



# COVID-19 AND TELEMEDICINE

Tool for assessing the maturity level of health institutions to implement telemedicine services

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# PAHO



Pan American  
Health  
Organization



World Health  
Organization  
REGIONAL OFFICE FOR THE  
Americas



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# COVID-19 AND TELEMEDICINE

Tool for assessing the maturity level of health institutions to implement telemedicine services

## Introduction

This tool has been designed to help health institutions assess their **level of maturity** to offer telemedicine services. Furthermore, it facilitates the identification of possible gaps or areas that could require more attention and expert technical support. The level of maturity is scored from **1 (lowest) to 4 (highest)**.

Level of maturity				
None (1)	Beginner (2)	Advancing (3)	Ready (4)	Requests technical support
No initiative is in place.	Some steps have been taken, but the institution is still far from being able to implement services.	Good progress, and some telemedicine services could begin to be implemented.	Everything is ready for telemedicine services to operate at full capacity.	Requires expert technical support to make further improvements.

This tool forms part of the support for pandemic response operations. Its design is based on the models that have been implemented by different health institutions with different levels of complexity in several countries. The tool was developed collaboratively with institutions and experts specialized in telemedicine and in the use of information technology (IT) in public health, from the Region of the Americas and Spain (see Appendix).

The tool has been developed with the understanding that there is an institutional commitment to immediately implement telemedicine services. However, it will also be useful to institutions that already have telemedicine programs up and running, which want to perform a self-assessment to redefine their priorities in light of the pandemic. The tool comprises a series of questions, organized into the six categories indicated below.

<b>I</b>  <b>Organizational readiness</b>	<b>II</b>  <b>Processes</b>	<b>III</b>  <b>Digital environment</b>	<b>IV</b>  <b>Human resources</b>	<b>V</b>  <b>Regulatory issues</b>	<b>VI</b>  <b>Expertise</b>
Foundational basis to identify issues to be resolved before moving forward with telemedicine services	Set of operations and functions that must be taken into consideration	Necessary technological infrastructure, including hardware and software	Institutional capacity in the areas of health services and of IT and communications	Rules and procedures that must be considered when providing telemedicine services	Additional know-how that could benefit the effective implementation of telemedicine services

## I. Organizational readiness

	Question	Level of maturity				Requests technical support
		1	2	3	4	
1	Is senior management committed to offering telemedicine services?					
2	Is it clearly understood which services can be offered via telemedicine?					
3	Have the services to be offered via telemedicine been identified?					
4	Is there a budget available for offering telemedicine services?					
5	Is the IT staff trained to provide support services for telemedicine?					
6	Do the national or local regulations allow the implementation of telemedicine services?					
7	Does the institution have reliable internet access?					
8	Does the institution already have some kind of telemedicine program in operation?					
9	Does the institution have any experience in using instant messaging or texting for health promotion?					
10	Does the institution have any experience in health service delivery through virtual consultations?					
11	Does the institution have any experience in remote monitoring of patients?					
12	Could the funding of telemedicine services be extended beyond the initial planning and pilot stages, to become a sustainable model?					
13	Is medical staff trained in providing telemedicine services? See section IV (on human resources) below for more information.					
14	If the score given on the previous question is 1 or 2, have telemedicine training options been determined?					
15	Does the institution have the infrastructure necessary for providing telemedicine services?					

15.a	<ul style="list-style-type: none"> <li>• <i>Sufficient space</i></li> </ul>					
15.b	<ul style="list-style-type: none"> <li>• <i>Reliable electricity supply</i></li> </ul>					
15.c	<ul style="list-style-type: none"> <li>• <i>Acceptable illumination levels</i></li> </ul>					
15.d	<ul style="list-style-type: none"> <li>• <i>Support teams</i></li> </ul>					
16	Has anyone been designated to be responsible for telemedicine services? <sup>1</sup>					
17	Is medical staff in agreement with offering telemedicine services?					
18	Has anything been done to address resistance to changes in routines with which physicians feel safe and comfortable, and to a new and unknown system involving a certain degree of initial uncertainty?					
19	If the score given on the previous question is 1 or 2, can this problem be solved through participatory dialogue?					
20	Have any incentives been put in place to promote the use of telemedicine?					
21	Is medical staff familiar with privacy and security practices based on current ethical and legal principles?					
22	Has the workload involved in launching this type of program in the current environment been defined?					
23	Does the program have the support of an institution specialized in telemedicine services?					
24	Has the institution's staff been informed of the intention to implement or expand telemedicine services?					
25	Have the potential beneficiaries of these telemedicine services been informed of their launch or expansion?					
26	Have patient care agendas been changed due to the need for remote consultations?					
27	What is the expected level of acceptance for telemedicine services from their potential beneficiaries?					
28	Are there cultural or linguistic barriers that could cause difficulties					

<sup>1</sup>. This individual is responsible for overseeing the service, offering support for referrals, second opinions, clinical decisions, operation of the program, and evolution of the system in general.

	during the delivery of telemedicine services?					
29	Is the level of connectivity of potential patients known?					
30	Is the level of digital literacy of potential patients known?					
31	Have governance mechanisms been established?					
32	Have continuous assessment mechanisms been established?					

