

# A checklist to improve your writing

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## Abstract

In this article, I provide a checklist of eight items to improve your writing. Several of the checklist items are discussed in detail in other articles in this issue of *Medical Writing*, although I provide explanations and examples for each item. I also provide a series of exercises to help you put them into practise.

For the last several years, I have lead several courses on scientific writing in the US and Europe. In my courses, I provide participants with several simple things they can do to improve their writing. Recently, several participants have requested a checklist summarising these ideas. My eight-item checklist is shown in Figure 1, and in this article I explain and give examples for each item.

## Item 1: Avoid nominalisations

Nominalisations are probably the most pervasive problem in scientific and medical writing. They are verbs turned into nouns, such as *demonstration* of instead of *demonstrate*. Nominalisations create sentences that are awkward and difficult to understand. Several articles in this issue of *Medical Writing*, especially the article by Michelle Arduengo (page 12), discuss nominalisations in

- Eliminate nominalisations
- Avoid phrases and sentences starting with “it is” or “there are”
- Eliminate useless words
- Eliminate “respectively”
- Use parallel structure
- Avoid multiple hedges
- Keep the subject and verb close together and where the reader expects to find them
- Reduce abbreviations

Figure 1. Writing checklist

more detail. Below are some simple examples of how nominalisations can be replaced:

*Measurement of concentration was made by ELISA.*  
**Replace with:** Concentration was *measured* by ELISA.

*A need exists for a new technique.*  
**Replace with:** A new technique *is needed*.

*We observed the migration of the cells.*  
**Replace with:** The cells *migrated*.

**Note:** Eliminate nominalisations whenever you can, but not all are bad. For example, *treatment* is a nominalisation of the verb *treat*, but of course it's ok to use it.

## Item 2: Avoid phrases and sentences starting with “it is” or “there are”

Like nominalisations, *it is* and *there are* create awkward sentences and so should be avoided. This is discussed in more detail by Tom Lang (page 21) in this issue of *Medical Writing*. Below are some examples and how they might be replaced:

*In patients treated with ibuprofen, there was a much earlier onset of pain relief.*  
**Replace with:** In patients treated with ibuprofen, onset of pain relief was much earlier.

*It is known that oestrogen is a steroid hormone...*  
**Replace with:** Oestrogen is a steroid hormone...

*It is possible that neutrophils contribute to other aspects of passive protection.*  
**Replace with:** Neutrophils *might* contribute to other aspects of passive protection.

**Note:** As with nominalisations, *it is* and *there are* are sometimes the best solution, but consider whether an alternative solution is possible. By the way, I could also have said “consider whether *there is* an alternative solution”, which would have been ok. However, keep *it is* and *there are* phrases to a minimum to avoid tiring your reader.

## Item 3: Eliminate useless words

Wordiness is a frequent problem for many writers. Do what you can to eliminate unnecessary words, because they are another way of tiring your reader. For further detail, refer to articles in this issue of *Medical Writing* by Christine Møller (page 14), Barb Every (page 17), and Tom Lang (page 21). The following are some examples of useless words and how they can be eliminated:

*In order to*

**Replace with:** *to*

**Explanation:** I know that most people say *in order to*, but *to* means exactly the same thing.

*A past history of*

**Replace with:** *A history of*

**Explanation:** The word *past* is redundant when you say *history*

*A bigger/higher/larger amount*

**Replace with:** *more*

**Explanation:** This is a common construct in writing by non-native speakers of English. Keep a lookout for these in your own and others' writing.

*Showed/demonstrated an increase*

**Replace with:** *increased*

**Explanation:** This is also a common construct in writing by non-native speakers of English. It also falls under the topic of nominalisations because the noun *increase* can be converted to the verb *increase*.

*The objective/aim/goal of the study was to investigate...*

**Replace with:** This study investigated

**Explanation:** Just say what was done!

*It is well known that/previous studies showed that/it is thought that...*

**Replace with:** Nothing – delete!

**Explanation:** These are called “preambles”. They are a way of sounding the trumpets or somehow announcing that important information is coming later in the sentence. Again, just say what is.

## Item 4: Eliminate “respectively”

*Respectively* causes the reader to look backwards to decipher what happened. This tires and confuses the reader so is best avoided. Unlike nominalisations and *it is* and *there are*, I recommend that you always delete the word *respectively*. Here are some examples:

*Jack and Jill are a boy and a girl, respectively.*

**Replace with:** *Jack is a boy, and Jill is a girl.*

*The incidence of herpes zoster decreased by 17.2%, 27.3%, and 55.2% in subjects immunised with 5 µg, 12.5 µg, and 25 µg antigen, respectively.*

**Replace with:** *The incidence of herpes zoster decreased by 17.2% in subjects immunised with 5 µg antigen, 27.3% in subjects immunised with 12.5 µg antigen, and 55.2% in subjects immunised with 25 µg*

antigen. Alternative: *The incidence of herpes zoster decreased by 17.2% at 5 µg antigen, 27.3% at 12.5 µg antigen, and 55.2% at 25 µg antigen.*

### Item 5: Use parallel structure

Parallel structure means using similar grammatical constructions for different items in a list. It makes complex sentences easier to understand. Parallel structure is discussed in some detail in a previous article in *Medical Writing* by Michelle Arduengo.<sup>1</sup> Here are some examples:

*The time to treatment failure was 12.2 months in the group treated with drug X, compared to 3.1 months in the placebo group.*

**Replace with:** *The time to treatment failure was 12.2 months in the drug X group and 3.1 months in the placebo group.* Alternative: *The time to treatment failure was longer with drug X than with the placebo (12.2 vs. 3.1 months).*

**Explanation:** The construct in the original text is common in writing by non-native English speakers. It causes the reader to stop to realign the information. In the revisions, the information is realigned so that the reader does not have to do it. In the first suggested replacement, the construct in both halves of the sentence is *xx months in the xx group*; in the second suggested replacement, it is simply *with x*.

