

# Ghana Telemedicine Toolkit

Interactive Implementation Guide

Start

Note: Novartis Foundation will not financially support roll-out activities

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Spandylove Kyerewah Manu attends to young Theresah Osaah, who she has diagnosed as having Malaria. She calls the ambulance, with her mobile phone, to come for both Mother (Afia Nyarko and child). She texts the information on the server.

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We express our appreciation to Ghana's leaders in the telemedicine effort, including the Ghana Health Service, the Ghana Ambulance Service, Ministry of Communication, Ministry of Health, and National Health Insurance Agency, and St. Martin's Hospital, and recognize the pioneering leadership and continuing intellectual support given by Millennium Promise Alliance and the Earth Institute at Columbia University. We also thank Ericsson and Medgate for their contributions.

# Introduction

**Effective universal health care requires that all people and communities, including pregnant women, children aged under five years and other patient groups, have access to a comprehensive health care system. To ensure effective health care, service providers should work together, from community level up to regional and national levels.**

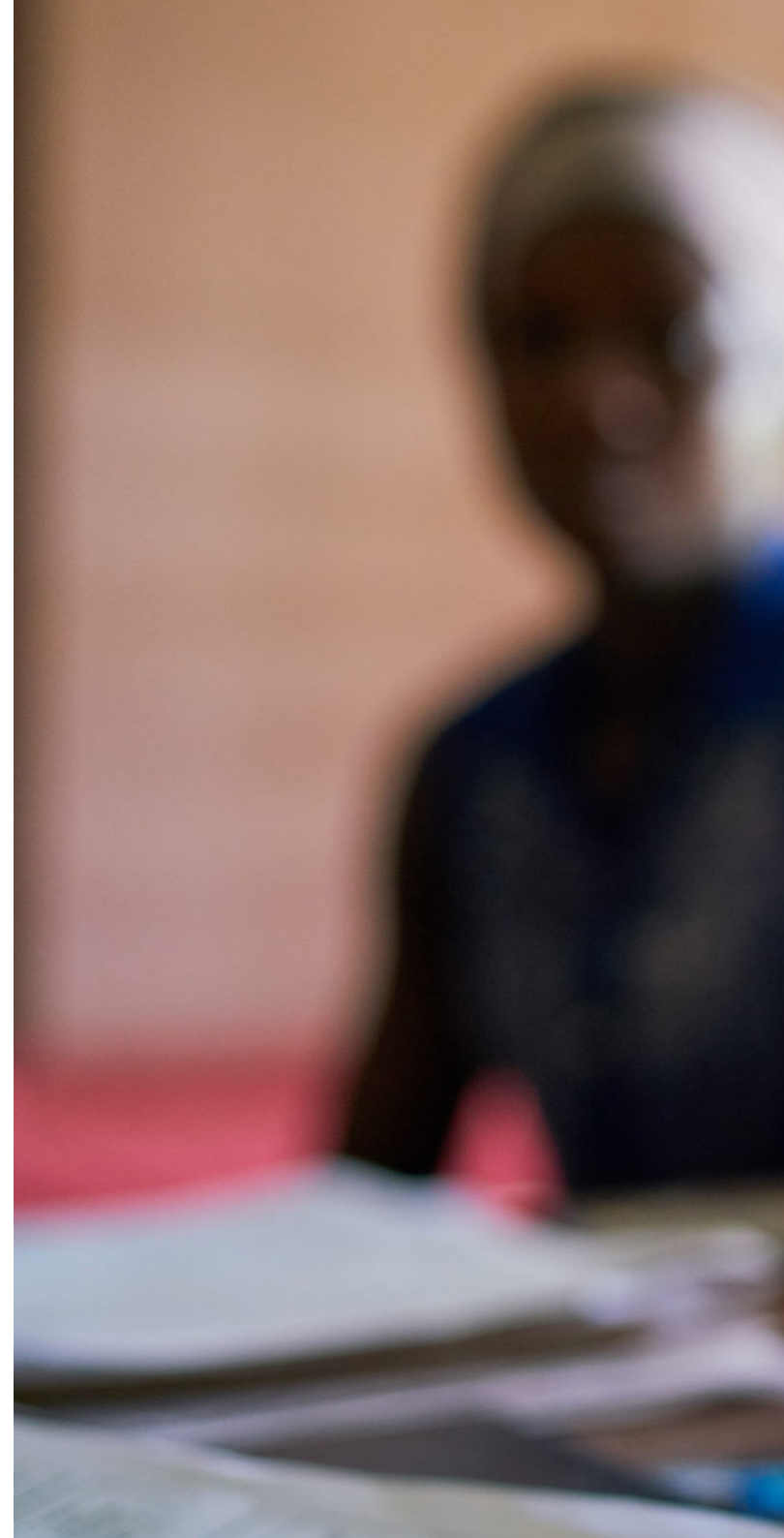
The use of Information and Communication Technology (ICT) approaches, such as telemedicine, presents several opportunities for improving the performance of health care systems, in particular in remote areas where lack of effective transport systems and inaccessible roads can limit access to health care.


## Benefits of telemedicine

Telemedicine is the delivery of health care services to patients in remote areas using ICT. It has the potential to overcome geographical barriers that hinder patient access to health facilities and is highly beneficial to patients living in hard-to-reach communities.

### Telemedicine:

- Facilitates the delivery of effective care to a wider population in settings where there are few highly skilled health care workers and the physician-patient ratio is low
- Enables health workers to receive case management support by telephone, improving the patient experience and minimizing the cost and risk of transporting patients to district hospitals
- Provides health workers with access to expert advice on stabilizing patients, initiation of treatment and correct referral destination when referral is necessary
- Increases feedback from specialists to primary care providers following referral (closing the referral loop)
- Utilizes recent advances in mobile technology to allow health care workers in multiple locations to easily share information and discuss patient issues as if they were in the same place.



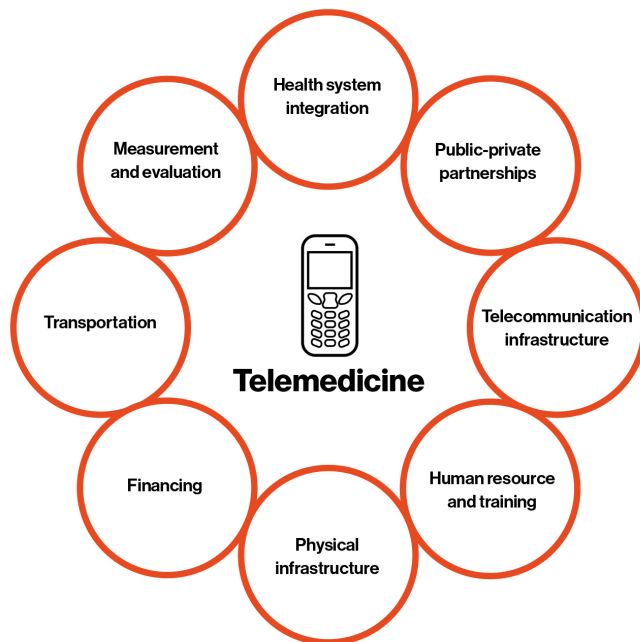
A close-up photograph of a person's hand holding a white smartphone. The phone's screen displays a telemedicine application interface. At the top, it says 'Connecting'. Below that, there is a blue silhouette of a person's head and shoulders. Underneath the silhouette, the text reads 'TTC' and 'Mobile 026-301-7961'. The background is a blurred indoor setting with warm, yellowish light.

In a pilot telemedicine project that started in the Amansie West District of the Ashanti Region in Ghana (known as the Ghana telemedicine initiative), affordable, sustainable and high-quality primary health care is provided using a telemedicine service. Using mobile phones, community-based health care workers diagnosing and treating patients in hard-to-reach communities receive medical assistance from qualified staff at regional teleconsultation centers (TCC). These 'teleconsultations' also connect health care workers remotely to physicians or specialists at the district or referral hospital, thus facilitating the referral of patients to other facilities as and when necessary.

This system helps to break down distance barriers and improves access to medical services that are not consistently available in these hard-to-reach communities. The success of the Ghana telemedicine initiative can serve as a model for the roll out of telemedicine in other countries, in order to improve patient care across countries regardless of a patient's physical location or the availability of local medical professionals.

## Factors to consider before launching a telemedicine service

The key to the success of telemedicine is maintaining a people-centered approach with local ownership. Before launching, it is important to consider factors that come together to support telemedicine. Implementing telemedicine within existing health service structures assures integration at all levels. Infrastructure, such as ICT, transportation and TCCs, should be established to ensure the service can operate effectively.



Partnerships should be developed to integrate external expertise into the running of the service. Appropriate financing is vital to ensuring the service has the means to operate.

Employing well-trained, experienced staff ensures the delivery of high-quality service to patients. And, finally, monitoring and evaluating the service will ensure it develops and improves over time.

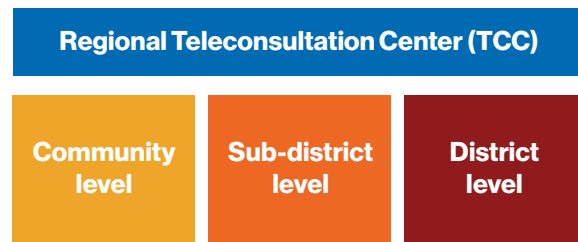


# Organizing your telemedicine service

When setting up a new telemedicine service, it is important to integrate it into your existing healthcare systems, at the national, regional, district, sub-district and community levels. At these levels, managerial and operational teams have already been established, there are defined levels of care for patients and referral procedures are in place.

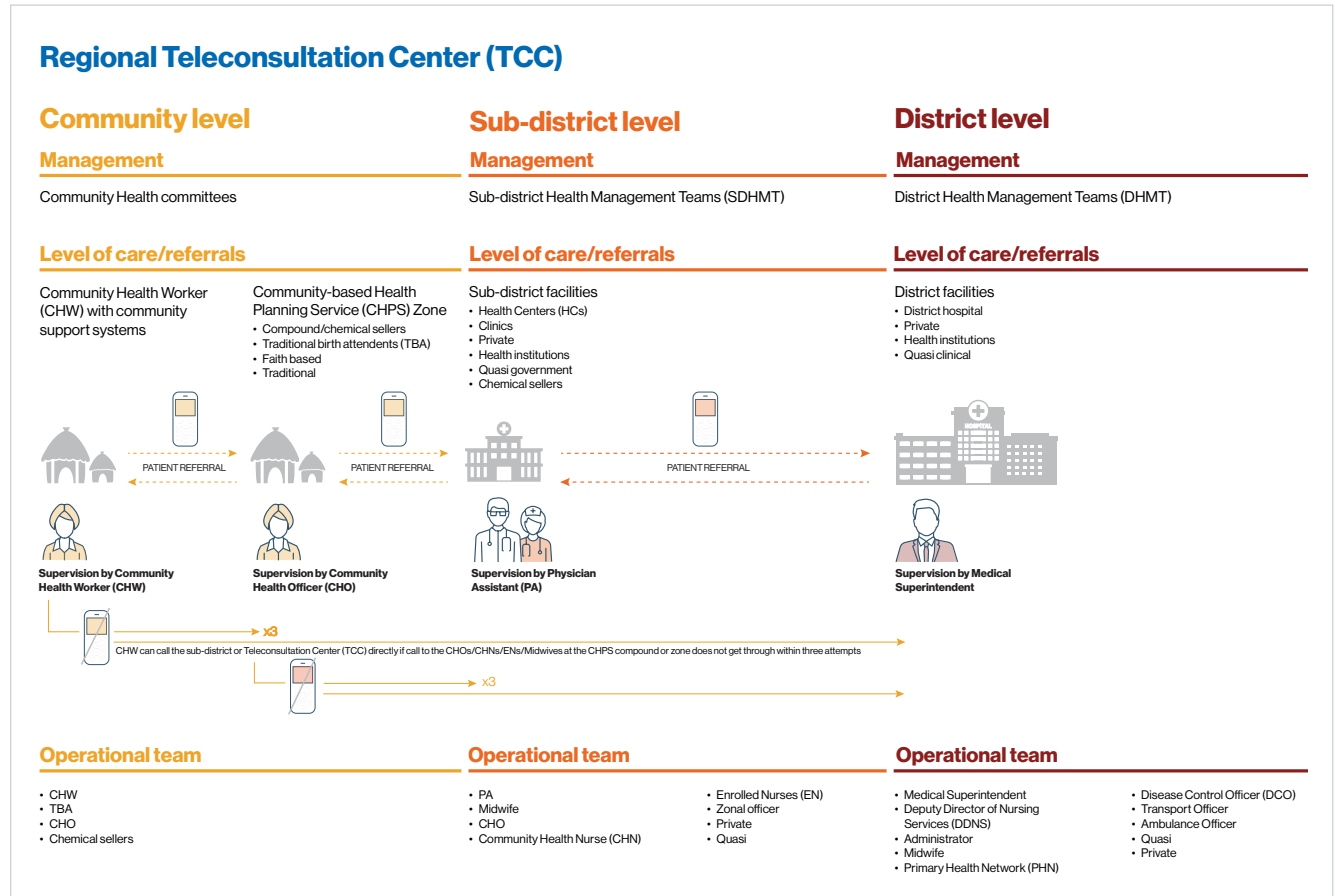
## Structure of a telemedicine service

A telemedicine service works at four main levels:



In this section of the Implementation Guide, you will find an overview of the District, Sub-district and Community levels; information about the Regional TCC will be covered later in the guide.

**Roles and responsibilities →**



**Click image to enlarge**



## Telemedicine at the Community level

### Management

Community Health Management Committees (CHMC) manages the Telemedicine service at the Community Level. The Community Health Officer (CHO) will provide technical advice and arrange regular meetings with stakeholders as needed.

A capacity assessment should also be carried out at this level.

### Communication

Depending on the type of patient that is being assessed, the Community Health Worker (CHW) or Traditional Birth Attendant (TBA) should contact the Community Health Officer (CHO), Community Health Nurse (CHN), Enrolled Nurse (EN) or Midwife.

If the CHW or TBA cannot get hold of their point of contact after three attempts, they can contact the Sub-district or TCC directly, and they will be given advice on the appropriate actions to be taken.

If the CHO or midwife comes across a patient whose condition requires management that is beyond their capabilities, or if they cannot reach the Sub-district after three attempts, they should contact the TCC directly.

In an emergency, members of the community can contact the CHW, CHMC or CHO directly themselves.

### Logistics

The CHWs and TBAs work with specific communities within the Community-Based Health Planning Service (CHPS). All CHWs should have mobile phones, and have access to simple information on specific conditions or symptoms, protocols on how these should be managed, and educational messages about key health interventions and services that could help to improve health outcomes within communities.

