Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Commentary

The maternity response to COVID-19: An example from one maternity unit in Taiwan

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Taiwan was predicted by Johns Hopkins University to be one of the nations hardest hit by COVID-19 due to its close interaction with, and proximity to, China. However, as of May 1st 2020, with a population of around 23 million people, the number of confirmed cases of COVID-19 was at a relatively low number of 429, with six deaths. This was compared to 16,169 cases and 15 deaths in Singapore (population 5.5 million) and 1038 cases and four deaths in Hong Kong (population 7.5 million). Nearly 80% of confirmed cases in Taiwan were among individuals who had contacted COVID-19 overseas. At the time of writing (May 1st 2020), there have been no new reported cases of local infections for over two weeks, and no cases of COVID-19 in pregnant or postnatal women. Taiwan has not been placed in lockdown during the pandemic, with most businesses, public transport systems, government offices, schools, shops and restaurants remaining open.

Successful national control measures included (i) effective leadership with comprehensive national coordination (ii) strong infrastructure and information technology (iii) advanced planning and deployment (iv) transparency in policy making with clear public guidelines and (v) smart testing for potential COVID-19 infection with meticulous tracking and strict isolation and quarantine of infected individuals (Chi, 2020). When the first case of COVID-19 was confirmed in Taiwan on January 21st 2020, Taiwan activated the Central Epidemic Command Centre (CECC; CECC Organization, 2020). The CECC provides centralised national leadership in commanding all sectors in a coordinated effort to control the spread of the pandemic. To enable identification of suspected cases, an individual's recent overseas travel history was added to the National Health Insurance Administration database, allowing physicians and other healthcare workers to access relevant information. Travel restrictions implemented for travellers from overseas included quarantine for 14 days upon arrival. To prevent shortages, a policy of "universal access to surgical masks" was implemented in early February 2020. Through central coordination of increased production of surgical/N95 masks and price control, although medical masks were prioritised for health professionals and medical facilities, the remainder were rationed to the public at a low cost (USD 0.20 per medical mask; Chi, 2020; Lien, 2020).

Given this context, we would like to share our experiences from one hospital with more than 2800 beds located in Taipei city, the capital of Taiwan, as an example of how the embedded maternity unit prepared and responded to the pandemic.

The maternity unit is a baby-friendly hospital, certified by Taiwan Health Promotion Administration. A Hospital Incident Command System was established on January 23rd 2020, just before the Chinese lunar new year holiday. The Director of the hospital chairs daily meetings to discuss the ongoing pandemic and plans and strategies in response to updates from the CECC. Measures implemented to prevent the spread of COVID-19 have included: establishing a specialised ward for COVID-19 patients in a separate building with designated walkways and separate elevator entrances; setting up outdoor fever screening stations to prevent individuals with suspected fever entering emergency rooms; having one designated entrance open per building and assigning personnel to monitor entrances 24 h a day.

Everyone entering the hospital has to pass through an infrared thermometer. Those identified with a fever are directed to a fever screening station, and every person entering the hospital has to provide proof of identification and complete a "self-health declaration form for COVID-19 prevention". This requires individuals to document any symptoms including fever, cough, or respiratory distress during the previous 14 days, and their overseas travel history. A nurse-led risk assessment of patients using a proforma developed by the Infection Control Unit includes documenting an individual's travel history, occupation, contact history, and cluster (TOCC). The information provided is verified using a Virtual Private Network (VPN) linking to the National Health Insurance Administration database.

More than 99% of births in Taiwan are delivered by obstetricians and take place in hospital. The maternity unit, staffed by nurse-midwives and nurses, includes antenatal/postnatal wards (40 beds), a delivery waiting room (8 beds), birth rooms (3 beds), nursery (24 beds) and special care baby unit (29 beds). There are around 110–140 births each month. The usual in-patient stay of three days following a vaginal birth and six days following a caesarean section has remained unchanged during the pandemic. Obstetric, gynaecology and neonatology clinical teams met on

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January 26th 2020 to discuss strategies to prevent COVD-19. Following the meeting, changes including only allowing two visitors per woman to visit at any time, preferably close relatives including her husband and mother, who have to provide proof of identification. One of these two named visitors can stay overnight with the woman.

