Economics in the Development of Embryo Transfer Policies

ASRM/IFFS Trilogy
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Disclosures

- Industry
  - Advanced Reproductive Care (ARC): Founder and CEO
  - XDhealth: Founder and Chairman
- Professional Organizations
  - ASRM & SART: Past President
  - FIGO: Chair, Reproductive Medicine Committee
  - ICMART: Chair
  - IFFS: Executive Committee
  - WERF: President
  - WHO: Co-chair and member, HRP Committees
- Funded Research Studies
  - Auxogyn
  - LabCorp

Introduction

- ART Costs
  - "Common knowledge" **cost affects delivery of care**
    - Access
    - Effectiveness
    - Safety
- Embryo transfer
  - Very **complex economic issues**
  - Disparities nationally and globally
  - ICMART documents global ART practice
  - Impact of economics on embryo transfer policies

Categorization of Costs

- **Societal**
  - All **direct** and **indirect** costs
  - Regardless of who incurs the cost
  - Cost = Per cycle cost X Number of cycles
  - Number of cycles (affected by pregnancy rates)
  - Proportion of total health care costs
  - Proportion of health care costs in economy

- Consumer (**Patient**)
  - Direct or indirect
  - Net market charges
  - Number of cycles (affected by pregnancy rates)

- How we look at costs affects embryo transfer policies

Direct Costs of Embryo Transfer

Direct Costs of Performing Embryo Transfer

- Medical consultations
- Hospital charges
- Nursing services
- Counseling
- Administrative
- Overhead

Costs of ART Treatment Cycles and Procedures (USD 2006)

TABLE 4

Costs of ART treatment cycles and procedures (USD 2006).

Variable	United States	Canada	United Kingdom	Scandinavia	Japan	Australia
Fresh transfer cycle	12,513[a]	8,500	6,534	5,549	3,956	5,645
Medications	(3,154)	(3,528)	(1,758)	(1,573)	(516)	(999)
Services/procedures	(9,358)	(4,972)	(4,776)	(3,976)	(3,440)	(4,646)
Frozen–thawed transfer cycle	3035	2,380	1,560	1,347	1,108	1,648
ICSI	1,626	1,172	1,339	614	860	469
Assisted hatching	705	349	675	339[b]	271	207
Blastocyst culture	379	247	678	458[b]	632	508
Cryopreservation +1 y storage	1,138	590	579	457[b]	452	274

[a] The US medication and service/procedures cost does not sum to the total cost of a fresh transfer cycle because of rounding.

[b] Denotes imputed value calculated as the percentage of the cost of an embryo transfer cycle in the remaining countries.

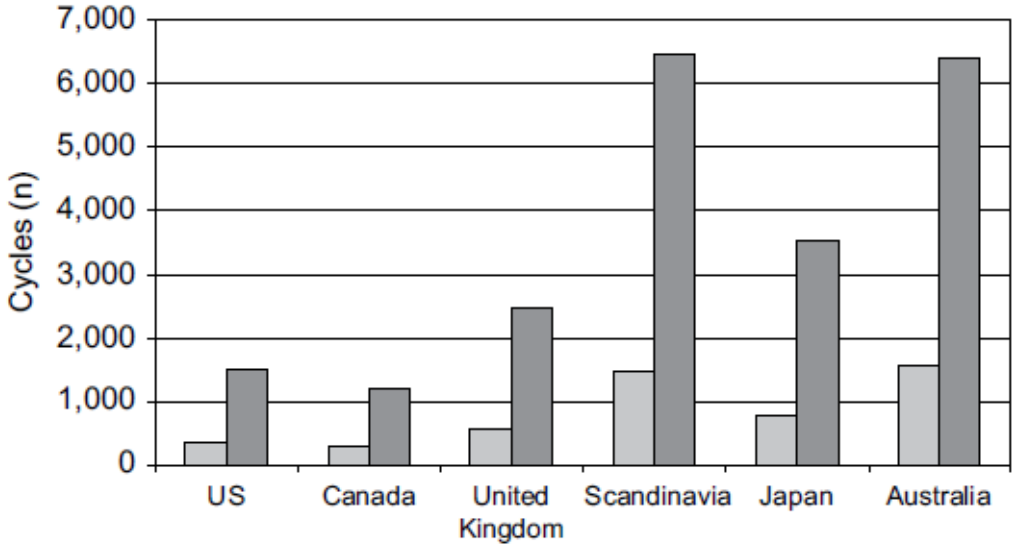
Chambers. International economic review of ART. Fertil Steril 2009.

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Level of Utilization of Autologous ART Treatment Cycles in 2003

FIGURE 2

Level of utilization of autologous ART treatment cycles in 2003.



Note: Population statistics sourced from The World Bank, World Development Indicators database (24) and the US Census Bureau, Global Population Profile (25).

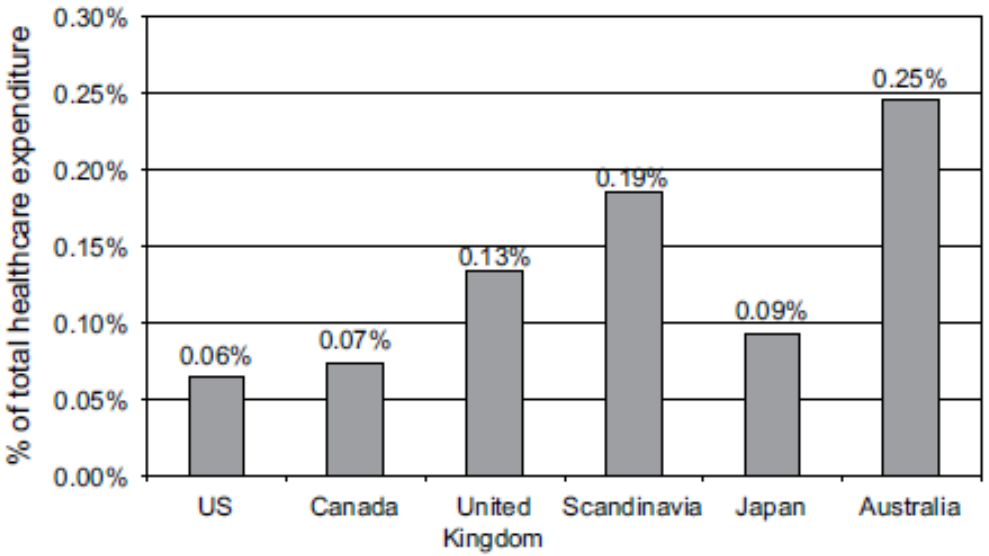
Chambers. International economic review of ART. Fertil Steril 2009.

