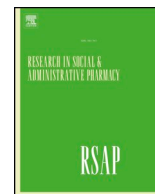




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Community Pharmacists: On the frontline of health service against COVID-19 in LMICs



Erick Wesley Hedima^{a,*,**}, Michael Samuel Adeyemi^b, Nasiru Yakubu Ikunaiye^c

^a Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmaceutical Sciences, Gombe State University, Nigeria

^b AIDS Healthcare Foundation, Nassarawa State, Nigeria

^c Department of Pharmaceutical Services, University of Maiduguri Teaching Hospital, Maiduguri, Nigeria

ARTICLE INFO

Keywords:

Community pharmacists
COVID-19
Public health
Healthcare professionals
Health systems

ABSTRACT

The COVID-19 outbreak is a global public health crisis which has affected healthcare practice across professions. In the context of this pandemic, there is a need to highlight the roles and responsibilities of pharmacists. Community pharmacists are the most accessible healthcare professionals to the general public and have a lot to offer amid the COVID-19 response. This has led to significant changes in the health systems of many countries. This article seeks to highlight additional roles and activities relating to the public health response that can be undertaken by community pharmacists that could help to reduce pressure on general practice and other areas of the health service.

Introduction

The latest threat to global health is the ongoing outbreak of the respiratory disease that was recently given the name Coronavirus Disease 2019 (Covid-19). Covid-19 was recognised in December 2019.¹ The impact on every level of society has been profound and, over the coming weeks and months, the challenges faced by healthcare services will be compounded by the increased risk of infection among healthcare workers and ensuing staff absences due to illness or the need to self-isolate.² In the face of public health emergencies, domestic and foreign clinical pharmacists collaborated together to take advantage of their pharmacology and therapeutics expertise to actively participate in the medical activities of COVID-19, and to maximize pharmacists' value and responsibility.³⁰ In many communities, pharmacists are the most accessible healthcare providers and the first touch point of patient engagement with the healthcare system.³ In rural and underserved communities and in areas experiencing physician shortages, pharmacists may be the only healthcare provider that is immediately accessible to patients. Pharmacists practicing in hospitals, clinics, physician offices, and community settings are trained to treat infectious diseases and can significantly expand access to care, if barriers are removed. During the current pandemic, it is recognised that community pharmacies will often be the first point of contact with the health system for individuals with COVID-19 related health concerns or who require reliable information and advice.⁴

During the previous Ebola outbreak in 2014, community

pharmacies in Nigeria were suitably placed to provide public health education and assist with infection prevention and control and making appropriate referrals in cases of suspected symptoms.⁵ A recent consensus exercise identified a wide range of roles that pharmacists can undertake in response to various types of disasters, such as pandemics, across four key phases (prevention, preparedness, response and recovery).⁶ More recently, the International Pharmaceutical Federation (FIP) published interim guidelines for the pharmacy workforce that outline key activities that form part of pharmacists' professional responsibility during the current pandemic.⁴

The extent of community pharmacy practice varies considerably across countries,^{7,8} and in some instances pharmacists' expertise is undoubtedly underutilized, as it is in most African countries. Therefore, in the midst of a public health crisis of the current magnitude, it is crucial to examine roles and activities that community pharmacists can undertake to help in relieving pressure and providing cushion in other areas of the health service, such as general practice and emergency departments. This is particularly important as some health services are now being restricted (e.g. routine health checks and non-urgent elective surgeries) to free up both human and capital resources to deal with the COVID-19 pandemic, some of which community pharmacists could assist with.^{6,9} This article seeks to highlight additional roles and activities relating to the public health response that can be undertaken by community pharmacists that could help to reduce pressure on general practice and other areas of the health service.

* Corresponding author.

E-mail address: wehedima316@gmail.com (E.W. Hedima).

