Implementation of a low-cost telehealth service in the delivery of antenatal care during the COVID-19 pandemic: an interrupted time series study

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2021 RANZCOG Virtual Annual Scientific Meeting 15–18 February

Background:

On 13th March 2020 the Australian Government introduced new Medicare item numbers to support telehealth implementation during the COVID-19 pandemic to maximise physical distancing and minimise disease transmission. Monash Health developed and implemented a telehealth integrated antenatal care schedule on 23rd March. Limited evidence exists to inform such a program. With the potential for impacts on pregnancy outcomes this evaluation was performed to guide the ongoing use of this program in care delivery.

Hypothesis:

Are pregnancy outcomes similar with telehealth integrated care to conventionally delivered antenatal care?

Methods:

Interrupted time series (ITS) study of all women birthing at Monash Health comparing conventional care (1st January 2018 – 22nd March 2020) to telehealth integrated care (20th April – 26th July 2020) periods, allowing a 4-week implementation period. Ethics approval was obtained. Routine data variables were obtained from the Birthing Outcome Summary database.

Primary outcome assessed safety of telehealth care on common pregnancy complications including fetal growth restriction (FGR), preeclampsia and gestational diabetes (GDM).

Low risk care models

	1st Trimester		2nd Trimester	3rd Trimester					
Telehealth	MAC	16w	22w - 1st Dr's		31w	34w		38w	
In-person				28w			36w		40w +

High risk care models

	1st Trimester		2nd Trimester		3rd Trimester					
Telehealth	MAC	1st Dr's		22w		31w	34w			
In-person			16-18w		28w			36w	38w	40w +

Figure 1: Telehealth Integrated Antenatal Care Schedule.

Results:

Table 1: Maternal Characteristics

	Conventional Care (n = 20,031)	Integrated Care (n = 2,292)	P value
Maternal Age (years)	31·29 (5·19)	31·61 (5·31)	0·03
BMI (kg/m²)	25 (14– 73)	25 (15– 60)	0·08
Smoking in pregnancy	1253 (6%)	147 (6%)	0.86
Nulliparous	7,983 (40%)	894 (39%)	0·73
Maternal Region of birth			
Australia	8,363 (42%)	1,012 (44%)	0.06
Southern Asia	5,961 (30%)	642 (28%)	
South East and East Asia	3,158 (16%)	363 (16%)	
Other	2,549 (12%)	275 (12%)	

Figure 2: 53% of consultations were delivered by telehealth

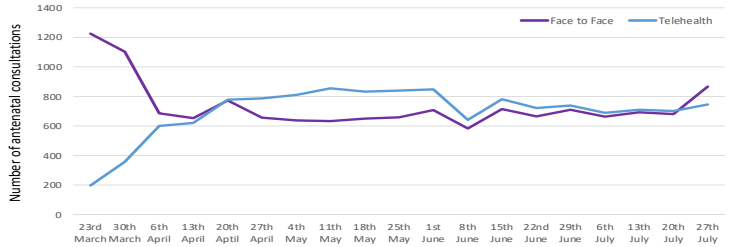
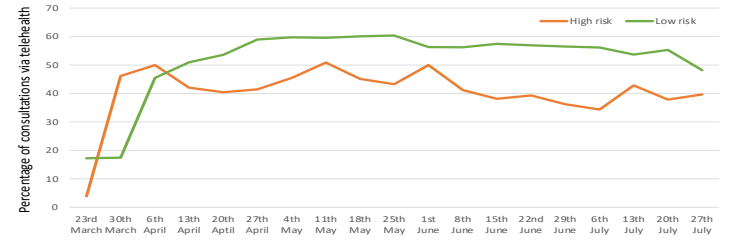


Figure 3: Telehealth Consultations by care model



57% of consultations in low-risk care models (midwifery-led, GP shared care or collaborative) and 42% of high-risk (obstetric specialty-led care) models were delivered by telehealth.

	Conventional Care	Integrated Care	ITS % rate change (95% CI)
	74/306 (24%)	8/34 (24%)	-0.58(-3.48 to 2.33)
	665/15,470 (4%)	82/1,767 (5%)	-0.19(-0.40 to 0.03)
	455/15,493 (3%)	49/1,768 (3%)	0.15(-0.03 to 0.34)
	38·2 (37·2 – 39·3)	38·4 (37·3 – 39·3)	
	20/455 (4%)	2/49 (4%)	
	3,405/15,493 (22%)	386/1,768 (22%)	-0.02(-0.52 to 0.47)
	1,242/3,405 (36%)	127/386 (33%)	0.72(-0.42 to 1.85)
	384/3,405 (11%)	33/386 (9%)	0.55(-0.26 to 1.36)
	105/15,516 (0·7%)	11/1,768 (0·6%)	0.02(-0.04 to 0.09)
	869/15,516 (6%)	82/1,768 (4%)	0.12(-0.10 to 0.35)
High-Risk Care Models			
Singletons <3rd centile born at or after 40 weeks' gestation	17/161 (11%)	1/19 (5%)	0.55(-0.48 to 1.57)
Singletons induced for suspected FGR	207/4,186 (5%)	30/474 (6%)	-0.008(-0.37 to 0.36)
Women diagnosed with preeclampsia	328/4,538 (7%)	47/524 (9%)	0.20(-0.31 to 0.70)
- Gestation at delivery (weeks)	36·8 (34·2 – 38·0)	37·1 (32·6 – 38·1)	
- Women with PE who suffered severe complication*	23/328 (7%)	2/47 (4%)	
Women diagnosed with GDM	1,178/4,538 (26%)	156/524 (30%)	0.38(-0.51 to 1.27)
- Requiring insulin	584/1,178 (50%)	78/156 (50%)	-0.51(3.49 to 2.46)
- With a macrosomic baby at birth (>97th centile)	194/1,178 (16%)	27/156(17%)	-0.72(-2.85 to 1.41)
Stillbirth	99/4,897 (2%)	13/574 (2%)	-0.22(-0.47 to 0.03)
Preterm birth (<37 weeks' gestation)	1,307/4,897 (27%)	164/574 (29%)	**-0.68(-1.37 to -0.002)**

Table 2: Maternal and Perinatal Pregnancy Outcomes. Crude Rates (% or inter-quartile range) presented for outcomes in the conventional and integrated care periods. ITS reports the change in rate of respective outcomes per week during telehealth integrated care compared to conventional care. Only significant change was a trend towards decreased preterm birth. *Composite of HELLP, eclampsia, abruption, pulmonary oedema and stillbirth

Conclusions:

Telehealth was able to be rapidly implemented and replaced ~50% of in-person consultations with no change in pregnancy complications compared to conventional care.

Monash Women's Monash Health