PRE-Congress Course 14

Academic Authorship Programme - The A to Z of research: doing a study, presenting a poster, giving a talk, writing it up.

Editors of Human Reproduction Journals
London - UK, 7 July 2013
Academic Authorship Programme - The A to Z of research: doing a study, presenting a poster, giving a talk, writing it up

London, United Kingdom
7 July 2013

Organised by
The Editors of Human Reproduction Journals
# Contents

Learning objectives, course format, target audience and faculty Page 5

Programme Page 7

Speakers’ contributions

- Principles of study design, treatment - **Johannes Evers - The Netherlands** Page 9
- Principles of study design, diagnosis - **Madelon Van Wely - The Netherlands** Page 27
- Presenting a poster - **Chris Barratt - United Kingdom** Page 36
- Giving a talk - **Edgardo Somigliana - Italy** Page 41
- Writing a study up for a scientific journal - **Richard Sharpe - United Kingdom** Page 53

Upcoming ESHRE Campus Courses Page 54

Notes Page 55
Learning objectives

After attending the course the participant should be familiar with the principles of study design – including those for treatment and diagnostic test studies. Considerable focus will be directed to the key components of a manuscript, with practical exercises designed to equip participants with the knowledge required to prepare their work for publication, either as a poster or as an oral presentation, and finally as an original publication in a scientific journal.

Course format

There will be just five lectures; the rest of the day being devoted to small-group exercises with feedback to all participants following each exercise.

Target audience

Young clinicians and scientists, people at the onset of the writing and presentation phase of their academic career, and all those who wish to familiarize themselves with present day ideas about designing a study and publishing its outcome.

Faculty

C. Barratt, Editor-in-Chief MHR
H. Beard, Managing Editor MHR
M. Brown/Ph. Bishop, Senior Publisher, Clinical Medicine, Oxford University Press
H. Evers, Editor-in-Chief Human Reproduction (Course chair)
F. Petraglia, Editor-in-Chief Human Reproduction Update
R. Sharpe, Deputy Editor Human Reproduction
E. Somigliana, Deputy Editor Human Reproduction
A. van Steirteghem, Editor Emeritus, Human Reproduction
M. van Wely, Deputy Editor Human Reproduction Update
K. Watkins, Assistant Managing Editor ESHRE Journals
A. Williams, Managing Editor ESHRE Journals
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 09:00 - 09:10 | Introduction to the course  
*Johannes Evers - The Netherlands* |
| 09:10 - 09:40 | Principles of study design, treatment  
*Johannes Evers - The Netherlands* |
| 09:40 - 09:50 | Discussion  
Madelon Van Wely - The Netherlands |
| 09:50 - 10:20 | Principles of study design, diagnosis  
*Madelon Van Wely - The Netherlands* |
| 10:30 - 11:00 | Coffee break |
| 10:20 - 10:30 | Discussion |
| 11:00 - 11:30 | Presenting a poster  
*Chris Barratt - United Kingdom* |
| 11:30 - 12:30 | Group work on poster presentation + report to group  
*Chris Barratt - United Kingdom* |
| 12:30 - 13:30 | Lunch |
| 13:30 - 14:00 | Giving a talk  
*Edgardo Somigliana - Italy* |
| 14:00 - 15:00 | Group work on oral presentation + report to group  
*Edgardo Somigliana - Italy* |
| 15:00 - 15:30 | Coffee break |
| 15:30 - 16:00 | Writing a study up for a scientific journal  
*Richard Sharpe - United Kingdom* |
| 16:00 - 17:00 | Group work on writing a manuscript + report to group  
*Richard Sharpe - United Kingdom* |
| 17:00 - 17:10 | Conclusions of the course  
*Felice Petraglia - Italy* |
Principles of study design, treatment

Hans Evers
Maastricht, The Netherlands

1. Diagnosis: Diagnostic test

2. Treatment: Intervention

2 x 2 table diagnosis

<table>
<thead>
<tr>
<th></th>
<th>disease</th>
<th>no disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>abnormal test result</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>normal test result</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>
### 2 x 2 table treatment

