DIGITAL HEALTH:
A STRATEGY TO MAINTAIN HEALTH CARE FOR PEOPLE LIVING WITH NONCOMMUNICABLE DISEASES DURING COVID-19

DEPARTMENT OF EVIDENCE AND INTELLIGENCE FOR ACTION IN HEALTH

OFFICE OF THE ASSISTANT DIRECTOR

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IMPORTANT NOTE: *Keep abreast of the latest information on coronavirus disease (COVID-19) through the PAHO and WHO websites and through your national and local public health authorities.*

Noncommunicable diseases (NCDs) are the main cause of death and disability worldwide. Effective management of these chronic conditions depends largely on continuous, responsive, accessible, and quality services and successful patient engagement and self-management. Digital health, and in particular telemedicine visits, electronic records, and electronic prescriptions, have already demonstrated having advantages in successfully ensuring continuity of care, especially when services are disrupted, as well as monitoring and evaluating interventions for NCDs. *See Factsheets: "COVID-19 and the role of information systems and technologies at the first level of care," "Electronic Health Records and Interoperability," and "Teleconsultations during a Pandemic."*

The area of digital health is expanding rapidly, and there is great potential to apply these strategies and approaches to the provision of care for persons living with NCDs, especially at times of disrupted health services observed during the COVID-19 pandemic. This factsheet summarizes some examples of how digital health tools have been applied to NCD management, with a view to stimulate uptake of similar approaches that will help ensure continuity of care, and self-management support for those living with NCDs.

What is the current context of **noncommunicable diseases** (NCDs)?

- Globally, NCDs kill 57 million people each year, equivalent to 71% of all deaths worldwide. In the Region of the Americas, NCDs account for 5.5 million or 81% of all deaths.
- In the Americas, cardiovascular diseases account for 28% of NCD deaths per year, followed by cancer (20%), respiratory diseases (7%), and diabetes (5%).
- Tobacco use, physical inactivity, the harmful use of alcohol, and unhealthy diets are common risk factors for NCDs. In total, 62% of adults in the Americas are overweight or obese.
- The Americas have the second highest levels of alcohol per capita consumption and heavy episodic drinking in the world.
- Major depression has a lifetime prevalence of 14.5% in the Region of the Americas.
- Suicide is an important possible outcome of mental illness, causing 97,288 deaths in the Region in 2016. More than 90% of suicidal victims have a diagnosable chronic mental disorder such as depression as well as substance use disorders.

What are the main benefits of digital solutions for NCD management during COVID-19?

The primary role of digital health is to support the maintenance of continuity of services during the period of community transmission of COVID-19, as well as serving as a platform for enhancing communication between providers and patients, and improving continuity of care for people with NCDs. Effective surveillance and health care delivery through digital solutions has a positive effect on the quality of life of patients suffering from chronic conditions. Digital solutions promote greater autonomy and self-care, as well as a higher level of adherence to treatments.

The use of digital solutions is transforming the way of delivering health services during the pandemic and drastically changing the operation of overall health systems. From the patient perspective, digital solutions empower health systems to take a more active role in managing their conditions and avoid treatment interruptions resulting from closure of facilities. Digital solutions also offer an alternative to in-clinic consultations during community transmission of COVID-19. From a health system perspective, providers have been able to interact with their patients remotely, update their electronic health records (EHRs) and even request second opinions from specialists. Digital solutions are reducing the unnecessary use of face-to-face services, while still ensuring service provision, while complying with public health guidelines on physical distancing and home isolation.

What are some of the main causes of NCD service disruptions during a pandemic?

