



SPECIAL ARTICLE

Bilingual edition English/Spanish

How COVID-19 has impacted the role of pharmacists around the world

Cómo ha impactado la COVID-19 a nivel mundial en el papel del farmacéutico

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Received 1 February 2020;
Accepted 7 February 2020.
DOI: 10.7399/fh.11652

How to cite this paper

Jordan D, Guiu-Segura JM, Sousa-Pinto G, Wang LN. How COVID-19 has impacted the role of pharmacists around the world. Farm Hosp. 2021;45(2):89-95.

Abstract

All over the world pharmacists are standing up to the challenge of COVID-19 and showing their commitment to the communities they serve. As the COVID-19 pandemic has tested global health systems to their limits, pharmacy professionals have shown themselves to be an integral part of them. Community pharmacists have supported government initiatives to control the pandemic and have ensured patients continued to receive their medicines. Hospital pharmacists have been moving beyond their specialties to help provide critical care to patients while dealing with ICU drug shortages. Pharmaceutical scientists have been involved in finding effective vaccines and identifying effective treatments. In short, the pharmacy profession has been demonstrating expertise, strength, courage and dedication to care at the highest level.

The International Pharmaceutical Federation (FIP), which represents the pharmacy profession globally, has a mission to advance pharmacy worldwide by sharing best pharmacy practice and innovation with the world. In this article, it describes how pharmacy has stepped up during the COVID-19 crisis by giving examples from several countries. It highlights, for example, how virtual practice became more prominent as face-to-face meetings became impossible, how pharmacists' scope of practice has been extended, and how pharmacy educators have embraced digital technologies to teach and assess students remotely. In particular, the

Resumen

Los farmacéuticos de todo el mundo están enfrentándose al desafío planteado por la COVID-19 y demostrando su compromiso para con las comunidades a las que sirven. A medida que la pandemia pone al límite los sistemas sanitarios de todo el mundo, los farmacéuticos están demostrando hasta qué punto son parte integral de dichos sistemas. Los farmacéuticos de las oficinas de farmacia han respaldado las iniciativas gubernamentales contra la pandemia y garantizado que los pacientes puedan disponer de sus medicamentos. Los farmacéuticos hospitalarios han tenido que ir más allá de su ámbito de actuación habitual para proporcionar cuidados a los pacientes al tiempo que intentaban gestionar la escasez de medicamentos en las unidades de cuidados intensivos. Los investigadores en farmacia han trabajado con denuedo en el desarrollo de vacunas eficaces y en identificar tratamientos efectivos. En resumen, la profesión farmacéutica en su conjunto ha demostrado su pericia, fortaleza, coraje y alta dedicación al paciente.

La Federación Internacional de Farmacéuticos, que representa a la profesión a nivel mundial, tiene la misión de contribuir al avance de la farmacia en todo el mundo compartiendo buenas prácticas e iniciativas innovadoras con farmacéuticos de todo el planeta. Este artículo evidencia hasta qué punto los farmacéuticos han estado implicados durante la crisis de la COVID-19, proporcionando ejemplos procedentes de varios países. Pone de manifiesto, por ejemplo, cómo la telefarmacia ha adquirido mayor

KEYWORDS

Pharmacy; Pharmacists; COVID-19; Pandemic;
Scope of practice; Pharmaceutical services;
Health services accessibility; Global health.

PALABRAS CLAVE

Farmacia; Farmacéuticos; COVID-19; Pandemia;
Ámbito de actuación; Servicios farmacéuticos;
Accesibilidad a los servicios sanitarios; Salud global.



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article highlights pharmacists' involvement in the COVID-19 vaccination programmes in Australia, Canada, Germany, Ireland, Switzerland, the UK and the USA.

As a result of all this, FIP sees an exciting future for the profession. Health ministers and heads of state have been praising pharmacists for their service, and FIP wants governments to translate this recognition into support for expanded roles and scientific research. It continues to gather data and intelligence to support an expansion of pharmacy practice, education and pharmaceutical workforce that builds on the profession's scientific base. All these advances are supported by scientific studies about our specialty.

Finally, FIP expresses its worries about equity of access to medicines during the pandemic, as younger, healthier people in rich countries are vaccinated before people at greater risk in poor countries. It insists it will continue to advocate on this topic as a core component of its global vision.

In this article, we share with readers a snapshot of how our profession around the world has adapted to the challenges posed by the COVID-19 pandemic, and our thoughts on the how it is affecting the evolution of pharmacy practice.

