

Sperm Morphology Audit - Assessment of Individual Spermatozoa Reveals Worrying Skill Level

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Not more QC data!

- I operate an online Quality Assurance program
- Both Australian and International participants.
- Review of data has shown what has been presented previously
- Relatively good agreement in estimates for
 - Concentration
 - Motility
- Wide variation in assessment of sperm morphology
- Why is this important?

Morphology and ICSI

- It is possible that referral to ICSI is largely being driven by morphology results that are below the cited reference ranges
- WHO is the root cause
 - Changing standards with inconclusive reference standards
 - Clear move to strict criteria
 - ?next WHO edition.
- Therefore, are couples referred to ICSI due to variations in morphology assessments.

QAPonline - data

- QAPonline publishes an image each month that contains 4-6 spermatozoa
- Each participant is asked to nominate if each spermatozoon is normal or abnormal
- Initially used as a training tool
- Interestingly only about 50% participants complete these questions.

QAPonline - Data

- Over 3 years, the sum of each assessment represents the number of sperm expected to be counted in any semen analysis.
- In all, 193 individual spermatozoa have been characterised as normal or abnormal by between 80 and 150 participants.
- Therefore the data set mimics a routine analysis ~ 200 sperm
- Question: can this data set be used to examine why there is a large variation between participants.

Results

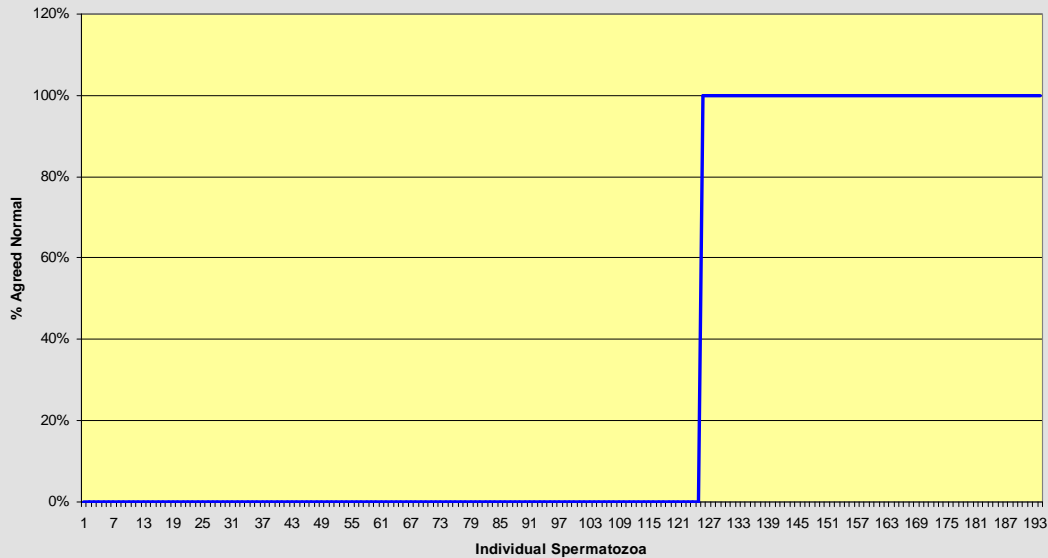
- Of the 193 spermatozoa,
 - none were universally agreed to be NORMAL
 - 13 were universally agreed to be ABNORMAL

 - 11 sperm had more than 90% indicating they were normal
 - 41 sperm had more than 90% indicating they were abnormal
 - Leaves 141 or 73% where there considerable disagreement

 - 66 or 33% had more than 50% nomination for normal
 - The % normal forms for this sample could be defined as 33%

