An Overview of Assisted Reproductive Technology (ART)

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Primary Care and ART

Appropriate investigations

Timely referral to specialist care.

Investigations by the GP

Cervical Smear

Rubella immune

Infection screen

Semen analysis

Infection Screen

Necessary given the prevalence of chlamydia, hepatitis and HIV in the population.

Mandatory for IVF

Delayed Referral to Specialist Care

Women < 35
Regular menses

Normal semen analysis

Less than two years cohabitation

Immediate referral to specialist care ~ females

Scanty/absent periods.
Previous ectopic pregnancy, STD, PID, abdominal surgery.
Previously treated for cancer.
Significant systemic illness.

Immediate referral to specialist care~ males

Semen abnormalities
Previous epididymo-orchitis
Ejaculatory difficulties
Testicular maldescent
Previous cancer
Urogenital surgery
Significant systemic illness

Ovarian Reserve
Anti Mullerian Hormone

Controls the formation of primary follicles
by inhibiting excessive follicular recruitment by FSH.

Correlates with antral cell counts

Expressed by granulosa cells of the ovary

AMH cannot be detected in women before puberty

Interpretation of AMH levels

High level	> 48.5 pmol/L	PCO / granulosa cell tumour
Optimal fertility	28.6- 48.5 pmol/L	Beware of OHSS
Satisfactory fertility	15.7-28.6 pmol/L	Likely to respond well to ovarian stimulation
Low fertility	2.2 – 15.7 pmol/L	Likely to respond poorly to ovarian stimulation
Very low- undetectable	0.0 -2.2 pmol/L	Premature ovarian failure. Counselling. Donor eggs.

Management of the Infertile Couple

Aetiology

Prevalence

Treatments

Unexplained Infertility Male factor

Aetiology	Prevalence	Initial treatment	Subsequent TX
Unexplained	28%	? IUI	IVF
Male factor	26%		
Mild		? IUI	IVF
Oligospermia		ICSI	DI
Azospermia		SSR ICSI PESA/TESE	DI

Intracytoplasmic Sperm Injection

The discovery of ICSI by Palermo (1995) revolutionised the treatment of male factor infertility.

Surgical Sperm Retrieval

PESA =percutaneous sperm aspiration

TESE=testicular sperm extraction

Donor Insemination

Single women

Same sex female couples

Prevention of transmission of genetic disorders

Unsuccessful ICSI

Disorders of Ovulation

Prevalence 21%

PCO	Weight loss Anti oestrogens Clomifene	Ovarian drilling Gonadotrophins IUI then IVF
POF	Donated eggs	Donated embryos
Hypo/hypo	Gonadotrophins	
Hyper prolactin	Bromocryptine	Carbergoline

Tubal disease and Endometriosis

Tubal damage	14%	IVF	
Endometriosis	6%		
Minimal		? IUI	IVF
Significant		IVF	

Coital difficulties/ Sperm -Mucus Disorders/ Uterine abnormalities

Coital failure	6%		
Psycho-sexual		Counselling	Viagra/Cialis IUI
Sperm –mucus	3%	IUI	IVF
Previous hysterectomy or uterine abnormality	IVF with surrogate host		

Regulation

Human Fertilisation and Embryology Authority

Invitro fertilisation

Treatment with donated gametes / embryos

Presentation of Results

Readily understood
Live birth rate
Multiple birth rate
Female age
Per cycle started
3-5 year data
Cumulative

Clinical Pregnancy Rates 2008

	Cycle started	Egg collection	Embryo transfer
IVF	52/197 (26%)	52/166 (31%)	52/155 (34%)
ICSI	40/152 (26%)	40/125 (32%)	40/115 (35%)
TOTAL	92/349 (26%)	92/291 (32%)	92/270 (34%)

58 cycles were abandoned before egg recovery

49 - failed ovarian stimulation *(49/348 – 14%)*

9 - cancelled for risk of OHSS *(9/348 - 2.6%)*

21 cycles did not reach replacement

11 - freeze all for risk of OHSS *(11/291 -3.7%)*

8 - failed fertilisation *(8/291– 2.7%)*

2 - failed cleavage *(2/291– 0.7%)*

Clinicalp regnancy rate per egg collection by age and the number of embryos replaced