Introduction

The International Pharmaceutical Federation (FIP) represents over 140 national organisations of pharmacists, pharmaceutical scientists and pharmaceutical educators, and over four million pharmacists worldwide. A key part of the mission of FIP is to advance pharmacy worldwide by sharing best practices and innovation and bringing together practitioners, researchers, educators and pharmacy leaders. In this article, we share with readers a snapshot of how our profession around the world has adapted to the challenges posed by the COVID-19 pandemic, and our thoughts on the how it is affecting the evolution of pharmacy practice.

The global health crisis that is COVID-19 has tested our health systems to their limits, even in the world's wealthiest and healthiest nations. This crisis has also made it clear that pharmacists, scientists and pharmacies are a crucial and integral part of health systems. Never have the demands on pharmacy been so great or so urgent. During this time of uncertainty and emergency, our profession has demonstrated its expertise, strength, courage and dedication to care to the highest level.

Pharmaceutical scientists have been involved in developing a vaccine, repurposing existing therapies and identifying effective treatments for COVID-19. Academics have worked to ensure the education of our students continued despite lockdowns so that we may have a workforce that is ready to meet the evolving needs of our people.

Hospital pharmacists continue to face huge intakes of patients into their hospitals, with many of them moving beyond their specialties to provide critical care and dealing with ICU drugs shortages. They have also played an important role in setting up field hospitals. Hospital pharmacists have contributed to advancing the knowledge about COVID-19 treatment, monitoring drug outcomes and collaborating in the constant updating of treatment guidelines.

Community pharmacists have performed triage, supported governments' pandemic initiatives, and ensured patients have continued access

protagonismo al resultar imposibles las consultas presenciales; cómo se han ampliado las responsabilidades del farmacéutico; y cómo los profesores de farmacia han sacado partido a las tecnologías digitales para impartir clases y evaluar al alumnado de forma remota. El artículo destaca en especial la participación del farmacéutico en los programas de vacunación contra la COVID-19 en Australia, Canadá, Alemania, Irlanda, Suiza, el Reino Unido y los Estados Unidos.

Lo observado durante la pandemia hace que en la Federación Internacional de Farmacéuticos vislumbremos un futuro apasionante para nuestra profesión. Aunque es verdad que varios ministros de sanidad y jefes de estado han alabado a los farmacéuticos por el servicio que han prestado, desde la Federación Internacional de Farmacéuticos deseamos que ese reconocimiento se traduzca en un mayor número de competencias para los farmacéuticos y en un apoyo más decidido a la investigación en farmacia. Seguimos recogiendo datos e información en defensa de la ampliación de las competencias del farmacéutico, de la mejora de los programas académicos y de la potenciación de la formación continua de los farmacéuticos en ejercicio. Todos estos avances están avalados por los estudios científicos sobre nuestra especialidad.

Por último, desde la Federación Internacional de Farmacéuticos deseamos expresar nuestra preocupación en relación con la equidad en el acceso a los medicamentos durante la pandemia, puesto que estamos viendo que, en muchos casos, las personas más jóvenes y saludables de los países ricos reciben la vacuna antes que las personas con mayor riesgo de los países pobres. Seguiremos con nuestra labor de sensibilización en relación con esta cuestión, que es una de las grandes prioridades dentro de nuestra visión global.

En este artículo presentamos cómo los farmacéuticos de todo el mundo se han adaptado a los desafíos planteados por la COVID-19, compartiendo nuestras reflexiones sobre cómo la pandemia está condicionando la evolución de la práctica farmacéutica.

to their medicines, in spite of the risk of infection. Colleagues from all sectors compounded disinfectants where there were shortages, and pharmacy students have been volunteering to reduce workforce shortages.

