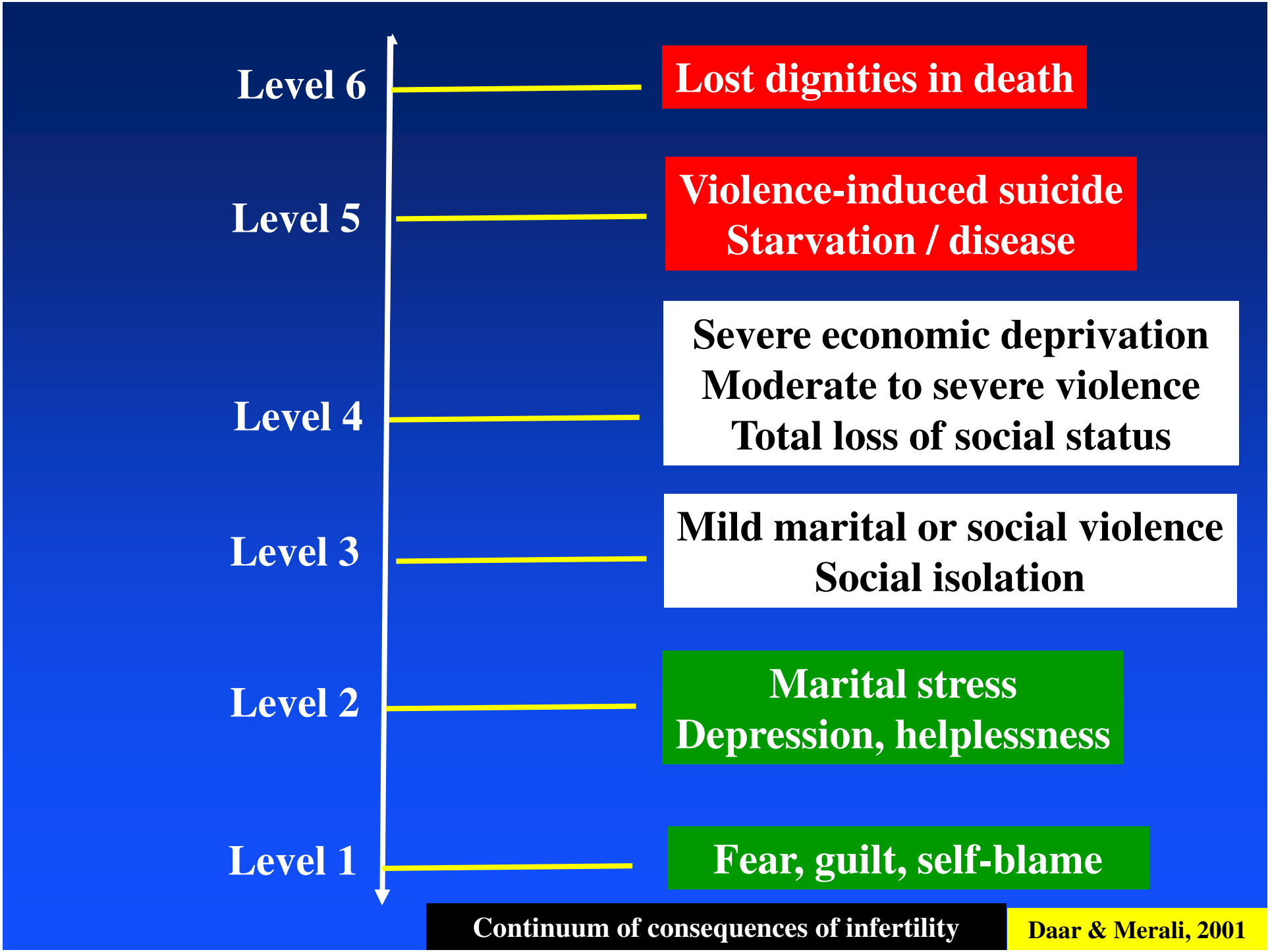
The Arusha Project

Willem Ombelet

Barcelona 03-11-09 / 36th International Symposium


Level 6
Lost dignities in death
Level 5
Violence-induced suicide
Starvation / disease
Level 4
Severe economic deprivation
Moderate to severe violence
Total loss of social status
Level 3
Mild marital or social violence
Social isolation
Level 2
Marital stress
Depression, helplessness
Level 1
Fear, guilt, self-blame
Continuum of consequences of infertility
Daar & Merali, 2001

