



Telemedicine

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Content :

- **Introduction .**
- **Definition .**
- **Elements of telemedicine .**
- **Telemedicine transmission mode .**
- **Barrier of telemedicine .**
- **Summary .**



Objectives :

- ➔ **By the end of this lecture the student will be able to :**
- ❖ **Define telemedicine .**
- ❖ **Discuss the elements of telemedicine .**
- ❖ **Describe telemedicine transmission mode .**
- ❖ **List telemedicine barriers .**



Introduction :

► **Telemedicine was postulated in the 1920s when an author from Radio News magazine demonstrated how a doctor might examine a patient remotely using radio and television.**



Count...

- **All health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.**

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Definition :

- **The delivery of health care services, where distance is a critical factor .**

Telemedicine applications have successfully improved the quality and accessibility of medical care by allowing distant providers to evaluate, diagnose, treat, and provide follow-up care to patients in less-economically developed countries (17, 25, 26). They can provide efficient means for accessing tertiary care advice in underserved areas (27). By increasing the accessibility of medical care telemedicine can enable patients to seek treatment earlier and adhere better to their prescribed treatments (28), and improve the quality of life for patients with chronic conditions (29).



Mobile teleradiology is utilized in villages in Botswana to communicate with radiologists in the capital city of Gaborone. (Photograph: Ryan Littman-Quinn, Carrie Kovarik: Botswana-UPenn Partnership)

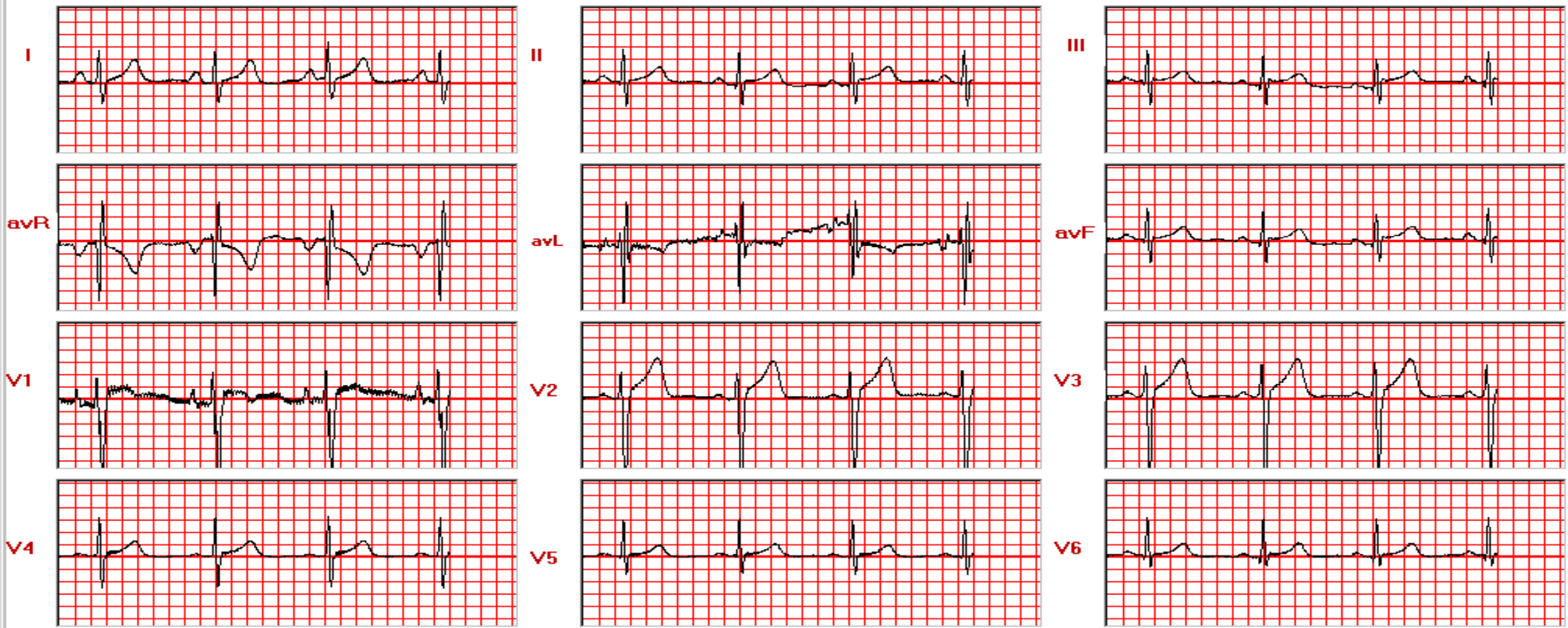
Telemedicine has been advocated in situations where the health professional on duty has little or no access to expert help (30); it is able to offer remote physician access to otherwise unavailable specialist opinions (31), providing reassurance to both doctors and patients. Telemedicine programmes have been shown to directly and indirectly decrease the number of referrals to off-site facilities and reduce the need for patient transfers (32, 33). Remote care and diagnosis via telemedicine in less-economically developed countries thus benefits both patients and the health care system by reducing the distance travelled for specialist care and the related expenses, time, and stress (17, 29, 34, 35). Furthermore, telemedicine programmes have the potential to



