2 Application of Telemedicine in the Management of Noncommunicable Diseases

2.1 Burden of NCDs in India

Noncommunicable diseases (NCDs) are a major cause of disease, disability and death in India. The demographic and epidemiological transition has resulted in a shift in the morbidity burden from infectious diseases to NCDs. Ischaemic Heart Diseases and Chronic Obstructive Pulmonary Diseases are the top two leading causes of disease burden, stroke is the fifth cause. NCDs contributed to 55% of the Disability Adjusted Life Years (DALYs) and 61.8% of deaths in India in 2016 (12). NCDs are estimated to account for 55 million deaths by 2030 (13). Management and prevention of NCDs and reduction in deaths due to NCDs is an essential component of achieving the health goals of Sustainable Development Goals (SDGs)(14). Managing NCDs is a challenge when the resources are limited, and when there are other competing priorities.

2.2 Rationale of use of telemedicine

Patients suffering from NCDs need long term care and support. Shortage of health workers and inadequate access to hospitals and medicines are essential barriers for optimizing care (15). Leveraging technologies for NCD care can have a positive impact on NCD control strategies. Telemedicine has a role in the whole spectrum of NCD care. It has a role in promoting healthy behaviours, prevention of risk factors, early detection of diseases, timely initiation of treatment, monitoring and follow-up support, rehabilitation and palliation. Telemedicine can increase access to healthcare and help in maintaining the continuum of care (16).

2.3 Scope of guidelines

2.3.1 Scope

- These guidelines are expected to encourage and assist primary health care providers in adopting and using telemedicine effectively for NCD care.
- The guidelines will act as a directory for preventive, promotive, curative and rehabilitative care.

- The guidelines will cover the best practices to be followed while providing care through telemedicine.
- The guidelines will be dynamic and will adopt the changes in the accepted standard of practice as and when they are updated.

However, the guidelines will exclude the technical aspects of the telemedicine platforms and communication channels of data management systems. The guidelines do not provide prescriptions for treatment of specific NCDs but explain the framework of application of telemedicine in management of NCDs.

2.3.2 Aim

To strengthen the preventive and continuity of care for NCDs using telemedicine

2.3.3 Objectives

Primary

To improve use of telemedicine for preventing and managing major NCDs by public and private healthcare providers at all levels of care.

Secondary

- To improve the continuum of care from the community to the tertiary health care level (community- primary - secondary - tertiary healthcare level).
- To empower patients and their healthcare providers in primary and secondary healthcare settings towards preventing and managing NCDs optimally through the use of telemedicine.

2.4 Broad areas for the use of Telemedicine in NCD Management

2.4.1 Primary prevention

- Primary prevention refers to the actions taken before the onset of disease, which removes the possibility that a disease will ever occur. In the case of NCDs, it refers to the actions that target the risk factors.
- Major risk factors for NCDs are- tobacco use, use of alcohol, unhealthy diet, physical inactivity, elevated blood pressure, elevated blood sugar, obesity and dyslipidaemia.
- Primary prevention can be achieved through;
    - Health promotion: healthy lifestyle, healthy eating habits, low salt diet, physical activity, yoga and self-care.

- Health education: knowledge about NCDs, preventive measures, myths and misconceptions.
- Counselling: tobacco cessation, alcohol cessation, medication adherence.
- Imparting skills: self-testing for blood glucose, monitoring of blood pressure.

2.4.2 Teleconsultation for treatment

Types of teleconsultation

a. First consultation

The consultation is provided for the first time through telemedicine.

The following aspects should be considered during the first consultation

- Chief complaints
- Family history
- Previous medical history
- Comorbidities
- Drug & other allergies

Patients can be advised for

- Screening/diagnostic tests
- Other investigations
- Non -pharmacologic interventions
- Prescription of medicines
- Transmission of previous medical records/ Investigation reports

Prescription of medicines

Medication can be prescribed during teleconsultation based on the professional discretion of the provider. The prescription should be based on the diagnosis/provisional diagnosis.

The medications are divided into four broad groups depending on the restrictions on their prescription.

- List O: Safe and can be prescribed through any mode of teleconsultation.

