



Transforming the Healthcare Simulation Spectrum: Now, Next and Beyond

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PREPARATION AND CONSIDERATION FOR ESTABLISHMENT OF AN ISOLATION MATERNITY UNIT IN SINGAPORE GENERAL HOSPITAL DURING THE COVID-19 PANDEMIC

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Introduction

- Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a novel coronavirus that first emerged in December 2019 and has since developed into a worldwide pandemic. As the virus continues to evolve, new variants have emerged, and it remains a major health challenge globally.
- With the rise in number of pregnant women with COVID-19 infection, we recognized an urgent need to establish a multidisciplinary taskforce to care for this group of women.
- We transformed designated rooms in the isolation ward into a birthing environment for COVID-19 pregnant women in labour.
- Workflows for vaginal delivery and emergency caesarean sections were developed and multiple simulation exercises were conducted to trial run these protocols.

Aims

- To provide pregnant women with COVID-19 infection safe and holistic care during their antenatal, intrapartum and postpartum period.
- To minimise cross transmission of COVID-19 infection to other pregnant women and healthcare workers.

The set up of an isolation maternity unit

- In Singapore General Hospital, our hospitalised COVID-19 pregnant women are not nursed in the labour ward as there are no single negative pressure rooms.
- This group of women are admitted to single rooms within the hospital's isolation wards which are located separately from the labour ward and the operating theatre.
- We had to urgently transform these isolation rooms into a comfortable and safe birthing environment.
- We ensured that medical equipment needed for labour, anaesthesia and neonatal resuscitation were prepared and set up in the isolation ward.



Fig 1. Delivery trolley containing (from left to right) the disposable epidural set, vaginal delivery set, perimortem caesarean section set and medications needed for labour and obstetric emergencies

Creation of delivery workflows

- As the isolation ward is in a separate block from the operating theatre, there could be potential delays during the transfer of an intrapartum COVID-19 patient who requires an emergency caesarean section, which can be life-threatening for the pregnant woman and her fetus.
- To avoid delays and minimize variations in care, workflows for vaginal birth and caesarean section for COVID positive women were developed based on input from members of the multidisciplinary care team.
- Prior to the implementation of these workflows, we conducted multiple simulation training exercises to validate them.

Conduct of simulation exercises

- We found that the simulation training exercises:
 - Helped to improve communication amongst different disciplines
 - Identified gaps and areas for improvement
 - Provided an opportunity for feedback and debrief after each simulation session
 - Improved preparedness and boosted confidence in the management of COVID-19 pregnant women in labour



Fig. 2 Workflow for vaginal delivery in isolation ward. **A.** Preparation of equipment and medication needed for delivery, **B.** Obstetrician and midwife delivered the baby in Negative Pressure (NEP) room, **C.** Neonatologists and staff nurse on standby to resuscitate baby as needed, **D.** Midwife hands baby over to neonatologists, **E.** Resuscitative measures carried out on baby as needed, **F.** Transfer of baby to transport incubator, **G.** Security escort during transfer of baby to Neonatal Isolation NEP room, **H.** Use of dedicated lift during transfer, **I.** Transfer of baby from transport incubator to Neonatal Isolation NEP room