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Total ART Treatment Costs as a Percentage of Total Healthcare Expenditure (USD 2006)

FIGURE 5

Total ART treatment costs as a percentage of total healthcare expenditure (USD 2003).



Note:
Total healthcare expenditure was sourced from The World Bank, World Development Indicators database (24).

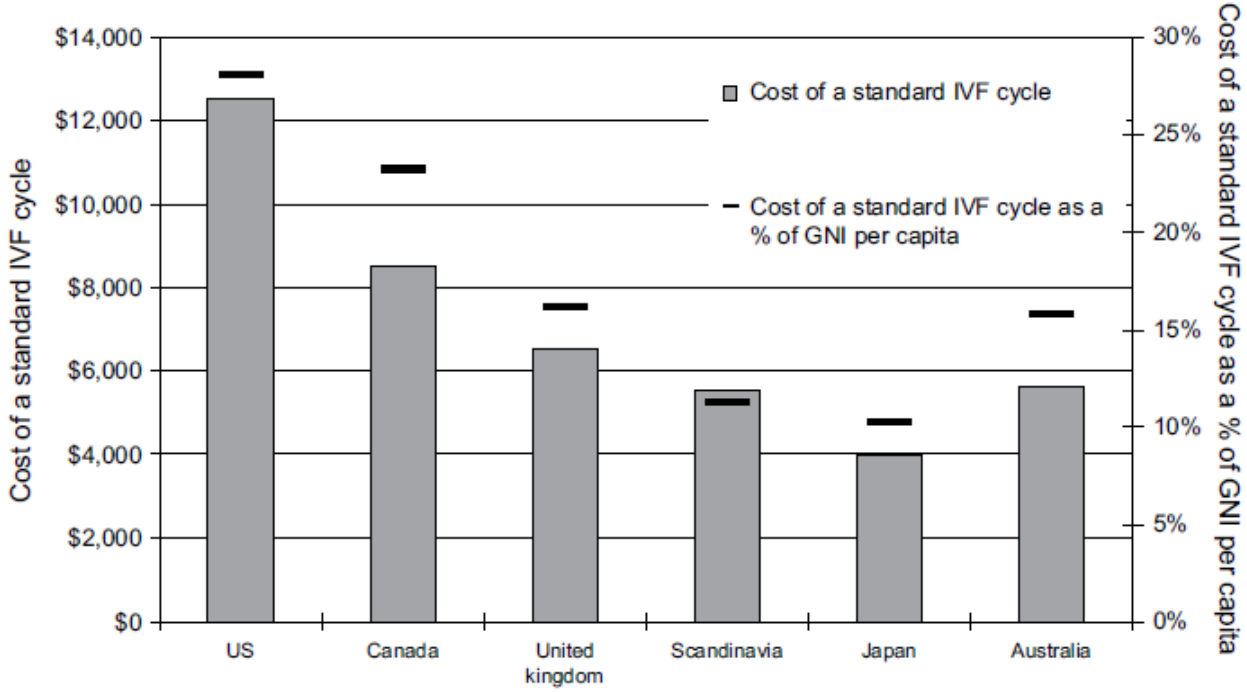
Chambers. International economic review of ART. Fertil Steril 2009.

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Average Cost of a Standard Fresh IVF Cycle, and as a Percentage of GNI Per Capita (USD 2006)

FIGURE 3

Average cost of a standard fresh IVF cycle, and as a percentage of GNI per capita (USD 2006).



Note: GNI per capita sourced from The World Bank Group, World Development Indicators database (24).

Chambers. International economic review of ART. Fertil Steril 2009.

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Total Annual Infertility Benefit Used Per Member Per Year

TABLE 5

Total annual infertility benefit used per member per year.

	No. of members (y)		
Range ($)	1995*	1994†	1993†
≥25,000	3	0	0
20,000–25,000	0	0	0
15,000–19,999	6	6	2
10,000–14,999	6	5	2
9,000–9,999	4	2	1
8,000–8,999	2	3	0
7,000–7,999	1	2	0
6,000–6,999	2	2	0
5,000–5,999	1	2	2
4,000–4,999	6	3	1
3,000–3,999	5	6	1
2,000–2,999	5	7	5
1,000–1,999	8	15	8
<1,000	103	125	81
Total	152	178	103

* Maximum lifetime infertility benefit $25,000.

† Maximum lifetime infertility benefit $15,000.

Stovall. The cost of infertility. Fertil Steril 1999.

Stovall. Fertil Steril. 1999 Nov;72(5):778-84.

ART Treatment Costs

- Not high relative to
  - Other healthcare services
  - Other societal services
  - Total societal cost

- **"Good value for money"**
- Not easily accommodated by tradition health economic methods
- **Not easy to communicate** to policy makers

Cost-effectiveness Analysis

- Measures the outcomes of alternative medical interventions in natural units (e.g. pregnancy rates)

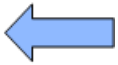
Cost-effectiveness of Common Infertility Treatments

TABLE 4

Cost-effectiveness of common infertility treatments.

Procedure	No. of couples	Mean maternal age in y (range)	No. of procedures	No. (%) of deliveries	Multiple birth rate (%)	Cost per delivery ($)
IUI	54	31.6 (24–41)	103	6 (5.8)	0	8,674
CC-IUI	91	31.9 (23–41)	188	12 (6.3)	8.3	7,808
HMG-IUI	52	32.0 (25–41)	80	14 (17.5)	21.0	10,282
ART*	136	34.0 (23–44)	155	43 (27.7)	30.0	37,028
IVF-ET (tubal factor only)*	71	32.3 (24–38)	81	18 (22.2)	44.0	43,138
Tubal surgery	24	29.7 (23–41)	24	3 (12.5)	0	76,232
Donor oocytes	26	37.8 (29–47)	34	11 (32.3)	18.0	35,062

Note: ART = assisted reproductive techniques including IVF-ET, GIFT, and zygote intrafallopian transfer; CC-IUI = clomiphene citrate-IUI.
* Excludes cycles with donor sperm or donor oocytes.