<table>
<thead>
<tr>
<th></th>
<th>outcome</th>
<th>no outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>intervention</strong></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td><strong>comparison</strong></td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

---

### Principles of study design, treatment

Hans Evers  
Maastricht, The Netherlands

---

### Question

Does surgery for a varicocele improve pregnancy chances in subfertile couples?
Types of study design

- Observational studies
  - Narrative
  - Case report
  - Case series
  - Analytical
    - Case-control
    - Cross-sectional
    - Cohort
- Interventional studies
  - RCT

Randomized clinical trial

Direction of research

The varicocele

Fertility
Randomized clinical trial: varicocele

Direction of research

2 x 2 table

<table>
<thead>
<tr>
<th></th>
<th>outcome</th>
<th>no outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>intervention</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>comparison</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

2 x 2 table

<table>
<thead>
<tr>
<th></th>
<th>pregnancy</th>
<th>no pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>varicocele surgery</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>no surgery</td>
<td>16</td>
<td>47</td>
</tr>
</tbody>
</table>

Nieschlag et al., 1996
### 2 x 2 Table

<table>
<thead>
<tr>
<th></th>
<th>Pregnant</th>
<th>Not Pregnant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varicocele Surgery</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>No Surgery</td>
<td>16</td>
<td>47</td>
</tr>
</tbody>
</table>

Pregnant 18/62 = 29%

Pregnant 16/63 = 25%

Difference 4%

Number Needed to Treat (NNT) = 100 / 4 = 25

---

### Hierarchy of Major Study Designs

- Meta-analysis
- Interventional
- RCT
- Cohort
- Observational
- Cross-sectional
- Case control
- Validity
- Case reports / case series

---

### Cochrane Library

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Control</th>
<th>Mean Difference</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>study 1</td>
<td>A</td>
<td>B</td>
<td>0.50</td>
<td>0.20</td>
<td>0.80</td>
<td>0.05</td>
</tr>
<tr>
<td>study 2</td>
<td>A</td>
<td>B</td>
<td>0.75</td>
<td>0.45</td>
<td>1.05</td>
<td>0.001</td>
</tr>
<tr>
<td>study 3</td>
<td>A</td>
<td>B</td>
<td>0.90</td>
<td>0.60</td>
<td>1.20</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Favours Control

[Graph]
### Number Needed to Treat

<table>
<thead>
<tr>
<th></th>
<th>surgery</th>
<th>no surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>pregnant</td>
<td>66</td>
<td>56</td>
</tr>
<tr>
<td>total patients</td>
<td>314</td>
<td>293</td>
</tr>
<tr>
<td>absolute risk (AR)</td>
<td>21.0 %</td>
<td>19.1 %</td>
</tr>
<tr>
<td>AR reduction</td>
<td>21.0 – 19.1 = 1.9 %</td>
<td></td>
</tr>
<tr>
<td>NNT</td>
<td>$\frac{100}{1.9} = 53$</td>
<td></td>
</tr>
</tbody>
</table>

### Summary

- **2x2 table** works also in treatment studies
- **RCT** is the best quality treatment study
- **NNT** is easily understandable outcome
- Sometimes an RCT is impossible or unethical
- Then observational studies may help
- **Meta-analysis** summarizes RCT’s

---

![Figure 1: Algorithm for classification of types of clinical research](image)
Randomized clinical trial

Prospective cohort study

Cross-sectional study
Case-control study

- Exposed
- Unexposed
- Disease cases
- No disease controls
- Study population
- Direction of research

Types of study design

- Observational studies
  - Narrative
    - Case report
    - Case series
  - Analytical
    - Case-control
    - Cross-sectional
    - Cohort
- Interventional studies
  - RCT

Case report

The gonadotrophin resistant ovary syndrome: a curable disease?