These are but a few examples of our profession's valuable contributions and there is an emerging body of literature shedding light on the experiences and actions of frontline pharmacists in the fight against COVID-19. Ung, for example, has described pharmacists' role as a public health educator in Macau with regards to local information regarding the pandemic evolution and hand hygiene and infection prevention measures¹. Furthermore, pharmacists partnered with the government to ensure an optimal supply of face masks and were encouraged to detect symptoms and refer patients when necessary. Okereke *et al.* have described similar roles played by community pharmacists in African countries, such as educating populations on safety and infection prevention recommendations as well as answering inquiries regarding investigational treatments². Wang, however, has highlighted the specific local challenges that pharmacists in Africa face, particularly in the sub-Saharan region where it is estimated that only 15% of the population have access to basic handwashing facilities and it has been reported that 41 countries have only 2,000 ventilators between them, and 10 have no ventilators at all³. Against this backdrop, pharmacists are helping to prevent spread of the virus by offering a place where people can wash their hands and, in the absence of running water, promoting the use of alcohol-based hand sanitisers. These pharmacists must often also counter public mistrust of the authorities, with some people thinking that the pandemic is a government ploy to receive international donor monies and being more concerned with problems of poverty than COVID-19³. These findings corroborate pharmacists' responsibilities in counselling and promoting disease prevention and infection control as first-line health professionals.

Pharmacists have also been called on to ensure adequate supplies of health products and medicines, and to manage shortages. Furthermore,

Cadogan and Hughes describe frameworks in the United Kingdom and Canada in which pharmacists ensure the continuity of health services through new professional activities and expanded scopes of practice⁴. For example, at a time when routine or elective check-ups with physicians have become unavailable or reduced, formulary and drug scheduling models have been adapted to enable community pharmacists to assess and manage patients for minor ailments. Expanding prescribing roles for pharmacists may also contribute to alleviating the burden on health systems.

Pharmacists across the globe continue to play leading roles in the fight against COVID-19. Song *et al.* describe the importance of pharmacists' clinical role in China and a framework for pharmaceutical care for patients hospitalised with COVID-19 in which recommendations are made regarding multiple themes, such as evidence-based treatment options, management of drug interactions, and therapy monitoring⁵. International collaboration between pharmacists in the United Kingdom and Pakistan have also led to the development of more cohesive, translated guidelines for pharmacy personnel⁶.

It is also clear that COVID-19 has necessitated a rethink of how we all operate so that progress in health care in general is not hampered. Pharmacists at the University Hospital in Ancona, Italy, for example, have been key in developing a "direct-to-patient procedure" to enable the shipping of investigational medicinal products to the homes of trial participants so that clinical trials can continue⁷. We have also seen more home delivery pharmacy services and pharmacists being authorised to perform repeat dispensing of prescription medicines to patients with chronic conditions. We note, in particular, adaptations in Spain and Portugal to allow continued care, particularly through greater collaboration between sectors. One example is the collaboration between community and hospital pharmacy and pharmaceutical distributors to make it more convenient for vulnerable patients to receive their medicines and reduce the burden on hospital services.

Acceleration of "virtual" practice

Perhaps one of the biggest shifts we have witnessed during this pandemic, is the adoption of technology in response to restrictions imposed by lockdowns and the consequent reduction in our contact with others. Many pharmacies, pharmacy organisations and pharmacy stakeholders have adapted to provide telepharmacy services. For instance, in April 2020, the Australian Federal Government announced that pharmacists could deliver funded medication review services via telehealth in order to ensure that vulnerable patients could still receive this important service. For example, Shane Jackson, a member of FIP's Community Pharmacy Section executive committee, has been providing the service from his pharmacies in Tasmania, Australia. He reports that patients are becoming more accustomed to using telehealth for their medical appointments and other allied health services and estimates that 10-25% of his services are now being delivered by telehealth⁸.

Pharmacists themselves have developed systems of working that harness technology. For instance, in a presentation during the FIP Virtual 2020 programme clinical pharmacist Lesley Douglas shared how Dr Gray's Hospital, Elgin, UK, assured services for cancer patients during lockdown by creating an IT model that allowed chemotherapy ordering and verification by a pharmacist working remotely⁹. An outpatient unit at Dr Gray's allows patients to receive systemic chemotherapy close to home instead of having to travel 65 miles to Aberdeen Royal Infirmary (ARI). Therapy is prescribed by specialists at the ARI and a pharmacist at Gray's orders the parenteral to be supplied by the ARI before blood test results are available. This is because same day delivery is not possible due to the distance between the hospitals. Implementation involved enabling a National Health Service (NHS) device in the pharmacist's home to be connected to the NHS network by installing direct access connections on Microsoft servers, and ensuring a secure WiFi connection to the patient management system, NHS email, intranet and clinical guidelines, and the hospital's chemotherapy prescribing and administration system.