#### Managerial team

- Community Health Management Committees
- Community Health Officer

#### Teleconsultation team

- This is formed at the district level

#### Operational team

- Community Health Worker
- Volunteers
- Traditional Birth Attendants
- Community Health Officer
- Chemical sellers

#### Structures

- Community-based health planning and service zone
- Community support systems





## Telemedicine at the Sub-district level

### Management

The Sub-district Health Management Teams will coordinate the telemedicine service at the sub-district level. The Sub-district Head will provide technical advice and arrange regular meetings with stakeholders as needed.

A capacity assessment should be carried out at this level, to determine if the teams have the skills that are needed to support the telemedicine service or if they need to be developed further.

### Communication

The health facilities at the Sub-district level should make calls to the TCC, who will then provide them with the appropriate advice.



#### Managerial team

- Sub-district Health Management Team
- Sub-district Head

#### Teleconsultation team

- This is formed at the District Level

#### Operational team

- Physician Assistant
- Midwife
- Community Health Officer
- Community Health Nurse
- Enrolled nurses
- Zonal officer
- Private providers

#### Structures

- Health centers
- Clinics
- Private providers
- Quasi Government
- Chemical sellers



## Telemedicine at the District level

### Management

The telemedicine service will be managed by the District Director of Health Services (DDHS), supported by the Medical Superintendent. Together, they will arrange regular family health meetings with all facility and programme heads, ideally once every three months, to review the telemedicine activities and ensure that the service is working efficiently.

The Medical Superintendent will also lead the teleconsultation team and review the Telemedicine reports every week.

### Documentation

The District Health Information Officer (DDIO) will work with the Medical Superintendent to compile monthly teleconsultation reports.

At all levels of the telemedicine service, processes should be put in place to record, document and sign teleconsultations – they should be recorded in the patients' healthcare record, and if they result in a referral, a referral form should be completed at the district and sub-district levels.

#### Managerial team

- District Director of Health Services
- Medical Superintendent

#### Teleconsultation team

- Medical Superintendent
- Medical Assistant
- Midwife
- Nurse
- Disease Control Officer
- Ambulance officer
- Deputy Director of Nursing Services
- Administrator
- Transport Officer
- Private
- Quasi facility in-charges

#### Operational team

- Medical Superintendent
- Medical Assistant
- Midwife
- Nurses
- Disease Control Officer

#### Structures

- District Health Management Team
- District Hospital
- Private Facilities

## Logistics

A district level transport team, set up and managed by the District Transport Officer (DTO), will ensure that referred patients are transported to the appropriate facility. They will be supported by the ambulance services, community emergency transport system operatives and faith-based transport services.

At all levels, a stock of emergency medicines should be made available from suppliers who are actively engaged with the telemedicine service, so that they can be prescribed when required, with the appropriate approval from a TCC instructor. Providing details of the locations of these suppliers to the relevant teams will help to identify the closest supplier of the medicine that is needed.

## Training

It is essential that training is provided to stakeholders at all levels, covering the following topics:

- Appropriate and effective communication
- How to use and complete teleconsultation referral forms
- Existing disease management protocols and treatment guidelines
- Emergency drugs
- How to document teleconsultations

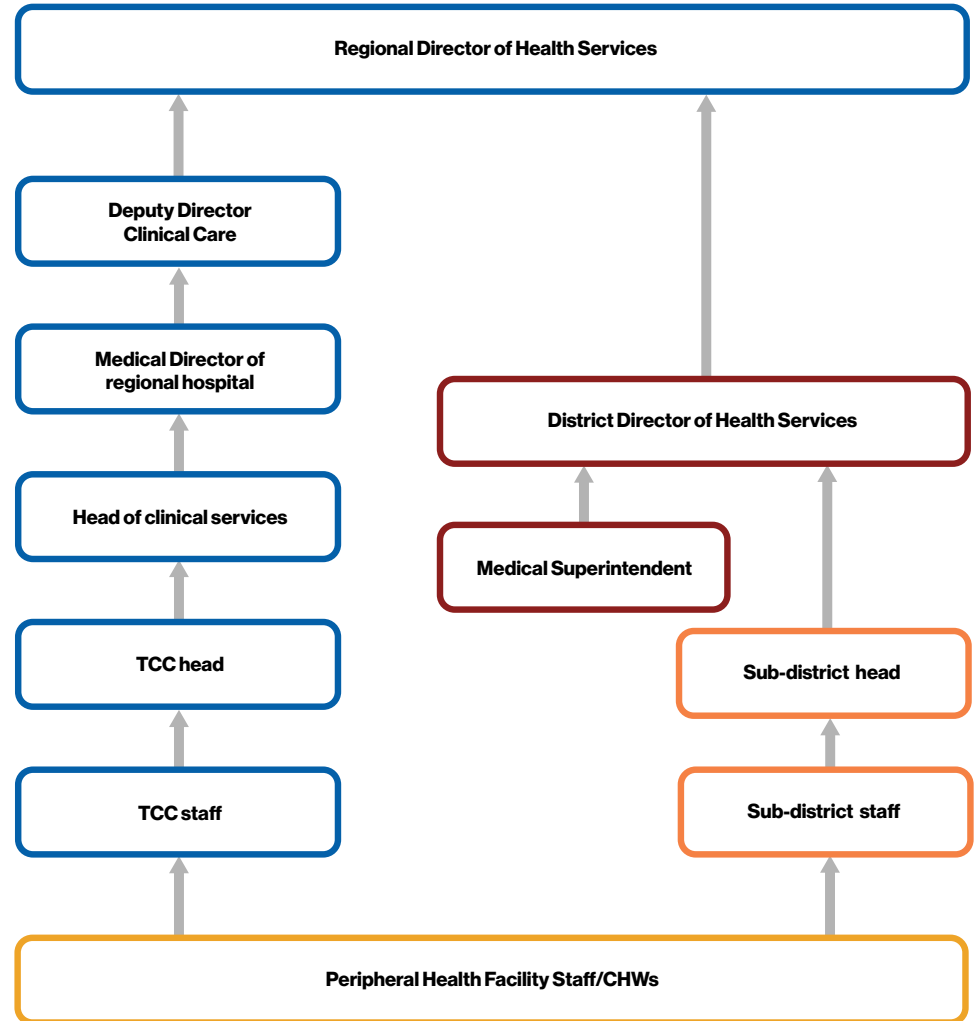


## Managing a telemedicine service – roles and responsibilities

Management of a telemedicine service should be integrated into the existing organizational structure of the country’s health service. The teleconsultation center (TCC) is located at a regional hospital and is a unit under the Regional Health Directorate. The TCC is managed by the TCC head.



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Click on each level to view roles and responsibilities.


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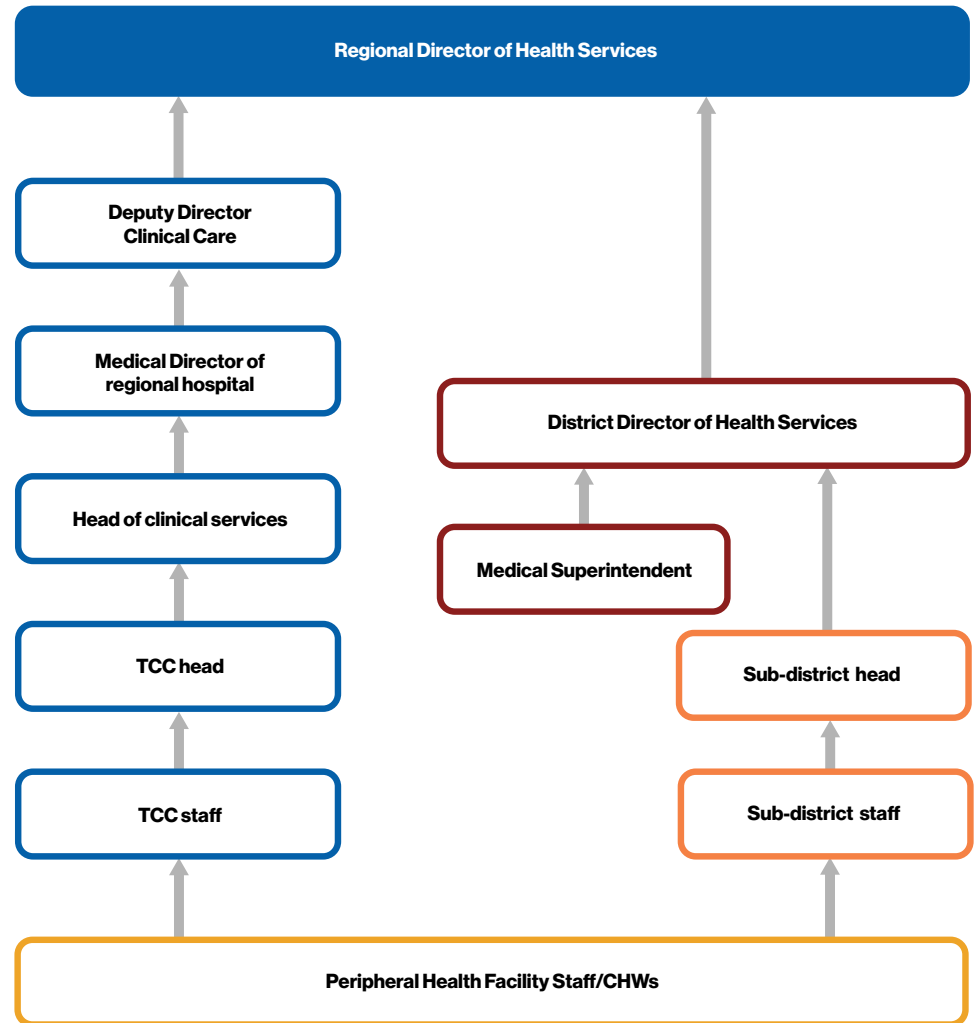
### Regional Director of Health Services

**Roles and responsibilities:**

1. Accountable to the Director General of the health service or country equivalent
2. Provides leadership role in executing the functions of the TCC
3. Ensures allocation of human and material resources for the TCC
4. Collaborates effectively with all relevant stakeholders and performs any other relevant functions



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Click on each level to view roles and responsibilities.


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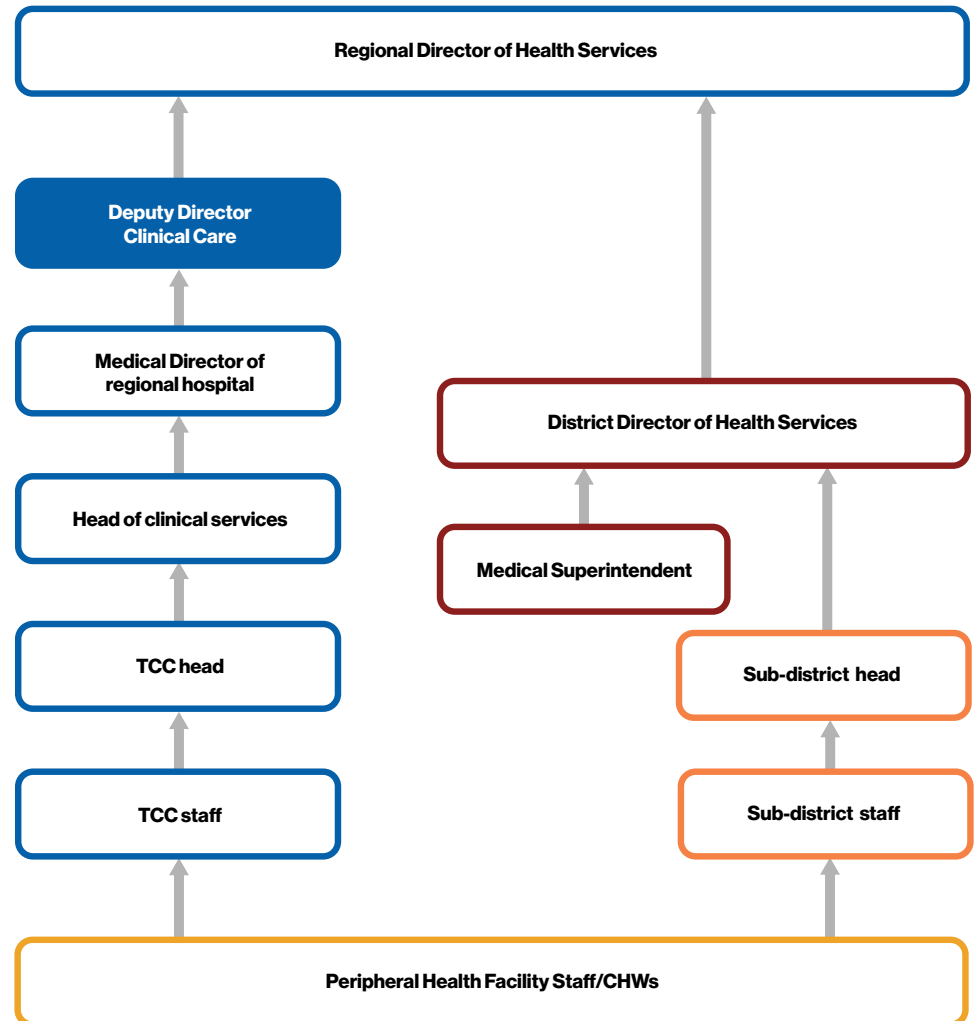
### Deputy Director – Clinical Care

**Roles and responsibilities:**

1. Responsible to the Regional Director of Health Services and accountable to the Director of Institutional Care Division or similar role within a regional health service
2. Provides leadership role in executing the functions of the TCC
3. Ensures allocation of human and material resources for the TCC
4. Provides support and feedback to TCC staff
5. Collaborates effectively with all relevant stakeholders and performs any other relevant functions



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Click on each level to view roles and responsibilities.


