

SNC2D BIOLOGY

TISSUES, ORGANS & SYSTEMS OF ...

🔍 Finding & Treating Cancer
(P.108-109)

Finding & Beating Cancer

Because most cancers take years to develop, they are rare in young adults. The cancers most often diagnosed in young people include lymphoma (cancer of the lymphatic system) and leukemia (cancer of the blood). But is there any way that people can help reduce their risk of getting cancer later in life?





Figure 3.24 A scanning electron micrograph of a cancer cell (white) and an autoradiogram showing the genetic code of a section of DNA. The presence or absence of particular sections of DNA, called genes, has been linked to the development of certain forms of cancer.

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Reducing Your Risk of Cancer



5. Eat plenty of fruits and vegetables. Eat less red meat and high-fat foods.

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Reducing Your Risk of Cancer

REDUCING YOUR RISK OF CANCER

- ❖ do not smoke (or quit smoking)
- ❖ protect your skin (use sunscreen)
- ❖ learn about self-examinations (breast, testes, ...)
- ❖ regular exercise
- ❖ proper diet

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Detecting Cancer

The sooner a cancer is found, the better. You can help in the early detection of certain cancers. Women can perform regular breast self-examinations to check for lumps. They can also be screened for early signs of cervical cancer, starting around age 18, by getting a regular Pap test.

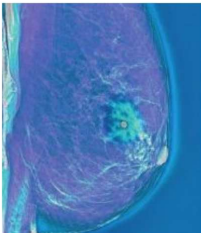
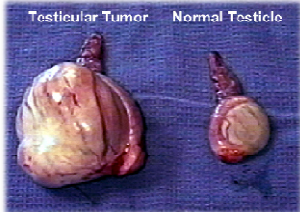


Figure 3 The dense blueish area on this mammogram is a suspected tumour.

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Detecting Cancer

Men can detect testicular cancer early through testicular self-examination. There is also a blood test, called the PSA test, that a doctor can prescribe to screen for prostate cancer (usually for men over the age of 50).

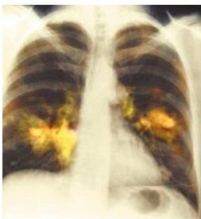


Testicular Tumor Normal Testicle

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Detecting Cancer

Cancer screening means checking for cancer even if there are no symptoms. Different types of cancer can be screened for in different ways – at home, as part of a routine medical checkup, or with a special appointment (i.e. mammogram, biopsy, X-ray, ...)



CANCER SCREENING

- ❖ checking for cancer
- ❖ self-check, X-ray, biopsy, ...

Figure 2 A chest X-ray shows areas of cancer in a patient's lungs.

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Detecting Cancer

NOTE!
Screening is especially important for people who:

- have a family history of certain cancers (such as breast cancer or colon cancer)
- are exposed to carcinogens at work or because of their lifestyle

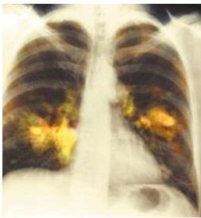


Figure 2 A chest X-ray shows areas of cancer in a patient's lungs.

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Moles: Early Indicators of Skin Cancer


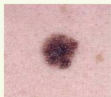



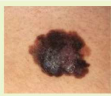


Other screening tests include a blood test for colon cancer and regular skin checks by a doctor or a dermatologist to look for changes in moles, new growths, and sores. Many people develop moles in their lifetime. Very few moles are cancerous, but some moles do develop into malignant tumours. There are five characteristics of moles (known as the ABCDE of moles) that can indicate whether they are benign or malignant. ABCDE stands for Asymmetry, Border, Colour, Diameter, and Evolution.

MOLES

- ❖ early indicators of skin cancer (ABCDE)

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Moles: Early Indicators of Skin Cancer

	Asymmetry	Border	Colour	Diameter
Benign	 symmetric shape	 even border	 uniform colour	 diameter less than 6 mm
Malignant	 asymmetric shape	 ragged border	 uneven colour	 diameter greater than 6 mm

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Confirming Cancer

After a suspected cancer is found, a biopsy may be done to confirm whether a growth is cancerous. During a **biopsy**, a doctor surgically removes a small portion of the suspected tumour. The tumour cells are then compared to normal cells from outside the tumour. Differences in size or shape indicate the presence of cancer cells.

BIOPSY

- ❖ removal of living tissue for diagnostic examination

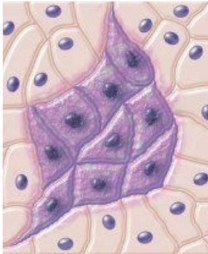


Figure 11 Illustration of cancer cells (shown in purple) among normal cells (pink). Notice that the cancer cells have irregular shapes.

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Confirming Cancer

It is important to remember that cancer tests may involve technologies that use radioactive materials and X-rays. And exposure to too much radiation can be dangerous. You have to weigh this risk against the risk of not knowing whether you have a disease. Without the correct diagnosis, it will be almost impossible to get the correct treatment. With the correct treatment, there is often a good chance of beating cancer.

CANCER TESTS

- ❖ can have both benefits and drawbacks
- ❖ may use radioactive materials and X-rays (and exposure to too much radiation can be dangerous)

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Treating Cancer

	Radiation Therapy	Chemotherapy	Surgery
???	uses a special kind of energy called ionizing radiation	uses chemicals to stop cancer cells from dividing	surgeon removes the tumour or repairs the affected organs
Pros	damages the DNA in cancer cells or kills them	useful when the cancer has spread to other parts of the body	if detected early it may be possible to safely remove the entire tumour and affected tissue
Cons	can also harm healthy cells near the tumour	chemicals are toxic to healthy, rapidly dividing cells (recovery is painful and severe)	recovery may be painful (is not an option if tumour is near vital organs or has spread too much)

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Treating Cancer

DETECTING & TREATING CANCER

- the main treatment methods include:
 - surgery (removal)
 - chemotherapy (chemicals)
 - radiation (special type of energy)


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Check Your Learning

1. What is the purpose of a biopsy?

to confirm whether a growth is cancerous


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 **Check Your Learning**

2. Why are regular cancer screenings recommended for older people and not for teens and young adults?

cancers are rare in young people


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 **Check Your Learning**

3. Why might a doctor choose to treat a cancer using chemotherapy instead of surgery?

if the cancer has spread chemotherapy is more effective than surgery

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 **Check Your Learning**

4. Cancer is generally rare among teens and young adults. Why do young people need to think about preventing cancer?

because most cancers take years to develop

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