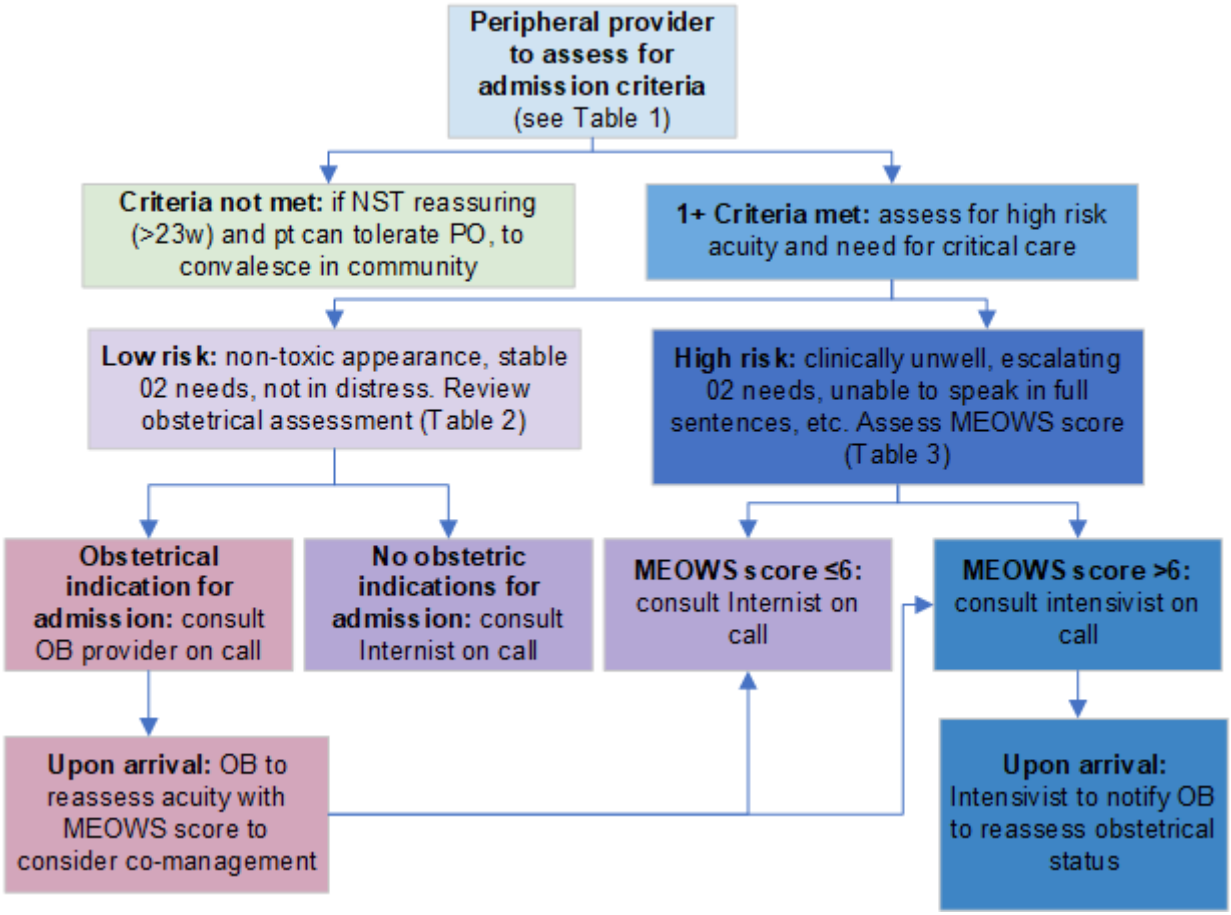
Shared Health Collaborative Statement on
COVID-19 Pregnant Patients Requiring Transfer to Tertiary Care

OBJECTIVE: To facilitate peripheral transfer of pregnancies complicated by moderate-severe COVID-19 with prompt and appropriate consultation, avoidance of emergency departments and obstetrical triage where possible, and with minimal redundancies in care to optimize outcomes and avoid critical decompensation in centres not served by Intensive Care services. **Collaboration between tertiary-care services will be key to best utilize available beds, staffing resources and medical expertise.**

KEY FEATURES:

1. **Transfer of care should favour HSC Women's Hospital**
    a. Each patient room is single occupancy with a private bathroom
    b. NICU capacity to isolate is exponentially greater than at St. Boniface Hospital
    c. In the event of HSC bed shortage, direct consultation to St. Boniface
2. **Consultation should be Attending to Attending MD**
    a. Meeting criteria for hospital admission should prompt transfer of care, as physiologic changes of pregnancy can temporarily mask severity leading to sudden decompensation.
    b. Communication between Critical Care/Medicine and OB physicians is crucial when transferring patients.
3. **Where COVID-19 is the primary indication for admission AND pregnancy is stable, admission should be under the purview of Internal Medicine or Critical Care**
    a. Consult HSC Critical Care first for any patient who appears acutely unwell, has increasing oxygen requirements or has cardiorespiratory comorbidities.
    b. Consult HSC Internal Medicine first for a patient who is clinically stable but requires oxygen supplementation at rest or with ambulation.
    c. Acuity assessment tools included in this document can help guide this decision but do not replace clinical judgement.
4. **Where obstetrical complaints are the primary indication for admission AND infectious status is stable, admission to be under the purview of Obstetrics, ie:**
    a. Preterm/prelabour Rupture of Membranes
    b. Risk for labour with newborn complications exceeding local neonatal capacity
    c. Unstable complications of pregnancy (bleeding previa, severe preeclampsia etc)
5. **Where both obstetrical concerns AND COVID-19 disease are symptomatic, first referral should be made to Obstetrics to triage the acuity of OB complaints and discern whether shared-care referral should include Medicine or Critical Care.** Determination of admission location should be based on the following:
    a. Likelihood of delivery in the next 24 hours
    b. Need for continuous electronic fetal monitoring
    c. Need for high flow oxygen supplementation
    d. Likelihood of intubation in the next 24 hours
6. **Where admission is NOT under an obstetrician, consult to Obstetrics if:**
    a. Greater than 20 weeks gestational age AND
    b. Less than 6 weeks postpartum

Decision to transfer should initiate the Moderate-Severe COVID-19 in Pregnancy Protocol



ADMISSION LOCATION - DIRECT TO WARD

Admitting provider to notify Labour Floor charge RN if gestational age >22+6 weeks to mobilize an RN and fetal monitor to complete an admission NST if the destination is not Women's Hospital

Admitting ward	Obstetrics AP/MBU	Obstetrics L&D	Internal Med	Critical Care
Indications	• Moderate risk for delivery in the next 72 hours • Very low risk for intubation in the next 72 hours • MEOWS 4 or less	• High risk for delivery in the next 24 hours • Indication for continuous EFM • Hypertensive crisis (>160/110) • MEOWS 4-6	• Low risk for delivery in the next 72 hours • Low risk for intubation in the next 72 hours • MEOWS <7	• Case-by-case assessment by ICU team
Contraindications	• Trigger of the sepsis protocol - transfer to L&D for continuous monitoring • Oxygen suppl >4L/min	• Escalating O2 requirements • Deterioration despite 3hrs aggressive resuscitation	• Obstetrical instability • Oxygen requirements >nasal prongs • Altered LOC	• Case-by-case assessment by ICU team

Where ambiguity remains, cases-by-case shared discernment to be made with OB & Critical Care

TABLE 1: Indication for hospital admission in the Obstetrical COVID-19 patient (1 or more category)

Hypoxemia	Dyspnea	Hemodynamic instability: abnormal vitals AND unwell		Dehydration: poor urine output OR po intake	
Sp02 < 95% requiring oxygen	RR > 20 bpm	BP > 20 mmHg below baseline *OR* MAP < 65 *OR* >150/100 mmHg	HR > 110 bpm despite fluids	< 30mL/h despite fluids	Unable to tolerate oral intake

Admission is indicated if features do not improve with treatment OR if presentation is unstable

TABLE 2: Indications for Obstetrical Admission

	Obstetrics admission	Internal Med admission
Ruptured Membranes	Recent (<5 days); untreated; viable	Chronic, previable with a closed cervix
PreEclampsia	Primary indication for admission; hyper-reflexic; symptomatic; HELLP	Stable on regular po meds and normal neurological exam
Diabetes	Polyhydramnios with any risk features for rupture and/or labour	All other diabetic features can be adequately managed by endocrine on non-OB ward
Vaginal bleeding	Bright red; volume >spotting; Previa; Etiology NOS; Increased postpartum	Chronic spotting with known subchorionic hemorrhage AND reassuring exam
Pelvic pain	Menstrual in character; recurrent with a temporal pattern; not limited to movement; associated with vaginal pressure	Limited to movement (MSK); associated with UTI or constipation improved with treatment AND reassuring PV exam x2
Cervical Dilation	Nullip ≥1cm OR any effacement Multip ≥2cm AND effacement	Closed, or stable multiparous Os
NST	Atypical or abnormal	Normal
Postpartum	Medically stable enough for Mother Baby Unit to permit rooming-in	If not stable enough for MBU, reassess the role of critical care

If obstetrical admission, consult Anesthesia and consider co-management with internal medicine

TABLE 3: Modified Early Obstetric Warning Score (MEOWS) Chart

Score	3	2	1	0	1	2	3
Temp		<35	35-35.9	36-37.4	37.5-37.9	38-38.9	≥39
sBP	≤69	70-79	80-89	90-139	140-149	150-159	≥160
dBP			≤49	50-89	90-99	100-109	≥110
Pulse		<40	40-49	50-99	100-109	110-129	≥130
RR	≤10			11-19	20-24	25-29	≥30
CNS				Alert	Respond to Voice	Respond to Pain	No response
U/O cc/h	≤10	11-30		>30			