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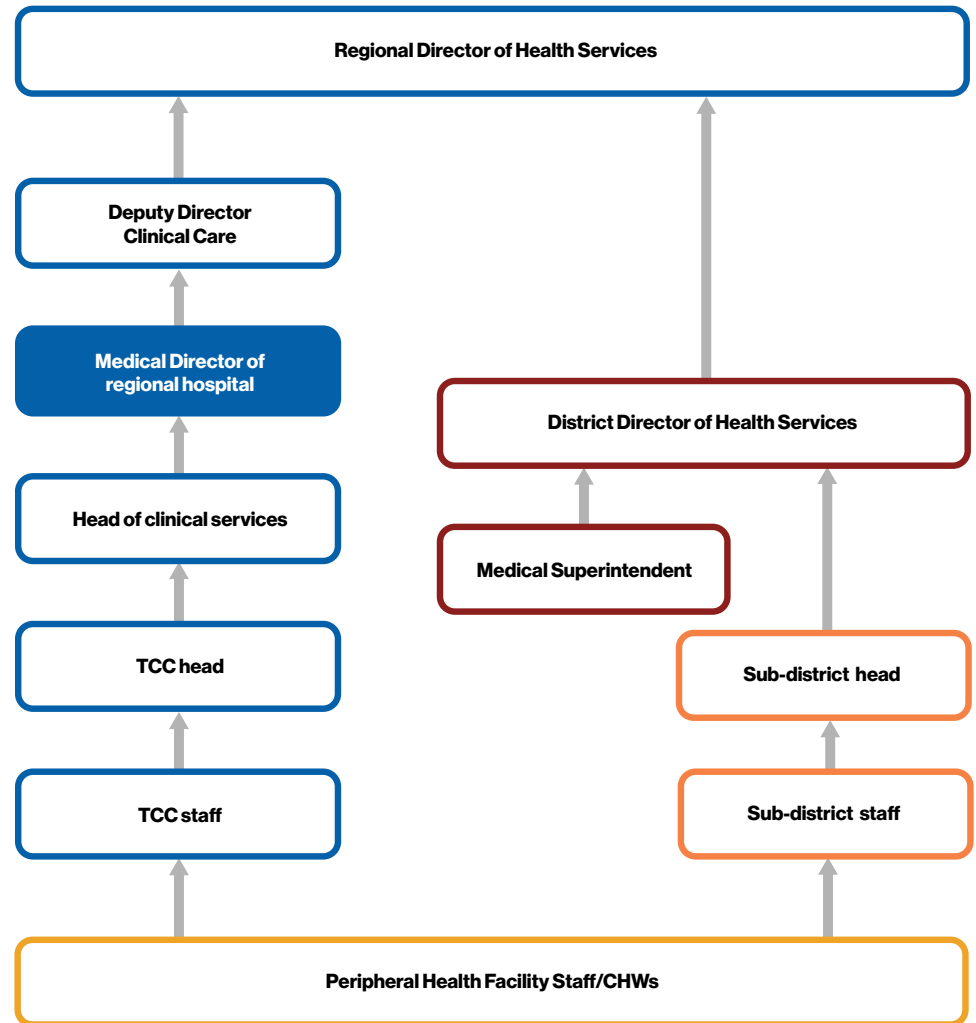
### Medical Director of Regional Hospital

**Roles and responsibilities:**

1. Accountable to the Regional Director of Health Service through the Deputy Director – Clinical Care or similar role within a regional health service
2. Provides leadership and supervisory role in executing the functions of the TCC
3. Ensures the safety and security of staff and equipment at the TCC
4. Assists with human and material resources for the TCC
5. Ensures collation, compilation, data entry onto the medical records system software platform and analysis for decision making
6. Provides feedback to TCC staff
7. Collaborates effectively with all relevant stakeholders and performs any other relevant functions



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Click on each level to view roles and responsibilities.


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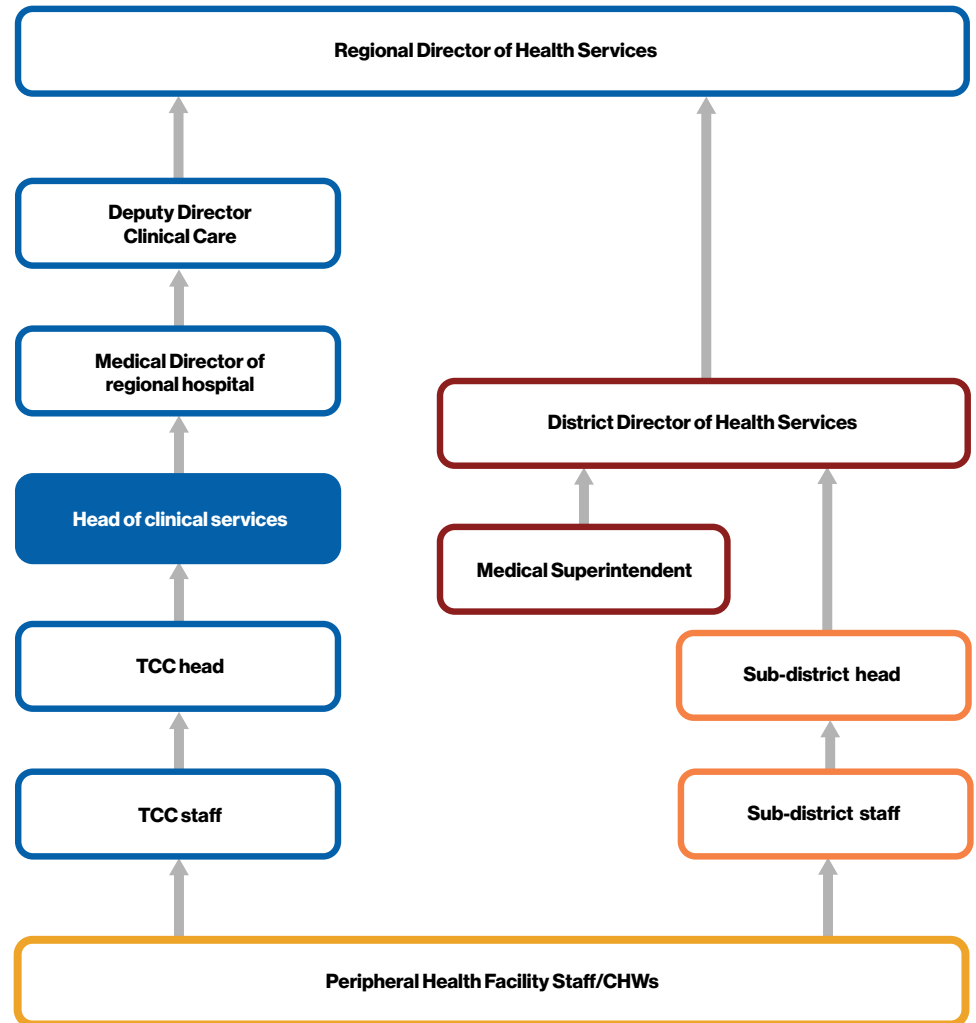
### Head of Clinical Services

**Roles and responsibilities:**

1. Accountable to the Medical Director of the Hospital
2. Provides leadership and supervisory role in executing the functions of the TCC
3. Ensures the safety and security of staff and equipment at the TCC
4. Plans and organizes human and material resources for the TCC
5. Facilitates the development of annual plans and budgets for the TCC unit.
6. Monitors TCC operations
7. Provides feedback to TCC staff
8. Appraises the TCC Head
9. Collaborates effectively with all relevant stakeholders and performs any other relevant functions



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Click on each level to view roles and responsibilities.



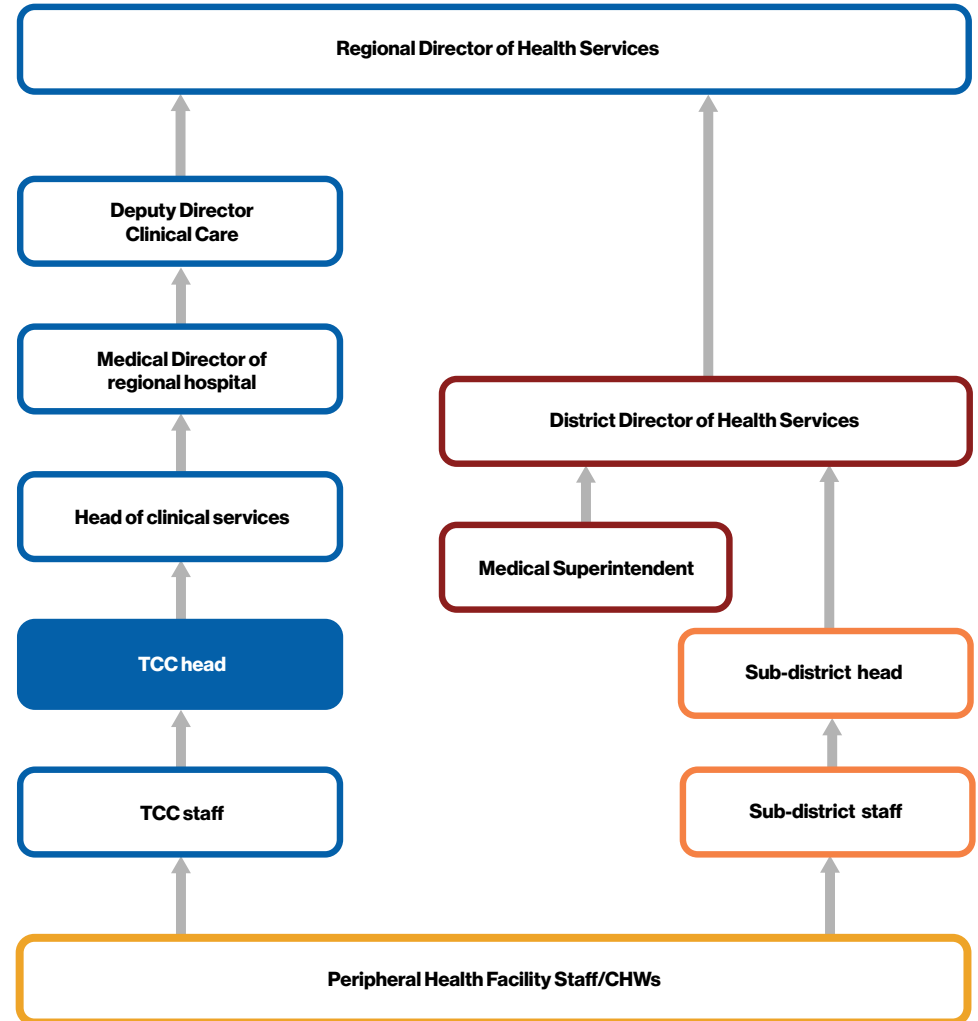
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### TCC Head

**Roles and responsibilities:**

1. Responsible to the Head of Clinical Services
2. Responsible for the day-to-day administration of the TCC
3. Provides leadership and supervisory role for TCC operations
4. Ensures the safety and security of staff and equipment at the TCC
5. Develops annual plans and budgets; and organizes human and material resources for the running of the TCC
6. Responsible for day-to-day maintenance of equipment and prompt reporting of equipment breakdown and follow-up of remedial action
7. Ensure that all teleconsultations are well documented
8. Ensures data collation and entry onto the medical records system software platform and other interoperable systems for analyses and decision making
9. Monitors call trends and provides feedback to management, TCC staff and other relevant stakeholders
10. Appraises TCC Staff
11. Collaborates effectively with all relevant stakeholders and performs any other relevant functions.



Click on each level to view roles and responsibilities.

## Managing a telemedicine service – roles and responsibilities

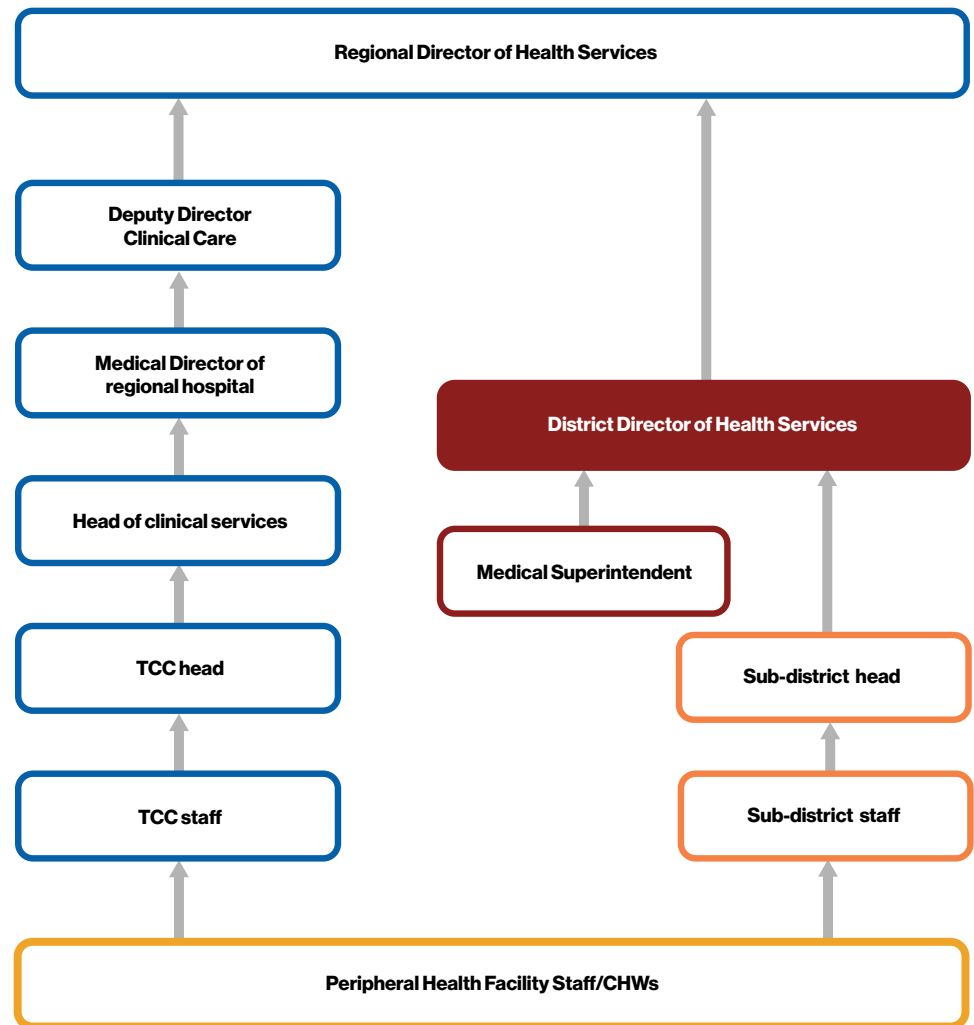
Management of a telemedicine service should be integrated into the existing organizational structure of the country's health service. The teleconsultation center (TCC) is located at a regional hospital and is a unit under the Regional Health Directorate. The TCC is managed by the TCC head.

### District Director of Health Services

**Roles and responsibilities:**

1. Responsible to the Regional Director of Health Service
2. Provides leadership, monitoring and supervisory role for telemedicine operations in collaboration with the Medical Superintendent
3. Plans and organizes human and material resources for telemedicine operations
4. Ensures staff capacity in telemedicine operations and communications training.
5. Ensures the availability of logistics for the running of the telemedicine service
6. Ensures data collation and entry onto the medical records system software platform and other interoperable systems for analyses and decision making
7. Receives information on the telemedicine service including TCC and provides feedback to all relevant facilities and stakeholders.
8. Collaborates effectively with all relevant stakeholders and performs all other relevant functions.

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Click on each level to view roles and responsibilities.

