The Royal Institution of Great Britain

SIRC SOCIAL ISSUES RESEARCH CENTRE

THE ROYAL SOCIETY

Guidelines on science and health communication

Prepared by the Social Issues Research Centre in partnership with the Royal Society and the Royal Institution of Great Britain

Contents

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Why it matters

Q: Why does it matter how health and science issues are reported?

A: It matters because misleading information is potentially dangerous: it can even cost lives.

- A natural and inevitable tension exists between journalists and groups of professionals whose activities are the subject of widespread publicity.

- No-one expects journalists and politicians always to agree on the way politics should be reported; some difference of perspective and emphasis between journalists and the science community is similarly inevitable.

- There is, however, a significant amount of common ground. All responsible journalists and all responsible scientists can agree, without prejudice to their editorial and professional freedoms, that the general public has the right to accurate information on the basis of which individuals can make informed lifestyle decisions.

- Information that is misleading or factually inaccurate can cause real distress to vulnerable groups. Misleading information that provokes unfounded public reactions (e.g. reluctance to undergo vaccination) can be said to cost lives.

In the context of health and science reporting, we recommend that both journalists and scientists concerned with the general reporting of research results should explicitly consider the likely public reaction, and should make appropriate decisions about the manner in which reports are made. We also recommend that a simple hypothetical question should be used by both journalists and scientists as a rule of thumb to help judge where the public interest lies. The hypothetical question is as follows:

You are a scientist about to be interviewed on research results you believe to be important. Or you are a journalist responsible for the reporting of the same research results.

Imagine you have a relative or close friend who is sensitive or vulnerable to information about a particular topic (for example, a cancer patient or a parent considering a vaccination for a child).

If the only source of information available to that relative or close friend was the interview you are about to give, or the report you are about to publish, would you feel comfortable with the way you propose to characterise and interpret the story?

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Introduction

These guidelines represent the amalgamation of two sets of documents produced by, respectively, the joint Forum of the Social Issues Research Centre in partnership with the Royal Institution of Great Britain, and the Royal Society.

The impetus for the development of these guidelines has come from concern expressed within the health and science communities about the ways in which some issues are covered in the media. Specific concern is evident, for example, among GPs and others in the medical profession regarding the negative impact of what are viewed as unjustified 'scare stories' and those which offer false hopes to the seriously ill.

In May 1999, the House of Commons Science and Technology Committee published a report *Scientific Advisory System: Genetically Modified Foods*, which recommended that:

> *"… media coverage of scientific matters should be governed by a Code of Practice which stipulates that scientific stories should be factually accurate. Breaches of the Code of Practice should be referred to the Press Complaints Commission."*

The Social Issues Research Centre and the Royal Institution of Great Britain subsequently brought together a Forum (SIRC/RI Forum) of distinguished scientists, GPs, medical specialists and representatives of the media to establish a set of guidelines that recognised fully the right of journalists in all media sectors to comment and editorialise with complete freedom. At the same time, however, the guidelines produced by the SIRC/RI Forum emphasised that there is an overriding obligation on journalists to distinguish clearly between fact and conjecture in all cases. The guidelines were formally endorsed by the Press Complaints Commission.

The Forum also recognised that scientists themselves have an equal obligation to ensure that they present their findings to the public in an accurate and responsible way. For this reason a separate set of guidelines were developed by the SIRC/RI Forum for scientists, research departments and professional bodies, prepared in consultation with the leading Institutions and Societies.

In January 2000, the Royal Society published *Scientists and the media: Guidelines for scientists working with the media and comments on a Press Code of Practice*. The House of Lords Select Committee on Science and Technology subsequently endorsed this document in March 2000 in its report on Science and Society, recommending that:

> *"…the Press Complaints Commission should adopt and promulgate the Royal Society's new guidelines for editors. In doing so, the PCC should make clear that they are aimed not just at specialist science correspondents, but at all journalists who find themselves dealing with science, including those on the news desk."*

These two documents have now been combined to create a common set of guidelines produced by the Social Issues Research Centre in partnership with the Royal Society and the Royal Institution.

No guidelines will ever be 'perfect' in the sense that they cover all eventualities and eliminate all types of misrepresentation, even when followed to the letter. For this reason the Social Issues Research Centre, the Royal Society and the Royal Institution will consider amendments and additions to the guidelines from time to time, in the light of on-going consultation with members of the media and the science communities, to be published as updates. Through this process of open and non-confrontational exchange, we very much hope to achieve not only more balanced and accurate reporting of health and science issues, but also much improved working relationships between scientists and the media.

