

Hydroxychloroquine shortages during the COVID-19 pandemic

Across the globe, concerns of hydroxychloroquine (HCQ) supply shortages for patients with rheumatic disease are growing,¹ in part as a consequence of the immense scientific and public enthusiasm for HCQ as a potential COVID-19 therapy.^{2,3} However, published data on the occurrence of HCQ shortages during the COVID-19 pandemic are presently lacking. Therefore, we conducted a national survey of 531 Canadian rheumatologists between 14 and 24 April 2020. The 5-question electronic survey (French or English) included province of practice, whether respondents were concerned about HCQ shortages in their province, and whether they had been contacted by patients or pharmacies regarding difficulties renewing HCQ prescriptions during the COVID-19 pandemic. Physicians who answered 'yes' to the latter question were asked to estimate for how many patients this occurred. The McGill University Health Centre research ethics board approved this survey.

Of 134 rheumatologists who completed the survey (25% response rate), three quarters (n=102, 76%) were concerned about HCQ shortages, while 81 (60%) had been contacted by pharmacies or patients regarding difficulties accessing or renewing HCQ (see table 1). In the province of Quebec, 29/31 (94% (95%CI 79 to 98)) physicians had been contacted, compared with 52/103 (50% (95%CI 41 to 60)) in the rest of Canada. Among those contacted by patients/pharmacies, 71 (88%) provided a numerical (rather than qualitative) estimate of the patients affected, with a median of 50 patients per physician in Quebec (IQR 25–100), compared with a median of 4 (IQR 2–5) patients per physician in the rest of Canada (p<0.0001 for Mann-Whitney U test).

In his editorial, Dr McInnes notes the imperative to protect HCQ supply for patients with rheumatic diseases.¹ While Quebec has reported higher COVID-19 rates (256/100 000 population)

than the rest of Canada combined (70/100 000 population), the substantially different experience of Quebec rheumatologists may furthermore be an unintended consequence of system-level mitigation strategies to proactively manage impending HCQ shortages. Following optimistic reports of the possible effectiveness of HCQ for COVID-19, Quebec health authorities determined that there was a significant risk of HCQ shortage in the province (only 2–3 weeks of estimated supply available) and made the unprecedented decision to restrict HCQ access for all indications except systemic lupus erythematosus (SLE) (as well as pregnant and paediatric patients) to reserve supply for these vulnerable groups.⁴ Patients such as those with rheumatoid arthritis (1% of the Quebec population)⁵ abruptly lost HCQ access. Pharmacies now contact rheumatologists to confirm diagnoses, potentially causing delayed access even for eligible patients. Whether these restrictions have succeeded in protecting specific groups, such as patients with SLE, from shortages, and to what extent HCQ cessation among all others will lead to disease flares, remains to be determined. In SLE, there is already ample evidence to indicate that HCQ discontinuation could lead to hospitalisation or even death.⁶

Due to the limited number of survey questions (to maximise response rate) we could not assess provider characteristics such as type of practice (academic vs community). Furthermore, physicians experiencing more HCQ access issues may have been more likely to complete the survey. Nevertheless, the consistent estimated number of affected patients per physician in most provinces (median five or less) and the drastically higher numbers reported in Quebec (10-fold more) lends validity to our observations.

Our survey establishes that HCQ shortages are reported by rheumatologists in most Canadian provinces during the COVID-19 pandemic, with over half of respondents receiving at least one notification of a HCQ access issue, now believed to stem from regional distribution problems rather than lack of

Table 1 Experiences with HCQ shortages among Canadian rheumatologists according to province of practice (n=134)

Province*	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Newfoundland and Labrador
Respondents (% total)	14 (10)	22 (16)	3 (2)	8 (6)	48 (36)	31 (23)	3 (2)	3 (2)	2 (1)
COVID-19 cases per 100 000 population†	36	84	28	19	88	256	15	85	49
Concerned about HCQ shortage, n (%)									
Yes	11 (79)	16 (72)	0 (0)	5 (63)	40 (83)	27 (87)	2 (67)	0 (0)	1 (50)
No	0 (0)	4 (18)	0 (0)	1 (13)	4 (8)	2 (6)	1 (33)	1 (33)	0 (0)
Unsure	3 (21)	2 (9)	3 (100)	2 (25)	4 (8)	2 (6)	0 (0)	2 (67)	1 (50)
Contacted by pharmacies or patients for HCQ access issues, n (%)									
Yes	9 (64)	9 (41)	0 (0)	2 (25)	29 (60)	29 (94)	1 (33)	1 (33)	1 (50)
No	5 (36)	13 (59)	3 (100)	6 (75)	19 (40)	2 (6)	2 (67)	2 (67)	1 (50)
Number of patients per physician affected by HCQ access issues, median (IQR)‡	5 (4–10)	5 (3–13)	n/a	3 (3–4)	3 (2–6)	50 (25–100)	3§	1§	1§
Number of patients per physician affected by HCQ access issues, mean (SD) ‡	6.9 (5.7)	8.0 (8.3)	n/a	3.0 (1.4)	4.5 (3.8)	74.9 (73.7)	3§	1§	1

*No respondents from Prince Edward Island, Yukon, Northwest Territories or Nunavut.

†Estimates based on: Coronavirus Disease 2019 (COVID-19) Daily Epidemiology Update. Health Canada. <https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/2019-novel-coronavirus-infection/surv-covid19-epi-update-eng.pdf>; Statistics Canada. Table 17-10-0009-01, Population estimates, quarterly. DOI: <https://doi.org/10.25318/1710000901-eng>. Both accessed 23 April 2020.

‡Includes only respondents providing a numerical estimate of patients affected (n=71).

§n=1 respondent; median (IQR) and mean (SD) not calculated.

HCQ, hydroxychloroquine.

supply. Monitoring the clinical impact of shortages for patients with rheumatic diseases and mobilising efforts to restore HCQ access are now critical.

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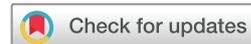
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