SPECIAL ARTICLE

Implementing the Implementation Framework for Telemedicine to Address Non-Communicable Diseases in Thailand: What We Have Learned

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For over two years, the coronavirus disease 2019 (COVID-19) has been spreading in Thailand and causing substantial disruption in non-communicable disease (NCD) care. To resuscitate and develop telemedicine for NCD care, Thai NCD Collaboration Group has devised and carried out an implementation framework since 2020. In December 2021, disciplinary experts including NCD specialists, a pharmacist, health economists, a payer, and a policy decision-maker, reconvened to review the progress of implementation activities. Three key prioritized implementation activities were discussed. First, a simple protocol for hypertension management, which was to initiate the 'decentralize to primary care services' activity, was successfully developed and ready to roll out to multiple hospitals. Second, representatives from the Ministry of Public Health ensured that the 'telemedicine advocacy' activity was officially endorsed by the national health policy. They also acknowledged to support the implementation of the simple protocol at a national level. Third, for a 'drug regulation and quality' activity, a case study of limited access to cost-effective treatment was discussed, and an access strategy such as a co-payment model, was proposed as a potential solution to alleviate payer's budget constraint. Overall, the progress of implementation activities is positive, still, ongoing monitoring is important to drive telemedicine for NCD care to be fully operational and sustainable nationwide.

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The pandemic of coronavirus disease 2019 (COVID-19) has disembarked in Thailand in early January 2020 and remained occupying the country up to the present time. COVID-19 extensively disrupts non-communicable disease (NCD) care, and thus causes worsened quality of life among NCD patients. Thai NCD Collaboration Group, consisting of multidisciplinary experts, has been formed to ensure the continuity of NCD care and health outcomes of NCD patients through telemedicine. In the late 2020, an implementation framework (Figure 1) was collaboratively developed to plan and prioritize implementation activities, and to ascertain the sustainability of telemedicine for NCD care in Thailand[1]. In essence, the experts expressed a high priority for the following activities to be carried out: 1) processes to ensure patient's privacy and sensitive health data management with the Ministry of Public Health (MoPH), 2) a process to revisit types of medication dispensable via telemedicine channels with Thai FDA and another to ascertain the quality of medications for telemedicine services with the National Health Security Office (NHSO), 3) a process to enhance media and digital literacy to the general public with the Ministry of Digital Economy and Society (MDES), and 4) processes to decentralize

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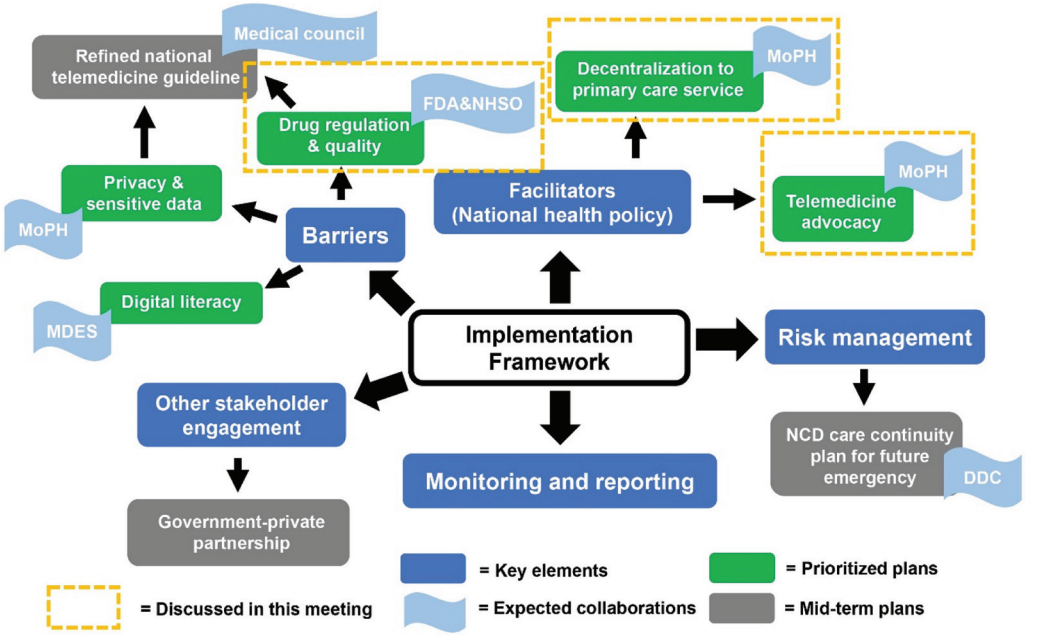