In an ideal laboratory

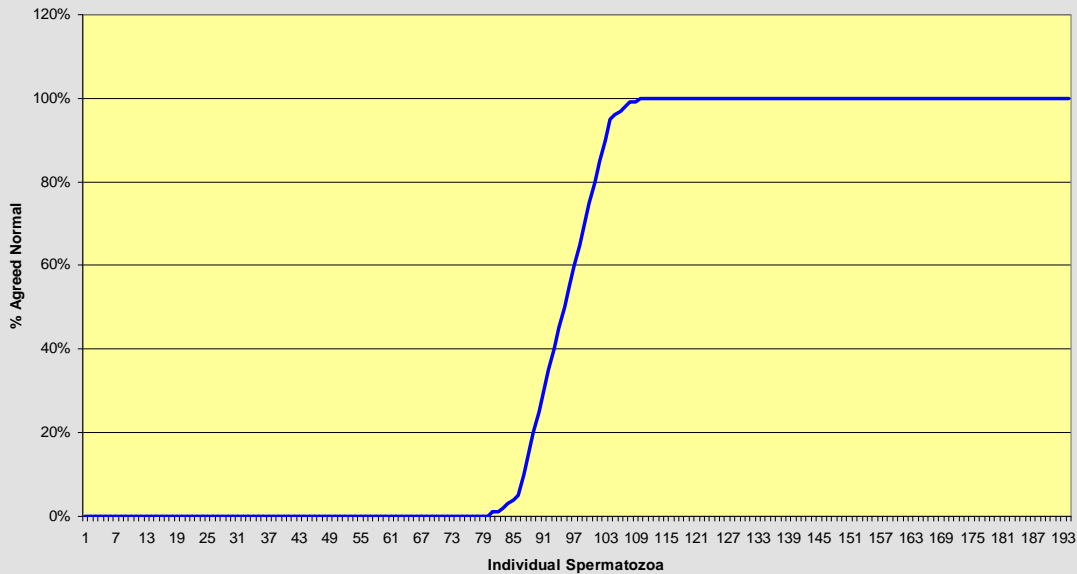
Diagnosis of Individual Spermatozoa



- In an ideal world, the distribution of individual sperm for a sample with 33% normal forms should look like this.

In a good laboratory..

