

Academy of Medical Sciences – How can we all best use evidence?

Written evidence from the Science Media Centre

Introduction

1. The Science Media Centre (SMC) is an independent press office for science established in 2002 as a direct result of a House of Lords inquiry into science and society published in 2000¹. The goal of the SMC is to improve the quality and accuracy of science in the media by:

- encouraging more scientists to engage with the media more effectively – especially during times of crisis, on topical controversies in science and in the reporting of new studies;
- making it easier for the media (and through them the wider public) to access the very best science and evidence during times of crisis, on topical controversies in science and when learning about new research.

2. The SMC's founding philosophy is: "The media will 'do' science better when scientists 'do' the media better".

3. The Academy's project is wide-ranging and is composed of four workstreams. Because of the focus of the SMC, our evidence here will concentrate on the third workstream, 'The communication of evidence to support discussion and decision-making', and will specifically focus on communication to the public via the mass media.

Science in the media

4. When the SMC was established in 2002 people were using the phrases 'war footing' and 'poor bedfellows' to describe the tense relationship between science and the media. Scare stories around BSE, GM, and MMR as well as animal rights extremism had left the scientific community reeling and exploring ways of improving the relationship as a prerequisite to getting accurate and measured information to the wider public. The SMC was asked to sit on the 'front line' between scientists working on controversial science and the journalists reporting these stories.

5. The situation in the UK today is unrecognisable from that troubled time; the relationship between science and the media has improved significantly in the past two decades. In the view of the SMC this can be traced to a combination of the following changes:

- i. A recognition at the highest echelons of science that scientists had to emerge from their ivory towers to engage the public and earn their licence to practise;
- ii. A sharp increase in the number and quality of professional science press officers in universities and scientific institutions;
- iii. The existence of specialist journalists reporting on science, health and environment in the UK mass media;
- iv. The revolution in the culture of science which has seen scientists who engage with the media redefined from being 'media tarts' to being great scientists. Incentivised by funders, vice-chancellors and the Research Excellence Framework, more scientists now believe that doing science and then talking to the public about it is part and parcel of being a good scientist;
- v. The proactive and bold approach pioneered by the SMC has been effective. We now have hundreds of case studies demonstrating that engaging with the media on controversial issues improves the quality of the media coverage, reduces potentially dangerous misinformation, and leads to better informed public and policy debates.

¹ House of Lords Science and Technology Committee (2000) [Science and Technology - Third Report](#)

6. Much of the media's coverage of science is exceptionally good. The scientific community should take a moment to celebrate the fact that specialist science journalists tell the stories of new science to a mass audience on a daily basis. Science is no longer the 'and finally' quirky story closing the news. Increasingly science stories are headline news reported by experienced and responsible journalists.

Role of specialist science reporters

7. The SMC urges the Academy to acknowledge the role of specialist reporters in this largely positive situation. The UK is now the envy of our colleagues in our sister organisations in Australia, New Zealand, the USA and elsewhere who have been haemorrhaging specialist science journalists; CNN sacked its entire science unit in a day. This is not the case in the UK. While there have been some losses the mass media generally have held onto science specialists (by which we include science, health and environment). To give one example, the *Daily Mail* still has a science editor, a health editor, a medical correspondent and a science and environment correspondent. Many of these journalists have told the SMC that they see a critical part of their role as 'knocking down' poor science stories favoured by their news editors.

8. An analysis of the reporting of the GM furore in 2000 conducted by POST² at the time revealed that most of the stories were written by general news journalists or consumer affairs specialists who often got the science wrong. MMR stories too were often covered by political or general news reporters in the 1990s. Today almost all GM stories are covered by the science or environment journalists with a significant rise in quality. Even when issues like human animal embryos and mitochondrial donation were front page news while being debated in the Commons, the stories remained in the capable hands of science journalists like the excellent Fiona MacRae at the *Daily Mail* and Fergus Walsh at the *BBC*.

