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Commentary

Disparities in European healthcare system approaches to maintaining continuity of medication for non-communicable diseases during the COVID-19 outbreak

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COVID-19 was declared a global pandemic on March 11 2020, with dramatic consequences on the way we live. The rigours of lockdown and physical distancing posed major challenges to society, and specifically to healthcare systems. In the initial focus on acute COVID-19 treatment, management of non-communicable diseases (NCDs) was severely scaled down, and patients suffering from NCDs were given low priority. Appointments were postponed or cancelled due to re-allocation of healthcare personnel to tasks related to managing COVID-19. Healthcare providers, coping with inadequate supplies of personal protective equipment, minimised physical contact with patients to avoid contagion. Patients' motivation to seek care diminished, as medical centres were perceived as potential sources of infection. The result was a major global disruption in NCD management just at a time when long-term conditions were emerging as major risk factors for poor outcomes from COVID-19 [1].

A World Health Organization (WHO) survey, conducted across 155 countries during the first wave of COVID-19 highlighted the major disruption to NCD services [2]. For example, half the countries reported that hypertension services were reduced despite two thirds of those dying from COVID-19 in hospitals having hypertension. Management of type 2 diabetes, cardiovascular and chronic

respiratory disease were similarly affected, along with multimorbidity and mental health [3]. Thus, COVID-19 has proved to be a *syndemic*, with repercussions that far exceed the direct consequences of the infection itself [4].

Maintaining management of NCDs is crucial for preserving both short- and long-term health and economic outcomes; morbidity and premature mortality from NCDs have been described as a 'twin epidemic' alongside COVID-19 [5]. A prerequisite for effective NCD management is continuity of medication [6]. Discontinuation of some treatments may have catastrophic consequences (e.g., non-persistence with chemotherapy may lead to cancer progression) [7]. Moreover, maintaining treatment may even be protective: statin use during the month prior to admission for COVID-19 was associated with a lower risk of severe infection [8]. Assuring continuous access to medication relies on healthcare systems adapting to the COVID-19 context, and it is likely that different countries will take different approaches to meet the challenge.

In December 2020, the EU-funded *European Network to Advance Best practices & technology on medication adherence* (ENABLE) COST Action conducted a rapid assessment survey across 39 European countries to obtain a 'snapshot' of NCD care, and specifically approaches to maintaining continuous access to medication during the second COVID-19 wave. Countries covered included all 27 EU countries, as well as 12 European countries not belonging to EU (i.e., Albania, Bosnia and Herzegovina, Iceland, Israel, Moldova, Montenegro, North Macedonia, Norway, Serbia, Switzerland, Turkey and the United Kingdom).

The web-based cross-sectional survey was sent to all ENABLE collaborators ($N = 92$, as most countries have 2–3 representatives). The survey was developed based upon key elements of the medication management cycle of NCDs (i.e., patient and healthcare system regulations, means of communication between the patient and prescriber, prescriber, prescription, community pharmacy regulations, medication and medication taking), and validated by six independent

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external experts. Respondents were instructed to describe the national context, rather than regional or local scenarios; to provide responses as of December 2020; and to reach consensus on each item with fellow country-members. They could contact additional local experts if required. Where multiple collaborators from a country completed the questionnaire independently, the responses were compared. In the few instances where answers differed, respondents were contacted to resolve the inconsistencies between themselves prior to data analysis.

Survey results indicated significant disruption of NCD services especially in countries with a greater number of COVID-19 cases per 100,000 inhabitants ($p < 0.05$). A national policy or specific guidance on ensuring on-going access to medication for NCDs during the COVID-19 pandemic was available in 19 (49%) of countries.

Although COVID-19 limited the number of face-to-face appointments in primary care, and outpatient clinics for NCDs in 35 (90%) of European countries, it accelerated telehealth and remote consulting. Nevertheless, not all modes of teleconsultation, and options for requesting chronic medication prescriptions were equally available across Europe. Teleconsultations over phone were available in all 39 studied countries, whereas those over e-mail, online chat, EHR portal, and videoconsultations were available in 28, 15, 8, and 22 countries, respectively. Prescriptions could be requested by phone (in 34 countries), e-mail (27), and less commonly, by videoconsultation, web-based solutions, mobile apps, and online chat (in 19, 19, 14, and 13 countries, respectively). The mean (SD) number of available teleconsultation services (including e-mail, online chat, phone, video, electronic health records) in the public healthcare system was significantly lower in upper-middle compared to high income countries (2.14 (1.07) vs. 3.16 (1.29), respectively; $p < 0.05$). Prescriptions for NCDs could be issued without a face-to-face consultation in 32 countries (82%) and e-prescriptions were available in 36 countries (92%). Home delivery of prescription medications was not available in two thirds of European countries. Thus, in these 26 countries despite remote availability of prescriptions, patients with NCDs needed to leave home to collect their medications.