Third World
=
overpopulation

1st priority
=
Education
Family-planning

Limited budget

ART =
ethical issue

ART = expensive

More important priorities:
HIV, tbc, malaria,
vaccinations …

Task n° 1
=
Prevention
Education

Limited or no interest for infertility in developing countries

Patient // Society - friendly ART

- Cost – effectiveness
- Access
- Risk minimisation
- Burden minimisation

Make it

SIMPLE
EFFICIENT
SAFE
AFFORDABLE

Strategies to simplify IVF

Natural cycle

Clomiphene citrate

Low dose hMG / rec FSH

Monitoring : (only) ultrasound

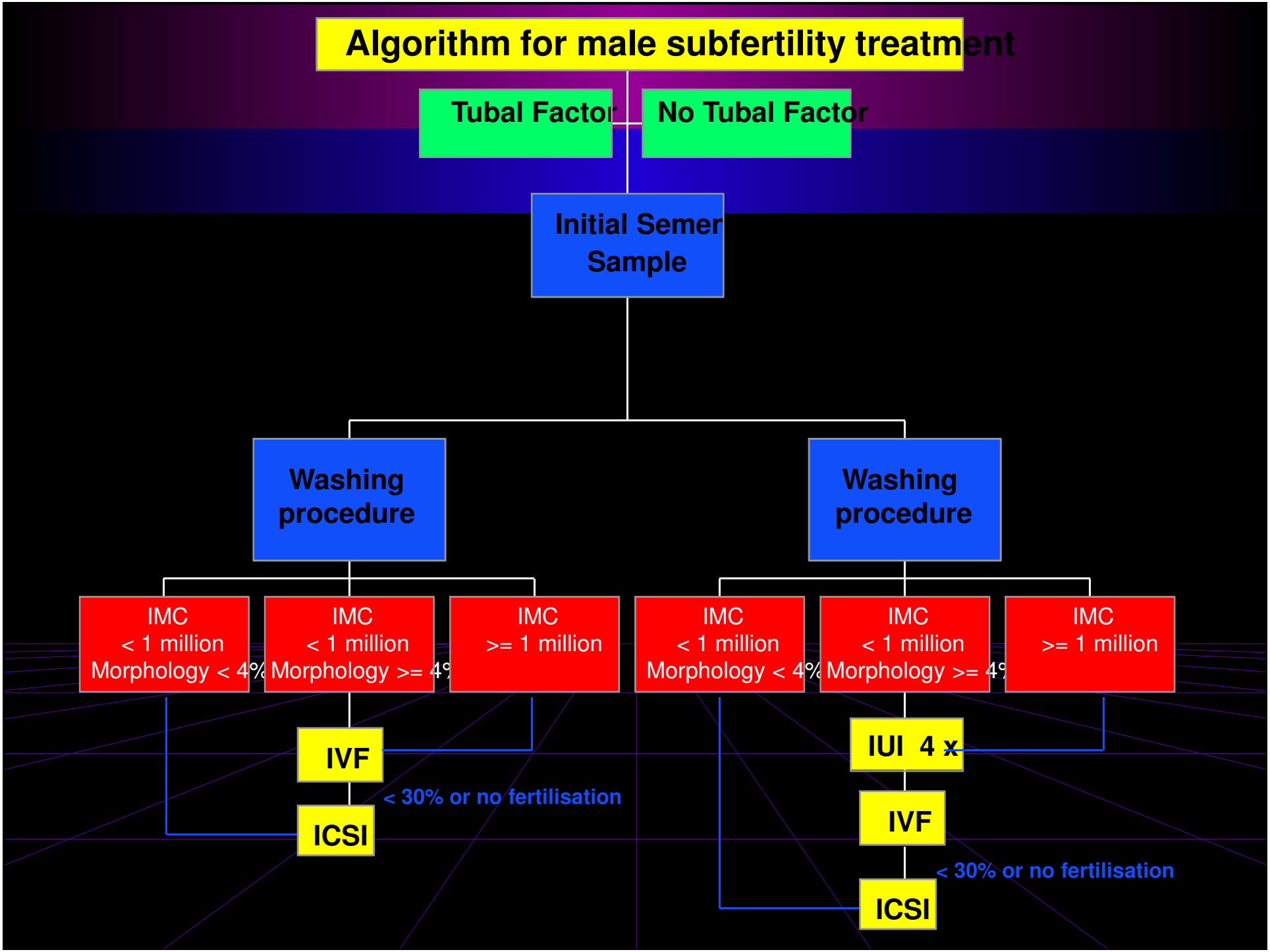
Single Embryo Transfer

Laboratory - technics

Laboratory - material

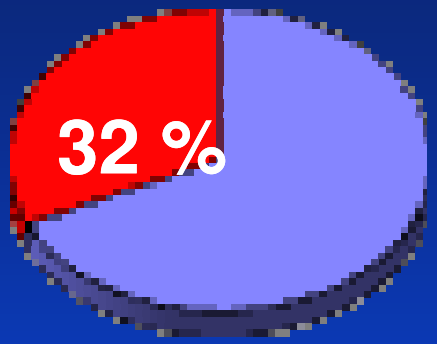
IUI as a first line treatment

Natural cycle
Clomiphene citrate