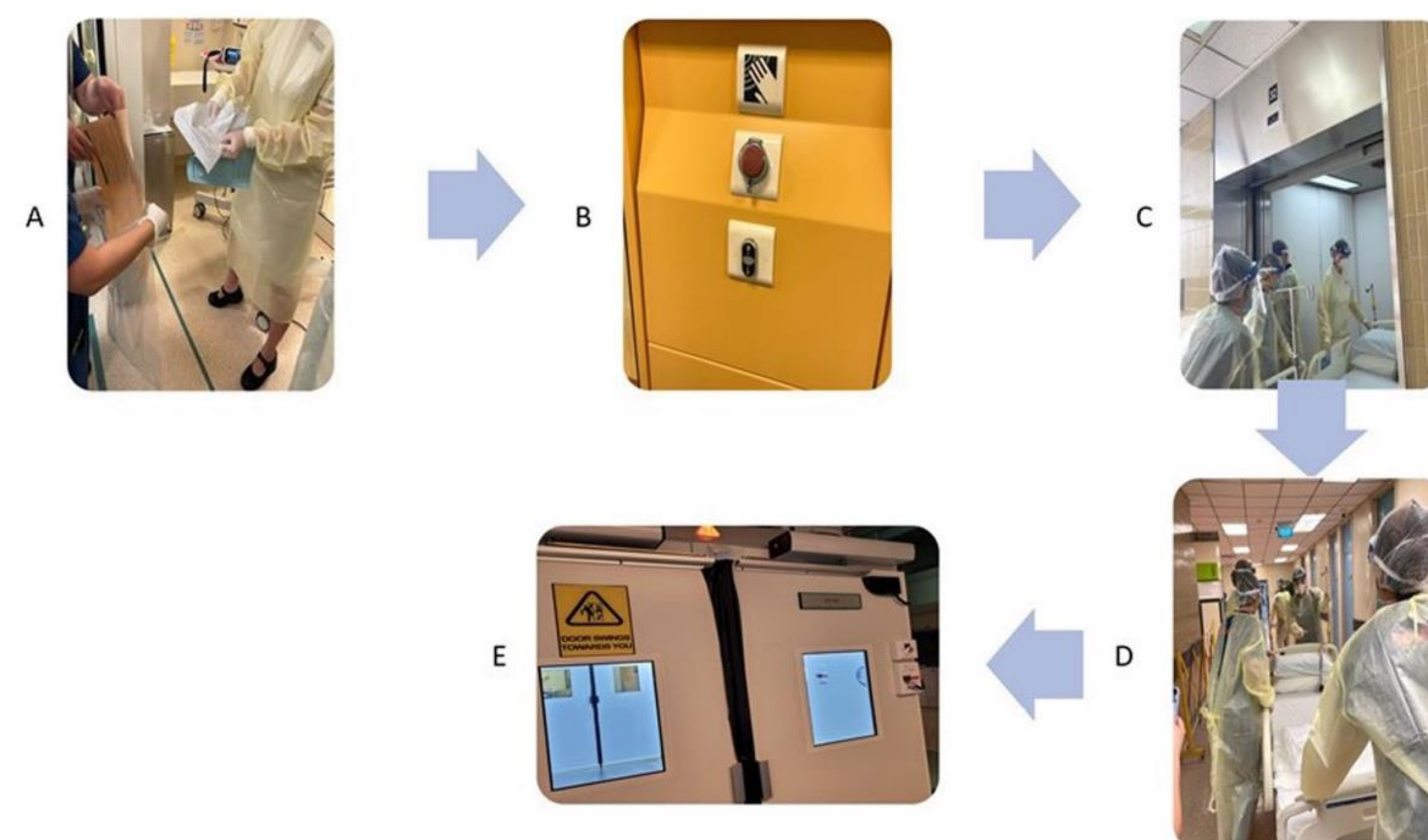


Fig. 3 Workflow for Caesarean section delivery for isolation ward. **A.** Aseptic technique of obtaining patient consent, **B.** Emergency button to open both doors in Anteroom for emergency transfer of COVID-19 pregnant women from NEP room to Operating room, **C.** Use of dedicated lift for transfer of mother, **D.** Security-led transfer, **E.** Negative pressure anteroom leading to Operating room

Discussion

- In the current COVID-19 pandemic, a coordinated multidisciplinary care approach is critical in caring for pregnant women with COVID-19 who are at higher risk of COVID-related complications.
- It is paramount that this group of pregnant women receive the same standard of care as for non-COVID pregnant women.
- With the standardised workflow, we report that there was no compromise to maternal care for pregnant women with COVID-19 infection and there have not been any transmission of virus to babies and the healthcare team.
- Simulation exercises are crucial in familiarising the team with the workflow, help in identifying latent gaps in the preparation process and eventually, improve and refine the existing protocols.