

Bringing the impact of COVID-19 in pregnancy out of the shadows

Raising awareness and influencing policy through evidence generation, dissemination and collaboration

The Challenge

The global pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), or 'COVID-19' has had far-reaching impacts. Maternal and fetal outcomes have been negatively impacted, with increases in maternal deaths and stillbirths, and significant disparities between high and low resource settings. Pregnant women have a higher chance than non-pregnant women of being admitted to intensive care, and risk factors for severe disease include non-white ethnicity, high body mass index, older age, pre-existing medical co-morbidities (including diabetes and hypertension). Other important factors effecting outcomes for pregnant women are the prevalent variant and the introduction of vaccines.

Public health and clinical guidance issued within countries and by major international bodies was the subject of ongoing, rapid change, and there were differences in the recommendations, adding to confusion. Little was known about the impacts of COVID-19 on pregnancy outcomes and how to best structure and deliver maternity care to mitigate the impacts of the virus.

Our Work

Members of the Pregnancy Loss Research Group have been key contributors to a number of national and international studies and resources in relation to COVID-19 and maternity practice



Professor Keelin O'Donoghue was involved in several international collaborations to better understand the impacts of COVID-19 in pregnancy, e.g.

- 'SARS-CoV-2 positivity in offspring and timing of mother-to-child transmission: living systematic review and meta-analysis', published in the *BMJ*
- 'Maternal transmission of SARS-COV-2 to the neonate, and possible routes for such transmission', published in *BJOG*
- 'Haemostatic and thrombo-embolic complications in pregnant women with COVID-19', published in *BMC Pregnancy and Childbirth*
- 'COVID-19 and pregnancy: A comparison of case reports, case series and registry studies', published in *EJOG*
- 'Recruitment of pregnant women to randomised trials of COVID 19 treatments, and pharmaceutical treatments received outside such trials', published in *EJOG*.



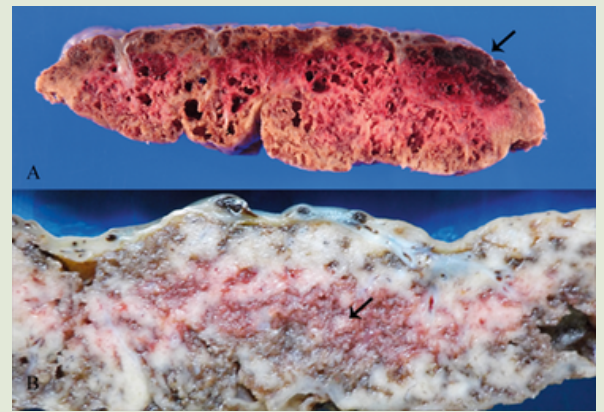


Dr Laura Linehan led a case study which was the first to document SARS-CoV-2 placentitis, uncommon complication of maternal COVID-19 – paper published in *Placenta*, and recommended that pregnant women with COVID-19 should receive extra monitoring of their baby after infection, particularly if they have reduced movements.



Dr Brendan Fitzgerald and Professor O'Donoghue led an investigation of seven fetal deaths in Ireland in early 2021 due to SARS-CoV-2 Placentitis caused by SARS-CoV-2 Alpha, findings published in *Archives of Pathology and Laboratory Medicine*.

Dr Fitzgerald collaborated with a multinational group of 44 perinatal specialists on 'Placental tissue destruction and insufficiency from COVID-19 causes stillbirth and neonatal death from hypoxic-ischemic injury: A study of 68 cases with SARS-CoV-2 Placentitis from 12 countries'; published in *Archives of Pathology & Laboratory Medicine*.



Professor O'Donoghue and Dr Margaret Murphy led the Irish arm of the multicountry COCOON study which investigated new, expectant, and bereaved parent experiences of care during COVID-19; protocol published in *BMJ Open*.

Dr Margaret Murphy was also involved in international calls for action regarding stillbirth and COVID-19, e.g. 'Counting stillbirths and COVID 19-there has never been a more urgent time' published in *The Lancet Global Health*; 'Pregnancy after loss during the COVID19 pandemic' published in *Women and Birth*.



Professor O'Donoghue was one of four international researchers who created and curated the *British Journal of Obstetrics and Gynaecology* COVID-19 Resource Centre, collecting useful and credible links to selected guidelines, registries, primary sources, systematic reviews and websites.

Professor O'Donoghue also curated a resource centre on COVID-19 and pregnancy with Professor Jim Thornton and Dr Kate Walker (Nottingham University) via Ripe-tomato.org.



Our Impact

The above work has added to the knowledge base surrounding COVID-19 in pregnancy, nationally and internationally. Professor O'Donoghue made several **media appearances**, communicating key messages from the work, including on:

- RTE Radio 1 (Pregnant women urged to attend visits as normal and raise any concerns)
- RTE ('No increase in stillbirths worldwide since pandemic' - HSE maternal health doctor)
- The Examiner (Cork obstetrician says pregnancy complications linked to Covid-19 are 'very uncommon')
- Belfast Telegraph (Pregnant women advised to attend appointments after Covid-19 infection)
- The Journal (Covid placentitis: Four more stillbirths and two babies' deaths reported in Ireland)
- Echo Live (Five stillbirths linked to Delta variant in unvaccinated mothers)
- The Scientist (Doctors investigate several stillbirths among moms with COVID-19)
- The Medical Independent (Uncertainties surround pregnancy and the coronavirus).

In 2021, Professor O'Donoghue and Dr Brendan Fitzgerald delivered a virtual **Masterclass** on COVID-19 in Pregnancy for the Royal College of Physicians of Ireland (RCPI).

Policy Impacts

Professor O'Donoghue was lead author for the Institute of Obstetricians and Gynaecologists (IOG) of the RCPI and the National Women and Infant's Health Programme (NWIHP), Health Service Executive (HSE) clinical guidance on COVID-19 and maternity services. This guidance document for maternity services outlines considerations for care for pregnant women and their infants during the COVID-19 pandemic. It provides advice for maternity units around the provision of safe care to women and infants with suspected or confirmed COVID-19. Since its initial publication, it has been updated four times and is published on many national websites, being widely endorsed by professional colleges and health services bodies.

Work on COVID-19 Placentitis led to several statements. In light of emerging findings, in April 2021, the IOG made a statement on SARS-CoV-2 placentitis. Acknowledging that stillbirth still appeared to be a rare complication of maternal COVID-19 infection, it highlighted the importance of stillbirth investigation, and pathologists, obstetricians, scientists and Coroners working together—and with national and international colleagues—to better understand the implications of the four cases of stillbirth identified nationally in Ireland's 3rd wave of COVID-19 infection.

The IOG and NWIHP issued guidance in January 2022 on Stillbirth, Surveillance of Fetal Wellbeing and SARS-CoV-2 Infection. This highlighted the risk of stillbirth with maternal SARS-CoV-2 infection, arising from both maternal complications from severe COVID-19 illness and placental damage from SARS-CoV-2 placentitis, and the mitigation of risk by COVID-19 vaccination.

Research priorities around SARS-CoV-2 placentitis include how to identify any variant which may be a risk for placentitis and how best to instigate and manage an urgent national/global obstetric response to it. There needs to be a concerted effort to address vaccine hesitancy in the pregnant population and among healthcare staff. Obstetricians and Pathologists should also monitor the clinical course, treatments and outcomes of pregnancies following SARS-CoV-2 infection so that women are provided with tailored, evidence based, advice for current and future pregnancy.

Professor Keelin O'Donoghue, Lead, Pregnancy Loss Research Group

