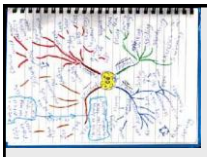
Defining your message

Writing the Introduction & Discussion

Elizabeth Wager PhD
Sideview
Visiting Professor
University of Split, School of Medicine
liz@sideview.demon.co.uk

Planning publications

- Before you start to write, establish:
  - Key message(s)
  - Target audience
  - Target journal
  - Authors
  - Ideal timelines / deadlines
  - Review process (boss / sponsor)



- What do I want to say?
- Who am I writing for?
- What do I want readers to do?

How would you describe your findings:

- to a friend in a bar?
- as a newspaper headline?
- in a Tweet (140 characters)

- *"in 30 seconds, standing on one leg"*

"Words are, of course, the most powerful drug used by mankind"

Rudyard Kipling (1865-1936)

Be specific

- The efficacy of wunderdrug on osteoarthritis *(no verb – not a message)*
- Effects of wunderdrug on pain in OA *(states outcome but no verb)*
- Wunderdrug reduces OA pain significantly more than placebo *(message!)*

Know your audience (1)

Who are you writing for?

- All physicists / chemists / doctors
- Broad group (beyond your own field)
- Specialist group (within your own field)
- Theoretical scientists / applied scientists
- Other researchers / practitioners / policy makers

Know your audience (2)

Who are you writing for?

- Global audience
- Regional audience
- Local audience

- ***How 'big' is your message?***

Keep your readers in mind

- What will interest them?
- What do they know already?
- What do you need to explain?

Remember, your first readers are:

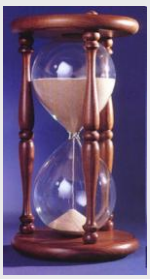
- the journal editor
- the peer reviewer(s)

Writing the Introduction & Discussion

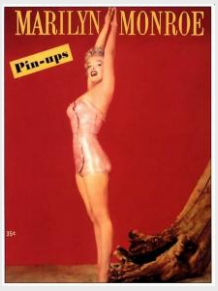
Function

- The Introduction should answer the question: 'WHY did you do this study?'
- The Discussion should answer the question: 'WHAT do the results mean?'

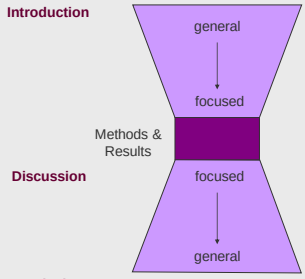
Your paper should be like an hour-glass



or like Marilyn Monroe!



Wide at the top and bottom, narrow in the middle!



State the problem
Put into context
Define disease area

Why did you do this study?

Our hypothesis was …

Our study suggests …
State limitations
Others have shown

What does it mean?

What should you do?

The introduction

- State aims / objectives
- 'Why did you do what you did?'
- Why might the reader be interested?
- 'Who cares?'
- 'So what?' test
- Avoid teaching / clichés

Don't take readers back to the school room!

- The history lesson
  - *Poxithingamazole was first synthesized in 1958*
- The chemistry lesson
  - *Poxithingamazole is a substituted dibenzene ribonucleic muton of the class gobbledegook …*

Remember your audience

- Give enough information to put your question in context
- and explain why it is important
- Do NOT tell readers what they already know

Say something interesting

- Alzheimer's disease is a serious, degenerative condition
- An estimated 4.5 million Americans have Alzheimer's disease
- The number of Americans with Alzheimer's has more than doubled since 1980

First sentences: who are these written for?