Evers JL, Rolland R. Clin Endocrinol (Oxf) 1981 Jan;14(1):99-103

A patient with the resistant ovary syndrome is reported. Feedback inhibition of pituitary gonadotrophin secretion was achieved by exogenously administered ovarian steroid hormones. All protein and steroid hormone levels returned to normal and spontaneous ovulatory cycles resumed after withdrawal of medication. It is concluded that the so-called "resistant ovary syndrome" is an ovarian feed-back inhibition defect.
Types of study design

- Observational studies
  - Narrative
  - Case report
  - Case series
- Analytical
  - Case-control
  - Cross-sectional
  - Cohort

- Interventional studies
  - RCT

Case series

The resistant ovary syndrome is not irreversible.


Eleven patients with the resistant ovary syndrome are described. Hormone levels returned to normal in 8/11, and spontaneous ovulatory cycles returned in 2/8 during exogenous steroid administration, in 2/8 after withdrawal of exogenous steroids, and in 1/8 after a fall on the ice while skating. Two patients conceived. It is concluded that the so-called "resistant ovary syndrome" is not an irreversible process.

Narrative observational studies

<table>
<thead>
<tr>
<th>Strength</th>
<th>Easy to write; fun to read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weakness</td>
<td>Little or no rigour</td>
</tr>
<tr>
<td>Aim/goal</td>
<td>Hypothesis generation</td>
</tr>
</tbody>
</table>
Types of study design

- Observational studies
  - Narrative
  - Case report
  - Case series
- Analytical
  - Case-control
  - Cross-sectional
  - Cohort
- Interventional studies
  - RCT

Hierarchy of major study designs

- Interventional: RCT, cohort
- Observational: cross-sectional, case control
- Validity: case reports / case series

Clinical scenario # 1

- Pat.: woman, 32 years
- Complaint: primary subfertility x 2 yrs
- Lab.: normal
- LS: blocked tubes
- Advise: IVF
- Question: Ovarian Ca risk?
**PICO**

- Patient
- Intervention
- Comparison
- Outcome

---

**PICO**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Subfertility patient with IVF indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Ovarian stimulation plus IVF</td>
</tr>
<tr>
<td>Comparison</td>
<td>No ovarian stimulation, no IVF</td>
</tr>
<tr>
<td>Outcome</td>
<td>Ovarian cancer</td>
</tr>
</tbody>
</table>

---

**Ovarian Cancer at age 32 yrs**

- Rare: <1 per 10,000 women per year
- Slow: lag time often >10 years

**If RCT:**

- Huge trial (thousands of women)
- Long follow-up (>10 years)
- Methodological, economical and ethical concerns
- Potential exposure to harm
Randomized clinical trial

- Randomize 200,000 women
- FSH IVF
- No FSH No IVF
- >>10 years

Ovarian Ca and IVF: case-control study

<table>
<thead>
<tr>
<th></th>
<th>ovarian Ca</th>
<th>no ovarian Ca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertility drugs</td>
<td>20 (3.3%)</td>
<td>11 (1.0%)</td>
</tr>
<tr>
<td>No fertility drugs</td>
<td>602</td>
<td>1090</td>
</tr>
</tbody>
</table>


Ovarian Ca and IVF: cohort study

<table>
<thead>
<tr>
<th></th>
<th>ovarian Ca</th>
<th>no ovarian Ca</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVF n=20,663</td>
<td>7 (0.03%)</td>
<td>20,656</td>
</tr>
<tr>
<td>No IVF n=9,050</td>
<td>6 (0.07%)</td>
<td>9,044</td>
</tr>
</tbody>
</table>

Venn et al., Lancet 354:1586-90, 1999: Risk of cancer after use of fertility drugs with IVF
Types of study design

- Observational studies
  - Narrative
  - Case report
  - Case series
  - Analytical
    - Case-control
    - Cross-sectional
    - Cohort
- Interventional studies
  - RCT

Clinical scenario # 2

- Pat.: woman, 36 years
- Complaint: primary subfertility
- H&Ph: uneventful history & physical
- LS: endometriosis

Question:
cause of subfertility?

