

Implementing telemedicine services during COVID-19: guiding principles and considerations for a stepwise approach

Interim guidance

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1. Introduction

1.1 Background

Worldwide, the need to reduce face-to-face consultations without compromising the quality and access of essential health services has revitalized telemedicine and brought it to the forefront in the era of coronavirus disease 2019 (COVID-19). Discussions on the necessity and feasibility of telemedicine have pervaded across a range of medical specialties and care settings. Health systems have introduced regulatory flexibilities and incentives to encourage adoption and implementation, with coordination from providers and technology companies.

The concept of telemedicine is not new. Across the Western Pacific Region, Member States were already using telemedicine applications before the pandemic. During COVID-19, Member States in different stages of digital health transformation are all more engaged in telemedicine implementation. With learnings from early adopters, this guidance aims to provide Member States with an understanding of the activities necessary to implement telemedicine effectively during COVID-19 and beyond the pandemic.

1.2 Goal and guiding principles

1.2.1 Goal

Based on a review of existing literature and the rapid implementation of telemedicine during the COVID-19 pandemic worldwide, with a focus on the Western Pacific Region, and this document aims to inform decision-making surrounding the implementation of telemedicine in Member States.

1.2.2 Target audience

Government officials at national and subnational levels advising on the design and implementation of telemedicine services as part of the COVID-19

response; public health professionals, implementers and donors concerned with the introduction and scaling up of telemedicine systems during COVID-19.

1.2.3 Guiding principles

Patient centricity

Telemedicine must be aligned with the goal of universal health coverage. This requires taking appropriate steps to ensure the accessibility, quality and sustainability of telemedicine services through effective policy, legislative and regulatory interventions. It should also support the continuity and coordination of care.

Multisectoral and multidisciplinary approach

Collaboration between the public and private sectors is required to ensure successful design and implementation. Expertise and perspectives from health and non-health disciplines (notably information and social sciences) should be involved throughout the process. All organizational stakeholders should formulate plans that set out the telemedicine services and capabilities they will invest in and deploy to move from their current state to a defined future state that is aligned with their digital health strategy.

Strong digital governance

A telemedicine governance framework should be put in place with clear lines of accountability, including a strict project management framework with detailed documentation practices. In addition, tools that are open-source can enable the public to more easily scrutinize security and privacy issues, which may assuage fears and help boost uptake in populations. Data collected by telemedicine applications should be secure, private and confidential, in line with data protection and privacy laws, regulations and frameworks, as well as cybersecurity protocols. All data use should be audited with oversight to

monitor for breaches and abuse. De-identification and encryption should be deployed wherever possible to safeguard identities, contact information and health data.

Equity and inclusivity

The deployment of digital technologies can widen the digital divide, leaving behind those without digital devices or skills, even though they may benefit most. Special consideration should be given with respect to adoption and outcomes of telemedicine for mobile, migrant, rural and vulnerable populations, as well as people with disabilities.

Usability and communication

User interfaces, functionalities and communication strategies should be co-designed with end users and adhere to best practices for usability and accessibility. The design should achieve a clear outcome for end users and the health system. The development, deployment and maintenance should meet industry best practice in security, technical and clinical standards. Communication should be clear, honest, consistent and continuous to calm anxieties and facilitate wider adoption, with authorities always taking care to alert the public of any issues that may affect their data, such as scams that masquerade as official tools.

Contextualization and localization

Each Member State or subnational administration should map out services that would benefit most from implementing telemedicine and assess the readiness of digital solutions, based on local social, legal, regulatory and technological contexts.

Please see Annex 1 for detailed guidance on legal considerations for implementing telemedicine services during COVID-19.

2. A stepwise approach for telemedicine implementation

The terms “telemedicine” and “telehealth” have been separately defined over time but are often used interchangeably with considerable overlap in scope. This guidance adopts the definition of telemedicine from the *WHO Guideline: Recommendations on Digital Interventions for*

*Health System Strengthening*¹ as follows: “the provision of healthcare services at a distance with communication conducted between healthcare providers seeking clinical guidance and support from other healthcare providers (provider-to-provider telemedicine); or conducted between remote healthcare users seeking health services and healthcare providers (client-to-provider telemedicine)”. Figure 1 presents an overall framework for a stepwise approach for telemedicine implementation.

