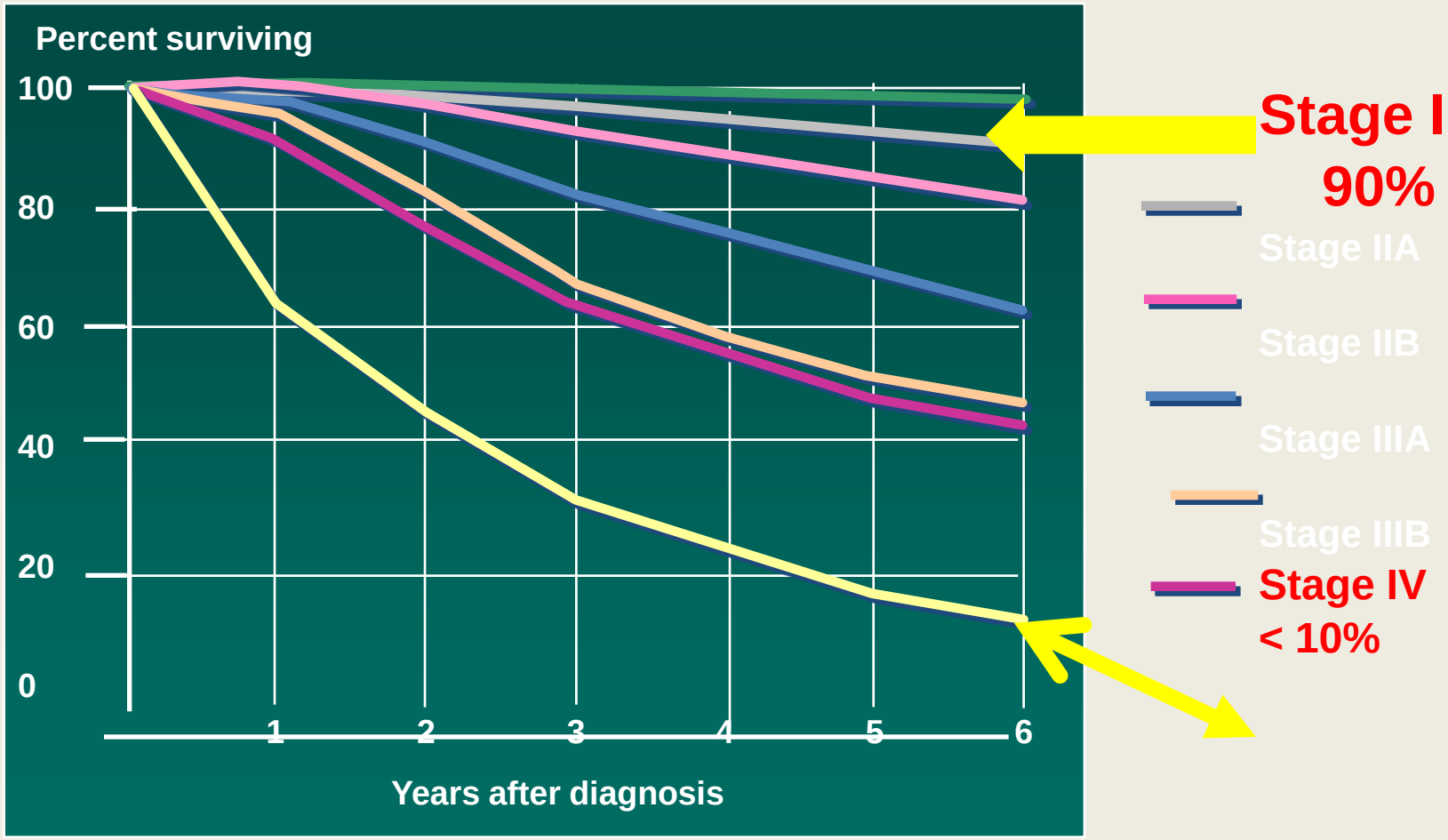
- BREAST CANCER
- COLON CANCER

Breast Cancer Facts

- 1st most common cancer in females.
- 2nd leading cause of death.

BREAST CANCER

Survival by stage



WE NEED EARLY DETECTION

It Is A Simple Equation

LATE PRESENTATION
+
ADVANCED STAGE
=
POOR OUTCOME

EARLY PRESENTATION
+
EARLY STAGE
=
GOOD OUTCOME

A Good Health Plan

1. Mammograms

2. Self Awareness (Monthly Self Exams) (BSE)

Suspect Breast Cancer

Why?
When?
What?
Which?

Why?

Many good reasons to suspect breast cancer

Remember:

Breast cancer :

- Most common cancer in females.

- Wide age range 20 - +70y.

- Breast cancer can occur during pregnancy ,during lactation.

- Breast cancer can occur in pre, peri and post menopausal females.

Suspecting Breast Cancer

Is one of the most important and the first step in diagnosing Early Breast cancer

Risk factors

- History of breast cancer
- Family history of breast cancer, especially in first-degree relatives
- Benign breast diseases / atypical hyperplasia
- Early menarche, late menopause
- Late first pregnancy/no pregnancy
- Exogenous estrogens
- Radiation (HD)

What To do

If you Suspect Breast Cancer?

If you Suspect Breast Cancer

- Do not just reassure the patient
- Do not give hormonal therapy
- Do not give antibiotics.