- "Type 2 diabetes mellitus (T2DM) is a common disease reflecting metabolic disorders characterized with hyperglycemia, which may lead to specific long-term complications affecting heart, brain, eyes, kidneys and nervous system" (13:44)
- "Diabetes, a disorder of metabolism results in substantial morbidity and mortality" (13:40)
- "Diabetes mellitus (DM) is a complex disease with many metabolic disorders characterized by hyperglycemia and defects in insulin secretion or insulin action." (13:32)
- "Diabetes is a systemic disorder resulting in abnormally high blood glucose levels." (9:13)

Intro: suggested structure

- Interesting opening sentence
- Statement of the problem (why this study needed to be done)
- State your hypothesis

If you can't be funny, be interesting

Harold Ross (founder, *New Yorker*) (1892-1951)

Discussion: suggested format

- Summarise results with respect to original question in the introduction
- Acknowledge shortcomings
- Describe other related work
- Explain why opposing evidence may be discounted
- Summarise with conclusions

The discussion

- Remember your message
- Be honest / realistic
- Don't include anything not in the results
- Face up to shortcomings in study design
- Cite relevant references
- Suggest future work
- Avoid clichés

Discussion: **what do journals say?**

- The Discussion section should not merely restate the experimental results and immediate conclusions. It should be constructive, interpretive, analytical, and it should establish the relationship between the results obtained and previously published work.

Archives of Virology

How long?

Editors often say:

- Introduction is too long
- Discussion is too short!

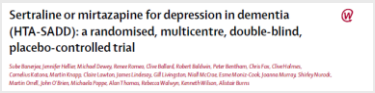
- Introduction should be short
- Discussion may be longer

Start with thunder … end with lightning

Mistakes to avoid

- Don't put a literature review in the Introduction (save for the Discussion)
- Don't put any findings in the Discussion that are not in the Results
- Don't repeat all your findings in the Discussion (e.g. state in words only)
- Remember to address study limitations (nothing is perfect!)

Key sentences

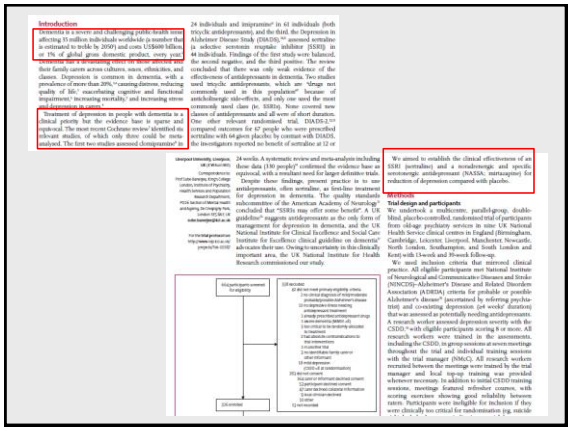


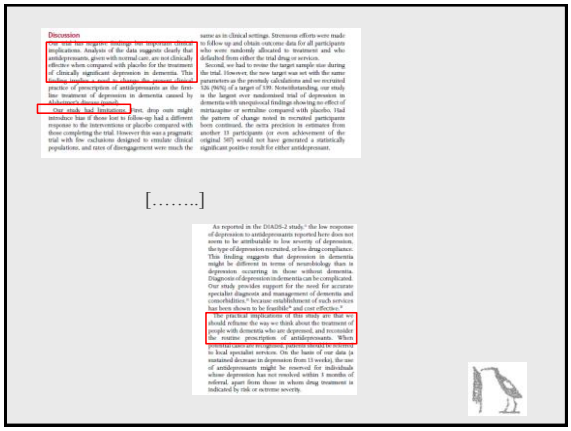
Sertraline or mirtazapine for depression in dementia (HTA-SADD): a randomised, multicentre, double-blind, placebo-controlled trial

Lancet 2011:378:403-11

- Interesting? Dementia is a severe and challenging public-health issue affecting 35 million individuals worldwide (a number that is estimated to treble by 2050[1]) and costs US$600 billion, or 1% of global gross domestic product, every year.[2]
- Needed? Treatment of depression in people with dementia is a clinical priority but the evidence base is sparse and equivocal. The most recent Cochrane review[7] identified six relevant studies, of which only three could be meta-analysed.
- Question? We aimed to establish the clinical effectiveness of an SSRI (sertraline) and a noradrenergic and specific serotonergic antidepressant (NASSA; mirtazapine) for reduction of depression compared with placebo.