Alternative arrangements for prescribing were evident in some countries. In 17 (44%) of European countries, professionals other than physicians were authorised to prescribe and 11 (28%) introduced alert systems to notify prescribers about the need to renew NCD medication prescriptions. In eight (21%) countries community pharmacists were enabled to dispense medications normally restricted to hospitals.

Despite the economic disruptions caused by COVID-19, only two (5%) European countries reduced out-of-pocket costs for NCD medications. Prescriptions for longer periods (>3 months) were possible in 26 (67%) of countries, though restricting duration may have been a strategy to avoid exacerbating a shortage of medicines that was a challenge for some drugs. However, only 21 (54%) countries applied measures specifically to address potential shortages of medicines, and 33 (85%) of countries allowed substitution of unavailable medicines.

Despite the limitations of being survey-based research, with a focus at the national level (e.g., not capturing local differences between urban vs. rural areas, or deprived vs. affluent settings), the pan-European coverage of this study offers a comprehensive 'snapshot' of how European countries responded to the challenge of assuring continuity of pharmacological products for NCDs during the second wave of the COVID-19 pandemic. Seven months after the WHO survey [2], in which countries 'asked for urgent guidance on how to develop national NCDs tool kits for use in emergencies', our findings suggest that there remain gaps in services that could be addressed.

According to our results, European countries adopted various measures to secure continuity of pharmacological treatment for

NCDs during the pandemic. In particular eHealth solutions emerged as pivotal in the provision of healthcare services. However, a systematic approach to maintaining access to on-going medication under 'stress-test' conditions of a global pandemic has not yet been adopted by most European countries. Outside Europe, various approaches have been proposed, ranging from dispensing longer than usual drug refills, to innovative digital solutions, such as the use of artificial intelligence [9, 10].

COVID-19 has jeopardised NCD care, and our survey suggests there are major disparities in the way European countries are dealing with this challenge. In many countries, there is room for improvements and countries may learn from each other's approaches. Notably, depending on country-specific resources, workflows and infrastructure, several practical and low-cost solutions may be worthy of consideration to optimise NCD care, including:

- (1) increasing the range of remote options for ordering repeat prescriptions (e.g., online, via mobile app etc.),
- (2) expanding the scope of professionals authorised to prescribe (or issue) repeat prescriptions,
- (3) increasing the duration of prescriptions (though this needs to be balanced with managing shortages),
- (4) enabling community pharmacies to dispense medications normally restricted to hospitals,
- (5) allowing substitution of unavailable drugs,
- (6) creating digital/eHealth systems supporting patients in long-term treatment, encouraging patient empowerment and patient-centred care and
- (7) providing publicly available guidance on strategies for maintaining treatment during pandemic lockdown.

Remote solutions do not solve all the challenges of maintaining access to NCD treatments. Some long-term therapies require face-to-face contacts with healthcare professionals (e.g., oral anticoagulants need periodic lab tests), so safe arrangements will be needed. Nevertheless, many of the suggested solutions have been already proved workable in some contexts during the pandemic [9, 10]. With second – or third – waves of COVID-19 currently challenging many European countries, strategic introduction of these solutions may help sustain effective NCD management. In the short-term, this will optimise the health of people at risk of poor outcomes from COVID-19. In the long-term, maintaining access to, and enabling adherence to chronic medication will limit the negative consequences of a disruption in NCD care. The WHO describes the interplay of the COVID-19 and NCD pandemics as 'deadly' [2] and calls for inclusion of NCDs in national COVID-19 plans. Our survey has identified marked disparities in ensuring on-going access to NCD medication; it also offers some practical solutions that could help reduce these inequities as Europe continues to manage the challenges of a global pandemic.

Author Contributions

All authors conceived and designed the paper, synthesised the initial information into a manuscript, helped to refine the manuscript, and contributed to revising the manuscript.

Declaration of Interests

Dr. Tsiligianni reports personal fees from Honoraria for educational activities, speaking engagements, advisory boards from Boehringer Ingelheim, Astra Zeneca, GSK, Novartis and grants from GSK Hellas and Elpen, outside the submitted work. Other authors declare no competing interests. The views expressed in this paper are those of the authors alone and do not represent the policies or views of the affiliated institutions.

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