2.1 Develop an implementation strategy

2.1.1 Set strategic directions and objectives

- This first step is to identify bottlenecks in the health system during COVID-19 and beyond, rethink how care should be delivered rather than replicated on a virtual platform, and determine if the infrastructure and systems in place can give an easy start and grow into a system that can support a long-term telemedicine strategy.
- Objectives should be specific, measurable, attainable and time-bound. They should be set around the fundamental goals of universal health coverage (health equity, coverage, equitable financing, quality, consumer satisfaction, allocative efficiency, technical efficiency, cost containment, political acceptability and financial sustainability) and translated into indicators and metrics for the monitoring and evaluation of system performance. Social goals, such as increased social acceptance of telemedicine and user experience, should be included if the telemedicine strategy is to stay.

2.1.2 Define scope of services

- Service scoping normally relies on a system-level mapping of health service supply and demand to identify unmet needs. With COVID-19, it is almost certain that health service supply will fall significantly short of demand. Clinical management of COVID-19 cases, provision of services to patients with underlying conditions that make them particularly vulnerable to COVID-19 and COVID-19-related mental health care for health workers need to be given high priority

as there continue to be gaps in these health service areas. A comprehensive review of the health service and care workflow must be conducted to identify all activities that can be done virtually. Priority should also be given to tasks that are applicable to both COVID-19 and essential health services.

- Providers should also be encouraged to explore innovatively yet cautiously the use of client-to-provider telemedicine and accommodate more services such as first encounter online, e-prescription and drug delivery. In the case of COVID-19 clinical management, data—starting from alerting health workers to follow-up with people who may have been flagged in screening and risk assessment apps to post-discharge remote monitoring—should be integrated either systematically or through a standardized process for health workers to follow.
- It must be recognized, however that the level of system interoperability is proportional to the variety of services delivered via telemedicine. Depending on the pre-pandemic telemedicine system in place and the broader digital health landscape in each country, it should be decided upfront whether the implementation of telemedicine is intended as an interim response to COVID-19 or it will be integrated into the broader health system (for common objectives, please refer to Table 1).

2.1.3 Identify and engage stakeholders

- Stakeholder engagement must start during this phase. Government agencies on information and communications technology (ICT) and telemedicine vendors are required to assess the objectives, scope and feasibility with providers and reflect user voices in the system design by consulting practitioners.
- Professional societies and technical committees should be invited to set standards and guidelines. Payers and regulators should be involved to coordinate the introduction of incentives and flexibilities into the regulatory framework. Early engagement with all possible and potential stakeholders can bring more confidence and resources into the planning and implementation.

2.1.4 Conduct multidimensional feasibility analysis

A feasibility assessment must be conducted to understand thoroughly the service scope, to identify challenges that may occur during the implementation and to determine if the programme is worth undertaking. The analysis should take into account technological, economic, social, organizational and medicolegal factors. It should be conducted at both the administrative and organizational level.

- At national and subnational health administration levels, the assessment is more about the feasibility of the implementation strategy and its implication for the life cycle of telemedicine programmes in the jurisdiction. For instance, an interim telemedicine implementation strategy requires fewer resources for continuous system integration compared to a strategy to institutionalize telemedicine. Health administrations can partner with telemedicine service providers to co-develop technological readiness assessments or adapt existing maturity assessment toolkits for use.²
- At the organization level, an assessment of the technological maturity can help identify if there are quick wins from repurposing existing applications or moderate customization.

2.2 Create enablers

2.2.1 Establish legal, policy and institutional framework

- An enabling environment needs to be created to promote the active and responsible participation of all stakeholders. Liability exposure is a major concern of health workers in practising telemedicine.³
- The environment for virtual care on both physician and patient sides invites distraction and risk of inadequate communication, which is the most common root cause of medical error.⁴ Communication can be disrupted by an unstable broadband connection, and the quality of a video call can alter the accuracy of instructed physical examination results.

