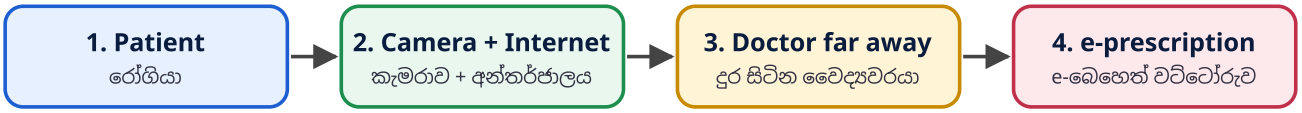
G.C.E. O/L Grade 11 ICT · Lesson 6

6.1 ICT in Health: Telemedicine, Medical Equipment and Medical Records

Syllabus 15.1. Hospitals and doctors use ICT every day. A doctor can talk to a patient who is far away (**telemedicine**), watch a patient's heart from another room (**telemonitoring**), take pictures inside the body with a **CAT scanner** or **MRI**, and keep all patient details safely in **electronic medical records**.

1. Telemedicine

Telemedicine means giving medical care from a distance using ICT. The patient and the doctor are in different places. They talk by video call, send photos and reports, and the doctor can send an e-prescription.



Telemedicine: the patient and the doctor are joined by the Internet.

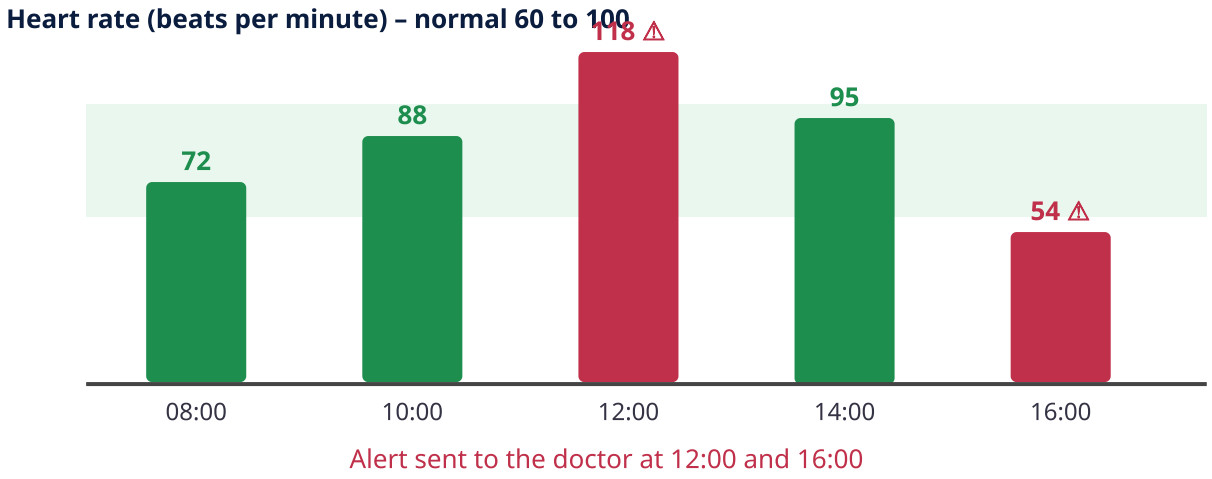
- Good for people in villages far from big hospitals.
- Saves travel time and money.
- A specialist can help a small hospital.
- Needs a good Internet connection and privacy.

2. Telemonitoring

Telemonitoring means checking a patient's body readings from a distance. Sensors measure heart rate, blood pressure, sugar or oxygen. The readings go to a computer. If a reading is outside the safe range, the computer gives an **alert** to the nurse or doctor.

Time	Heart rate	Result
08:00	72	Normal
10:00	88	Normal
12:00	118	High
14:00	95	Normal
16:00	54	Low

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Normal heart rate is 60 to 100 beats per minute. The readings at 12:00 and 16:00 are outside this range, so an alert is sent.

> 💡 Think of telemonitoring like a smoke alarm for the body: it watches all the time and rings only when something is wrong.

3. Computer-controlled medical equipment

Equipment	What it does
CAT (CT) scanner	Uses X-rays from many angles. A computer joins them into slice pictures of the body.
MRI scanner	Uses a strong magnet and radio waves (no X-rays). Very clear pictures of the brain, muscles and joints.
ECG machine	Records the electrical signals of the heart.
Patient monitor in ICU	Shows heart rate, blood pressure and oxygen all the time.
Infusion pump	Gives the exact amount of medicine into a vein.

4. Electronic medical records

A **medical record** keeps everything about a patient's health. When it is stored on a computer it is an **electronic medical record (EMR)**. Any doctor in the hospital can see it quickly, and it is not lost like paper.

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An electronic medical record holds the clinical history, medication and test reports.

Clinical history
Past illnesses, operations and visits.

Medication
Medicines given, doses and allergies.

Test reports
Blood tests, X-rays and scan results.

In Sri Lanka many government hospitals use a **Hospital Health Information Management System (HHIMS)** to keep patient records, and people can book doctor channelling online.

> NEW 2026 2026: **AI** helps doctors read X-rays and scans faster, **smart watches** measure heart rate and oxygen at home, and **online channelling** apps are common. Health data is very private, so the **Personal Data Protection Act (PDPA) No. 9 of 2022** says it must be kept safe.

Key Words

Telemedicine – Giving medical care from a distance using ICT.

Telemonitoring – Checking a patient's body readings from a distance with sensors.

Sensor – A device that measures something such as heart rate or temperature.

Alert – A warning given when a reading is outside the safe range.

CAT scanner – A machine that joins many X-ray pictures into slice images of the body.

