



Trends in caesarean section rates amongst women giving birth following conception by Assisted Reproductive Technology (ART) in Queensland, 1998 to 2008

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Available evidence suggests that caesarean section (CS) deliveries are more common in pregnancies resulting from Assisted Reproductive Technology (ART) than in those that are the product of natural conception^{1 2}. It has also been noted that ART conception often results in pregnancies where a caesarean section may be indicated, such as multiple gestation pregnancies and those resulting in a preterm birth¹. Thus, it is not clear whether the higher caesarean section rates are a product of the method of conception itself, or simply reflect an increased incidence of higher risk pregnancies amongst women who conceived by ART.

This publication describes CS rates amongst Queensland women who did and did not conceive via ART. The analysis is confined to nulliparous women, who had a singleton, vertex presentation, where gestation was between 37 weeks and 40 weeks and 6 days (inclusive); presumably, there are fewer indications for a CS than for other births (e.g.: previous CS, multiple gestation, preterm, abnormal lies). The data were drawn from the Queensland Perinatal Data Collection (QPDC) for the years 1998-2008. The QPDC is a complete census of births in Queensland and includes detailed information on obstetric, delivery and perinatal outcomes. The study was restricted to Queensland women. There were 153,980 low risk pregnancies (as defined) in Queensland between 1998 and 2008. This represents 27.2% of pregnancies for the period. Of these, 4.4% were conceived by ART, 26.2% were delivered by CS and 9.3% were delivered by CS prior to the onset of labour.

Caesarean section births: 1998 to 2008

The CS section rate in 2008 was 28.8% in this cohort. CS rates were higher amongst women who conceived via ART when compared to women who conceived naturally and higher amongst women in the private sector when compared to women in the public sector. In the public sector CS rates were 39.0% in ART pregnancies and 20.5% in naturally conceived pregnancies; the corresponding figures for the private sector were 51.4% (ART) and 41.1% (natural conception).

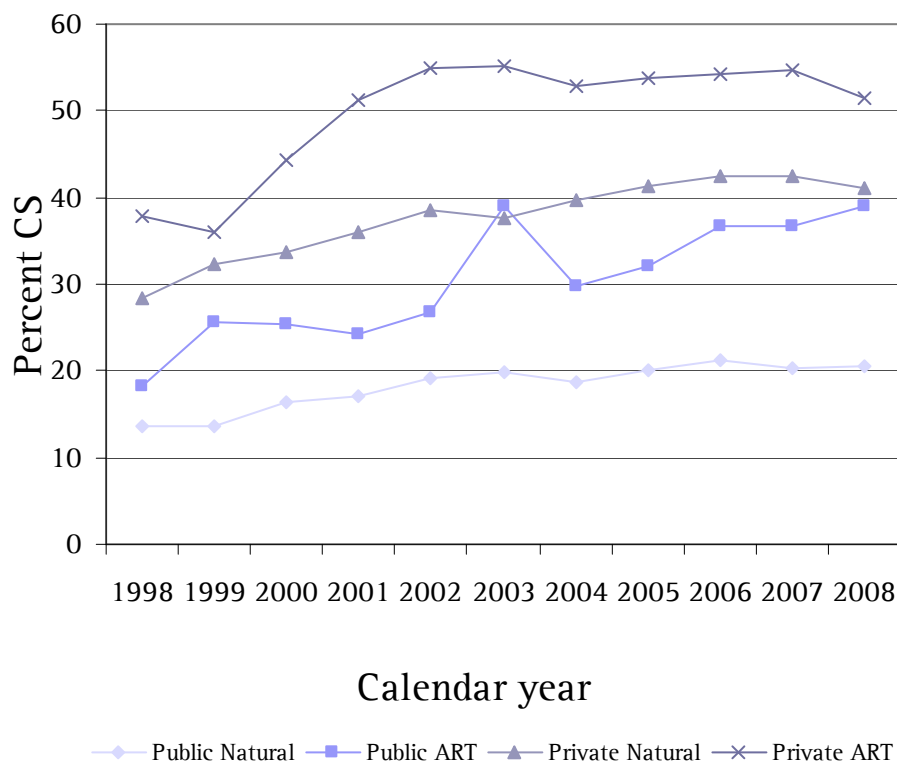
The rate of caesarean section births was generally higher amongst pregnancies conceived by ART when compared to those conceived naturally irrespective of sector (Figure 1). However, there were variations in the trends for ART pregnancies across sector. The CS rate among ART pregnancies in the public sector has shown a steady and consistent increase across the study period (1998 to 2008); in contrast, CS rates amongst ART pregnancies in the private sector increased sharply from 1998 to 2002 but have remained stable between 2002 and 2008.

Caesarean section before labour: 1998 to 2008

A caesarean section prior to labour accounted for 10.5% of births in this cohort during 2008. In general, CS before labour was more prevalent in women who conceived via ART and amongst women who gave birth in the private sector. Rates in the public sector during 2008 were 14.1% amongst ART conceived pregnancies and 3.6% amongst naturally conceived pregnancies; the corresponding rates in the private sector were 29.1% and 21.1%.