Figure 1. The implementation framework of key elements and solutions to advocate the advancement and sustainability of telemedicine for noncommunicable disease services in Thailand, adapted from Chattranukulchai et al. (2021)[1].

DDC=Department of Disease Control; FDA=Thai Food and Drug Administration; MDES=Ministry of Digital Economy and Society; MoPH=Ministry of Public Health; NHSO=National Health Security Office

NCD management to primary care services with supports from the healthcare policy level with the MoPH. In addition, the experts also suggested the following activities to be performed as mid-term action plans, 1) a process to develop an improved version of telemedicine guideline to be completer and independent with the Medical Council of Thailand, 2) a process to identify potential government-private partnership to support the advancement and sustainability of telemedicine for NCDs, and 3) a process to develop risk management plans to mitigate risks of future emerging infectious diseases with the Department of Disease Control (DDC). Now, it is the appropriate time for the experts to review the activities operationalized throughout the year 2021.

Materials and Methods

The Thai NCD Collaboration Group held a second advisory board meeting in December 2021. Invited attendees comprised healthcare practitioners with NCD specialists and a pharmacist, health economists, a payer, and a policy decision-maker. Updates of three prioritized implementation activities including 1) decentralization to primary care service, 2) telemedicine advocacy, and 3) drug regulation and quality were shared and discussed among the experts. Overall progress and reflection were consolidated to inform future actions.

Results and Discussion

Eleven multidisciplinary experts attended the face-to-face advisory board meeting. An executive summary of the discussion for each prioritized implementation activity was sequentially described in the paragraphs below. Furthermore, additional key discussion points are presented in Table 1.

Throughout the presentation regarding decentralization to primary care service, the development of a simple protocol for hypertension management[2] was discussed. With a supportive climate among healthcare practitioners, village health volunteers, and the provincial public health office, a pilot project of the simple protocol was successfully implemented in Lampang Province. An all-in-one telemedicine application and an encrypted system that manages anonymous patient data, which were similar to those successfully adopted in Japan[3], were also developed simultaneously. To ensure compliance with standards of the Thai Medical Council and the Ministry of Public Health in Thailand[4,5], the developed all-in-one telemedicine application would require patient and provider identification, and

Table 1. Additional key discussion points by each prioritized implementation activity

Prioritized implementation activity	Key discussion points
1. Decentralization to primary care service	• According to the result from the pilot project, the simple protocol for hypertension management is useful in improving real-world clinical practice. However, it may increase workload to healthcare practitioners, which can make them reluctant to adopt changes. A mitigation plan should be generated to prevent resistance to change when implementing the simple protocol on a larger scale. • Nowadays, patients are getting used to telemedicine services. Thus, providing care to patients via telemedicine is not technically problematic. However, the adoption rate is still minimal. Public relations should be more actively disseminated at a national level. • May Measurement Month (MMM) 2021, an annual global blood pressure (BP) screening campaign initiated by the International Society of Hypertension (ISH), reveals that Thai people have no difficulty getting access to BP measurement. Nevertheless, after getting BP measured, the majority of people with high BP do not get either diagnosed or referred to receive proper treatment. Hence, an effective referral system among healthcare practitioners should be developed.
2. Telemedicine advocacy	• A national telemedicine service should also include medication dispensing process. The development of a nationwide prescribing network among telemedicine providers, physicians, and community pharmacists should be endorsed to put into effect. Accordingly, patients will be able to consult a doctor via telemedicine and get prescriptions from a nearby pharmacy store. • Health Technology assessment (HTA) should be performed to evaluate value for money of various national telemedicine service schemes.
3. Drug regulation and quality	• When evaluating health economic implications of medications, the 'real' societal perspective, where both direct and indirect costs are taken into account, should be adopted. The current cost-effectiveness analysis guideline, which judges the value of medications based on the restrictive willingness-to-pay threshold (160,000 Thai baht per quality-adjusted life years [THB/QALY], excluding indirect costs), may conceal the 'real' benefits that medications actually bring to patients' and caregivers' productivity and well-being.

