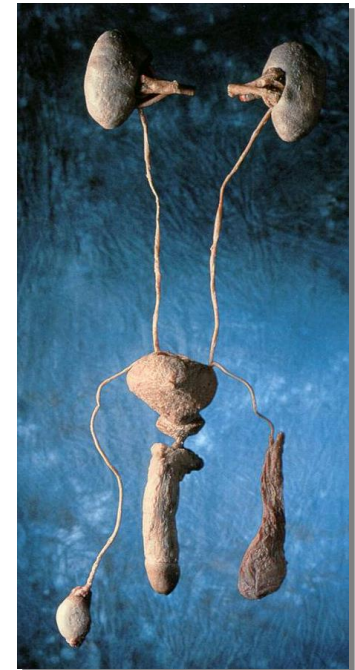


Sperm preparation, cryopreserving and IVF/ICSI in MAGI

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Faculty Disclosure

x	No, nothing to disclose
	Yes, please specify:

<i>Company Name</i>	<i>Honoraria/ Expenses</i>	<i>Consulting/ Advisory Board</i>	<i>Funded Research</i>	<i>Royalties/ Patent</i>	<i>Stock Options</i>	<i>Ownership/ Equity Position</i>	<i>Employee</i>	<i>Other (please specify)</i>

A large group of people, likely a parade float, are dressed in blue shorts, pink suspenders, and pink wigs. They are holding blue sticks and appear to be dancing or celebrating. The scene is outdoors with buildings and other people in the background. A large yellow text overlay is centered over the image.

A donor you
can choose!

www.nighttours.com

♂, 1982

- 1991 orchidopexy for retained right testicle
- 2005 Pre-B-cell-ALL (high risk)
- 4-5-2005 sperm cryopreservation ICSI quality ($0,6 \times 10^6$, 2% slowly progressive)
- 5-9/2005 HOVON37 study chemo-tx + stemcell-tx
- de novo chronic graft-versus-host disease
- Immune suppressive therapy
- Benzathine benzylpenicillin 1,2Mio 1x/month, valaciclovir
- 3-2014 child wish, semen analysis VCM $0,62 \times 10^6$
- 14-07-2014 3 days before ovum pick-up partner acute epididymitis after 2 weeks uti, treated with nitrofurantoin

What to do?

- Cancel because of acute infection?
- Use “fresh” ejaculate under “non-teratogenic” antibiotics?
- Use cryopreserved ejaculate?
- Vitrification of oocytes?
- Combination?

What is MAGI - WHO definition, 1993

- Sperm alterations (oligo-, astheno-, teratozoospermia) + ≥ 2 factors
 - a) history of urogenital infection, sexually transmitted infection and/or presence of post-inflammatory alterations in physical examination of testicular and epididymal region and/or digito-rectal exploration of the prostate and the seminal vesicles;
 - b) cytological signs, microbiological infection and/or inflammation on the secretion obtained after prostatic massage;
 - c) signs of infection in the ejaculate (leukocytospermia $>1 \times 10^6/\text{ml}$); semen cultures positive for significant presence of pathogenic bacteria; alterations of physical-chemical properties and/or biochemistry of seminal plasma.

⇒ Done by the reproductive specialist?

What is the influencing factor in MAGI?

- Acute infection / bacteria?
- Chronic changes?
- Gland dysfunction?
- Damage of spermatozoa by reactions of leukocytes, cytokines and reactive oxygen species (ROS)?
- Teratogenic effects antibiotics?
- Less fertilization?
- Infection of embryos?

What do the guidelines / literature say?