PICO

<table>
<thead>
<tr>
<th>Patient</th>
<th>Patient with unexplained subfertility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>LS: endometriosis</td>
</tr>
<tr>
<td>Comparison</td>
<td>LS: no endometriosis</td>
</tr>
<tr>
<td>Outcome</td>
<td>Fertility</td>
</tr>
</tbody>
</table>
### Endometriosis and subfertility

<table>
<thead>
<tr>
<th></th>
<th>Endometriosis</th>
<th>No Endometriosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subfertility</td>
<td>21 (91%)</td>
<td>79 (29%)</td>
</tr>
<tr>
<td>No Subfertility</td>
<td>2 (9%)</td>
<td>196 (71%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Endometriosis</th>
<th>No Endometriosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subfertility</td>
<td>21 (21%)</td>
<td>79 (79%)</td>
</tr>
<tr>
<td>No Subfertility</td>
<td>2 (1%)</td>
<td>196 (99%)</td>
</tr>
</tbody>
</table>

### Cross-sectional study

Endometriosis Subfertility Exposure Outcome

No direction of research
Bias & confounding

- Selection bias: subfertile patients compared with patients of proven fertility (i.e. having been pregnant)
- Surveillance bias: Look more carefully for a given outcome in one group
- Confounding factors: proven fertility, oral contraceptives, fewer menses, pregnancy and breast feeding

Types of study design

- Observational studies
  - Narrative
    - case report
    - case series
  - Analytical
    - case-control
    - cross-sectional
    - cohort
- Interventional studies
  - RCT

Clinical scenario # 3

Doctors warn of possible new risk for IVF babies

LONDON (Reuters) – 24 Jan. Test tube babies have a sevenfold increased risk of developing retinoblastoma, a rare form of eye cancer, scientists warned on Friday.
**PICO**

<table>
<thead>
<tr>
<th>Patient</th>
<th>newborn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>IVF pregnancy</td>
</tr>
<tr>
<td>Comparison</td>
<td>spontaneous pregnancy</td>
</tr>
<tr>
<td>Outcome</td>
<td>retinoblastoma</td>
</tr>
</tbody>
</table>

---

**The figures (Moll et al., 2003)**

- 5 IVF children with retinoblastoma in 6 years (15,500 ongoing IVF pregnancies)
- 8 non-IVF children with retinoblastoma per year (180,000 spont. pregnancies)


---

**Retinoblastoma and IVF**

<table>
<thead>
<tr>
<th></th>
<th>retinoblastoma</th>
<th>no retinoblastoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>13</td>
<td>195,500</td>
</tr>
<tr>
<td>IVF</td>
<td>5 (38%)</td>
<td>15,500 (8%)</td>
</tr>
<tr>
<td>no IVF</td>
<td>8</td>
<td>180,000</td>
</tr>
</tbody>
</table>

Case-control study

- 5 IVF
- 8 no IVF
- 15,500 IVF
- 180,000 no IVF

Cases: retinoblastoma
n = 13

Controls: no retinoblastoma
n = 195,500

Direction of research

Case-control studies

<table>
<thead>
<tr>
<th>Strength</th>
<th>Few subjects, rare diseases, slow development, long lag time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weakness</td>
<td>Index case bias, recall bias, inaccurate/incomplete records, sampling bias controls, only one outcome studied</td>
</tr>
<tr>
<td>Aim/goal</td>
<td>Hypothesis testing</td>
</tr>
</tbody>
</table>

Observational studies

- cohort
- cross sectional
- case - control
### Strengths & weaknesses of study design

<table>
<thead>
<tr>
<th>Design</th>
<th>Start</th>
<th>Assessment</th>
<th>Strength</th>
<th>Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCT</td>
<td>Intervention</td>
<td>Outcome</td>
<td>Little bias</td>
<td>Feasibility, cost, generalisability</td>
</tr>
<tr>
<td>Cohort</td>
<td>Intervention</td>
<td>Outcome</td>
<td>Feasible when randomisation non possible</td>
<td>Bias, limited validity</td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>Intervention &amp; Outcome</td>
<td>Fast, cheap, prevalence</td>
<td>Bias, association, no causal relation</td>
<td></td>
</tr>
<tr>
<td>Case-control</td>
<td>Intervention</td>
<td>Outcome</td>
<td>Fast, small sample size</td>
<td>Bias, limited validity</td>
</tr>
</tbody>
</table>
Learning objectives

- What is important when designing a diagnostic study
- How to use the results of diagnostic tests
- How to interpret the results in practice
- Pooling evidence using meta-analysis

What is diagnosis?

