

Forty Something Seeking Fertility Gambling Against the Odds

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Objectives

- Discuss the impact of age on female fertility.
- List two major causes of the age related decline in female fertility.
- Discuss the concept of ovarian reserve.
- Define aneuploidy.
- Describe tests commonly used to assess ovarian reserve.

Objectives



- Discuss the impact of culture and society on female fertility.
- Discuss general trends in women forty and older undergoing infertility treatment as reported by SART in 2001/2002.
- Discuss ways this information can be used in infertility nursing practice.



FERTILITY FACT:

Advancing age decreases your ability to have children. While women and their partners must be the ones to decide the best time when (and if) to have children, women in their twenties and early thirties are most likely to conceive.

A.S.R.M. 2002

www.protectyourfertility.com

Age and Fertility

“Female fertility begins to decline many years prior to the onset of menopause despite continued regular ovulatory cycles.”

Fertility potential declines appreciably at 35 and dramatically by 40.

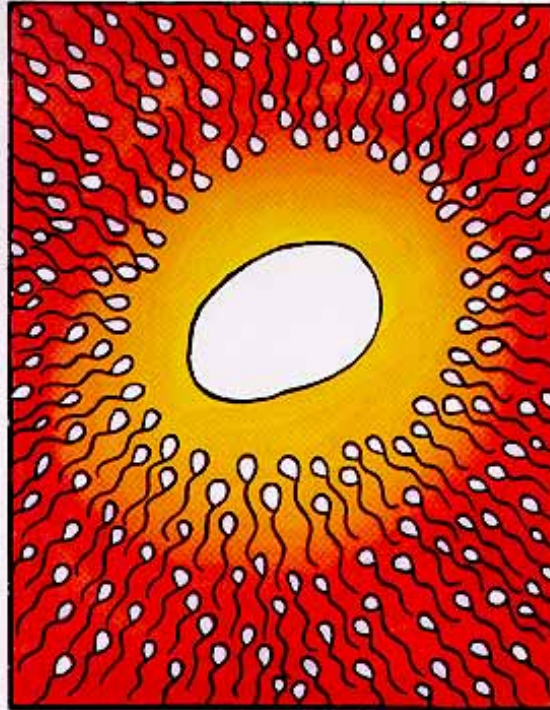
The two major causes are decreasing ovarian reserve and the increasing incidence of chromosomal aneuploidy.

A healthy 30 year old has ~ 20% chance of pregnancy each month. A healthy 40 year old has ~ 5% chance.

Cultural Changes affecting Fertility

- 20 % of women now wait until age 35 to attempt pregnancy.
- Contraception
- Careers
- Marriage and remarriage at older age
- Financial Security
- Lack of awareness

What is the Cause of Advanced Maternal Age?



Scientists prove that men's fear of commitment begins at an early age.

Ovarian Reserve Testing

- Day 3 FSH and E2 FSH < 12 E2 < 75
- Clomid Challenge Test
- Inhibin B low level suggests decreased reserve
- Ovarian Size and volume
- Basal Antral Follicles 2-10 mm <4 or >4

