

SASREG Embryo Transfer Guidelines

Background

High order multiple pregnancies (three or more) is an undesirable outcome of ART (Assisted Reproductive Technologies) and ovarian hyper stimulation. Multiple pregnancies lead to an increased risk of maternal and perinatal morbidity; they have a severe social and emotional impact and are at high cost for the parents, medical aids and society (1). The societal cost of caring for preterm neonates resulting from multiple pregnancies outweighs the couple's savings from preventing failed cycles (2,3). Even twin pregnancies have a significant increased risk of medical complications, social and financial impact and should therefore also be avoided as much as possible (4). The incidence of delivery before 37 weeks is 5 times higher and the delivery before 32 weeks is 4 times higher in twins compared to singleton pregnancies (Table 1). Multiple births are the single highest risk factor to health for both mother and child when undergoing ART treatment. The neonatal and maternal outcomes were dramatically better for women undergoing two IVF singleton pregnancies compared with one IVF twin pregnancy after double-embryo transfer. These results support single-embryo transfer to minimize the risks associated with twin pregnancies (4).

Table 1. Incidence (%) of major maternal complications in multiple pregnancies (5)

	Singleton	Twin	Triplet	Quadruplet
Preeclampsia	6	10–12	25–60	>60
Gestational diabetes	3	5–8	7	>10
Preterm labour	15	40	75	>95
Delivery at <37 wk	10	50	92	>95
Delivery at <32 wk	2	8	26	>95

EXECUTIVE COMMITTEE

President

Dr Danie Botha

Vice-President

Dr Sulaiman Heylen

Honorary Secretary

Lydia Els-Smit

Honorary Treasurer

Prof Thinus Kruger

Ex Officio: Past President

Dr Paul Le Roux

Members

Dr Abri de Bruin

Prof Igno Siebert

Dr Pieter Kruger

Dr Chris Venter

Prof Silke Dyer

Dr Yossi Unterslak

Dr Thabo Matsaseng

Dr Viju Thomas

Mr Gerhard Boshoff

(Embryologist SIG)

Ms Karin Schwenke

(Nurses SIG)

Ms Leanne van der Westhuizen

(Counsellors SIG)

SECRETARIAT

Turners Secretariat (Pty) Ltd

PO Box 1935

Durban, 4000

South Africa

Tel: +27 31 368 8000

Fax: +27 31 368 6623

Email: info@sasreg.co.za

A Member of



International Federation of
Fertility Societies

Recently, increased pregnancy rates due to improved technologies, coupled with concerns about maternal and perinatal complications associated with multiple pregnancy have led to attempts to restrict the number of embryos transferred. Single embryo transfer (SET) is the only effective way to avoid the risk of multiple pregnancies following ART. However, there are concerns that replacing only one embryo can reduce significantly success rates. The Cochrane review found however that the cumulative live birth rate associated with SET followed by a single frozen and thawed embryo transfer was comparable with that after one cycle of double embryo transfer (DET), whilst still maintaining a significantly lower rate of multiple births (6). Elective single embryo transfer results in a higher chance of delivering a term singleton live birth compared with double embryo transfer.

Although this strategy yields a lower pregnancy rate than a double embryo transfer in a fresh IVF cycle, this difference is almost completely overcome by an additional frozen single embryo transfer cycle. (7) Despite this evidence, the uptake of elective SET has been variable. This is mainly due to differences in funding of ART.

There are currently two models for funding of ART.

Model 1

This model aims to optimise cumulative live birth rates. A single healthy live birth is the desired outcome. Frozen embryo transfer is an important part of this model. This model is common in many countries in Western Europe and also in Australia. In most cases ART is funded by the government or insurance. The funding is coupled with strict embryo transfer guidelines. In the UK guidelines advise that wherever possible a single embryo only should be transferred. These policies have resulted in a drastic reduction of multiple pregnancy rates.

This model can be called the “funded” model or “regulated” model or “optimal” model.

Model 2

This model aims to maximise the pregnancy rates in a single fresh embryo transfer. The patient usually has to pay everything for the ART and desires the highest chance of conception. The fertility clinics work in a competitive environment and want the highest success rates to attract more patients. This model is most common in the USA. This results in recommendations by the ASRM to transfer up to 5 embryos in certain situations (8). This despite the recent evidence from a prospective study of nearly 125,000 ART cycles in the Lancet that concluded that the transfer of three or more embryos should be avoided at any age (9).

This model can be called the “private” model or “non-regulated” or “competitive” model.

Guideline

The aim of these guidelines is to eliminate high order multiple pregnancies and to reduce twin pregnancies as much as possible, whilst maintaining high pregnancy rates. Specialists in Reproductive Medicine should follow model 1 whenever possible.

Table 2: Recommendation for the number of embryos to transfer in a fresh or frozen embryo transfer.

	<37 or egg donation	38-40	>40
Model 1	1	2	2
Model 2	2	2	3

The National Health Act regulations of 2012 states that no more than three zygotes or embryos may be transferred to the recipient during and embryo transfer procedure, unless there is a specific medical indication to the contrary (ref NHA).

References

Sunderam S, Chang J, Flowers L, Kulkarni A, Sentelle G, Jeng G, Macaluso M, et al. Assisted reproductive technology surveillance United States, 2006. *MMWR Surveill Summ* 2009, 58:1- 25.

Collins J. Cost efficiency of reducing multiple births. *Reprod Biomed Online* 2007;15:35-9.

Gerris J, De Sutter P, De Neubourg D et al. 2004. A real-life prospective health economic study of elective single embryo transfer versus two-embryo transfer in first IVF/ICSI cycles. *Human Reproduction* 19, 917–923.

Sazonova A, Källen K, Thrin-Kjellberg A, Wennerholm UB, Berg C. Neonatal and maternal outcomes comparing women undergoing two in vitro fertilization (IVF) singleton pregnancies and women undergoing one IVF twin pregnancy. *Fertil Steril* 2013;99:731-7.

Practice Committee of American Society for Reproductive Medicine. Multiple gestation associated with infertility therapy: an American Society for Reproductive Medicine Practice Committee opinion. *Fertil Steril* 2012;97:825-34.

Pandian Z, Bhattacharya S, Ozturk O, Serour G, Templeton A. Number of embryos for transfer following in-vitro fertilisation or intra-cytoplasmic sperm injection. *Cochrane Database Syst Rev* 2009;2:CD003416.

McLernon DJ, Harrild K, Bergh C, Davies MJ, Neubourg D, Dumoulin JC, Gerris J, Kremer JA, Martikainen H, Mol BW, Norman RJ, Thurin-Kjellberg A, Tiitinen A, Montfoort AP, Peperstraten AM, Royen E, Bhattacharya S. Clinical effectiveness of elective single versus double embryo transfer: meta-analysis of individual patient data from randomised trials. *BMJ* 2010;341:6945

Criteria for number of embryos to transfer: a committee opinion. The American Society for Reproductive Medicine and the Practice Committee of the Society of Assisted Reproductive Technology. *Fertil Steril* 2013. In press.

Lawlor DA, Nelson SM. Effect of age on decisions about the numbers of embryos to transfer in assisted conception: a prospective study. *Lancet*. 2012;379:521–527.