SARS-CoV-2 in pregnancy

COVI-PREG
International COVID-19 and Pregnancy Registry

March 20th, 2021

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COVID-19 and pregnancy

Multiple challenges

From 1 to…. 2 patients !!!!

Mother

- Higher metabolic demand
- Immune tolerance
- Limited respiratory capacity
- Vascular / hemodynamic stress

Fetus / newborn

- Immature / developing organs
- Limited immune response

Increased susceptibility to infections

Limited treatment options

COVID-19 and pregnancy

At the beginning

CORRESPONDENCE | VOLUME 395, ISSUE 10224, E40, FEBRUARY 22, 2020

2019-nCoV epidemic: what about pregnancies?

Guillaume Favre • Léo Pomar • Didier Musso • David Baud

Published: February 06, 2020 • DOI: https://doi.org/10.1016/S0140-6736(20)30311-1

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MERS-CoV, SARS-CoV-1 & adverse **obstetrical** outcome…

… **SARS-CoV-2** outcomes ?

COVID-19 and pregnancy

Outcomes

John Allotey, BMJ, 2020

Outcomes	No of studies	Women (No with event/No in group (%))		Odds ratio (95% CI)
		Pregnant women with covid-19	Comparison group	
Comparison group: non-pregnant women of reproductive age with covid-19				
All cause mortality	4	16/8282 (0.2)	208/83 327 (0.2)	0.81 (0.49 to 1.33)
ICU admission	4	121/8276 (1.5)	758/83 330 (0.9)	1.62 (1.33 to 1.96)
Invasive ventilation	4	43/8276 (0.5)	226/83 330 (0.3)	1.88 (1.36 to 2.60)
Comparison group: pregnant women without covid-19				
Maternal outcomes:				
All cause mortality	1*	5/427 (1.2)	0/694 (0)	18.08 (1.00 to 327.83)
ICU admission	1*	40/427 (9.4)	1/694 (0.1)	71.63 (9.81 to 523.06)
Preterm birth <37 weeks	2	7/44 (15.9)	18/295 (6.1)	3.01 (1.16 to 7.85)
Caesarean section	3*	184/491 (37.5)	577/1676 (34.4)	2.02 (0.67 to 6.10)
Perinatal outcomes:				
Stillbirth	1*	3/427 (0.7)	2/694 (0.3)	2.45 (0.41 to 14.71)
Neonatal death	1*	2/427 (0.5)	1/694 (0.1)	3.26 (0.30 to 36.07)
Admission to neonatal unit	1*	64/427 (15.0)	37/694 (5.3)	3.13 (2.05 to 4.79)

COVID-19 and pregnancy

Outcomes

Zambrano, MMWR, Nov. 2020

TABLE 2. Intensive care unit (ICU) admissions, receipt of invasive ventilation, receipt of extracorporeal membrane oxygenation (ECMO), and deaths among symptomatic women of reproductive age with laboratory-confirmed SARS-CoV-2 (N = 409,462), by pregnancy status, age, race/ethnicity, and underlying health conditions — United States, January 22–October 3, 2020

	No. (per 1,000 cases) of symptomatic women		Risk ratio (95% CI)	
Outcome*/Characteristic	Pregnant (n = 23,434)	Nonpregnant (n = 386,028)	Crude†	Adjusted†,§
ICU admission¶ All	24[illegible] (10.5)	1,492 (3.9)	2.7 (2.4–3.1)	3.0 (2.6–3.4)
Death§§§ All	34 (1.5)	447 (1.2)	1.3 (0.9–1.8)	1.7 (1.2–2.4)