BP=blood pressure; HTA=Health Technology Assessment; ISH=International Society of Hypertension; MMM=May Measurement Month; THB/QALY=Thai baht per quality-adjusted life years

integration with current health services. For data security, all information was hosted by the service provider using a virtual private network (VPN) that complied with the National Institute of Standards for Technology security (NIST) Cybersecurity Framework (CSF)[6]. The use telemedicine in the management of hypertension was recently endorsed by the Cardiovascular Outcome Prevention, Evidence (HOPE) Asia Network[7]. For the application, hosting, and security, all the experts expressed favorable opinions and would endorse this pilot project to be rolled out to other hospitals.

Besides, representatives from the National Health Security Office, which were the NHSO and a payer, the Ministry of Public Health (MoPH) ensured that telemedicine advocacy was already emphasized in the national health policy agenda. Telemedicine services were financially subsidized under the Universal Coverage (UC) scheme. Both representatives expressed an optimistic opportunity to collaborate with the leader of the simple protocol implementation project to further improve the completeness of telemedicine services for NCD care at a national level.

Finally, during the session of drug regulation and quality, an economic evaluation study[8] of atorvastatin for primary cardiovascular disease prevention was presented as an example of interventions that are cost-effective and capable of improving patient outcomes. Still, these interventions were not included in the national list of essential medicines (NLEMs). Thus, patient access to these interventions was limited. Having seen benefits to patients and overall healthcare management, all healthcare panelists agreed to support and propel these interventions to be adopted in the NLEMs. A co-payment model was proposed as a potential mitigation plan to alleviate payer's budget constraint.

In turn, all panelists shared the same vision that they would not expect to replace a general face-to-face medical practice with telemedicine services. Nonetheless, they would like telemedicine to evolve into a complete and sustainable system that could augment healthcare practitioners to provide better care for NCD patients, even during this prolonged era of unexpected emerging COVID-19 pandemic.

Conclusion

The present study article is the first follow-up meeting after the implementation framework of telemedicine for NCD care. The top three prioritized implementation activities have been operationalized for almost one year, and their overall progress was found to be positive. Nonetheless, there are areas of improvement identified during the discussion, which are worth being considered to improve the implementation plan. Ongoing monitoring is crucial

to regularly review the implementation progress and propel telemedicine for NCD care to be fully operational and sustainable at a national level.

What is already known on this topic?

- Non-communicable disease (NCD) services were disrupted in countries globally including Thailand due to the unpreparedness for coronavirus disease 2019 (COVID-19) pandemic emergency.
- Various remote healthcare services have been developed to maintain the continuity of NCD services, but they are disaggregated and still in its infancy.
- The implementation framework to advocate the advancement and sustainability of telemedicine for NCD services in Thailand was constructed and operationalized since 2020.

What this study adds?

- The progress of the top three prioritized implementation activities including 1) decentralization to primary care service, 2) telemedicine advocacy, and 3) drug regulation and quality was good.
- However, there are areas of improvement on the implementation plan, and a regular review process is deemed necessary to monitor implementation success.
- All implementation-related activities such as development of a simple protocol for hypertension management, development of a nationwide prescribing network, and a May Measurement Month campaign, were discussed, and viable solutions to key challenges were agreed upon among the multidisciplinary experts.

Ethical approval

The article does not contain any human or animal study data or any other confidential data; therefore, it does not require approval from ethics committee or institutional review board.

Authors' contributions

All the authors were involved during the conceptualization and writing up of the article.

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Conflicts of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, or publication of the present study article.

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