Government measures related to the fight against the pandemic may result in situations that negatively impact the continuity of care of patients with NCDs and mental health disorders. Some of them are directly related to the reduced frequency of public transport services that makes it impossible for patients and health workers to mobilize, as well as the closure of outpatient clinics and resulted consultations, as well as redirection/deployment of medical staff to the COVID-19 response. Therefore, efforts to mitigate the pandemic have, in many cases, led to the discontinuation of population-level screening programs, cancelation of elective procedures, insufficient staff to provide services, or even a lack of essential medications. Furthermore, decreases in personnel specialized in NCDs are resulting from staff being reassigned to other areas of the health system to support pandemic response efforts.

What can be achieved with digital solutions for NCD management during a pandemic?

Digital solutions have shown great potential to complement in-person consultations for the management of NCDs, from all perspectives: the patient, the caregiver, the health worker, and health organizations. These solutions can be tailored to a specific disease or they can be designed such that several technologies may be used synchronously for people-centered care to serve their multiple health needs, targeting different audiences. This depends on the initial objective(s), the proposed scope, the available infrastructure and capacity for use by clients and the potential for scaling up.

Even after the pandemic, a new more patient-centered model of medical care will arise, where people take a more active role in the management of their conditions, facilitated by the digital solutions that are and will continue to improve the communication, coordination, continuous follow-up, and quality of care for people living with NCDs.

Initiatives that use digital solutions for NCD management may be targeted to, or employ, a specific application. In this case, we are talking about a multichannel initiative that, for example, integrates apps, SMS, web platforms, calls, chatbots, and many more. Examples in the case of NCDs that have integrated various applications focused on anxiety, depression, developmental disorders, hypertension, chronic conditions, diabetes, heart failure, chronic obstructive pulmonary disease (COPD), among many others.

What types of interventions can be supported remotely during a pandemic?

Remotely by patients to self-manage their conditions

Health promotion: by use of government-recommended digital interventions to track healthy behaviors and give advice accordingly.

Peer support: by promoting healthy online communities and safe digital spaces for support and guidance, like promoting physical activity and healthy diet.

Disease management for patients/health workers: by supporting disease management and control for patients living with diabetes or hypertension, or those looking at tobacco cessation. For healthcare workers, by adopting "forward triage" to refer patients.

Remote monitoring: by possible adoption of reliable wearable devices that collect data, its variability and automatically updates medical treating group on changes outside set thresholds.

Engagement to treatment: by virtual education (content, videos), automated follow-up and reminders for treatment.

Remotely by health care providers and caregivers

Prevention: by increasing awareness of healthy lifestyles and risk factors through social media campaigns, and creation of shareable content.

Health care provision: by online consultations for health concerns, pharmacies, and prescription renewal (digital signature and coverage/consultation validation).

Maternal, Reproductive and Child Health training: by the creation of sharable audiovisual content, for example, regarding breastfeeding utility and techniques.

Drug supply chain and anticounterfeit: by monitoring stock of essential medicines and preventing stock out, raising awareness of the dangers, and offering guidance to consumers. Working alongside large-scale distributors on guidelines to reduce forums for sale of counterfeit medications.

Digital data patient tracker: by promoting the routine collection and use of patient data and interoperability standards to reduce manual data entry and enabling efficient patient flows to different health providers.

Identify and assist families: by digital contact tracing and automatic updates on contact risks, including emergency contact information on digital patient records.

Treatment: by adopting teleconsultation and guiding patients through basic physical self-examination to improve tele-diagnostics and advice on any changes needed to the treatment plan; adopting electronic prescription mechanisms, especially for recurring prescriptions and as an alternative to having to obtain prescriptions through in-person consultations.

