Andrology Services at HA – Past, Present and Future

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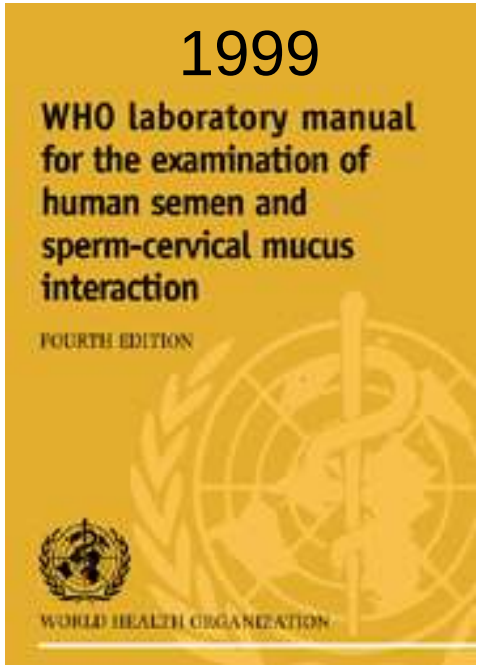
Content

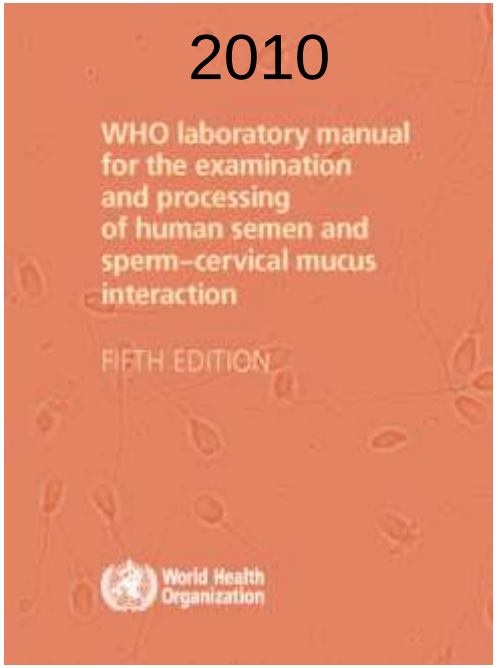
- How is semen analysis done?
- Is it useful?
- Past
- Present
- Future

Aim of semen analysis

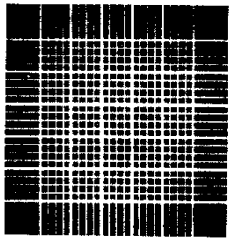
Provide indication of fertility potential

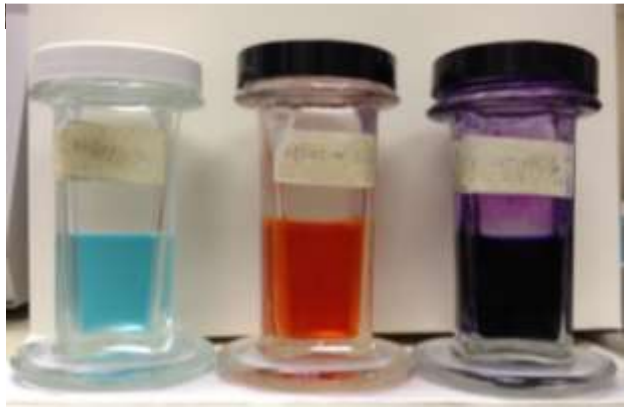


- Semen analysis is not a direct test of male fertility
- Fertility can only be demonstrated by a pregnancy



Semen analysis is simple to perform but is difficult to do well

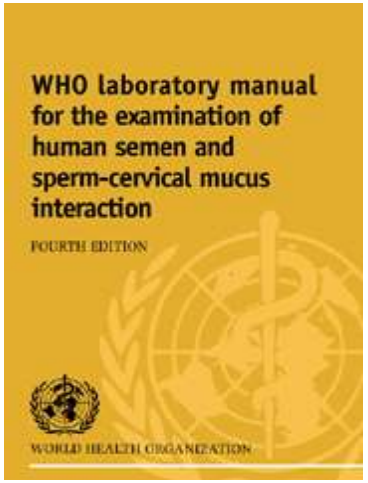




Is semen analysis useful?

