# My pseudoscientific nightmare

Edzard Ernst

*Everyone knows medical research is about improving healthcare*

RECENTLY I HAD SOME trouble with people one might call "pseudoscientists". These individuals are often technically quite competent; they seem to know their craft and they produce seemingly good work. But there is something amiss. It took me a long time to find out what that might be. Now I think I have identified it — the pseudoscientist has entered the field of science for the wrong reason: to advance not medicine, but himself.

This theme must have been on my mind the other night, when I had the most vivid dream. The dream took me to the "Annual Festival of Pseudoscience", where a panel of the most distinguished pseudoscientists reached consensus on how to become a fellow pseudoscientist. Here are the 10 commandments of pseudoscience that they dictated to their audience.

1. **Ensure that passionate belief rather than reason is the force that drives you.** In science, one tests (more accurately, falsifies) hypotheses. In pseudoscience you want to "prove" what you already "know". Only the biased researcher can mislead the world effectively.
2. **Avoid scientific training.** Pseudoscience needs enthusiastic amateurs who have picked up the rules of science while busy doing other things. The worst that could happen to pseudoscience is for properly trained career scientists to join its arena.
3. **Maintain your bias.** Bias usually originates from interests that create financial, personal or emotional conflicts. Nurture those interests and never disclose these conflicts to anyone, particularly not when publishing.
4. **Use publicity to obtain funding.** Research funds are becoming scarcer by the minute. Lack of funds can seriously delay your endeavours. If you find it difficult to compete, the time-tested approach is to make more noise than anyone else. Hire a PR firm, for instance. Once the daily papers regularly sing your praises, your pseudoscience will thrive.
5. **Do not lose sight of what you intend to prove.** Some people say that good research can never be "negative" — even showing that therapy X is not effective would yield the positive result of enabling patients to choose something that does work. Make sure your goals are not obscured by such old-fashioned nonsense — your aim as a pseudoscientist is to assist your friends, the manufacturers or promoters of therapy X.
6. **Let your goals drive your data analysis.** Even with safeguards in place, you might one day generate a result that does not fit your preconceived ideas (or those of your sponsors). Subanalyse and subanalyse until you have what you were fishing for — a significant result showing what you want.
7. **Suppress unwelcome results.** If things should go disastrously wrong and even extensive data dredging does not yield the desired outcome, the professional pseudoscientist must resort to the last, desperate, but usually effective, measure. Make the unwelcome finding disappear — don't ever publish anything that does not confirm your beliefs or that might upset your friends.
8. **Overinterpret.** More often than not, you will create data that you and your sponsors like. Now you must ruthlessly overinterpret these findings to ensure that everyone knows about your work.
9. **Publish your results as often as you possibly can.** Journal editors don't like duplicate publications, so it would be foolish to tell them.
10. **Attack opposing scientists.** There is always a danger that scientists will publish papers that upset pseudoscientists. In such cases, initiate a campaign of defamation against your opponent — this will decrease their credibility and increase yours, and all will be fine again.

At this point, I woke up feeling sick and anxious. Where does the dream end and reality begin? Did I have a nightmare or a vision? And, horror of horrors, did I not recognise some of the faces of the panellists?

But it must have been a nightmare! These 10 commandments are just a guide on "how *not* to conduct medical research". Surely, medical research is not abused as a career springboard? This would result in chaos and lead us badly astray without a compass for orientation. Surely, any responsible researcher knows that medical research is about improving healthcare? If not, how could we continue with the progress medicine has made so far? Surely, medical research has not been taken over by pseudoscientists.

Or has it? ❑

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