

Use and Abuse of Abbreviations in Technical Communication

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The function of technical writing as represented by the articles published in this journal is very simple—the clear communication of information and ideas. The operative word is “clear.” Above all else, technical communications must have clarity. They must be unambiguous. They must erect minimal barriers between the mind of the writer and mind of the reader. The purpose of writing a paper is to communicate, and anything impairing clarity of technical writing weakens its effectiveness, undermining the reason for doing it in the first place.

At best, barriers to clear communication represent sloppy writing and are disrespectful to the reader, who is investing time and effort in the author’s words and thoughts. At worst, especially in medical writing, barriers to clear communication can be dangerous to patients and misleading to other scientists, whose own research and careers depend on understanding clearly the work of others.

One significant barrier to clear technical communication is the use and abuse of abbreviations. An abbreviation is a shortened form of a word or phrase used in place of the whole word. Abbreviations are usually formed by omitting presumably unneeded letters within a word or combining the initial letters of words within a phrase. When read as words, abbreviations become acronyms. Symbols are alphanumeric characters used in place of a word. The distinction between abbreviations and symbols is not sharp, although different rules of punctuation have applied historically.

The abbreviation is a subset of jargon—the common, everyday, often curt usage by individuals who share common experiences described by their own language. Such language may be differentially understandable to noninitiates, but when communicating entirely within the group, individuals using jargon, including abbreviations, can communicate with clarity. The problem arises when they attempt to communicate outside the group, and most technical communication, by design, is not restricted to one’s laboratory.

Let’s look at several examples from the recent neurology literature. Can you understand these sentences or phrases? If so, why?

Adjuvant therapy should begin immediately after surgery and/or RT, when cell numbers are relatively small and growth fraction is highest. To optimize treatment, CCS agents, which do not readily cross cell membranes, should be combined with CCNS agents, which, because of their lipophilic properties, have the potential of crossing the BBB and penetrating the BAT.¹

The nitrosoureas, including BCNU, CCNU, and methyl-CCNU, act as alkylating agents but, in addition, have an isocyanate metabolite that inhibits DNA repair.¹

In a phase II trial at SJCRH ...¹

We conclude that in children and adolescents with a spectrum of neurologic diseases and abnormal EEGs, abnormalities of brain structure or function are more likely to be documented by SPECT than by CT or MRI scans.²

One road to understanding is to be part of a jargon group. In that these references are from the field covered by this journal, it is likely they can be understood by most readers. To the extent that any portion of these examples was unclear or caused the reader to pause to think about a term, the abbreviations served as a barrier to clear communication.

But what of the readers whose field is related to, but not within the confines of, neurology? The further removed the reader is from the jargon group, the more difficult and prone to misunderstanding the work becomes. At some point, the difficulty of comprehension becomes so great that the reader gives up, thereby forgoing the potential for interdisciplinary communication.

The primary barrier to understanding, then, is for those outside the jargon group, who occupy a gradient from near understanding to nonunderstanding. In that the goal of technical communications should be to communicate as widely as possible, jargon and abbreviations should be avoided almost completely.

An interesting question from these examples is: Where lies the boundary between scientific jargon and common educated English? Abbreviations such as RT, BBB, and BAT lie well within the disciplinary jargon.

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CCNS, CCS, BCNU, and CCNU seem highly specialized indeed. CT and MRI might be expected to be in the vocabulary of a medically aware lay person. DNA, on the other hand, might be expected to grace the vocabulary of most contemporary English speakers. SJCRH is an interesting abbreviation. It is surely an ultimate jargon term, but as a reader living near Memphis, Tennessee, I can guess its meaning. So, when should you rely on your reader to supply meaning to a technical abbreviation? Given that every reader brings with him or her a finite set of terms from their individual experience, the safest answer to that question is never.

A second road to understanding is through the context. The articles from which the examples were chosen were well and clearly written. The meaning of most of the abbreviations is suggested or even defined by their clear context. Certainly these abbreviations were understandable to neurologists reading the entire paper, but even the clearest context is not unambiguous to one with limited experience in the language. For example, the reader knows what sort of things BCNU and CCNU are from their context but may not know what the abbreviations stand for.

A third road to understanding is through defining or identifying the abbreviation in text. Defining every abbreviation is an absolute minimum requirement for their use. In the examples, nearly every abbreviation had been identified in previous text. The paper by Legido et al is an excellent example of how abbreviations should be initially defined in an abstract.² So does defining relieve the author of further responsibility? Not if any abbreviation remains unclear in any context, causing a reader to pause and go backward in the text or to a dictionary, thereby interrupting the flow of communication. Most readers, pressed for time and having limited patience, do not stop to look up an abbreviation, but plunge on in the hope that lack of clarity will not damage their overall understanding. The risk is that they may not know whether damage has been done.

