



Letter to Editor

Sharing Singapore's Experience in the Management of Obstetrics COVID-19 Patients

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Abstract

There are current guidelines for managing obstetric COVID-19 patients, however, guidelines for the initial triaging and assessing obstetric COVID-19 patients to right-site care and disposition whilst ensuring patient safety are absent. Here, Singapore's utilization of a risk-stratified approach to manage obstetric COVID-19 patients' recovery in a safe manner is described, and this approach also helps to preserve tertiary healthcare resources for the acutely sick. The care protocol was also progressively relaxed as more information was obtained from statistical analysis of pregnant patients' hospitalisation and disease severity data. The information showed that disease severity in pregnant patients were generally mild, and majority of patients could recover safely at home.

Keywords: Obstetrics, COVID-19, Perinatal, Infectious Diseases, Vaccination

Sharing Singapore's Experience in the Management of Obstetrics COVID-19 Patients

Singapore utilises a risk-stratified approach to manage COVID-19 patients, where the population has a high vaccination rate of 83% [1] and the national sorting system, termed the National Sorting Logic (NSL), stratifies obstetric patients by gestational age (GA). The protocol was refined with inputs from obstetrics and gynaecology experts, and statistical analysis of obstetric COVID-19 patients' outcomes. Current medical literature contains guidelines for managing obstetric COVID-19 patients, however, guidelines for initial triaging and assessing obstetric COVID-19 patients to right-site care and disposition whilst ensuring patient safety [2, 3] are absent.

Patients managed under Protocol 1¹ recover at home under the supervision of selected MOH-registered telemedicine providers. Patients managed under Protocol 2 recover at home and request for ad-hoc consultations from their family doctors or telemedicine providers when required. All obstetric COVID-19 patients undergo preliminary assessment by primary care doctors via telemedicine services or at community clinics using a script containing screening questions specific to obstetric patients [4]. Currently, regardless of vaccination status, patients with GA of 36 weeks or more, recover at a specialist hospital, while patients with GA below 36 weeks, recover at home under the Protocol 2 (Table 1). Conversely, the presence of any concerning symptoms, signs, or past medical history warrant conveyance to either a care facility or tertiary health institution for further assessment.

Data from the Delta-predominant period showed zero morbidity or mortality cases and it was previously mandatory to admit all obstetric

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Table 1: Evolution of Singapore’s protocol for managing obstetric COVID-19 patients which shows the care protocol was progressively relaxed. Based on statistical analysis of pregnant patient data reviewed at frequent intervals, the disease severity was mild in this patient group and with concurrence from O&G experts, the care protocols were progressively relaxed to ensure patient safety. Protocol 1 is a higher level of supervised healthcare than Protocol 2.

	December 2021 to 5 February 2022	6 February 2022 to 15 February 2022	16 February 2022 to 24 October 2022	25 October 2022 to 12 February 2023	13 February 2023 to date
Fully vaccinated	· GA <26 weeks recover at home (Protocol 1)	· GA <26 weeks to 34 weeks recover at home (Protocol 1)	· GA <36 weeks recover at home (Protocol 1)	· GA <36 weeks recover at home or CIF ² (Protocol 2) · GA ≥36 weeks recover in hospital	· Regardless of GA, recover at home or CIF (Protocol 2). · Only escalate to hospitals when conditions deteriorate.
	· GA ≥26 weeks recover in hospital	· GA ≥34 weeks recover in hospital	· GA ≥36 weeks recover in hospital		
Not fully vaccinated	· GA <26 weeks recover at CTF	· GA <26 weeks recover at CTF	· GA <36 weeks recover at CTF		
	· GA ≥26 weeks recover in hospital	· GA ≥26 weeks recover in hospital	· GA ≥36 weeks recover in hospital		

COVID-19 patients to public healthcare institutions (PHI) for closer monitoring, as there was minimal information about their outcomes. Patients’ oxygen utilization rates, and ICU admission rates were used as metrics to evaluate morbidity. From December 2021 onwards, the management protocol was amended to allow those with GA below 26 weeks to recover at home under telemedicine care (Protocol 1) and subsequently extended to patients with GA below 36 weeks (Table 1).

In the Omicron-predominant period, there was no obstetric patient mortalities and the oxygen utilization rate remained low at 0.02%, that is 1 out of 4166 cases between January to March 2022. Using the refined protocol, Delta-predominant and Omicron-predominant hospitalization rates were 10.5% (4 of 39) and 2.4% (100 of 4166) respectively. As Singapore entered endemicity, the care protocol was further relaxed to allow patients of all GA to recover at home (Table 1). The Institutional Review Board approval was waived under the auspices of the Infectious Diseases Act (Singapore).

The statistics support the viability of the risk-stratified management of obstetric COVID-19 patients, especially for countries with high rates of vaccination. Such an approach allows preservation of tertiary healthcare resources for the acutely sick.

¹ Protocol 1,2,3 was the method used to care for COVID-19 positive patients in Singapore. If a patient is assigned to Protocol 1, which is the highest acuity care, it means that the patient is at high-risk of developing severe disease and are cared for in care facilities. For Protocol 2, the patient is assessed to be at medium- to low-risk of developing severe disease and can be cared for by community physicians at home. Protocol 3 is assigned to individuals who are close contacts of COVID-19 positive patients, and these patients are given health risk warnings and advisories, to monitor their health and to see a doctor if they develop acute respiratory symptoms.

²Community Isolation Facility.

Ethics Approval and Informed Consent

Ethical Approval and Consent to participate

Not Applicable

Human and Animal Ethics

Not Applicable

Consent for publication

Consent sought from Ministry of Health (SINGAPORE) for publication. All of the material is owned by the Ministry of Health (SINGAPORE) and no permissions are required.

Availability of supporting data

Provided in manuscript submission

Conflicts of Interest

Not applicable

Author Contributions

Eda Qiao Yan LIM: Involved in the implementation of stratification and management of COVID-19 obstetric patients in Singapore during COVID-19; contributed significantly to the penning of the paper.

Thong Chuan Eugene KOH: Drafted and edited the manuscript.

Lay Kok TAN: An active member of the committee overseeing the policies governing the disposition of pregnant women with COVID-19; reviewed the manuscript and has made suggestions and amendments.

Si Jack CHONG: Proposed research idea, supported data collection, gave inputs to manuscript, collated feedback from panel of obstetricians.

Swee Boon Raymond CHUA: Proposed research idea, gave inputs to manuscript, helped amend some parts in results and conclusion section.

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