- EAU guidelines on Male Infertility, 2013

http://www.uroweb.org/gls/pdf/17%20Male%20Infertility_LR.pdf

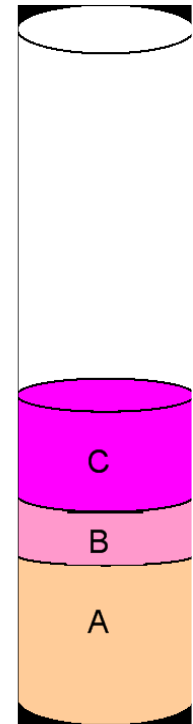
11.4 Conclusions and recommendations for male accessory gland infections

Conclusions	LE
Urethritis and prostatitis are not associated clearly with male infertility.	3
Antibiotic treatment often only eradicates microorganisms; it has no positive effect on inflammatory alterations, and cannot reverse functional deficits and anatomical dysfunction.	2a
Although antibiotic treatment for MAGI might provide improvement in sperm quality, it does not necessarily enhance the probability of conception.	2a

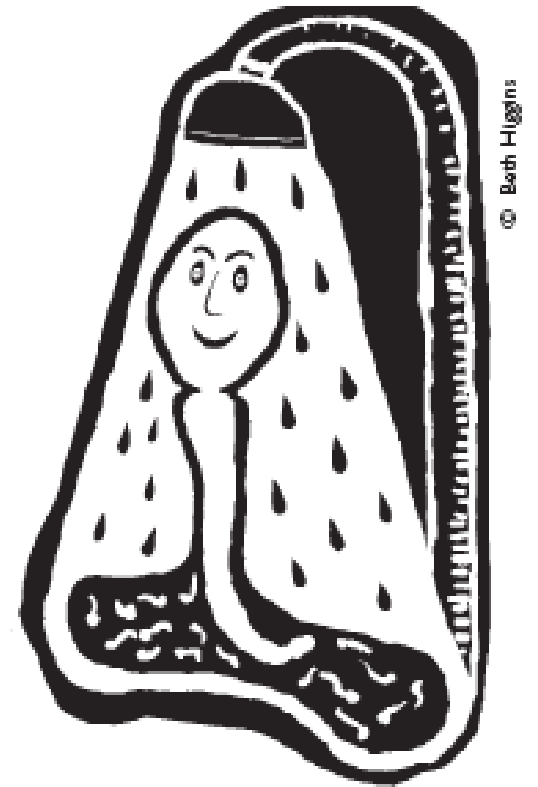
- Literature controversial and poor for MAGI in assisted reproductive techniques (ART)

Sperm preparation

- Aim: to obtain progressively motile sperms separated from debris, dead / immature sperms, seminal plasma, leucocytes, microorganisms
- Dependent from sperm quality and ART:
 - Standard: PureSperm method (density gradient centrifugation)
 - A pellet with spermatozoa
 - B pure sperm with some spermatozoa
 - C seminal plasma and culture medium
 - Swim-down-method (for IVF)
 - Swim-up-method (e.g. in HIV patients)



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-
- HTF medium used for dilution / washing prior contains Gentamycin
 - Basic step for all ART techniques
 - MAGI does not play a role



Semen cryopreservation (sperm banking)

- Indication:
 - Cancer patients before chemotherapy
 - Deterioration of sperm quality
 - In rheumatic, neurodegenerative or hematologic diseases
 - Transgenders
- 2 groups:
 - Autoconservation
 - Donors
- Longest reported successful storage 21 years
- Depending on indication any quality accepted
- Thawing of a small portion to determine quality
- MAGI does not play a role

-
-
- Frozen with cryoprotectant mostly glycerol, often with sucrose or other di-, trisaccharides, sometimes also egg yolk or soy lecithin
 - Different freezing techniques:
 - Slow programmable freezing
 - Vitrification (newer)