- Increase certainty about presence/absence of disease
- Disease severity
- Monitor clinical course
- Assess prognosis – risk/stage
- Plan treatment e.g., location
- Stall for time!
Importance of diagnosis

• 2/3 malpractice claims against GPs in UK
• 40,000-80,000 US hospital deaths from misdiagnosis per year
• Adverse events, negligence cases, serious disability more likely to be related to misdiagnosis than drug errors
• Diagnosis uses <5% of hospital costs, but influences 60% of decision making

Appropriate diagnostic studies needed

Basic structure of diagnostic studies
Dealing with diagnostic tests: 3 easy steps

1. Will the results be valid?
   - Appropriate spectrum of patients?
   - Does everyone get the gold standard?
   - Is there an independent, blind or objective comparison with the gold standard?

2. Presentation of results?
   - Sensitivity, specificity
   - Likelihood ratios
   - ROC curve

3. Will the study help me look after my patients?
   - Can I do the test in my setting?
   - Do results apply to the patients I see?
   - Will the result change my management?
   - Costs to patient/health service?

Valid results

- Appropriate spectrum of patients
  - Ideally, test should be performed on group of patients in whom it will be applied in the real world clinical setting
- All patients have the gold standard?
  - Ideally all patients get the gold/reference standard test
- Comparison with the gold standard
  - Ideally, the gold standard is independent, blind and objective

Presentation of results: 2 by 2 table

<table>
<thead>
<tr>
<th></th>
<th>Disease present</th>
<th>Disease absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test +</td>
<td>True positives</td>
<td>False positives</td>
</tr>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
</tr>
<tr>
<td>Test -</td>
<td>False negatives</td>
<td>True negatives</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
<td>(d)</td>
</tr>
</tbody>
</table>
Presentation of results: 2 by 2 table - sensitivity

<table>
<thead>
<tr>
<th>Disease present</th>
<th>Disease absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>True positives</td>
<td>(a)</td>
</tr>
<tr>
<td>False negatives</td>
<td>(d)</td>
</tr>
</tbody>
</table>

Proportion of people with the disease who have a positive test result
Proportion of true positives.

Sensitivity = a / a + c

Presentation of results: 2 by 2 table - specificity

<table>
<thead>
<tr>
<th>Disease present</th>
<th>Disease absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>False positives</td>
<td>(b)</td>
</tr>
<tr>
<td>True negatives</td>
<td>(d)</td>
</tr>
</tbody>
</table>

Proportion of people without the disease who have a negative test result
Proportion of true negatives

Specificity = d / b + d

Presentation of results

- Sensitivity and specificity are not affected by prevalence
- Beware of clinical differences!
- Prevalence of gynecological diseases in general practice low
- Prevalence in clinic is high, likely also greater disease burden
Presentation of results: Likelihood ratios

- Positive likelihood ratio (LR+): How much more likely is a positive test to be found in a person with the disease than in a person without it?
  \[
  LR^+ = \frac{\text{sens}}{1-\text{spec}} = \text{ratio of true positives to false positives}
  \]

- Negative likelihood ratio (LR-): How much more likely is a negative test to be found in a person without the condition than in a person with it?
  \[
  LR^- = \frac{1-\text{sens}}{\text{spec}} = \text{ratio of true negatives to false negatives}
  \]

How to interpret likelihood ratios?