A new charitable body, the Health and Science Communication Trust (registered charity no. 1089139), has been established which will have as one of its aims the dissemination of the Guidelines in concert with the Royal Society and the Royal Institution. It will also be instrumental in arranging seminars and workshops to bring together journalists, broadcasters, scientists and health professionals to explore the issues of accurate and balanced communication in more depth. Further information about these and other HSCT activities can be obtained from the Social Issues Research Centre.

Summary checklist for print and broadcast journalists

1. **Credibility of sources**
   - Have the findings been published in a peer-reviewed journal?
   - Do the researchers have an established track record in the field and are they based at a reputable institution or organisation?
   - What are the affiliations of the researcher(s)?

2. **Procedures and methods**
   - Were the research methods appropriate?
   - What do other professionals in the field think of the methods?

3. **Findings and conclusions**
   - Is this really a 'breakthrough'?

4. **The significance of findings**
   - Are the findings preliminary or inconclusive?
   - Do the findings differ markedly from previous studies?
   - Do these findings appear to contradict mainstream scientific opinion?
   - Are these findings based on small or unrepresentative samples?
   - Do these conclusions generalise to humans from animal studies?
   - Have the researchers only found a statistical correlation?

5. **Communicating risk**
   - Has the risk been expressed in absolute as well as relative terms?
   - Can the risk be compared with anything else?
   - Have the researchers been asked 'how safe is it' instead of 'is it safe'?

6. **Anticipating the impact**
   - Will the report cause undue anxiety or optimism among audiences or readers?
   - Have important caveats been prominently included?

7. **The role of specialist correspondents and editors**
   - What do specialist journalists think about the report?

8. **The role of sub-editors**
   - Is the headline a fair reflection of the report?
   - Is the caption a fair reflection of the report?

9. **Expert contacts**
   - What do other professionals in the field think of the research?

Summary checklist for science and health professionals

1. **Dealing with the media**
   - Should I talk to journalists about my work?
   - Who can give me advice about dealing with the media?

2. **Credibility**
   - Have I mentioned whether the study has been published yet in a peer-reviewed journal?
   - Have I mentioned that the findings are preliminary or a generalisation is not warranted?
   - Have I mentioned that the results have yet to be replicated?
   - Have I mentioned that the results differ markedly from those of previous studies?
   - Have I mentioned that the findings are derived from samples that may be too small or unrepresentative?
   - Have I mentioned that the findings are based entirely on animal studies?
   - Have I mentioned that the findings are based on correlation?

3. **Accuracy**
   - Have I exaggerated the significance of the findings?
   - Are there other possible interpretations of the results?
   - Have I speculated based on opinions or beliefs that are not related to the study itself?

4. **Communication of risk and benefits**
   - Have I cited absolute as well as relative risks?
   - Have I warned of drawing the wrong conclusions about the risk?
   - Can the risk be compared with anything else?
   - Could the reporting of my work lead to undue anxiety or optimism among audiences or readers?

5. **Is it safe?**
   - Have I explained properly why it is not possible to offer an assurance of absolute safety?

6. **Should I complain?**

Guidelines for print and broadcast journalists

The aim of the guidelines for journalists outlined below is to suggest how the broad principles contained in existing Codes of Practice or Guidance, such as those of the Press Complaints Commission and the Broadcasting Standards Commission, should apply in health and science reporting.

Although journalists strive to ensure that all reports of scientific studies are accurate, in the sense that the details of studies and specific findings are reported faithfully, this does not eliminate the risk that a report will be misleading. Misrepresentation can arise in the interpretation of the findings, in generalisations made from limited data, selective coverage of available evidence, and the failure to refer to contradictory findings.

While guidelines cannot ensure error-free copy, the following precepts should increase accuracy and reduce misrepresentation and distortion.

1. Credibility of sources
The processes of peer review followed by leading science and health journals ensure (with a few notable exceptions) that published accounts of investigations are worthy of consideration by the wider community. Journalists should, therefore, establish if the work has been assessed in this way and make clear occasions when it has not.

They should also consider the reputation of the institute or academic department in which an investigation has taken place, and the professional qualifications and track record of the investigators. When the authors of a study appear to have no previous publications in relevant areas, or are from institutions not normally associated with excellence in the particular field, that should be noted. But the reputations or qualifications of sources do not guarantee that published findings are either definitive or significant.