Van Voorhis. Fertil Steril. 1998 Dec;70(6):995-1005.

Cost-effectiveness of ART

Table 4. Summary of charge data.

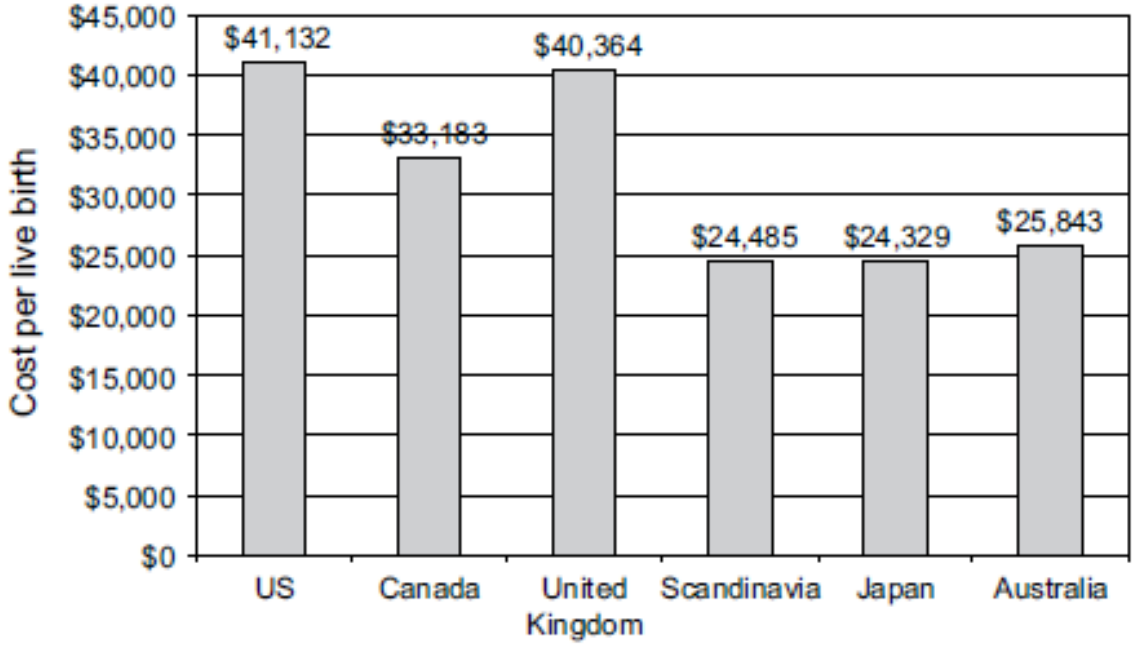
Arm	No. of couples with charge data[a]	No. of deliveries, N (proportion)	Total	Per couple ± SE	Per delivery	Total	Per couple ± SE	Per delivery
Conventional	215	132 (0.61)	$4,594,361	$21,368 ± 1,548	$34,806	$9,424,646	$43,835 ± 3,255	$71,399
Fast Track	233	156 (0.67)	$4,524,522	$19,418 ± 1,229	$29,003	$9,602,269	$41,211 ± 2,104	$61,553
Δ		+24 (0.06)			–5,802 (95% CI, –14,388, 2,299)		–$2,624	–9,846 (95% CI, 25,099–3,869)

Reindollar. Fertil Steril. 2010 Aug;94(3):888-99.

Cost Per Live Birth in 2003 for Autologous ART Treatment Cycles

FIGURE 6

Cost per live birth in 2003 for autologous ART treatment cycles (USD 2006).



Chambers. International economic review of ART. Fertil Steril 2009.

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Effect of a Woman's Age on the Cost-effectiveness of Infertility Procedures

TABLE 5

Effect of a woman's age on the cost-effectiveness of infertility procedures.

Procedure	Age of woman (y)	No. of women	No. of cycles	No. of deliveries (%)	Cost per delivery ($)
IUI	<38	50	94	6 (6.4)	7,897
IUI	≥38	4	9	0 (0)	NA
CC-IUI	<38	79	164	11 (6.7)	7,414
CC-IUI	≥38	12	24	1 (4.2)	12,132
hMG-IUI	<38	43	68	12 (17.6)	10,214
hMG-IUI	≥38	9	12	2 (16.7)	10,686
ART	<38	104	119	39 (32.8)	31,597
ART	≥38	32	36	7 (11.1)	89,981
Donor oocyte cycles recipient	≥38	15	18	6 (33.3)	35,605

Note: ART = assisted reproductive techniques including IVF-ET, GIFT, and zygote intrafallopian transfer; CC-IUI = clomiphene citrate-IUI; NA = not applicable.

Van Voorhis. Fertil Steril. 1998 Dec;70(6):995-1005.

Effect of Sperm Numbers on the Cost-effectiveness of Infertility Procedures

TABLE 6

Effect of sperm numbers on the cost-effectiveness of infertility procedures.

Procedure	No. of cycles	Total motile spermatozoa for insemination $\times 10^6$ (range)	No. (%) of deliveries	Cost per delivery ($)
IUI: no. of motile spermatozoa $<10 \times 10^6$/mL	48	3.7 (0.3–9.3)	2 (4.2)	12,783
IUI: no. of motile spermatozoa $\geq 10 \times 10^6$/mL	55	31.9 (10.0–107.8)	4 (7.2)	6,620
CC-IUI: no. of motile spermatozoa $<10 \times 10^6$/mL	79	3.9 (0.1–9.1)	3 (3.8)	13,262
CC-IUI: no. of motile spermatozoa $\geq 10 \times 10^6$/mL	109	41.9 (10.9–190.4)	9 (8.3)	5,989
hMG-IUI: no. of motile spermatozoa $<10 \times 10^6$/mL	21	3.1 (0.1–8.0)	1 (4.8)	41,390
hMG-IUI: no. of motile spermatozoa $\geq 10 \times 10^6$/mL	59	46.6 (10.1–153.0)	13 (22.0)	7,889
ART: no. of motile spermatozoa $<10 \times 10^6$/mL	60	3.4 (0.01–9.7)	19 (31.7)	33,974
ART: no. of motile spermatozoa $\geq 10 \times 10^6$/mL	95	35.5 (10.0–159.6)	24 (25.3)	39,446

Van Voorhis. Fertil Steril 1998 Dec;70(6):995-1005.