hMG or rec FSH: minimal dose step-up regimen

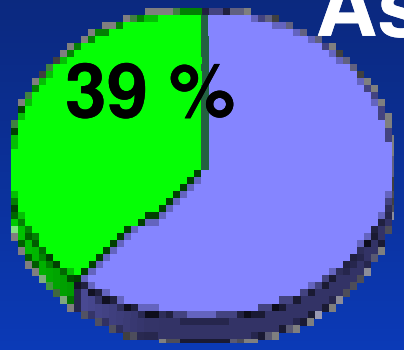

Algorithm for male subfertility treatment
Tubal Factor
No Tubal Factor
Initial Semen Sample
Washing procedure
Washing procedure
IMC < 1 million Morphology < 4%
IMC < 1 million Morphology >= 4%
IMC >= 1 million
IMC < 1 million Morphology < 4%
IMC < 1 million Morphology >= 4%
IMC >= 1 million
IVF
< 30% or no fertilisation
ICSI
IUI 4 x
IVF
< 30% or no fertilisation
ICSI

Infection-related tubal factor

Third World



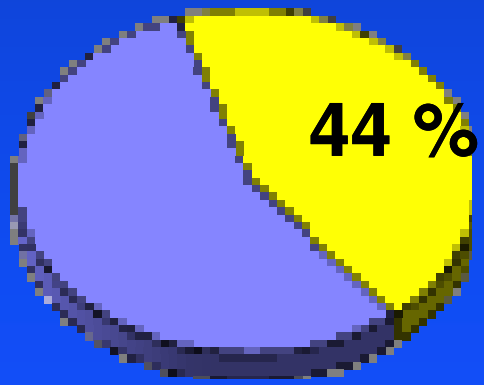
Asia



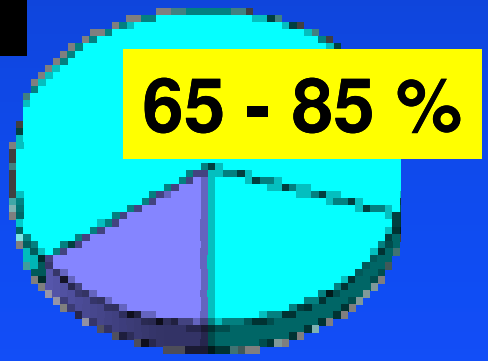
Tubal factor : why ?

- Sexually transmitted diseases
- Post-partum infections
- Illegal abortions
- Urbanisation - mobility
- Polygamy
- Resistant micro-organisms …