As well as helping patients through the COVID crisis, digital technology is helping pharmacy students, too. Pharmacy educators around the world have moved online so that they can continue to deliver curricula. For example, in April, after it had been forced to close its doors, Obafemi Awolowo University, in Nigeria, began to deliver microbiology lectures to its third- and fourth-year pharmacy students via Zoom¹⁰. They have demonstrated that online learning is a valuable alternative even in resource-limited settings and despite challenges of network disruptions and access to electricity. Educators have also been conducting assessments remotely. Keele University in the UK, for instance, redesigned its competency based assessments so that they could be carried out using Google Meet software¹¹.

Scientists are also harnessing technology. Participants at FIP's virtual Pharmaceutical Sciences World Congress in October 2020 heard about virtual platforms developed to enhance research, including the COVID-19 Pharmacology Resource Centre which has an *in silico* workbench that allows researchers and clinicians to simulate the pharmacokinetic profile of therapeutics that are being tested in clinical trials. Another example is N3C, a centralised secure enclave launched by the US National Centre for Advancing Translational Sciences in September, which allows access to medical records data of people diagnosed with COVID-19 in order to improve collaborative analytics.

The increased use of IT to allow continued care, research and education is something our entire profession must be prepared for. However, a recent survey by FIP indicates that a large proportion of pharmacy schools and faculties do not yet offer digital health education or training¹². Furthermore, the survey indicated that many practitioners are lacking familiarity with emerging digital health technologies such as blockchain, bots, digital medicines and artificial intelligence, and only a small fraction of these respondents had received continuous educational development on digital health. With increased complexity of health conditions and ageing populations, digital health can be the key to addressing many unmet needs in health services. A capable and digitally enabled pharmaceutical workforce is required to make use of the full potential of digital health and ways forward have been proposed by FIP¹². In addition, FIP will be developing a global competency framework for digital health in pharmacy education and this will facilitate national, regional and global implementation of FIP Development Goal 20 (digital health).

On the other hand, the greater application of virtual practices has also emphasised the importance of face-to-face contact. One example comes from Kantonsspital Baden, Switzerland¹³. At the start of the pandemic, the hospital's pharmacists stopped going on ward rounds in order to protect patients and, where possible, worked from home. However, after a month of performing their clinical duties online, the pharmacists decided to return to the wards because writing clinical recommendations is difficult if you do not know the patient. In addition, the pharmacists also analysed the effect of decreased face-to-face interactions on the impact of their interventions and had found that acceptance rates had decreased significantly — to around 40% compared with 90% when pharmacists were present on the wards. Their conclusion was that digital solutions can have advantages and save time but will "never replace" personal contact; clinical pharmacy services are best delivered face to face.

Vaccination in pharmacies, by pharmacists

Certainly, face-to-face contact is required for the administration of vaccinations. We know that prevention is better than cure and a global survey over 99 countries and territories conducted by FIP last year found pharmacy-based vaccination being available in at least 36 countries and territories and had been proposed or was undergoing development in a further 16. We note that during this pandemic vaccination rates have fallen, with family visits to healthcare providers still below pre-pandemic levels and influenced by vaccine hesitancy or unemployment during COVID-19. However, since the development of COVID-19 vaccines, we are seeing more countries recognise the easy accessibility of

pharmacy as a further solution that should be utilised in their vaccination programmes. Some recent developments compiled by FIP are presented in the table 1 and it is our hope that progress in this area gained during this pandemic remains post-pandemic, with more pharmacists able to vaccinate and the range of vaccines they are able to administer increasing.

Testing in pharmacies

Another role that has expanded for pharmacists during this pandemic is in testing. We have seen pharmacies in Australia, France, Spain, Switzerland and the UK offering COVID-19 testing services^{24,27} and FIP has urged governments to support in-pharmacy COVID-19 testing to help bring pandemic under control²⁸. Diagnostic testing is one of the most important aspects in controlling a pandemic and it is both an ethical and a public health priority for access to testing be expanded, the federation has said²⁸. It is our hope that the waiving of rules necessary to expand pharmacy-based testing will continue after this pandemic and that authorities learn that they have been overly restrictive and those restrictions are contrary to the highest quality of care, and that pharmacy practice in this area will be advanced. There are a number of conditions that pharmacists could be testing for effectively, including influenza and streptococcus.