Adjusted for age, ethnicity, medical condition, …

COVID-19 and pregnancy

Outcomes

Jering, JAMA Intern Med, 2021

Outcome	No. (%) Without COVID-19 (n = 400 066)	With COVID-19 (n = 6380)	*P* value	Unadjusted OR (95% CI)	Adjusted OR (95% CI)[a]
Cesarean delivery	109 865 (27.5)	1847 (28.9)	.01	1.08 (1.02-1.14)	1.07 (1.02-1.13)
Preterm labor	16 137 (4.0)	332 (5.2)	<.001	1.31 (1.17-1.46)	1.19 (1.06-1.33)
Preterm birth[b]	23 234 (5.8)	459 (7.2)	<.001	1.26 (1.14-1.38)	1.17 (1.06-1.29)
Stillbirth	1289 (0.3)	34 (0.5)	.003	1.66 (1.18-2.33)	1.23 (0.87-1.75)
Preeclampsia	27 078 (6.8)	564 (8.8)	<.001	1.36 (1.22-1.46)	1.21 (1.11-1.33)
Eclampsia	288 (0.1)	8 (0.1)	.12	1.74 (0.86-3.52)	1.56 (0.77-3.16)
HELLP syndrome	989 (0.2)	33 (0.5)	<.001	2.10 (1.48-2.97)	1.96 (1.36-2.81)
Myocardial infarction	18 (0.0)	8 (0.1)	<.001	27.90 (12.13-64.20)	30.89 (12.56-75.99)
Stroke	14 (0.0)	0	.64	NA	NA
VTE	268 (0.1)	15 (0.2)	<.001	3.52 (2.09-5.92)	3.43 (2.01-5.82)
Thrombotic event[c]	300 (0.1)	22 (0.3)	<.001	4.61 (2.99-7.11)	4.47 (2.87-6.96)
Intensive care	1747 (0.4)	212 (3.3)	<.001	7.84 (6.78-9.06)	6.47 (5.55-7.55)
Mechanical ventilation	212 (0.1)	86 (1.3)	<.001	25.77 (20.03-33.15)	23.70 (17.95-31.29)

Infection rate & pregnancy

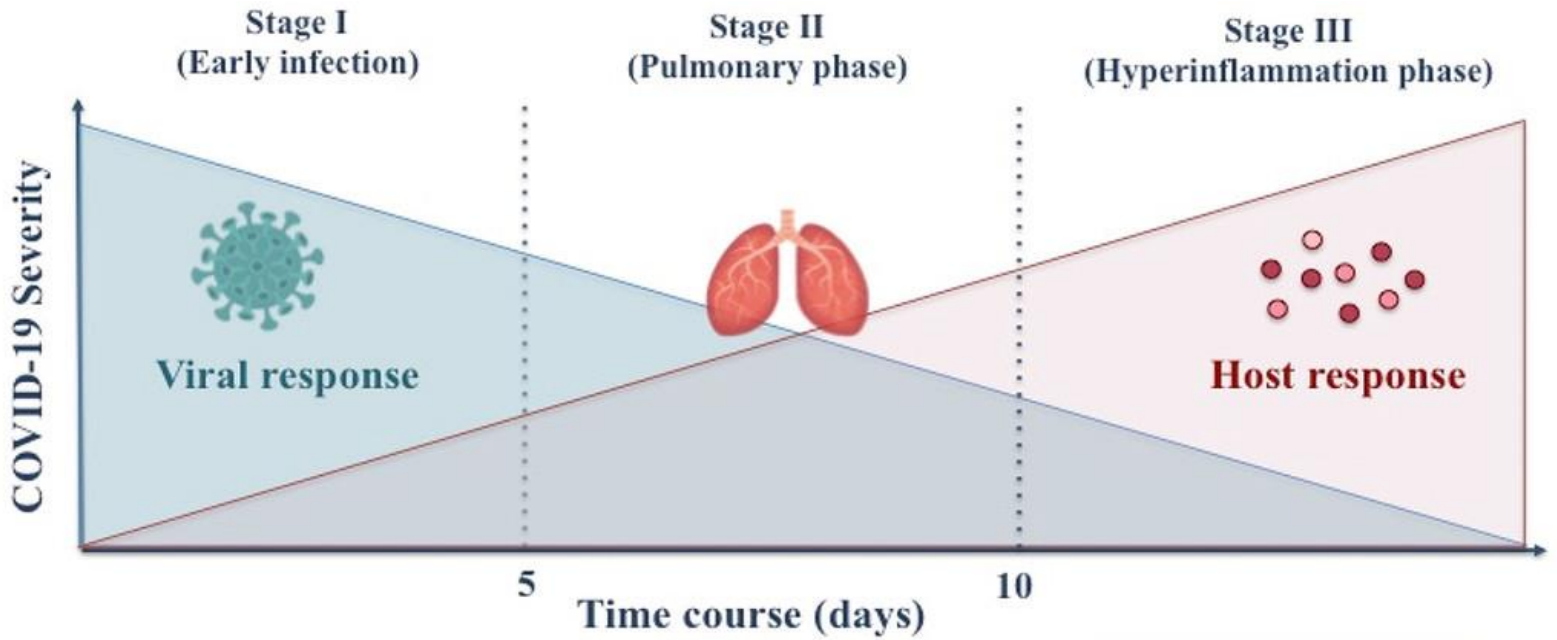
Lokken EM, AJOG, 2021

Table 2. SARS-CoV-2 Infection Rates in Pregnancy in Washington State

Accountable Community of Health	Washington State COVID-19 in Pregnancy Collaborative					Washington State: 20-39 Year Olds				Rate Ratio	
	Cases in pregnancy		Deliveries during study period		SARS-CoV-2 Infection rate/ 1000 deliveries	Cases[i]		Population[ii]	SARS-CoV-2 Infection rate/ 1000		
	N	(%)	N	(%)	Rate (95%CI)	N	(%)	N	Rate	(95%CI)	RR (95%CI)
Washington State Total	240		17,233		13.9 (8.3, 23.2)[iii]	15,238[iv]		2,076,248	7.3	(7.2, 7.4)	1.7 (1.3, 2.3)[v]