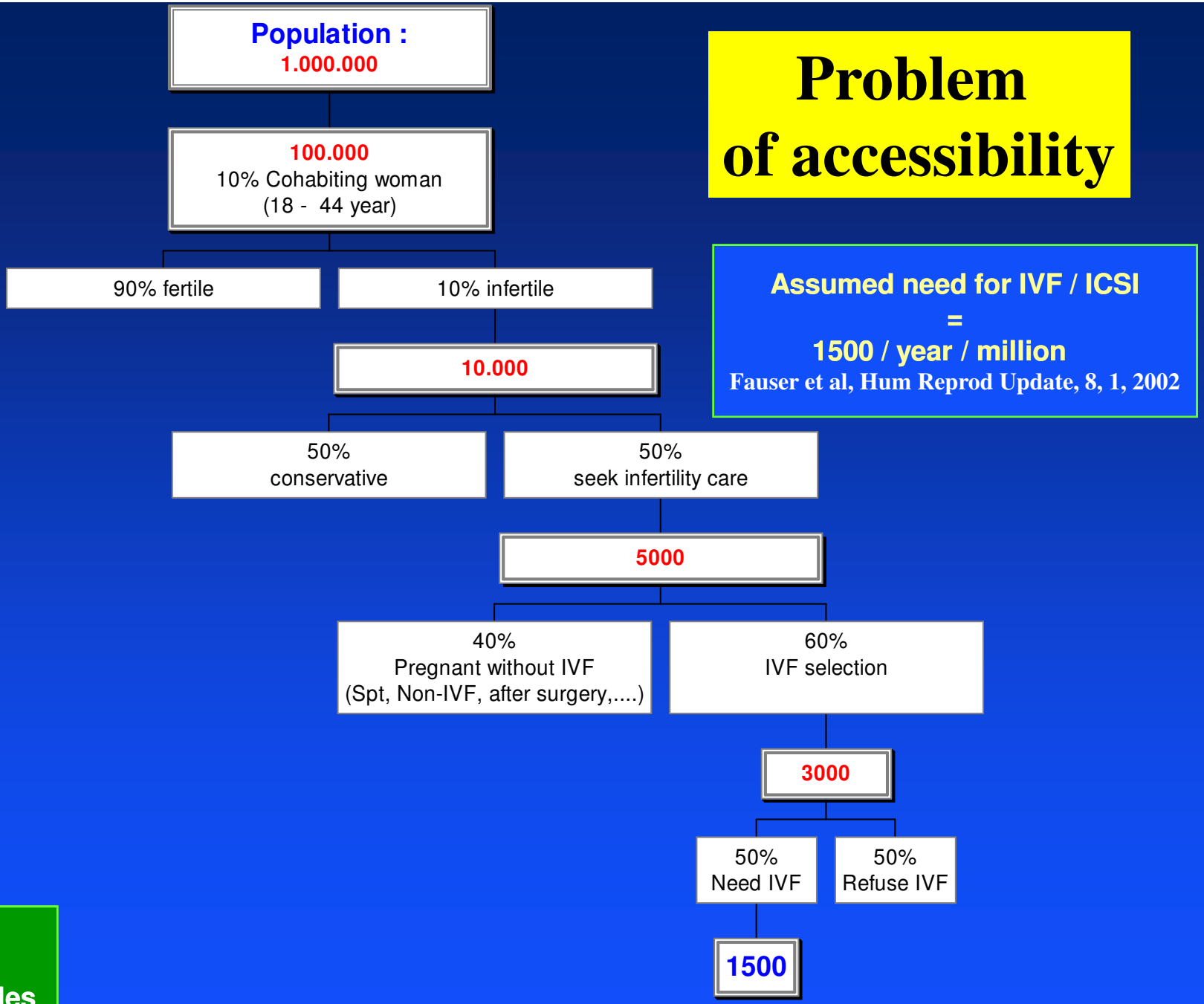
Latin America



Africa



Problem of accessibility



Assumed need for IVF / ICSI
=
1500 / year / million
Fauser et al, Hum Reprod Update, 8, 1, 2002

Nigeria
> 190 000 cycles per year

37 participants

Arusha (expert) meeting
ESHRE STF "Developing countries & infertility"
December 15-17, 2007

President-elect ESHRE
Past president ESHRE
Past-president IFFS
President-elect FIGO
President MRSM
Principal advisor President Museveni (Uganda)
Representative of EC
Representative of WHO
President ISMAAR

4 Working Groups (WG)

- The one-day diagnostic phase — R Campo
- Ovarian stimulation for IUI & IVF/ICSI — AN Andersen
- Laboratory phase for IUI & IVF/ICSI — J Van Blerkom
- Fundraising — H Sallam

5 Study Groups (SG)

- Reproductive health education, prevention & awareness — G Serour
- Burden of disease & cost-effectiveness — D Habbema
- Training courses — I Cooke
- Intravaginal // intrauterine culturing — R Frydman
- Differences in ethics / law / religion / level of care — F van Balen

Level 1 – 3 clinics – action mode

(H Sallam – Monograph HR)

Level 1	basic infertility exploration treatment options: up to IUI
Level 2	+ diagnostic laparoscopy treatment options: up to IVF
Level 3	+ operative endoscopy treatment options: ICSI & cryopreservation
Level 4	+ ??

1. Equipping the clinics
2. Training the staff
3. Educating the public
4. Running the services

Developing countries & infertility

Health Care Centres

Family planning
Mother care
Infertility diagnosis
Infertility treatment

Accessible ART services

Diagnostic phase

Ovarian stimulation

Lab phase

One-day clinic (diagnosis)

Female

questionnaire

Male

Clinical examination
Blood sample: Hb, Hep B, Hep C, HIV
cervical smear
TB-testing
Hystero-salpingography
Vaginal ultrasound
PCT if regular cycle & easy access to centre
Optional: mini-hysteroscopy

Clinical examination
Blood sample: Hep B, Hep C, HIV
TB-testing
Semen examination: fresh sample
Count & motility a + b
After washing: IMC (& morphology)

Good Quality-Low Cost Ultrasound

£ 6500 or 7400 Euro

Chinese company

Mindray DP-6600 with 2 probes

Accessible ART services

Diagnostic phase

Ovarian stimulation

Lab phase

Natural cycle IVF
systematic review – 1800 cycles

- Complication rate (MPR & OHSS) : almost zero
- Much cheaper
- ET per cycle: 45.5 %
- Ongoing pregnancy rate per cycle: 7.2 %
- Ongoing pregnancy rate per transfer: 15.8 %