World Health Organization (1999) reference ranges are based on expert opinion

The predictive value of is LIMITED



World Health Organization

The predictive value of the 2010 criteria unknonwn

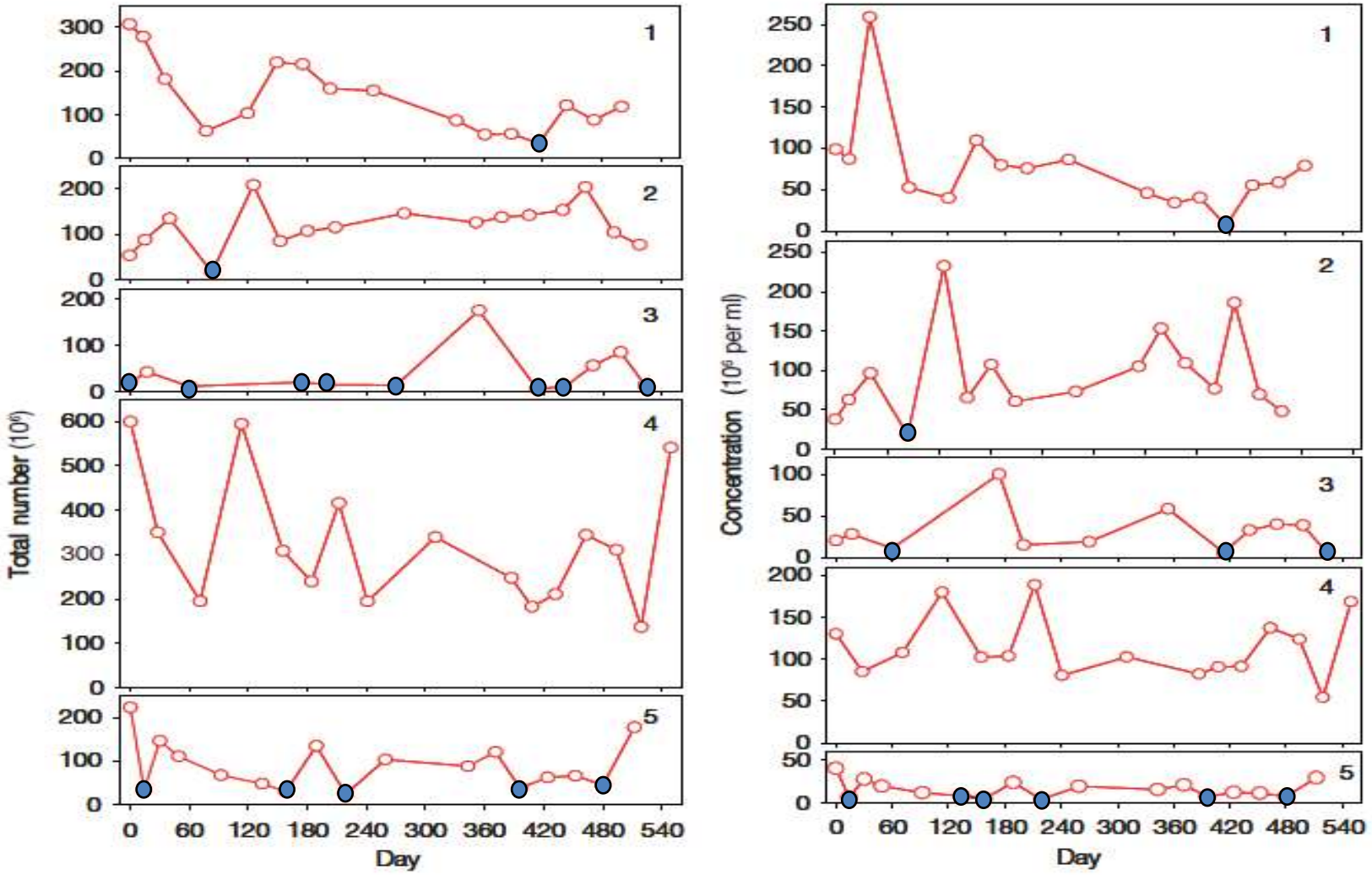
		2010
Volume	• >4500 fertile men from several prospective, cross-sectional studies of semen quality • Their partner conceived within 12 months after stopping use of contraception • One complete semen sample from each man after 2–7 days of abstinence	1.5 ml
pH		≥ 7.2
Concentration		15 x 10^6 /ml
Total count		39 x10^6 /ejaculate
Motility (<1 hour)		32% progressive motility
Morphology		4%

Cooper et al. (2010) Hum Reprod Update16:231-45 .