## Managing a telemedicine service – roles and responsibilities

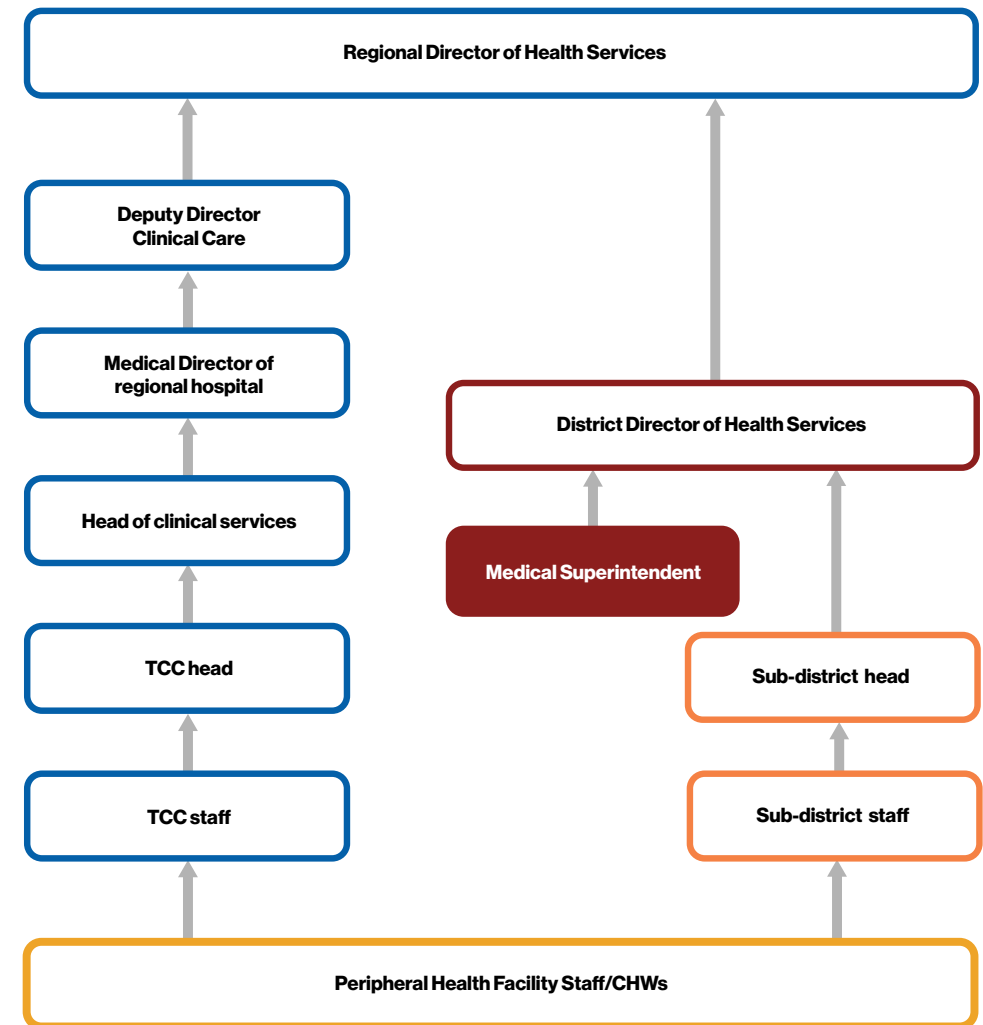
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### The Medical Superintendent

#### Roles and responsibilities:

1. Responsible to the District Director of Health Service and accountable to the Regional Director of Health Service
2. Provides leadership, monitoring and supervisory role for telemedicine operations in collaboration with the District Director of Health Service
3. Ensures that there is always a clinician on call 24 hours to receive TCC calls
4. Works together with the District Director of Health Service to identify other referral Health Facilities within their catchment area, where patients can be referred
5. Plans and organizes human and material resources for the telemedicine service
6. Ensures the availability of logistics for Telemedicine and case management
7. Ensures data collation and entry onto the medical records system software platform and other interoperable systems for analyses and decision making
8. Monitors call trends and provides feedback to management, TCC staff and other relevant stakeholders
9. Collaborates effectively with all relevant stakeholders and performs any other relevant functions

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Click on each level to view roles and responsibilities.

## Managing a telemedicine service – roles and responsibilities

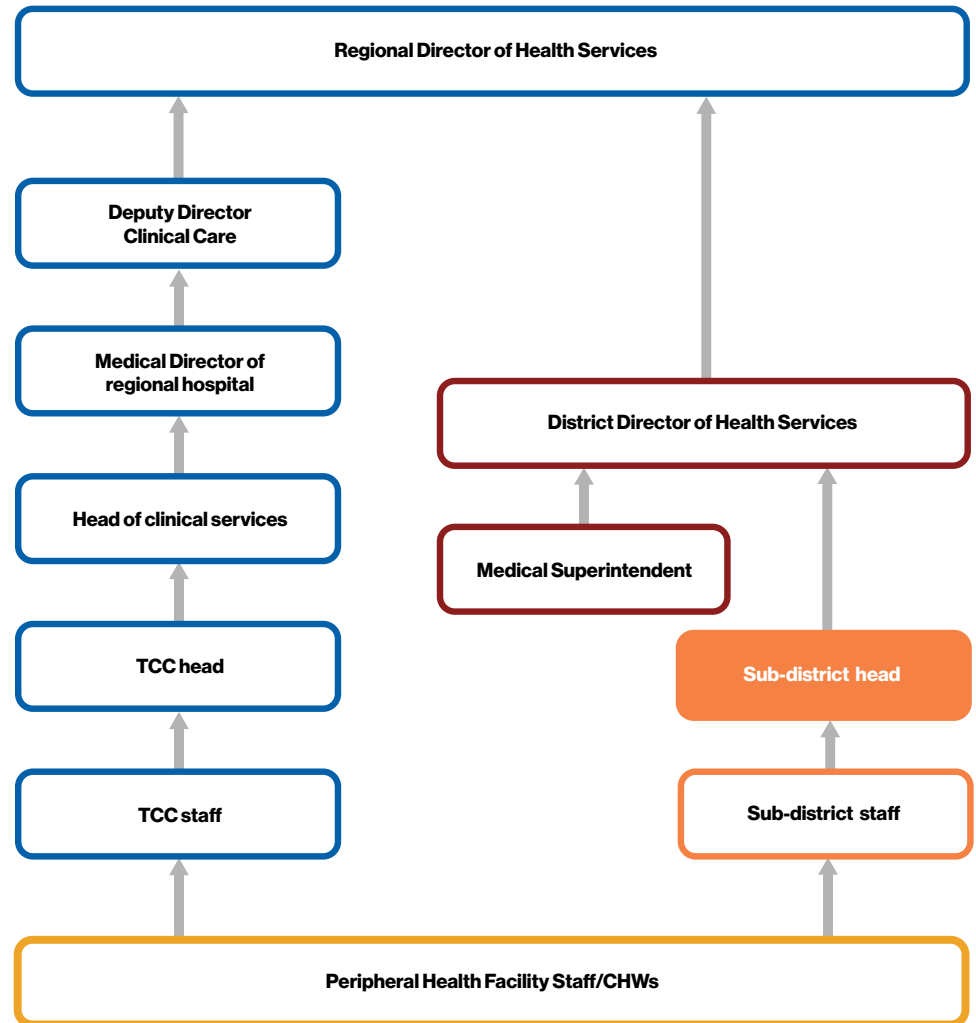
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### The Sub-District Head

**Roles and responsibilities:**

1. Responsible to the District Director of Health Service
2. Provides leadership, monitoring and supervisory role for telemedicine operations
3. Has the capacity to call, manage and refer cases in line with Telemedicine Protocols
4. Ensures that there is always a provider on call 24 hours to call the TCC when necessary
5. Develops annual plans and budgets; and organizes human and material resources for the telemedicine service
6. Ensures that case management protocols and guidelines are available
7. Ensures that all teleconsultations are well documented
8. Ensures data collation and entry onto the medical records system software platform and other interoperable systems for analyses and decision making
9. Monitors call trends and provides feedback to management, TCC staff and other relevant stakeholders
10. Collaborates effectively with all relevant stakeholders and perform any other relevant functions

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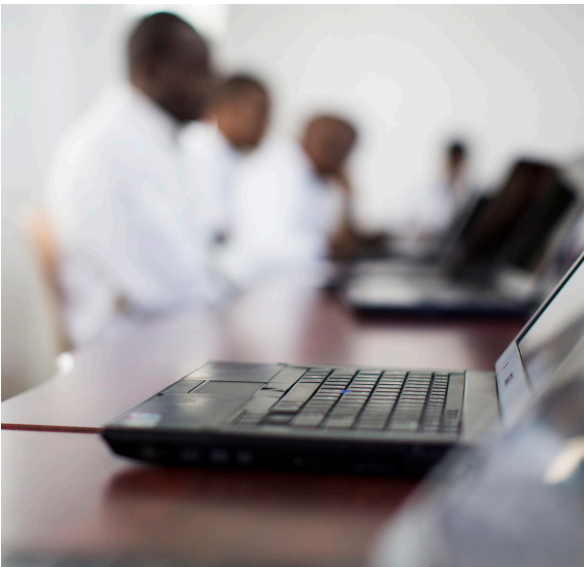


Click on each level to view roles and responsibilities.

# Setting up the Teleconsultation Center (TCC)

## Introduction

The TCC should be in service continuously for 24 hours a day, seven days a week. Therefore, its location needs to be carefully considered and its mode of operating maximized. Every call to the TCC is a potential patient requiring emergency care – if there are disruptions to the service, for example due to a power cut or lost telephone signal, lives could be put at risk.



## TCC Location



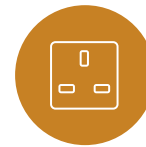
### Area

- Define the area that the service will cover, plus its population and the number of facilities that it will serve
- Should be easily accessed via public transport



### Phone

- Reliable public telephone network
- Minimum of 3G internet connectivity



### Electricity

- Constant electricity supply
- Back-up generator capable of powering all equipment
- Solar panels for secondary back-up, if available



### Security

- Safe area
- Windows and doors capable of protecting staff and equipment
- Security personnel
- Insurance (building and contents)



### Environment

- Quiet, to allow staff to concentrate fully
- Free of dust, to protect equipment and ensure staff are comfortable



### Rooms

- Minimum of two rooms, 16 m<sup>2</sup> each – one for the call center, one for the staff room (with kitchen facilities)
- Long tables and swivel chairs for call center, bed or mattress for staff room for night shift workers
- Sufficient storage
- Bathroom for use by TCC staff only

## Teleconsultation equipment

The specialist equipment shown in the diagram on the next page is needed for the TCC. To set up the equipment correctly, a professional Network Administrator or Telecoms Engineer is required, with a high level of technical experience.

## Maintenance of the TCC System

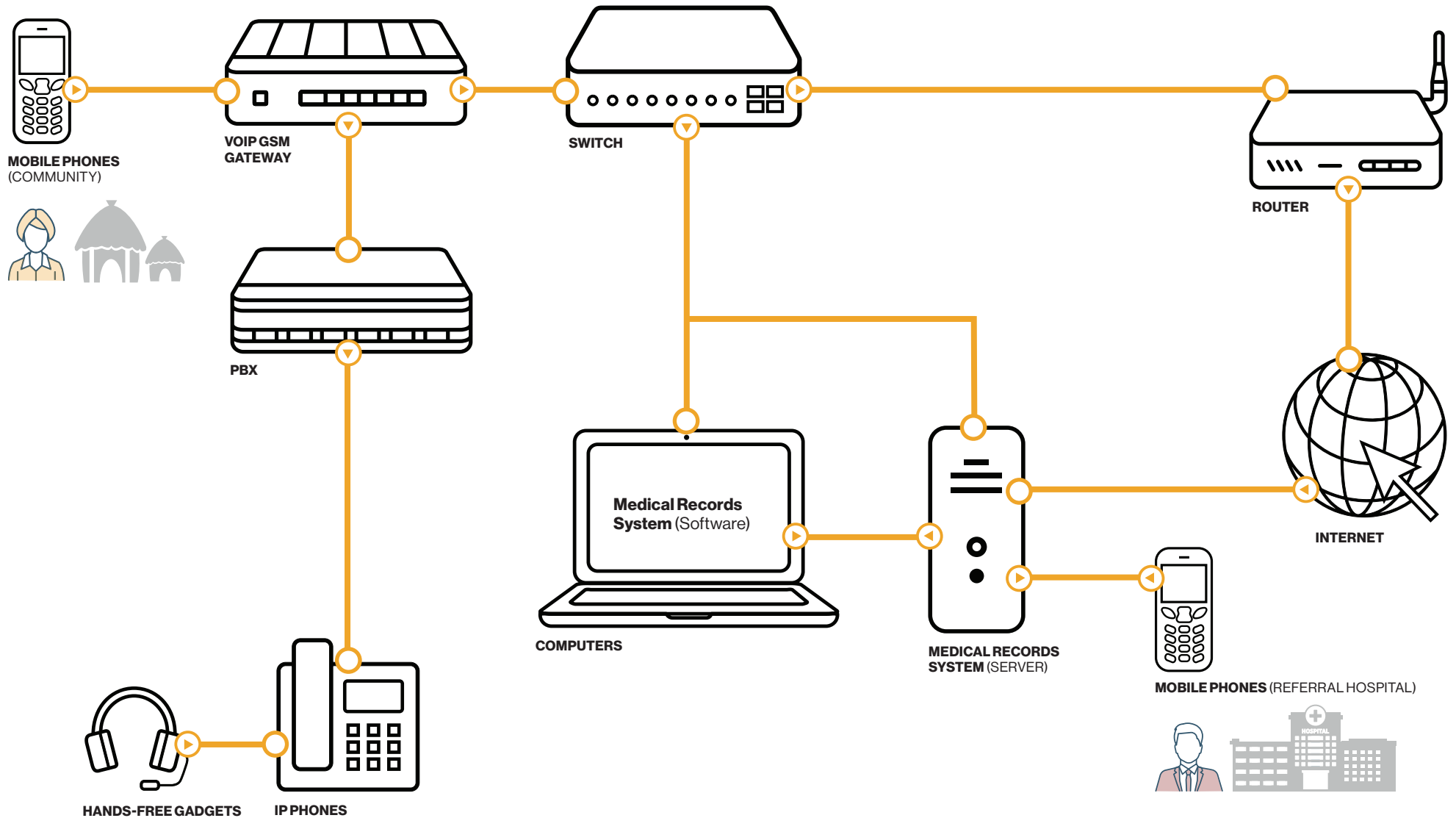
Maintenance of the TCC system is vital. TCC staff should be trained on how to maintain the system – this may be repeated regularly if any changes or updates become available.