- \(LR>10\) = strong positive test result
- \(LR<0.1\) = strong negative test result
- \(LR=1\) = no diagnostic value

Converting LR to post test probability

Presentation with a HCG of 3000 IU/L – LR = 15
Prevalence EUG: 5% in a non-symptomatic woman with a history of EUG
Prevalence EUG: 40% if the woman had abdominal pain

<table>
<thead>
<tr>
<th>Pre test probability</th>
<th>Pre test odds</th>
<th>LR</th>
<th>Post test odds</th>
<th>Post test probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>0.05</td>
<td>15</td>
<td>0.79</td>
<td>0.79/1.79 = 44%</td>
</tr>
<tr>
<td>40%</td>
<td>0.40</td>
<td>15</td>
<td>1.0</td>
<td>1.0/1.41 = 71%</td>
</tr>
</tbody>
</table>

From Stal et al, Human Reprod 1998, 14
Usefulness of LR

- LR can help fine tune the risk of disease for an individual patient
- Can help decide on management

ROC curve

1. Tradeoff between sensitivity and specificity
2. The closer the curve follows the left-hand border and then the top border of the ROC space, the more accurate the test.
3. The closer the curve comes to the 45-degree diagonal of the ROC space, the less accurate the test.
4. The slope of the tangent line at a cut point gives the likelihood ratio (LR) for that value of the test.
5. The area under the curve is a measure of test accuracy.

Further from 0.50, (straight line, where LR = 1), the better the test.

Will the test apply in my setting?

- Reproducibility of the test and interpretation in my setting
- Do results apply to the mix of patients I see?
- Will the results change my management?
- Impact on outcomes that are important to patients?
- Where does the test fit into the diagnostic strategy?
- Costs to patient/health service?
Meta-analysis

of diagnostic studies

Pooling results from diagnostic studies: meta-analysis

• Multiple reviewers should independently extract the required information.
• Obtain data and construct the diagnostic $2 \times 2$ table:
  • Absolute numbers in the four cells are needed.
  • Obtain totals ‘diseased’ and ‘non-diseased’ to calculate prior probability (pre-test probability) from recalculated sensitivity, specificity, likelihood ratios, predictive values.
Diagnostic versus treatment trial

- Relative risk in experimental group: \[ \frac{a}{a+c} = \frac{b}{b+d} \]
- Likelihood Ratio for a Positive Test.
- Relative Risk in Control Group = Likelihood Ratio for a Negative Test.
- The Expression for the Odds Ratio (OR) is \( \frac{a \times d}{b \times c} \).

Diagnostic meta-analysis: database

<table>
<thead>
<tr>
<th>Study</th>
<th>TP</th>
<th>FN</th>
<th>FP</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19</td>
<td>2</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>C</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>20</td>
<td>2</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>E</td>
<td>20</td>
<td>4</td>
<td>3</td>
<td>49</td>
</tr>
<tr>
<td>F</td>
<td>16</td>
<td>4</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>G</td>
<td>25</td>
<td>3</td>
<td>1</td>
<td>83</td>
</tr>
</tbody>
</table>

Diagnostic meta-analysis: choose model for pooling
Example of a random-effects model used to diagnostic value of transvaginal sonography (TVS) for non-invasive, presurgical detection of bowel endometriosis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (%)</td>
<td>91.00 (88–93)</td>
</tr>
<tr>
<td>Specificity (%)</td>
<td>98.56 (96–99)</td>
</tr>
<tr>
<td>LR+</td>
<td>30 (15–80)</td>
</tr>
<tr>
<td>LR−</td>
<td>0.09 (0.05–0.19)</td>
</tr>
<tr>
<td>DOR</td>
<td>394 (116–1236)</td>
</tr>
<tr>
<td>Prevalence (%)</td>
<td>47 (31–57)</td>
</tr>
</tbody>
</table>


Example of a hierarchical summary ROC curve predicting violence in men with at least one Met allele

Singh et al., Plos one 2013
How to do a poster

c.barrat@dundee.ac.uk

Helpful things

http://colinpurrington.com/tips/academic/posterdesign

Lets play a game

What's needed?