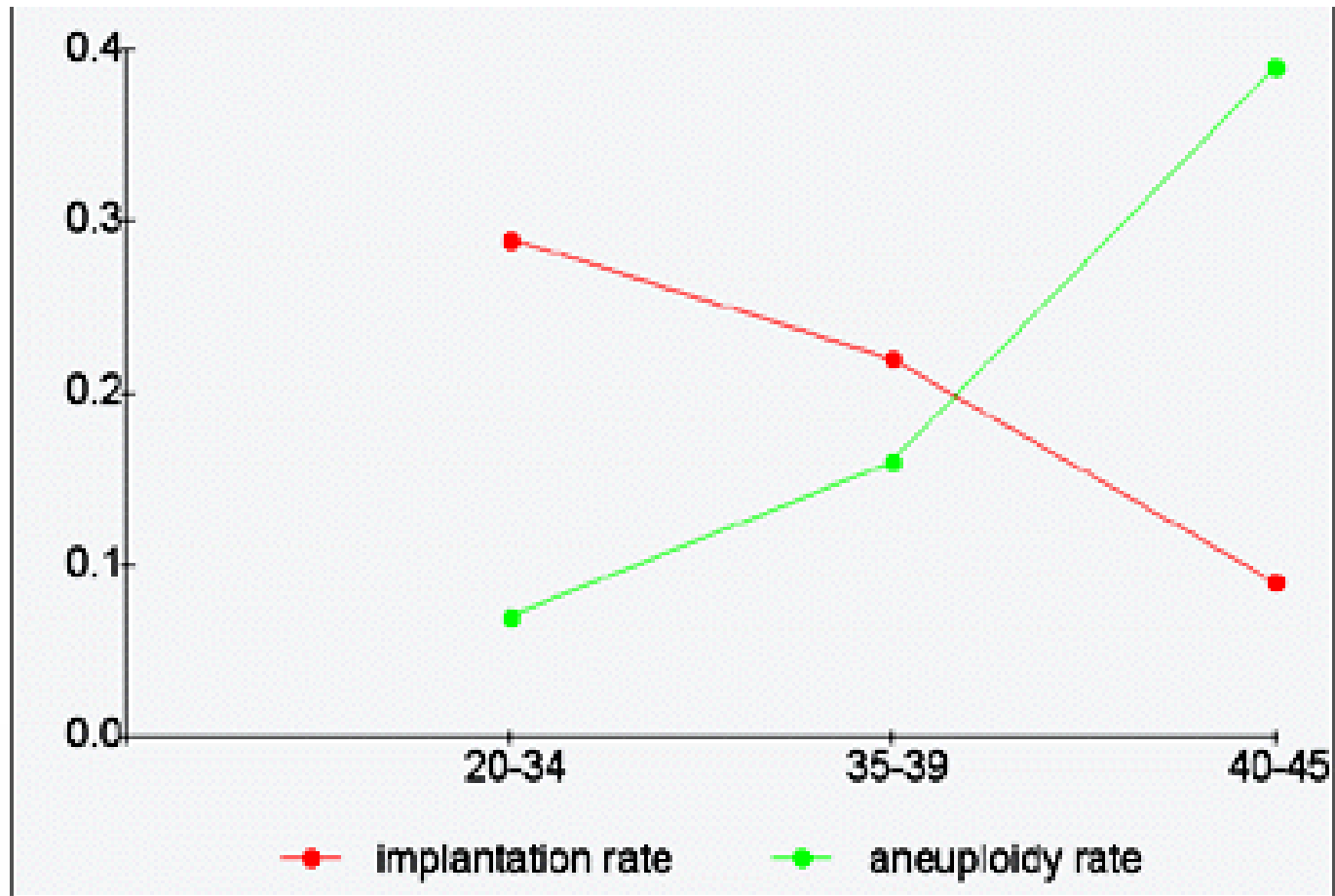
Chromosomal Aneuploidy

- Abnormal number of chromosomes in the oocyte or embryo
- As age increases a larger percentage of oocytes will be abnormal
- Meiotic spindle in oocytes frequently exhibits abnormalities in chromosomal alignment and microtubular matrix composition