Reports of research should clearly state the known affiliations or interests of the investigators. This applies not only to researchers who are attached to, or funded by, companies and trade organisations, but also to those who have sympathies with particular consumer pressure groups or charitable organisations. Nevertheless, particular affiliations do not exclude the potential for objectivity.

The credentials of investigators should, where appropriate, be further assessed by consultation with other scientists in the relevant field. The Press Offices of professional and learned bodies, such as the Royal Institution and the Royal Society, should be able to provide guidance on this issue.

2. Procedures and methods
While the peer review process aims to weed out reports of studies that are seriously flawed, unpublished work, conference papers or hand-outs from press briefings are not subject to such scrutiny. Journalists should therefore ask questions, such as whether appropriate control samples were used, whether the sample size was sufficiently large to yield significant results, and whether the research methods were appropriate. Specialist knowledge and research experience is usually required to identify of such flaws. Consultation with another scientist in a relevant field is advised.

3. Findings and conclusions
In science and health research, abrupt 'breakthroughs' do occur, but only rarely. Most progress consists of relatively minor developments from existing bodies of knowledge and theory. Studies that appear radically to challenge existing assumptions should be handled with particular care by journalists. When findings are at variance with previous knowledge that should be stated clearly within the first few lines of a newspaper report or the air-time equivalent in broadcast news. Journalists should then take pains to recruit opinions from scientists qualified in a relevant field to explain why the interpretation put on the new findings might be considered premature or even unfounded.

4. The significance of findings.
The significance and implications of even credible studies may be open to various interpretations. This is particularly so when the findings:
- are preliminary or inconclusive;
- differ markedly from findings of previous studies;
- appear to contradict mainstream scientific opinion;
- are based on small or unrepresentative samples;
- generalise to humans from animal studies; or
- have found only a statistical correlation.

In most cases, the authors of published papers declare such limitations openly, usually noting the need for further research before definitive conclusions can be drawn. Journalists should report fully these limitations. When there are doubts about the frankness of the investigators in their interpretation of the data, advice from other scientists should be sought.

The use of the term 'link' in media reporting is a common trap that can create misleading impressions. A statistical association alone between two variables does not establish a causal connection. Journalists should not use headlines such as "Red meat 'causes cancer'" in reporting studies that have identified an unexplained correlation. Additional evidence and the use of penetrating statistical analyses are almost always required before a cause and effect relationship can be demonstrated conclusively.

5. Communicating risk
Many journal papers report changes in relative risks associated with some variable. These are commonly

expressed in percentage terms or odds ratios. Interpretation of these can be difficult. A 30 per cent increase in the risk of contracting a specific disease, for example, may seem quite significant, but the implications for public health may be small. If, for example, the disease is quite rare, affecting say 1 in 100,000 of the population, the increase in risk would be just 0.3 in 100,000 ie the added risk would affect only three in million. In circumstances like these, journalists should be careful to cite the pre-existing risk and let their audiences or readers judge for themselves how significant the findings are. The same principle applies to purported 'cures', where the real benefits may be smaller than the statistics may seem to imply.

We recommend that, whenever possible, novel risks should be compared with risks that readers and audiences will be familiar with in their daily lives. For example, can the reported risk be compared with that of being struck by lightning, crossing the road, taking a bath or flying a hang-glider? The aim is to provide a meaningful yardstick to help people make informed decisions about their own lives.

Further potential for distortion arises when studies have consistently failed to identify evidence of a risk associated with, say, a particular food ingredient, even after a substantial period of use. Confusion can occur because scientists are reluctant, by virtue of their training and the canons of modern science, to declare that anything is ever 'safe'. Journalists should not, however, regard such reluctance as a sign of equivocation. From a commonsense point of view, situations in which risk has never been demonstrated are considered to be 'safe', even if scientists avoid the term.

6. Anticipating the impact

There are many examples of press reports and broadcasts that follow many of the recommendations listed here, but which have contributed to undesirable changes in the behaviour of audiences and readers.

Unfounded scares can cause very serious damage to public health. Some have estimated, for example, that the 1995 scare over some types of oral contraceptive pills led to thousands of unwanted pregnancies and over 29,000 abortions. The more recent scare over the MMR vaccine has resulted in a drop in immunisation rates, to a level possibly below that needed to prevent a measles epidemic. In both of these cases, the 'sources' must bear much of the responsibility, but more cautious media reporting (such as citing absolute rather than relative risks in the case of the Pill, and noting when sources were speculating beyond the evidence of their published data in the case of MMR) could have significantly limited the damage.