Intervention Examples[1]

NCD	Name	Type	Technology	Country
Smoking cessation Diabetes awareness Breast cancer awareness Cervical cancer awareness	Be He@lthy, Be Mobile BHBM[5]	Prevention and health promotion	SMS program	Burkina Faso Costa Rica Egypt India Philippines Senegal SudanTunisia Zambia
Hypertension control	Simple	For patients with hypertension	App	All world
Diabetes screening	MIDO[6]	Screening	Big Data Digital Platform	Mexico
Physical activity tracking	Vitality[7]	Prevention	App integrated with wearable	All world
Teleconsultation	Babyl[8]	Healthcare provision	SMS program	Rwanda
Diabetes	M-Tiba[9]	Self management	Symptoms monitor and Digital Wallet	Kenya
Maternal and child care[10]	NurseConnect MumsConnect	Healthcare and mothers training	SMS program	South Africa
Health care workers	Switchboard[11]	Peer support	SMS and calling platform	Liberia Ghana
Various diseases	mTrac	Drug supply chain and anticounterfeit	SMS program	Uganda
Diabetes High blood pressure Heart failure COPD	AccuHealth[12]	Digital Clinical Hospital	Multichannel platform	Chile
Multiple chronic	WellDoc[13]	Disease management for	App	USA

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[1] This is an illustrative list of examples and does not constitute an official recommendation of products or strategies to use.

conditions		patients/health workers		
Chronic conditions	AxisMed[14]	Remote monitoring	Multichannel platform	Brazil
Hypertension	eHTN.Tracker[15]	Digital data patient tracker	Multichannel platform	Vietnam
Developmental disorders (mental health)	Without name[16]	Identify and assist families	Mobile phone-based interactive voice response system	Pakistan
Depression, Anxiety	MoodGym[17]	Promotion and treatment	Web-based psychotherapy	Australia
Anxiety Depression	BigWhiteWall[18]	Peer-to-peer support community	Web-based platform	UK
Psychosis	Silver Linings[19]	Engagement to treatment	App	UK

What is the role of apps for NCD management?
Due to the high penetration of smartphones and the use of apps for these devices, many applications have been designed for the management of NCDs, such as the public sector and private sector ones mentioned in the table above, among many others.

What is the role of SMS for NCD management?
In regions and populations where access to smartphones is very low but where access to basic cell phones is high, SMS text messages can be a very useful resource for providing messages associated with NCDs management. Some examples such as the *WHO Be He@lthy, Be Mobile initiative*[5] have addressed various NCDs such as smoking cessation, reminders for follow-up appointments for people with diabetes and cancer and for maternal and child care, aimed at self-management, bringing health workers closer to patients, and even training health workers. They have also been used in public health surveillance activities.

What is the role of big data for NCD management?
Big data in itself is not an information and communications technology (ICT). In fact, ICTs are sources that can produce, when aggregated, a huge amount of data that could fall within what is called big adta. Some NCD management initiatives have sought to analyze big data generated by various channels such as web or mobile platforms.

What is the role of wearable technologies for NCD management?
Wearable technologies can serve as an aid for self-management for people living with an NCD. Indicators can be monitored in real time, through wearable devices such as bracelets or smart watches, such as blood pressure, heart rate, steps, and oxygen saturation, sleep patterns or physical exercise, among others. It is always important to verify the device's official authorization and accuracy level.

What is the role of artificial intelligence (AI) for NCD management?

AI, in particular machine learning, can improve all actions related to self-care of people with NCDs. AI algorithms can improve the control of the health status of a person thanks to constant self-generated knowledge that is produced from the processing of millions of data and self-learning tools. Thus, with AI tools, patients are able to improve self-management of their conditions and define their own challenges with physical activity or diet that are based on their personal characteristics. It also allows health workers and institutions to identify patterns for developing public health measures, and to improve precision medicine.

How can several digital solutions be integrated to improve NCD management?

Examples of national strategies

NCD	Name	Type	Technology	Country
Diabetes Hypertension Health education	Brazil's Family Health initiative[20]	Remote diagnoses and real-time communication with the clinic	Mobile phones, tablets	Brazil
Obesity Diabetes	Salud Móvil[21]	Personalized communication with patients and health professionals	SMS text messages	Mexico
Various diseases	eGabon[22]	e-government with digital health interventions	Multichannel platform	Gabon

Additional Information and References

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Inter-programmatic Collaboration

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