In circumstances when more than two visitors are permitted to see the woman and/or her baby, to prevent possible transmission of infection rooming-in and breastfeeding are temporarily halted, as the baby will be transferred to the nursery and fed the woman's expressed breast milk. No visitors can enter the nursery, but visitors can see/hear/talk to the baby via telephones or live videos. Visitor management measures in these cases include prioritising a woman's husband before other relatives. Any other children the woman may have cannot visit while she is an in-patient. Visitors have to wear surgical masks all of the time and adhere to strict infection control rules including TOCC report, VPN verification, complete a self-health declaration form, body temperature measurement, hand washing, and can only access designated corridors and entrance/exit walkways.

If a pregnant woman is diagnosed with or suspected to have COVD-19 she will be moved to a negative-pressure isolation ward and birth will take place in a negative-pressure birth room. Any woman showing signs of fever, tremor, headache and diarrhoea in labour will be assessed by a doctor and have a SARS-CoV-2 test if needed. If symptoms such as fever and/or upper respiratory symptoms are identified in a postpartum woman, she will be moved to an isolation room, assessed by an infectious disease specialist and tested for SARS-CoV-2, with a repeat test 24 h later. Her infant will be admitted to an isolation area in the nursery until the maternal test results are negative, there is no fever and the woman has received full clinical assessment.

Advice on breastfeeding, rooming-in, postpartum exercise, postpartum nutrition, contraception and resuming sexual intercourse are now offered to women individually at their bedsides, rather than offering group classes. The unit is no longer accepting "sitting the month" meals provided by external companies, and meals now have to be provided by the hospital or the woman's relatives. Public galleries and a sitting room in the maternity unit were closed to prevent people gathering and the unit has only one entrance open. Half of the seating in all public areas in the unit were removed to maintain social distancing.

According to traditional Chinese custom, women should remain at home, follow restrictive rules and receive assistance with practical tasks when "sitting the month" (Chien et al., 2009) at home or in a designated Postpartum Care Centre. The Postpartum Centres are also not allowing any visitors other than women's husbands, who will be expected to adhere to the same infection control guidance as above. Women on discharge home will be advised to avoid public and crowded places, maintain social distancing and wash their hands frequently, similar to advice offered to the general public. There is anecdotal evidence that postpartum women are much stricter about avoiding close contact with visitors and keeping the number of visitors to a minimum. As "sitting the month" is already restrictive in terms of what women should be doing, high adherence to measures to prevent the spread of COVID-19 is perhaps not unexpected.

Hospital policy towards its staff includes measuring their temperature every day. Individuals who develop symptoms including fever, sore throat, upper respiratory tract infection, diarrhoea, or anosmia must stop work immediately and attend the fever screening station where they will be tested for SARS-CoV-2. Official leave is granted when waiting for test results, and the staff worker are expected to strictly comply with "self-health management" measures for 14 days prior to returning to work. The hospital Occupational Safety and Health Centre will follow up the staff member and test results will be assessed by an infectious disease doctor, who can sign a return to work permit when appropriate.

Other measures for staff working at the hospital include that throat and nasopharynx specimens have to be taken by a senior doctor wearing personal protective equipment, including N95 masks, water-resistant surgical gowns, face shields, and gloves. Doctors in their post-graduate year of training are not allowed to collect these specimens. Increasing environmental cleaning and disinfection from once to three times a day was also introduced, using disposable cloths and 0.6% (6000 ppm) bleach for cleaning. The Infection Control Unit of the hospital oversees the monitoring of environmental safety.

We consider that effective preventative and control measures introduced at government and hospital/unit level have minimised the risk of COVID-19 infection to women and their infants. In general, front-line clinicians have not experienced serious concerns with patients/service users or visitors. This could be due to clear public guidelines and communication issued by the CECC, with information about the hospital policy on websites, electronic notice boards, and posters at all entrances. Only a few complaints, mainly related to visitor restrictions, have been reported. Women are noted to be more vigilant regarding their own physical symptoms during the pandemic, and actively refer to clinical staff if they develop a fever or cough. Nevertheless, despite general acceptance of all measures introduced to prevent the spread of COVID-19, research is needed to investigate if/how these may have impacted on the health, well-being and experiences of women and their families.

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