


# Global oncology pharmacy response to COVID-19 pandemic: Medication access and safety

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Marliese Alexander<sup>1,2,3</sup> , Jennifer Jupp<sup>3,4</sup>, Grace Chazan<sup>2,5</sup>,  
Shaun O'Connor<sup>3,6,7</sup> and Alexandre Chan<sup>3,8</sup> 

## Abstract

Response, action, and adaptation of the way health services are delivered will impact our ability to provide optimized and continuity of care while acting within resource constraints imposed by COVID-19. Care for patients with cancer is particularly important given increased infection rates and worse outcomes from COVID-19 in this patient population, as well as potential adverse outcomes if treatment pathways need to be compromised. In this commentary, we provide a global oncology pharmacy perspective (including both developed and developing nations) on how COVID-19 has impacted access to and delivery of cancer therapies. This perspective was prepared by the International Society of Oncology Pharmacy Practitioners, with input from national and regional oncology pharmacy practice groups (42 practice leaders from 28 countries and regions) who contributed to a snapshot survey between 10 and 22 April 2020. Specifically, we highlight challenges related to safe handling of hazardous drugs and maintaining high-quality medication safety standards that have impacted various stakeholders.

## Keywords

COVID-19, ISOPP, pandemic, oncology pharmacy, pharmacist

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Response, action, and adaptation of the way health services are delivered will impact our ability to provide optimized and continuity of care while acting within resource constraints imposed by COVID-19. Care for patients with cancer is particularly important given increased infection rates and worse outcomes from COVID-19 in this patient population,<sup>1,2</sup> as well as potential adverse outcomes if treatment pathways need to be compromised. Here we provide a global perspective (including both developed and developing nations) on how COVID-19 has impacted access to and delivery of cancer therapies. Specifically, we highlight challenges related to safe handling of hazardous drugs and maintaining high-quality medication safety standards that have impacted various stakeholders.

This perspective was prepared by the International Society of Oncology Pharmacy Practitioners (ISOPP), with input from national and regional oncology pharmacy practice groups (42 practice leaders from 28

<sup>1</sup>Pharmacy Department, Peter MacCallum Cancer Centre, Melbourne, Australia

<sup>2</sup>Sir Peter MacCallum Department of Oncology, University of Melbourne, Parkville, Australia

<sup>3</sup>International Society of Oncology Pharmacy Practitioners, North Vancouver, Canada

<sup>4</sup>Pharmacy Services, Alberta Health Services, Calgary, Alberta, Canada

<sup>5</sup>Department of Medical Oncology, Peter MacCallum Cancer Centre, Melbourne, Australia

<sup>6</sup>Pharmacy Department, St. Vincent's Hospital, Melbourne, Australia

<sup>7</sup>Health & Wellbeing Division, Department of Health & Human Services, Melbourne, Australia

<sup>8</sup>Department of Clinical Pharmacy Practice, University of California, Irvine, CA, USA

## Corresponding author:

Alexandre Chan, Department of Clinical Pharmacy Practice, University of California, Irvine, 101 Theory, Suite 100, Irvine, CA 92697-3958, USA.  
Email: a.chan@uci.edu

countries/regions) who contributed to a snapshot survey between 10 and 22 April 2020. The survey was developed by ISOPP and aimed to collate data describing the impact of COVID-19 to oncology pharmacy services and the response by pharmacy departments to continue the delivery of care to oncology patients. The survey included both quantitative and qualitative data and was administered in the English language, the official language of ISOPP. Survey questions included (1) demographics; (2) oncology pharmacy practices; (3) pharmacist and pharmacy technician activities; and (4) patient care. Survey questions are included as Supplementary Data. Distribution was targeted to leaders of national oncology pharmacy groups and institutions who were asked to complete the survey on behalf of members, representing impact across their country of practice. This targeted approach aimed to minimize response time to facilitate rapid first assessment of the impact to practice with the goal to assist practitioners seeking real-time guidance and to inform future broader assessments. It was assumed that leaders would have knowledge of practices beyond their own place of practice and across their country, and leaders were able to distribute to multiple respondents within their group for representative input, but we acknowledge biases associated with individual respondents. Experiences are reported on a regional basis including Africa (Egypt, Ethiopia, Ghana, Kenya, Malawi, Tanzania, Uganda), Australasia (Australia, China, Hong Kong, Japan, Macau, Malaysia, Saudi Arabia, Singapore, South Korea, Thailand, Turkey), Europe (Belgium, England, Hungary, Italy, Spain), North America (Canada, Mexico, United States), and South America (Brazil, Chile). Key findings are summarized in Table 1.