Cost-utility Analysis of ART

- Tool used by government to guide decisions about the allocation of public healthcare resources
- Allows for **economic comparison** between disparate interventions that result in **different health outcomes** (e.g. immunization, cancer treatment)
- Usually measure in **Quality of Life Years** (QUALYs)
- When **clinically appropriate ART** and SET represent **good value** for money

http://guidanceniceorguki/GC/WaveR/90 2012.

Inpatient Costs for Selected Medical Diagnoses Compared to Infertility Costs

TABLE 4

Total and per member per month inpatient costs for selected medical diagnoses compared to combined inpatient and outpatient infertility costs over a 3-year period (1993–1995).

Y Diagnosis	Total cost ($)	Cost/member/mo ($)
1993		
Benign and malignant tumors	1,405,032	4.41
Cardiac disease	976,653	3.06
Mental disorders	705,517	2.21
Infectious diseases	334,881	1.05
Infertility	104,703	0.33
1994		
Benign and malignant tumors	989,588	2.93
Cardiac disease	953,201	2.82
Mental disorders	668,520	1.98
Infectious diseases	509,236	1.51
Infertility	276,751	0.82
1995		
Benign and malignant tumors	1,475,284	4.24
Cardiac disease	1,054,785	3.03
Mental disorders	740,792	2.13
Infectious diseases	529,605	1.52
Infertility	299,467	0.86

Stovall. The cost of infertility. Fertil Steril 1999.

Stovall. Fertil Steril 1999 Nov;72(5):778-84.

Affordability of ART Treatment

- **Cost** of treatment
- Societal economic status
- **Disposable income**
- Government coverage
- Insurance coverage
- Access to financing programs (loans) (1)

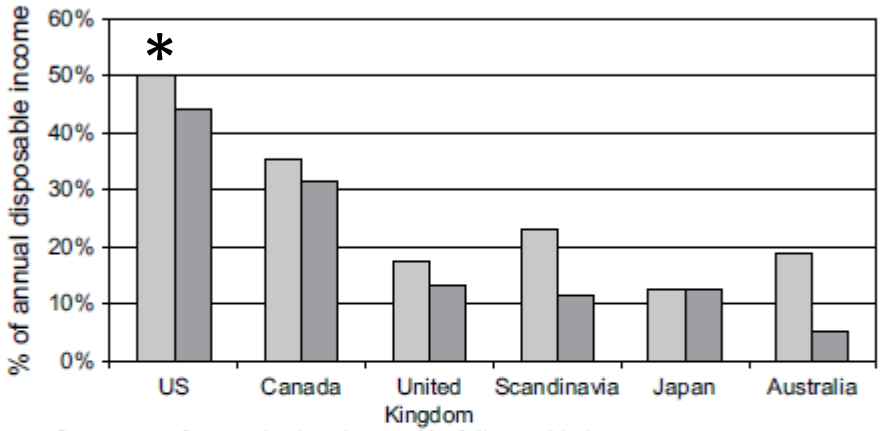
- **Net cost** to patients can be significantly **reduced by subsidies**
- Great **variability** among and within countries
- From 2004 at 46% increased to 64% in 2010 (2)

(1) Chambers. Fertil Steril. 2013 Aug;100(2):319-27.
(2) IFFS Surveillance. Fertil Steril. 2011 Feb;95(2):491.

Average Cost of a Standard IVF Cycle as a Percentage of Annual Disposable Income (USD 2006)

FIGURE 4

Average cost of a standard IVF cycle as a percentage of annual disposable income (USD 2006).



- Gross cost of a standard cycle as a % of disposable income.
- Net cost of a standard cycle as a % of disposable income after government subsidization.

Note:

1. Annual disposable income is based on a single person at 100% of average earnings with no dependents (27).
2. The estimated percentage reduction in the average price of a standard IVF cycle due to government subsidization was 11% for Canada, 25% for the UK, 50% for Scandinavia, 0% for Japan and 71% for Australia.
3. In the US, there is negligible government subsidization for ART, however, the central role of private insurance in the US was included in the analysis, reducing the average price of a standard cycle by 12%.

Chambers. International economic review of ART. Fertil Steril 2009.

* **States without mandates 52%**
5 States with mandates 13%

In mandated states
more patients with
-- Better prognosis
-- Poorer prognosis

Chambers. Fertil Steril. 2009 Jun;91(6):2281-94.

Opportunity Costs and Willingness to Pay

Opportunity Cost

- The correct cost of any resource is its "Opportunity Cost": the **value of foregone benefits because money is spent on other societal opportunities.**
- In ART, Opportunity Cost:
  - Is the value of **babies not born** because ART (and therefore embryo transfers) is not performed
  - It is much greater than all other costs
  - This suggests it is **worth paying** for embryo transfers
  - But it is **difficult to see and to measure**—especially for the non-infertile!

Cost-benefit Analysis of ART

- Contingent evaluation techniques to elicit society's **willingness to pay** (WTP)
- Lack of empirical evidence to validate in ART
- Willingness to Pay for ART
  - Ex-post (user-based, if infertile) **$177,730**
  - Ex-ante (insurance-based) **$1,800,000**

Neumann. Med Care. 1994;32:686-99.