9. Despite all the pressures on the media there are new and exciting examples of its commitment to the science specialism. For example the *BBC* recently created new senior posts in science by appointing overall editors for science (David Shukman) and health (Hugh Pym). In factual programmes beyond news, Tom Heap now delivers specialist knowledge on farming, environment and science to *Countryfile*, *Costing the Earth* and *Panorama*. *Channel 4 News* appointed Tom Clarke as Editor of Science, and the *BBC Radio 4 Today* programme and the *Guardian* now have overall news editors with a specialism in science and environment (Tom Feilden and James Randerson) and the *Guardian* even has specialist sub-editors.

What goes wrong in science reporting

10. When things do go wrong with the media's reporting of science it often involves factors that are common across the media rather than specific to science: a tendency to sensationalise; a focus on bad news; the love of a good row; stories that are too good to fact-check.

11. To the extent that science has a specific set of issues we refer the Academy to the Best Practice Guidelines for Reporting Science and Health³ produced by the SMC. Unlike other guidelines on science reporting produced from within the scientific community, these were compiled by a group including specialist reporters, editors and sub-editors from a representative cross section of the national press. The guidelines were requested by Lord Leveson as part of his inquiry into the press and were recommended to newsrooms in Lord Leveson's final report.

² Parliamentary Office of Science and Technology (2000) [Science in the media: press coverage of GM food](#)

³ Science Media Centre (2012) [10 best practice guidelines for reporting science & health stories](#)

12. Two points we would like to highlight and emphasise from these guidelines are: “Especially on a story with public health implications, try to frame a new finding in the context of other evidence – e.g. does it reinforce or conflict with previous studies? If it attracts serious scientific concerns, they should not be ignored”; and “If space, quote both the researchers themselves and external sources with appropriate expertise. Be wary of scientists and press releases over-claiming for studies.”

13. One of the causes of public cynicism about science is the apparently contradictory nature of much of the evidence on issues such as diet, HRT, statins, bees and neonicotinoids, e-cigarettes, cannabis etc. One day red wine is good for us; one day it’s killing us. Often this opposing evidence is simply a result of the way science works – science is an iterative process that continuously builds on and corrects previous evidence, and different kinds of study which are testing different hypotheses can have different findings, all of which are rightly of interest to the media. However sometimes it is because small studies which lack sufficient statistical power, or were carried out in a test tube or in mice, or small uncontrolled observational studies in a particular subgroup of people, are reported as prominently in the media as Cochrane reviews or huge, gold standard, multi-centre, randomised controlled clinical trials on real patients.

14. The SMC believes that scientists, press officers and journalists could do much more to help the public understand the difference between small studies with preliminary findings, and bigger, more robust ones which may only confirm existing evidence but are worthy of more prominence. More could also be done to clarify whether a single new study does in fact herald a change in the direction of public health advice or is simply another small piece in the puzzle that contributes to the huge body of evidence on, for example, dietary fats. We wonder whether a system could be introduced like the Food Standard Agency’s traffic light system which would encourage all science press releases to prominently display the stage of the research, for example red may be an abstract at a conference that hasn’t gone through peer review; amber may be a small study in mice; green may be an randomised controlled trial, etc.

Amplifying voices of minority scientists

15. One of the most damning things that emerged in the aftermath of the MMR debacle was a public opinion poll showing that a majority of the British public believed that medical science was split down the middle on the safety of the vaccine. This was untrue. Medical science was completely behind the vaccine and rejected the link to autism. Few people come out of the MMR furore smelling of roses but the one lesson we hope the media has learned is the danger of pitting one or two vocal mavericks against the whole of mainstream science without making it clear that the maverick holds a minority view.

