



## REVIEW

# Post-COVID-19 and the Portuguese national eye care system challenge



Vera Lúcia Alves Carneiro\*, Helena Andrade, Luísa Matias,  
Raul Alberto Ribeiro Correia de Sousa

*Professional Association of Licensed Optometrists, Portugal*

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### KEYWORDS

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**Abstract** The pandemic of the severe acute respiratory syndrome disease caused by the new coronavirus SARS-CoV-2 (COVID-19), had profound impact in many countries and their health care systems. Regarding Portugal, a suppression strategy with social distancing was adopted, attempting to break the transmission chains, bending the epidemic curve and reducing mortality. These measures seek to prevent an eventual National Health Service over-running, enforcing the suspension of all elective and non-urgent health care. Despite the success in so far, there is a consensus on the need to recover the previous level of health care provision and further enhance it. The Portuguese National Health Service, as a public, universal access, health care system funded by the State proved, in this context, its importance and relevance to the Portuguese population. However, long standing issues, such as the pre pandemic over long waiting lists for hospital ophthalmology attendance, whose determinants are fully identified but still unmet, emerge amplified from this pandemic. The lack of primary eye care in the National Health Service is a significant bottleneck, placing a huge stress on hospital-based care. An exclusive ophthalmologist's center care was over-run before pandemic and will be even more so. The optometrist's exclusion from differentiated, multisectoral and multidisciplinary eye care teams remains the main hurdle to overcome and insure universal eye care in Portugal. National Health Service highlights the consequences of an overcome model. Universal eye care more than ever demands an evidence-based, integrated approach with primary eye care, in the community, on time and of proximity.

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\* Corresponding author.

E-mail address: [vera0carneiro@gmail.com](mailto:vera0carneiro@gmail.com) (V.L.A. Carneiro).

**PALABRAS CLAVE**

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**Post-COVID-19 y el desafío del sistema nacional portugués de atención oftalmológica**

**Resumen** La pandemia del síndrome respiratorio agudo grave causado por el nuevo coronavirus SARS-CoV-2 (COVID-19) ha tenido amplias repercusiones en muchos países y en sus sistemas sanitarios. En Portugal, se ha adoptado una estrategia de contención basada en el distanciamiento social, con la cual se ha intentado cortar las cadenas de transmisión, frenar la curva de la epidemia y reducir la mortalidad. Con estas medidas se trataba de evitar un eventual desbordamiento del Servicio Nacional de Salud y se imponía la suspensión de toda la atención médica programada, que no fuera urgente. A pesar del éxito logrado hasta este momento, existe consenso sobre la necesidad de recuperar el nivel anterior de atención médica y fomentar su mejora. El Servicio Nacional de Salud de Portugal, como sistema sanitario público y de acceso universal, a cargo del Estado, ha demostrado, en este contexto, su importancia y pertinencia para la población portuguesa. Sin embargo, los problemas que acarrea desde hace mucho tiempo, como las largas listas de espera, anteriores a la pandemia, en la asistencia oftalmológica hospitalaria, cuyos factores determinantes están completamente identificados, pero que continúan sin solución, se han visto agravados a resultas de esta pandemia. La falta de atención primaria oftalmológica en el Servicio Nacional de Salud es un importante cuello de botella, que ejerce una enorme presión en la atención hospitalaria. La atención de un centro exclusivamente oftalmológico estaba desbordada antes de la pandemia y lo estará aún más después de esta. La exclusión de los optómetras de los equipos de atención oftalmológica diferenciados, multisectoriales y multidisciplinarios continúa siendo el principal obstáculo que debe superar y asegurar la atención oftalmológica universal en Portugal. El Servicio Nacional de Salud hace hincapié en las consecuencias de un modelo superado. La atención oftalmológica universal exige, más que nunca, un enfoque integral basado en la evidencia para abordar la atención primaria oftalmológica en la comunidad, puntual y de proximidad.

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**COVID-19**

Early this year it became obvious that the severe acute respiratory syndrome disease caused by the new coronavirus, SARS-CoV-2, (COVID-19) would translate into a pandemic,<sup>1</sup> already having almost 3 million infected people identified and more than 200 thousand deaths.<sup>2</sup> In addition to the symptomatology associated with the respiratory and digestive systems, ocular symptomatology such as hyperemia and conjunctival congestion are also identified.<sup>3</sup> However, more evidence is needed to determine the ocular effects presented in COVID-19 or its ability to first suspect COVID-19.