Future of pharmacies and pharmacists' roles worldwide

This pandemic has made visible all the benefits for communities of having competent pharmacists and a dense network of pharmacies. It has made clear that pharmacists and pharmacies are a crucial and integral part of health systems, greatly contributing to making them efficient and sustainable. The burden of diseases that existed before COVID-19 remain, and some are likely to worsen because of the socio-economic problems brought about by COVID-19. Sadly, more than 2 million people have now died from COVID-19, but for instance, 1.6 million people died of diabetes in 2016 and seasonal influenza is associated with up to 500,000 deaths each year. Antimicrobial resistance has not gone away: the existing problems in health systems have not evaporated and new pandemics are possible. Moreover, the World Bank has warned that the pandemic could drive many people back into poverty²⁹, people under lockdown are having less social interaction and exercise, with an increased risk of physical and mental health problems, and our health systems are already being confronted with these wider health impacts of this pandemic. Pharmacists will be needed more than ever to prevent ill health and ensure patient safety.

When considering the top 10 threats to global health identified by the WHO in 2019³⁰ it was evident then that pharmacists can play an active role in all of them. These threats have only been expanded upon and the

Table 1. Recent developments in COVID-19 vaccination programmes involving pharmacists

Country	Pharmacist participation
Australia	Pharmacies will begin to vaccinate mid-2021, when the vaccination will be extended to groups of the general population ¹⁴ . The requirements for training and certifying pharmacists as vaccinators have been modified to allow the theoretical part of this training to be done online; also, the requirement for pharmacists to have a prior first-aid certificate is temporarily waived ¹⁵ .
Canada	The pre-pandemic scope of pharmacy practice in Canada included the administration of drugs, including immunisations in clinical pharmacy settings (community pharmacy, ambulatory clinic or hospital). The Canadian Pharmacists Association and Neighbourhood Pharmacies have issued recommendations on COVID-19 vaccines and pharmacy readiness ¹⁶ .
Germany	Pharmacists and additional pharmaceutical staff are participating in COVID-19 vaccination strategies through the regional vaccination centres and mobile vaccination teams, who have vaccinated many thousands of people against the coronavirus since the end of December 2020. In particular, pharmacists can reconstitute the vaccine (i.e., dilute the concentrate) ¹⁷ .
Ireland	The Irish Government's National COVID-19 Vaccination Strategy and Implementation Plan explicitly include community pharmacies alongside GPs as vaccine access locations ¹⁸ .
Switzerland	PharmaSuisse has been working closely with the Federal Office of Public Health (FOPH) to ensure that pharmacy staff are included in the vaccination strategy, on an equal footing with other health services and professionals ¹⁹ . Tangible proof of this success is the presence of the PharmaSuisse president on one of the posters of the national information campaign in favour of COVID-19 vaccination.
UK	In England, some community pharmacies started administering vaccinations in January ²⁰ .
USA	Vaccination in pharmacies, limited to priority groups, has started ²¹ . Vaccinations in geriatric care centres are largely carried out by pharmacists ²² . President Joe Biden has stated that community pharmacies will be used to accelerate vaccination against COVID ²³ .

pharmacy profession can also play roles in the 13 urgent health challenges for the next decade defined by the WHO in 2020³¹.

The pharmacy profession takes an even greater role in public health, with new services around prevention (including testing and vaccination) emerging alongside services for patient safety and non-communicable diseases, all of which are crucial for delivering primary health care. FIP signed up to the Astana Declaration³² in October 2018, where ministers and professions pledged to build sustainable primary health care. Since then, FIP has led the agenda to encourage action from our profession. In 2019, FIP regional conferences for the Eastern Mediterranean and European regions elicited commitments to action on primary health care from pharmacy leaders and FIP will be working on gaining similar commitments in other regions in 2021.

In the future, the reconfiguration of health systems with the insertion of pharmacies as places of service delivery based on primary health care. Pharmacists are already becoming more integrated into health systems and FIP's member organisations are seizing the opportunity to advocate for this. For example, in the USA, lobbying for provider status has accelerated during COVID-19.

The future and the potential of the pharmacy profession are exciting, but depend on having enough pharmacists with the right skills. The FIP Development Goals for the entire pharmacy profession, launched in September 2020 provide a comprehensive key resource for transforming our whole profession³³. Pharmacists must keep up to date, not only with clinical knowledge but with technology to enable practice at a higher level, supported by tools such as national frameworks for advanced practice based on the FIP Global Advanced Development Framework³⁴. More pharmacists will be able to enhance their professional profiles through specialisms and we must give focus to working with others interprofessionally, so that we can become more integrated in healthcare teams in order to provide universal health coverage.

