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Effectiveness of Chloroquine in the management of COVID-19 Part II

Effects of CQ against the SARS-CoV-2

CQ inhibits the action of SARS-CoV-2 in cell culture by interfering with terminal glycosylation of its cellular receptor, angiotensin-converting enzyme 2 (ACE2) and by inhibiting sialic acid biosynthesis, which is a component of the receptor. These anti-viral effects have been well demonstrated in-vitro against SARS-CoV-1 and the MERC-CoV to a certain degree. As the genetic sequence of SARS-CoV-2 shares many similarities with SARS-CoV-1, it seems rational to investigate the potential to use CQ in the management of the respiratory disease caused by SARS-CoV-2.

The in-vitro studies showed that CQ did indeed inhibit SARS-CoV-2 activity via the above mechanisms. Further, this inhibition was brought about at low concentrations that can be easily achieved by standard dosing, as the drug has favourable pharmacokinetics and penetrates the tissues readily, including lung tissues.

Based on the findings of these in vitro studies, around 23 clinical trials have been initiated in many Chinese hospitals to assess the safety and efficacy of CQ in the management of COVID-19 pneumonia. The trials vary in study design, target population, the severity of the disease, the drug dosing and the duration of treatment. The preliminary results have shown improvements in clinical and virology findings, where the patients who were treated with CQ have reported a reduction of exacerbation of pneumonia and duration of symptoms, leading to shortening of the hospital stay, improvement of the lung imaging findings and a reduction in the viral load, over the control group. None of the treated patients had reported any major adverse effects. However, there are no published data on the results of the clinical trials, as these findings were only communicated at a news briefing from the State Council of China.

Due to the rapid spread of the SARS-CoV-2 with 15% of the patients contracting the severe form of the disease, CQ has been recommended in the management of COVID-19 patients in many countries. The recommendations on the dosages and duration of treatment may differ due to unavailability of adequate evidence (table 1).

Table 1: Different dosing regimens recommended for the management of COVID-19 using CQ

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Recommending agency	Target population of COVID patients	Recommended regimen
Department of Science and Technology of Guangdong Province and Health Commission of Guangdong Province	Patients with mild, moderate and severe pneumonia.	CQ 500 mg twice per day for 10 days
Dutch Centre for Disease control	**Moderately severe infections requiring admission to the hospital and oxygen therapy**	For adults: Chloroquine base: a loading dose of 600 mg, 300 mg after 12 hours, followed by 300 mg twice daily on days 2–5
Italian Society of Infectious and Tropical disease	Patients with mild respiratory symptoms and co-morbidities to patients with severe respiratory failure	CQ 500 mg twice daily or hydroxychloroquine200 mg twice daily for 10 days

However, these agencies emphasize the importance of the availability of safety measures due to the lack of evidence of clinical effectiveness of CQ on COVID-19. The Department of Science and Technology and Health Commission of Guangdong Province recommends that treatment should be coupled with blood testing to rule out the development of haematological abnormalities, serum electrolyte disturbances and/or hepatic and renal dysfunction; routine electrocardiography to rule out the development of QT interval prolongation or bradycardia; Regular assessment of any visual and/or mental disturbances and avoidance of concurrent administration of drugs known to prolong the QT interval, antiarrhythmic, antidepressant and antipsychotic drugs. The Dutch CDC suggests that optimal supportive care should be available when treating patients with CQ.