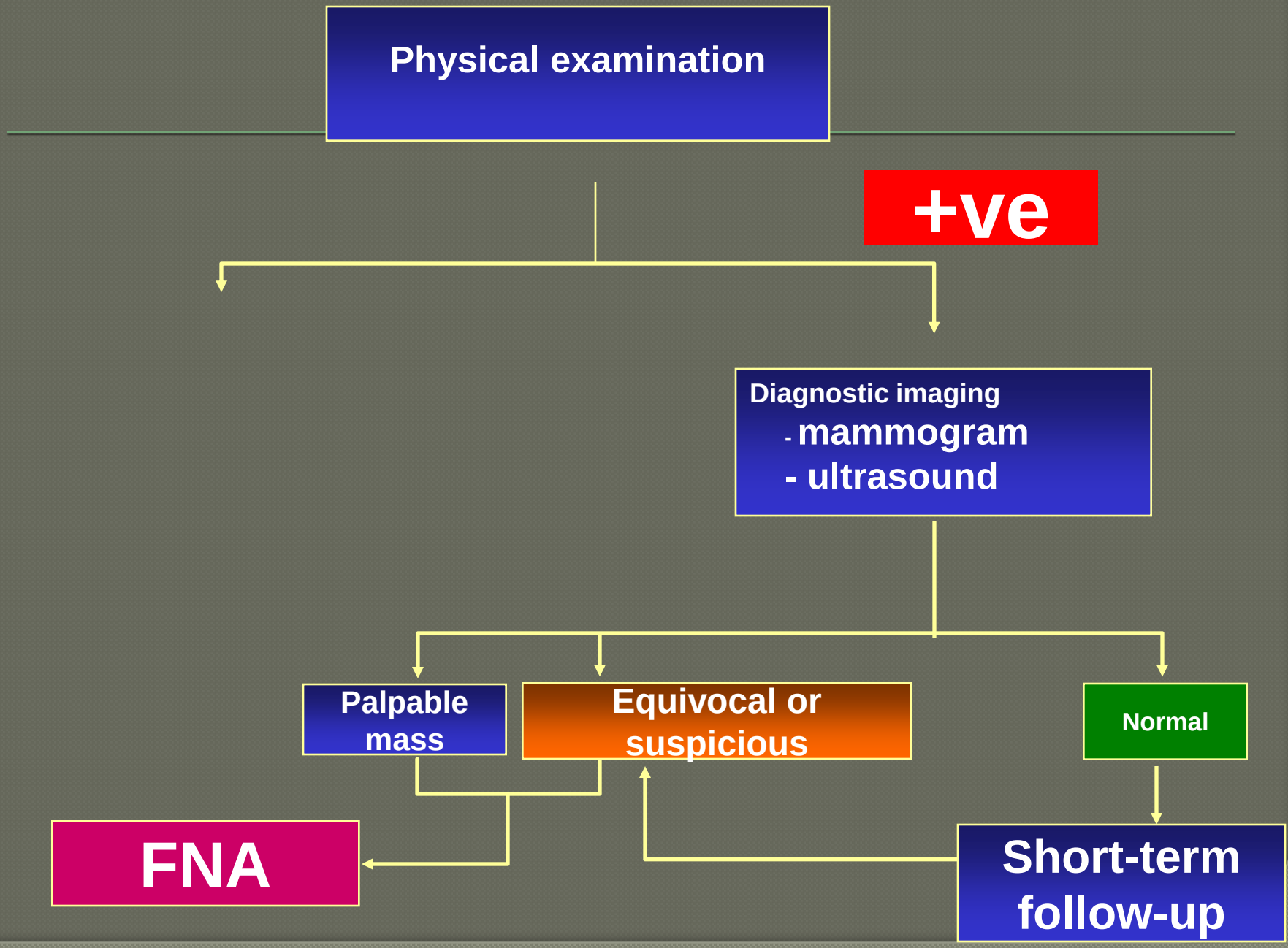
If you Suspect Breast Cancer

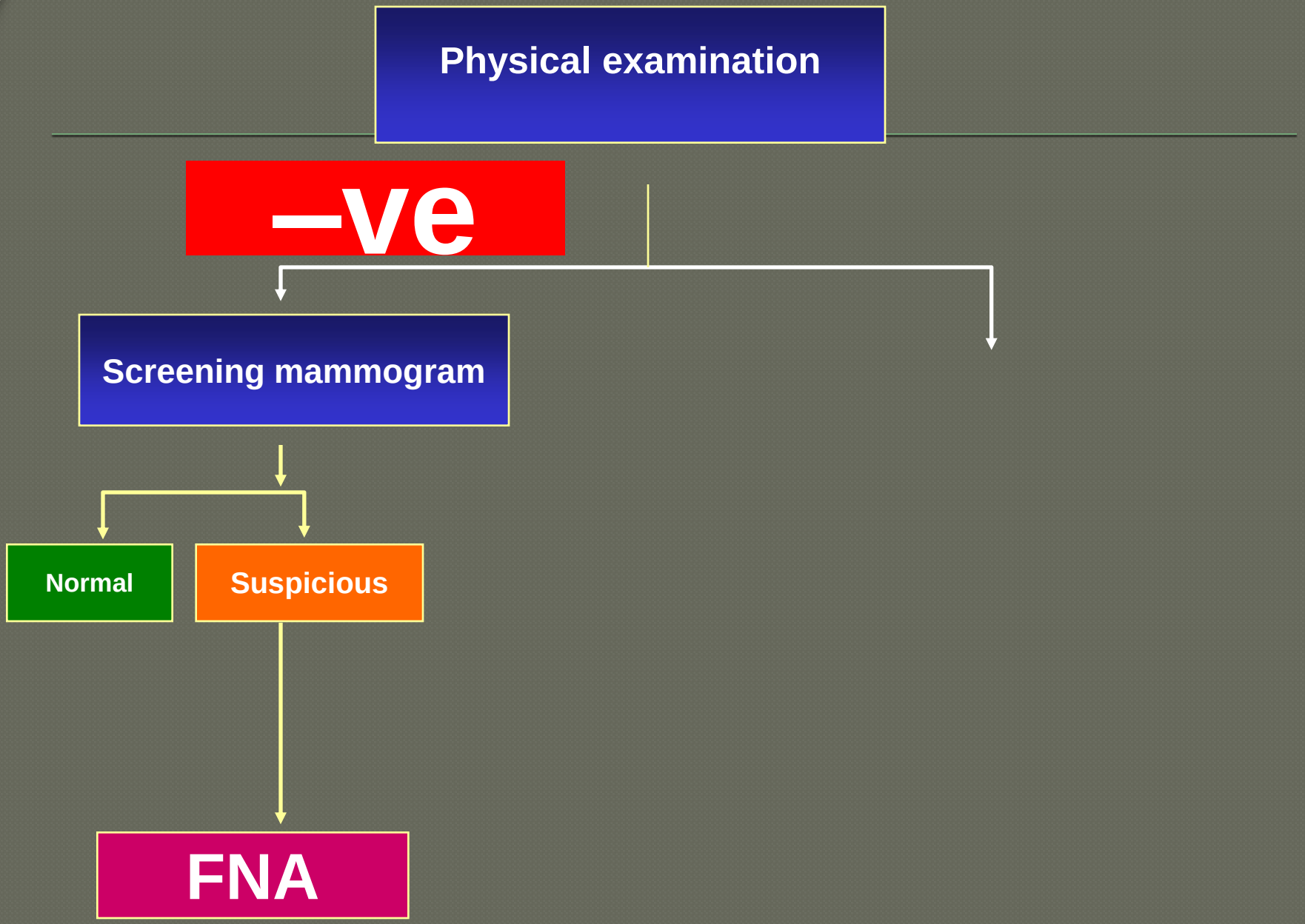
Careful history & Careful physical ex

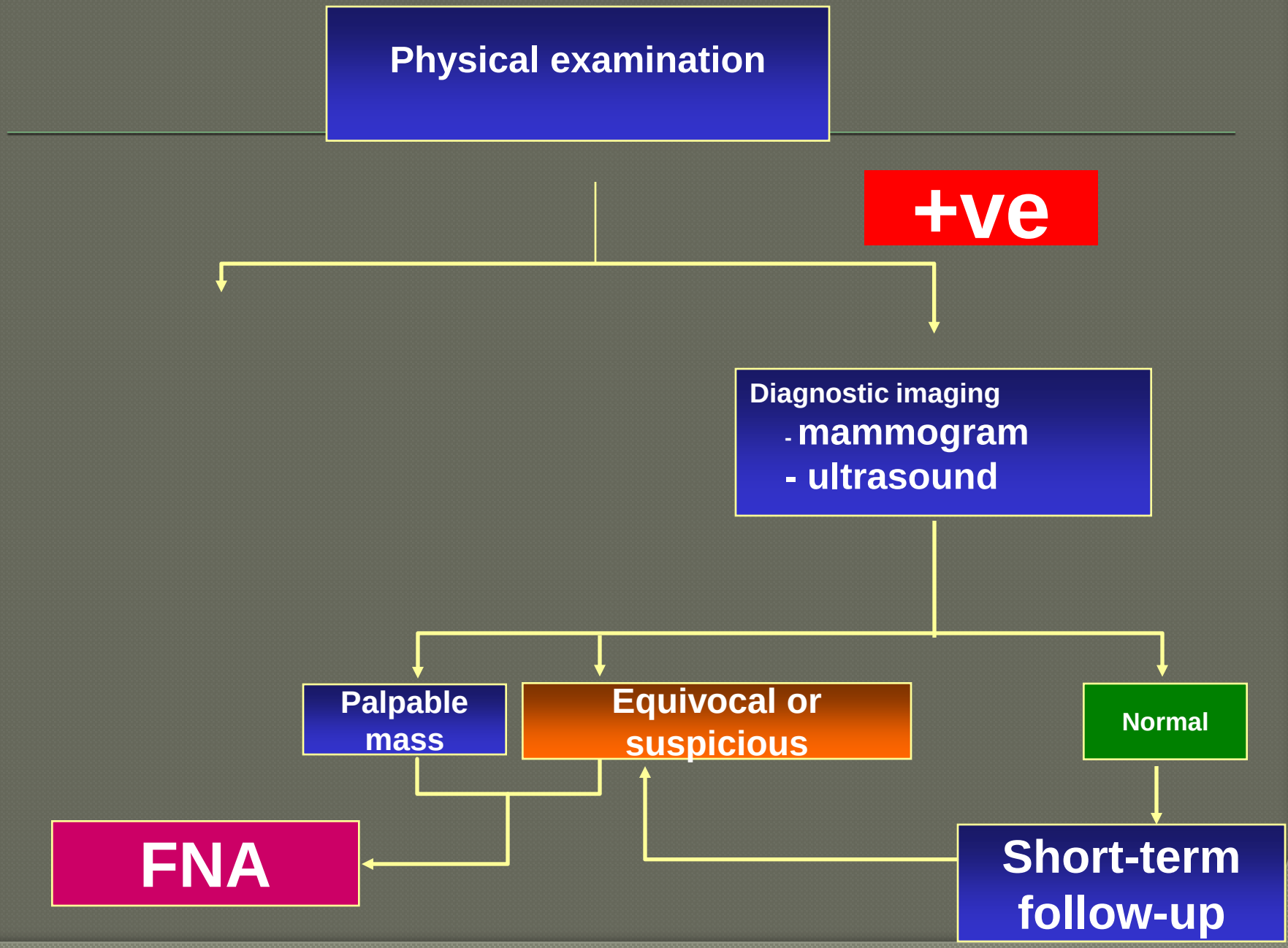
Warning Signs

Warning signs and symptoms:

-Painless lump or thickening
(can be painful)
-Thickening or swelling that persist
-Nipple pain or retraction
-Nipple discharge
-Breast skin irritation or dimpling


Physical examination
+ve
Diagnostic imaging
- mammogram
- ultrasound
Palpable mass
Equivocal or suspicious
Normal
FNA
Short-term follow-up


Physical examination
–ve
Screening mammogram
Normal
Suspicious
FNA


Physical examination
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Palpable mass
Equivocal or suspicious
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Short-term follow-up

conclusion

Suspecting Breast Cancer

Is one of the most important steps in diagnosing Early Breast cancer.