16. This trend was seen again in 2014 in the media coverage of ‘statins wars’ prompted by the controversial decision of NICE to extend this now cheap off-patent drug to people with a lower risk of heart disease. While the debate about over-medicalisation is a legitimate and indeed important one, the media often gave equal billing to one or two outspoken critics of statins and the huge numbers of cardiac experts and researchers, many of whom have conducted Cochrane reviews and other huge randomised controlled trials showing the relatively few side effects of these drugs. Recent research in the UK⁴ and Denmark⁵ indicates that media coverage and debate played out in the public is associated with some patients discontinuing their statins treatment. It is not trivial if the British public believe that medical science is evenly split over whether life-saving treatments are safe, based on a media that has amplified the voices of a small number of medics, some of whom have never conducted research.

⁴ BMJ (2016) <http://www.bmj.com/content/353/bmj.i3283>

⁵ European Heart Journal (2015) <http://eurheartj.oxfordjournals.org/sites/default/files/pdf/ehv641.pdf>

17. The SMC is not calling for minority voices to be banned from our airwaves. Indeed we have defended the *BBC's* use of climate sceptics in certain circumstances⁶. However we strongly endorse the approach adopted by Professor Steve Jones in his BBC Trust Impartiality Review of science⁷ where he called for 'intelligent' balance and for the media to find ways of informing the reader/viewer of when a spokesperson represents a minority view held by only a handful of scientists. The wider public cannot be expected to judge levels of expertise among those scientific 'experts' who are given equal prominence in print and broadcast – the SMC would like journalists to remain vigilant about the power they wield in giving a mouthpiece to people commenting on matters that affect the public's health.

Press releases from journals and universities

18. Many of the science stories in the media come from science and medical journals publishing new findings which advance our understanding of the natural world and announce new breakthroughs or risks. The media use the peer review system as a comfort blanket to reassure them that claims being made are scientifically credible and reliable. Medical science journal editors and press officers must take special care and responsibility when promoting the voices of minority opinions which go against the grain of mainstream science and the weight of evidence. Press releasing editorials from experts who are not themselves active in research and do not publish in scientific journals can disproportionately amplify the voice of these experts, and can lead the media and public to believe that experts are divided when they are not.

19. The SMC believes journals that press release opinion pieces and editorials should clearly label them as such. If the opinion presented is at odds with the vast majority of medical research evidence then that should also be included in any press release.

20. The SMC suggests it might be useful to explore a traffic light system for press releases, to indicate to journalists the stage and type of research (such as whether something has been through peer review, is a small animal study, is an observational or epidemiological study, or is a randomised controlled trial, etc.).

21. Journals should endeavour to retract misleading information in a prompt manner when it is found that what they have published is seriously wrong. The lesson from the MMR and Árpád Pusztai stories of a decade ago is that inaccurate claims based on poor science that are not corrected quickly can mislead the public and affect public attitudes for decades to come.

Scientific conferences and PR

22. Several high profile science media stories over the last year have originated from talks or posters being presented at scientific conferences that were press released to the mass media. Examples of headlines of stories about conference abstracts or posters include: 'Breast cancer trial kills tumours in 11 days'; 'Statins may cut risk of cancer death by half'; 'Test can increase women's chances of getting pregnant while having IVF by 80%'; 'Saliva test can tell whether a man is gay'; and 'How a glass of red wine every night could cut risk of diabetes'. Because of the preliminary nature of science presented at conferences, press releases can be sent out about studies that are incomplete, unfinished, and have not yet been through peer review. The SMC is sometimes requested by journalists to gather expert reaction to these stories, and experts often tell us it's very difficult to be

⁶ Science Media Centre (2013) [Give the BBC a break over their IPCC coverage](#)

⁷ BBC (2011) [BBC Trust review of impartiality and accuracy of the BBC's coverage of science](#)

able to assess the robustness and quality of a conference poster or abstract because either very limited data or no data at all are available.

23. Press officers could do more to clarify whether information being press released to journalists does indeed come from a peer-reviewed scientific publication, or preliminary data or posters being presented at scientific conferences that have not been through the standard processes of peer review.