Factors affecting predictive power of semen analysis

- Indirect markers of sperm function
- Variation of semen quality
  - >1 analyses per man

Variation of semen quality



WHO 2010

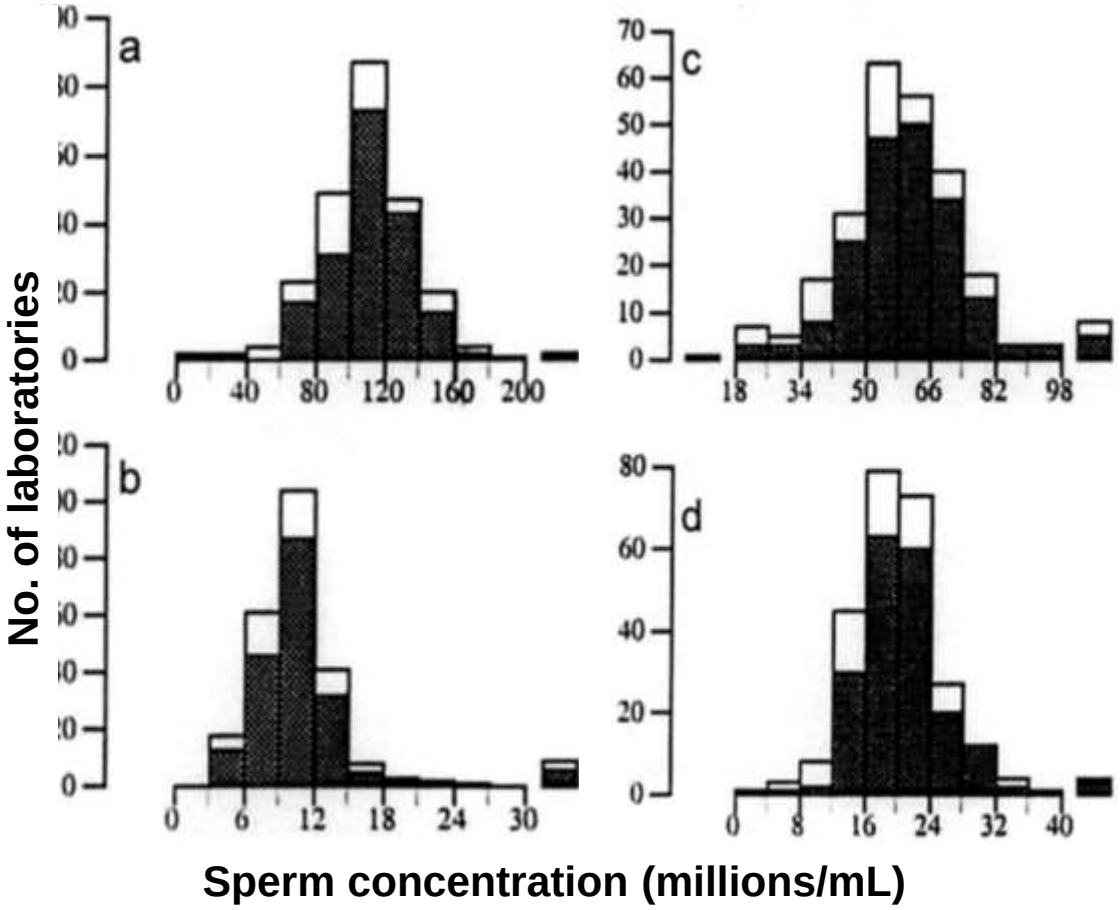
Factors affecting predictive power of semen analysis

- Indirect markers of sperm function
- Variation of semen quality
  - >1 analyses per man
- Inter- and intra-laboratory variation of semen analysis

Semen analysis is usually done manually and is subjected to inter- and intra-technician variation