While the harm and distress caused by reports of 'miracle cures' is more difficult to measure than that of unfounded scares, raising false hopes can also damage the public interest. Journalists should, therefore, always communicate the limitations of reported medical advances prominently in their reports. For example, they should give realistic estimates of when a new drug/treatment/vaccine might be available. If appropriate, they should state whether a new drug is effective only in the early stages of a disease.

When in doubt, we recommend that journalists reporting medical advances should consider the effect of their report on a person suffering from the disease in question, or on a relative or close friend affected by the disease.

7. The role of specialist correspondents and editors

Most national and many regional newspapers and several regional ones, as well as broadcast organisations, have specialist editors and correspondents whose role is to provide informed coverage of science and health issues. Their training and background, and their ability to communicate with academics and professionals, should minimise gross inaccuracy and misrepresentation in reporting of these issues. But these journalists, particularly in the print media, are sometimes 'sidelined' by their editors in the coverage of controversial issues such as GM foods.

While it is recognised that newspaper editors have a right to pursue their own agenda on such issues, and to conduct campaigns on behalf of their readers, there is an obligation to separate such activities from factual coverage. In order that reporting is fairly balanced, and seen to be so, editors should give sufficient prominence to contributions from science and health journalists to enable readers to distinguish clearly between facts and opinions.

8. The role of sub-editors

In newspapers, headlines and picture captions are not written by the authors of the accompanying text, but by sub-editors. Unfortunately, the effect of a balanced article can be easily distorted by a misleading headline or caption. Sub-editors should use qualifiers such as 'may', 'could', 'claims', 'possible', and 'potential', to avoid misleading the public about the health risks or benefits of any product or activity. They should use the terms 'cause' and 'cure' only when justified by the scientific evidence.

9. Expert contacts

While most of the specialist editors and correspondents have established contacts in the science and health communities who they can consult, this is less frequently the case for other reporters. To overcome this problem, the Press Offices of professional and learned bodies, such as the Royal Society and the Royal Institution, are developing databases of scientists and health professionals who can offer advice on a range of issues. Journalists should find these directories of 'expert contacts' useful, particularly when they are provided on web sites.

Guidelines for science and health professionals

It is clearly important that researchers should communicate their results to the wider public as this will illustrate the potential value to society of their work, and may also enhance the reputation of their professions and of their host institutions. But the communication of research findings imposes on investigators the obligation that findings should be presented accurately and in ways that minimise the potential for distorted or unwarranted conclusions being drawn. This obligation is particularly significant in the medical and biological sciences, where members of the public may view the research as having direct relevance to their own conditions, behaviour or lifestyles.

To ensure accuracy and to minimise the potential for misleading conclusions, the following guidelines are proposed.

1. Dealing with the media
Many scientists have little experience of being interviewed by print and broadcast journalists. While they may be at ease when discussing their work with fellow professionals at conferences and seminars, communicating their work accurately to the wider public requires a different perspective, if only because journalists necessarily use different criteria for judging the interest and importance of new developments.

Successful interviews require mutual trust, often not easily established on the telephone (the most common means of communication by journalists). Researchers should nevertheless do what they can to assure enquiring journalists of their willingness to co-operate. It is reasonable (and often helpful) to ask in what context the information sought will be published or broadcast (but "don't know yet" is an equally reasonable reply).

Similarly, it is reasonable to ask whether the interview could be postponed until a more convenient and mutually agreed time, but researchers should be aware that what they have to say is less likely to be misrepresented if their interlocutors have time to reflect on the interview. Requests for a sight of a text before publication are usually (but not always) resisted, not least because the journalist might not be the final arbiter of what is published. Offers to supply background material (by fax or internet) are prudent safeguards against misrepresentation – so is the offer of telephone contact numbers for last-minute checks close to the deadline for the story.

It is desirable that all research institutions and bodies provide advice and guidance to their scientists and health professionals regarding the presentation of their findings to the media. Researchers should be encouraged to talk about their work in an open and responsible way, balancing the need to maintain scientific rigour with the requirement that research should be communicated in a way that can be clearly understood by the wider public. Equally, host institutions should provide their researchers with specific advice on responses to likely questions from the media, in order to reduce the risk of misinterpretation.

2. Credibility
The status of a research report should always be made clear. If a study has not yet been published in a peer-reviewed journal, the researcher should state this explicitly. When discussing the findings, researchers should state if their findings:

- are 'preliminary', so a generalisation is not warranted;
- have yet to be replicated;
- differ markedly from previous studies in the same area;
- are derived from small or unrepresentative samples;
- are based entirely on animal studies; or
- are based on correlation alone.