Reason: premature LH rise / ovulation

→ need for randomized controlled trials

Pelinck et al., HR Update, 8, 129, 2002

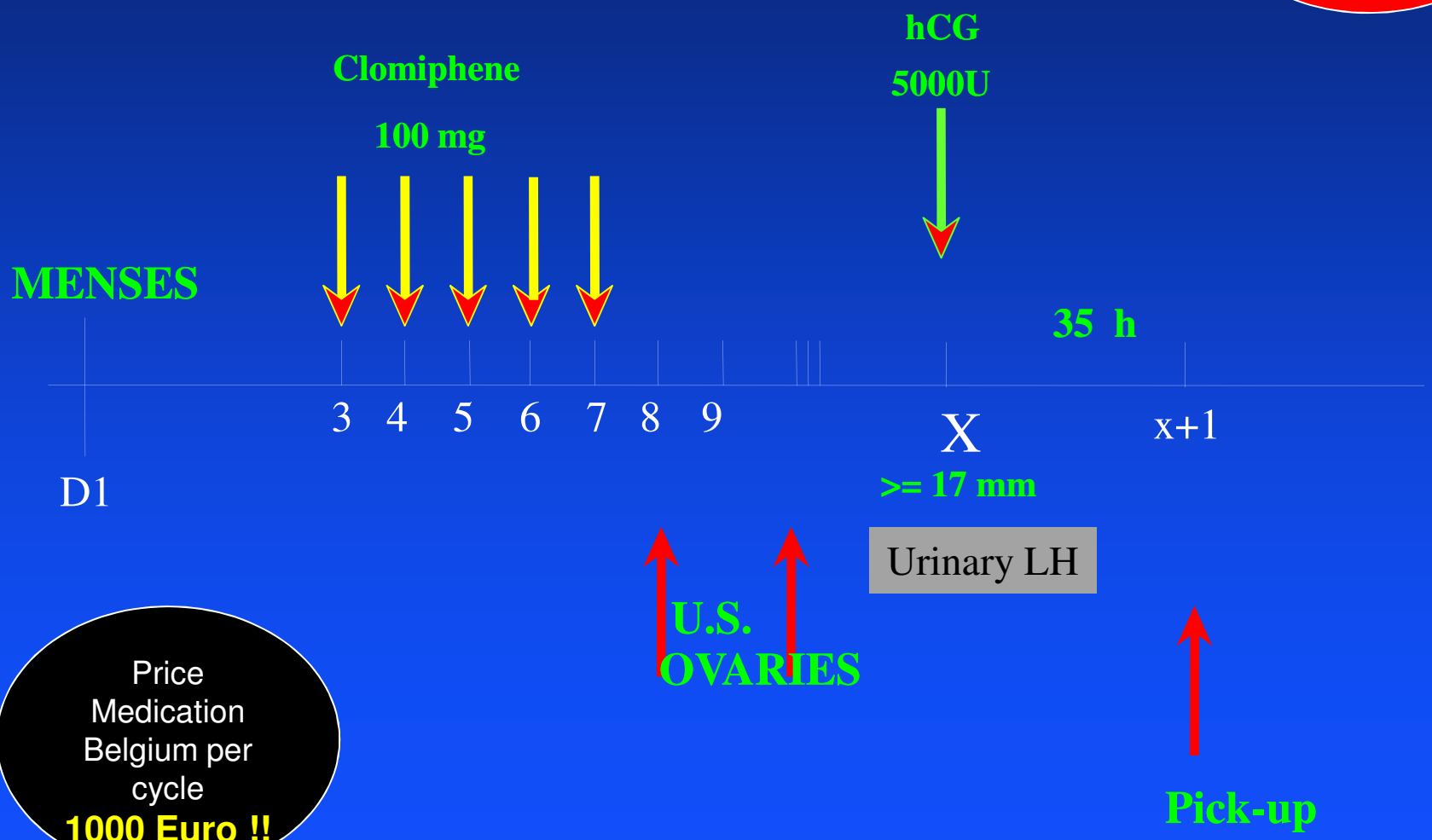
Make it

SIMPLE
EFFICIENT
SAFE
AFFORDABLE

Low-cost IVF stimulation

Price
Medication

13 Euro

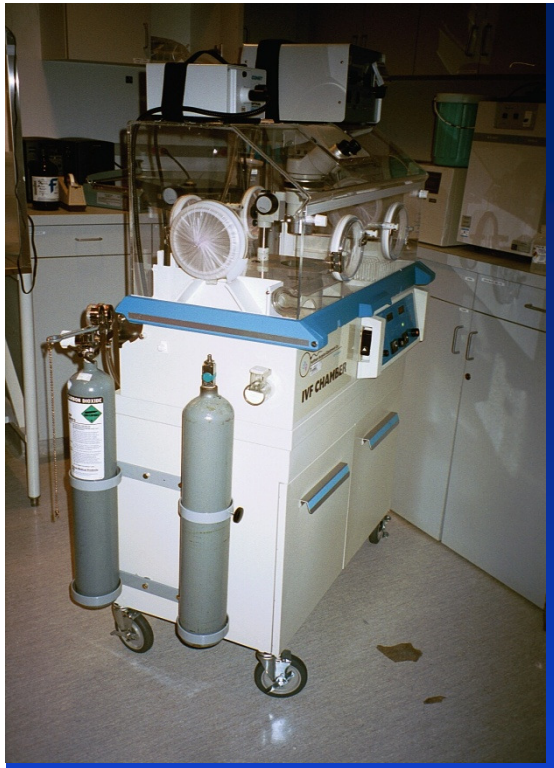


Price
Medication
Belgium per
cycle
1000 Euro !!