Full maintenance of the system every three months, in line with instructions in the manufacturer's manual, will ensure that it continues to function in the long term without any interruptions. All equipment should also be kept clean and dry – this should be checked every day.



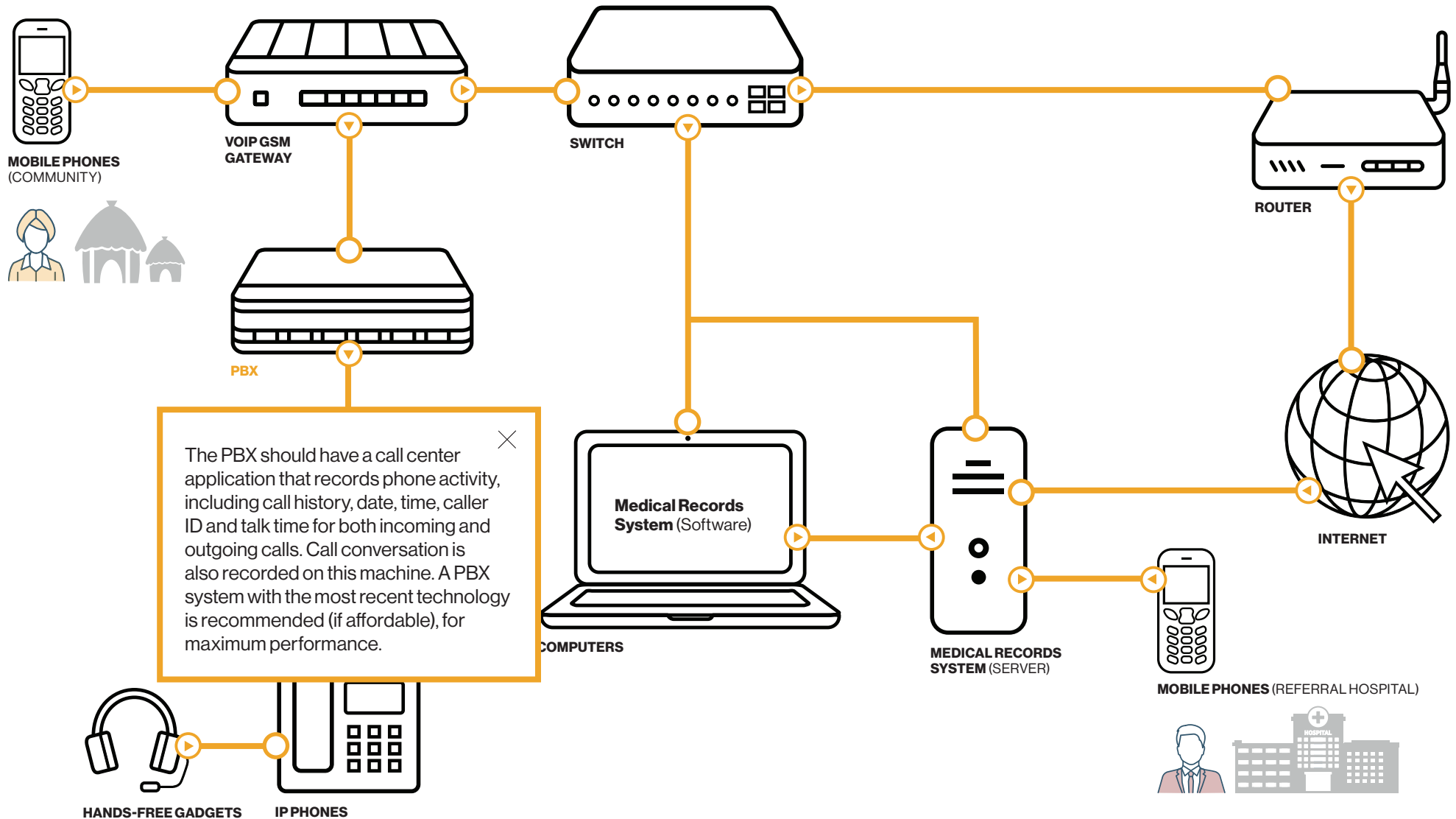
## Teleconsultation equipment

Click on each piece of equipment to find out more.



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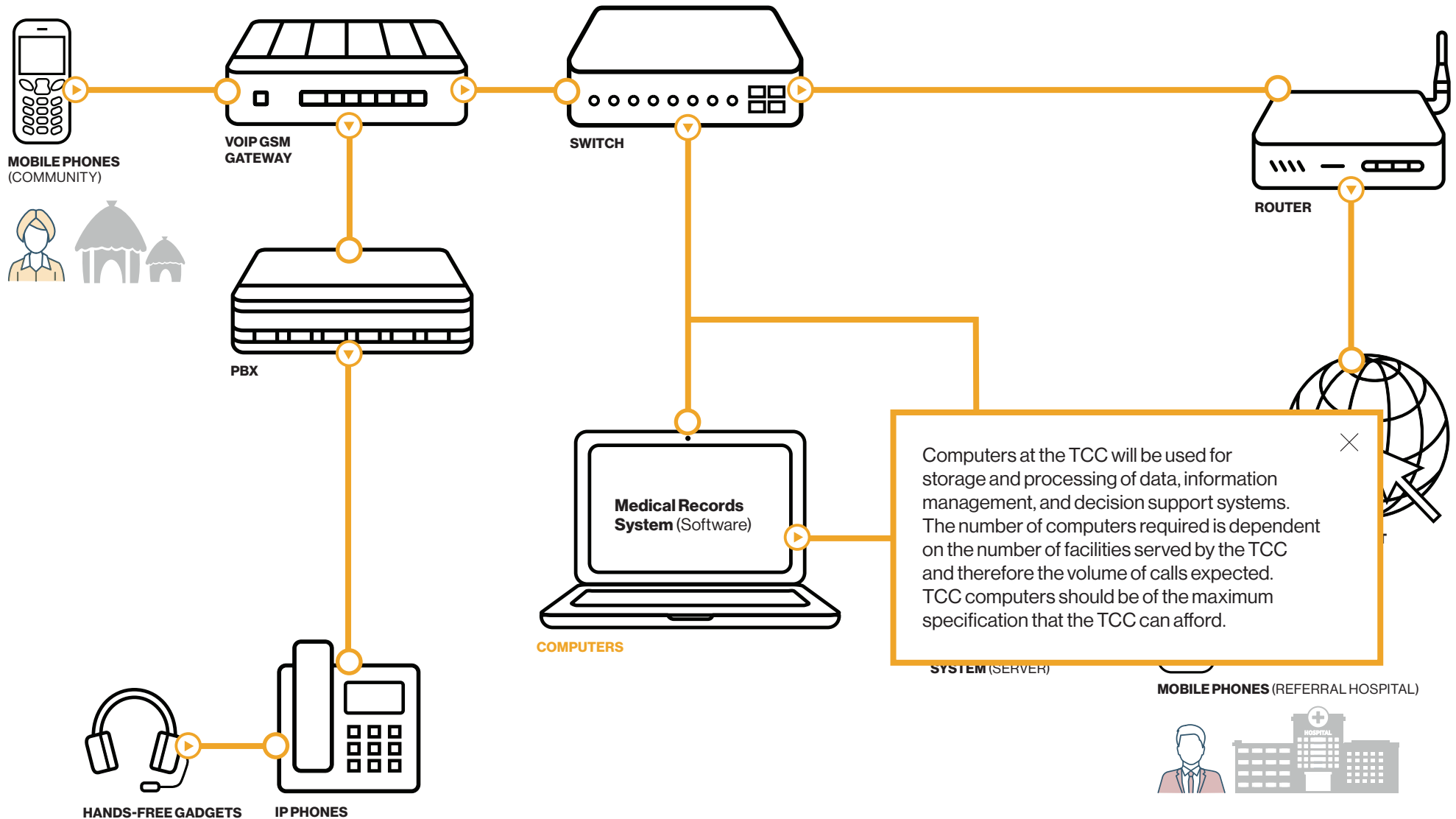


The PBX should have a call center application that records phone activity, including call history, date, time, caller ID and talk time for both incoming and outgoing calls. Call conversation is also recorded on this machine. A PBX system with the most recent technology is recommended (if affordable), for maximum performance.



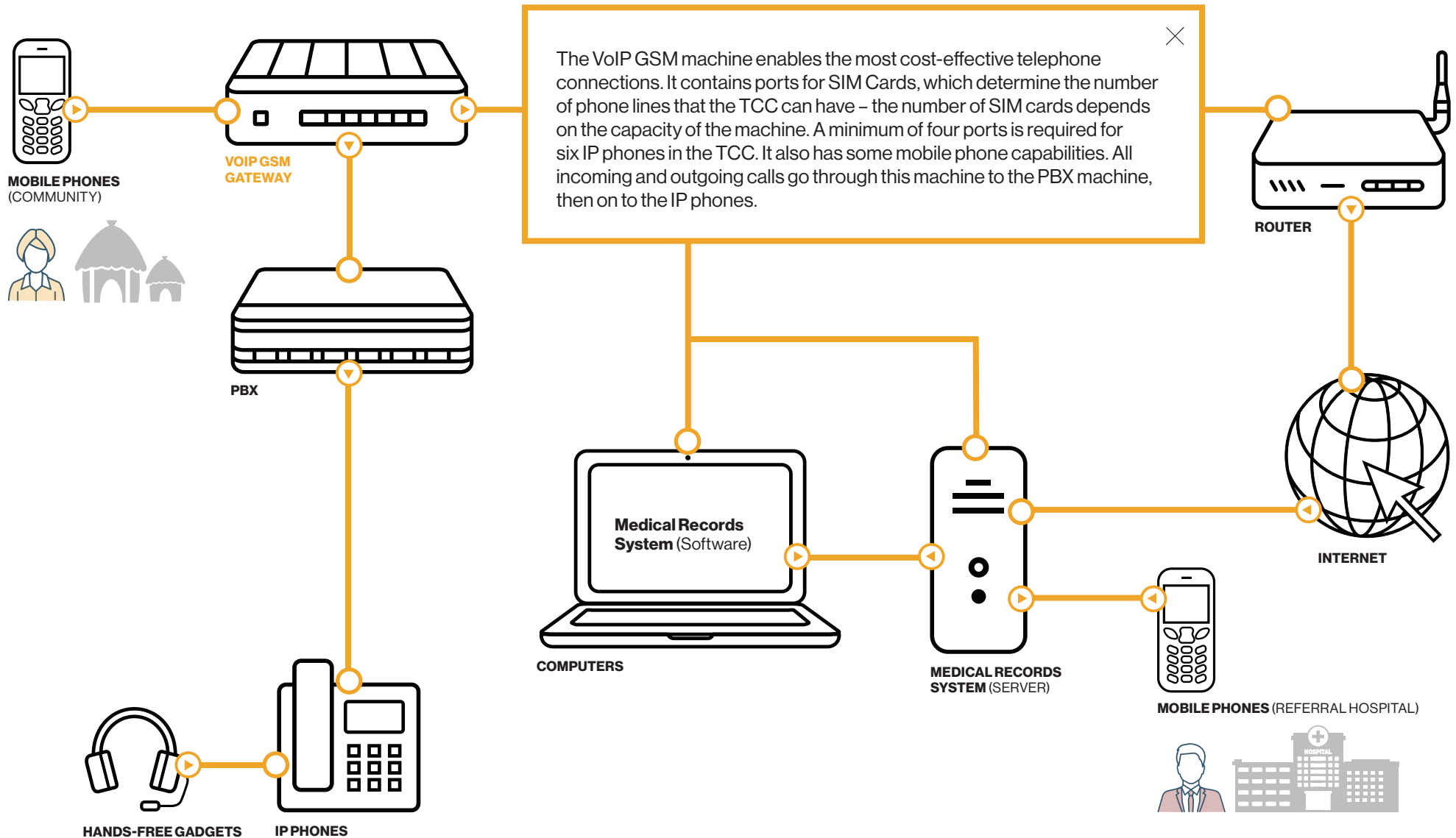
## Teleconsultation equipment

Click on each piece of equipment to find out more.