Indirect Costs of Embryo Transfer

Indirect Costs of ART

- **Patient** complications subsequent to ART treatment
  - OHSS
  - Surgical complications
  - Intrinsic medical conditions worsened by treatment
  - Other
- **Maternal** pregnancy complications
  - Population at increased risk
  - Multiple pregnancy
  - ? ART procedure
- **Neonatal** and **childhood** complications
  - Population at increased risk
  - Multiple pregnancy
  - ? ART procedure

Indirect Costs of Neonatal and Childhood Complications

- Complications and Costs
- **Greater than the general population** for
  - ART singletons
  - ART twins
  - ART higher order multiples

Risks of Multifetal Gestation

NUMBER	FETAL LOSS (%)	AVERAGE DELIVERY	MORTALITY (%)	MORBIDITY (%)
6	90%	26	20%	30% per fetus
5	50%	28	15%	25% per fetus
4	25%	29	6%	15% per fetus
3	15%	32	3%	5% per fetus
2	8%	35	2%	3% per fetus
1	3%	39	1%	2%

2008 Data

Courtesy Mark Evans, MD

Indirect Costs of ART Multiple Births

- Total annual USA healthcare cost = **$1 Billion** (1)
- Approximates the total Direct Cost of ART
- UK and Australia data (2)
  - **Savings** not spent on multiple pregnancy
  - **Cross-subsidized** much of increase in ART utilization

(1) Bromer. Curr Opin Obst Gynec. 2011;23:168-73.
(2) Chambers. Med J Australia. 2011;195:594-8.

Factors Affecting Indirect Costs of Embryo Transfer

- Controlled ovarian stimulation protocols
  - RCT of **mild stimulation and eSET** vs. standard stimulation and DET
  - Results over 1 year
    - Similar cumulative Live Birth Rate
    - **Lower costs** per Live Birth for mild stimulation/eSET because of lower indirect costs for **multiples**
    - Lower costs managing **OHSS** for mild stimulation/eSET

Polinder. Hum Reprod. 2008;23:316-23.

Incremental Cost Per Live Birth and per QUALY (DET vs SET) Over a 20 Year Time Horizon

Age (yrs)	ICER per Livebirth	ICER per Qualy
32	£27,356	£28,263
36	£18,580	£21,722
39	£15,539	£20,278

Scotland. BJOG 2011. 118(9):1073-83.

Cleavage Stage Vs. Blastocyst Stage Transfer in Assisted Conception

- **Live Birth Rate**
  - **Blastocyst > Day 3: OR 1.35** (95% CI 1.05-1.74)
  - Especially for
    - Good prognosis patients
    - Equal number of embryos transferred (including SET)
    - Randomization on Day 3 (ability to select patients for blast culture)
- Rates of Embryo **Cryopreservation**
  - **Blastocyst < Day 3: OR 0.45** (95% CI 0.36-0.56)
- **Failure to Transfer** Any Embryos
  - Failure Blastocyst > Day 3: **OR 2.85** (95% CI 1.97-4.11)
  - Good prognosis Pts: **OR 1.50** (95% CI 0.79-2.84)
- **"Emerging evidence that in selected patients blastocyst culture may be applicable for SET."**

Blake. Cochrane Database Syst Rev 2007;17(4):CD002118.

Outcome Issues: CD 3 Cleavage vs. CD 5 Blast Transfer

- ? Effects of longer durations of culture
  - Epigenetic issues
  - Some literature creates concern
  - Some literature is reassuring
- Adverse neonatal outcomes vs. natural
  - CD 3 OR, 1.11 (95% CI, 1.02-1.21)
  - **CD 5** **OR, 1.53** (95% CI, 1.23-1.90)
- **Clinical significance unclear** (1)

SART/ASRM Practice Committees. eSET. 2011.

ASRM Practice Committee. Multiple Gestation. 2011.

Diagnostic Tests On the Embryo

- PGD and PGS
  - Total Delivery Rate
    - **No genetic testing vs. PGS**
      - No high quality studies of total number of babies born in unselected population resulting from one egg retrieval
      - Currently, **known cost without proven benefit**
      - Need for **large RCTs** to show benefits of PGS and in which populations
    - **Blastocyst culture**
      - Twinning rates
      - Epigenetic issues
      - Cryopreservation questions
  - ? Time-lapse photography technology
  - Treatment variability complicates **economic assessment**

N. Esfandiari. ASRM. Oral 438. October 16, 2013.

Embryo and Oocyte Testing and Treatment

- Economic assessment complicated by
  - Vitrification with improved pregnancy rates
  - **"Freeze all"** cycles
  - PGS for gender selection
  - Other uses of PGS
- **New technologies** require careful **assessment prior to implementation**
  - Safe
  - Effective
  - **Cost-effective**
- **Uncommon in ART**

Economic Implications of Insurance Coverage for IVF

Affordability Affects the Number of Embryos Transferred

- **Irrefutable evidence** on the economics
  - Countries with better coverage
  - States with mandated coverage
  - Countries that have introduced coverage
  - Countries that have reduced coverage
  - Provinces that have reduced coverage
- **Regulations and guidelines** (when followed) have had similar results
- **USA**: issue of publication of **clinic-specific pregnancy rates**

Chambers. Fertil Steril. 2013 Aug;100(2):319-27.