- Data confidentiality and patient privacy issues were also of concern across all forms of telemedicine practice. Medicolegal risk is more often raised in hypothetical cases than in real case scenarios in the literature (lawsuits filed against physicians practising telemedicine),⁵ but the perceived risk of malpractice remains high. Adjustments and arrangements must be made to give telemedicine practice a safety net.
- Technical and ethical guidelines for telemedicine practice, clear frameworks and processes should be set up to deter telemedicine practitioners from, and hold them accountable for, misconduct through disciplinary actions and compensation adjustments. However, the degree of flexibility should not be earned at the price of care quality, continuity and increased medicolegal risk. These are the risks that may accompany client-to-provider telemedicine as its business model often relies more on high patient turnover than consistent care as their general practitioner (GP) counterparts provide.⁶

2.2.2 Introduce supply- and demand-side incentives

Incentives must be provided to ensure the full participation of the community and patient acceptance of telemedicine. Introducing incentives to stimulate supply and demand is essential to maximize the benefit of telemedicine services. Insurance coverage of telemedicine service items similar to in-person care can stimulate demand. Performance-based remuneration can be introduced to incentivize practitioners. Organizational senior management need to take responsibility and exercise oversight of all incentive activities and adverse events. Appropriate protocols must be in place to protect the security and integrity of patient information. Standard procedures and codes of conduct should be introduced at the individual level.

2.2.3 Develop norms, standard and guidelines

Technical committees consisting of health professionals and digital health professionals should be set up to guide the development of norms and standards consistent with the service

implemented. They can help avoid misunderstandings of issues encountered in implementation (e.g. patient eligibility, billing code, workflow integration). Standards for prioritized teleservice procedures (e.g. scheduling, pre-visit preparation, provider/patient setting, physical examination, consent for data collection) and conditions for in-person visits (e.g. certain information that could not be collected via a telemedicine platform for diagnosis) will streamline the process of staff training, patient coaching and circumstantial decision-making. They also lend convenience to monitoring and evaluation.

2.3 On-site planning and implementation

The tremendous progress in telecommunications, most notably the rapid adoption of mobile devices and internet technologies, has upgraded communication channels, expanded the depth and breadth of services, and merged and simplified telemedicine implementation. Early asynchronous, store-and-forward provider-to-provider telemedicine (teleradiology) can now be provided on the cloud and scaled up without huge upfront costs in setup and maintenance. Patient education, health monitoring and behaviour change programmes have penetrated specialty care enabled by text messages, phone calls and, more recently, mobile applications and wearables. Client-to-provider telemedicine has been propelled by the emergence of videoconferencing applications. Inpatient telemedicine can further be augmented by big data and artificial intelligence on health in order to reduce the need for a large workforce and turnaround times. The evolving landscape brings more possibilities and complexities, which make cautious planning a necessity.

2.3.1 Commit financial and human resources with some risk tolerance

- Financial and human resources need to be reviewed to ensure the implementation will sustain and serve the health system in the long run. An accurate demand forecast is the first step to inform investment decisions in infrastructure and staffing arrangements. To de-risk telemedicine implementation, investments in organizational changes (e.g. care workflow adaptation, workforce training

on digital skills and adapted care practice, oversight and evaluation) needs to be costed.

- Investment in foundational layers (e.g. broadband connection, care workflow adaptation, workforce training) should be prioritized to pave the way for the implementation of telemedicine to grow into a comprehensive service suite. An assessment of the organizational risk profile is important as it may take a considerable amount of time for telemedicine services to grow to a self-sustaining size and to attain financial sustainability.

2.3.2 Develop implementation specifications

Implementing telemedicine is the process of translating utilization scenarios into features and functionalities to incorporate (key technical concepts can be found in Table 2) into a telemedicine system. The specification of features determines the architecture, level of interoperability, its operational capabilities, expected impact and changes to established care workflows, and the technical potential to be integrated into a health system.

