

Informal science writing

Not all scientific articles have to be written for peer-reviewed journals. There are many opportunities to write articles for journals, magazines and newsletters, perhaps communicating with a wider audience. We will call these 'informal' articles, though in practice their formality varies widely according to the publication. They can be aimed at a wide range of audiences, including the lay public, and can be great fun to write. While not adding the same lustre to your publications list as a peer-reviewed article, informal articles help to get your name and your research better known.

▲ Get a commission or check out your idea first

You may be commissioned to write such an article by the editor of the publication. Or you may have a good idea – in which case it is wise to write or telephone first to check whether your contribution would be appreciated. Magazine or newsletter editors are likely to be cautious about undertaking to publish an article they have never seen, but will usually tell you honestly about what they think of your suggestion. That way, you can tailor your article to suit their readers.

▲ Write to suit your readers – not yourself

The first rule of any kind of factual writing is to write to meet your audience's needs. You do this when you write to meet demands of scientific journals for clarity, brevity and scientific accuracy. Writing to meet your audience's needs is even more important in informal articles. No one has to read an article in a magazine or newsletter – they read because they want to. Your article has to meet the 'what's in it for me' criterion.

▲ Know your readers

If you are writing for your fellow clinicians or researchers, you may already have a fairly clear idea of your readers' interests, likes and dislikes. Often, however, informal articles will be written for people with a different background, knowledge and interests from your own. For example, if you are a molecular biologist, you could find yourself explaining the clinical implications of your work to doctors, or trying to interpret them for the lay public. Before you even begin to plan your article, ask yourself:

- what are my readers interested in?
- why should they be interested in what I have to say?
- what do my readers know already?
- what information is essential in order to understand the 'big idea'?
- what information is peripheral ('nice to know' versus 'need to know')?
- what terminology will be familiar to my readers?
- what terminology will put them off?
- what do I want my readers to think, feel, decide or do as a result of reading this article?

Only when you have put yourself in your readers' shoes and answered these questions will you be ready to start writing.

▲ Get the basics right

All the rules for clear, concise, accurate writing, listed in Chapters 24–27, apply to informal science writing just as much as to formal papers and reviews. In informal writing, it is even more important to make your prose easy to read, because readers who become tired or confused can easily stop reading and look elsewhere for their information or entertainment.

▲ Pitch your article at the right level

Think carefully about the technology and concepts that your readers will be used to. Even scientific audiences may not know the technical words used in areas outside their expertise. The general public will certainly not be familiar with many scientific terms. Thus, for lay people you would usually write about 'high blood pressure' instead of 'hypertension'. On the other hand, lay people may be very knowledgeable in certain areas; for example, the parents of children with asthma probably already know quite a lot about the condition and some of the terminology used. It all comes down to knowing your audience.

▲ Say something new

People will always be more interested in your article if it tells them something they do not already know. Articles describing recent scientific discoveries are likely to attract more attention than those restating well-known facts. The topic does not have to be brand new, however. It only has to be new to your audience, or a new angle on a familiar topic.

▲ Find the conflict

People are always interested in reading about conflict. This applies not only to conflict between individuals or groups (the race to put a man on the Moon), but to conflict between ideas, between man and disease, or science and ignorance. Finding and emphasizing the conflict in your story can add interest to informal articles.

▲ Look for the human interest

People are often at least as interested in the human protagonists in a story as they are in the story itself. Thus, when describing a Nobel Prize-winning discovery, talk about the person who won the prize, as well as about the science.

▲ Add quotes for interest and endorsement

Read any news story and you will see that direct quotes are used liberally throughout. Quotes demonstrate very clearly how the person speaking feels about the subject. “Over my dead body – I’ll fight it to the last,” said Dr Jones’ is a far more convincing demonstration of Dr Jones’s feelings than if the journalist just wrote ‘Dr Jones disapproves of the proposed hospital closure’. Remember that you can quote not only things people have said, but things they have written – for example, in a presentation or scientific paper.

▲ Separate ‘nice to know’ from ‘need to know’

Some information in your article may be useful but not essential. For example, some readers may need background information, while others may not. You can get around

this situation by separating out ‘nice to know’ information in a box or other clearly-defined area on the page. This means that the logical flow of the main article is not disrupted. You will often see this done in popular science magazines like *New Scientist*. For example, in an article about the medical applications of growth factors, you might include a box showing how growth factors are cloned and produced in usable quantities.

▲ Put your best strawberries at the top of the basket

Lord Beaverbrook, the newspaper tycoon, advised journalists to ‘put your best strawberries at the top of the basket’. In other words, do not save your conclusion until the end – put it at the beginning. Remember that only a minority of readers will be patient enough to read your article from beginning to end. It usually pays to dive straight in at the beginning with your main conclusion, then support it with the evidence. Nowhere is this more true than in news stories (see below).