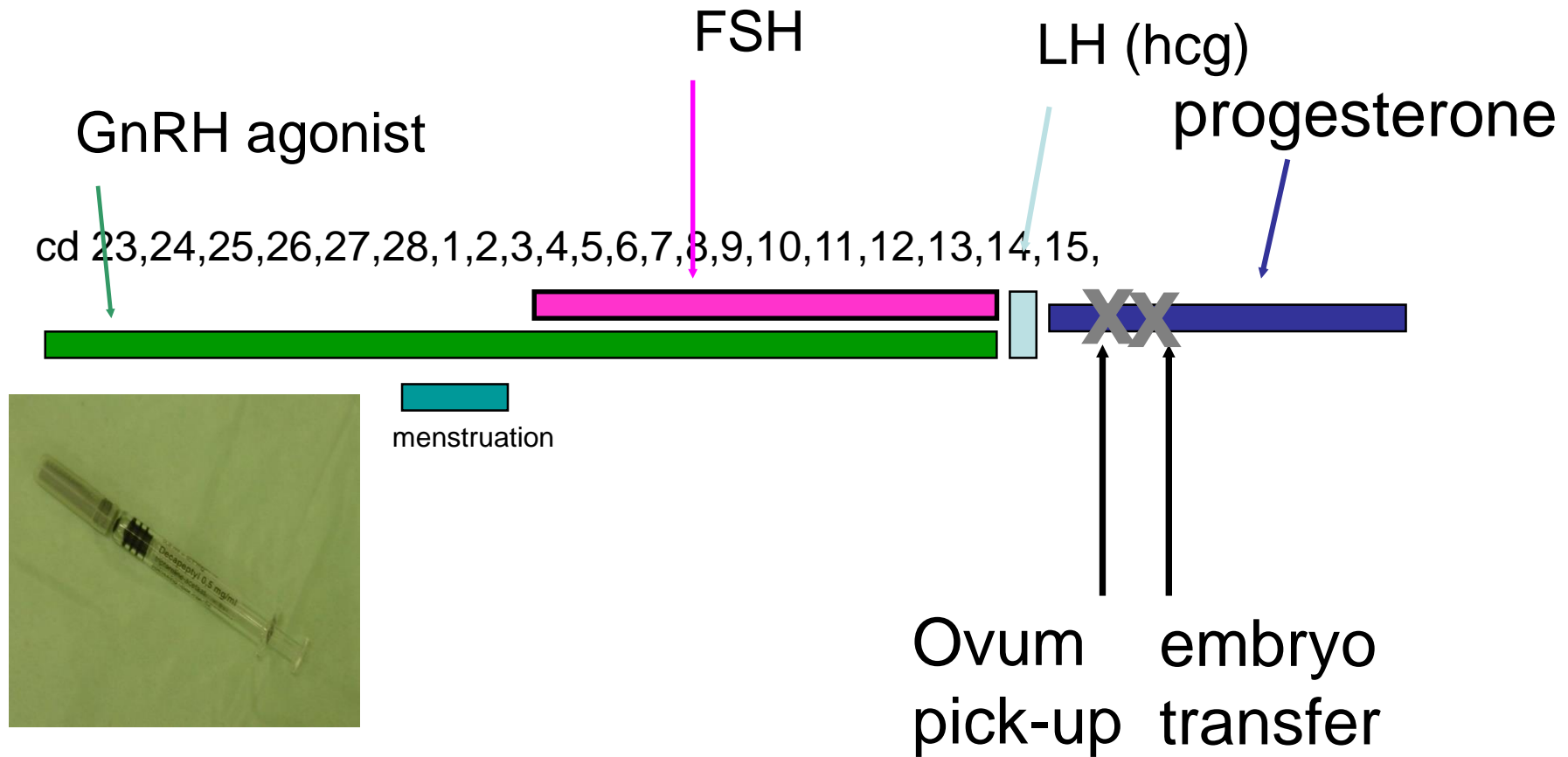
Sperm cryopreservation

- No liquid nitrogen used anymore,