- Provider-to-provider telemedicine, which integrates image and data sharing, electronic medical records, teleconferencing, medical equipment and software to assist lower-level health facilities with case management and carry out remote education, has relatively high upfront infrastructure investment and recurring maintenance costs. It also needs dedicated communication lines to perform services.
- More recently, non-public facing, internet-based videoconferencing tools (e.g. Skype, WhatsApp, Zoom) have been nominally free and easy to use in both forms of telemedicine. The downside is mass market tools can neither be easily interoperable with provider information systems nor give control over patient privacy protection.

2.3.3 Select technology partners

The user privacy and data security protection mechanism, transparency in function specifications and service modules, in alignment with guiding principles, should also be included in vendor selection criteria. Previous project

experience working with prevailing health systems, user experience and feedback, interoperability with provider systems, extensibility, ability to train and support for hospital site personnel should be given extra weight. User experience is not mentioned as often but is no less important in ensuring provider and client adoption of telemedicine services.

2.3.4 Diversify scenarios for testing

Field tests do not guarantee that usability are detected issues. Using a rapid iterative approach, diversified test environments and users with varying degrees of digital skills in parallel would expedite the process and chance of spotting functionalities that are non-intuitive or add to the user workload. Careful tests of designs, rapid iterations and documentation of user experience lessons should be encouraged. A backup plan should be put in place in case of technical failures.

2.4 Plan for health system integration

Health system integration is a process that takes planning and an outcome supported by evidence. With COVID-19 forcing telemedicine to scale, setting up an accountable governance system that includes having the capacity to run telemedicine, deliver quality care with evidence, and protect providers and clients from adverse events should be put on the agenda.

2.4.1 Monitor and improve system performance

Operational monitoring of system performance should be conducted to guide adjustments.

- Gaining insights from key system performance metrics and then taking actions to improve telemedicine service performance at lower costs are the main goals to keep in mind. Performance indicators with supporting data from telemedicine vendors should be collected ideally in near-real time. Performance data analysis and executive team reviews should be routinely conducted for accountability. Data gathered can be used to carry out benchmarking, inform decision-making at the senior management level, and detect risks that may derail the implementation.

- Each implementing health facility has its specific resource and capacity constraints that require targeted solutions for improvement in daily operations. Feedback should be obtained from health workers, clients and vendors in diagnosing the problem in context. It should also be reflected in system adjustments in a timely fashion.

2.4.2 Generate evidence that telemedicine implementation achieves its intended benefits

While overcoming technological and regulatory challenges, planning for research and real-world evidence generation are needed to assess telemedicine performance in routine use, stand-alone or complementary to in-person service, and to prove cost and time savings at the population level.

- Existing research evidence on the benefits of telemedicine has been limited and mixed. No definite conclusion can be drawn about its effectiveness in improving patient outcome and well-being, behaviour change (e.g. treatment adherence), disease prevention, cost-effectiveness or patient satisfaction. However, the weak evidence base can partly be ascribed to the heterogeneity in study designs, partly explained by the stand-alone nature of randomized telemedicine interventions and by the considerable economies of scale required in the digital sector, which most studies did not achieve.
- Outcome monitoring and evaluation of telemedicine services is needed to assess whether the implementation has achieved its goals. A comprehensive evaluation framework should be developed to collect input, process, output and outcome data in order to measure its availability, accessibility, quality, utilization, cost, user satisfaction, and tangible and intangible impact on provider and health organizations.