Conclusion

If you

Suspect Breast Cancer

-Careful Hist & Ex

-Perform Bilateral mamogram

+ breast US

+/- Fine needle aspiration

To improve patients Prognosis

1-EARLY DIAGOSIS

2-EARLY &PROPER INTERVENTION

LOCAL THERAPY

SURGERY

RADIOTHERAPY

SYSTEMIC THERAPY

- CHEOTHERAPY

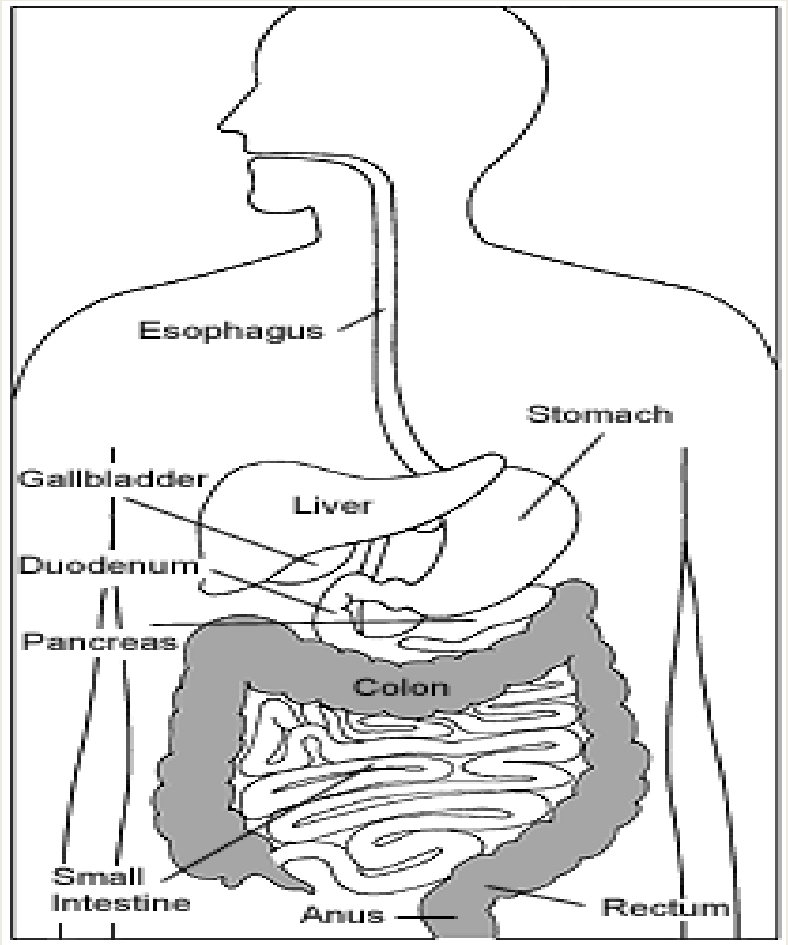
- **HORMONAL THERAPY**
- **BIOLOGICAL THERAPY**

COLON CANCER

Colon cancer is the second leading cause of cancer deaths

American Cancer Society

What is the Colon



- The Colon is a long, coiled, tubular digestive tract
- It basically acts as a waste processor
- Takes digested food in the form of Solid waste pushing it out of the rectum and anus
- The Colorectal tube is a prime location for the development and growth of small polyps or tumors

Risk factors
of colon cancer

- **Older age.** About 90 percent of people diagnosed with colon cancer are older than 50. Colon cancer can occur in younger people, but it occurs much less frequently.
- **A personal history of colorectal cancer or polyps.** If you've already had colon cancer or adenomatous polyps, you have a greater risk of colon cancer in the future.

Risk factors
of colon cancer

- **Inflammatory intestinal conditions.** ulcerative colitis and Crohn's disease,
- **Inherited syndromes that increase colon cancer risk.**. familial adenomatous polyposis and hereditary nonpolyposis colorectal cancer, which is also known as Lynch syndrome.

Risk factors
of colon cancer

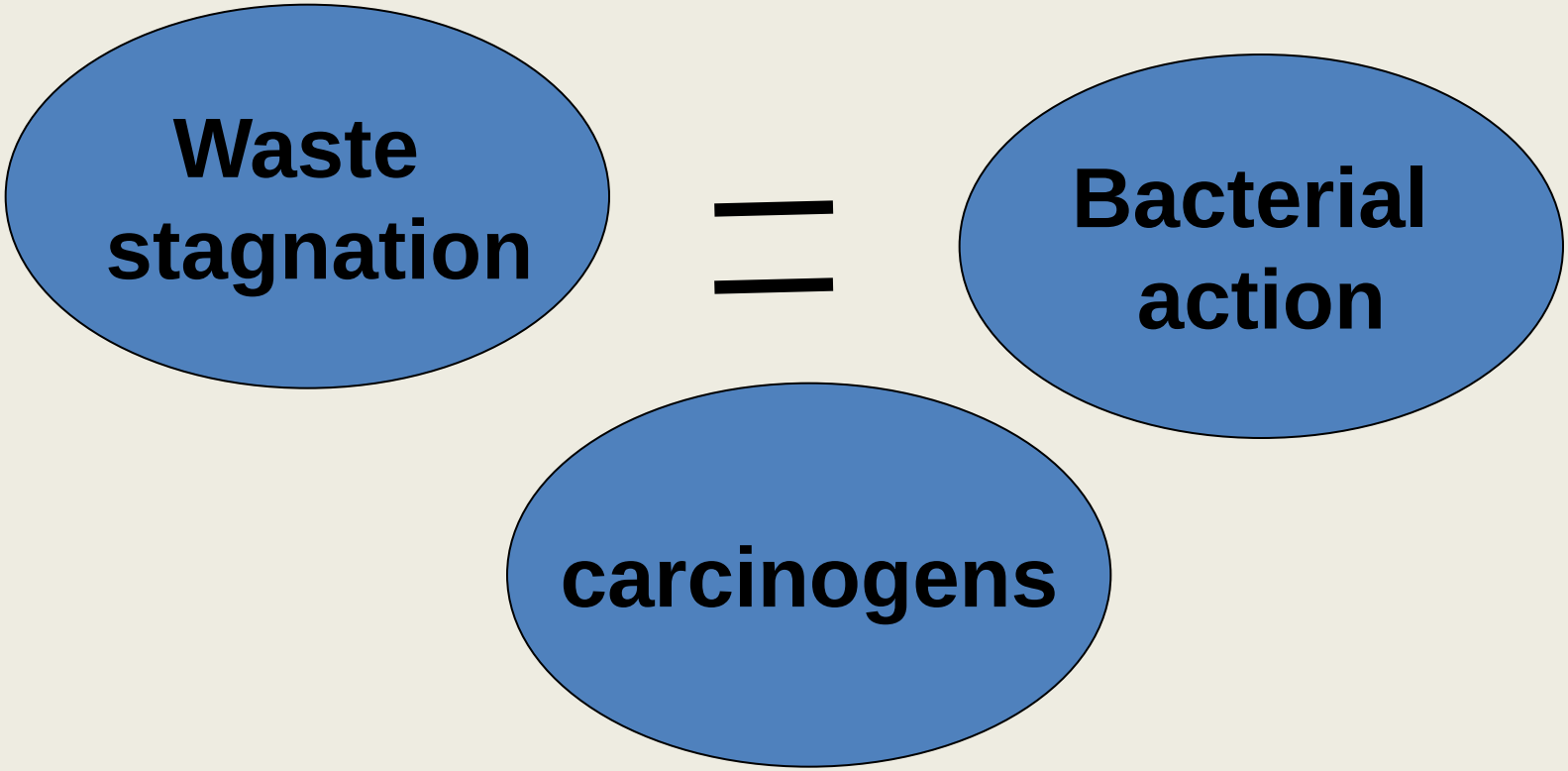
- **Family history of colon cancer and colon polyps.** a parent, sibling or child with the disease.
- **Low-fiber, high-fat diet.**.
- **A sedentary lifestyle.**