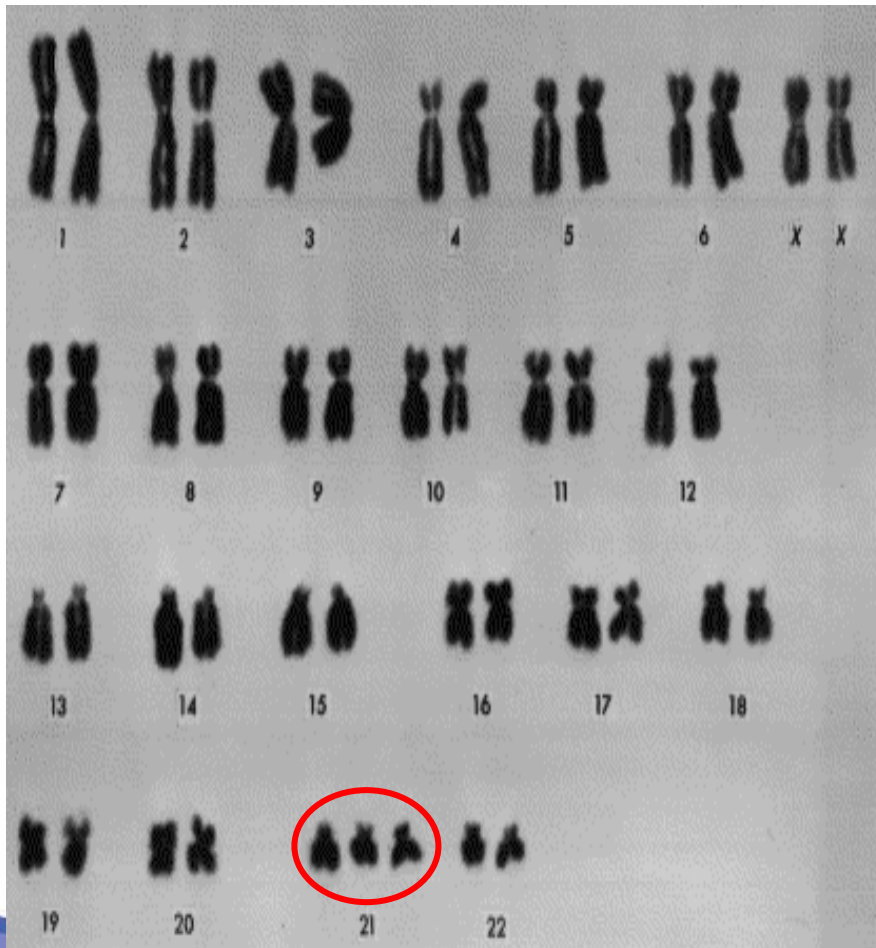
Consequences of Chromosomal Aneuploidy

- Severe abnormalities may not allow fertilization of oocyte or implantation of embryo
- Embryo abnormalities may allow implantation but, depending on chromosome involved, spontaneous loss of pregnancy
- Chromosomal abnormalities in embryo may lead to the livebirth of a child affected with syndrome

Maternal Age, Aneuploidy, Implantation



Aneuploidy*



- Maternal (80-90%)
- Rises 70 fold with age
- Most common chromosomes are 13, 16, 18, 21, and 22

*Loss or gain of one or two chromosomes

The Biological Clock is Ticking (And Her Chromosomes are Sticking)

Frequency of trisomy 21

Maternal Age	Risk at Birth
20	1 in 1500
25	1 in 1350
30	1 in 900
35	1 in 380
41	1 in 85
45	1 in 28

Mange, A.P. and E.J. Mange. 1988. Nondisjunction. In *Genetics: Human Aspects*, edited by A.P. Mange, pp. 107 - 122. Sinauer Associates, Inc., Sunderland, MA

2004 Nursing Abstract

SMART ART

Purpose

To review clinical variables, pregnancy rates and outcomes per embryo transfer in each age group of women 40 and older to determine the significance of each subsequent year in order to educate patients and allow them to make informed decisions regarding their treatment.

