Potential of chloroquine and hydroxychloroquine to treat COVID-19 causes fears of shortages among people with systemic lupus erythematosus

To the Editor — In March 2020, in the midst of the COVID-19 pandemic[1], reports that chloroquine (CQ) can inhibit the growth of severe acute respiratory syndrome coronavirus (SARS-CoV-2)[2,3] have brought this molecule into the spotlight. Hydroxychloroquine (HCQS), which is typically used in dermatology clinics for the management of systemic lupus erythematosus (SLE) and has a better clinical safety profile and fewer drug–drug interactions than CQ, has also been demonstrated to have anti-SARS-CoV activity in vitro[2,4]. Now, amid the speculation regarding the beneficial roles of these molecules in COVID-19 treatment, shortages of CQ and HCQS are feared.

CQ has been shown in vitro to increase endosomal pH, prevent virus–cell fusion, and interfere with glycosylation of the ACE2 receptor and thus the binding of the SARS-CoV-2 S protein to ACE2 (ref. [3]). Chinese experts recommend that mild, moderate and severe COVID-19 cases (without contraindications to CQ) be treated with 500 milligrams of CQ twice daily for 10 days (ref. [5]). A Chinese study has demonstrated that HCQS is more potent than CQ in inhibiting SARS-CoV-2 in vitro[2]. These new developments have brought some hope for COVID-19 treatment, though more research is warranted to validate the findings.

A shortage in HCQS would create problems for people with SLE who are currently taking this drug. Given the reports of the effectiveness of HCQS in COVID-19 treatment and the anticipated shortage of HCQS, the number of patients with SLE visiting dermatology outpatient departments (even before their scheduled appointments) to refill their medication has increased. SLE is a chronic autoimmune disease with varied manifestations (including fever, rash, alopecia, arthralgia, fatigue and photosensitivity), which usually follows a relapsing and remitting course. Various organs, such as the skin, kidneys, heart, joints, pleura, pericardium and brain, may be involved in the disease process. The use of HCQS for SLE offers several advantages by controlling constitutional symptoms; decreasing the risk of flare-ups; sparing the use of glucocorticosteroids; decreasing the risk of organ damage, osteoporosis and thromboembolism; and increasing life expectancy[6]. In addition, HCQS is considered safe in pregnancy, and it has a protective role in preventing congenital heart block. A prolonged shortage of the drug might deprive people with SLE of a low-cost, safe, effective and well-tolerated drug. Patients are terrified that they might lose access to the drug that prevents their disease from damaging other vital organs.

Beyond affecting people with SLE, the shortage of CQ and HCQS would affect people with other rheumatological disorders, such as rheumatoid arthritis, primary Sjögren syndrome and antiphospholipid syndrome[6]. In addition, HCQS is commonly prescribed for various dermatological indications including dermatomyositis, sarcoidosis, polymorphous light eruptions, chronic actinic dermatitis, granuloma annulare, lichen planus, chronic erythema nodosum and morphea. Patients taking chloroquine analogs for its metabolic, cardiovascular, antithrombotic and antineoplastic effects may also be negatively affected by a shortage.

The pharmaceutical companies and other stakeholders manufacturing HCQS should quickly assess the situation and make sure that the drug remains available to those who need it. In addition, people should not purchase medications that they do not need, and health authorities should make sure that HCQS is not dispensed without a prescription. Combined sensible efforts can help us navigate these difficult times. ❐

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Competing interests

The authors declare no competing interests.

Coping with COVID-19: scaling up virtual care to standard practice

To the Editor — In times of disease outbreak, social distancing can be facilitated by video consultation, but many practices are not ready to implement this. Here, we share a roadmap for emergency scaling up of virtual care in the outpatient setting.

Since the outbreak of SARS CoV-2 and the associated disease, COVID-19, in December of 2019, the effects of the virus

