## Title: Where is Primary Care data during COVID-19 pandemic in Europe?

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## **Manuscript:**

COVID-19 has affected more than 62 million European citizens; with most cases presenting mild or moderate symptoms (1). Overall, 7.5% of COVID-19 cases diagnosed (August 2020 to May 2021) reported to the European Surveillance System (TESSy) were hospitalised (2) and it has caused more than 1 million deaths by the end of August 2021 (1). Information from the pandemic has been collected by the European Centre for Disease Prevention and Control (ECDC) along with the European Observatory on Health Systems and Policies (EOHSP). The ECDC provides information related to reported cases, COVID-19 testing, hospital and/or ICU occupancy, the risk groups more affected and vaccination against SARS-CoV-2. In addition, the ECDC has the infectious disease surveillance whose aim is to generate data to give a rapid response to an outbreak (3). The system has been widely developed to monitor the influenza season in the EU based on a network of virologists, epidemiologists and sentinel General Practitioners (GPs) (4). This model was used during the pandemic with sentinel GPs from Germany, Denmark, France, Ireland, Italy, The Netherlands, Portugal and Sweden who collected nasopharyngeal swabs to monitor trends during the SARS-CoV-2 pandemic.

The EOHSP has developed a COVID-19 Health System Response Monitor to follow the European response to the pandemic with the partnership of the European Commission among other institutions. The Observatory offers a general view of each country's response within Europe including 51 countries and not only the 27 EU countries. An example of the data shared comes from Germany where 85% of COVID-19 cases were treated in ambulatory care in April 2020; this number rose to 95% of cases treated mainly by GPs in October 2020 (5). In Italy, 156.5 per 100,000 inhabitants were isolated at home with only 8.1% needing hospitalization in October 2020(6).

A significant part of the COVID-19 workload burden has therefore fallen on Primary Care (7), but its work has not been widely acknowledged by health care institutions nor by mass media, as it was considered of secondary importance. In the ECDC website, there is also a lack of data from Primary Care. On the ECDC COVID-19 dashboard there is not any data on the type of work conducted in Primary Care settings and where the COVID-19 diagnosis were made. The new European Commission proposal for the ECDC regulation highlights as key areas "rapid digitalisation of integrated surveillance systems including using data, such as disease prevalence, complications, hospitalisation and mortality " and "reinforced capacity and building key competences to monitor and assess health systems capacity for diagnosis, prevention and treatment" among other tasks (8), however, Primary Care data is not specifically mentioned when other data sources were.

The lack of Primary Care data in pandemics is not a new phenomenon as there are no data registered from Primary Care for the past SARS, MERS, H1N1 influenza, Zika and Ebola pandemics (9). In order to raise awareness of the role of Primary Care in the COVID-19 pandemic, we present here with the activity data publicly collected by Regional Government of the Madrid region (an area of 6,2 million habitants in the centre of Spain). Since the beginning of the pandemic till the 27<sup>th</sup> of August 2021: 886,732 cases were diagnosed. These patients required 947,506 follow-up appointments in Primary Care, 123,726 patients were hospitalized, 12,964 were admitted in ICU and 24,902 patients died in the region (10).

The World Health Organization (WHO) Regional Office for Europe recognized Primary Care played a crucial role during the pandemic as well as managing COVID-19 cases along with maintaining other essential health services. The advantage of supporting a proper primary health system is based on its accessibility and coverage, offering services for preventing and controlling acute and chronic diseases through continuity of care (11). Even more now than ever, the role of Primary Care has been to triage or screen health concerns of the population, evaluate the reasons for the consultations and selecting the appropriate level of care, thus avoiding unnecessary hospital procedures and visits and focusing health care on community-based services to local needs (12).

The COVID-19 pandemic has changed how healthcare was provided in the European Union (EU). On one hand, face-to-face appointments diminished in the practices, especially during the first wave, but remote consultations grew significantly (13). The overall number of encounters in Primary Care remained stable in The Netherlands (14), diminished in Germany (15), Finland (16), Ireland (17) and Sweden (18), and increased by 15% in the United Kingdom (19) and by 2.3% in Spain (20) compared to those in 2019. On the other hand, pathways to treat COVID-19 were created. COVID-19 information has been offered through websites or telephone hotlines to the citizens; in some countries and cases, once patients were suspected of having COVID-19, they were referred to their Primary Care practices either virtually or face-to-face (figure 1)(21). Most countries performed RT-PCR testing in laboratories or in community settings; however, sometimes the appointment was scheduled through Primary Care. In other countries, such as Belgium, Spain, The Netherlands and Sweden, Primary Care performed them directly. Mild and moderate COVID-19 cases were followed up by remote assessment mainly by GPs and nurses (3). If patients required physical examination, they were explored in the specific respiratory areas of the GP practices or in COVID-19 ambulatory centres run by associations of GPs. Those patients with severe symptoms or red-flag signs were sent to secondary care where they were hospitalized. Systematic reviews worldwide have indicated that hospitalizations lasted a median of 5 days (interquartile range, IQR 3–9) (22) and a median of 9 days (95% CI 6.5-11.2) in patients who were admitted in intensive care units (23). However, there is high variability in the length of their stay. Once patients were discharged, they were usually referred to their Primary Care professionals and in general, severe cases still have some appointments at the hospital. We are aware that one in ten patients will have long term effects of coronavirus infection 12 weeks after the onset (Long COVID) (24). Consequently, these patients will need follow up in Primary Care settings, where a holistic approach will be provided by their GP; although, some may need assessment in secondary care (4). Moreover, nursing homes received GP support to treat COVID-19 patients without referring them to the hospitals, especially in France (25).