Personal Protective Equipment (PPE) requirements have exponentially increased for healthcare workers treating COVID-19 patients, impacting availability for routine use in the compounding and administration of hazardous drugs for anticancer treatments. While impacting both practitioner safety and quality of the compounded pharmaceutical, current practice standards (ISOPP, USP 800)<sup>3,4</sup> do not specify recommendations for practice during PPE shortages. PPE was reported as difficult to access or restricted in supply in nearly half the countries surveyed (12/28). This predominately related to supply of N95 masks (10/28) though some reported issues for gloves (5/28), gowns (5/28), and scrubs (4/28). Moreover, while access was otherwise adequate, practitioners highlighted efforts to divert and conserve use of PPE including outsourcing of chemotherapy compounding, longer shifts within compounding units (fewer PPE changes), and reduced use in clinical areas to allow priority use for COVID-19. Guideline updates to include strategies for PPE

utilization and preservation without comprising practitioner safety or the supply and quality of compounded agents, as well as limits at which point activity should be reduced or ceased, and ethical frameworks to disperse limited PPE, would assist practitioners making real-time decisions around operational capabilities.

During COVID-19, impaired access to anticancer medications was reported in 12/28 countries: increased procurement time (5) and reduced access (7). Anti-infective (procurement (7), access (14)) and supportive care (procurement (6), access (9)) medications were also impacted. Africa and Europe were most affected by supply limitations whereas for other global regions access was more difficult (increase procurement time, sourcing new/alternative providers, supply chain interruptions, delays in delivery times), but adequate to meet practice needs. Several respondents, representing all global regions, stated that while medications access was currently adequate, shortages were expected as the pandemic has increased impact in their region, regions from where medications are imported, as well as global medication demand. Regulation for equality of access, particularly for developing nations, should be supported.

Reflecting resource constraints and a balance between COVID-19 risk and cancer treatment delivery, most countries reported changes to anticancer treatments. For curative intent cancer therapies, the most common changes were reduced clinical trial referrals (10/28 countries), increased use of supportive care medications (9/28), and delayed or changed timing/interval of treatments or transplants (9/28). In the palliative setting, the most common changes were increased use of oral cancer therapies (12/28), changes to less myelosuppressive chemotherapy regimens (8/28), and reduced clinical trial referrals (8/28). Differences between countries and regions likely reflects the variable impact of COVID-19 at the time of this report; however, practitioners also cited reasons for not implementing changes including lack of supportive evidence, awaiting government or institutional directives, and beliefs that patients should have access to standard care treatments despite the risks of COVID-19. Variability of practice should be monitored and assessed against patient outcomes to understand the impact of such decisions. It was noted that practitioners from 13 of 28 countries believe patient survival will worsen due to imposed changes. We now have the opportunity to assess outcomes and gather evidence which may inform practice decisions beyond the pandemic. For example, potential rationalization of second and subsequent palliative lines of therapy where response rates may be low, survival advantages in the realm of limited months should be weighed against the trade-off of impact to quality of life.

**Table 1.** Global changes to oncology pharmacy practice in response to COVID-19.

	Africa		Australasia		Europe		North America		South America		All Regions	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Countries represented	7	100	11	100	5	100	3	100	2	100	28	100
Oncology pharmacy service changed	5	71	8	73	5	100	3	100	2	100	23	82
Difficulty or inability to access required PPE	3	43	4	36	2	40	1	33	2	100	12	43
Increased use of digital technologies												
Patient Communication	2	29	5	45	2	40	3	100	1	50	13	46
Staff Communication	3	43	5	45	3	60	3	100	1	50	15	54
Difficult or reduced access to medications												
Anti-cancer	6	86	4	36	2	40	0	0	0	0	12	43
Anti-infective	5	71	4	36	3	60	2	67	0	0	14	50
Supportive care	6	86	4	36	3	60	1	33	1	50	15	54
Workforce changes												
Reduced hours <sup>a</sup>	1	14	0	0	1	20	1	33	1	50	4	14
Increased hours <sup>b</sup>	2	29	1	9	4	80	1	33	1	50	9	32
Changed hours <sup>c</sup>	4	57	4	36	1	20	2	67	2	100	13	46
Changed structure <sup>d</sup>	4	57	6	55	4	80	0	0	2	100	16	57
Scope of practice changes <sup>e</sup>												
Pharmacist	1	14	2	18	2	40	2	67	1	50	8	29
Technician	1	14	1	9	4	80	1	33	0	0	7	25
Mental Health impact on practitioners												
Extremely likely/likely	4	57	5	45	4	80	2	67	2	100	17	61
Possibly/unsure	1	14	4	36	1	20	1	33	0	0	7	25
Unlikely	2	29	2	18	0	0	0	0	0	0	4	14

PPE, Personal Protective Equipment.

