

UNDERSTANDING IVF PREGNANCY RATES

THE TRICKS
THE TRAPS
THE TRUTH

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RATE IS A RATIO i.e. A FRACTION

NUMERATOR
DENOMINATOR

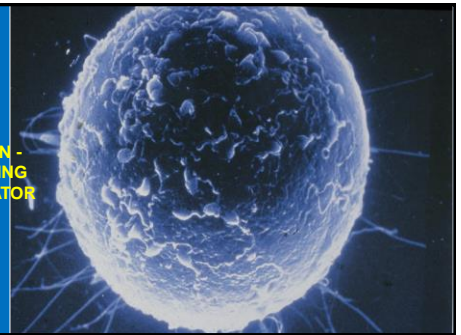
WHAT IS A PREGNANCY? = THE NUMERATOR

- A BIOCHEMICAL PREGNANCY
- A CLINICAL PREGNANCY
 - USS DIAGNOSIS
 - TISSUE DIAGNOSIS
 - ONGOING PREGNANCY
- A PERINATAL DEATH
- A LIVE BIRTH (& A HEALTHY BABY)

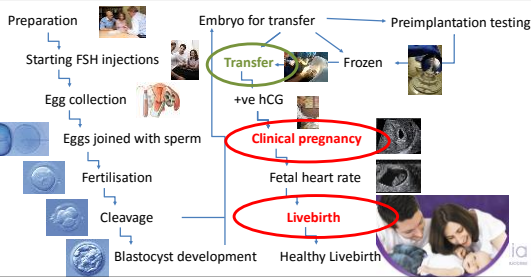
MISCARRIAGE ECTOPIC
MISCARRIAGE ECTOPIC
LIVE BIRTH SB NND

STILLBIRTH NND

IN VITRO
FERTILISATION -
UNDERSTANDING
THE DENOMINATOR



What's meant by an IVF success rate – choosing the right numerator and denominator?



PATIENT BEGINS HYPERSTIMULATION

↓ 5-10% CANCELLATION RATE

PROCEEDS TO OOCYTE RETRIEVAL

↓ 10-15% FAIL TO FERTILISE RATE

PROCEEDS TO EMBRYO TRANSFER AT CLEAVAGE STAGE

↓ 20-25% FAIL TO FORM BLASTOCYSTS

PROCEEDS TO EMBRYO TRANSFER AT BLASTOCYST STAGE

↓ 20-25% NO EMBRYOS SUITABLE FOR TF

PROCEEDS TO EMBRYO TRANSFER AT BLASTOCYST STAGE AFTER GENETIC SCREEN

→ NO FRESH EMBRYO TRANSFER FREEZE ALL +/- PGD AND LATER FET

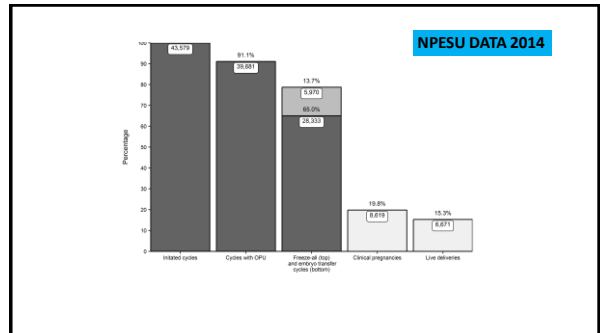
30-40% NO EMBRYOS SUITABLE FOR TF



HOW PREGNANCY RATES ARE QUOTED

DENOMINATOR	
STARTING STIMULATION	INTENTION TO TREAT
AT OOCYTE RETRIEVAL	PER EPU
AT EMBRYO TRANSFER	PER ET (EMBRYO TRANSFER)
AT FROZEN EMBRYO TRANSFER	PER FET

- MOST USED**
- CLINICAL PREGNANCY /ET
 - LBR/ET



JUST WHEN YOU THOUGHT

PREGNANCY RATE CAN ALSO BE A NUMERATOR

- PER CYCLE
- CUMULATIVE
- OR IMPLANTATION RATE / EMBRYO TRANSFERRED (LAB USE)

CUMULATIVE CAN MAKE YOU LOOK REALLY GOOD AND CAN BE VERY MISLEADING

CUMULATIVE PREGNANCY RATES:

- CAN BE ALL THE PREGNANCIES FROM 1 FRESH EPU CYCLE
- ALL THE PREGNANCIES IN AN IVF CAREER
- VARIABLE COUNTS AFTER MORE THAN 1 PREGNANCY
- WHEN DO YOU RESTART THE CLOCK?

SOME UNITS ONLY QUOTE BABIES DELIVERED AND NO RATES

What's meant by an IVF success rate – choosing the right population?