In August 2021, the number of occupied beds in hospital is lower than before but new cases are still consuming resources in Primary Care. Follow-up is carried out in Primary Care, which in addition to COVID-19 patients, continues to offer support in diagnosing and treating those conditions that have been neglected during this period (26). New roles have been incorporated into Primary Care practices; to detect side effects of COVID-19 vaccines, to treat those affected, to handle sick leave because of adverse reactions and to notify the effects to national medicines agencies. Hence, in this period of pandemic resolution and vaccination, it is even more important to collect information on the evaluation of the pandemic by gender, age groups and between vaccinated and unvaccinated populations that have milder symptoms and therefore require close follow-up in Primary Care. The need for a common Primary Care health information system to all European countries, not only the EU countries, is increasingly acute as we are facing a global pandemic.

As we evaluate the impact of the pandemic in the EU without Primary Care data, we have a strongly biased view of the situation. The ECDC should standardize the minimum data input from Primary Care practices' activity related to COVID-19 from each EU country and publish it on its website. One of the problems for not providing Primary Care data could be related to the actual information systems and the lack of interoperability of the electronic health records (EHRs) in the different regions. Moreover, there is not a unified COVID-19 Notifiable Diseases Surveillance System in Europe. The collection of information about which services (public health, Primary Care or accident & emergency department) requested the COVID-19 testing and why they did so, could offer a better picture about how health care was provided. Another issue of concern is the lack of integration between Primary Care and Public Health administrations (12,27). Addressing a pandemic involves that both administrations should have worked together to trace, treat patients, vaccinate and reach vulnerable populations. (28); moreover, to incorporate practicing GPs to the

decision-making bodies in the European Commission and their agencies as they would provide crucial information from the ground (9). Nevertheless, this was not the case in Europe (29), the collection of data from Primary Care to plan appropriately for the pandemic was not a priority. Envisioning the future of Primary Care, if the EU does not collect data on the activity of Primary Care or listen to the GPs voices, which managed the majority of COVID-19 cases, how can policies be designed and funding invested to improve Primary Care as the foundation of European healthcare systems? This has serious implications not only for policymakers but to guarantee a universal health coverage of the general population.

The European Commission has launched a €672.5 billion Recovery and Resilience Facility in 2021 (30). The plan is accompanied by a guidance to member States on how to spend the fund (31). The guidance describes the plan as "an important tool to strengthen Europe's health and care systems for the future"; however, it does not provide practical information about how to do so either in Primary Care or secondary care. Moreover, the text urges the member States to provide national statistics about health outcomes while the European institutions did not provide that information from Primary Care activity in the past. If the European Commission wants to strengthen health care systems, they must prioritize the investment in health care especially in those countries with the lowest percentage of the gross domestic product in health expenditure. The WHO calls on all countries to invest an additional 1% of the gross domestic product in Primary Care after the pandemic (11), however that recommendation has not been included by the European Commission.

In conclusion, it is urgent to strengthen Primary Care information systems in order to implement interoperable patient, epidemic surveillance systems and Primary Care Electronic Health Records and Electronic Prescription. It is also crucial for decision makers at EU level to listen to all actors including: primary and secondary care professionals, patients, national and international multidisciplinary teams. Finally, it is important to support research to build up a Primary Care European dashboard that includes information about structure, procedures and results and invests in improving Primary Care infrastructures in order to face future pandemics in a safer way. This is a rapidly evolving and challenging field where much should be learned from other countries worldwide and initiatives taken to provide the best care possible. To be able to do so, professionals, decision-makers and citizens deserve to have all the information and that must start by including Primary Care data in the ECDC website.

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Figure 1: Workload in the health system of COVID-19 patients according to their symptoms.

Symptoms	Date of exposure to SARS-CoV-2	Symptoms Of RT-RCP Contact 1	tracing		Patie	nts witl	h persistent	symptom	ns over 12 week	s	
Mild	Presymptomatic infectious period (2-14 days)	Primary Care			Primary Care						
	-				P1		_				
Moderate	Presymptomatic infectious period (2-14 days)		Hospital adm		Primary Care		-	Primary Care			
Severe	Presymptomatic infectious period (2-14 days)		Hospital admission	ICU a	admission			Primary Care		Primary Care	
	Day	0	7 10	12	15	17	21		28		
	COVID-19 Workload in the Health System										
Departments responsible for COVID-19 care:											

Laboratory Public Health Hospitalization or hospital consultation ICU

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