- List A: Can be prescribed during the first consultation and can be reviewed during follow-up
- List B: Which can be prescribed only in-person for the first consultation and can be refilled in the teleconsultation during follow-up.
- Prohibited list: Medication that cannot be prescribed through tele-consultation

Medications for most NCDs such as diabetes, hypertension and chronic lung diseases belong to the categories of:

1. 'List A': Follow-up medications for chronic illnesses for 'refill' (on any mode of consultation) such as medications for

- Hypertension: Enalapril, Atenolol etc
- Diabetes: Metformin, Glibenclamide etc
- Asthma: Salmeterol inhaler etc

2.'List B': On follow-up, medications prescribed as 'Add-on' to ongoing chronic medications to optimize management such as for hypertension: Eg, add-on of Thiazide diuretic with Atenolol, for Diabetes: Addition of Sitagliptin to Metformin

b. Follow-up consultation

The following aspects should be considered during the follow-up consultation

- Fresh complaints (if any)
- Review of past records/investigations & treatment
- Disease status/ progress
- Transmission of recent investigation reports
- Treatment modification (if any)

c. Regular monitoring

Regular monitoring can be done for

- Healthy individuals
- Individuals with risk factors
- Patients with NCDs

Monitoring of physiologic and biochemical parameters such as

- Blood glucose
- Blood pressure
- Height, Weight
- Oxygen saturation

d. Patient education

Teleconsultation can be used for patient education for -

- Self-monitoring of physiologic and biochemical parameters
- Medication adherence
- Administration and supervision of medicines like insulin
- Wound / ulcer care
- Diet regulation, Physical activity, Blood pressure monitoring

e. Emergency consultation

Emergency consultation can provide

- Advice /measures for immediate relief of pain/discomfort
- First aid: Life-saving care of the patient until the patient reaches the hospital
- Referral of the patients to appropriate facilities
- Specialist consultation by the primary care provider/ other health care providers
- Counselling: If the presenting complaint/s is/are not deemed to be an emergency, counselling and reassurance may be provided

2.4.3 Specialized consultation

The consultation can be between

- Patient and the Registered Medical Practitioner (RMP)
- Patient and the front-line healthcare worker
- Front-line healthcare worker / Primary care provider (RMP) and the Specialist
- RMP/ Front-line healthcare worker with a caregiver

Patient and the RMP

- The patients can interact with the doctor either from their home setting or from a dedicated teleconsultation setting facilitated by a technician.
- Consultation of the patients directly with the doctor would require the patients to have some technical knowledge.
- The ubiquitous availability of text/ voice/ video channels of communication is conducive for the teleconsultation between the patients and the doctor.

Patient and the front-line healthcare worker

In remote areas or difficult to access areas where the availability and accessibility to the health care facilities are limited, the front-line healthcare workers like ASHA/ ANM/ AWW along with a technician appointed for the telemedicine can provide telemedicine consultation.

Front line healthcare workers can

- Identify the conditions requiring emergency consultation/ referral
- Provide first aid
- Empower patients to access telemedicine tools
- Explain the doctor's advice to the patients in the local language
- Facilitate health care providers by taking preliminary history/ collecting records
- Follow-up the patient for treatment adherence

Front line healthcare worker / Primary care provider (RMP) and the specialist

Telecommunication between the primary care provider and the specialist can help in the devolution of duties.

- The primary care providers can expand their care provision under expert guidelines.
- This would also decrease the load on tertiary health care centres and would help in triaging the patients.

RMP/ Front line healthcare worker with a caregiver

When the patient is not in a state that he/she can attend the teleconsultation, the patient's caregiver can be provided advice on -

- The tests or routine refill of the drugs
- Patient care at home
- Changing the family environment / care provision

2.4.4 Process of consultation

The process of teleconsultation can be standardized so that all the elements of consultation are covered. The telemedicine consultation must always assess need for physical/in-person evaluations and inform patients accordingly.

The consultation can include the following broad steps-

Preparation

- The patients can share the history/ relevant investigations/medical records if present
- The doctors/ care providers can share the identity/ qualification and also provide a checklist of items that might be required during teleconsultation
- The time and date of the consultation can also be fixed during this step

Introduction and Identification

- The healthcare provider and the patient should identify themselves at the beginning of the consultation
- The participant should provide consent for teleconsultation
- The scope and limitations of the teleconsultation should be explained during the introduction

History taking

- This step involves collecting the information on the patient's condition and other relevant histories
- As in the in-person consultation, all the relevant information that would facilitate treatment of the patient should be collected

Examination

- This is the most limiting aspect of teleconsultation when compared to an in-person consultation.
- While some aspects of examination (palpation/ auscultation) cannot be performed through teleconsultation, an inspection of the patient for general (pallor/ clubbing/ Icterus etc.) and disease-specific signs can be undertaken through telemedicine (eg: healing of diabetic foot ulcers, balance in walking, deviation of mouth in stroke).