Monitoring ART treatment

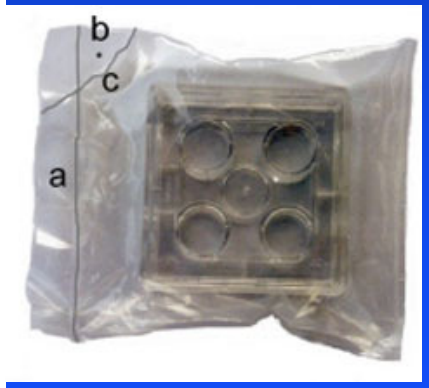
IUI
- max 2 US
- no biochemical testing

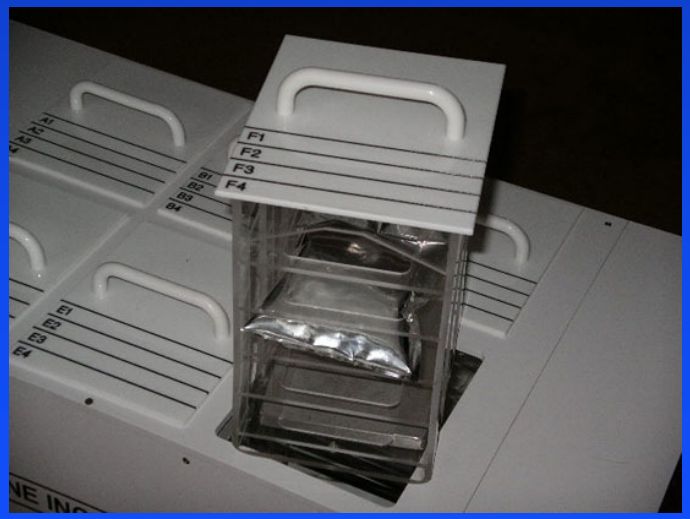
IVF
- max 2 or 3 US
- no biochemical testing
- 1 x urinary LH

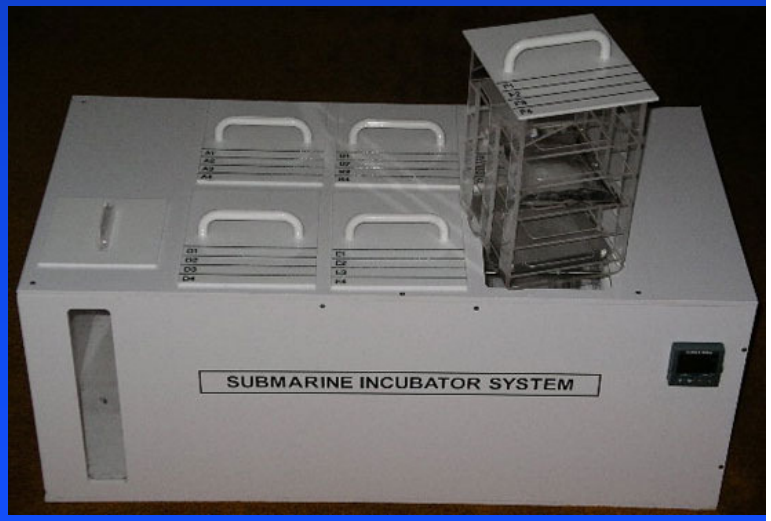

IVF CHAMBER


Forma Scientific

Lab Phase

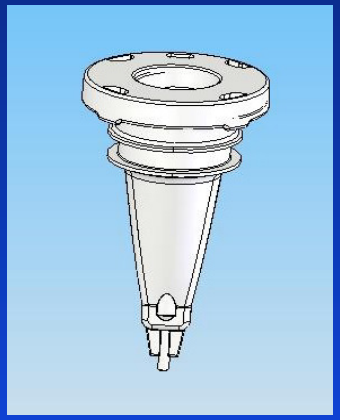

b
c
a


F1
F2
F3
F4

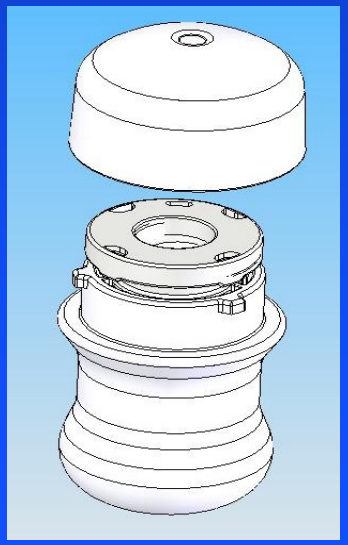

SUBMARINE INCUBATOR SYSTEM

INVOcell

Ranoux & Frydman



INNER CHAMBER



OUTER RIGID SHELL

Make it

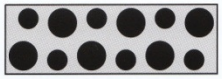
SIMPLE
EFFICIENT
SAFE
AFFORDABLE

BioTherm™

STANDARD BLOCKS & CORES

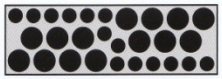
A12-1

12 Microtubes (15mm Ø x 94mm)
1 x 14ml or 15ml Tube (17mm Ø x 98mm)



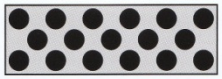
F6/6

6 x 14ml or 15ml Tubes (17mm Ø x 96mm)
6 x 5ml or 6ml Tubes (12mm Ø x 63mm)