The list includes (write down)
A test ....
Basics

- Its an avert for your work
- An illustrated abstract
- Easy on the eye
- Get the reader interested
- Simplify it (not the intellectual bit..)
- Who is my audience?
Basics

- Simple effective data displays
- Small blocks of supporting text (easy to read)
- Answer questions (e.g. HR long abstract)
- Big title
- Use only essential words
- Easy on eye
- Add relevant but helpful pics

Minor but important

- Have extended section as print out ready
- Ethical approval/acknowledgement/funding/collaborations.
- Pick good software program
- Try out on number of individuals
- Add contact information
- Prepare verbal explanation to go through with people.

So what's in our list???
Accademic Authorship Programme

Giving a talk

Edgardo Somigliana M.D., Ph.D.
Deputy Editor – Human Reproduction

Conflicts of interest to declare: None

Learning objectives

- Importance of data presentation
- Logic of a presentation
- Practical advises

More than just a talk…

Dr. Ignaz Semmelweis 1818-1865

Ungharian physician, working at the Vienna general Hospital

He discovered that the incidence of purperal fever could be drastically cut by the use of hand disinfection in obstetrical clinics.
More than just a talk…

Doctors' wards had three times the mortality of midwives wards.

More than just a talk…

Semmelweis's ideas were rejected by the medical community.

In 1865, Semmelweis was committed to an asylum, where he died at age 47 after being beaten by the guards.

Semmelweis's practice earned widespread acceptance only years after his death, when Louis Pasteur confirmed the germ theory and Joseph Lister using hygienic methods, practiced and operated with great success.
More than just a talk…

- The vision contravened established scientific opinion at this time
- He was unable to provide a scientific explanation for his findings
- Doctors were offended at the suggestion that they were the cause
- He aggressively antagonized the medical establishment
- He was unable to clearly report his data
- He frequently committed his students to talk and write on his behalf

More than just a talk…

The treatise included 543 pages
Referred to as ‘the often-quoted but seldom-read treatise of Semmelweis’.

Irvine, 2002

More than just a talk…

If possible, fame should not be posthumous…

Vincent Van Gogh
Self-portrait (1889)
Data Presentation

- Introduction - Background
- Materials and Methods
- Results
- Discussion
- Conclusions
- Questions

The clinical significance of calcium signalling pathways mediating human sperm hyperactivation

[Text and figures related to calcium signalling pathways and sperm hyperactivation]
**Data Presentation: Tables**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Cases (n=39)</th>
<th>Controls (n=78)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancelled cycles</td>
<td>3 (8%)</td>
<td>3 (4%)</td>
<td>0.67</td>
</tr>
<tr>
<td>Dosage of FSH</td>
<td>227 ± 77</td>
<td>215 ± 110</td>
<td>0.24</td>
</tr>
<tr>
<td>N. Follicles &gt; 15 mm</td>
<td>6.2 ± 2.6</td>
<td>9.6 ± 4.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>N. Oocytes retrieved</td>
<td>7.1 ± 3.2</td>
<td>9.8 ± 5.5</td>
<td>0.001</td>
</tr>
<tr>
<td>N. Embryos obtained</td>
<td>2.6 ± 1.4</td>
<td>3.1 ± 1.5</td>
<td>0.074</td>
</tr>
<tr>
<td>N. Transferred embryos</td>
<td>2.1 ± 0.6</td>
<td>2.0 ± 0.5</td>
<td>0.40</td>
</tr>
<tr>
<td>N. Pregnancies per cycle</td>
<td>12 (31%)</td>
<td>26 (33%)</td>
<td>0.84</td>
</tr>
<tr>
<td>Implantation rate</td>
<td>14 (22%)</td>
<td>32 (23%)</td>
<td>1.00</td>
</tr>
<tr>
<td>N. Deliveries per cycle</td>
<td>9 (23%)</td>
<td>23 (29%)</td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Danno alla riserva ovarica: FIVET**