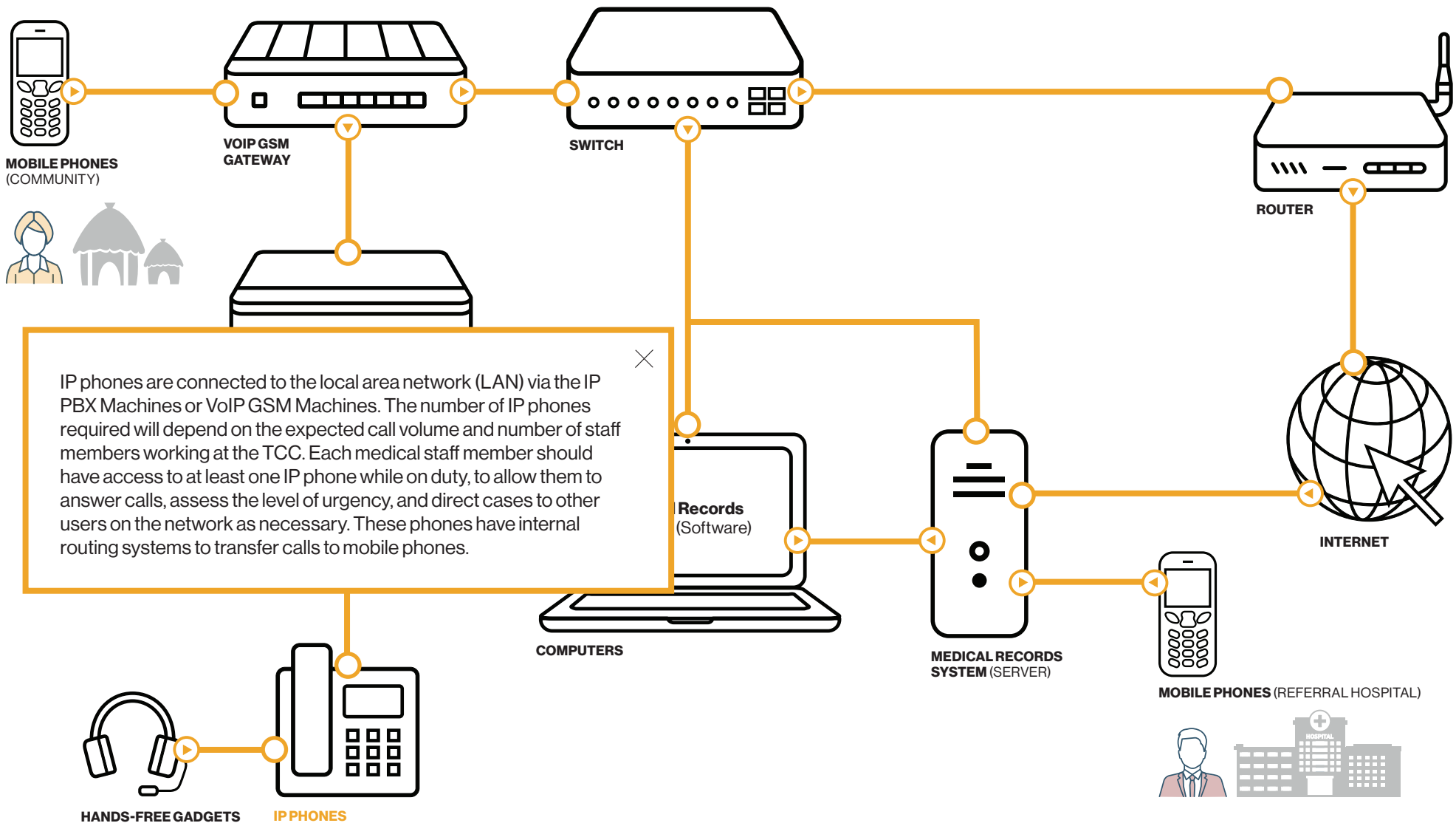
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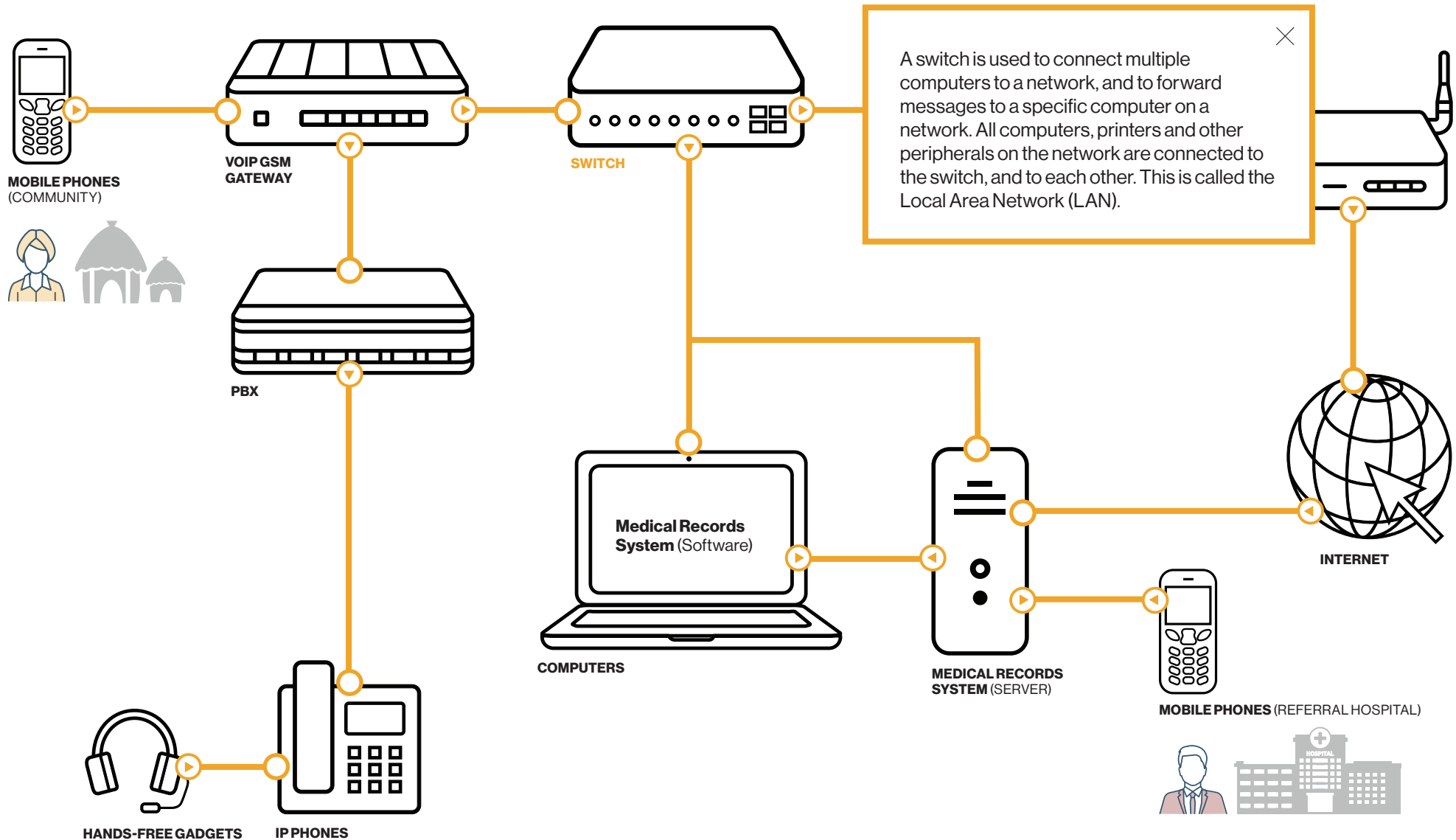
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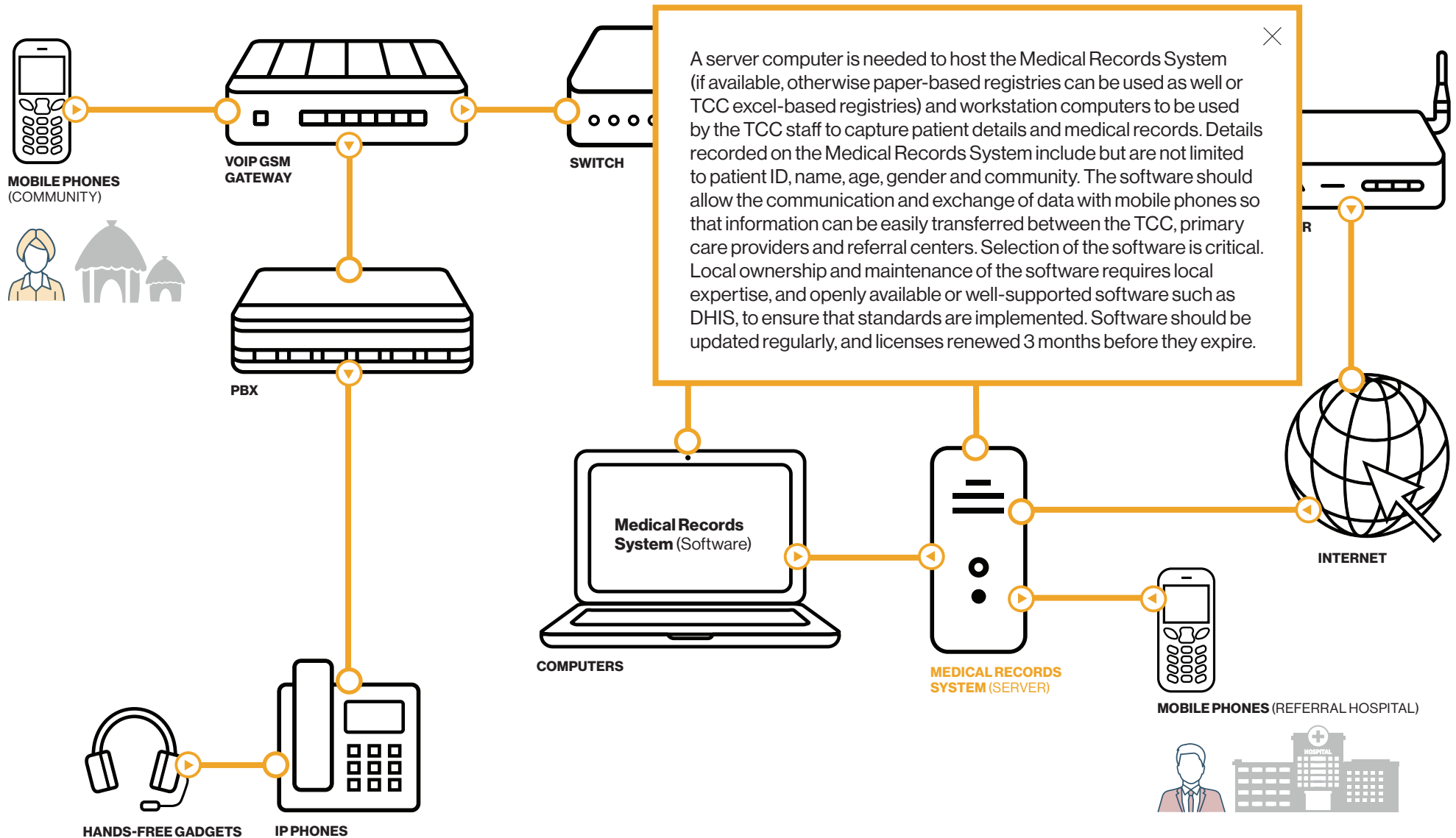
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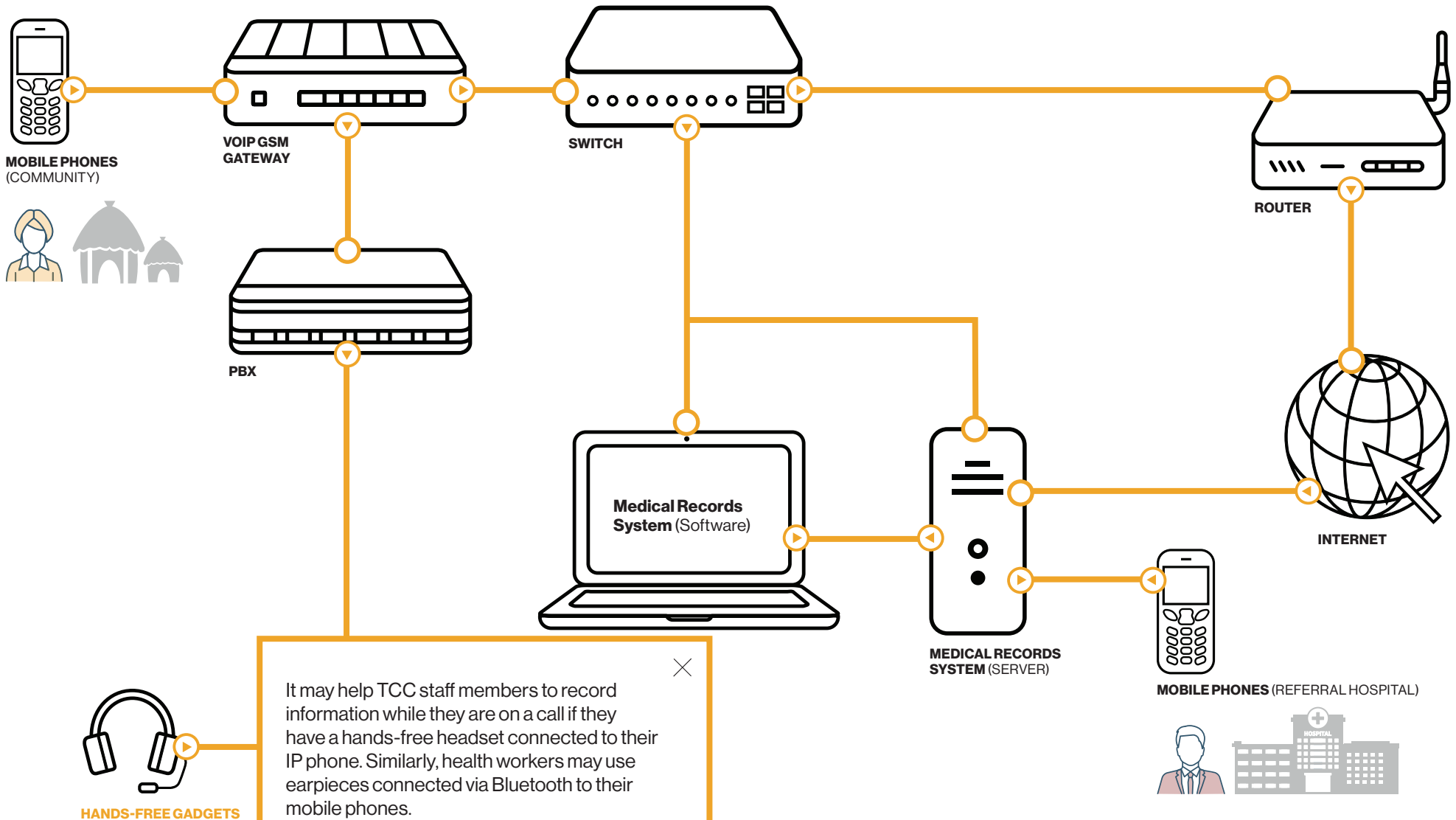
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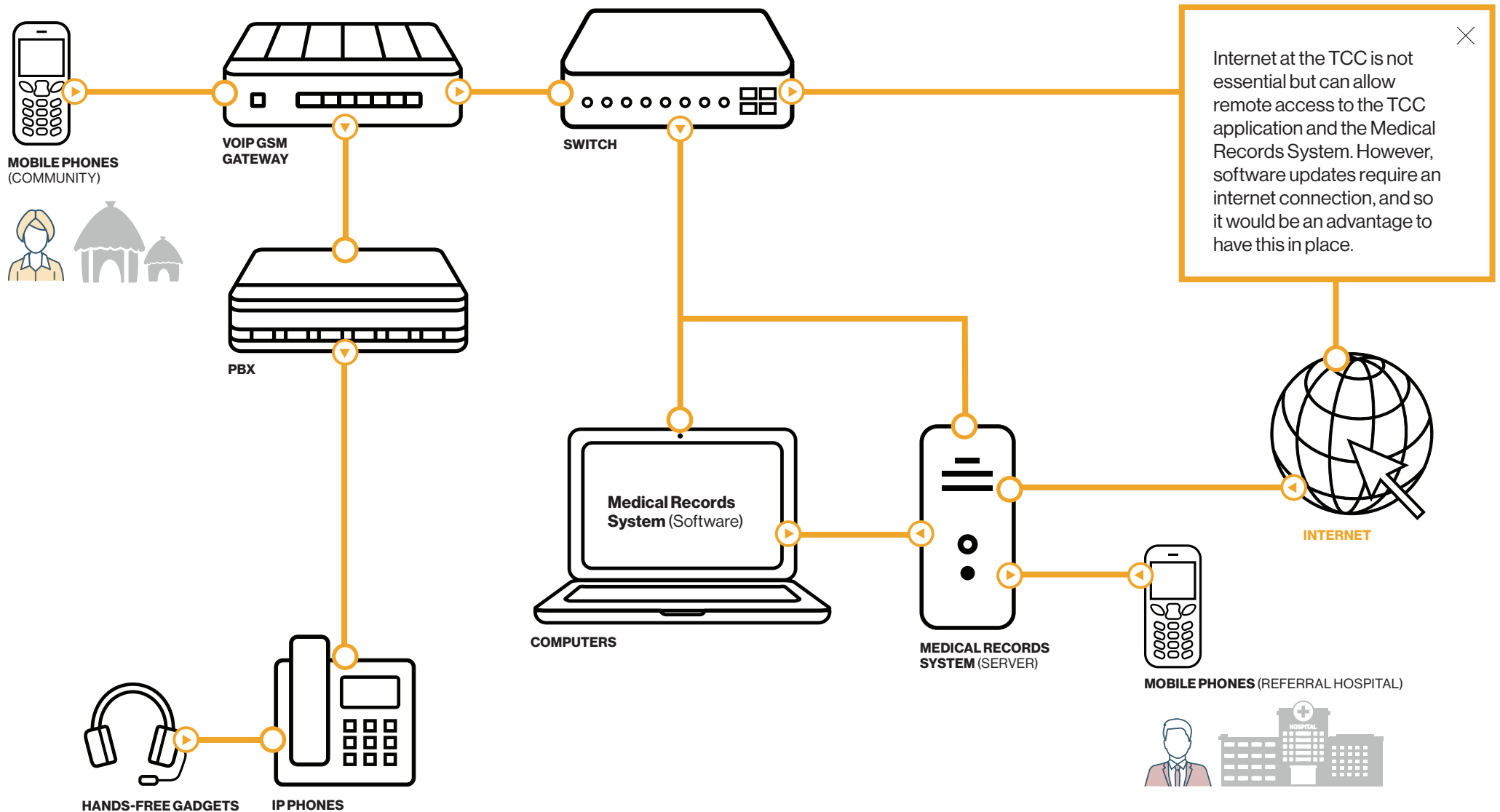
Click on each piece of equipment to find out more.