+70%

Course of the disease

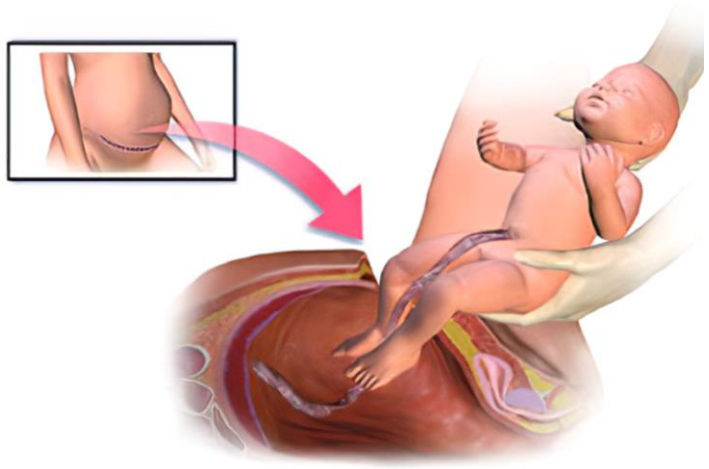


Antivirals	Antivirals, Corticosteroids, Anticoagulation, Convalescent Plasma	Corticosteroids, Anticoagulation, IL-6 Inhibitors, JAK Inhibitors

COVID-19 and pregnancy

Cesarean section pandemic

There is currently no evidence that delivery by cesarean section improves outcomes among patients with Covid-19.[4] We advise that cesarean delivery be performed in women with Covid-19 only after a careful evaluation of the disease severity and obstetrical indications.

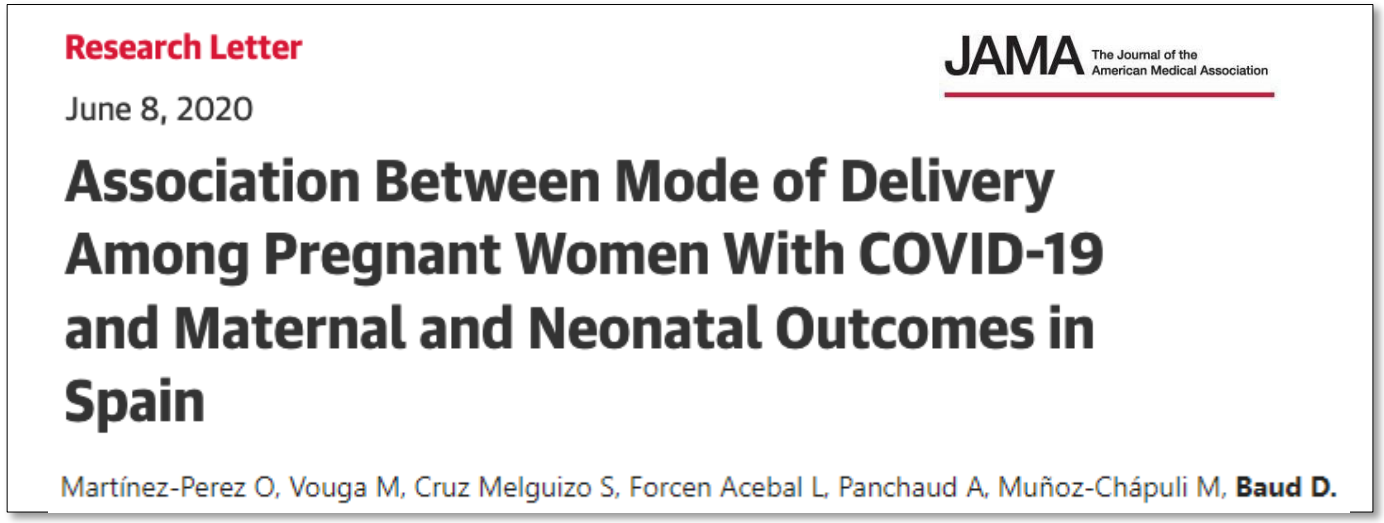


Vouga, Grobman, Baud

The NEW ENGLAND JOURNAL of MEDICINE

COVID-19 and pregnancy

Cesarean sections



Research Letter

JAMA The Journal of the American Medical Association

June 8, 2020

Association Between Mode of Delivery Among Pregnant Women With COVID-19 and Maternal and Neonatal Outcomes in Spain