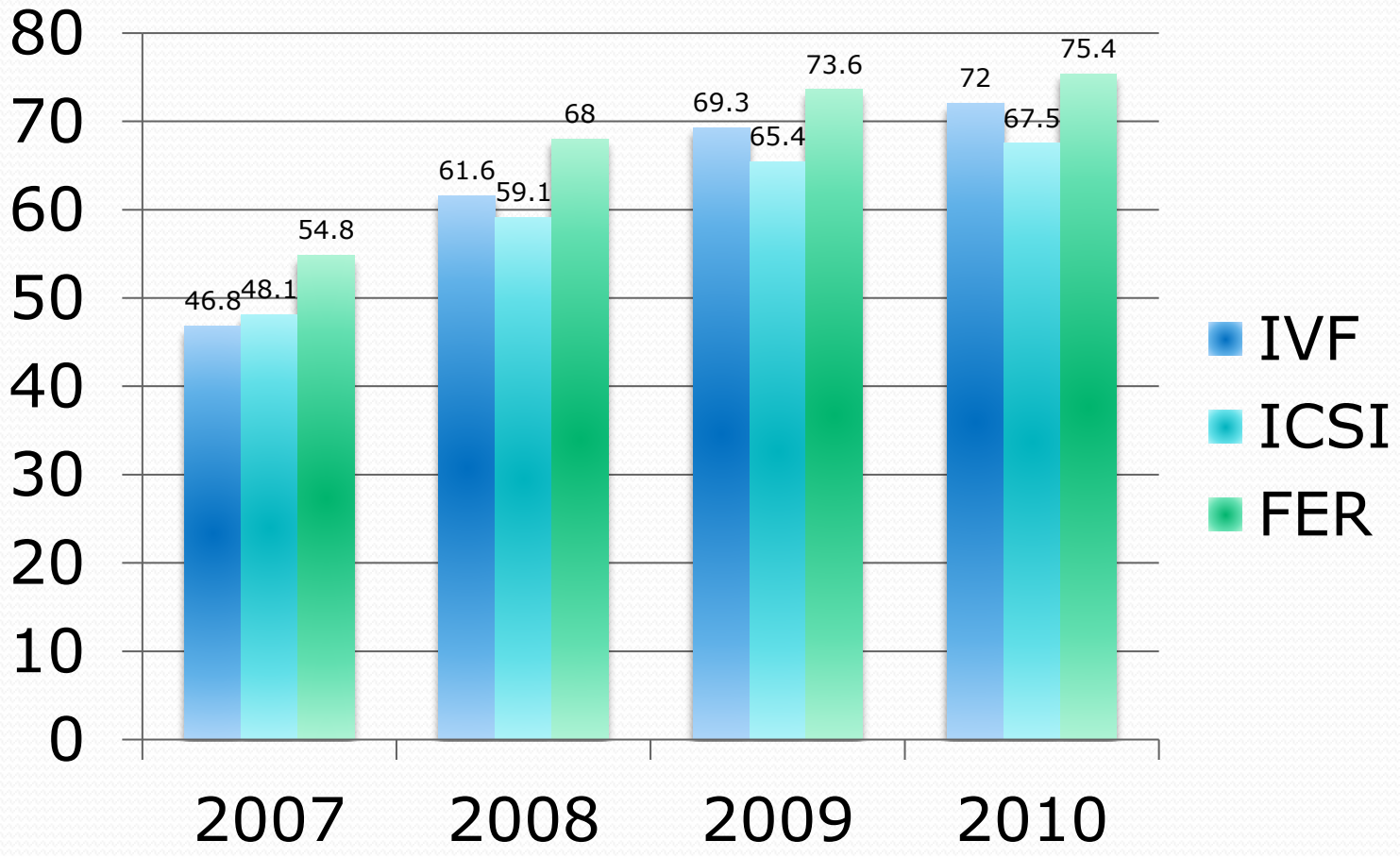
Reimbursement for the Cost of ART in Japan

Fiscal year	2004 *	2005	2006	2007 **	2008	2009	2010
The number of reimbursements	17,589	26,061	31,630	60,536	72,029	84,395	96,458
% increase	-	148%	121%	191%	119%	117%	114%

*Since the Japanese fiscal year starts every April and ends in March, most of the local governments in Japan started their reimbursement program from January 2005.
**Japanese government loosened the limit of couple's annual income and increased the amount of reimbursement from 2007.

Ishihara. ICMART at ESHRE 2012.