It may help TCC staff members to record information while they are on a call if they have a hands-free headset connected to their IP phone. Similarly, health workers may use earpieces connected via Bluetooth to their mobile phones.

## Teleconsultation equipment

Click on each piece of equipment to find out more.

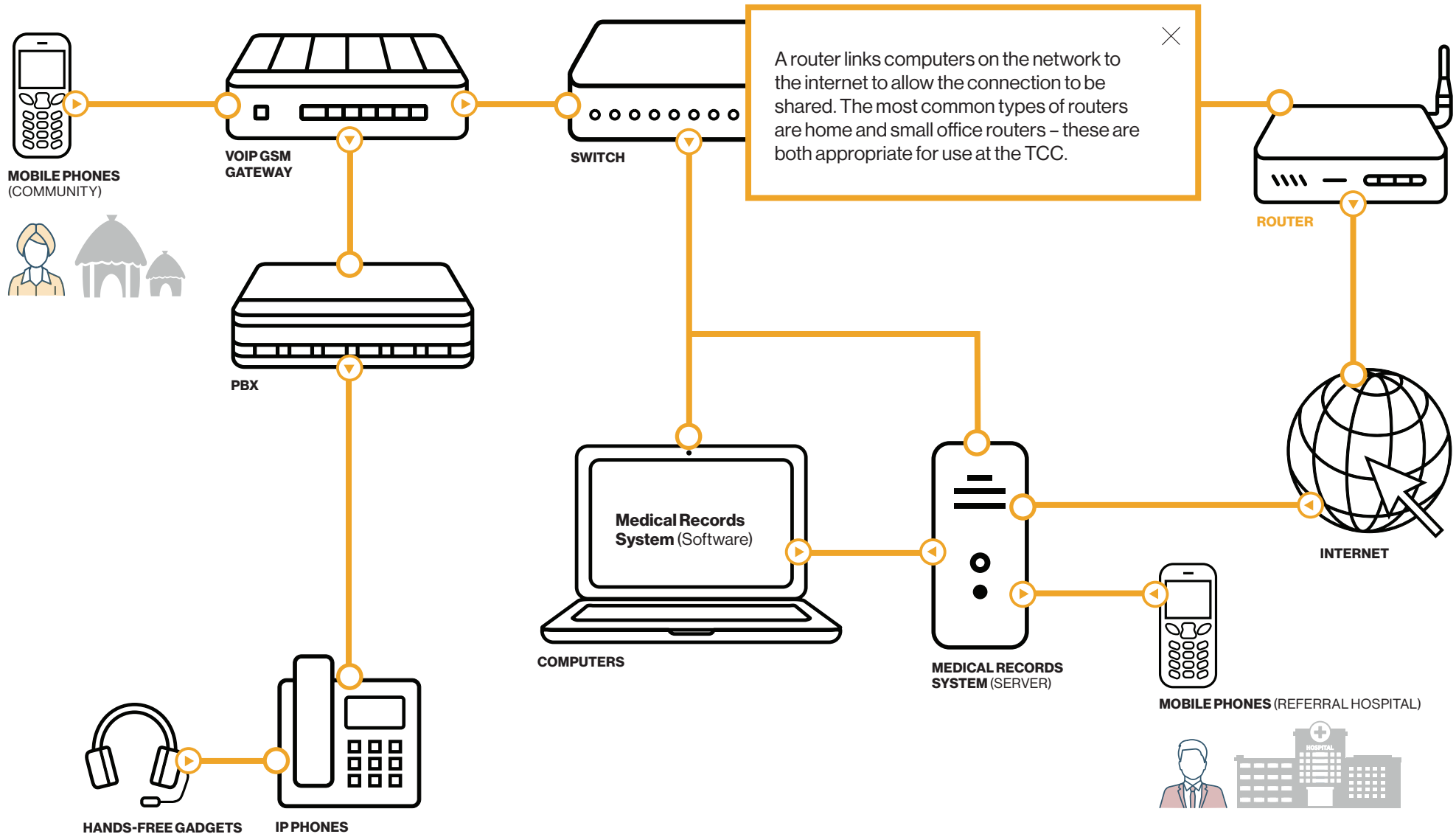


Internet at the TCC is not essential but can allow remote access to the TCC application and the Medical Records System. However, software updates require an internet connection, and so it would be an advantage to have this in place.



## Teleconsultation equipment

Click on each piece of equipment to find out more.



Next page →



## Teleconsultation equipment

Click on each piece of equipment to find out more.



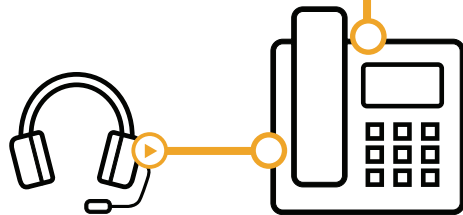
**MOBILE PHONES**  
(COMMUNITY)



Mobile phones should be easy to use and have a battery life of around 24 hours. Although only basic features are required, the phones must be compatible with the Medical Records System software. Phones and chargers should be distributed to stakeholders that have direct roles in TCC activities. Each staff member at the public health unit (disease control officers, nutrition officers, community health nurses etc.) should have a phone to call the TCC if needed during home visits and/or other community health activities. Each referral hospital should have at least three phones, to be distributed to doctors, the Maternity Ward and the Emergency Unit users by the hospital's Medical Superintendent.



PBX



HANDS-FREE GADGETS

IP PHONES



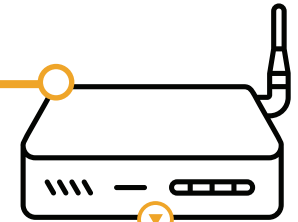
COMPUTERS



MEDICAL RECORDS  
SYSTEM (SERVER)



**MOBILE PHONES** (REFERRAL HOSPITAL)



ROUTER



INTERNET

# Operating the Teleconsultation Center

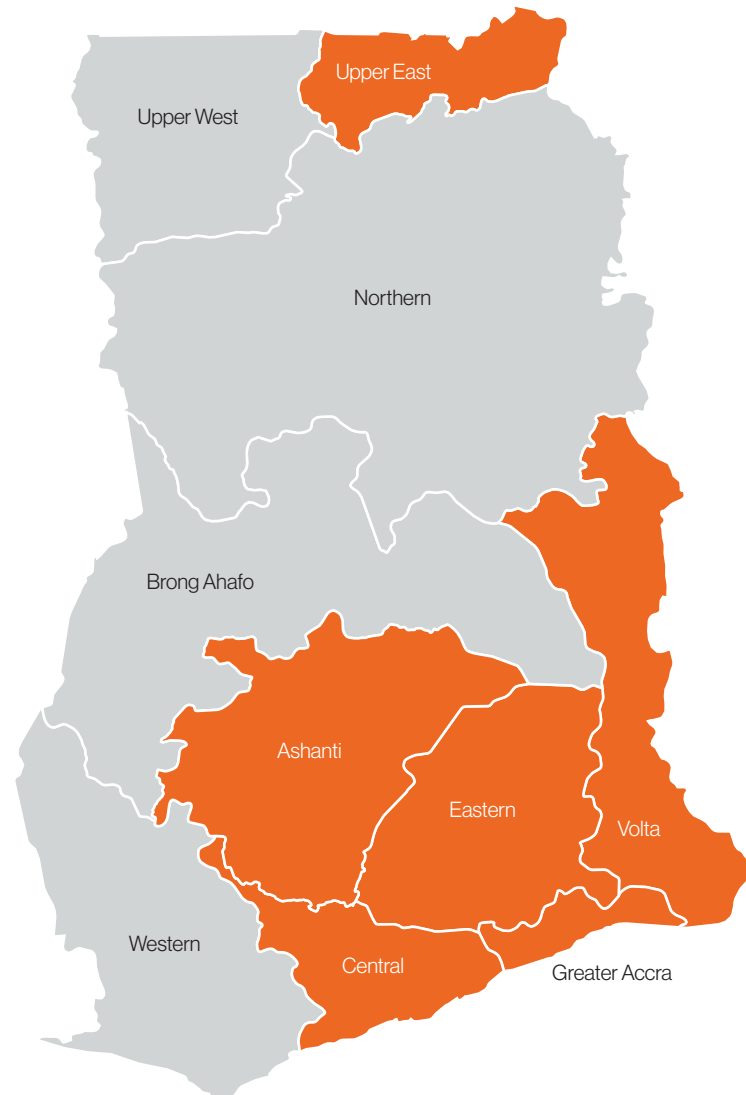
## The Ghana Telemedicine Initiative – Proven model

The telemedicine pilot in Ghana was carried out in the Amansie West District, and will now be scaled up to the national level. Projections for national level resource use can be made from this pilot model.

Estimates for resource use in the Ghana Telemedicine model are shown in this figure. These estimates are based on the number of calls the TCC in the Amansie West District received in a week relative to its population.

### Staffing

To function efficiently, the TCC should be staffed at all times (24-hour coverage). The staff should cover both public health and clinical roles, with an appropriate balance of general nurses and midwives. Ideally, considering the levels of care provided (primary, secondary and tertiary), the TCC should also have Medical Officers as staff. The nurses and midwives should be qualified, experienced and committed to delivering exceptional care. It is also an advantage for staff to have training in emergency response.



Estimated total population reached  
**7 million**

Per population of 1 million, approximate resources are:

**1 x TCC**

**8 x TCC staff**

**50 x sub-district staff**

**180 x CHOs (CHPS zone)**

**2000 x CHWs**

## **Nurses and midwives for round-the-clock coverage**

For the TCC to operate effectively, a minimum of 8 nurses or midwives should be assigned to work at the TCC full time, with at least two staff on duty per shift. Importantly, to ensure medical personnel do not lose their technical skills, they should be rotated after 6–12 months.

## **Physicians**

A physician should be on-call at all times to support TCC case management. If a case cannot be resolved by phone, the TCC staff and on-call physician should arrange for the patient to be transferred to the referral health facility.

## **Management of referrals**

In situations where there is a need for the patient to be referred, the following rules must be applied:

- Notify the ambulance service
- Notify the receiving health facility to prepare for the patient's arrival
- Stabilize and prepare the patient for transportation
- Transfer patient to the receiving health facility
- Complete a referral form and other necessary documentation





## Telemedicine training

The success of telemedicine is determined by the number of calls received by the TCC and on delivering effective responses to these calls. Training of all telemedicine stakeholders is essential to delivering effective responses.

Three levels of training should be delivered, with the following responsibilities at each level:

1. **National** – the national team should organize a train-the-trainer workshop for regional and national staff
2. **Regional** – the regional team should organize a train-the-trainer workshop for the district staff
3. **District** – the district team should train the sub-district staff

Training should be delivered when the TCC is first set up, with refresher sessions every 6 months. It should be guided by the disease pack in the Telemedicine Toolkit, the Standard Treatment Guidelines and other existing health service protocols.

## Trainees

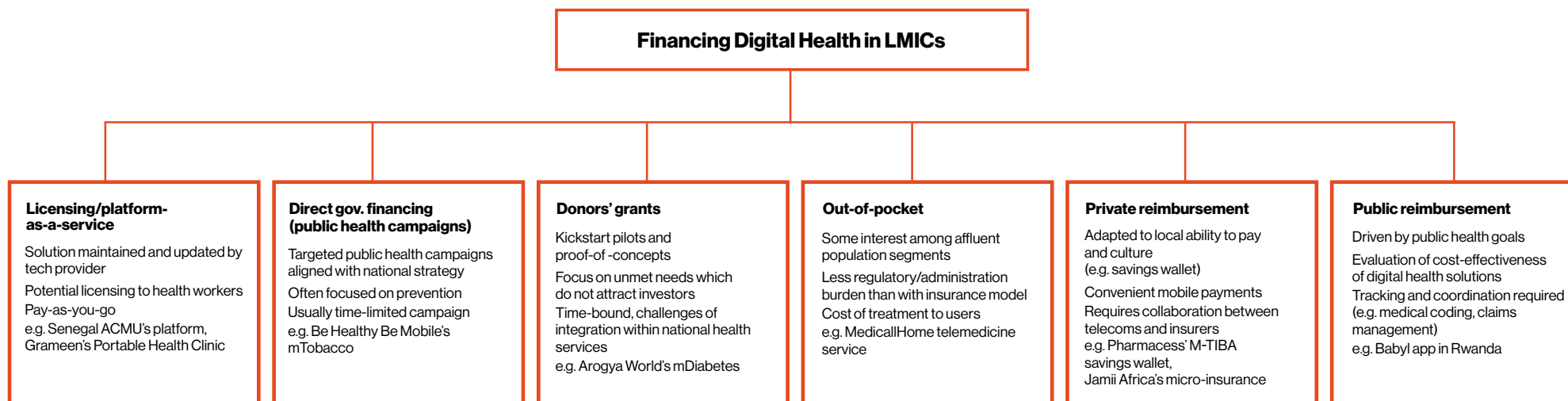
All telemedicine stakeholders should be trained, including:

- TCC staff
- Doctors
- Nurses and midwives (including Community Health Officers)
- Health information officers and ICT staff
- Emergency medical technicians
- Technical officers
- Community health workers
- Health care managers
- Biomedical engineering
- National health insurance scheme staff

## Emergency transport

The TCC should be complemented by an emergency transport system. A plan should be in place for locally available emergency transportation to support referred cases. The existing emergency transport system at the Community-Based Health Planning and Services and Sub-district levels should be developed by providing the TCC with the phone numbers of drivers and riders who offer emergency transport during referrals. It is important to involve the drivers and riders in initial sensitization meetings and training, as well as in all future review meetings.