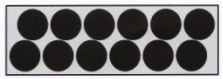
L14/14

14 x 1.8ml Cryovials (13mm Ø x 34mm)
14 x Auto-sample Tubes (8.5mm Ø x 98mm)



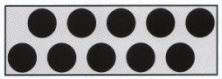
G17

17 x 5ml or 6ml Tubes (12mm Ø x 63mm)



V12

12 x 10ml Tubes (16mm Ø x 92mm)



E10

10 x 14ml or 15ml Tubes (17mm Ø x 96mm)

SC 8/1

8 x 5ml or 6ml Tubes (12mm Ø x 63mm)
1 x 14ml or 15ml Tube (15mm Ø x 97mm)
1 x Cassette Slot (136mm x 94mm x 13mm)

Straw Cassette
50 x 0.50ml or
100 x 0.25ml Straws

CryoLogic
Innovative Instrumentation

TRANSPORTABLE INCUBATORS

Specimen tubes of various dimension to suit most applications can be accommodated in the thermally conductive blocks.

The Biotherm™ INC-RB1 is supplied with two blocks as standard. Currently, six block models are available to choose from. Custom Blocks can also be made. These can be removed by the user to clean or interchange.

The same range of block styles are available as fixed cores in the Biotherm™ INC-12V. In addition, a straw cassette is available with a fixed core as shown.

Specifications	12V / RB-1
Selectable Temperature Range:	32.5°C to 40.0°C
Temperature Steps:	0.5°C
Holding Time:	> 30 hours at 40°C, battery fully charged
Thermal Fuse Trip Point:	55°C
Batteries:	2 x 6V x 4Ah, sealed lead acid
Battery Dimensions:	Typical 70x46x105 (WxDxH) mm
External Dimensions:	275 x 212 x 258 (WxDxH) mm
Weight:	6kg (including batteries)

www.cryologic.com Tel: 61 3 9574 7200 Fax: 61 3 9574 7300

Action Plan – Objective & background
(J Van Blerkom)

- Minimalist approach – back to basics
- Avoid needless complex instrumentation / reagents ..
- Simple incubation system – single temperature (37°)
  - Battery

Non-CO_2 based culture conditions

  - Less oocytes / embryos
  - 24 – 36 culturing
- Culture medium: simple // for 1 – 2 days
- Looking for pronuclear characteristics / mononucleation / blastomere symmetry

Cost /cycle/ 100 per yr.

- Fixed cost:18,200 /500 = 36 / cycle
- Consumables 265
- Overhead 20

$ 321 = 254 Euro

+ personnel !!!!

A De Cherney, Geneva 2008

Income /// health care costs in DC

country	Daily income % < 1 $	Daily income % < 2 $	Health care % of GNP	Health care % out of pocket
Tanzania	90 %	58 %	4 %	83 %
India	80 %	35 %	5 %	94 %
Indonesia	52 %	8 %	3 %	75 %
China	47 %	16 %	5 %	86 %
Brazil	21 %	8 %	9 %	64 %

Pilot-project for LC-IVF

Suggested centre

Egypt: Alexandria

Selection of patients / methods

- Only childless women
- Age limits: Women: > 18 & < 35 yrs
  Male: < 55 yrs
- only IVF (no ICSI)
- SET or DET

Future activities if phase 1 is succesful

Implementing more level 1 centres

Implementing more level 2 centres

Implementing level 3 centres
(+ ICSI // cryo //operative endoscopy)

→ Registration obliged – yearly audit
(ICMART)

Training courses
(ESHRE, IFFS)

- different packages (level 1 – 3)
- Manual & protocols for each level
- train the trainees
  - Diagnostic phase (ISMAAR, EAGE ...)
  - Clinical aspects IUI & IVF cycles
  - Laboratory phase IUI & IVF/ICSI

Funding the project

ESHRE

training courses / website / secretarial support

Walking Egg Project NPO

secretarial support - project manager

funding – campaigns (affordable art)

WHO

Leaflets

Implementing infertility services

Fertility centres -- solidarity

1 euro or $ per cycle

Ohter foundations

Bill Gates & others

Governments

EC - United Nations

African World Bank

World Community Statements

1. "Men and woman of full age, without any limitation due to race, nationality or religion, have the right to marry and to raise a family". This statement was adopted 60 years ago at the 1948 UN Universal Declaration of Human Rights and can't be misunderstood: it implies the right to access to fertility treatments when couples are unable to have children.