Table 4a: MEOWS thresholds and triggers

MEOWS SCORE	Obstetrical Site Response
Total < 5	Unit-based response; vitals q4h; monitor
Total 5-6 OR 3 in any single individual parameter	Urgent unit-based response; vitals q1h, continuous EFM; notify housestaff & anesthesia
Total > 6 or dramatic change in one parameter	Urgent response threshold; continuous maternal & fetal monitoring; page attending MD
Total > 6	Critical Care response threshold: Page ICU

Please note that all COVID-19 affected pregnancies are invited for inclusion in CANCOVID-*Preg*, a pan-national observational study to capture the impact of this disease with infection any time after conception and before 8 weeks postpartum. A patient leaflet is available for print here:
http://umanitoba.ca/faculties/health_sciences/medicine/units/obstetrics_gynecology/media/CANCOVID-PregPtPamphlet-1.pdf

REFERENCES:

Alzamora, M. C., Paredes, T., Caceres, D., Webb, C. M., Valdez, L. M., & La Rosa, M. (2020). Severe COVID-19 during pregnancy and possible vertical transmission. *American journal of perinatology*, *37*(8), 861.

- In agreement with other literature, case report supports that, unlike the vast majority of COVID+ pregnancies, severe infection may precipitate vertical transmission
- Case shows rapid deterioration following tachypnea onset, in keeping with other literature

Galang, R. R., Chang, K., Strid, P., Snead, M. C., Woodworth, K. R., House, L. D., ... & Shapiro-Mendoza, C. K. (2020). Severe coronavirus infections in pregnancy: a systematic review. *Obstetrics & Gynecology*, *136*(2), 262-272.

- Descriptive review paper including 98 severe/critical COVID-19 infections in pregnancy
- Maternal mortality (1%) secondary to culture-negative septic shock, multiorgan failure, cardiac arrest
- Management recommendations deferred

Kadir, R. A., Kobayashi, T., Iba, T., Erez, O., Thachil, J., Kazi, S., ... & Othman, M. (2020). COVID‐19 coagulopathy in pregnancy: Critical review, preliminary recommendations, and ISTH registry—Communication from the ISTH SSC for Women's Health. *Journal of Thrombosis and Haemostasis*.

- Discussion of the high risk for poor outcomes with comorbid COVID-19 disease in pregnancy secondary to coagulopathy
- Detailed hematologic findings modified for pregnancy
- Recommendation of VTE prophylaxis for all pregnant patients admitted with COVID-19

Paternina-Caicedo, A., Miranda, J., Bourjeily, G., Levinson, A., Dueñas, C., Bello-Muñoz, C., & Rojas-Suarez, J. A. (2017). Performance of the Obstetric Early Warning Score in critically ill patients for the prediction of maternal death. *American journal of obstetrics and gynecology*, *216*(1), 58-e1.

- Validation of the MEOWS scoring system to predict maternal mortality
- Utility of MEOWS in the ICU setting

Royal College of Obstetrics and Gynecology Guideline 64a: Bacterial Sepsis and Pregnancy
Royal College of Obstetrics and Gynecology Guideline 64b: Bacterial Sepsis Following Pregnancy

- Comprehensive use and evidence for MEOWS scoring to risk stratify severe illness in pregnancy
- Many elements are appropriate for management of viral illness, such as modified vital sign triggers and biochemical targets

To date there are no case series reporting co-infection with severe COVID-19 and a bacterial source. Where, however, COVID status is not yet confirmed, a high index of suspicion should be maintained for invasive group A strep in a tachypneic pregnant/postpartum patient as this is a common presentation of obstetrical sepsis.

Saad, A. F., Chappell, L., Saade, G. R., & Pacheco, L. D. (2020). Corticosteroids in the management of pregnant patients with coronavirus disease (COVID-19). *Obstetrics & Gynecology*, *136*(4), 823-826.

- RECOVERY Trial included only a handful of pregnant subjects
- Due to Dexamethasone's transmission across the placental barrier it may confer benefit to mother and baby in the first 48 hours if the pregnancy is <35 weeks gestation, however risk of fetal toxicity increases with additional dosing or administration >35 weeks.
- Alternative regimen of Prednisilone or Hydrocortisone recommended here and in the RECOVERY Trial protocol V9.
- Combination of dex x2 days and Pred/Hydrocort x8 days in preterm labour is reasonable

Due to limited pregnancy data, poor response to alternative steroids >48hrs should prompt reconsideration of dexamethasone to complete 10d course.

Schnettler, W. T., Al Ahwel, Y., & Suhag, A. (2020). Severe ARDS in COVID-19-infected pregnancy: obstetric and intensive care considerations. *American Journal of Obstetrics & Gynecology MFM*, 100120.

- Detailed case presentation with rapid decompensation over 10 hours
- Recommendations regarding modified criteria (in keeping with MEOWS) to discern severity
- Co-involvement of Obstetrics with ICU admission
- Out of date medication recommendations