Diagnosis of Individual Spermatozoa

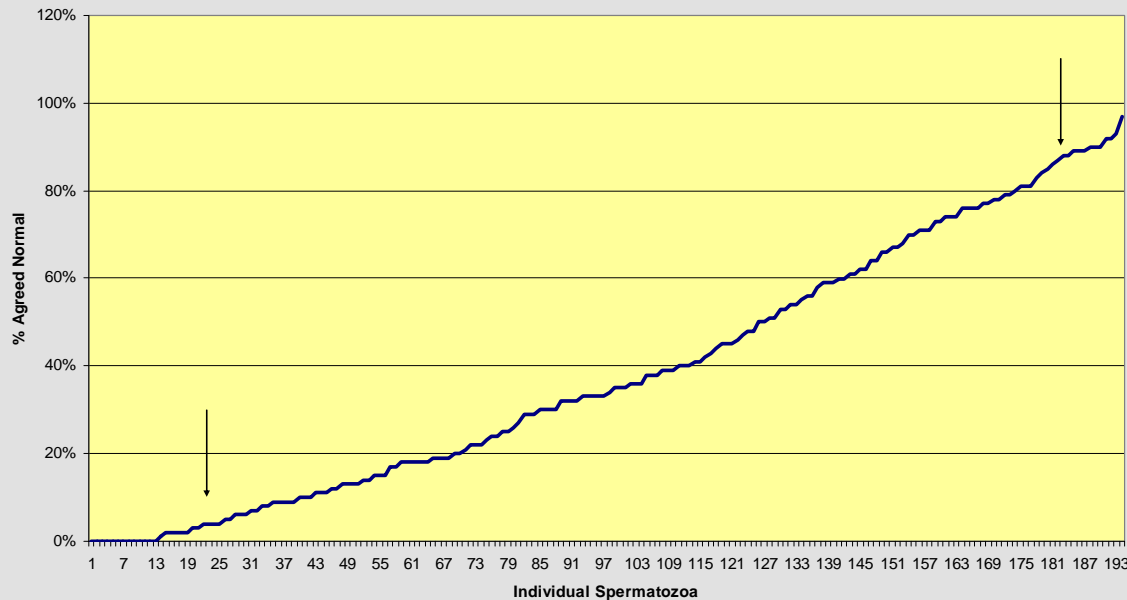


- This sort of profile would be considered very acceptable

The reality

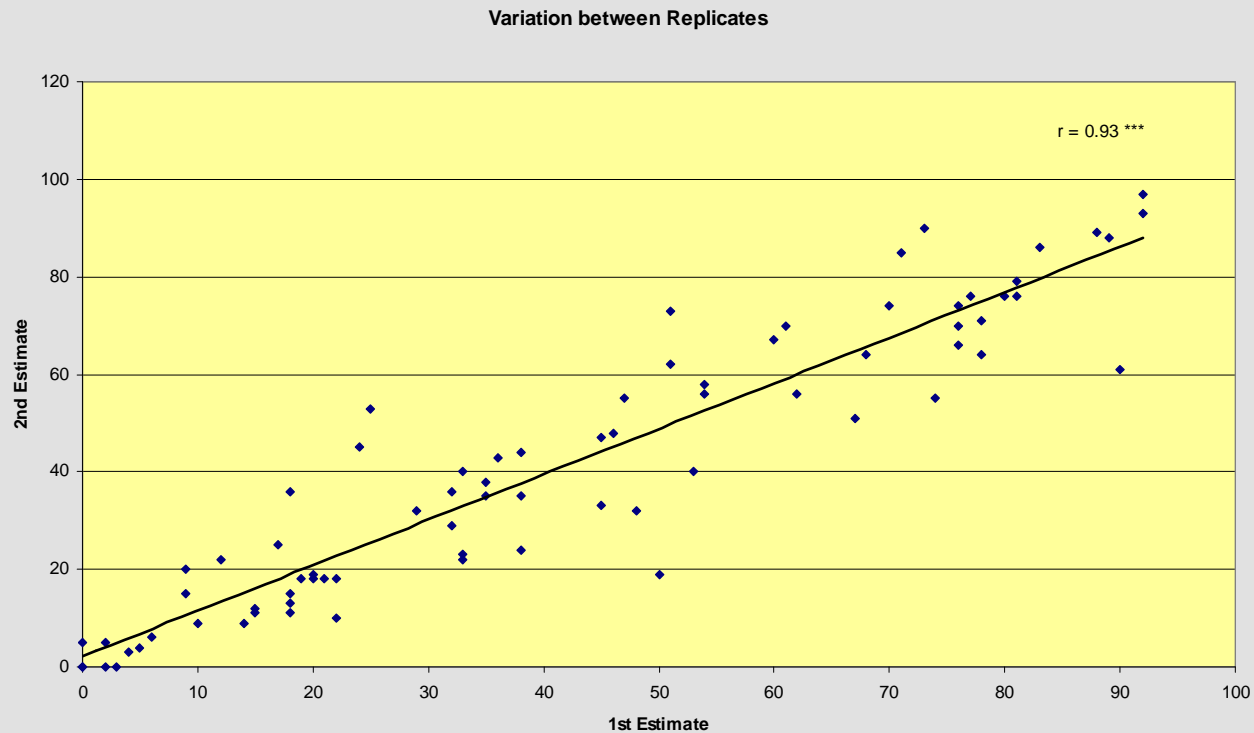
- 73% of spermatozoa had more than 10% variation in whether they were normal or abnormal