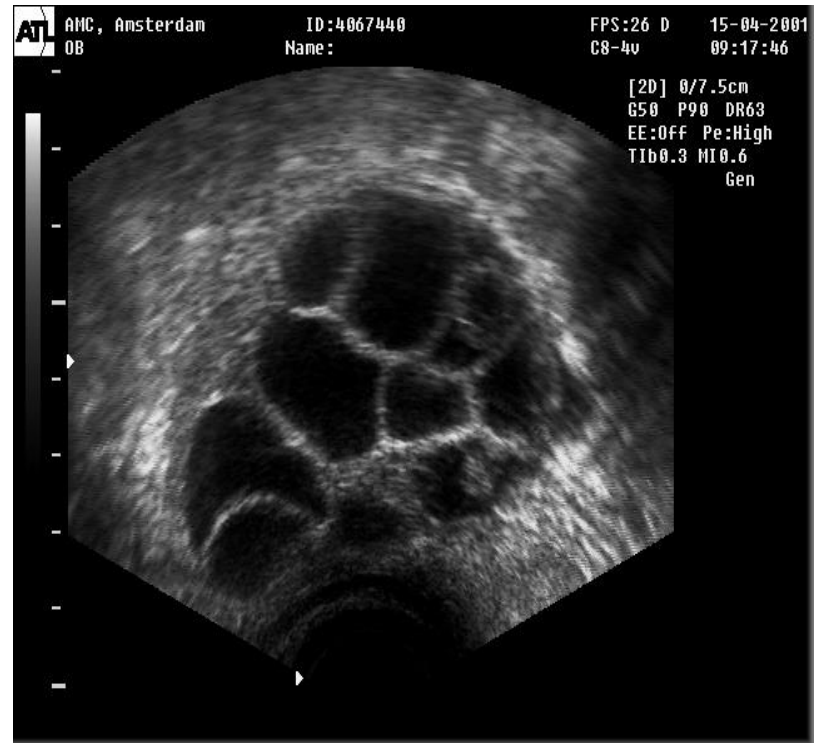
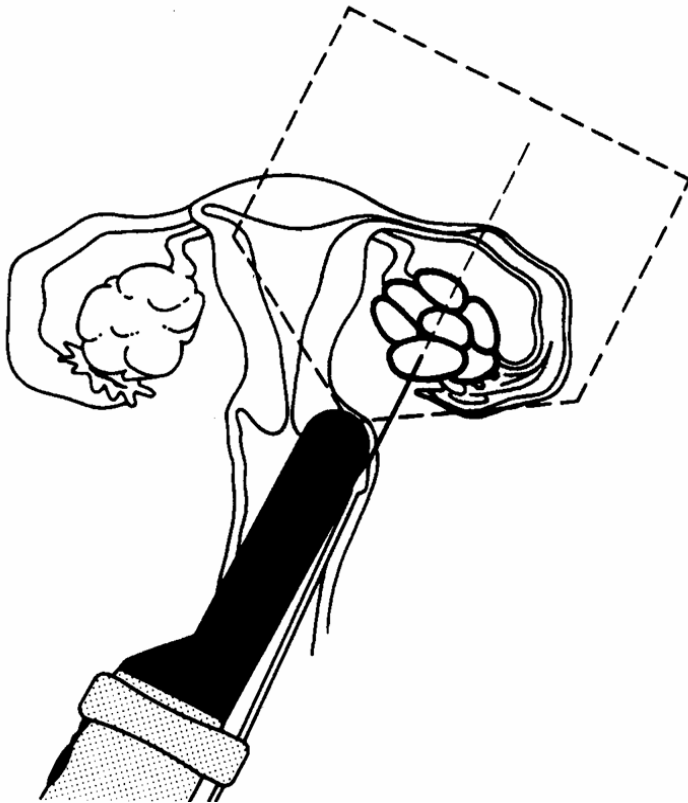


