Aims of chromosome screening

Chromosome screening aims to achieve the birth of a healthy baby in the shortest time using the safest approach.

- Reducing the number of miscarriages
- Reducing the risk of an abnormal pregnancy
- Reducing both the time and cost to achieve a healthy baby by reducing the number of repeat IVF cycles
- Reducing the number of multiple pregnancies by transferring embryos with the best chance of producing a baby

If you are considering IVF treatment and would like to find out whether chromosome screening is available at your chosen clinic, enquire with them directly.

It is important that each couple has their individual circumstances assessed by the clinician before chromosome screening is incorporated into the treatment plan.

Tel: 031 2677 920
Fax: 031 2677 928
careoffice@ion.za.net

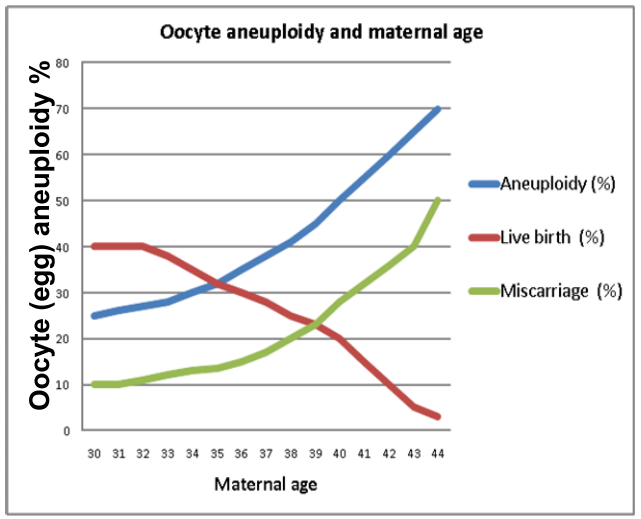
C.A.R.E Clinic
Tel: 031 2677 920
Fax: 031 2677 928
careoffice@ion.za.net

Chromosome screening in an IVF cycle

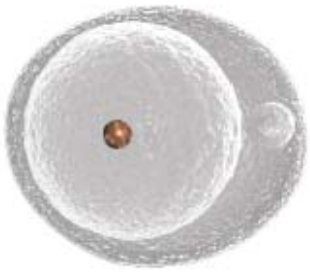
Why are chromosomes important?

Many IVF cycles can result in disappointment due to embryos failing to implant. This may be explained by having an incorrect amount of genetic material (chromosomes) in embryos being transferred. Aneuploidy is the incorrect amount of chromosomes present in embryos (missing or extra chromosomes). Some aneuploidy embryos can lead to the birth of a baby e.g. Down Syndrome caused by an extra copy of chromosome 21 and Edward's Syndrome, caused by an extra copy of chromosome 18; the majority of pregnancies with aneuploid embryos result in miscarriages.

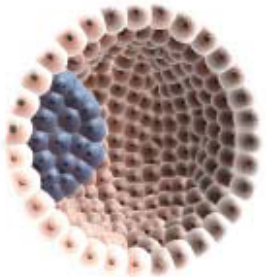
With advancing maternal age, a woman's risk of aneuploidy increases. Clinicians believe this is the main reason why birth rates fall for woman in their late thirties and early forties. See graph below:



Screening for aneuploidy before embryo transfer in IVF optimises the likelihood that embryos with no identifiable genetic abnormalities are transferred. This aims to improve the chance of having a health baby and a successful IVF cycle.


Egg with polar body


Day 3 embryo (blastomere)


Day 5 embryo (blastocyst)

How is the screening performed?

A single cell is removed or biopsied from the embryo or egg and is screened for all the chromosomes in the cell.

Egg biopsy – tiny cells called polar bodies that are not needed for the development of the embryo or for fertilization can be removed from the egg. This procedure is performed by an embryologist on the day of egg collection.

Embryo biopsy – chromosomes can be screened from a single cell of a Day 3 embryo known as a blastomere or usually 3 to 5 cells from a Day 5 embryo or blastocyst. This procedure is performed by an embryologist following fertilization.

Following screening, the results are available before the embryo is transferred into the womb.

Who should have chromosome screening?

Chromosome screening is suitable for all patients. It is helpful:

- in younger women to diagnose the cause of repeated miscarriage, failed IVF or unexplained infertility
- in older women approaching the age of 40, the number of eggs produced with abnormal chromosomes increases
- men who have been shown to have sperm at risk of carrying abnormal chromosomes
- couples who have had a previous pregnancy with abnormal chromosomes or a child with birth defects as well as those with an inherited genetic disorder.

Studies have shown pregnancy rates to be greatly improved. (Yang *et al.*, 2012)