Creating a balance between supply and demand of medicines and consumables

There have been anecdotal reports of patients stockpiling medications.¹⁰ Unless prompt action is taken, this sudden increase in demand could have a considerable and detrimental effect on the medication supply chain. Medication shortages occur when the total supply of a medication is insufficient to meet current or projected demands at the patient-level. The reported frequency of medication shortages worldwide has been increasing in recent years and has been described as a healthcare crisis in itself.^{11,12} Problems with local ordering, local or national distribution, or manufacturing can all result in supply problems that can lead to regional or national shortages. The medication distribution system in Nigeria is in a state of chaos and consists of open drug markets, and the activities of patent and proprietary medicine vendors (PMV), community pharmacies, private and public hospitals, importer, distributors and wholesalers, and pharmaceutical manufacturers.¹³ There is growing concern because although reserves exist, China experienced a drop-off in drug production during the height of its COVID-19 outbreak, though that is leveling off.¹⁴ And India, another big supplier, has also said that it will keep some of the medications it makes on reserve.¹⁵ In one case, a drug wholesaler said that demand for over-the-counter and prescription drugs was 30–40% higher than the company's forecasts, which had already been adjusted to account for COVID-19. The problem has been confirmed by a number of pharmacists.¹⁶ Pharmacies can share the information of drug availabilities and its store locations online or through mobile APPs to guide patients when they need to buy medications. For patients not able to visit the pharmacy, mail order or home delivery service can be offered by working with social works, volunteers, care coordinators, or drug companies. Through close collaboration with such personnel and organizations, Chinese community pharmacies have made great achievement in ensuring adequate drug supply for community patients.¹⁷ Hand hygiene is an important part of the response to COVID-19. Washing hands often with soap and water for at least 20 s is essential, especially after going to the bathroom; before eating; and after coughing, sneezing, or blowing one's nose. Hand sanitizers are regulated as over-the-counter (non-prescription) drugs by the U.S. Food and Drug Administration. The Centers for Disease Control and Prevention (CDC) recommends consumers use an alcohol-based hand sanitizer that contains at least 60% alcohol (also referred to as ethanol or ethyl alcohol).¹⁸

Point of care testing

Pharmacists play an essential and unique role within the healthcare team to optimize patient care during this COVID-19 pandemic.¹⁹ They are trusted healthcare professionals with established relationships with their patients. The vast majority of Americans live close to a retail or independent community based pharmacy. That proximity reduces travel to testing locations, which is an important mitigation measure. Pharmacists also have strong relationships with medical providers and hospitals to appropriately refer patients when necessary.²⁰ HHS Secretary Alex Azar issued the following statement: "Giving pharmacists the authorization to order and administer COVID-19 tests to their patients means easier access to testing for Americans who need it. Pharmacists play a vital role in delivering convenient access to important public health services and information. The Trump Administration is pleased to give pharmacists the chance to play a bigger role in the COVID-19 response, alongside all of America's heroic healthcare workers."²¹ This rapid diagnostic capability allows healthcare providers to quickly initiate antiviral medication, if appropriate, and direct infected patients to more acute care settings. Ensuring that pharmacists have the ability to order these diagnostics will expand access to care in underserved areas, reduce unnecessary burden on emergency departments that may already be strained with patients requiring a higher level of care, reduce community exposure by eliminating unnecessary

office visits, and ensure that patients needing higher levels of care are referred to their physician or hospital for treatment.

Community pharmacies as point of immunization

Pharmacists have contributed to improving public health in a variety of ways, including immunizations, health promotion, health education, patient and medication counseling, medication reconciliation, disease self-management training, point-of-care testing, screenings, and emergency preparedness and response in disaster management.²²

The incidence of vaccine-preventable diseases has decreased dramatically in recent decades. The incidence of influenza (flu), pneumococcal disease and herpes zoster has been substantially reduced thanks to vaccination.^{23,24} Although there is currently no vaccine for COVID-19, significant research is underway to develop a vaccine.²⁵ When a vaccine does become available, it is likely that there will be high demand for access to the vaccine and a significant public health interest in achieving high levels of immunization in the community. Studies indicate that when pharmacists are empowered to provide immunizations, they substantially increase the number of vaccinated patients in the community.^{26,27}