- But gas phase
⇒ No risk of spreading infections

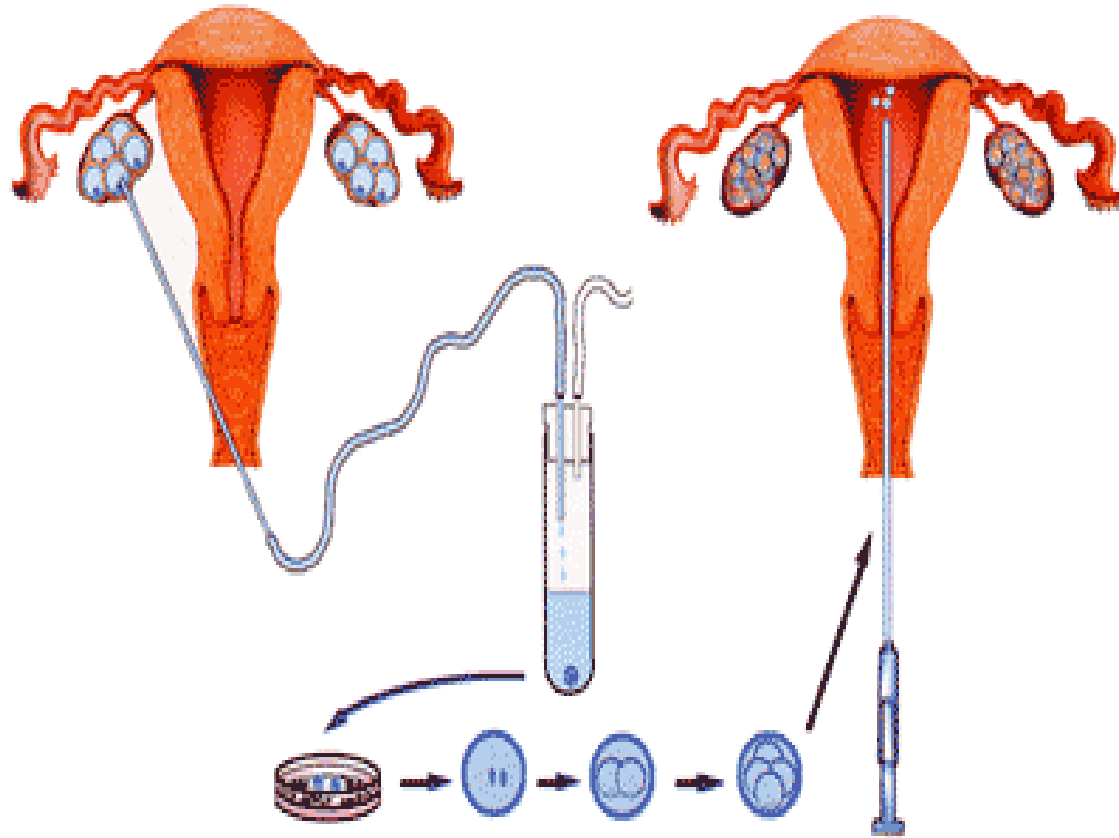
Hormonal hyperstimulation for IVF/ICSI



Ovum pick-up

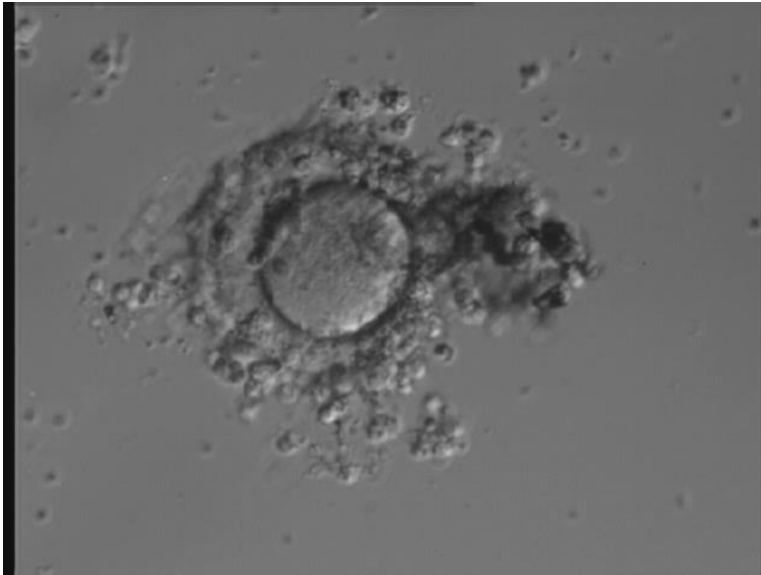


IVF laboratory phase



IVF

- first IVF child: Louise Brown, 25 July 1978
- Fertilization (day = 0)
 - 1 or more oocytes in culture dish
 - Add ~10.000 good motile spermatozoa
 - Leave it overnight in the incubator