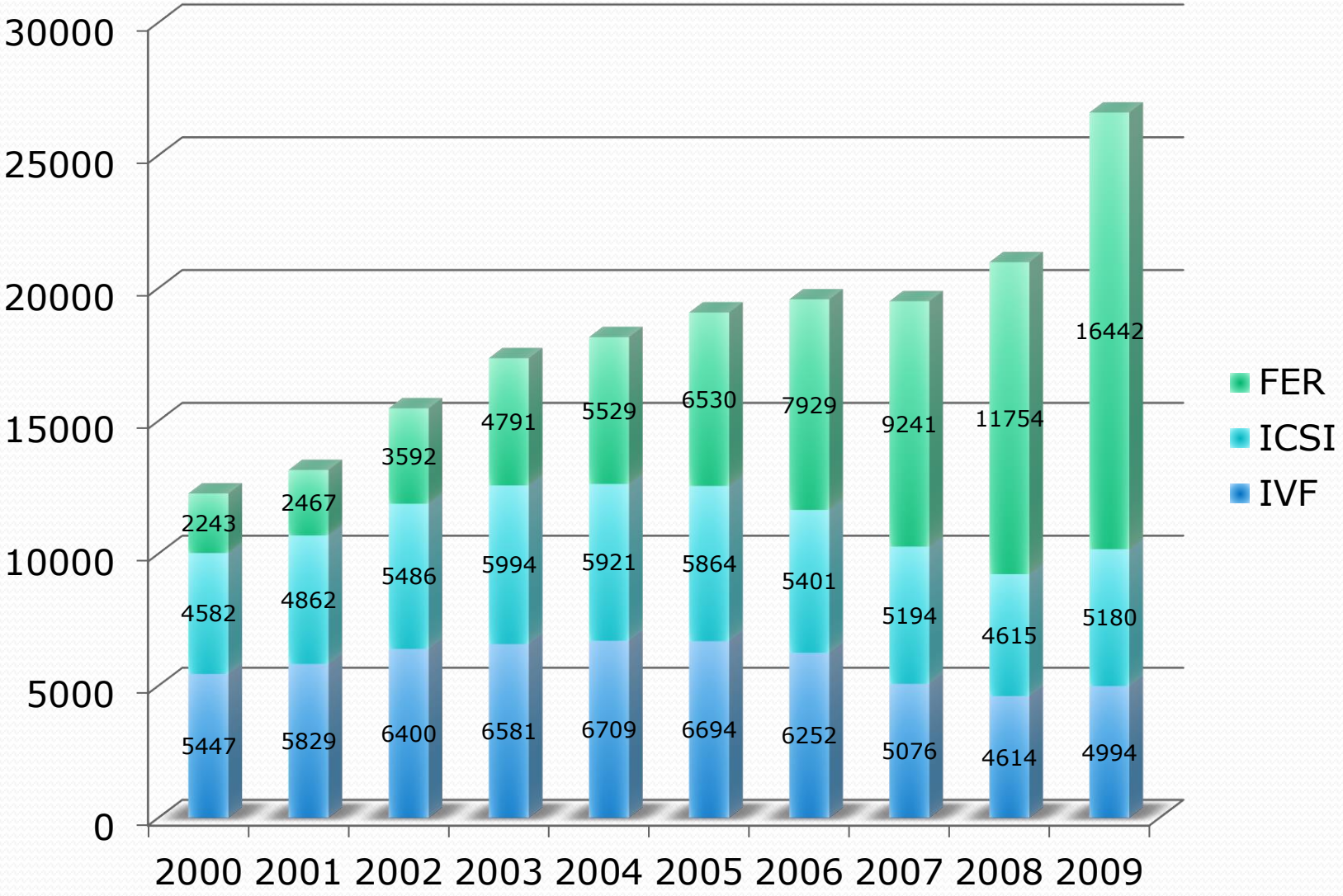
Proportion of SET in Japan



Average ET: 1.38 1.41 1.32 1.31 1.34 1.27 1.28 1.33 1.25

*cycle-based national registry JSOG data

Number of Live Birth Infants After ART in Japan



JSOG dat

Mean Number of Fresh or Frozen Embryos Transferred, According to the Category of Required Insurance Coverage

TABLE 4. MEAN (±SE) NUMBER OF FRESH OR FROZEN EMBRYOS TRANSFERRED, ACCORDING TO THE CATEGORY OF REQUIRED INSURANCE COVERAGE.*

REQUIRED COVERAGE	FRESH EMBRYOS		FROZEN EMBRYOS	
	TOTAL NO. OF TRANSFERS	NO. OF EMBRYOS/ TRANSFER (95% CI)	TOTAL NO. OF TRANSFERS	NO. OF EMBRYOS/ TRANSFER (95% CI)
Complete	8,593	3.25±0.051 (3.15–3.35)†	1394	3.11±0.124 (2.87–3.35)
Partial	4,075	3.54±0.075 (3.39–3.69)	1031	3.15±0.145 (2.87–3.43)
None	37,004	3.59±0.025 (3.54–3.64)	7633	3.27±0.054 (3.16–3.38)

*CI denotes confidence interval.

†P=0.001 for the comparison with partial coverage, and P<0.001 for the comparison with no coverage.

Jain. N Engl J Med. 2002 Aug 29;347(9):661-6.

Cost

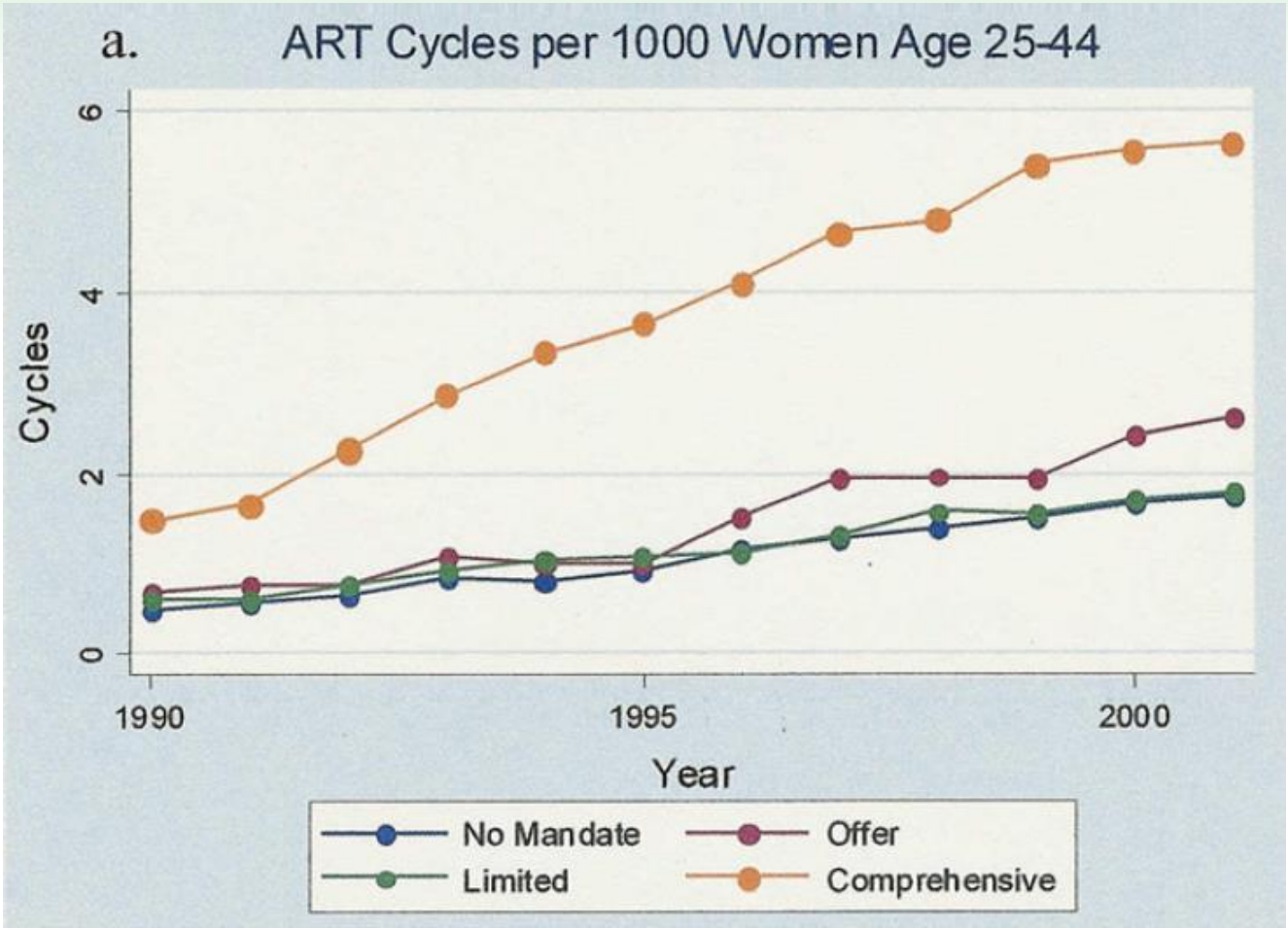
- **The average cost of an IVF cycle in the U.S. is $9,226**. Among policies that provide IVF services, the **increase in premium** per month ranges from **$0.67 to $14.**

- When IVF is provided as a health benefit, the **cost increases** can be **variable**.

