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In search of ethical pandemic technology

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The duration of the pandemic over the last two years has witnessed the steering of multiple technological interventions by governments. These interventions — ranging from contact tracing applications to vaccine certificates — have been developed in the specific context of the pandemic, and were meant to address its unique requirements. This family of technological interventions may be termed “pandemic technology” — having diverse uses such as preventing the transmission of Covid-19, and aiding the relaxation of pandemic-induced restrictions. We propose a four-rung ethical paradigm for the deployment of such technology. We call it the STEP model and its four pillars consist of (i) sunset clauses, (ii) trust, (iii) equity, and (iv) privacy preservation.

While the proliferation of pandemic technology has occurred at a rapid pace, concerns remain on its largely unregulated status and inequitable uptake. The unsupervised spread of pandemic technology bears the risk of curtailing individual freedoms, and marginalising already vulnerable communities. Adopting the suggested model would therefore enable the development of privacy-preserving pandemic technology that is trustworthy and equitable, now and in future pandemics.

Essentially, the model implies that:

(i) Pandemic technology should be constrained by a mandatory sunset clause. This necessarily means that the intervention should also be backed by law. A sunset clause ensures that the law would automatically lapse after a particular date, thus de-commissioning the intervention. This is essential to ensure that intrusive emergency measures introduced during the pandemic do not spill over unjustifiably, beyond the horizon of the pandemic [1].

Designing the sunset clause contemplated above is a two-step

process. Regulation must hard-code the following objects into law:

First, the clause must fix a mandatory date on which the law ceases to exist, unless extended by competent authorities. Second, the clause must contain a provision for period review, to account for any risks that the continuous deployment of pandemic technology may entail.

(ii) The deployment of pandemic technology must inspire **trust**, by checking for the following — reliability, verifiability and accuracy. Technology providing assessments of an individual’s health (such as digital immunisation certificates) must be operable in both online and offline capacities, ensuring that the benefits of such technology are not lost to those without access to a smartphone or the Internet. Such technology must strive for universal interoperability, embracing open standards that can be adapted by relevant authorities for seamless access to services [2].

Ensuring trust involves communicating the scientific merits and limitations of each intervention to individuals using such technology. For example, immunisation certificates may carry a note stressing the importance of social distancing even among vaccinated individuals. This can help to avoid lowering the risk-perception of Covid-19 among people, potentially mitigating the impact of any novel variants of the virus that may emerge in the future.

(iii) The principle of **equity** must guide the deployment of pandemic technology. Here, the state must focus on equitable uptake of such technology. The state should develop strategies to overcome the digital divide prevalent in India and assume full responsibility for the uptake of such technology among the disadvantaged.

(iv) Pandemic technology must be deployed while preserving **privacy**. In the absence of a comprehensive data protection legislation in force in India, it remains critical for the state to lead with regulation that adapts universally accepted privacy principles to secure the personal data of individuals.

There is precedent that convinces us to remain optimistic on this frontier. The Aarogya Setu’s Data Access and Knowledge Sharing Protocol, 2020, [3] serves as a useful regulatory example on outlining permissible uses of data collected and processed by pandemic technology. A broader framework, building on the principles outlined in this protocol can guard for privacy risks and ensure the responsible use of personal data for public health objectives.

It is important to acknowledge that the pillars of the S.T.E.P. model will robustly intersect when applied to technology. We do not view this as a limitation — interaction among the discussed principles is desirable — with each pillar nourishing the others to secure pandemic technology against misuse. The adoption of these principles could

reshape attitudes towards pandemic technology, thus emboldening the perception that their just adoption forms an integral part of our public health objectives.

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Is delayed regulation of yoga and naturopathic medicine in India breeding quackery?

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The combined discipline of Yoga & Naturopathy (Y&N) constitutes one of the official indigenous medical systems under the Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa, and Homoeopathy (AYUSH), Government of India (Gol). The Gol has recently regulated all the systems under AYUSH, except Yoga & Naturopathy, through the National Commission for Indian System of Medicine (NCISM) Bill, 2020 [1]. However, Y&N has been left out from the NCISM Bill, despite the recommendations of the Department-related Parliamentary Standing Committee on the National Commission for Indian System of Medicine Bill, 2019 [2: p 20], and NITI Aayog [3: p 15]. On the contrary, Gol has proposed a board for regulating Y&N without defining its statutory value or timeline.

Currently, there are 56 Y&N medical colleges spread across different states, affiliated to their respective state-run medical universities, offering five-and-a-half year Bachelors' medical degree in Y&N (BNYS), as well as three-year Doctor of Medicine (MD) programmes in Y&N, which are recognised by the University Grants Commission [4, 5]. BNYS doctors are registered as Class 'A' medical practitioners in nearly 20 states of India and are employed as physicians in state-run clinical

facilities [6]. Gol has also acknowledged that only BNYS graduates are eligible to be registered as Y&N doctors [6]. Y&N physicians' services are widely used in treating diseases ranging from obesity to Covid-19 in India. Given the popularity of Y&N, supported by the government's initiative to mainstream traditional medicine, the lack of regulation has led to mushrooming of non-recognised courses and self-proclaimed doctors, thereby endangering the health and lives of patients. Petitions against such quack practitioners, courses and complications inflicted by them are widely reported [7, 8]. Delaying the regulation of Y&N can only lead to more confusion and will serve as fertile ground for quackery.

Globally, Naturopathy is an umbrella term used for all the alternative systems of medicine that include yoga, acupuncture, acupressure, homoeopathy, ayurveda, Tai chi, etc. Currently, 98 countries are reported to have active Naturopathy practitioners, with the largest proportion in North America. Naturopathy is well regulated in Canada, the United States, the Virgin Islands, etc [9, 10]. According to the World Naturopathic Federation, regulation of naturopathic practice in these countries has helped both government and practitioners to determine the scope of practice, enhance academic standards, provide accreditation and prevent potential harm to patients [9].

These reforms are seen even in those Indian states with well-regulated statutory mechanisms for Y&N, such as Tamil Nadu, Kerala, Madhya Pradesh and Karnataka, which exhibit significant growth in inter-disciplinary referrals and peoples' acceptance of Y&N [11]. In addition, they pave the way to inclusion of Y&N in insurance schemes; upscale the accreditation process with reputed agencies like the National Accreditation Board for Hospitals & Healthcare Providers, and Central Government health schemes; and ensure patient safety by doing away with unwarranted/unethical medical practice. This warrants expansion of such regulation beyond these states.

With the rapid expansion of the beneficiary base of Y&N, it is Gol's moral responsibility to regulate Y&N under the existing NCISM Bill, as originally recommended by the Parliamentary Standing Committee and NITI Aayog, or to create a separate law for their regulation at the earliest. Denying quality treatment by qualified practitioners to the public is ethically incorrect and even dangerous. Similarly, it is an injustice to rigorously trained and highly qualified practitioners in Y&N from nationally instituted medical universities not to establish professional standards through regulation. Medical regulation of Y&N is thus essential to safeguard the rights and interests of patients as well as practitioners.

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