IVF outcome in unoperated women with bilateral endometriomas

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Cases (n=39)</th>
<th>Controls (n=78)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancelled cycles</td>
<td>3 (8%)</td>
<td>3 (4%)</td>
<td>0.67</td>
</tr>
<tr>
<td>Dosage of FSH</td>
<td>227 ± 77</td>
<td>215 ± 110</td>
<td>0.24</td>
</tr>
<tr>
<td>N. Follicles &gt; 15 mm</td>
<td>6.2 ± 2.6</td>
<td>9.6 ± 4.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>N. Oocytes retrieved</td>
<td>7.1 ± 3.2</td>
<td>9.8 ± 5.5</td>
<td>0.001</td>
</tr>
<tr>
<td>N. Embryos obtained</td>
<td>2.6 ± 1.4</td>
<td>3.1 ± 1.5</td>
<td>0.074</td>
</tr>
<tr>
<td>N. Transferred embryos</td>
<td>2.1 ± 0.6</td>
<td>2.0 ± 0.5</td>
<td>0.40</td>
</tr>
<tr>
<td>N. Pregnancies per cycle</td>
<td>12 (31%)</td>
<td>26 (33%)</td>
<td>0.84</td>
</tr>
<tr>
<td>Implantation rate</td>
<td>14 (22%)</td>
<td>32 (23%)</td>
<td>1.00</td>
</tr>
<tr>
<td>N. Deliveries per cycle</td>
<td>9 (23%)</td>
<td>23 (29%)</td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Data Presentation: Figures**

The interpretation of dreams is the royal road to a knowledge of the unconscious activities of the mind.

_Sigmund Freud_

_Salvador Dali_  
*Dream Caused by the Flight of a Bee around a Pomegranate a Second Before Awakening* (1944)
Data Presentation: Figures

Jackson Pollock
Number 1, 1950

May et al., 2010

Data Presentation: Figures

May et al., 2010

Data Presentation

- Introduction - Background
- Materials and Methods
- Results
- Discussion
- Conclusions
- Questions

State limitations!
"Attacking is the best way to defend"
Cardoso, Brazilian soccer trainer
Form advises

- Duration
- Contrast, framing and dimension
- Equilibrium
- Final advises

---

The “one minute-one slide” rule

---

Elliott Erwitt
Contrast
Form advises:

- Duration
- Contrast, framing and dimension
- Equilibrium
- Final advises

Aldo Mondino
Balance (1975)

Form advises: Equilibrium

Lucio Fontana
Concetto spaziale – Attesa (1968)

Giorgio De Chirico
Lonely Oreste (1974)

Form advises:

- Duration
- Contrast, framing and dimension
- Equilibrium
- Final advises

John F. Kennedy
“Ich bin ein Berliner” (1963)
## Final advises

- Slides are a support, not "notes to remind".
- Speak slowly, loudly, in the microphone and with emphasis. Try "to convince".
- Smile and look to the audience.
- Explain tables and figures.
- Read statements.
- Practise at home (and monitor time!). Memorize the first 1-2 sentences and the pivotal ones.
- Avoid coffees, spirits, anxiolytics... The physiological stress is the most appropriate help you can receive!
Writing a study up for a scientific journal – Richard Sharpe (United Kingdom)

Contribution not submitted by the speaker
You can now register for these upcoming ESHRE Campus events:

- Application and challenges of emerging technologies in preimplantation and prenatal diagnosis
  12-13 September 2013 - Prague, Czech Republic

- Female genital tract congenital malformations: new insights in an old problem
  27-28 September 2013 - Thessaloniki, Greece

- Introducing new techniques into the lab
  4-5 October 2013 - Barcelona, Spain

- Polycystic ovary syndrome: A new look at an old subject
  25-26 October 2013 - Rome, Italy

- Infections from conception to birth: role of ART
  7-8 November 2013 - Berlin, Germany

- Endoscopy in reproductive medicine
  20-22 November 2013 - Leuven, Belgium

- From early implantation to later in life
  28-29 November 2013 - Brussels, Belgium

Mark your calendar for:

- Premature ovarian insufficiency
  6-7 December 2013 - Utrecht, The Netherlands

www.eshre.eu
(see “Calendar”)

Contact us at info@eshre.eu