Specific to the future of community and hospital pharmacy, FIP's Community Pharmacy Section has published its vision of pharmacists being at the hearts of their communities and a vision for hospital pharmacy is set out in the FIP's Hospital Pharmacy Section's Basel Statements^{35,36}. These documents contribute to transformation in these two specific sectors of practice.

Gathering the evidence to grasp the opportunities

Through necessity, COVID-19 has removed a number of obstacles to expansion of pharmacy services. Things that the pharmacy profession has been advocating are happening more quickly and red tape to legislative changes being removed. But the doors that this pandemic has opened for our profession stay open. This crisis has given pharmacy the opportunity to demonstrate that its services are valuable to patients and to health systems and that they are feasible and ready to be implemented in many settings. Now is the time to gather the data and evaluate the outcomes of our achievements during this pandemic. FIP has long since collected data through a number of global surveys and is growing this capacity, noting the positive findings of surveys conducted by national professional organisations. For example, a survey commissioned by the General Pharmaceutical Council of Spain after the first month of lockdown found that³⁷:

- Spain's pharmacy network provided care to over 30 million people.
- 2.2 million citizens received telephone care from their pharmacist.
- 850,000 citizens received pharmaceutical care at home, especially those over 65.
- More than 90% of the population acknowledges the public service provided by pharmacies during the coronavirus crisis.

The data and intelligence that our profession generates will create powerful advocacy to enhance pharmacy practice, education and workforce, building on the underpinning science and evidence base of the profession. FIP has conducted a survey across all its constituencies to measure the impact of COVID-19 on the roles of community and hospital

pharmacists, including the implementation of services that did not exist before the pandemic. The findings will be published in due course.

Solidarity through FIP

We know that the effects of globalisation will continue which continue to demonstrate why FIP is much needed. In January 2020 — just six days after the World Health Organization declared the new coronavirus outbreak a Public Health Emergency of International Concern, FIP published international guidance to support pharmacy teams around the world³⁸. It is because of the position of the Federation as the global leader of pharmacy that action was so responsive and concerted. An international taskforce was convened, including experts from China with valuable early experience. In the following months as the situation developed, workplans were adapted to support our profession with advocacy and policy tools to facilitate response at country level. FIP also issued a call to action listing 23 urgent measures that governments must put in place in order to ensure the continuity of pharmaceutical care around the world³⁹. A repository of international resources on the FIP COVID-19 Information Hub is available at FIP web site www.fip.org/coronavirus.

This pandemic has heightened many global issues that FIP has been working on, including falsified medicines (with many medicines producers in lockdown, increases in counterfeits have been reported), misinformation, patient safety, vaccination and vaccines hesitancy, medicines shortages, inequities of access to medicines, and lack of investment in science. More information on these issues and the responsive work are to be found at FIP web site www.fip.org/. FIP recognises the importance of sharing experiences and knowledge and solving global problems in solidarity.

Lessons from this crisis

No disease in recent history has brought the value of the pharmacy profession centre stage as much as COVID-19. Indeed, a number of ministers and heads of state have praised and thanked pharmacists for their service and such recognition, in addition to the evidence of these actions, should urge governments to support expanded roles by pharmacies in a sustainable manner as well as scientific research.

This pandemic has also brought to the foreground the prevalence of health inequities and inequalities, first in terms of access to treatment and now in terms of access to immunity. We are witnessing younger, healthier people in richer countries being vaccinated before people at greater risk but who happen to live in poorer countries, which is worrying. Equity of access to medicines and healthcare is a core component of FIP's vision and work and we will continue to advocate on this topic and will support the efforts of the WHO and other organisations on this important issue.

Tedros Adhanom Ghebreyesus, director general of the WHO has said: "If there is anything positive to come from this pandemic, it must be a safer and more resilient world"⁴⁰. Perhaps the greatest lesson to be learnt from COVID-19 is that international cooperation is crucial to finding effective and sustainable solutions not only to the consequences of this pandemic, but also to the many other health problems we face.

All over the world, pharmacists are standing up to the challenge of COVID-19 and showing their commitment to the communities they serve. FIP is proud to represent them and as "One FIP", and "One pharmacy," the profession will emerge from this pandemic bigger and better to ensure the 21st century will be the century of pharmacists together.

Funding

No funding was received for this article.

Conflict of interest

No conflicts of interest.

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