## II. Processes

	Question	Level of maturity				
		1	2	3	4	Requests technical support
33	Have the duties, roles, and responsibilities associated with the telemedicine services been defined for all staff who will be involved?					
34	Have the duties, roles, and responsibilities related to the telemedicine services been defined for all administrative staff?					
35	Have procedures been defined to address the security considerations regarding patients and institutional legal responsibility?					
36	Have procedures been defined to safeguard the security, confidentiality, and backup of the data and information generated by telemedicine services?					
37	Are procedures in place to record the level of patient satisfaction with telemedicine services?					
38	Are notification procedures in place in the event of incidents or adverse events during telemedicine consultations?					
39	Are there standardized procedures to notify and document possible technical failures during a consultation that could affect the clinical outcome?					
40	Are there formal procedures to remotely obtain informed consent from patients?					
41	Are there procedures or tools for staff and patients to share their					

	concerns, suggestions, or comments regarding how the telemedicine program is working?					
42	Is there a strategy and operation plan to orient healthcare providers towards opting for outpatient teleconsultations and remote monitoring of their patients?					
43	Are there communication mechanisms for informing and educating the public about the recommended use of telemedicine?					
44	Is there a procedure or emergency plan for physicians practicing telemedicine if they consider that a patient should be referred to an intensive care center?					

### III. Digital environment

	Question	Level of maturity				Requests technical support
		1	2	3	4	
<b>INTERNET CONNECTION AND CONNECTIVITY</b>						
45	Is a regular, reliable internet connection available?					
46	Does the available bandwidth make it possible to offer telemedicine services without affecting other services?					
47	Is the institution able to calculate the bandwidth necessary for providing telemedicine services?					
48	Is the necessary minimum hardware available?					
49	If the score given on the previous question is 1 or 2, is there a budget available to procure the necessary equipment?					
50	Is there technical support available to solve problems related to connectivity?					
51	Is there a cybersecurity plan?					
52	Are technical support manuals available to address connectivity issues?					
53	Is there a contingency plan in the event of equipment or connectivity failures?					

54	Has the possible impact of the new telemedicine services on the current technological infrastructure been considered?						
<b>APPLICATIONS (SOFTWARE FOR MANAGING MEDICAL RECORDS, PATIENT PORTALS, ETC.)</b>							
55	Is there an electronic patient record system?						
56	Is there a patient portal?						
57	Does the institution know what software or IT solutions are necessary to offer telemedicine services?						
58	Are there standard operating procedures for managing the data and processes involved in telemedicine delivery?						
59	Are there guidelines on:						
59.a	<ul style="list-style-type: none"> <li>• Patient safety?</li> </ul>						
59.b	<ul style="list-style-type: none"> <li>• Privacy and data confidentiality?</li> </ul>						
60	What is the level of interoperability among the telemedicine services' different systems and databases?						
61	Are there terms of reference for the procurement of IT solutions?						
62	Has it been decided whether telemedicine IT solutions will be integrated into other existing systems and processes, such as those for medical records, patient portals, and messaging?						
63	Are there standard operating procedures for managing data and processes related to providing care to patients?						
64	Do the medical records platforms used in the telemedicine services have the capacity to include copies of all the electronic communications related to the patient?						
<b>APPLICATIONS (ADMINISTRATIVE SOFTWARE FOR BILLING, PAYMENTS, MONITORING HOURS, ETC.)</b>							
65	Are the administrative management platforms ready to work with the implementation of telemedicine services?						
<b>TECHNICAL EQUIPMENT (HARDWARE AND OTHER EQUIPMENT)</b>							
66	Is there an inventory of all the technical equipment, including the brand, model, time in operation, and serial number?						
67	Is there a secure location to store the equipment when is it not in						

	use?						
68	Is there a maintenance program for the technical equipment?						
69	Has consideration been given to the technological capacity for storage and security that will be necessary to document and record face-to-face meetings?						
70	Is technical support available from IT specialists?						
71	Are there plans for updating technical equipment?						

#### IV. Human resources

	Question	Level of maturity				Requests technical support
		1	2	3	4	
<b>HEALTH WORKERS</b>						
72	Is there staff available to participate in the telemedicine program?					
73	Has it been clearly defined which staff members will work on telemedicine services or specialties?					
74	Have the minimum skill sets necessary for the different telemedicine services been defined for those who will be working in telemedicine?					
75	Has the possibility of implementing an expedited training plan been considered for staff with the lowest level of IT skills?					
76	Is there access to expedited training programs at other institutions, if necessary?					
77	Are there plans to provide telemedicine services outside the usual face-to-face hours?					
78	What is the level of staff training necessary to provide telemedicine services?					
<b>IT STAFF</b>						
79	Is there in-house IT staff to support telemedicine services?					
80	If fewer than 3 IT staff are available, is it clear what qualifications					

	should be required for those who will be providing telemedicine services?					
81	Is there trained staff able to critically assess any equipment, and the IT that should be procured?					
82	Is there staff with the necessary experience to negotiate with providers for purchasing or contracting IT or support services?					
83	How qualified is the institution's IT staff to provide telemedicine services?					