Thus, it is evident that CQ has shown promising results for the management of COVID-19. However, more robust data are needed on the efficacy, optimal dose and the duration, and the safety profile of Chloroquine, in patients with COVID-19. Until such data are available through clinical trials, this drug should be used cautiously when used in the management of COVID-19.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 07th– 13th Mar 2020 (11th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	81	2624	4	13	0	3	0	4	1	14	4	57	0	0	0	2	0	0	15	132	0	14	0	0	**58**	**98**
Gampaha	18	1566	0	3	0	0	0	4	3	19	1	36	0	1	0	0	0	0	12	187	0	8	0	17	**52**	**96**
Kalutara	32	876	0	5	0	4	0	3	0	1	8	85	1	7	1	1	0	0	10	121	0	9	0	0	**62**	**85**
Kandy	41	1038	0	6	0	1	0	7	0	6	1	15	1	34	0	2	0	0	12	80	1	14	2	25	**64**	**100**
Matale	11	410	0	3	0	2	0	1	0	3	0	15	0	2	0	2	0	1	7	31	0	1	11	108	**63**	**98**
NuwaraEliya	4	121	0	7	0	0	0	0	0	0	1	13	3	36	0	1	0	0	3	39	1	6	0	0	**22**	**100**
Galle	9	934	1	10	1	8	0	2	0	12	2	158	1	20	0	1	0	0	11	175	1	14	0	2	**59**	**92**
Hambantota	7	253	0	4	0	0	0	1	26	36	2	53	1	13	0	2	0	0	13	91	1	8	7	229	**74**	**98**
Matara	2	351	0	7	0	3	0	0	0	0	1	81	0	4	0	6	0	0	2	68	1	5	0	117	**50**	**83**
Jaffna	34	1666	5	34	0	0	0	14	1	16	1	10	18	421	0	0	0	1	7	54	1	3	0	0	**36**	**93**
Kilinochchi	0	100	1	10	0	0	1	3	0	0	1	6	2	15	0	0	0	0	0	4	0	3	2	4	**68**	**100**
Mannar	1	116	0	0	0	0	1	1	0	0	0	3	0	1	0	0	0	0	1	1	0	3	0	0	**47**	**96**
Vavuniya	9	223	1	4	0	0	0	3	0	0	1	30	0	1	0	0	0	0	0	10	0	3	0	1	**57**	**100**
Mullaitivu	0	60	1	4	0	0	0	3	0	1	1	10	1	3	0	0	0	1	0	2	0	0	0	5	**37**	**79**
Batticaloa	56	1902	3	33	2	2	0	0	1	4	1	13	0	0	0	0	0	1	4	49	0	9	0	1	**62**	**99**
Ampara	15	271	2	8	0	1	0	0	0	0	0	21	0	0	1	1	0	0	3	54	0	7	0	4	**65**	**100**
Trincomalee	43	2079	0	4	0	0	0	0	0	1	0	10	0	2	0	0	0	0	2	56	0	5	0	0	**53**	**89**
Kurunegala	17	635	0	5	0	4	0	2	2	29	0	54	0	10	0	1	0	0	11	212	0	7	24	152	**57**	**97**
Puttalam	13	327	0	5	0	1	0	2	0	1	0	15	0	9	0	0	0	1	5	52	4	16	0	2	**68**	**97**
Anuradhapur	13	295	0	8	0	1	0	2	0	19	1	113	2	11	0	1	0	1	10	87	2	16	8	76	**55**	**91**
Polonnaruwa	8	176	0	4	0	0	0	0	0	0	4	53	0	0	6	11	0	0	12	56	0	8	4	83	**61**	**100**
Badulla	9	347	2	8	0	2	0	2	0	3	10	94	2	14	0	6	0	0	11	80	1	15	0	4	**62**	**99**
Monaragala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Ratnapura	27	550	0	27	1	11	0	1	0	13	18	260	0	9	0	8	0	0	9	103	0	31	1	37	**49**	**98**
Kegalle	12	335	0	5	0	3	0	1	0	12	1	65	2	16	0	3	0	0	8	92	0	11	0	9	**61**	**98**
Kalmune	10	789	2	25	0	2	0	0	0	1	0	2	0	2	0	0	0	0	25	142	0	11	0	0	**79**	**100**
SRILANKA	**472**	**18044**	**22**	**242**	**4**	**48**	**2**	**56**	**34**	**191**	**59**	**127**	**34**	**631**	**8**	**48**	**0**	**6**	**193**	**1978**	**13**	**227**	**59**	**876**	**58**	**93**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 13th March , 2020 Total number of reporting units 356 Number of reporting units data provided for the current week: 279 C**-Completeness

A = Cases reported during the current week. **B** = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

07th – 13th Mar 2020 (11thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2020	Number of cases during same week in 2019	Total number of cases to date in 2020	Total number of cases to date in 2019	Difference between the number of cases to date in 2020 & 2019
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	03	09	23	- 60.8 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	02	00	01	00	00	01	04	09	49	81	- 39.5 %
Measles	01	00	00	00	00	00	00	00	00	01	00	19	38	- 50 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	01	03	04	0 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	- 25 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	06	07	200 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	03	02	19	- 89.4 %
Tuberculosis	00	00	00	00	00	00	00	00	00	00	131	1455	1879	- 22.5 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS =**Congenital Rubella Syndrome

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them free of water collection.

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