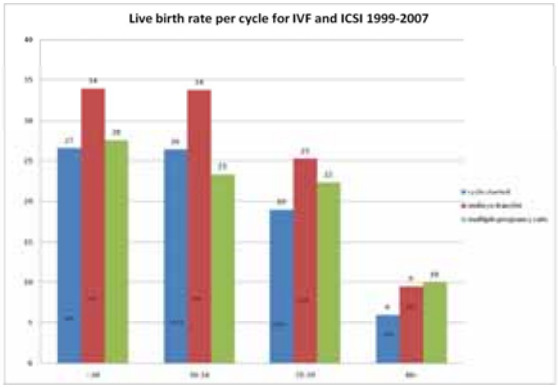
01/01/2008 -31/12/2008

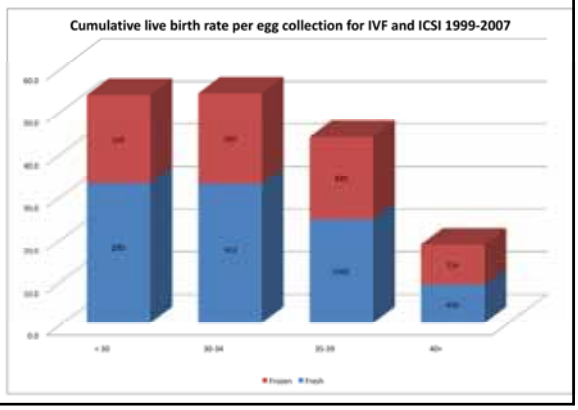
Number of Embryos replaced	≤ 29	30-34	35-39	≥ 40	TOTAL
0	0/2	0/3	0/8	0/8	0/21
1	0/6	1/8 1x1	3/10 3x1	1/5 1x1	5/29 **17%**
2	10/18 6x1 4x2	27/62 20x1 7x2	40/105 33x1 6x2 1x3	10/56 8x1 2x2	87/241 **36%**
TOTAL	10/26 **38%**	28/73 **38%**	43/123 **35%**	11/69 **16%**	92/291 **32%**

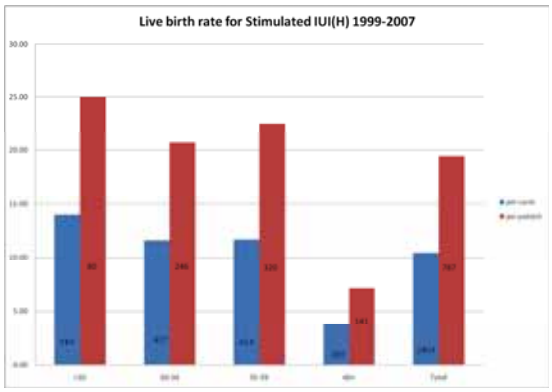
1,2 and 3 indicaten umber of fetal hearts visible on scan

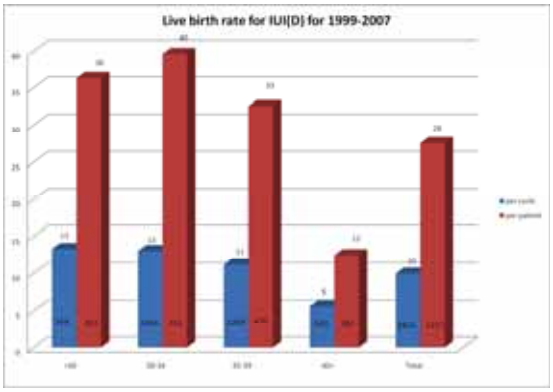
Frozen Embryos

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of patients treated	165	130	115	133	133	186	191	184	189	175
Cycles started	207	166	137	162	181	259	300	256	246	246
Embryo transfer (ET)	166	147	120	129	160	217	248	229	211	223
Clinical pregnancies	28	25	28	24	33	49	53	43	40	45
CP as % of ET	**16.8**	**17.0**	**23.3**	**18.6**	**20.6**	**22.5**	**21.3**	**18.8**	**19.0**	**20.2**
Live births	26	24	27	22	28	42	48	39	36	NA
% Failed thaws	19.8	11.4	12.4	20.3	11.6	16.2	17.3	10.5	14.2	9.3









Conclusions

- Effective treatment for all forms of infertility but:
- Repeated cycles the rule rather than the exception
- Accurate and comprehensive results essential
- Risks: Multiple births and OHSS