Risk factors
of colon cancer

- **Diabetes.** insulin resistance may have an increased risk of colon cancer.
- **Obesity.**
- **Smoking.** People who smoke cigarettes may have an increased risk of colon cancer.
- **Alcohol.** Heavy use of alcohol may increase your risk of colon cancer.
- **Radiation therapy for cancer**

constipation

- **Why does constipation is a risk factor?**

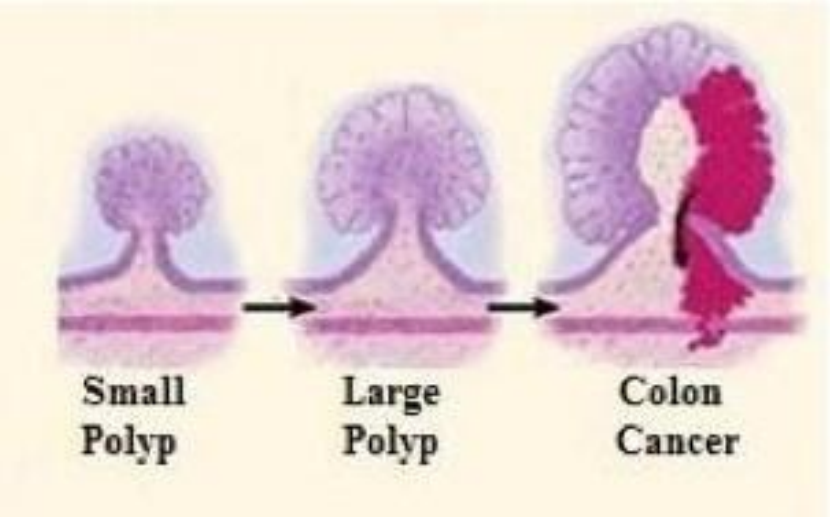


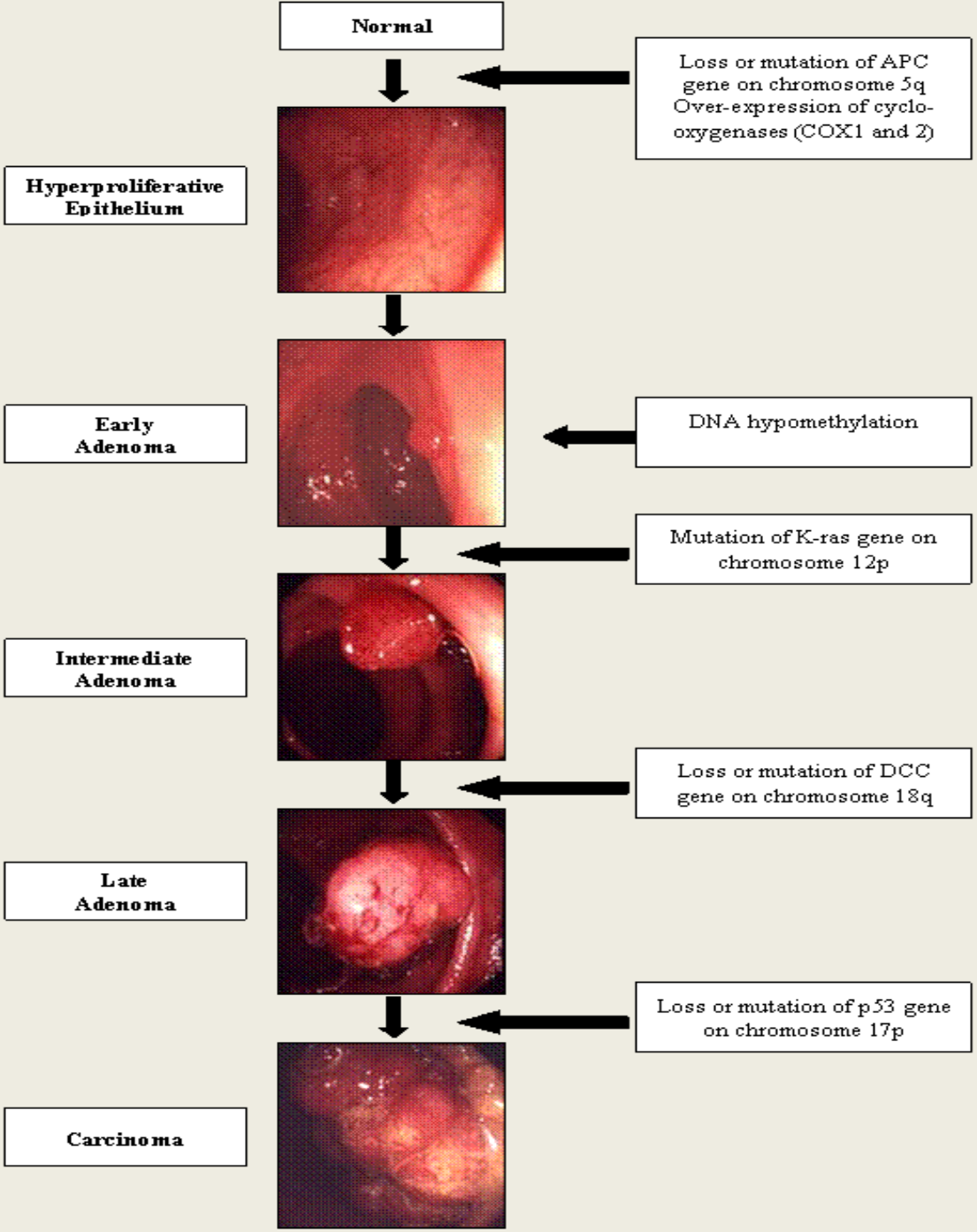
Colon Cancer Pathogenesis

- It starts with a simple cell the mutates and grows into a polyps
- If a polyp is allowed to remain in the colon it can grow into a cancerous tumor that can invade other organs.
- Colon cancer is the second leading cause of cancer deaths

Colon; The Cancer Its Self

- If a polyp is allowed to remain in the colon it can grow into a cancerous tumor that can invade other organs.




Normal
Loss or mutation of APC gene on chromosome 5q
Over-expression of cyclo-oxygenases (COX1 and 2)
Hyperproliferative Epithelium
Early Adenoma
DNA hypomethylation
Mutation of K-ras gene on chromosome 12p
Intermediate Adenoma
Loss or mutation of DCC gene on chromosome 18q
Late Adenoma
Loss or mutation of p53 gene on chromosome 17p
Carcinoma

Signs & Symptoms

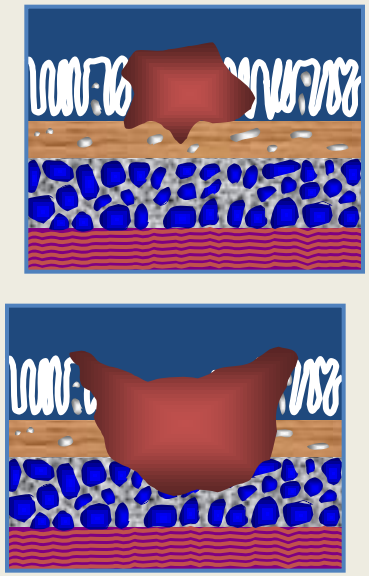
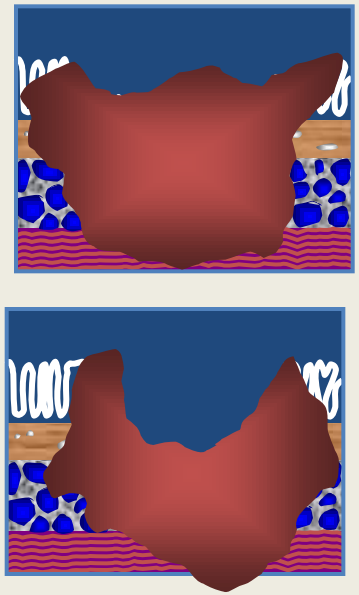
It can occur at any age but mostly if your of 45 years of age

- Change in bowel habits
- Blood in Stool
  - Bright red
  - Very dark red
  - Black/Tarry Stool
- Diarrhea
- Constipation
- Does your bowel feel like it emptied completely?
- General abdominal discomfort
  - Gas pains
  - Bloating
  - Fullness
  - Cramps
- Weight loss w/ no explained reason
- Constant tiredness
- Vomiting (coffee grounds)