▲ For news items, follow the standard structure

If you want to write an article describing recent events, follow the standard news story structure, used by journalists everywhere:

- *Headline*. A short, active statement of what happened, in the present tense, e.g. ‘Oldalol cures Alzheimer’s’
- *Intro*. The whole story captured in just one or two sentences, e.g. ‘Oldalol can arrest or reverse the progression of Alzheimer’s disease, according to a study published in the *Lancet* today. A single daily dose improves mental performance by at least 50%’
- *Facts*. More details of the story in descending order of importance, e.g. ‘Researchers at the State University of Oldsville in Kentucky, USA treated more than 500 nursing-home residents with oldalol for one year. Another group received placebo treatment. After just three months, tests of short-term memory showed a marked improvement in the oldalol group, compared with a slight decline in the placebo group’
- *Background*. ‘Nice to know’ rather than ‘need to know’ information comes at the end of the story, e.g. ‘Alzheimer’s disease affects more than one in ten people over the age of 75’
- *Quotes*. Spread throughout to add interest, e.g. ‘The leader of the research team, Professor Harold Higgins (aged 74) said “This is the biggest breakthrough since tacrine”’
- *No conclusion*. In a news story, the conclusion comes at the beginning, not at the end. Journalists realize that most readers will not make it to the end of the story.

▲ Be generous with headings and lists

In informal articles, you have a much wider choice of headings and lists than in the IMRAD structure (information, methods, results and discussion) of a scientific paper. Use headings generously to help your readers find their way around. Bullet-point lists will also act as signposts to important information.

▲ Make headings and subheadings informative

Remember that headings in informal articles can be more informative than those in a scientific paper. For example, whereas in a formal article describing a study you would have the heading 'Methods', in an informal article this could become 'At last – a model for migraine'.

▲ Be generous with illustrations

Most informal articles benefit from having plenty of illustrations. Any figures or tables previously used in scientific papers should be simplified to suit the audience of the informal publication. In contrast to scientific papers, informal articles can use illustrations simply because they are interesting or attractive. So if you have a nice photograph of your experiment in action, this is the place to use it. Many journals also have access to picture libraries, so if you do not have a suitable picture yourself you can suggest one and ask if they can obtain it. For example, if the article is about hypertension, they will probably be able to obtain a picture of a doctor measuring blood pressure.

▲ Ask rhetorical questions

In informal writing (and sometimes in formal writing), it is an accepted technique to ask questions to which you are then going to give the answer (i.e. a rhetorical question). You can use rhetorical questions in headings or in the main text of your writing. A few rhetorical questions scattered widely throughout your article can add interest, but beware of making it read like an interrogation, unless you are deliberately writing in question and answer format.

▲ Use examples and case histories

Dry technical detail can be made real by using examples, either real or invented, to suit the occasion. For example, in medical articles, both the general public and health professionals usually find patient case histories fascinating.

▲ Make statistics real

Numbers have far more impact if readers can relate them to their everyday experience. For example, you might say 'Epilepsy is common, affecting as many as one in every 130 people in the UK. This means that in a crowd of 30 000 people watching a first-division football match, over 200 may have epilepsy'.

▲ Do not give people too much to remember

Studies in the 1950s showed that most people can hold no more than seven items in their short-term memories. This means that, when giving lists of items or ideas, it is best to include no more than seven items. If you have a very long list, try to break it up into subcategories to make it more memorable. Incidentally, the most memorable number seems to be three – which is why orators and advertising copywriters continually use the rule of three (Julius Caesar: 'I came, I saw, I conquered'; advertising slogan: 'A Mars a day helps you work, rest and play').

▲ Use alliteration in moderation

Alliteration is the term used to describe the use of words beginning with the same letter or sound in close proximity (such as 'pedantic professor', or 'I came, I saw, I conquered'). You will often encounter alliteration used consciously in newspaper headlines or radio reports. We seem to have a liking for alliteration, perhaps because of the rhythm it adds to sentences. When we create neologisms in biomedicine they are often alliterations (e.g. 'big bad baby syndrome'). There is no reason why you should not use alliteration, if it comes naturally. However, try not to use it either excessively or inadvertently.

▲ Use metaphors and similes, where they help the reader

A metaphor is a figure of speech in which you say something *is* something else, e.g. 'The brain is a computer with an infinite hard disk'. A simile is a figure of speech in

which you say something *is like* something else, e.g. 'Writing is like driving: we all like to think we are good at it, and are ashamed to say we are not'.

▲ Be positive

Positive writing means replacing 'It is not impossible that ...' with 'It is possible that ...' Similarly, avoid 'Professor Smith is not unimpressed ...' and use 'Professor Smith is impressed ...'

▲ Avoid unnecessary qualification

Avoiding qualification means that, wherever scientifically credible, you should write, for example, 'The experiment showed that oldalol improves cognitive function' instead of 'The experiment suggested that oldalol may improve cognitive function'. (See Chapter 15 for more information on qualification.)