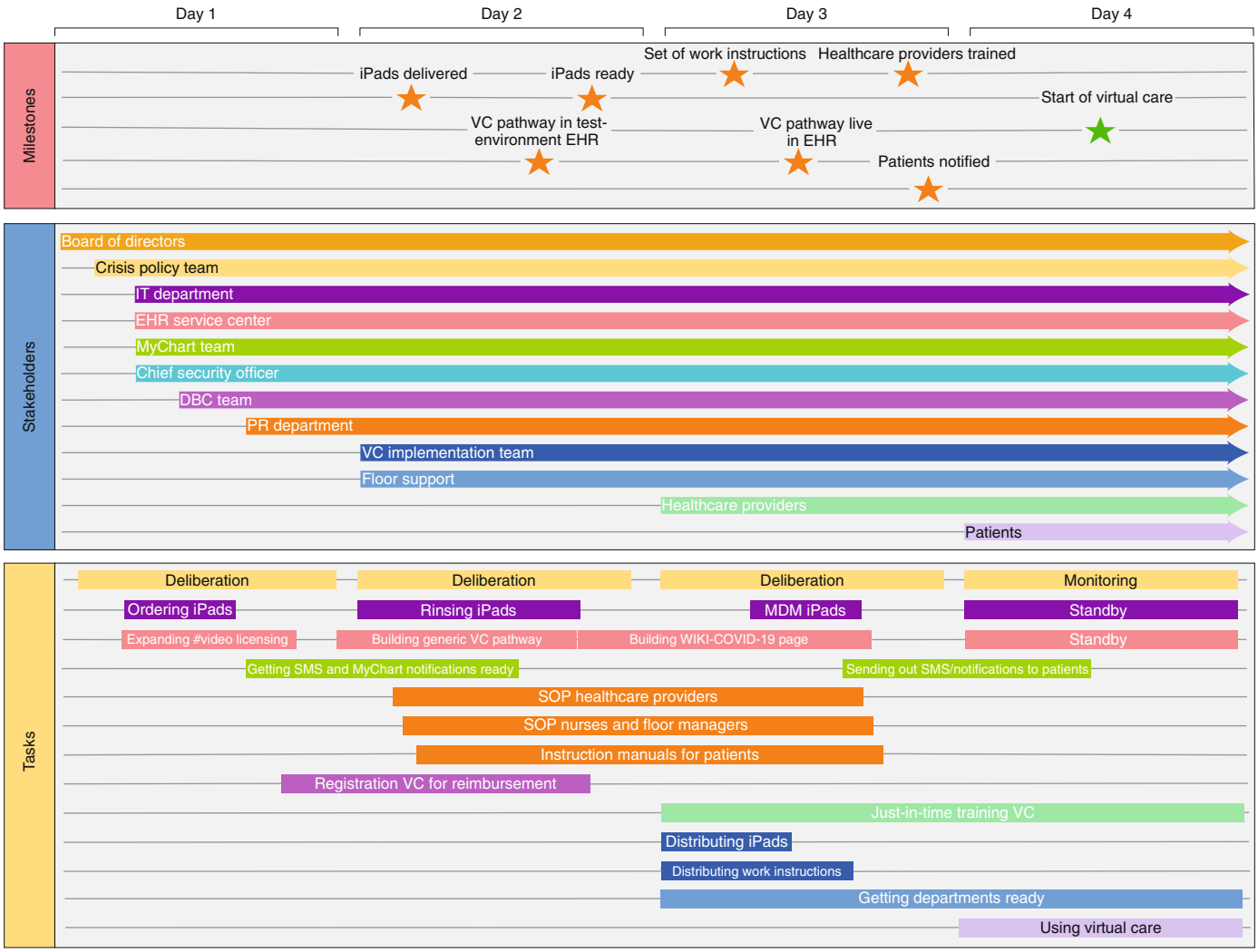

Fig. 1 | Roadmap to scaling up video consultation. VC, video consultation; PR, public relations; DBC, decibels relative to the carrier; SOP, standard operating procedure; MDM, mobile device management; MyChart, patient portal of the EHR in use.

have manifested globally. Transmission of the virus is significantly decreased by appropriate social distancing. Fast-tracking the implementation of video consultation to replace physical appointments with virtual care is a strategy that should not be overlooked[1]. The use of real-time video connections maintains important aspects of communication, including visual aspects, without risking physical interaction. Provision of healthcare can be preserved for infected individuals and non-infected individuals scheduled for appointments not related to COVID-19 (ref. [2]). Additionally, a feeling of safety for both healthcare providers and patients can be provided to reduce the psychosocial effects of fear and anxiety.

In November of 2019, video consultation was implemented successfully on a small scale at the surgical outpatient clinic in our tertiary referral center in Amsterdam, the Netherlands[3]. To avoid full lockdown of our outpatient clinics because of COVID-19, the board of directors launched an emergency protocol to scale up video consultation to every department at the hospital within 3 days, in an attempt to cope with the crisis. Here, to aid healthcare professionals worldwide, we share our roadmap for the emergency scaling up of video consultation in an outpatient setting.