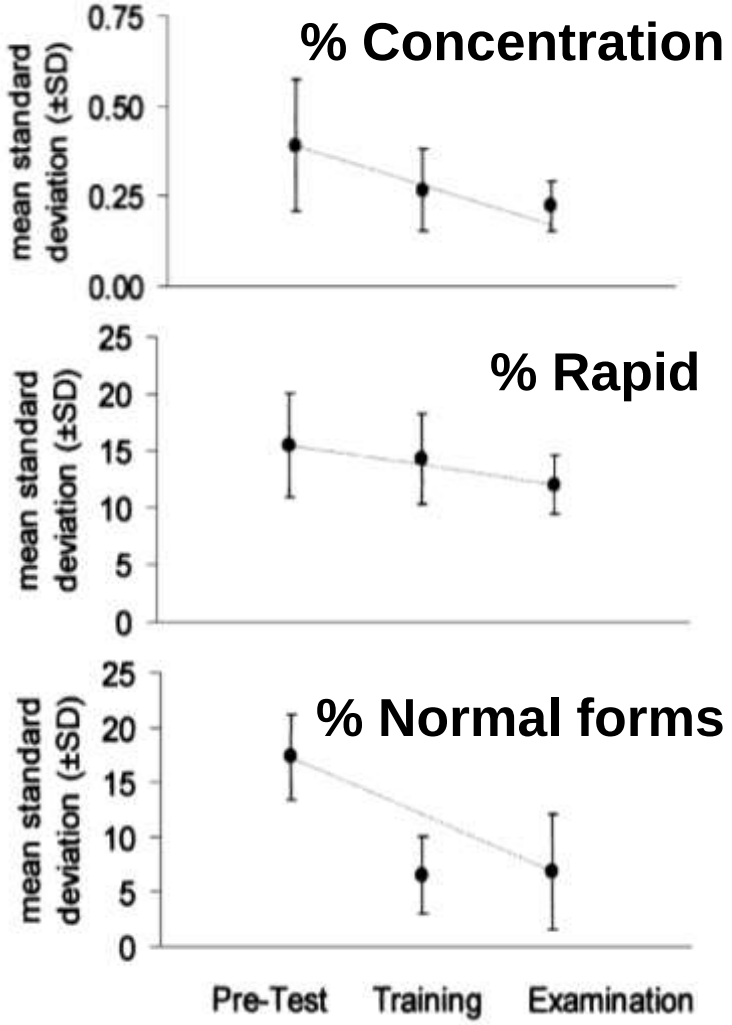
Sperm morphology is the most subjective parameter