# Financing options for telemedicine



## Sustainable financing

The success of a telemedicine service is dependent on it receiving sustainable funding. In addition to traditional funding sources, such as Development Partners and Government, all levels of the health system are encouraged to seek innovative means of funding.

These could include:

- Appealing to non-governmental organizations and other philanthropic institutions for supply of logistics (including mobile phones)

- Negotiating with telecom providers for closed user groups and/or toll-free numbers for TCC

This will require the costing of equipment and logistics required by each level of the health system.

## Costs of implementation

Core items for telemedicine implementation are

- The size of the district (number of communities)
- Number of community health workers and volunteers

- Number of sub-districts
- Population
- Number of health facilities
- Number of trained staff
- Number of mobile phones, SIM cards, chargers, airtime credits
- TCC equipment and maintenance
- Training

It is recommended that each telemedicine service carries out their own internal costings.

## Telemedicine accreditation and reimbursement

In Ghana, the current policy for National Health Insurance Authority (NHIA) reimbursement does not cover teleconsultation. This may change, however, as the leadership of the Ghana Health Service is in talks with the Ministry of Health and the NHIA on possible reimbursement of teleconsultation. The rationale in favour of reimbursement is that teleconsultation provides an ideal gatekeeping system to avoid unnecessary referrals.

## Modification of current claim forms

If pre-existing claim forms are available, the following modifications are recommended for inclusion:

- A field to indicate that the claim is for a case that required teleconsultation
- A field for mode of case resolution, either:
  - With TCC staff
  - With distant facility staff, which includes clinical/technical support
- A field to indicate case referral
- A unique code, which may be considered to differentiate teleconsultation cases from others.



A review of the pilot service in the Amansie West district demonstrated that the following steps are involved in case resolution:

1. Patient reports at CHPS or health center
2. Patient's condition is not resolved, and staff calls the TCC
3. TCC staff are unable to resolve the case and call the nearest hospital (Medical Officer)
4. If the condition is not resolved remotely, the patient is referred

Given these steps to case resolution or referral, a flat rate of 20% or 10% of the reimbursable cost should be paid to the TCC and expert facility, respectively. This will help to facilitate consistency in the teleconsultation process.

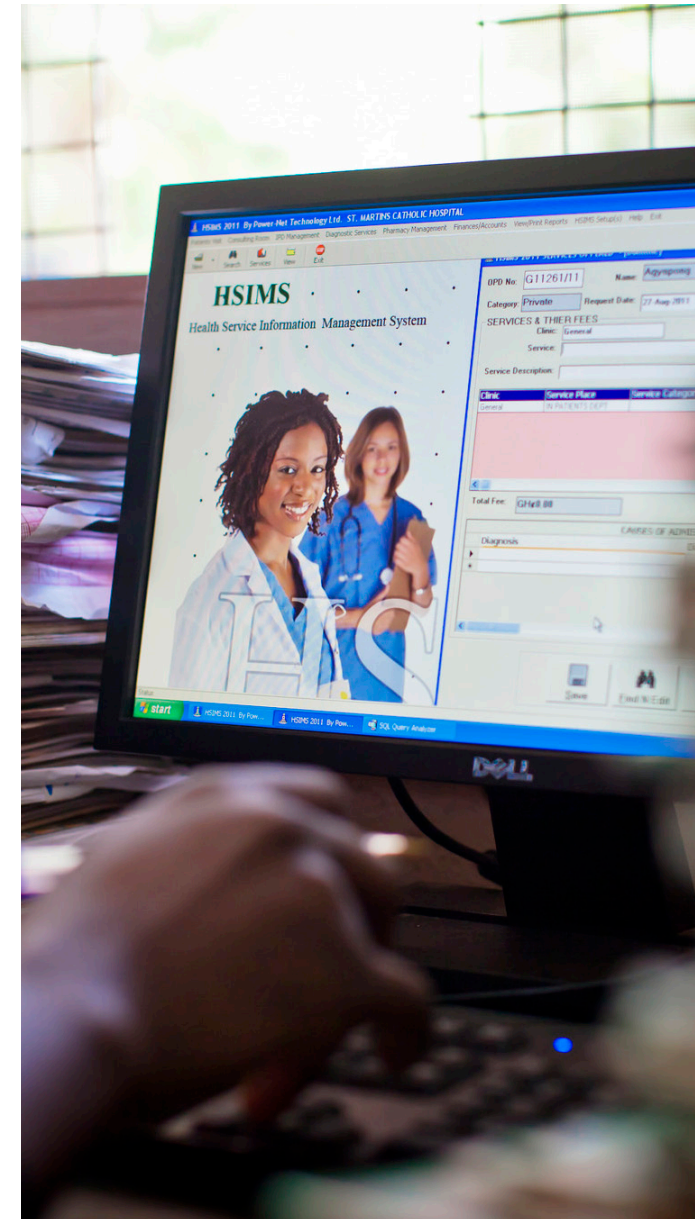
## Documentation and claims management

The following guidance on the collection of documents and processes required for claims submission and reimbursement is provided.

### Claims documentation

1. To generate a valid claim, contact must be made between the patient and a health care worker during the management of an emergency or conditions beyond the skills of the service providers at the originator facility.

2. The health care worker at the originator facility should record the patient's information on a claim form, which should be modified to include options of providing teleconsultation services.
3. If a call is made to the TCC, call logs and records generated by the telemedicine system should be used to verify the teleconsultation. For effective monitoring, evaluation and claims management, all teleconsultations should pass through the TCC, with only calls passing through the TCC being reimbursed. To improve connectivity, TCCs should maintain telephone services with all major providers.
4. The details of a teleconsultation should be recorded by a clinician (if available, the TCC can be designed to auto-transcribe calls), which will ensure that diagnoses can be verified. These records are crucial to monitoring and quality assurance and should be submitted along with the claim form and supporting documentation. The TCC records are also crucial for monitoring and quality assurance.
5. Teleconsultation records should be provided to the originator facility within 48 hours of a call for the claim submission. For each case, a unique telemedicine code should be generated, which will be included on the claim form for authentication.
6. The teleconsultation record does not replace collection of routine medical records. Hospital records should be maintained at all facility levels.



## Claims submission

1. The originator facility should submit a claim form on behalf of all the facilities involved in the case. This should be distributed to all participating facilities under the supervision of their respective directors of health care.
  - a. Existing tariff per the criteria; ownership and level of care should apply
  - b. If available at the originator facility, medicines can be prescribed and dispensed
2. At all levels, services that are usually reimbursed will not be reimbursed if submitted as a telemedicine tariff.
3. The recommended claim share ratio is 7:2:1 to the originator facility, TCC and distant facility, respectively.

## Enhancing reimbursement of telemedicine services

Considering the current guidelines for developing reimbursement rates for teleconsultations, the Ministry of Health should set the telemedicine standardized eligibility criteria.

## Documentation of claims

At the CHPS and health centre level, unique codes of patients (from the facility call register) should be documented and added to the claim form for submission for reimbursement.

At the TCC, case-by-case information should be recorded along with call time by the facility, which should be submitted to the originator facility for use in verifying claims.





# Monitoring and evaluation

The monitoring and evaluation of telemedicine should be consistent with the health sector monitoring and evaluation framework from the CHPS to the national level. Ideally baseline assessments should be conducted before starting the telemedicine service, followed by continuous monitoring and evaluation. The service should be evaluated annually.

## Reporting and integration into the district health information systems

It is important that all the services offered by the TCC are captured and recorded. The implementation team should work with the relevant health service department to ensure that all data passing through the TCC is reported in the appropriate database on a monthly basis.

The following standardized registers developed for teleconsultations should be used by all TCCs and facilities:

- TCC call log register
- Health facility call log register
- Referral forms for telemedicine
- Modified consulting room registers

All calls to the TCC should be recorded and analyzed periodically so that the quality of care being offered through the TCC is monitored.

It is recommended that the national health authorities define core indicators that are to be reported monthly and integrated within regional reports. The District Health Information Service should consider including indicators that describe the functionality of the TCC i.e. number of calls and prevented referrals.

Health authorities are also recommended to consider tracking longer-term indicators related to health outcomes that might be improved by the provision of telemedicine services. Such as:

- Difference in the proportion and range of cases CHNs manage before introducing telemedicine
- Proportion of referrals that were prevented through telemedicine
- The outcome of referrals of telemedicine cases in the pilot
- The waiting time of telemedicine referred cases at the receiving end compared to the cases referred through regular channels
- Health facility trends for maternal, neonatal and severe illness (e.g. monthly)
- TCC morbidity trends



## Performance indicators and means of verification

Objective	Objective	Objective	Objective	Objective
<b>Reporting and documentation</b>	<b>Reduce unnecessary referrals</b>	<b>Improve call quality</b>	<b>Strengthen the referral system</b>	<b>Improve case management (Quality of care)</b>
<b>Performance indicators</b>	<b>Performance indicators</b>	<b>Performance indicators</b>	<b>Performance indicators</b>	<b>Performance indicators</b>
All TCC service data are recorded and reported on the appropriate database	Total call volume Proportion of calls resolved by TCC Proportion of calls that were referred	Proportion of calls unanswered by the TCC Proportion of calls not reaching the TCC Average call duration Minimum call duration Maximum call duration <hr/> Proportion of unnecessary calls	Proportion of call that used an ambulance Proportion of call that used commercial or other forms of transport	All-cause mortality of referred cases
<b>Means of verification</b>	<b>Means of verification</b>	<b>Means of verification</b>	<b>Means of verification</b>	<b>Means of verification</b>
Consulting room register and monthly reports TCC call log registers Health facility call log register	TCC call log register Health facility call log register	TCC call log register Health facility call log register <hr/> TCC call log register Voice recordings	TCC call log register Health facility call log register	Medical records system reports at TCC Database records TCC call log Telemedicine referral form

For all these indicators, baselines and targets should be set to help track performance.

“We want to make sure that by 2020, everybody can have access to quality affordable healthcare in Ghana, irrespective of where you are. I see telemedicine as the next step on the path to achieving Universal Health Coverage in Ghana.”

Dr. Anthony Nsiah-Asare, Director General of Ghana Health Service

“Working with policy makers to integrate initiatives like telemedicine into health systems is the ultimate goal for us – only with sustained government leadership can such initiatives continue to transform healthcare for years to come.”

Dr. Ann Aerts, Head of the Novartis Foundation

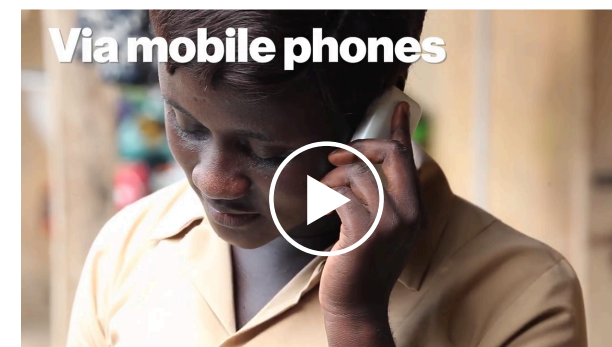
## Videos



**Telemedicine in Ghana:**  
from pilot to scale-up



**Telemedicine in Ghana:**  
changing healthcare one life at a time



**Telemedicine in Ghana:**  
working together to bring healthcare to all

## Contacts for the Ghana Health Service

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# Appendix

# Regional Teleconsultation Center (TCC)

## Community level

### Management

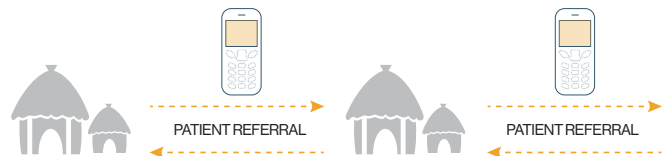
Community Health committees

### Level of care/referrals

Community Health Worker (CHW) with community support systems

Community-based Health Planning Service (CHPS) Zone

- Compound/chemical sellers
- Traditional birth attendants (TBA)
- Faith based
- Traditional



**Supervision by Community Health Worker (CHW)**

**Supervision by Community Health Officer (CHO)**

## Sub-district level

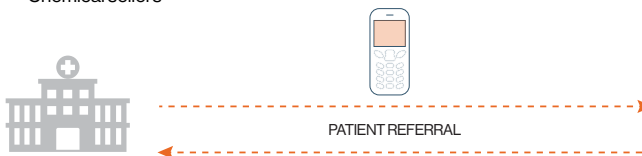
### Management

Sub-district Health Management Teams (SDHMT)

### Level of care/referrals

Sub-district facilities

- Health Centers (HCs)
- Clinics
- Private
- Health institutions
- Quasi government
- Chemical sellers



**Supervision by Physician Assistant (PA)**

## District level

### Management

District Health Management Teams (DHMT)

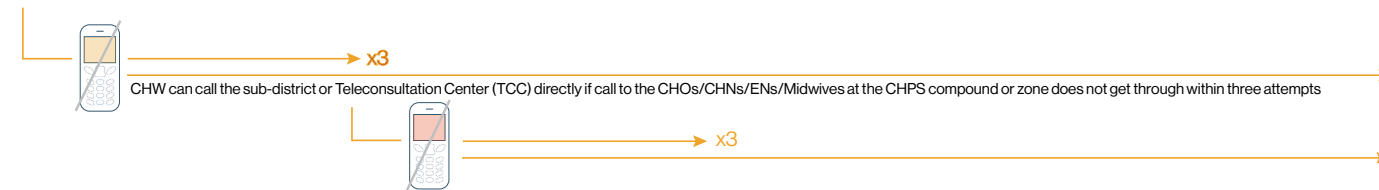
### Level of care/referrals

District facilities

- District hospital
- Private
- Health institutions
- Quasi clinical



**Supervision by Medical Superintendent**



### Operational team

- CHW
- TBA
- CHO
- Chemical sellers

### Operational team

- PA
- Midwife
- CHO
- Community Health Nurse (CHN)

### Operational team

- Medical Superintendent
- Deputy Director of Nursing Services (DDNS)
- Administrator
- Midwife
- Primary Health Network (PHN)

- Disease Control Officer (DCO)
- Transport Officer
- Ambulance Officer
- Quasi
- Private

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