Diagnosis of Individual Spermatozoa



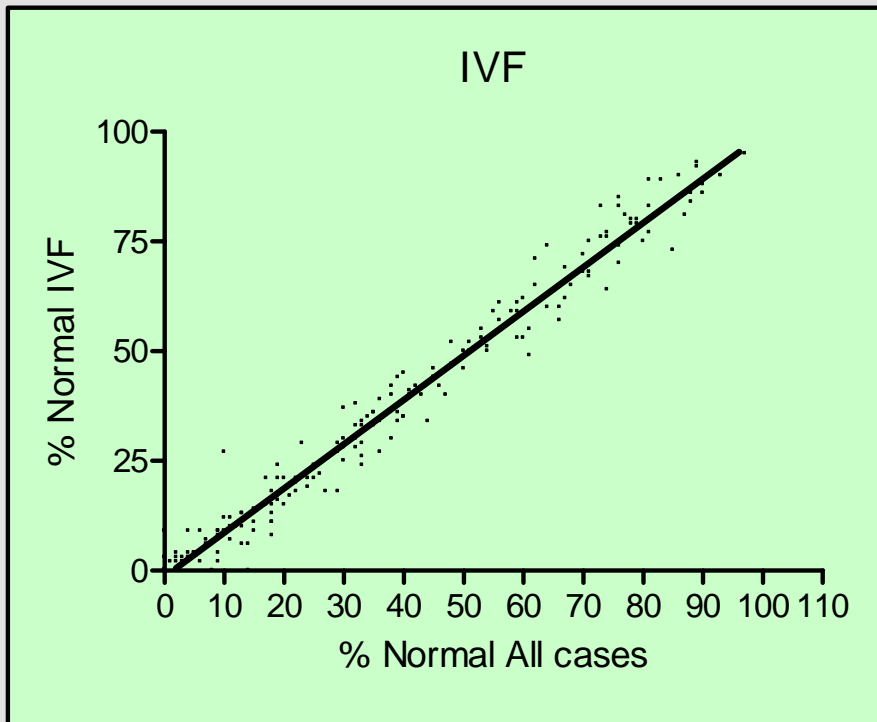
Replicates

- Some images were repeated over the 3 years.
- Good agreement between participants nominations
- ?Impact of training and participation in QAP program

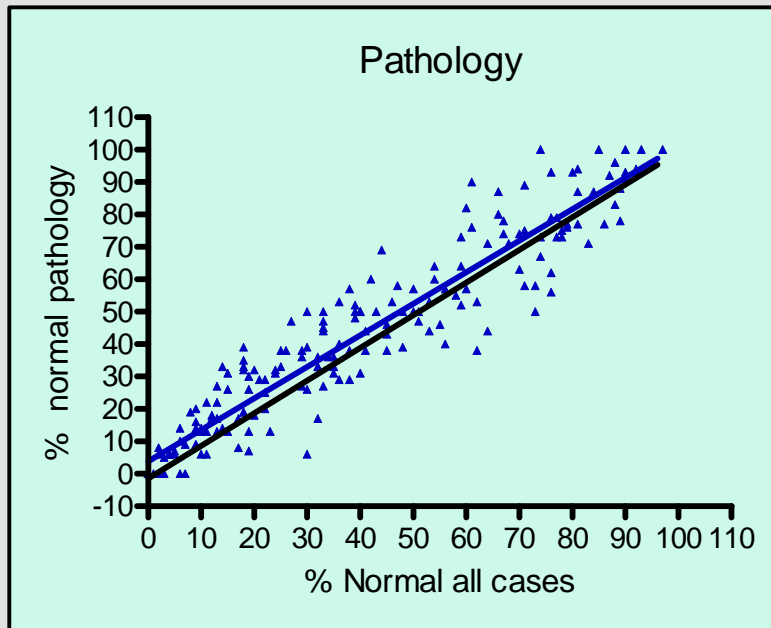


IVF participants

- IVF staff benchmark



Non IVF participants



- More variation
- Marginal increased at low morphology
- Very Similar

Conclusions

- There remains considerable variation in how individuals assess sperm morphology
- If morphology is to be used effectively, training schemes and certification may be key elements
- Levels of observed variation would not be tolerated in other assessment based areas e.g. PAP smears,
- FSA & NATA should actively encourage sperm morphology certification in a more proactive manner
- Universally move to Strict criteria ??

Acknowledgements

- The presenter has a financial association with this data.

Strict Criteria Participants

- Not any better than WHO?
- Fewer participants