- Findings Our trial has negative findings but important clinical implications. Analysis of the data suggests clearly that antidepressants, given with normal care, are not clinically effective when compared with placebo for the treatment of clinically significant depression in dementia.
- Limitations Our study had limitations. First, drop outs might introduce bias if those lost to follow-up had a different response to the interventions or placebo compared with those completing the trial. However …
- Conclusion The practical implications of this study are that we should reframe the way we think about the treatment of people with dementia who are depressed, and reconsider the routine prescription of antidepressants.



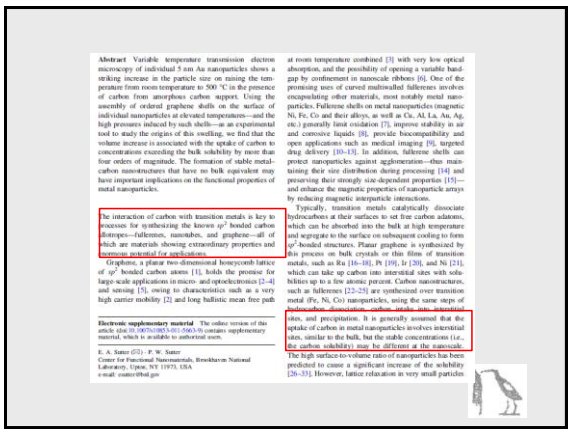


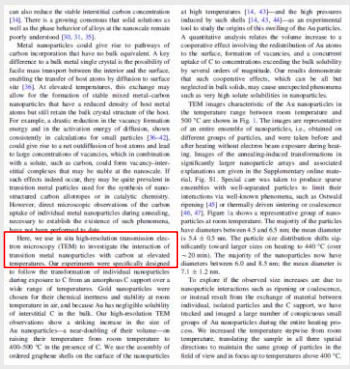
Key sentences: engineering

- Giant carbon solubility in Au nanoparticles
- Sutter & Sutter. *Journal of Materials Science* 2011;**46**:7090-7

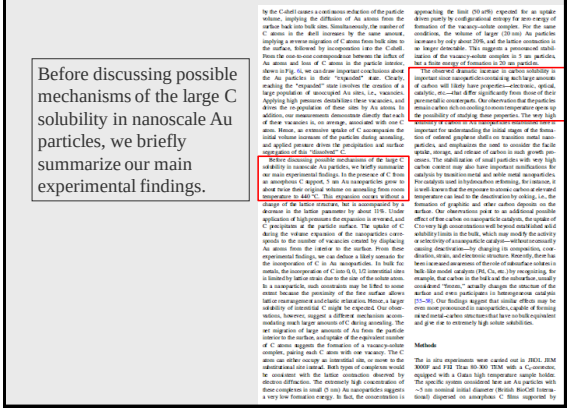
- 1st sentence: "The interaction of carbon with transition metals is key to processes for synthesizing the known sp^2 bonded carbon allotropes—fullerenes, nanotubes, and graphene—all of which are materials showing extraordinary properties and enormous potential for applications."
- Need: "It is generally assumed that the uptake of carbon in metal nanoparticles involves interstitial sites, similar to the bulk, but the stable concentrations (i.e., the carbon solubility) may be different at the nanoscale. The high surface-to-volume ratio of nanoparticles has been predicted to cause a significant increase of the solubility"

- Study question: "Here, we use in situ high-resolution transmission electron microscopy (TEM) to investigate the interaction of transition metal nanoparticles with carbon at elevated temperatures."
- Findings: In the presence of C from an amorphous C support, 5 nm Au nanoparticles grow to about twice their original volume on annealing from room temperature to 440 °C.
- Interpretation: The observed dramatic increase in carbon solubility is important since nanoparticles containing such large amounts of carbon will likely have properties—electronic, optical, catalytic, etc.—that differ significantly from those of their pure metallic counterparts.