The Amsterdam University Medical Centres (Amsterdam UMC) were recently formed in a merger between two large university hospitals at two physical locations. Together, both hospitals have more than 15,000 employees and approximately 1,700 beds. At the AMC location alone, 350,000 patients are scheduled for appointments at the outpatient clinic annually. The electronic health record (EHR) used is EPIC Hyperspace 2017. Patients can use EPIC's electronic patient portal, MyChart, to access their own medical files (for example, to view available blood-test or diagnostic imaging results, or to schedule or reschedule appointments). During the past 3 years, software enabling a secure video connection (Vidyo) has been integrated into the EHR and MyChart to allow for the safe use of video consultation. Because the video software was integrated within the EHR, confidentiality was ensured through the hospital's standardized regulations according to the General Data Protection Regulation guidelines (portal with protected personal two-factor-verification login). Healthcare providers can either start a video connection by accessing the EHR through EPIC at a clinical workstation or use EpicCare's mobile applications, Haiku or Canto. The latter option allows clinicians to access patient charts securely from their own devices. For patients, the video connection is accessible via MyChart.

Within 3 days, a protocol was generated for facilitating the full implementation

of video consultation (Fig. 1). The board of directors prioritized overcoming the limitations hindering the scaling up of video consultation. The success of this process required the immediate cooperation and dedication of all stakeholders together, which are otherwise known to be important barriers to the scaling up of any innovation within a hospital[4].

On day 1, a crisis policy team was appointed, consisting of members of the department heads of the intensive care units, clinical wards, outpatient clinics, representatives of the internet technology department, the EHR service center and chief security officers. All essential personnel were approached early in the process, extra workforce capacity was added, and time-appropriate milestones were formulated. Hence, the full scale of the emergency scale up became apparent.

During the second half of day 1, existing technical services were expanded by ordering 50 extra iPads and ensuring that enough video-connection licenses were available. Furthermore, at that time, all involved stakeholders were preparing for day 2, the day of the development of all technical aspects of scaling up the integration of video consultation within the EHR.

Day 2 began with a stand-up meeting with the crisis policy team and technical staff to provide a status update, identify possible issues and set deadlines regarding the formulated milestones. Next, all teams worked to meet the proposed deadlines, and the crisis policy team was updated regularly during the day. The video-consultation pathway was tested with earlier-appointed super users in the surgical department who already knew how to operate the video-consultation software and hardware. Because the first test failed, another test was scheduled for the next morning.

Day 3, the day on which everything needed to come together, started with a stand-up meeting and a short brainstorming session regarding the failed test of the day before. By the end of the morning, the new test was successful, and the video-consultation pathway was merged with the live environment of the EHR. All work instructions were finalized and approved by the crisis policy team. The video-consultation implementation team distributed the iPads together with the work instructions to all departments. Floor support offered just-in-time training to healthcare providers who needed extra support. Because all important milestones were achieved, patients could then be notified about scaling up virtual care to standard practice. All patients already scheduled for an appointment at the outpatient clinic received a text message with the details and directions for receiving virtual care. A news link was placed on the hospital website to inform patients without a scheduled appointment at the hospital.

On day 4, the first video consultations took place after the prerequisite stand-up meeting. The virtual outpatient clinic care successfully began, thus facilitating social distancing while preserving the provision of healthcare.

Because we believe that video consultation holds promise in optimizing outpatient care in the current crisis, we feel that others may benefit from our approach and efforts. By sharing this roadmap, we aim to inspire other centers to scale up virtual care to cope with COVID-19. ❐

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Author contributions

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Competing interests

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A framework for identifying regional outbreak and spread of COVID-19 from one-minute population-wide surveys

To the Editor — In December 2019, a novel coronavirus was isolated, after a cluster of patients in China were diagnosed with pneumonia of unknown cause[1]. This new isolate was named 'SARS-CoV-2' and is the cause of the disease COVID-19. The virus has led to an ongoing outbreak and an unprecedented international health crisis. The number of infected people is rapidly increasing globally[2] and most probably is a vast underestimation of the real number of patients worldwide, as infected people are contagious even when minimally symptomatic or asymptomatic[3]. The spread of the disease has presented an extreme challenge to the international community, and policy-makers from different countries have each chosen different strategies, depending on the local spread of the virus, healthcare-system resources, economic and political factors, public adherence, and their perception of the situation.

Coronavirus infection spreads in clusters, and early identification of these clusters is critical for slowing down the spread of the virus. Here we propose that daily population-wide surveys that assess the development of symptoms caused by the virus could serve as a strategic and valuable tool for identifying such clusters and informing epidemiologists, public-health officials and policymakers. We show preliminary results from an Israeli survey of a cumulative number of over 74,000 responses and call for additional countries to join an international consortium to extend this concept in order to develop predictive models. We expect such data will allow the following: faster detection of spreading zones and patients; acquisition of a current snapshot of the number of people in each area who have developed