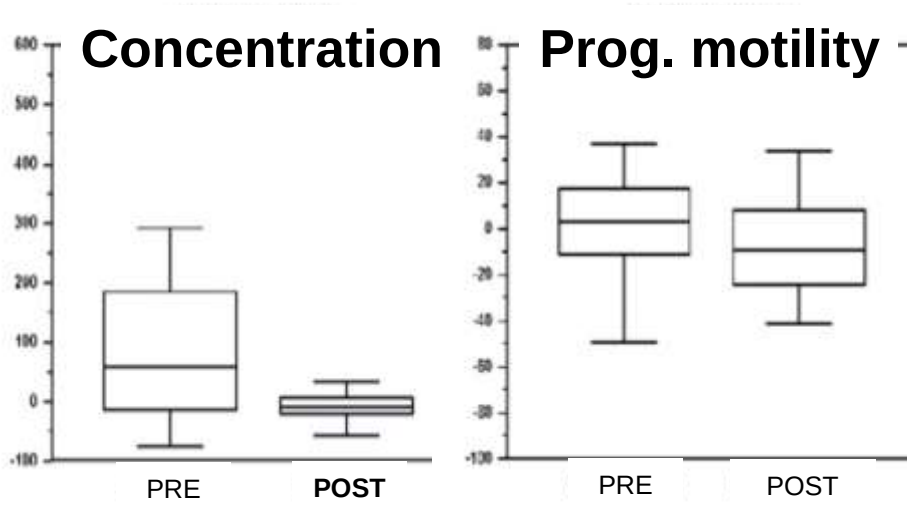
Variation of laboratory results

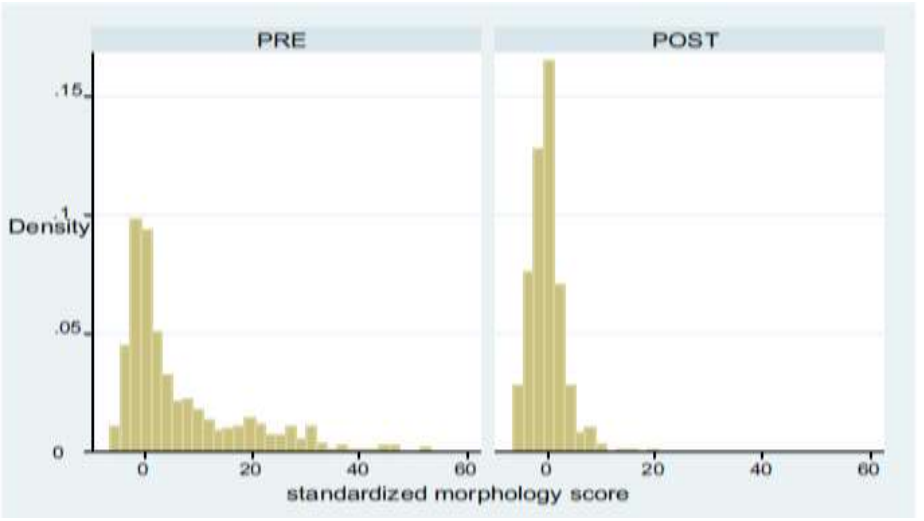


Pacey et al., 2005 Hum Reprod 21:1105–9

Training reduces variations







Bjorndahl et al. (2002) Hum Reprod 17:1299-305

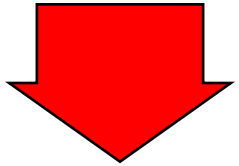
Franken et al. (2010) Fertil Steril 94:2615-9

Quality control is important

- Training reduces variation
- Appropriate standard operation procedure
- Internal quality control
- External quality control

Aim of semen analysis in QMH

identify unsuccessful treatment procedure

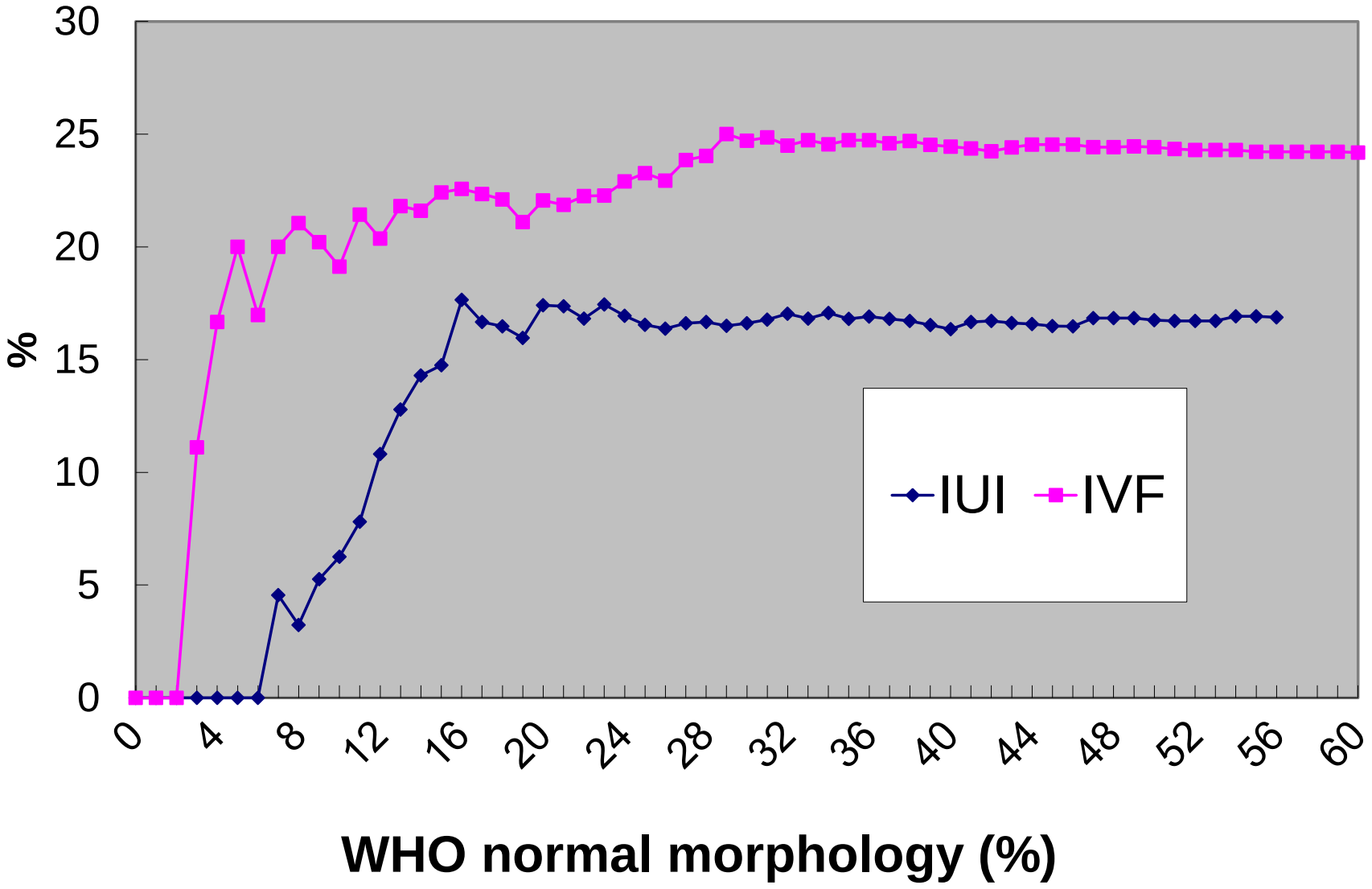


selection of appropriate treatment

Semen analysis is predictive in extreme cases

- Azoospermia
- Severe oligospermia
- Severe asthenozoospermia
- Globozoospermia

Cumulative pregnancy rate (98-00)