Symptoms of Colon Cancer

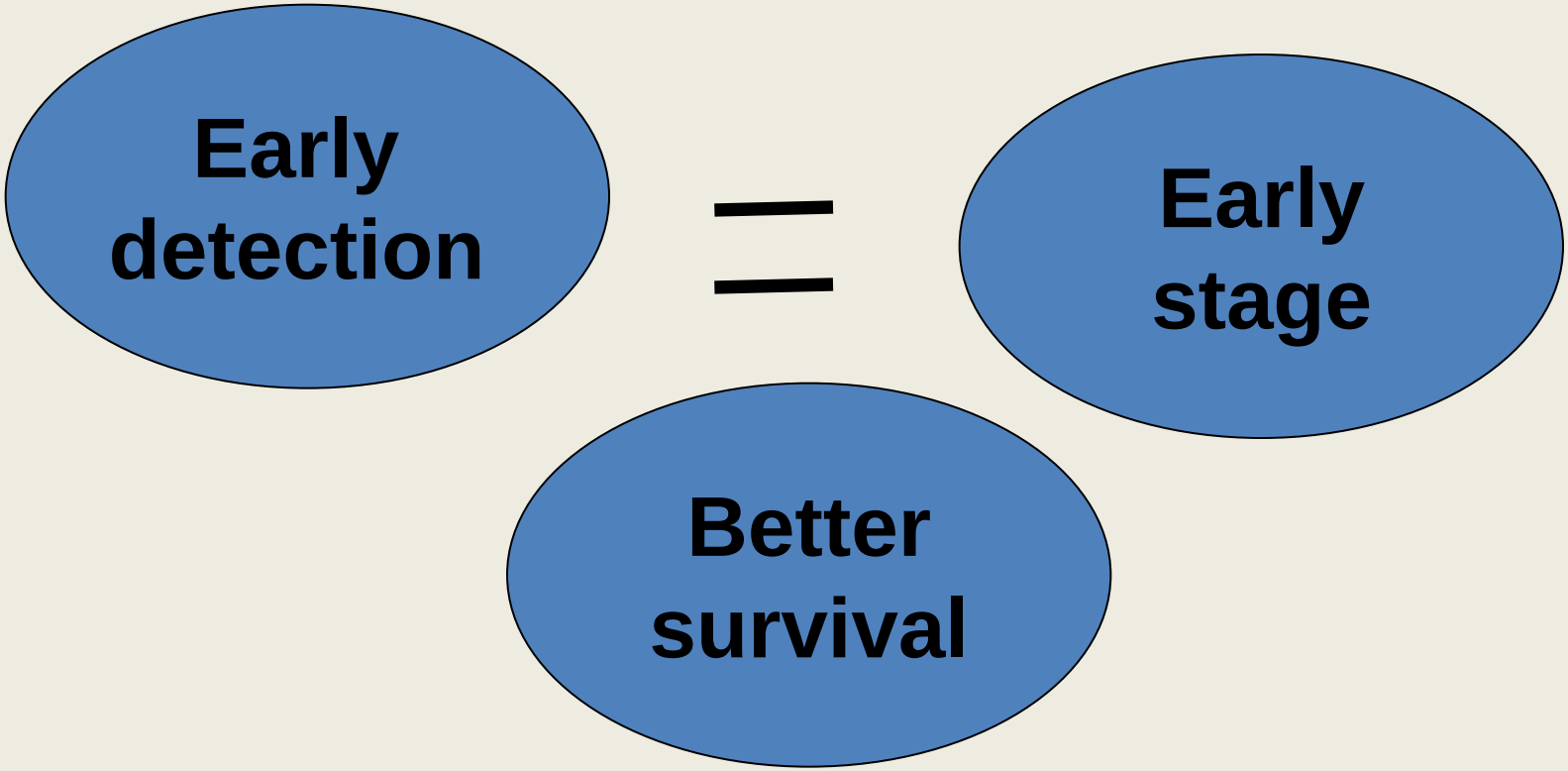
- And Unexplained Fatigue
- Unexplained iron deficiency anemia

Colon cancer staging

I	II	III	IV
			
Confined To wall	Beyond the wall	Nodal involvement	Metastases
5y OS= 90%	60-80%	30-60%	< 5%

Early detection:

- **Why does this contribute to a better survival?**



Early detection:

- 1- Occult blood in stools
- 2- Colonoscopy,
- 3- Better imaging,
- 4- Better public and physician awareness.

MANGEMENT OF COLON CANCER

- 1- Occult blood in stools
- 2- Colonoscopy,
- 3- Better imaging,
- 4- Better public and physician awareness.

