



Inaccuracies: press releases, referencing, statistics, and the ‘Dizzy Awards’

by Sara Hughes

Press releases

The media play a pivotal role in disseminating results of medical research [1]. Medical journalism is often criticised because the type of coverage is sometimes influenced by reader preferences [1,2]. However, many health news stories rely largely on press releases from academic medical centres [2]. Woloshin et al. (2009) characterised 200 randomly selected press releases from the 10 lowest and the 10 highest ranked US academic medical centres. The centres issued 989 medical research related press releases in 2005, an average of 49 releases per centre per year. Higher ranked centres issued more releases than lower ranked centres and were less likely to promote unpublished research [2]. The authors found that many press releases promoted preliminary research or limited human studies without providing basic details or cautions needed to judge the meaning, relevance, or validity of the science. Only one press release clearly distinguished statistical from clinical significance. All other cases were ambiguous [2]. At all centres, investigators requested press releases and were regularly involved in editing and approving them [2].

The accuracy of press releases is important as they attract journalists’ attention and many journalists rely on them as their sole source of information. The centres could improve poor media coverage by issuing fewer but more informative press releases, therefore reducing the chance that journalists and the public are misled about the importance of medical research [2]. A simple tool that could be adapted to ensure that press releases contain the necessary details for journalists to provide more informed coverage is the CONSORT reporting guideline [1,3].

Referencing

As medical writers we are often involved in the preparation and writing of manuscripts, conference abstracts, protocols, and technical reports, and accurate citation is an important part of our work. Citation is not simply an impartial scholarly method for joining related published knowledge; it may also be used for self serving purposes or as a tool for persuasion. Distortions of citation may result in broad acceptance of unfounded claims as fact [4].

Fergusson (2009) has studied the consequences of inappropriate citation in research. Citation errors can be repeated in further articles and can therefore cause considerable damage over time. Incorrect information can be promoted, alternative evidence ignored, and redundant research undertaken following inappropriate use of references, impairing scientific progress and affecting patient care [5].

Greenberg (2009) illustrated a number of serious consequences of inappropriate or inaccurate citation of published work. The author constructed a complete citation network from all PubMed indexed papers addressing the belief that β amyloid is produced by and injures skeletal muscle fibres in the muscle disease sporadic inclusion body myositis. Each paper was classified as primary data, myositis review, model, or other and the citation pattern was studied, i.e. how each statement was supported by reference to other papers. Each citation was classified as supportive, neutral, or critical according to how the underlying statement supported the belief. The author found that unfounded authority was established by citation bias (where primary data that weakened or refuted claims on which the belief was based was ignored); amplification (claims amplified over time by influential papers and citations, without presenting new primary data); and invention (for example, the conversion of hypothesis into fact through citation alone) [4].

Data that form the basis of claims in a paper should be replicated from the primary source. There is a need for systematic reviews, including literature searches, eligibility criteria, and quality appraisal [4,5].

(Ed: Also see box on page 179)

Statistics

Accurate statistical interpretation is key in reporting the results of clinical trials [6]. Translating statistical findings into everyday English is a challenge to authors, journals, and readers. The phraseology cannot capture every nuance of the data, and the clinical importance of statistical results requires consideration [6].

Pocock and Ware (2009) have provided some guidance for the wording that authors could use, based on the assumption that one short sentence needs to capture the essence of a trial’s findings for the primary endpoint:

- a highly significant treatment effect ($p < 0.001$) would justify a statement such as “treatment X was superior to treatment Y”, but is nonetheless not definitive proof
- there is some evidence of efficacy but $0.01 < p < 0.05$ means the play of chance (i.e. no true effect) cannot be dismissed. The lower confidence limit close to zero means the true effect may be small. Hence some doubt is appropriate: “treatment X seems superior to treatment Y.” The absolute benefit and its confidence interval (CI) are an important guide to clinical interpretation >

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- p value slightly above 0.05. Statistical significance is on a continuous scale, the smaller the p value the stronger the evidence, and $p < 0.05$ is an arbitrary cutoff with no rational justification. The word “trend” is sometimes used in this context, but is best avoided because it implies special pleading when evidence is slim. Authors usually decline to mention trends in the opposite direction
- p value is quite large, e.g. $p = 0.3$, which indicates no evidence of treatment difference. However, if the trial was too small (underpowered) to reliably detect clinically important effects, one might state there was insufficient evidence and the trial was ‘inconclusive’; $p > 0.05$ should not be labelled as a ‘negative’ finding, because the possibility of a true treatment difference cannot be dismissed. Equally the label ‘positive’ trial is best avoided when $p < 0.05$

Non-inferiority (or equivalence) trials, designed to examine whether a new treatment has comparable efficacy to an active control, present particular interpretive challenges. The key is whether the 95% CI for the primary endpoint’s treatment difference excludes a prespecified non-inferiority margin. Any true inferiority less than the prespecified non-inferiority margin is deemed acceptable [6].

When referring to subgroup findings or secondary endpoints, greater caution is required. Such claims should ordinarily be excluded from the main conclusions and abstract, which is particularly relevant in industry-sponsored trials with regulatory or marketing implications [6].

Extra caution is required when drawing conclusions from non-randomised studies, because selection bias in treatment allocations cannot be dismissed [6].

Dizzy Awards

Finally, the ‘Dizzy Awards’ are awards for excellence in bewildering, unintentionally comical, or downright terrible medical writing and poor editing [7]. Here are a few examples of winning statements from articles in prominent medical publications [7]:

“Radiation pneumonitis has been argued by Komaki et al. to necessitate its occurrence within the irradiated volume.”

“...I recommend that the rest of my patients follow American Heart Association guidelines until they are revised.”

“It was first described by Pretty in 1931 when an autopsy on a 42-year-old woman with chest pain who died revealed a coronary dissection with rupture.”

“In this article, six patients were operated on because of chest wall hydatid cysts between the years 1989 to 1991 have been reported.”

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Self-help: Some tips for creativity and giving a good impression at work

The summer issue of *BBC Focus* included the following tips—all backed up by research—for getting on at work:

- Lie down when you need to think—when you lie down noradrenaline, which is thought to impair flexible and creative thinking, is inhibited
- Put some plants in your office—they engender creative ideas and help you find solutions to problems
- Persuade yourself to just ‘start’ the task you have been dreading—once you start the unfinished task preys on your mind kicking in a strong urge to get it finished
- Position yourself in the centre of the group—people perceive that important people sit in the middle.

And two more with particular relevance to medical writing:

- Avoid using long words and fonts that are difficult to read—contrary to common belief, at least among authors of scientific papers, people judge the users of simple language and easy-to-read fonts to be more, not less, intelligent
- Avoid giving the impression that you are lying—people who are vague using ‘ums’ and ‘ahs’ and who avoid using first person pronouns are more likely to be suspected of lying