Since the expression of the receptor for SARS-CoV-2, an angiotensin-converting enzyme 2 (ACE2),<sup>4,5</sup> seems to be concentrated in type II alveolar cells,<sup>6</sup> a rapid and unique transmission by infected individuals through droplets in contact with deep lung tissue was speculated. However, and as the airways where type II alveolar cells are located are not reachable by respiratory droplets with a diameter greater than 5 micrometers,<sup>7</sup> seems likely that at least the most severe cases of COVID-19 with viral pneumonia result from airborne events.<sup>8</sup> The continuity between the ocular tissues and the upper respiratory tract, as well as the existence of ACE2 receptors on the ocular surface, makes eye protection indispensable in the provision of proximity health care, less than two meters away, through protective goggles or face shield, in addition to the normal personal protective equipment that includes gloves, medical mask and gown.<sup>9,10</sup>

**Strategy of the Portuguese authorities**

As measures to prevent the spread and contagion by the SARS-CoV-2 in Portugal, it was decreed schools' closure on March 16 and the Emergency State declaration, with border control and closure, on March 19.<sup>11</sup> Portugal has thus tried to adopt a suppression strategy, that is, an attempt to break the transmission chains, slowing the epidemic propagation and reducing the incidence to the smallest possible. A zero-growth rate in the COVID-19 incidence is compatible with the effectiveness of measures of distancing and social isolation, as well as of the measures of hygiene and respiratory etiquette. Still, the growth in the prevalence continues, and although the data supports the claim that the incidence peak has already been reached, it is yet to be reached the prevalence peak in Portugal. Despite variations in duration, size and phase, the European context is of community spread and virtually all European countries are currently in the community transmission mitigation phase.

The identified limitations of the human, material and organizational resources of the Portuguese National Health Service (Serviço Nacional de Saúde)<sup>12</sup> and the alarming expectation of an eventual National Health Service overrunning by a significant number of infected people, implied the suspension of all elective and non-urgent health activity, namely in the primary care level, scheduled hospital interventions and community care,<sup>11</sup> which adds to the decrease of the urgent and emergent activity care due to the fear of

contagion felt by the patients.<sup>13</sup> The current strategic objective of the Portuguese Health General-Director is to mitigate the risk to public health, patients, and professionals, and at the same time to avoid the National Health Service collapse. Still, despite how worrying public health situation is, there is a consensus on the need to recover the previous level of health care provision, otherwise the effects of other untreated illness can be even more harmful. Nevertheless, a possible second peak is a circumstance to be considered, as a result of the relaxation of the measures to restrict circulation, internal and external, and less social distancing. It is also important not to lose sight of the fact that the different National Health Services in all countries have been under enormous pressure, not because of the relatively low lethality rate, but above all because of the very high incidence of COVID-19 on the population. Italy's experience, for example, supports the idea that in the case of full use of intensive care resources, the lethality rate increases significantly. Therefore, prudent and informed planning is essential to contain contagion, safeguard health services and consequently limit the lethality rate.

### Recovery of care delivery

Until group immunity is achieved in Portugal, either through vaccination or through possible acquired immunity, the recovery of health care provision must be framed in the current epidemic situation with community spread contagion, as well as contagion by foreigner source. This implies adjusting organizational and clinical management procedures, individual therapeutic and diagnostic equipment, physical spaces, and management of the circulation of patients and professionals in the spaces of access to the health care facilities. In the eye care provision, protection measures, procedures, and personal protective equipment, acquire special importance in this new context. Similarly, this pandemic situation is further evidence of the direction that health services should follow, focusing on a community and proximity-based care. An approach where primary, timely and preventive care is provided, enhances the first contact between the health provider and the community, in an integrated care provision through all the different health care levels.<sup>14</sup> Thus, it would be possible to filter what can be attended and solved in primary eye care, and leaving the necessary curative and reactive approach to highly specialized, secondary and tertiary care, safeguarding physical and human resources. The differentiation and separation of the current health organizational model, in a real primary or community, secondary or hospital and tertiary care, duly established and communicative bottom to top, would also constitute a barrier in the propagation and contagion of conditions such as COVID-19, without the need to completely suspend the provision of health care. It would allow the sorting patients within the community and in a proximity way, without the typical agglomerations of hospital services and observing the limitations of travel within the system and contact inherent. The significant financial burden borne by the State, inherent to the purely specialized secondary and tertiary services, would also be reduced. By all these arguments, it is important to note that this is a moment of change and to create the formal rationality that the National

Health Service has just suffered a temporal division: the pre-pandemic era and the post-pandemic era.

Looking on the positive side, the National Health Service as a public, universal access, health care system funded by the State proved, to those who still had doubts, its potential and responsiveness when mobilized and provided with the appropriate resources and organization. The essence of the National Health Service, its mission and its values serve a greater purpose and demonstrate in this context its importance and its relevance to the society, assuming itself as possibly the most important organization at national level. And that is precisely why it is important to highlight the need to provide access to a broad scope of health care services within the National Health Service, to ensure its functionality, its safety, its effectiveness, and its efficiency. Also, National Health Service should be reformed, reorganized, complemented, and adapted to population needs, which are dynamic and changeable over time. All of this, considering differentiated approaches according to population demographic evolution, epidemiological data, and scientific evidence, focusing care on patients and population needs.