MANGEMENT OF COLON CANCER

Early

SURGERY

Locally Advanced

SURGERY
+
ADJUVANT CHEMOTHERAPY

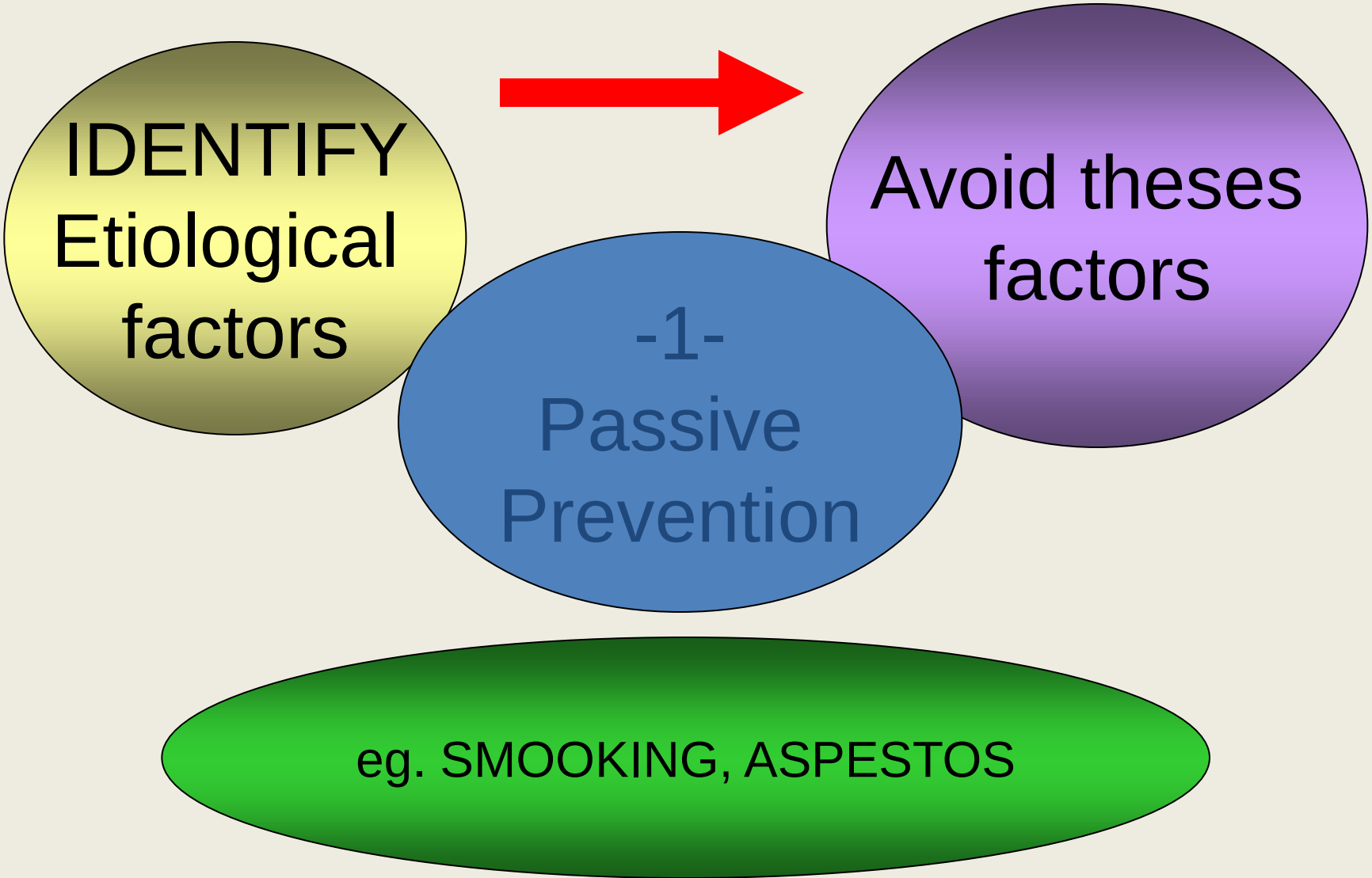
Metastatic

CHEMOTHERAPY
+
SURGERY

CAN WE PREVENT BREAST or colon CANCER?

MAY 2011

Different Strategies for Cancer Prevention



- General health maintenance
  - Eat a healthy diet
  - Don’t smoke
  - Don’t drink too much
  - Exercise/ maintain optimal weight

TRY TO AVOID THE