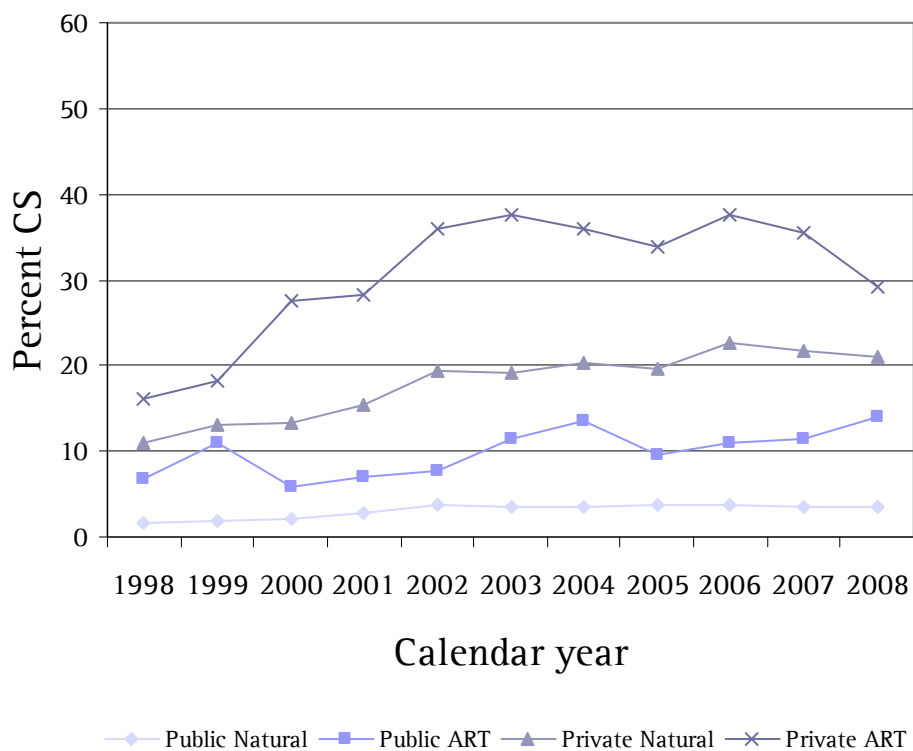
In general, increases in the rates for CS before labour were similar (albeit lower) than those for CS overall (Figure 2); that is, the increases for ART conceived pregnancies were greater than those for naturally conceived pregnancies in both the public and private sector. There was a steady increase in the CS rates for ART pregnancies across the study period in the public sector; however, CS rates for ART pregnancies in the private sector increased between 1998 and 2002, but have remained stable in the years since.

Figure 1. Trends in caesarean section rates by conception method (natural conception versus ART) by sector, Queensland, 1998 to 2008



Source: Queensland Perinatal Data Collection. Extracted 10 June 2010

Figure 2: Trends in caesarean section rates (before labour) by conception method (natural conception versus ART) by sector, Queensland, 1998 to 2008



Source: Queensland Perinatal Data Collection. Extracted 10 June 2010

Reason for caesarean section: 2006 to 2008

The most commonly cited reasons for a caesarean section were failure to progress and fetal distress (Table 1). These in combination accounted for 73.3% of naturally conceived pregnancies and 60.9% of ART conceived pregnancies in the public sector and for 39.5% of naturally conceived and 28.7% of ART conceived pregnancies in the private sector. The private sector recorded higher rates of “no classifiable condition” than the public sector and this was particularly high among ART conceived pregnancies in the private sector. The remaining causes listed in the table each accounted for less than 10% of CS in either the public or private sector.

Table 1: Top reasons for a caesarean section by sector and conception method Queensland 2006 to 2008

	Public		Private	
	Natural %	ART %	Natural %	ART %
No classifiable condition (O82)	3.4	9.2	21.7	29.0
Failure to progress (O61-O63)	47.4	37.9	25.0	17.2
Fetal distress (O68)	25.9	23.0	14.5	11.5
Obstructed labour (O65-O66)	3.4	4.0	3.2	2.4
Disproportion/dystocia (O33)	1.2	1.7	7.1	5.3
Placenta praevia (O44)	1.7	4.0	2.4	4.7
Gestational hypertension (O10, O11, O13-O16)	1.6	2.9	3.5	4.2
Excessive fetal growth (O366)	1.7	1.7	3.0	2.4

Source: Queensland Perinatal Data Collection. Extracted 10 June 2010

Conclusion

The findings in this study are similar to recent findings reported by Sullivan and associates¹. Caesarean section deliveries are more common in pregnancies resulting from Assisted Reproductive Technology than in those that are the product of natural conception. This appears to be only partly due to the increased incidence of complicated pregnancies associated with ART: higher CS rates were observed in ART-conceived pregnancies among this cohort of nulliparous women with a full term, singleton birth, with vertex presentation where the risk of pregnancy complications is arguably low. There are trends indicating that CS rates in ART pregnancies are increasing in the public sector, although they appear to have stabilised in the private sector.

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Related publication: StatBite #34: Characteristics of women in Queensland who gave birth following Assisted Reproductive Therapy (ART), 1998 to 2008. <http://www.health.qld.gov.au/hic/statbite/statbite34.pdf>

¹ Sullivan EA, Chapman MG, Wang YA, Adamson GD. Population-based study of caesarean section after in vitro fertilization in Australia. *Birth* 2010; 37:3; p184-191.

² Wang YA, Chambers GM, Deing M, Sullivan EA 2009. Assisted reproductive technology in Australia and New Zealand 2007. Assisted reproduction technology series no 13. Cat. no. PER 47.