### Provision of eye care and paradigm change

A much greater challenge is the recovery of the normal activity of the eye care provision in the National Health Service. The problems that led to the chronic and over long waiting lists for hospital ophthalmology attendance and constrains in the provision of eye care before the pandemic, are fully identified in the Proposal for an Eye Health National Strategy. Between 2016 and 2017, the referrals from General Practitioner to Hospital Ophthalmology, within National Health Service, went from 313.941 to 327.431. Of which were left unattended 181.824 to 223.228, respectively. The median average waiting time increase from 171 days to 180 days, and in some hospitals it were of 783 days (Centro Hospitalar do Oeste), 510 day (Centro Hospitalar Barreiro Montijo) or 460 days (Hospital Distrital de Chaves), in 2017.<sup>15</sup> The lack of primary eye care in the National Health Service and inadequate planning of the eye care workforce are the central constrains, highlighted during and pos pandemic crisis.<sup>15,16</sup> Also, it is pointed that about sixty percent of the Portuguese eye conditions could be manage at primary care level, since they are technical simple and would free hospital resources from less differentiate tasks. The Portuguese ophthalmologist-only eye care model is known to be ineffective and expensive use of eye care resources, that could be allocated and better used in surgery and pathology management. A comparison with the UK ophthalmologist-optometrist model clearly evidences Portuguese shortcomings.<sup>17</sup> As a result of not implementing the recommendations of the World Health Organization, good practices and scientific evidence, a difficult pre-pandemic situation suddenly escalates to a defiant pandemic and post-pandemic situation. It is enough to consider the elderly on their visits to the hospital to obtain a simple prescription for glasses, knowing that they are in the age group with higher prevalence of refractive errors and also have higher risk of exposure to contagion, and risk of death outcome.

The approach to eye care provision must follow the same orientation of the other health care, differentiated

by levels, primary and secondary, integrated in the community, protecting, and promoting the eye health. Eye care at primary level should be evidence based, preventive and proactive, contrary to the curative and reactive action of secondary and tertiary care.<sup>18–20</sup> The same recommendations are made by the World Health Organization and for which there is a global action plan.<sup>16,21</sup>

The creation of primary care platforms for the eye care, properly integrated in the current primary care network, taking advantage of the existing logistics and material resources and using the highly qualified human resources trained nationally by Portuguese universities – optometrists – is one of the proposed solutions for solving a chronic National Health Service problem<sup>15</sup> and that the pandemic scenario has accentuated. Lourenço and Pita-Barros study concludes that it will suffice to address in primary eye care only twenty-five percent of all 2018 references to secondary hospital specialty of ophthalmology to immediately eliminated waiting lists.<sup>15</sup> This would provide resolution of primary care conditions, as are refractive errors, accommodative, vergence and oculomotor dysfunctions, as well as the screening and follow-up of pathologies such as retinopathies, would allow a screening of primary care users and immediately solving the problem of most patients. Providing primary eye care from the perspective of proximity and community would minimize the patient travel and waiting time to access the National Health Service, making it safer, more effective, and more efficient. A recently published study shows that the delay in the use of primary eye care provided by optometrists is associated with a greater probability of resorting to General Practitioners, as an indicator of missed opportunities to detect potentially serious eye conditions. It is emphasized that this study reflects on the pre-pandemic period, so the consequences during and post-pandemic are expected to be substantially greater.<sup>22</sup>

## Opportunities

The impossibility of maintaining current practices regarding eye care provision challenges in the Portuguese National Health Service, imposes a paradigmatic shift that breaks with previous overcome practices and with the permanent insufficiency in the provision of this care. More than implementing a better cost-benefit practices, which is consensually assumed and accepted, a change is required that protects public health, patients and professionals, that provides care where is needed, when is needed, with reduced contagion exposure and effective, simple and direct response to the patient needs. Scientific evidence, recommendations of relevant organizations and entities and good practices,<sup>19,23–25</sup> as well as the analysis of socio-economic impact,<sup>15</sup> are clear and point to the same solution: a National Health Service should be based on a solid primary, differentiated, multisectoral and multidisciplinary care, and with regard to primary eye care, should be provided, by definition, by the optometrist. More important than the reform of the National Health Service, which has proved to be a matter of significant challenge, this period requires a reform of thought and the disconnecting of obsolete and ineffective practices. With regard to the eye care, and anticipating the difficult post-pandemic scenario, only a solution

that takes advantage of the human and material resources already existing in the country and that does not submit to the economic and corporate interests is acceptable.