2. At the United Nations International Conference on Population and Development in Cairo in 1994 the following statement was made "Reproductive health therefore implies that people have the capability to reproduce and the freedom to decide if, when and how often to do so … and to have the information and the means to do so …"

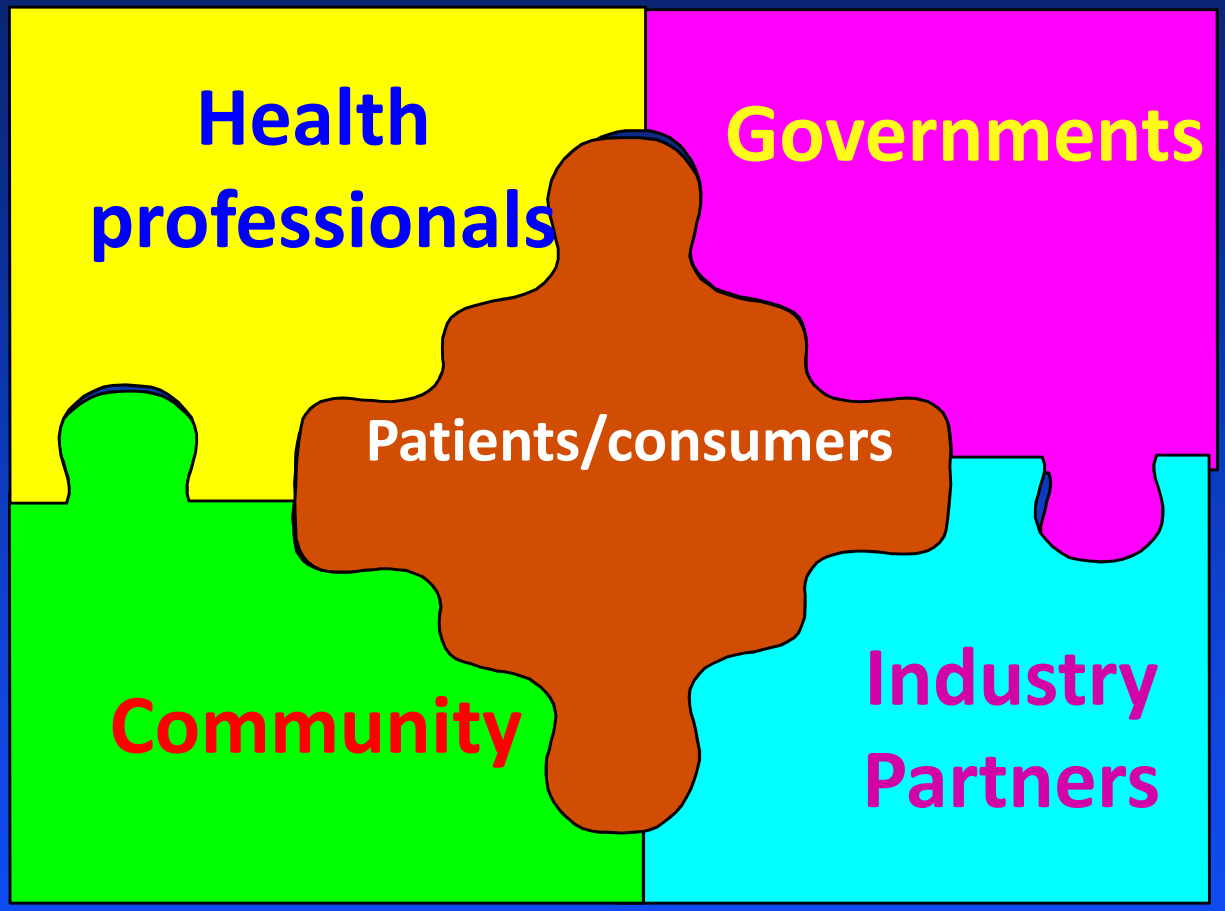
3. United Nations Millennium Declaration, signed in September 2000 : "Achieve, by 2015, universal access to reproductive health".

4. In 2001, on the occasion of a WHO meeting on "Medical, Ethical and Social Aspects of Assisted Reproduction" in Geneva, a call for the integration of infertility into existing sexual and reproductive health care programmes in developing countries was made.

5. In 2004 the World Health Assembly proposed five core statements, including "the provision of high-quality services for family-planning, including infertility services".

6. At the World Summit in 2005, the largest-ever gathering of world leaders called for achieving these goals by the year 2015.

7. At the Oslo Ministerial Declaration in 2007 health was recognised as one of the most important long-term foreign policy issues by the Ministers of Foreign Affairs of Brazil, France, Indonesia, Norway, Senegal, South Africa, and Thailand. "The well functioning health systems that are needed to reduce maternal newborn and child mortality and to combat HIV/AIDS, tuberculosis and malaria will also help countries to cope with other major health concerns such as sexual and reproductive health ...


Health professionals
Governments
Patients/consumers
Community
Industry Partners

30 years IVF

> 3 million IVF / ICSI babies

SUCCESS !!! (??)