It is certainly possible to achieve communication using abbreviations, but is it worth it? Abbreviations are used because they are convenient (being short), hard to misspell (being simple), comfortable (being the everyday lingo of the group), and intellectually impressive (being indecipherable to outsiders). Abbreviations can make common ideas look important indeed. They also save space in the journal. In the examples above, it is likely that none of the abbreviations needed to be used, that inserting full words would have had no fiscal impact on the publication, and that the unabbreviated work would have been clearer to more readers.

A puzzling aspect of the continued use and abuse of abbreviations is why the practice is allowed to continue. This is less a matter for authors than for editors and editorial boards. The misuse of abbreviations in medical and pharmacy practice has been well documented. Examples range from a patient who, being prescribed TAB (meaning a triple antibiotic), subsequently had a wound irrigated with a diet soda, to cases having serious health conse-

quences.³⁻⁵ Davis⁵ provided thousands of abbreviations as defense against their use.

The case against abbreviations in the medical research literature is similarly long standing and well argued.⁶⁻⁹ Keyes⁶ makes the case for the reader when he complains, "Why should I have to learn a new code in order to decipher each and every fragment of published information?" If we wish to communicate clearly, why build roadblocks against the reader's progress?

In addition to the long-standing issues of clarity and consideration, modern technology has infused new complexities.⁸ Electronic transfer and worldwide translation of technical writing, especially abstracts, increase chances for mistakes in translating and transcribing abbreviations.

The American Medical Association style manual and instructions to authors of biomedical journals "discourage" the use of abbreviations, although the American Medical Association allows for use of good judgment, flexibility, and common sense.⁸ Unfortunately, what is common sense to one author or editor may not be so for a reader. Any editor knows that an unyielding rule will soon be badly dented. Nonetheless, there likely are better rules than leaving the matter to the author's and editor's discretion. One rule is to use an abbreviation only if it *increases* clarity of understanding for nearly all readers. A less stringent rule might be: If the sentence containing an abbreviation would probably not be understandable by the average reader of that journal without reference to a definition elsewhere in the article, the abbreviation should not be used.⁶

Some additional comments are in order regarding specific sorts of abbreviations.

It remains acceptable to use, without definition, abbreviations in common everyday English usage. These would include such terms as AM, PM, PhD, FL, Feb, or Mon. Although acceptable, care must be taken. For example, if AM were abbreviated am, it could be confused with the verb. State name abbreviations are (mostly) understandable in the United States, but not elsewhere in the world. Months and days go by different names in other languages, so abbreviations of the English names may not be clear to the translator. Many of the federal and United Nations agency abbreviations are familiar to some, some are familiar to many, but none is familiar to everyone. With care, use of even common abbreviations can be minimized to preserve clarity. Using the 24-hour clock and spelling out states, months, and days of the week take little more space yet gain much in clarity.

The international system of scientific units (le Système International d'Unités) is well accepted and, in fact, demanded by nearly all journals. But care must be taken to use these abbreviations (or symbols) in a way that is not ambiguous. For example, "s," "m," or "g" beside a number may not be clear. Is "m" minutes, meters, mile, or milli-something? Furthermore, there is no reason ever to use these symbols in place of the full word in sentences.

The use of abbreviations in tables and figures needs to be monitored carefully. All figures and tables should be able to stand alone intelligibly. So, if abbreviations are

used (as often is necessary to conserve white space), they should be defined in the legend or caption.

Latinisms may be to some a sign of cultured upbringing, but they only add one more layer of fog. One needs to appreciate what Latin words the abbreviations stand for, what the Latin phrases mean, and how they are properly used in English. It is little wonder that Latin abbreviations are often used wrongly.¹⁰ It seems that technical English would be better off without the likes of eg, etc, ca, cf, et al, ie, and qv. The proper English terminology is far clearer and also avoids intellectual laziness, often signified by use of such terms as etc.

The proper style for abbreviations is not universal. Abbreviations have been losing their periods for decades, to the joy of many editors but to the sorrow of those seeking clarity. Case is highly variable. Upper case makes abbreviations prominent, calling attention to the fact that they are not real words, but they become more prominent than they deserve. Lower case, especially without periods, lets the abbreviations settle back into the sentence, where they mimic real words and cause a reader to pause to figure them out. If abbreviations are to be used, the journal's editorial policy on style should be clearly stated so the writer and the reader have the same ground rules. Nonetheless, given the prominence of photocopy, off-print, and electronic means of distribution, most articles are read on their own, unaccompanied by the journal's rules. Why take the chance? Be sure that when abbreviations have to be used, they are clear.

My colleague, Sharon Naron of St Jude Children's Research Hospital, uses the term abbrevobabble to attempt to capture a sense of the shortcomings of abbreviations. The result of the Tower of Babel story was the

inability of individuals to communicate and to accomplish tasks together. Babble is the last thing we should hope for from technical writing, particularly medical writing. Abbrevobabble is an unacceptable outcome because it belays our primary purpose—clear exposition of facts and ideas.

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