Sperm morphology (WHO) & ICSI

		IVF		ICSI
		<5%	>5%	(<5%)
No. OPU		35	1158	21
Fert. Rate (%)	=0	34.3	3.8	4.6
	<30	57.1	8.4	23.8
	Mean	33.3	74.1	52.4
Embryo/transfer		2.1	2.7	2.0
Preg/transfer (%)		3.8	19.4	16.7

Sperm morphology & ICSI

	1995/2000	2001/2008
No. cycle*	784	1285
Fert. rate≦30%		
No. (%)	92 (12.0%)	85 (6.6%)
No. with ICSI criteria	24 (3.1%)	13 (1.0%)
Fert. rate=0%		
No. (%)	42 (5.4%)	30 (2.3%)
No. with ICSI criteria	13 (1.7%)	8 (0.6%)
ICSI criteria TMC	<0.1M	<0.1M
Morphol	-	WHO<5

* 1st IVF cycle with oocytes >5 (excluding PGD)

Semen analysis at HKU-QMH CARE

Period	Criteria	Number of sample	Male infertility
1.11.05 – 31-10.08	WHO 1999	5532	5479 (99%)
1.11.08 – 30.4.11	WHO 2010	4162	2089 (50%)

Semen analysis at HA hospitals (Past)

- Semen analysis is a diagnostic test
- Traditionally done by the Department of Pathology
- At Queen Mary Hospital, SA was done by both Pathology and IVF Centre.

Semen analysis at HA hospitals (Present)

	No. of samples	IVF Centre	Pathology	Private lab.
Queen Mary Hospital	~1600	~1600	0	0
Kwong Wah Hospital	650	650	0	0
Prince of Wales Hospital	178-267	-	178-267	0
Princess Margaret Hospital	117-121	-	117-121	0
United Christian Hospital	~160-180	-	<1/3	>2/3
Tseung Kwan O Hospital	~40-50	-		
Queen Elizabeth Hospital	~190	-	0	~190
Pamela Youde Nethersole Eastern Hospital	87-102	-	0	87-102

Reasons for not sending to Pathology

- Setting for private lab better and more convenient
- Our Path Lab is not using the WHO 2010 criteria and interpretation is a problem
- Many patients have been seen in the private sector as well and SA have been arranged via their private doctors
- No service
- They *(Pathology)* admit they are not good at doing this.

Quality semen analysis in Pathology could be difficult

- Cost-effectiveness: Not many samples. SA is only one of the many diagnostic tests done in the laboratories.
- Not specialized in gamete assessment: SA is part of the training for embryologists but not necessarily for medical laboratory technicians
- Rotation of staff in pathology laboratory: SA by dedicated and trained staff in IVF centres

Semen analysis training in Hong Kong

- Self learning
- Not a usual teaching topic in medical laboratory sciences.
- HKU had provided HA commissioned training to HA units in 2006 and 2014.
- A practical in Assisted Reproduction Technology (Laboratory) module, Master of Medical Sciences, HKU
- Overseas training
- Continuous practice is important to keep the quality

Semen analysis at QMH

- Semen analysis done by 3 dedicated staff.
- Training
  - One-month training + assessment
- Internal quality control
  - within 10% variation
  - Monthly mean
- External quality control
  - Join proficiency program of College of American Pathologists.

Future andrology services at HA

A 2-phase reform of andrology services at HA

- First phase:
  - SA is centrally performed in the 3 IVF centres.
    - Patients' convenience
    - Semen analyses have to be done within 1 hour after ejaculation.
  - The IVF centres provide training of SA to technical staff of other HA hospitals.

A 2-phase reform of andrology services at HA

- Second phase:
  - SA can be done by either the IVF centre or the pathology laboratory depending on individual hospital arrangement.
  - To maintain the standard and reliability of the service, a quality assurance program has to be implemented.

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