Martínez-Perez O, Vouga M, Cruz Melguizo S, Forcen Acebal L, Panchaud A, Muñoz-Chápuli M, **Baud D.**

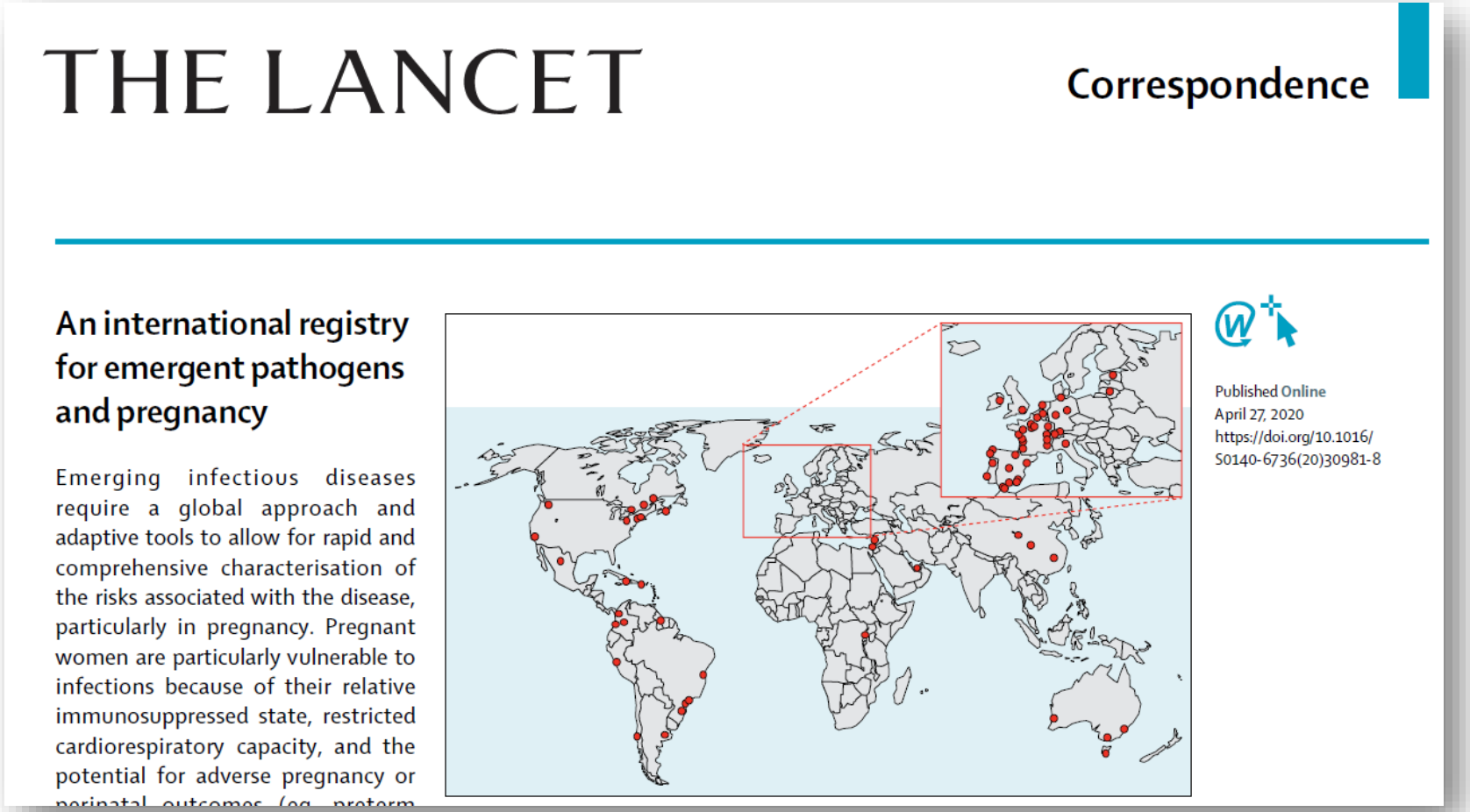
Cesarean section among patients with a **mild disease** is associated with severe clinical **pejoration**

aOR 13.4 (1.5-121.9)

COVI-PREG

International COVID-19 and Pregnancy Registry

- 240 co-authors
- 158 hospitals
- from 23 countries
- over 5 continents



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An international registry for emergent pathogens and pregnancy

Emerging infectious diseases require a global approach and adaptive tools to allow for rapid and comprehensive characterisation of the risks associated with the disease, particularly in pregnancy. Pregnant women are particularly vulnerable to infections because of their relative immunosuppressed state, restricted cardiorespiratory capacity, and the potential for adverse pregnancy or

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