

Jaargang 14 nr. 1197
4 maart 2020



Geneeskunde opvissen

De commerciële verloedering ontspoort.

Kneedbare evidenties weren wetenschap.

A Rough Guide to
SPOTTING BAD SCIENCE

Being able to evaluate the evidence behind a scientific claim is important. Being able to recognise bad science reporting, or faults in scientific studies, is equally important. These 12 points will help you separate the science from the pseudoscience.

- 1. SENSATIONALISED HEADLINES**
Article headlines are commonly designed to entice viewers into clicking on and reading the article. At times, they can over-simplify the findings of scientific research. At worst, they sensationalise and misrepresent them.
- 2. MISINTERPRETED RESULTS**
News articles can distort or misinterpret the findings of research for the sake of a good story, whether intentionally or otherwise. If possible, try to read the original research, rather than relying on the article based on it for information.
- 3. CONFLICTS OF INTEREST**
Many companies will employ scientists to carry out and publish research - whilst this doesn't necessarily invalidate the research, it should be analysed with this in mind. Research can also be misrepresented for personal or financial gain.
- 4. CORRELATION & CAUSATION**
Be wary of any confusion of correlation and causation. A correlation between variables doesn't always mean one causes the other. Global warming increased since the 1800s, and pirate numbers decreased, but lack of pirates doesn't cause global warming.
- 5. UNSUPPORTED CONCLUSIONS**
Speculation can often help to drive science forward. However, studies should be clear on the facts their study proves, and which conclusions are as yet unsupported ones. A statement framed by speculative language may require further evidence to confirm.
- 6. PROBLEMS WITH SAMPLE SIZE**
In trials, the smaller a sample size, the lower the confidence in the results from that sample. Conclusions drawn can still be valid, and in some cases small samples are unavoidable, but larger samples often give more representative results.
- 7. UNREPRESENTATIVE SAMPLES USED**
In human trials, subjects are selected that are representative of a larger population. If the sample is different from the population as a whole, then the conclusions from the trial may be biased towards a particular outcome.
- 8. NO CONTROL GROUP USED**
In clinical trials, results from test subjects should be compared to a 'control group' not given the substance being tested. Groups should also be allocated randomly. In general experiments, a control test should be used where all variables are controlled.
- 9. NO BLIND TESTING USED**
To try and prevent bias, subjects should not know if they are in the test or the control group. In 'double blind' testing, even researchers don't know which group subjects are in until after testing. Note, blind testing isn't always feasible, or ethical.
- 10. SELECTIVE REPORTING OF DATA**
Also known as 'cherry picking', this involves selecting data from results which supports the conclusion of the research, whilst ignoring those that do not. If a research paper draws conclusions from a selection of its results, not all, it may be guilty of this.
- 11. UNREPLICABLE RESULTS**
Results should be replicable by independent research, and tested over a wide range of conditions (where possible) to ensure they are consistent. Extraordinary claims require extraordinary evidence - that is, much more than one independent study!
- 12. NON-PEER REVIEWED MATERIAL**
Peer review is an important part of the scientific process. Other scientists appraise and critique studies, before publication in a journal. Research that has not gone through this process is not as reputable, and may be flawed.

© COMPOUND INTEREST 2015 - WWW.COMPOUNDCHEM.COM | @COMPOUNDCHEM
Shared under a Creative Commons Attribution-NonCommercial-NoDerivatives licence.

Geen enkele bevolking verdient het om dagelijks gepamperd te worden met schadelijke of zelfs giftige en verslavende stoffen, met de voornaamste bedoeling om chemische bedrijven te verrijken en in stand te houden.

Men stelt een chronische afhankelijkheid met ziektemakers in en verzuimt om vakkundig medisch te behandelen.

Het afwimpelen van de chemische bijwerkingen als comorbiditeiten van de aandoening is op een criminele manier misbruik maken van het vertrouwen van niets vermoedende patiënten.

Maar veel erger nog, het chemisch pamperen van die bijwerkingen bezorgt de industrie een goudmijn van inkomsten.

Immers, geen van de academische studiejaar heeft toekomstige voorschrijvers opgeleid in de farmacologie van wat de chemische industrie ter beschikking houdt.

Zelf zag ik eens een patiënt met maar liefst 27 verschillende geneesmiddelen, dagelijks in te slikken.

Apotheker Fernand Haesbrouck,
4 maart 2020.