Where several of the above points apply to a particular study, there may be a strong case for delaying communication of the results until the credibility of the evidence has been established. If journalists are already aware of the story, it may desirable to attempt to persuade them that they should wait until the necessary proof can be provided. But a refusal to wait should not, in itself, signal an end to the conversation.

3. Accuracy
It is, of course, a fundamental requirement that all researchers report their work accurately. Correct details of methods, procedures, analyses and statistical methods are required in all cases to allow the merits or otherwise of a particular investigation to be assessed. The peer review process is intended to provide this safeguard for the formal scientific literature.

The need for accuracy, however, also extends to the presentation of conclusions and implications of findings, in which journalists are usually most interested. While scientists should be ready to draw attention to the most interesting and potentially newsworthy aspects of their work, it is crucial that the importance of the work should not be exaggerated. Where, for example, several interpretations of the data are possible, these should be spelled out. Researchers should also attempt to set their own work in the context of the evolving pattern of cognate discovery. Similarly, they should avoid speculation based on opinions or beliefs that are not related to the study itself. Collaborators should be identified and their names correctly spelled.

4. Communication of risk and benefits
The communication of the results of studies that report changes in the probability of human morbidity or

mortality, or similar changes in risks to the environment, imposes additional and quite specific responsibility on researchers. Science and health professionals clearly have a duty both to warn the public of potential dangers and to highlight potential ways of improving health and safety. At the same time, however, it is essential to avoid generating unwarranted optimism, by reporting findings as 'breakthroughs' or 'miracle cures', or raising fears and anxieties that cannot be supported by the data.

With this in mind, it is desirable that when relative risks are reported, the absolute risk of the phenomenon under investigation should be clearly stated in order to minimise the possibility of inappropriate conclusions being drawn. Where relative risks are small (usually less than 50 per cent), the dangers of inferring causal connections should be stated explicitly, even if the findings may be statistically significant.

Comparative risks should also be provided where there is a potential for misinterpretation of results. The observed 'benefits' of a particular variable should be presented in a comparative manner as well.

5. Is it safe?
Journalists are often concerned about the safety of a particular development or new technology, reflecting the rise in the prominence of the Precautionary Principle in policy and public decision-making. Scientists are often reluctant to respond to the media by saying something is absolutely 'safe' because there are usually important uncertainties. Audiences or readers may interpret this as 'equivocation' or a lack of conviction.

Therefore, researchers need to anticipate the potential for such reactions, while at the same time maintaining the rigorous application of scientific principles. Again, they might do this in a comparative manner, for example, by indicating that the risks associated with X are, empirically, no greater than those associated with Y, where Y might be something which is popularly perceived as 'safe'.

6. Complaining
Researchers who believe their work has been inaccurately reported or that its significance has been distorted, should not hesitate to protest, both to the journalist concerned and to his or her editor, preferably in a letter intended (and suitable) for publication. While it may be true that the immediate consequences of misrepresentation will not be extinguished by this action, editors do read correspondence with care and may pay attention in the future.

If such correspondence does not produce a satisfactory response, or if the misrepresentation is of a serious nature, a complaint to the Press Complaints Commission or the Broadcasting Standards Commission would be appropriate.

The Royal Society

As the UK's independent national academy of science, the Royal Society promotes excellence in science, engineering and technology, both in the UK and internationally. The Society encourages public debate on key issues involving science, engineering and technology and the use of high-quality scientific advice in policy-making. We are committed to delivering the best independent advice, drawing upon the expertise of the Society's Fellows and Foreign Members and the wider scientific community.

The Social Issues Research Centre

The Social Issues Research Centre is an independent, non-profit organisation founded to conduct research on social and lifestyle issues, monitor and assess global sociocultural trends and provide new insights on human behaviour and social relations. SIRC aims to provide a balanced, calm and thoughtful perspective on social issues, promoting open and rational debates based on evidence rather than ideology.

The Royal Institution of Great Britain

For over 200 years, the Royal Institution has been breaking down the barriers between science and society. It is a unique forum for informing people about how science affects their daily lives, and it organises events that engage the public in scientific debate. The Davy Faraday Laboratory at the Ri has a dynamic and wide-ranging research programme in the field of the synthesis, characterisation and optimisation of complex materials. The Science Media Centre at the Ri provides the print and broadcast media with access to in-depth information on science-related issues. It endeavours to forge links and greater understanding between scientists and journalists.