Changes in journalism

24. The biggest changes to the media landscape in recent years came from the move to a 24-hour news media and the move to digital. The main outcome of this for scientists is that journalists who used to write one or two articles for tomorrow's print edition are now routinely writing anything between five and ten stories a day. Never has there been a stronger case for scientists to make themselves available to answer questions and explain science. The SMC's philosophy remains as true today as it did in 2002: "the media will 'do' science better when scientists 'do' media better".

25. According to the 2014 Department for Business, Innovation and Skills (BIS) Public Attitudes to Science report⁸, two thirds of people say that TV is one of their two most regular sources of information on science (either in the form of TV news programmes or non-news programmes), while a quarter say the same of print newspapers. The SMC is excited and positive about the huge changes ushered in by the internet and social media, which allow more and more scientists and science communicators to create their own content, and communicate it directly their chosen audiences. However the BIS poll shows that the scientific community must not neglect the national news media. Despite the challenges in the business model for newspapers the national news media is proving extremely adaptable and still reaching millions of people who would not ordinarily seek out science.

26. While the reporting of science news is in a relatively healthy condition, it is the case that what may be described as 'boat rocking' journalism on science is extremely rare. Most of the exposés of the problems of reproducibility in science have come from US media and outlets like the *Economist* rather than from our national news media. It is critical that original and investigative journalism on the problems in science are supported at a time where the media's ability to invest in this kind of journalism is limited. We refer the Academy to recommendations made on this in the BIS report on the future of science and the media⁹ chaired by Fiona Fox, chief executive of the SMC.

Role of press officers

27. The media's reporting of science is rarely ever the exclusive product of a journalist. Science stories, especially those on new research, start with scientists and then go to science press officers and then to the journalist. If a science story is covered beautifully, as many are, it will mostly be because every link in this chain worked well. When there is poor coverage blame is often laid at the feet of the journalists, but as research carried out shows, the exaggeration in media reports of new studies can often be traced back to exaggeration in press releases¹⁰.

28. As with science journalists the UK is blessed with fantastic, high quality science press officers. Many are scientifically qualified and have chosen this career to allow them to remain close to the scientific research they love without staying at the bench. They care passionately about accurate

⁸ Department for Business, Innovation and Skills (2014) [Public Attitudes to Science](#)

⁹ Science and the Media Expert Group (2010) [Science and the Media: Securing the Future](#)

¹⁰ BMJ (2014) <http://www.bmj.com/content/349/bmj.g7015>

and measured science reporting and work hard with scientists and journalists to ensure accurate coverage¹¹.

29. However not all science press officers work so responsibly. Sometimes pressure from scientists to hype their new findings or pressure from a university or institute for namechecks leads to a cavalier attitude to media relations where caveats and limitations of studies are downgraded and impact of small studies oversold. We have heard anecdotally from some press officers that some institutions give target numbers of press releases they should issue within the year, which again suggests a desire for publicity regardless of newsworthiness or quality. We have also heard anecdotally from some press officers that they believe the inclusion of caveats in their press releases can turn journalists off. The SMC would encourage the Academy to support initiatives like the BIS-funded Stemptra training for science press officers¹² which includes talks from science specialist journalists and the Stemptra guide to being a press officer¹³.

30. The professionalisation of science communication has also introduced some worrying trends. Some senior communications managers prioritise brand recognition and institutional reputation over openness and it is not unusual for the SMC to be told by institutions that their experts will not be commenting for strategic reasons – even during crises when these experts are the best qualified to answer public concerns and inform the debate.

31. Public trust in science depends on science admitting its flaws as well as promoting its successes, answering media questions about the problems as well as giving them great stories. The SMC is keen that more science press officers consider the public interest as well as their institutional interests when deciding when to make their experts available to the media.