Promoting safe use of medicines

In addition to protecting continuity of medication supply at the community pharmacy level, it is equally important that patients maintain adherence to their current treatment regimens in order to prevent any deterioration in their current health status that could ultimately place additional demand on currently overburdened health services.¹⁰ According to World Health Organisation (WHO), rational use of drugs necessitate that patients receive 'medicines appropriate to their clinical needs, in doses, that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community'.²⁸ The US Centers for Disease Control and Prevention (CDC) released a health advisory urging physicians to advise patients on the harms associated with misusing non-pharmaceutical chloroquine phosphate to prevent infection of coronavirus disease 2019 (COVID-19).

In Nigeria, health authorities are warning against self-medicating, after two patients overdosed on the anti-malaria, drug chloroquine. Tests are currently being carried out with anti-malarials in the U.S. and other countries, but the FDA and the WHO have not approved its use as a treatment for COVID-19. Back in the U.S., lupus patients have reported shortages of the drug hydroxychloroquine — which is used to treat both malaria and lupus.²⁵ It is pertinent for pharmacist to dispense the right information to patients amidst this public health crisis so as to ease the panic.

Conclusion

There is a need and opportunity for pharmacists to be utilized across key global health areas over and above what is currently being done. From workforce development to supply chain management and medication safety, pharmacists can apply their medication expertise to contribute to gaps in care that align with major global health efforts and programs. The shift pharmacists have made in high-income countries from product-centered to patient-centered services with public health implications took decades to achieve. The shift for pharmacists in low to middle-income countries will also take time. The activities and roles depicted in this article are a not all that there is community pharmacists have for the public. Finally, policy makers should make sure pharmacists in their communities are enabled to effectively support the COVID-19 response as well as other future public health crisis.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2020.04.013>.