The embryo (day 1 - 5)

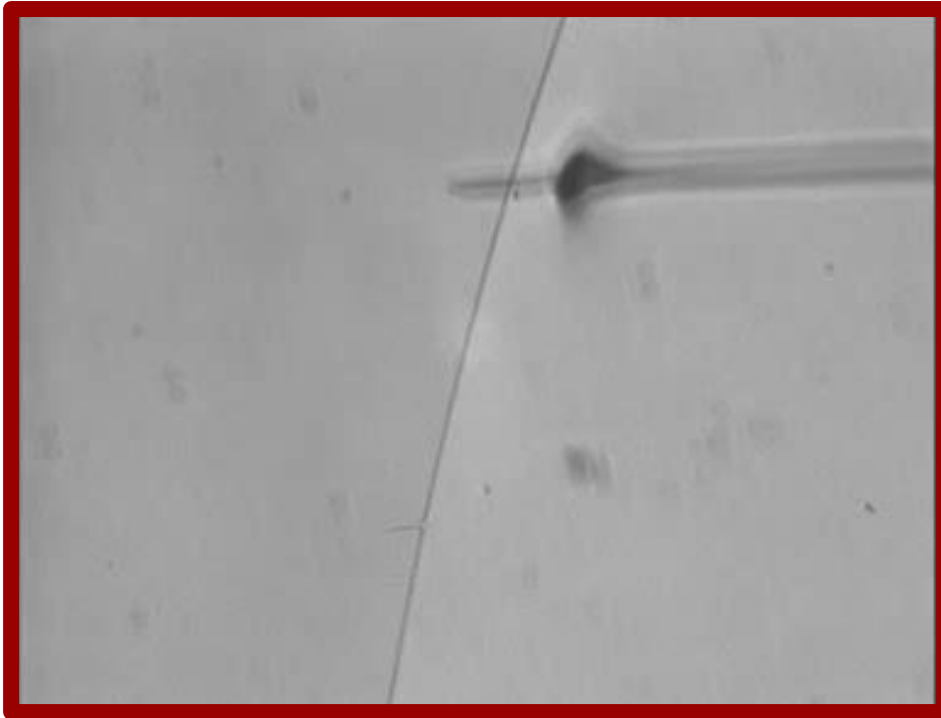


Intracytoplasmatic sperm injection

- First child born in 1992
- Indication
 - Serious male factor
 - (VCM < 1 Million)
 - No fertilization with IVF
- Pregnancy rate: 25-30%

ICSI

- Mature oocytes (metaphase II)
- 1 spermatozoon is being injected



What we did in the case

- Cancel because of acute infection? **No**
- Use of “fresh” ejaculate under antibiotics? **No**
- Cryopreserved ejaculate? **Yes**
- Vitrification of oocytes? **Not necessary**
- 5 oocytes obtained, 5 injected, resulting 1 embryo

- Because of threatening relapse of leukaemia
new semen cryopreservation advised
after successful treatment urinary tract infection

Conclusion: MAGI is not a real problem in ART

- Spermatic fluid is always considered not to be sterile by fertility lab
- Leukocytospermia / bacteriospermia reported by fertility laboratory as recognized, no screening
- Consequence to be taken by clinician: cancel ICSI, vitrification of oocytes
- Gentamycin added in washing solutions
- No infection of the embryo possible
- Deleterious effect on sperm quality under debate
- MAGI treatment seems not to improve ART success rates