Four elements are germane to telemedicine:

- 1. Its purpose is to provide clinical support.**
- 2. It is intended to overcome geographical barriers, connecting users who are not in the same physical location.**
- 3. It involves the use of various types of ICT.**
- 4. Its goal is to improve health outcomes.**

Back

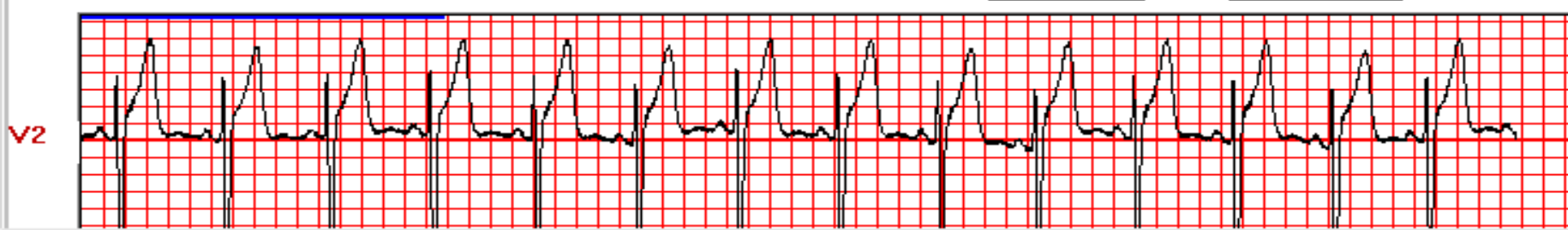


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Lead Information

For Upper Leads		For Lower Lead	
X-Axis	Y-Axis	X-Axis	Y-Axis
100	150	150	150
Millisecond		Millisecond	



Telemedicine Transmission

Modes :

- **There are three major types :**
 1. Store and forward .
 2. Real time .
 3. Remot monitoring .



Store-and-forward :

- **Images or videos are saved and sent later. As an example, a primary care physician takes a picture of a rash with a digital camera and forwards it to a dermatologist to view when time permits.**



Count...

- **This method is commonly used for specialties like dermatology and radiology. This could also be referred to as asynchronous communication.**





R



Real time :

- **A specialist at a medical center views video images transmitted from a remote site and discusses the case with a physician .**



Count...

- **This requires more sophisticated equipment to send images real time and often involves two way interactive televisions enables the sharing of images from peripheral devices such as stethoscopes, otoscopes, etc. This would be an example of synchronous communication.**

Live session using 512 Kbps Leased Line





Remot monitoring :

► **A technique to monitor patients at home, in a nursing home or in a hospital for personal health information or disease management.**

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Barriers to telemedicine :

- 1. Limited reimbursement.**
- 2. Slow clinical acceptance because of the newness of the technology.**
- 3. Limited research showing reasonable benefit and return on investment .**

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Count...

4. High cost or the limited availability of high speed telecommunications .

5. State licensure laws when telemedicine crosses state borders.



Count...

- 7. Lack of standards .**
- 8. Lack of evaluation by a certifying organization.**
- 9. Fear of malpractice as a result of telemedicine .**



Conclusion :

- **Telemedicine is still in its infancy in most areas of the country. The barriers are largely financial due to the high cost to set up the system and the lack of reimbursement in many cases.**



Count...

- **Fortunately, the price of telemedicine systems is dropping so it may eventually be cheaper to use telemedicine in rural areas than to refer patients to distant urban specialists.**



➤ **Any questions**

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