References

- World Health Organization. Pneumonia of unknown cause — China: disease outbreak news. Geneva; January 5. Available at: <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/>; 2020.
- Willan J, King AJ, Jeffery K, Bienz N. Challenges for NHS hospitals during covid-19 epidemic. *BMJ*. 2020;368 m1117.
- NCPDP Pharmacy File. *ArcGIS Census Tract File*. NACDS Economics Department; 2013.
- International Pharmaceutical Federation (Health Advisory). Coronavirus 2019-nCoV Outbreak. Information and interim guidelines for pharmacists and the pharmacy workforce 2020 The Netherlands. . Available from: <https://www.fip.org/files/content/priority-areas/coronavirus/Coronavirus-guidance-update-ENGLISH.pdf> Accessed date: 20 March 2020.
- <https://www.pharmaceutical-journal.com/news-and-analysis/news-blog/how-pharmacists-in-nigeria-are-helping-to-manage-the-ebola-outbreak/20066590.article?firstPass=false>.
- Rimmer A. Covid-19: GPs can stop health checks for over 75s and routine medicine reviews. *BMJ*. 2020;368 m1157.
- Hughes CM, Hawwa AF, Scullin C, et al. Provision of pharmaceutical care by community pharmacists: a comparison across Europe. *Pharm World Sci*. 2010;32(4):472–487.
- Aly M, Garcia-Cardenas V, Williams K, Benrimoj SJ. A review of international pharmacy-based minor ailment services and proposed service design model. *Res Soc Adm Pharm*. 2018;14(11):989–998.
- Lacobucci G. Covid-19: all non-urgent elective surgery is suspended for at least three months in England. *BMJ*. 2020;368 m1106.
- Cadogan C, Hughes CM. On the frontline against COVID-19: community pharmacists' contribution during a public health crisis. *Res Social Admin Pharm*. 2020. <https://doi.org/10.1016/j.sapharm.2020.03.015>.
- Fox ER, Sweet BV, Jensen V. Drug shortages: a complex health care crisis. *Mayo Clin Proc*. 2014;89(3):361–373.
- Rider AE, Templet DJ, Daley MJ, Shuman C, Smith LV. Clinical dilemmas and a review of strategies to manage drug shortages. *J Pharm Pract*. 2013;26(3):183–191.
- Ogbonna Brian Onyebuchi. National drug distribution in Nigeria; implications for the goals of national drug policy. *Eur J Pharmaceut Med Res*. 2016;3(1) 1-04.
- Lupkin S. How coronavirus is affecting the U.S. pharmaceutical supply. March NPR. 2020;12npr.org/sections/health-shots/2020/03/12/814623335/how-coronavirus-is-affecting-the-u-s-pharmaceutical-supply.
- Goel V. As coronavirus disrupts factories, India curbs exports of key drugs. The New York Times. March 3 [nytimes.com/2020/03/03/business/coronavirus-india-drugs.html](https://www.nytimes.com/2020/03/03/business/coronavirus-india-drugs.html); 2020.
- <http://medicalrepublic.com.au/panic-buying-creates-rural-drug-shortages/25803>.
- Zheng Si-qian, Yang Li, Zhou Peng-xiang, Li Hui-bo, Liu Fang, Zhao Rong-sheng. Recommendations and guidance for providing pharmaceutical care services during COVID-19 pandemic: a China perspective. *Res Social Admin Pharm*. 2020. <https://doi.org/10.1016/j.sapharm.2020.03.012>.
- U.S. Food and Drug Administration. Hand sanitizers/COVID-19. <https://www.fda.gov/drugs/coronavirus-covid-19-drugs/hand-sanitizers-covid-19>.
- Li Huiibo, SiqianZheng, Liu Fang, Liu Wei, Zhao Rongsheng. Fighting against COVID-19: innovative strategies for clinical pharmacists. *Res Social Admin Pharm*. 2020. <https://doi.org/10.1016/j.sapharm.2020.04.003>.
- https://www.pharmacist.com/sites/default/files/files/APHA%20Meeting%20Update/PHARMACISTS_COVID19-Final-3-20-20.pdf.
- U.S. Department of Health and Human Services. Guidance for licensed pharmacists, COVID-19 testing, and immunity under the PREP act. <https://www.hhs.gov/sites/default/files/authorizing-licensed-pharmacists-to-order-and-administer-covid-19-tests.pdf>.
- Aruru M, Truong HA, Clark S. *Pharmacy Emergency Preparedness and Response (PEPR) Framework for Expanding Pharmacy Professionals' Roles and Contributions Toemergency Preparedness and Response during the COVID-19 Pandemic and beyond*. Research in Social & Administrative Pharmacy; 2020<https://doi.org/10.1016/j.sapharm.2020.04.002>.
- Demicheli V, Jefferson T, Ferroni E, Rivetti A, Di Pietrantonj C. Vaccines for preventing influenza in healthy adults. *Cochrane Database Syst Rev*. 2018;2 CD001269.
- Torres A, Peetermans WE, Viegi G, Blasi F. Risk factors for community-acquired pneumonia in adults in Europe: a literature review. *Thorax*. 2013;68:1057–1065.
- Severe illness associated with using non-pharmaceutical chloroquine phosphate to prevent and treat coronavirus disease 2019 (COVID-19). <https://emergency.gov/han/2020/han00431.asp>.
- Hamm N. Pharmacists increase vaccination rates. *Drug Topics* (Aug. 2017). Available at: www.drugtopics.com/latest/pharmacists-increase-vaccination-rates.
- Steyer T, et al. The role of pharmacists in the delivery of influenza vaccines. *Vaccines*. 22(Feb. 2004). Available at: <https://www.sciencedirect.com/science/article/pii/S0264410X0300673X>; 2004.
- WHO. *Rational Use of Medicines: Progress in Implementing the WHO Medicines Strategy*. World Health Organization; 2006 11 May.