Case study – statins in the media

32. When statins came off patent and became a cheaper option for prevention and treatment of heart disease NICE decided to consult on lowering the threshold for prescribing statins to those people with only 10% risk of heart disease. The consultation prompted a spirited national debate about overmedicalisation. While such debates are important and legitimate, some people with strong views against extending the offer of statins to healthy people with a lower risk resorted to seriously exaggerating the side effects of the drug. Extraordinary claims were made based on weak or non-existent evidence. Within weeks of the NICE consultation starting many media headlines were screaming about the dangerous side effects of this drug and journalists and the public were becoming very confused over conflicting statements about the safety and effectiveness of this widely used drug.

33. The SMC was asked by journalists and scientists to help the media navigate this frenzy of claim and counter claim, and we sought to help journalists access the best expertise on the topic and to become familiar with the biggest and most reliable clinical studies and the best gold standard research on statins. The SMC ran a background press briefing in July 2014 with the scientists that have done this research. These included leading researchers from the well regarded Clinical Trial Service Unit at the University of Oxford, researchers from the Cochrane collaboration, and from the British Heart Foundation. The briefing was attended by over 15 national news journalists from UK media, some of whom told us after the event that for the first time they fully understood where the weight of evidence lies about the risk of side effects from these drugs. This briefing continued to inform the media coverage of statins over the months following and journalists and scientists believe

¹¹ Lancet (2015) [Alzheimergate: neither miscommunication nor sensationalism](#)

¹² Stemptra <http://stempra.org.uk/events/press-officer-training-day-2>

¹³ Stemptra [Guide to being a press officer](#)

the briefing was a significant event in clarifying some of the misinformation circulating which was threatening to undermine public health. The SMC sees this as an example of the benefit and importance of scientists engaging with the national news media even and especially on the most controversial topics and at the most contentious of times.

34. Since that SMC press briefing in 2014 statins have been in and out of the news headlines, including studies reporting increased risk of type 2 diabetes with statins, studies reporting impaired immune response to the flu vaccine in elderly people taking statins, studies investigating efficacy of PCSK9 inhibitors as alternatives to statins in statin-intolerant people, studies investigating the impact of statins on heart disease in different socioeconomic groups, and observational studies reporting no relationship between LDL cholesterol levels and heart events in people taking statins. Recently, a paper⁴ published in the BMJ found an association between widespread media and public debate about statins and people stopping taking their statins, and a qualitative study¹⁴ by the Picker Institute published by the British Heart Foundation looked at why patients came off their statins. This was a contentious and difficult issue, but the authors of these studies talked journalists through their findings at an SMC press briefing. By taking the time to carefully explain their results and the implications, media coverage was accurate and measured.

Recommendations

We call on the Academy to champion the role of specialist science, health and environment reporters in the national news media and acknowledge the critical role they play in ensuring the accurate reporting of science to a mass audience and in knocking down bad science in the media.

We call on the Academy to recommend the 10 best practice guidelines for reporting science and health stories written by the SMC in conjunction with the national news media and recommended by Lord Leveson. We urge the Academy to call on the Independent Press Standards Organisation to promote these guidelines to newsrooms.

We call on the Academy to recognise that journalists, press officers, and scientists have key roles in ensuring accurate and evidence-based media reporting of science, to encourage scientists to engage with the national news media when their area of expertise hits the headlines, and to encourage press officers to strive for accuracy especially when working on matters of public health.

We call on the Academy to explore the possibility of a new traffic light system for science press releases, to clearly sign-post to journalists what stage a study is at, ranging from an abstract at a conference that has not yet been peer reviewed, to a randomised controlled trial published in a journal.

Declaration of interest

Declaration of interest Over 90 supporters including scientific institutions, media groups, charities, universities, corporate organisations and individuals fund the Centre, with donations capped at 5% of income to preserve its independence.

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¹⁴ Picker Institute Europe (2016) https://www.bhf.org.uk/-/media/files/research/p2941-bhf-statins_final-report_publication.pdf