Methods

- Retrospective study
- Fresh, autologous ART cycles with ER and ET in women 40 and older 2001 through 2003
- N = 972
- Six age groups 40(n=349),41(n=318),42 (n= 209), 43(n= 84),44(n= 8) and 45(n=4) years old
- Chi Square analysis ~ distribution of stimulation protocols, pregnancy rates and outcomes
- ANOVA on Ranks ~ oocytes retrieved and embryos transferred
- P < 0.05 considered significant

Table 4:
Oocytes Retrieved
Mean Values and Standard Deviations

Age	Not Pregnant (SD)	Pregnant (SD)
45	8 (5.6)	8 (0)
44	8.5 (7.7)	12 (5)
43	10.2 (7.6)	9.9 (3.8)
42	7.5 (4.8)	10.9 (5.6)
41	8.2 (5.9)	11.9 (7.6)
40	8 (5.4)	11.1 (6.0)
All	8.2 (5.7)	11.3 (6.4)
p value	0.378	0.993

**Table 5:
Embryos Transferred
Mean Values and Standard Deviations**

Age	Not Pregnant (SD)	Pregnant (SD)
45	2.7 (1.5)	4 (0)
44	4 (0)	4.7 (1.5)
43	2.8 (1.5)	3.1 (1.4)
42	2.8 (1.6)	3.6 (1.2)
41	2.3 (1.3)	3.4 (1.3)
40	2.3 (1.3)	3.2 (1.3)
All	2.5 (1.4)	3.3 (1.3)
	0.064	0.278

Table 6: Pregnancy Outcomes

Age	Biochem	Ectopic	CIG	SAB	Ongoing	Live	Total Cycles
45	0	0	1	1	0	0	4
44	0	0	3	2	0	1	8
43	7	0	10	6	2	2	84
42	18	0	39	19	4	16	209
41	22	0	68	21	5	42	318
40	26	3	96	25	7	63	349
Total	73	3	217	74	18	124	972

Conclusions

- Many ART centers cycle women 40 and older as long as they generate a reasonable number of eggs and embryos
- There was no significant difference in oocytes retrieved or embryos transferred between the six age groups

What do our fortysomething patients believe ????

- They are young
- Fortysomething women have babies all the time
- As long as they have normal FSH levels, respond reasonably to stimulation, get to an egg retrieval and embryo transfer they should continue to cycle
- They will beat the odds

Women of Advanced Maternal Age.....

- Tend to be married to older men
- More likely to be Caucasian
- Attended graduate school
- Family income >\$150,000

Parenting Issues Among Women of Advanced Reproductive Age: Does Age Really Matter?
Steiner et al, Pacific Coast Reproductive Society April 2006

What do we need to tell them so they can make fully informed decisions ?

- Our shared goal is the live birth of a healthy infant
- The focus should not just be on response to treatment but on live birth rates
- Share age specific cycle outcomes with these patients
- PGD may be helpful in determining the availability of normal embryos
- Introduce alternate ways to become a family
- We want to support them in their decision

