

6.7 Computers in medicine

Syllabus 2026 - 2028

WHAT YOU NEED TO KNOW

- Characteristics and uses of patient records and pharmacy records
- 3D printers, including printing of prosthetics, tissue engineering, artificial blood vessels and customised medicines

Patient records

A patient record is a database entry that holds a patient's details, medical history, allergies, test results, treatments and the medicines they have been given.

Advantages	Disadvantages
+ Doctors and nurses can see a patient's history quickly, even in another department	- Private data must be protected from hackers and unauthorised staff
+ Records are clear (no handwriting problems) and easy to update and back up	- A system failure or power cut can make records unavailable
+ Less storage space is needed than for paper files	- Wrong data entered by mistake could lead to wrong treatment

Pharmacy records

- Store details of medicines in stock, prescriptions and the medicines each patient has taken
- The system can check for allergies and for medicines that should not be taken together
- Stock levels are updated automatically and new stock can be ordered when it runs low
- Labels can be printed, and the supply of controlled medicines can be tracked

3D printers in medicine

A 3D printer builds a solid object from a digital design, one layer at a time.

Use	Description
Prosthetics	Artificial limbs and joints made to fit one person exactly, more quickly and cheaply than before.
Tissue engineering	Layers of living cells are printed to build tissue, and in future whole organs, that can be used in transplants.
Artificial blood vessels	Tubes printed from suitable materials or cells to replace damaged blood vessels.
Customised medicines	Tablets printed with the exact dose and mix of drugs for one patient.

Advantages	Disadvantages
+ Products are made to fit each patient	- The printers and materials are expensive
+ Fast to produce, and less material is wasted	- Some uses (such as printing organs) are still being developed
+ Can reduce waiting times for transplants in the future	- There are ethical and safety rules that must be met

EXAM TIP

For 3D printing, always say that the item is made to suit the individual patient. This is the main benefit examiners look for.

Key terms

Term	Meaning
Patient record	A stored collection of data about one patient's health and treatment.
Prosthetic	An artificial replacement for a body part, such as a limb.
Tissue engineering	Growing or printing living tissue to repair or replace damaged tissue.