Risk Factors for Breast Cancer

- Weight Gain as an adult /obesity
- Estrogen & Progestin use
- Alcohol use

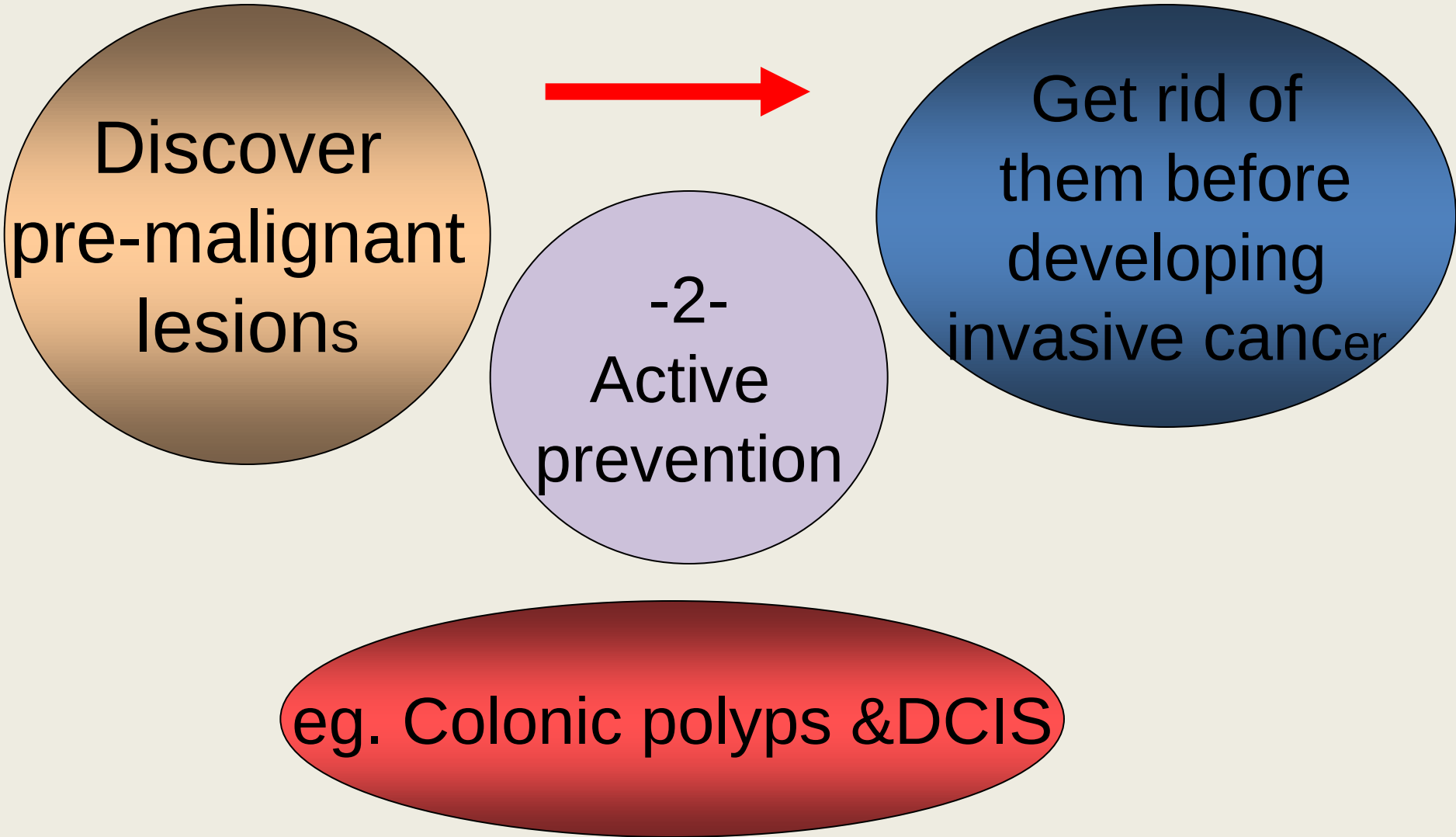
Lubet,2000

NOT AN EASY TASK

Social change is difficult and takes
a long time

Not good enough
In high risk people

Different Strategies for Cancer Prevention



-2-
Active prevention

- **Eliminate or prevent pre-invasive disease before invasion develops**

Chemoprevention

Surgery