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## Conflict of interest

None declared.

## References

1. World Health Organization [WHO]. *WHO Timeline – COVID-19*; 2020, <https://www.who.int/news-room/detail/08-04-2020-who-timeline-covid-19>. Accessed 20.04.20.
2. Johns Hopkins University. *Coronavirus COVID-19 (2019-nCoV)*; 2020, <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>. Accessed 20.04.20.
3. Guan W, Ni Z, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020.
4. Zhou P, Yang X-L, Wang X-G, et al. Discovery of a novel coronavirus associated with the recent pneumonia outbreak in humans and its potential bat origin. *Nature*. 2020, 2020.01.22.914952.
5. Letko M, Munster V. Functional assessment of cell entry and receptor usage for lineage B  $\beta$ -coronaviruses, including 2019-nCoV. *BioRxiv*. 2020;21:1–9.
6. Zhao Y, Zhao Z, Wang Y, Zhou Y, Ma Y, Zuo W. Single-cell RNA expression profiling of ACE2, the putative receptor of Wuhan 2019-nCoV. *bioRxiv*. 2020, 2020.01.26.919985.
7. Brankston G, Gitterman L, Hirji Z, Lemieux C, Gardam M. Transmission of influenza A in human beings. *Lancet Infect Dis*. 2007;7:257–265.
8. Moriyama M, Hugentobler WJ, Iwasaki A. Seasonality of respiratory viral infections. *Annu Rev Virol*. 2020;7.
9. DGS. *Orientação 03/2020: Prevenção e Controlo de Infecção por novo Coronavírus (2019-nCoV)*; 2020, <https://covid19.min-saude.pt/wp-content/uploads/2020/03/Orientação-003-1.pdf>. Accessed 20.04.20.
10. DGS. *Novo Coronavírus | COVID-19 Utilização de Equipamentos de Proteção Individual*; 2020, <https://covid19.min-saude.pt/wp-content/uploads/2020/03/Kit-de-Prestação-de-Cuidados-Não-Invasivo.pdf>. Accessed 20.04.20.
11. Presidência da República. *Decreto n.º 2-A/2020 - Diário Da República n.º 57/2020, 1º Suplemento, Série I de 2020-03-20*; 2020, <https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=3f8e87a6-3cf1-4d0c-b5ee-72225a73cd4f>. Accessed 27.04.20.
12. De Almeida J, Gonçalves S, Augusto F, Fronteira I, Hernández-Quevedo C. *Health Systems in Transition – Portugal*. vol. 19; 2017.
13. Serviço Nacional de Saúde. *Monitorização Diária – SNS*; 2020, <https://www.sns.gov.pt/monitorizacao-do-sns/servicos-de-urgencia/caracterizacao-urgencias/>. Accessed 25.04.20.
14. World Health Organization. *Declaração de alma-ata*; 1978.
15. Lourenço A, Pita Barros P. *Estudo Para a Universalização de Cuidados de Saúde Da Visão Em Portugal*; 2019, [https://cld.pt/dl/download/a88221f7-6dc8-4317-89c1-915754b02eef/20190203\\_relatorio\\_saude\\_da\\_visao.pdf](https://cld.pt/dl/download/a88221f7-6dc8-4317-89c1-915754b02eef/20190203_relatorio_saude_da_visao.pdf). Accessed 25.04.20.

16. Direção Geral de Saúde. *Estratégia Nacional para a Saúde da Visão*; 2018:1–126.
17. Ingram DV, Culham LE. Ophthalmologists and optometrists – interesting times? *Br J Ophthalmol*. 2001;85:769–770.
18. Biscaia AR. A reforma dos cuidados de saúde primários e a reforma do pensamento. *Rev Port Clin Geral*. 2006:67–79.
19. WHO. *Primary Health Care: Now More than Ever*; 2008.
20. Konyama K. Essential components of primary eye care. *Commun Eye Heal J*. 1998;11:19–21.
21. World Health Organization. *WHO | Universal Eye Health: A Global Action Plan 2014–2019*. World Health Organization; 2014.
22. Wright DM, O’Reilly D, Azuara-Blanco A, Curran R, McMullan M, Hogg RE. Delayed attendance at routine eye examinations is associated with increased probability of general practitioner referral: a record linkage study in Northern Ireland. *Ophthalmic Physiol Opt*. 2020, opo.12685.
23. World Health Organization [WHO]. *World Report on Vision*; 2019.
24. World Council of Optometry. *Strategic Plan 2017–2020 “Towards a Better World – Optometry’s Role”* – World Council of Optometry; 2017 <https://worldcouncilofoptometry.info/strategic-plan/>.
25. World Health Organization. *Strategies for the Prevention of Blindness in National Programmes: A Primary Health Care Approach*. 2nd ed; 1997. Geneva.