Advice

This can be accomplished by

- Advising for Investigations
- Prescribing the medicines
- Prescribing lifestyle changes
- Health Monitoring activities
- Patient/ Health education

Fixing next date and time of the follow-up

- A session of consultation should always end with a mutually understood and agreed time and place for the next consultation.
- The same information can also be reiterated with the patients by sending a copy of the consultation with a note on advice and the follow-up schedule.

2.4.5 Skill-building for the providers

All the health care providers/ doctors should be sensitized about delivering care through telemedicine and should be trained to use telemedicine tools.

Telemedicine Practice guidelines published by the MoHFW, GoI prescribes a mandatory one-month online course on telemedicine for the RMPs before providing telemedicine services.

Following skills can be imparted to the healthcare providers

- Different modes of telecommunication
- Tools available for telemedicine
- Communication skills for telemedicine
- Maintaining Health Records
- Training in operational guidelines of National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)
- Training in standard treatment guidelines/workflows on NCDs

2.4.6 Empowering the patients

One of the key challenges in the practice of telemedicine is the need to sensitise patients and their care givers on the scope of telemedicine. A patient charter may be developed to explain the patient's right to receive reasonable care/consultation within the limitations of telemedicine. The information could include

- Scope of telemedicine consultation
- Way to access care using telemedicine
- Right to confidentiality and dignity
- Provide general information on the right to receive complete information on the medical conditions, treatment, prescription and procedure details and choice of care or treatment
- Documented procedure for obtaining the informed consent

Patient's responsibilities	Doctor's responsibilities

- Honesty in disclosure
- Treatment compliance
- The intent for health promotion and maintenance
- Transparency and honesty
- Patient-friendly
- Patient education

2.5 Communication

- Effective communication is a core component of telemedicine and teleconsultation. Clear and detailed communication will compensate for the lack of in-person consultation.
- Communication should be clear and in a language that the patients can easily understand.
- All the parties involved in the consultation (doctor/ front line healthcare worker/ patient/ care provider/ family members) should be aware of the identity of each other.
- A mechanism should be built in the telemedicine consultation to verify the identity of the participants routinely.
- Whenever applicable, written instructions/ advice should always accompany the oral instructions.

2.6 Challenges

Numerous factors act as challenges for the widespread adoption of the telemedicine.

- Resistance to change may be seen in both the providers and the patients. Adoption of telemedicine and change management is an important factor
- Technical illiteracy, lack of access to hardware and poor internet facilities
- Lack of integration between different platforms like EHRs with the telehealth platforms, which may lead to duplication of work and difficulties during coordination
- Lack of availability of clinical tools required at primary health care setup for making diagnosis and treatment decisions
- The process of ensuring privacy and confidentiality of health data of patients is in the process of evolution
- High cost of setting up the telemedicine platform

2.7 Limitations

- Delays in healthcare provision due to failure of the electronic equipment, communication network and technological problems
- Inability to provide emergency care or change the course of care easily
- Inability to examine patients using clinical methods
- Protection of data is always a concern
- Doctors/ Providers who do not have experience using telemedicine may be unable to provide optimal care

2.8 Advantages

- Patients can connect to their physician at the comfort of their home: Telemedicine provides easy access to a specialist.
- The problems and cost of travelling from other towns or states are eliminated: People living in rural areas or with no direct access to tertiary care facilities in urban areas can overcome their limitation of travelling.
- Eliminates the fear of contracting infections while waiting for doctor's appointment: During the pandemic, the fear of contracting any infectious disease while going to doctor's office/hospital can be a hindrance in the continuum of care. This problem can be solved by consultation through telemedicine.
- Frequent consultations with the physician are possible without travelling: Patients do not require travelling for their routine and follow-up visits, and they can save expenses and time.
- Easy maintenance of medical records: Telemedicine can be an easy, safe and legally approved way to maintain and retrieve records.

2.9 Disadvantages

- Physical examination is not possible. This is a major issue in new cases or in an emergency.
- The absence of the personalized approach and 'healing touch' is another drawback of telemedicine.
- Emergency and serious cases cannot be managed, making it a serious disadvantage of using telemedicine. The physician can only guide the patient to the nearest hospital.