<sup>a</sup>Reduced staff hours due to illness or quarantine.<sup>b</sup>Increased hours of existing employed staff or hiring new staff.<sup>c</sup>Changed hours refers to different start/stop times to facilitate split shifts or team separation.<sup>d</sup>Changed structure refers to remote or off-site work opportunities.<sup>e</sup>Scope of practice includes regulatory changes and/or individual practitioner scope of practice such as redeployment to areas beyond usual practice.

Consideration for pharmacy services and counseling is needed to ensure the safe supply of anticancer therapies in the context of a reduced workforce and new workforce constraints. We report increased utilization of digital technologies (e.g. telehealth or digital conferencing) during the pandemic across 13/28 countries for patient interactions and 15/28 countries for staff interactions. Uptake was lower within some countries in Asia and Africa, attributed in part to lack of time or resources for establishment (assumed low or not established use prior to the pandemic). Online medication ordering and prescription fill systems as well as increased patient telephone follow-up and monitoring were more commonly reported than telehealth consultations. Rapid increases in utilization of digital platforms necessitated by social distancing efforts has likely overcome perceived and real barriers and accelerated digital uptake. There are opportunities to continue and expand digital services post-pandemic, with particular focus on funding models, as for medical consultations. Data demonstrating safe dispensing and impact on patient outcomes and medications utilization will support such efforts. Importantly, consideration of safe workloads for virtual clinics and remote dispensing must be considered. Remote supply (postage or courier) of high cost, narrow therapeutic window, temperature controlled, clinical trial, and addictive medications commonly prescribed for anticancer and supportive care treatments, requires special consideration to ensure regulatory conformance, integrity of drug, and safety of patient, while also limiting potential for diversion and stockpiling.

In response to COVID-19, 8/28 countries reported that pharmacist activities have changed or expanded in scope including redeployment to areas beyond usual practice (with on the job or rapid training). Expansion of technician roles was proportionate (7/28), facilitating release of pharmacist time for higher level clinical activities. While many oncology pharmacists do not provide front line care for COVID-19 patients, significant changes to working environments, personal health risks, and general societal stressors associated with COVID-19 have potential to impact mental health. Survey respondents from 17/28 countries reported a belief that practitioners were likely at risk of adverse mental health outcomes highlighting the importance of formal mental health support programs for both COVID and non-COVID healthcare workers.

Beyond this important ‘first look’, we will continue to work as an international collaborative group to more formally evaluate COVID-19 imposed oncology pharmacy practice changes and their impact on medications safety and the care and outcomes of patients with cancer. We are currently preparing to survey individual practitioners of the global oncology pharmacy

practice groups that have contributed to this commentary (all continents, 28 countries and regions), with the goal to identify opportunities to learn from experiences to ensure pharmacy services can prioritize initiatives and workforce activities to ensure continued supply of critical medications and safety of patients on high-risk, complex, and narrow therapeutic drug regimens, during a pandemic or other resource-constrained environment.

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### ORCID iDs

Marliese Alexander  <https://orcid.org/0000-0001-5782-7912>

Alexandre Chan  <https://orcid.org/0000-0003-4391-4219>

### Supplemental material

Supplemental material for this article is available online.

### References

1. Wu C, Chen X, Cai Y, et al. Risk factors associated with acute respiratory death syndrome and death in patients

- with coronavirus disease 2019 pneumonia in Wuhan, China. *JAMA Intern Med*. Epub ahead of print March 13 2020. DOI:10.1001/jamainternmed.2020.0994.
2. Liang W, Guan W and Chen R. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet*. Epub ahead of print February 14 2020. DOI:10.1016/S1470-2045(20)30096-.
  3. International Society of Oncology Pharmacy Practitioners Standards Committee. ISOPP standards of practice. Safe handling of cytotoxics. *J Oncol Pharm Pract* 2007; 13 Suppl: 1–81.
  4. States Pharmacopeia. USP general chapter <800> Hazardous drugs – Handling in healthcare settings: United States Pharmacopeial Convention. <https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare> (accessed 18 April 2020).