2.4.3 Document learning and share experience

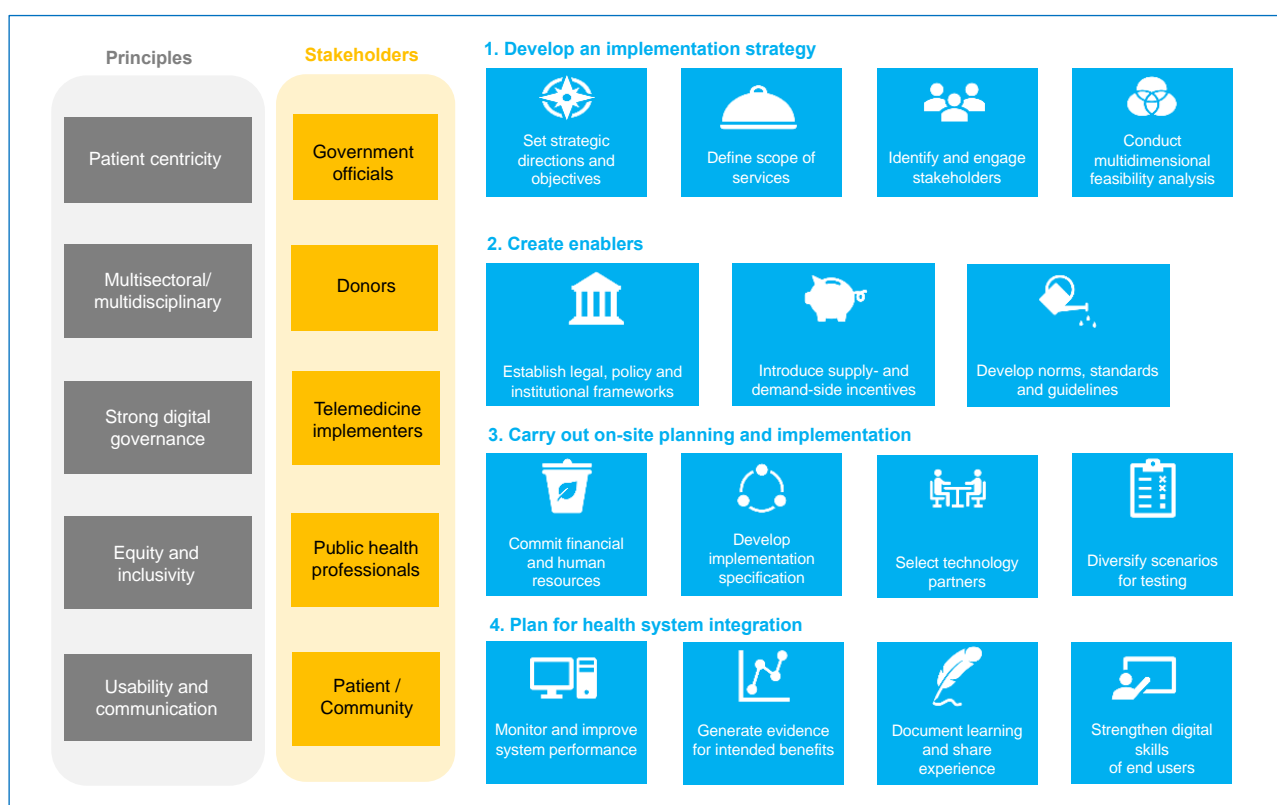
Learnings from planning and implementation should be shared between Member States in a timely fashion, as good governance from sharing and growth go hand in hand.

2.4.4 Strengthen digital skills of end users

The literature suggests that perceived reduction in autonomy and existential threat to their practice have led to physician resistance,⁷ as have the lack of incentives, enforcement and reimbursement.⁸ Training, technical support and favourable organizational arrangements are critical to sustained service provision.^{9,10} Training, coaching and supervision must be provided to telemedicine users and others whose work is influenced in health facilities. Recurring trainings should be organized to familiarize health workers with functionalities, service-specific guidelines and procedures, good practices in virtual engagement with patient and patient coaching, as well as the digital code of conduct to ensure ethical behaviour and care service of equivalent quality. Training manuals and workshops can be developed through collaboration with health workforce networks, agencies, academic institutions and experts. Performance evaluation of telemedicine workers through feedback collection from patients can also be used as an instrument to ensure the behaviour and conduct of health workers are consistent with the intended goals and values.

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Fig 1. A stepwise approach for telemedicine implementation**Table 1.** Goal-setting and service scoping

| Strategy | Goals | Scope of telemedicine services |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COVID-19 control and prevention | <ul style="list-style-type: none"> Reduce health worker and patient exposure to SARS-CoV-2 in health facilities Build critical care capacity | <p>Digitize COVID-19 care pathway</p> <ul style="list-style-type: none"> Self-screening, self-triage and referral AI-assisted COVID-19 infection detection Follow-up and remote monitoring of mild or discharged COVID-19 cases Emergency triage (tele-ICU) Provider-to-provider telemedicine for teleradiology, health worker training and case management |

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