Before discussing possible mechanisms of the large C solubility in nanoscale Au particles, we briefly summarize our main experimental findings.



Key points

- Define your message:
  What do you want readers to do (or think)?
- Define your audience: write for them
- Introduction & Discussion:
  thunder & lightning / Marylin

Muddled messages

- Title: Acupressure using ondansetron versus metoclopramide on reduction of postoperative nausea & vomiting after strabismus surgery
- Questions? Study design, number of treatment groups

Acupressure using Ondansetron versus Metoclopramide on Reduction of Postoperative Nausea and Vomiting after Strabismus Surgery

Conclusion: Acupressure at the P6 point causes a significant reduction in the incidence and severity of PONV 24 hours after strabismus surgery as well as metoclopramide (0.2 mg/kg) and ondansetron (0.15 mg/kg) intravenous for patients aged 10 or older. (Irct ID: IRCT138807152556N1)

Abstract: design

- Randomised, placebo-controlled
- Gp 1=control
- Gp 2=metoclopramide
- Gp 3=ondansetron
- Gp 4=acupressure

Abstract:

- Results: The incidence of PONV was not significantly different among acupressure, metoclopramide and ondansetron groups
- Question: was this a non-inferiority trial?
- What about the placebo group?

Abstract

- Conclusion:
  Acupressure causes a significant reduction in the incidence of PONV 24 hours after strabismus surgery as well as metoclopramide and ondansetron
- Language problem: "as well as"

Main paper

- Primary end point not defined
- 200 patients (50 in each group) ?power
- Discussion: "the incidence of PONV in the acupressure group showed a significant decrease compared with the placebo group in both the recovery room and the ward"

Table 2. Comparison of incidence of PONV between acupressure and study groups

	Metoclopramide (n=50)	Ondansetron (n=50)	Acupressure (n=50)	Placebo (n=50)	P-value ap	P-value ao	P-value am
Retching *	0 (0%)	0 (0%)	2 (4%)	0 (0%)	0.153	0.153	0.153
Nausea *	3 (6%)	2 (4%)	0 (0%)	4 (8%)	0.041	0.153	0.079
Vomiting*	3 (6%)	0 (0%)	0 (0%)	8 (16%)	0.003	—	0.079
Retching **	5 (10%)	1 (2%)	4 (8%)	10 (20%)	0.084	0.401	0.727
Nausea **	7 (14%)	9 (18%)	6 (12%)	19 (38%)	0.003	0.169	0.766
Vomiting **	5 (10%)	9 (18%)	10 (20%)	23 (46%)	0.006	0.799	0.161

P-value of ap=acupressure to placebo; P-value of ao=acupressure to ondansetron; P-value of am=acupressure to metoclopramide; *During recovery phase; **In the ward

Discussion

The present study was designed to determine the effects of acupressure as well as metoclopramide and ondansetron on reducing PONV in both the recovery room and ward. The incidence of PONV in the acupressure group has shown a significant decrease when compared with the placebo group in both the recovery room and ward. These findings were in agreement with a number of previous studies. Other

Conclusion

PONV is an unpleasant symptom. It seems that prophylactic antiemetic agents tend not to eliminate PONV, but significantly reduce this postoperative side effect. Using the correct selection process of patients and improving techniques in order to control PONV, would enable physicians to successfully prevent this side effect. Over all, there is not a definite clinical recommendation based on non-pharmacological methods; however, it could be suggested that in order to achieve the useful effect of acupressure against PONV, thus P6 stimulation must be applied prior to the onset of nausea and vomiting.

Conclusion

- "Overall there is not a definite clinical recommendation based on non-pharmacological methods [to reduce PONV].
- However, it could be suggested that … P6 stimulation must be applied prior to the onset of nausea and vomiting"