MRI – A scanner that uses a strong magnet and radio waves to make clear body pictures.

ECG – A machine that records the electrical signals of the heart.

Medical record – All the details of a patient's health and treatment.

EMR – A medical record kept on a computer.

Clinical history – A list of past illnesses, operations and hospital visits.

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Test report – The result of a blood test, X-ray or scan.

E-prescription – A list of medicines sent electronically by a doctor.

Sample Q&A

1. What is telemedicine?

> **Answer:** Giving medical care from a distance using ICT, such as a video call between a patient and a doctor.

2. Give two advantages of telemedicine.

> **Answer:** Village patients can see a specialist; it saves travel time and money.

3. How does telemonitoring warn a nurse?

> **Answer:** Sensors send readings to a computer. If a reading is outside the safe range the computer gives an alert.

4. Give one difference between a CAT scanner and an MRI.

> **Answer:** A CAT scanner uses X-rays; an MRI uses a magnet and radio waves.

5. Name three things in a medical record.

> **Answer:** Clinical history, medication and test reports.

6. Why must medical records be protected?

> **Answer:** They are very private personal data. The PDPA No. 9 of 2022 says personal data must be kept safe.

MCQ

1. A doctor in Colombo treats a patient in Jaffna by video call. This is

A. telemedicine
B. telemonitoring
C. robotics
D. e-business

2. Sensors send a patient's heart rate to the nurses' room all day. This is

A. CAD
B. e-learning
C. telemonitoring
D. plagiarism

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3. Normal heart rate is 60–100. Which reading gives an alert?

A. 88
B. 72
C. 118
D. 95

4. Which scanner uses a strong magnet and no X-rays?

A. MRI
B. X-ray machine
C. barcode reader
D. CAT scanner

5. A CAT scanner makes pictures by

A. taking a normal photo
B. joining many X-ray images with a computer
C. reading a barcode
D. using sound only

6. Which is NOT part of a medical record?

A. medication
B. test reports
C. clinical history
D. the doctor’s salary

7. One advantage of electronic medical records is that they

A. can be shared with anyone
B. are always on paper
C. can be found quickly by any doctor
D. never need a password

8. Which Sri Lankan law protects patients’ personal data?

A. Traffic Act
B. PDPA No. 9 of 2022
C. No law
D. Copyright only

9. Which term means: “Giving medical care from a distance using ICT”?

A. Telemedicine
B. MRI
C. EMR
D. Alert

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10. Which term means: “Checking a patient’s body readings from a distance with sensors”?

A. Clinical history
B. CAT scanner
C. Telemonitoring
D. ECG

11. Which term means: “A device that measures something such as heart rate or temperature”?

A. Medical record
B. Test report
C. MRI
D. Sensor

12. Which term means: “A warning given when a reading is outside the safe range”?

A. Alert
B. EMR
C. E-prescription
D. ECG

13. Which term means: “A machine that joins many X-ray pictures into slice images of the body”?

A. Clinical history
B. CAT scanner
C. Medical record
D. Telemedicine

14. Which term means: “A scanner that uses a strong magnet and radio waves to make clear body pictures”?

A. EMR
B. Test report
C. Telemonitoring
D. MRI

15. Which term means: “A machine that records the electrical signals of the heart”?

A. Clinical history
B. ECG
C. E-prescription
D. Sensor

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Structured Questions

1. Explain telemedicine and give two advantages. *(3 marks)*

> Medical care from a distance using ICT (1); village patients reach specialists (1); saves travel time and cost (1)

2. The heart rate readings were 08:00 = 72, 10:00 = 88, 12:00 = 118, 14:00 = 95, 16:00 = 54. Which times give an alert and why? *(2 marks)*

> 12:00 and 16:00 (1); the readings are outside the normal range 60–100 (1)

3. Compare a CAT scanner and an MRI scanner. *(3 marks)*

> CAT uses X-rays from many angles (1); MRI uses a magnet and radio waves (1); both use a computer to build the image (1)

4. List three parts of an electronic medical record and give one advantage of keeping it on a computer. *(4 marks)*

> Clinical history; medication; test reports; quick to find and not lost (1 each)

5. Give two ways a hospital should keep patient data safe. *(2 marks)*

> Passwords and user access levels (1); backups and following the PDPA (1)

Summary

- Telemedicine = medical care from a distance by ICT.
- Telemonitoring = sensors watch a patient and give alerts.
- CAT scanner = many X-rays joined by a computer.
- MRI = magnet and radio waves, no X-rays.
- ECG, ICU monitors and infusion pumps are computer controlled.
- Medical records: clinical history, medication, test reports.
- EMRs are quick to find but must be kept private.
- 2026: AI reads scans, smart watches, PDPA 2022.

MCQ answer key – 6.1

1. **A** – Care from a distance by ICT is telemedicine.
2. **C** – Watching readings from a distance is telemonitoring.
3. **C** – 118 is above 100.
4. **A** – MRI = magnet and radio waves.
5. **B** – Computed tomography joins X-ray slices.
6. **D** – Records are about the patient's health.
7. **C** – EMRs are fast to find but must stay private.

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8. **B** – The Personal Data Protection Act 2022.
9. **A** – Telemedicine – Giving medical care from a distance using ICT.
10. **C** – Telemonitoring – Checking a patient's body readings from a distance with sensors.
11. **D** – Sensor – A device that measures something such as heart rate or temperature.
12. **A** – Alert – A warning given when a reading is outside the safe range.
13. **B** – CAT scanner – A machine that joins many X-ray pictures into slice images of the body.
14. **D** – MRI – A scanner that uses a strong magnet and radio waves to make clear body pictures.
15. **B** – ECG – A machine that records the electrical signals of the heart.

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