Table 9 2001 SART Statistics

Age distribution in Fresh Nondonor Cycles

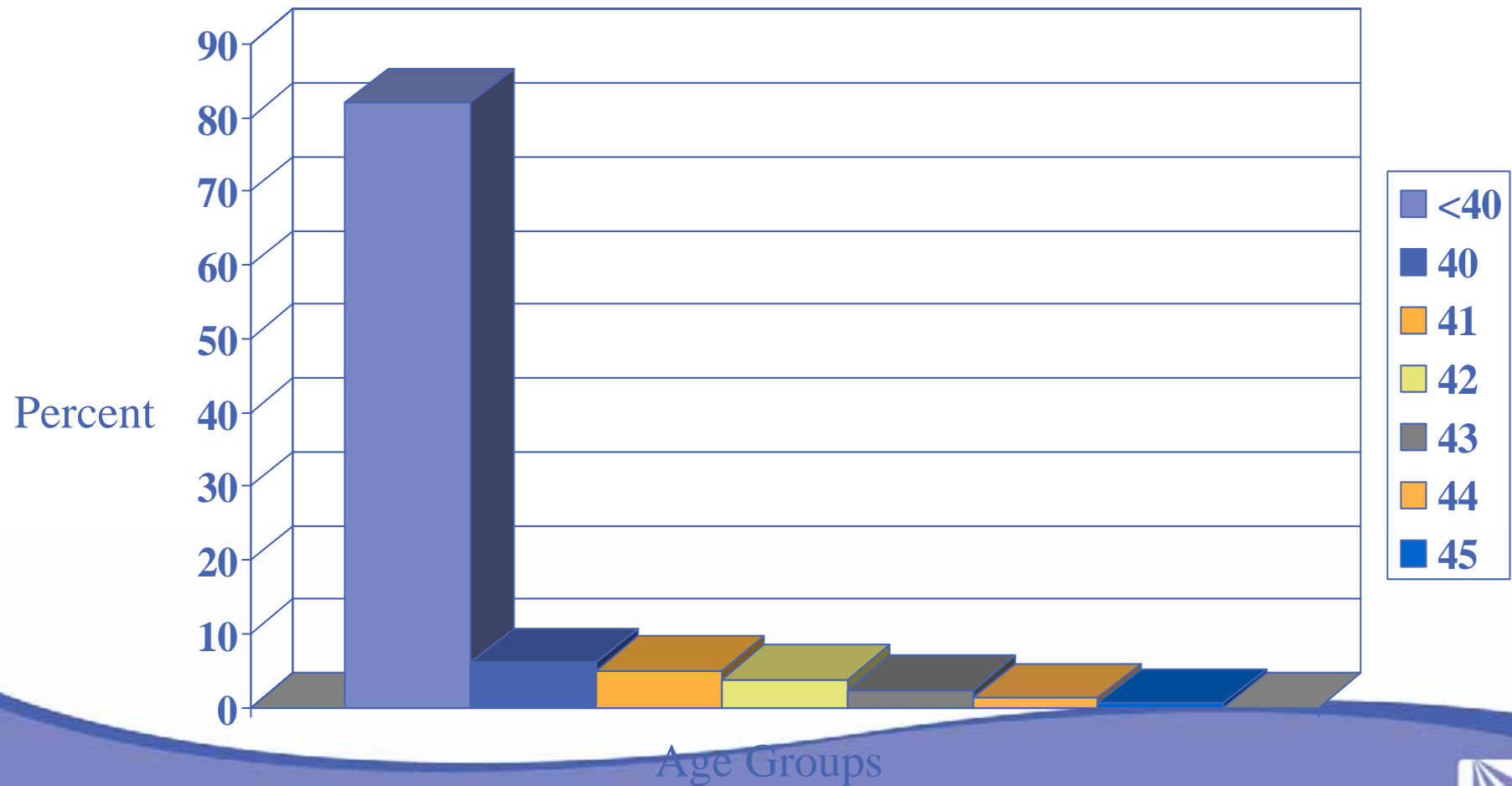


Table 10 2001/2002 SART Statistics
per Cycles Initiated
Fresh Nondonor Eggs or Embryos

AGE	PREG RATE	LB RATE	SAB RATE
40	22.6/23%	15.9/16.1%	29.8/30.2%
41	18.2/18.7%	11.4/12.1%	37.3/35.3%
42	16/15.4%	9/9%	43.9/41.8%
43	10/11.5%	5.9/6.3%	40.9/45%
44	8.1/5.2%	3.4/2%	57.3/61.6%
45	6.2/5.2%	3.0/2%	57.3/64%

Table 11 2001/2002 SART Statistics

Per cent Live Births per Fresh ET

AGE	AUTOLOGOUS	DONOR
40	21.3 %	46.8 51 %
41	15.6 %	46.5 47.9 %
42	12.8 %	45.8 50.4 %
43	8.4 %	45.5 51 %
44	5.3 %	47.8 51.8 %
45	4.9 %	49.2 51.6 %
46	2 %	45.2 47.8 %

Nursing Implications

- Point of reference
- Value Systems
- Educate and inform
- Partner in care
- Support
- Words are powerful
- Simply being there



Many Thanks

Never underestimate the
difference you can make!