Patient factors affecting IVF success rates

- Age
- Past pregnancy
- Duration of infertility
- Number of past IVF attempts
- Cause of infertility
- Mode of treatment required
- Ovarian reserve

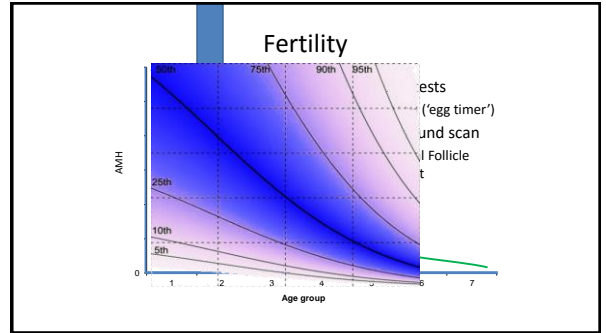
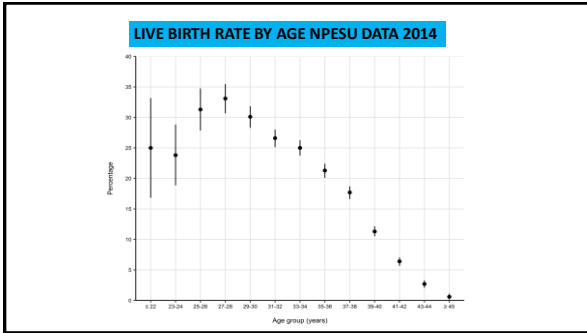


AUDITING AND COLLECTION OF IVF DATA NPESU

NATIONAL PERINATAL AND EPIDEMIOLOGICAL STATISTICS UNIT

- UNIVERSITY OF NSW
- SINCE 1985
- ANNUAL REPORT
- ALL IVF CYCLES IN AUSTRALIA AND NZ
- FUNDED BY A LEVY ON IVF UNITS
- CROSS AUDITED AGAINST THE UNITS ACCREDITATION

<https://npesu.unsw.edu.au/>



CUMULATIVE PREGNANCY RATE LBR/CYCLE 30-34 YEAR OLDS NPESU

Cycle number(s)	Number of women starting cycle	Number of women who had a live delivery (n)	Cycle-specific live delivery rate (%)	Number of women who did not (n) (%)	Non-pregnant rate (%)
One	4,705	1,413	30.0	451	13.7
Two	2,841	771	27.1	334	16.1
Three	1,736	396	22.8	262	15.6
Four	1,078	223	20.7	186	21.8
Five	669	151	22.6	120	23.2
Six	396	85	21.4	78	24.9
Seven	235	60	25.5	49	26.0
Eight	126	22	17.5	28	26.9
Nine	76	13	17.1	18	28.6
Ten	45	5	11.1	15	37.5

CUMULATIVE PREGNANCY RATES 40-44 YEAR OLDS

Cycle number(s)	Number of women starting cycle	Number of women who had a live delivery	Cycle-specific live delivery rate (%)	Number of women who did not (n) (%)	Non-pregnant rate (%)
One	1,761	251	17	433	28.0
Two	1,066	281	29	330	34.0
Three	1,172	81	8.5	321	36.0
Four	812	88	13	240	38.0
Five	588	88	18	191	41.0
Six	397	21	6	131	48.0
Seven	261	11	5	81	58.0
Eight	161	5	3	51	68.0
Nine	108	2	2	31	78.0
Ten	71	1	1	21	88.0

CLINIC VARIATION IN AUSTRALIA

Age group (years)(a)	Percentile					Overall
	0th (c)	25th	50th	75th	100th (d)	
<35	12.5	23.0	25.8	30.7	36.4	27.6
35-39	6.7	15.5	17.3	20.9	27.6	17.8
≥40	1.5	4.5	5.6	7.8	12.5	6.1
All	9.5	15.1	17.6	20.7	24.8	17.7

- ### Complicating features of changing practice
- What's changing
 - Single embryo transfer
 - Evolution from cleavage stage to blastocyst culture
 - Increasing use of preimplantation genetic diagnosis
 - Using gentler triggers in good prognosis patients
 - Routine use of "freeze-all" cycles
 - Evolution of a Predictor Tool

RISKS OF A HIGH MULTIPLE PREG RATE

1. REPUTATIONAL
2. MEDICOLEGAL
3. RTAC
4. THE OUTCOMES

OUTCOMES OF QFG BRISBANE MULTIPLES 2011-13

- 289 TWINS AND 1 TRIPLET
- 23 DEATHS AFTER 20w
- 21 TWIN PREG AND 2 of 3 TRIPLETS
- TWINS - 16 SB AND 5 NND IN 16 PREGNANCIES
- PMR = 3.6% AND 3.9% INCLUSIVE
- NPSU 2012 PMR = 3.1%
- QFG BNE SINGLETON PMR= 1.4% (.98%)
- FUNERAL RATE/TWIN PREG =16/289=5.6%= 1:18
- FUNERAL RATE FOR A SINGLETON IS 1.4%
- APPROX 246 ICU WEEKS
- 44/289 del < 34 weeks = 15%
- 92/289 DEL < 36 weeks = 32%

How do we compare with the rest of the world?

Region	Aspirations	Transfers	Number of transferred embryos (%)					Multiple births	
			1	2	3	≥4	Average*	Twin (%)	Triplet+ (%)
Asia	>174 968	>101 486	46.6	29.3	16.6	7.5	1.87	15.3	1.1
Australia and New Zealand	38 770	33 274	64.9	34.1	0.9	0.1	1.36	8.9	0.2
Europe	383 444	>340 291	24.3	57.3	17.2	1.2	1.95	19.4	0.8
Latin America	24 930	21 390	12.6	43.4	34.3	9.7	2.42	21.5	2.2
Middle East	11 642	10 668	10.7	27.3	47.3	14.8	2.70	23.6	1.4
Middle East (Israel)	NA	21 017	NA	NA	NA	NA	NA	NA	NA
North America	91 313	85 019	13.1	52.4	23.2	11.3	2.36	28.7	1.5
Sub-Saharan Africa	3521	3006	13.2	52.3	25.9	8.6	2.30	10.7	0.0
Total	>728 588	>616 151	28.3	49.0	18.3	4.4	2.00	20.5	1.0