## V. Regulatory issues

	Question	Level of maturity				Requests technical support
		1	2	3	4	
84	Are all the legal issues associated with the delivery of telemedicine services perfectly clear?					
85	Is there a procedure in place to keep staff who provide telemedicine services up to date on possible changes in regulations, statutes, federal and subnational policies, and legislation related to telemedicine services?					
86	Does the institution have in-house legal advisory services? Does it have access to a specialized consultancy to receive expert advice on legal, ethical, privacy, and security issues?					
87	Is it known for certain that the patients are located within the same catchment area (e.g. state, province, or municipality) as the institution providing the telemedicine services?					
88	Are the malpractice issues related to the telemedicine services well understood?					
89	Has a process been put in place for obtaining and documenting the consent of patients before they participate in a telemedicine visit?					
90	Is there a regulatory framework for authorizing, integrating, and reimbursing telemedicine in the delivery of care to all patients, particularly during emergencies and outbreaks?					
91	Are new regulations or legal technical frameworks necessary to implement telemedicine services?					

## VI. Expertise

	Subject	Level of maturity				
		1	2	3	4	Requests technical support
92	Indicators for telemedicine projects as tools to reduce inequities in health.					
93	Treatment protocols for telemedicine.					
94	IT standards in health and interoperability.					
95	Management of change.					
96	Architecture of public health information.					
97	Technological readiness in public health.					
98	Data governance in public health.					
99	Implementation framework for telemedicine services.					

### Guidelines for analyzing the results

The results should be discussed in interdisciplinary teams comprising specialists from the different areas involved. If there is enough time, they should also be validated by experts in health services and IT who have telemedicine experience.

Questions that are answered “**requests technical support**” will serve as the basis for developing a collaboration agreement with specialized partners.

The following guidelines should be used to interpret the results, section by section.

Level of maturity				
None (1)	Beginner (2)	Advancing (3)	Ready (4)	Requests technical support
No initiative is in place.	Some steps have been taken, but the institution is still far from being able to implement services.	Good progress, and some telemedicine services could begin to be implemented.	Everything is ready for telemedicine services to operate at full capacity.	Requires expert technical support to make further improvements.

- If a **maturity score of 1 or 2** is given for any of the questions between 1 and 7, the recommendation is to delay implementation of telemedicine services until **level of maturity 3** is achieved, by taking the following actions:
  - Formulate an action plan and an evidence-based budget for discussion at the decision-making levels.
  - Set up a task force.
  - Ensure reliable internet access.
  - Define which healthcare services will be offered via telemedicine.
  - Identify IT staff specialized in telemedicine or in more complex information technologies.
  - Carry out a specific legal consultation, taking as an additional reference the questions in section V (on regulatory issues) of this tool.
- Any questions for which a **maturity score of 1 or 2** is given should serve as the main basis for planning the necessary actions and investments to be incorporated into the final telemedicine program.
- Those questions for which a **maturity score of 3 or 4** is given should be analyzed in a macro, rather than an individual, context to determine whether it is possible to begin offering some telemedicine services partially and securely. In this situation, it is suggested that the process be validated with experts in health services and IT who have experience in telemedicine.
- If some of the questions from numbers 8 to 11 are given a **maturity score of 3 or 4**, then a quick analysis should be conducted on lessons learned that could lead to recommendations for the current situation. This would mean carrying out an assessment on the initiatives that are or were in operation.
- Working with outside experts is recommended to design a road map based on analysis of the end results.
- A framework for monitoring and evaluating the process is strongly recommended.

### References and other tools for further self-assessment

- Pan American Health Organization. Framework for the Implementation of a Telemedicine Service. Washington, D.C.: PAHO; 2016. Available at: [https://iris.paho.org/bitstream/handle/10665.2/28414/9789275119037\\_eng.pdf?sequence=6&isAllowed=y](https://iris.paho.org/bitstream/handle/10665.2/28414/9789275119037_eng.pdf?sequence=6&isAllowed=y)
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## Project team

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## Appendix. Contributors to the development of this tool

The following institutions and experts in telemedicine and the use of IT in public health from the Region of the Americas and Spain have contributed to developing this tool:

- Social Protection and Health Division, Inter-American Development Bank.
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- Center for Health Informatics, University of Illinois (PAHO/WHO Collaborating Center on Information Systems for Health).
- Salud.uy, Agency for eGovernment and the Information Society (AGESIC) of Uruguay
- Telemedicine Network from Brazil (Rede RUTE)
- The Central American Health Informatics Network, RECAINSA  
PAHO Information Systems for Health (IS4H) network of experts