- As utilization increases, contemporary cost analyses and outcomes research will aid providers, third-party payers and policymakers in better understanding the economic impact of IVF.

Omurtag. Fertil Steril2009 Nov-Dec;54(11-12):661-8.

Trends in ART Utilization and Outcomes by Insurance Mandate Status



Martin. Fertil Steril 2011 Mar;1(3):964-9.

All 2006 IVF Cycles Reported to the CDC Comparing IVF Mandated and Non-mandated States

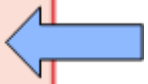
TABLE 4

All 2006 IVF cycles reported to the CDC comparing IVF mandated and nonmandated states.

Overall	IVF mandated	Nonmandated	*P* value
Cycles	27,565	64,188	
Pregnancy rate (%)	35.0	38.8	<.001
Live-birth rate (%)	29.1	32.2	<.001
Live-birth transfer (%)	35.4	37.9	<.001
Cancellation rate (%)	11.0	10.9	.66
Embryos transferred	2.4	2.7	<.001
Twin rate (%)	26.0	28.1	<.001
Triplet rate (%)	3.4	3.9	<.001
Multiple births (%)	27.3	29.8	<.001

Note: "Twins" are defined as the percentage of pregnancies with twins and "triplets" as the number of pregnancies with triplets or more. The CDC definition of "multiples births" is the percentage of live births having multiple infants.

Martin. Insurance coverage and IVF outcomes. Fertil Steril 2011.



Martin. Fertil Steril 2011 Mar;1(3):964-9.

The Effects of Insurance Mandates on Choices and Outcomes in Infertility Treatment Markets

- **Broad insurance mandates for IVF** result in not only large **increases** in treatment **access** but also significantly **less aggressive treatment**
- More **limited insurance mandates**, which may apply to a subset of insurers or provide weaker guidelines for insurer behavior, generally have **little effect** on IVF markets

Hamilton. Health Econ. 2012 Aug;921(8):994-1016.

Utilization of Infertility Treatments: the Effects of Insurance Mandates

- Utilization effects differ by age and education
  - **Older, more-educated** women should be more likely to be directly affected by the mandates than younger women and less-educated women
    - **Higher risk** of fertility problems
    - **More** likely to have **private health insurance**
- **Mandates** have a **significant** effect on utilization for **older, more-educated** women that is larger than the effects found for other groups
- Largest for the use of ovulation-inducing drugs and artificial insemination

Bitler. Demography. 2012 Feb;49(1):125-49.

Value Added by Performing Embryo Transfer

Balancing of Costs and Benefits

- Many direct and indirect Costs
  - Individually and Societally difficult to quantify
- Must be balanced against the benefits
  - Economic
  - Direct and Indirect
  - Individual, Family, Society
  - Singletons, twins and higher order multiples
- Not commonly done in our literature
- **Evidence is that benefits greatly exceed costs**

Economic Benefits of Embryo Transfer

- **Individual** Born
  - Lifetime **economic productivity** contribution
  - **Tax contributions**
    - UK Discounted Net Tax Revenue **$208,400** (1)
    - 8 X return on investment
    - Only for those not otherwise conceiving
- **Statistical life value** (lower in healthcare)
  - $1—6 Million
  - US government 9/11: $3.1 Million ($0.25—7.1M) (2)
  - Average all studies **$2—3 Million**

(1)Connolly. Hum Reprod. 2009;24:626-32.
(2)www.rand.org/pubs/research_briefs/RB9087/index1.html

Net Benefit of ART Embryo Transfer

- Net benefit
  - **Economic** productivity
  - **Taxes** paid
  - Statistical **value** to society
  - Personal, **family**, friends, **society**
    - Happiness
    - A meaningful life
    - Parenthood

Factors Affecting the Economics of Embryo Transfer Policy: Resource-poor Countries

- **Economics different**
  - Prevalence of infertility similar
  - Patients **younger**
  - Possibly more tubal/uterine **disease**
    - Pelvic inflammatory disease
    - Puerperal sepsis
    - Tuberculosis
    - Unsafe abortion
- **Access** to diagnosis and treatment **limited**
- **Infertility not** recognized as **important** by policy makers with other priorities

Factors Affecting the Economics of Embryo Transfer Policy: Resource-poor Countries

- Societally **heterogeneous** perspectives
  - Family
    - Traditional
    - Non-traditional
  - Children, including gender
  - Infertility
  - ART treatments different
    - Ability to create new life
    - Vs. improve quality of existing life
- Difficult to use usual health **economic methods**
- **Overpopulation/underpopulation**

Factors Affecting the Economics of Embryo Transfer Policy: Developed Countries

- Treatment for **non-infertility** conditions
  - Donor gametes in some populations
  - Preimplantation genetic diagnosis
  - Preimplantation genetic screening
  - Gender selection
  - Oocyte cryopreservation
    - Cancer and other serious medical conditions
    - Elective "fertility preservation"
- **Cross Border Reproductive Care**
- Developing countries' middle and **upper-middle classes** emulating these uses
- **IVF** should continue to **grow**

Conclusions

- Assisted reproductive technology is **expensive from a patient** perspective but **not** from a **societal** perspective
- ART is "Good value for money"
- Only countries with **funding** arrangements that minimize out-of-pocket expenses met **expected demand**
- Funding mechanisms should **maximize equity of access** and **effectiveness** while **minimizing** the potential **harm** from multiple births

Chambers. Fertil Steril 2009 Jun;91(6):2281-94.

Conclusions

- Financial **cost** is the major **barrie**r to access to ART
- **Societal values impact**
  - Perception of cost
  - Distribution of financial burden to individuals and society
- Distribution of **financial burdens impacts treatment**
  - Type of treatment (“~Access”)
  - Effectiveness
  - Safety
- **Safety** has short and long term ramifications for many different stakeholders in society
- **Better understanding of financial aspects of ART will help inform better social policy and individual decision-making**
  - Treatment for those who need it most

Conclusion: What should we do?

- **Educate**
  - Patients, policy-makers
  - Society
- **Practice ART**
  - Cost-effectively
  - Effectively
  - Safely
- **Research**
  - Basic science
  - Clinical care
  - Health economics

THANK YOU!