### Item 6: Avoid multiple hedges

A hedge is simply a way of avoiding doing something definite. For example, you can *hedge* your bets when you play cards by not betting all of your money. Scientists are frequently told to not say anything definite because new information can come along invalidating their conclusions. Similarly, in medical writing, company compliance officers often ask to avoid saying anything definite for legal reasons. Hedges are ok, but you only need one. For example:

*These preliminary results suggest the possibility that the drug might be effective at reducing the incidence of the disease in some populations.*

**Replace with:** *These results suggest that the drug will reduce the incidence of the disease.*

**Explanation:** The original sentence contains the following hedges: *preliminary*, *possibility*, *might*, and *in some populations*. By hedging four times, this sentence ends up concluding nothing.

*These results indicate that the factor enhances wound healing, but further studies are needed.*

**Replace with:** These results indicate that the factor enhances wound healing.

**Explanation:** Avoid saying that *further studies are needed*. Further studies are always needed, if not, science would come to a halt! This is a very weak way to end a text. If you must say that further studies are needed, be specific, for example, *but this needs to be validated in a large randomised controlled trial*.

### Item 7: Keep the subject and verb close together and where the reader expects to find them

This is another common problem for non-native speakers of English, although it can also be a problem for native speakers too. In English, the subject and verb need to be obvious. Searching for them tires and confuses the reader. Also, within a paragraph, the topic of the previous sentence needs to be linked to the subject of the following one to create a logical flow of ideas. This issue was also discussed in detail in the previous article in *Medical Writing* by Michelle Arduengo.<sup>1</sup> Linking ideas within paragraphs is discussed in this issue of *Medical Writing* in an article by Amy Whereat and me (page 38).

Here is an example:

*A critical gene that serves as a beacon and gives cells a much needed sense of direction in the chaotic days of early development has been identified by HHMI researchers.*

**Replace with:** *HHMI researchers have identified a critical gene that serves as a beacon and gives cells a much needed sense of direction in the chaotic days of early development.*

**Explanation:** In the original sentence, the subject is not clear and needs to be identified to understand what the writer meant. In addition, the verb is not clear. Is it *gives* or *has been identified*? In the revision, the subject is clearly *a critical gene* and the verb *have identified*. In addition, the verb comes just after the subject, making the sentence easy to understand.

### Item 8: Use abbreviations sparingly

Although counter-intuitive to many writers, having more abbreviations makes a text more difficult, not easier, to understand. The reason is that abbreviations often make the reader go back and search for definitions. Reserve abbreviations

## Exercises

Rewrite the following sentences for maximal simplicity.

1. Previous studies have shown that AIDS is caused by the HIV virus.
2. The rate of response showed an increase with the dose.
3. The trial subjects exhibited an apparent dose response to the treatment with responder rates of 17%, 40%, and 61% after treatment with placebo, 100 mcg, and 600 mcg, respectively.
4. It is well known that there are no differences between the effects of the treatments in terms of fertilisation rate or number of embryos transferred.
5. A positive correlation has been shown between monoclonal antibody-dependent complement deposition on pneumococci and passive protection in mice.
6. In a majority of cases it is a combination of social, psychological, and biological factors that cause major depressive disorder.
7. A larger proportion of cells treated with polymixotone underwent apoptosis compared to cells treated with placebo.
8. We observed the death of all mice in these treatment groups within two days.
9. Macrophage depletion using clodronate liposomes resulted in the elimination of the protection of all mice from death.
10. At this point, it is important to consider whether counselling may be productive.
11. Local reactions were observed with a higher intensity and with a longer duration in subjects treated with bigizimab compared with morizimab.
12. The occurrence of influenza epidemics has a well-established link with various climate and meteorological parameters.

for complex, multi-word expressions that are used at least three times.

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## Answer key

- Original:** Previous studies have shown that AIDS is caused by the HIV virus.  
**Suggested rewrite:** HIV causes AIDS.  
**Explanation:** *Previous studies have shown that* is a preamble and can be deleted. With *HIV, virus* is redundant because the “V” stands for “virus”. Finally, the sentence can be further shortened by changing the word order.
- Original:** The rate of response showed an increase with the dose.  
**Suggested rewrite:** The response rate increased with the dose.  
**Explanation:** *Rate of response* can be simplified to *response rate*, and *an increase* is a nominalisation and can be replaced with the verb *increased*.
- Original:** The trial subjects exhibited an apparent dose response to the treatment with response rates of 17%, 40%, and 61% after treatment with placebo, 100 mcg, and 600 mcg, respectively.  
**Suggested rewrite:** The response rate increased with the dose (17% with placebo, 40%, at 100 mcg, and 61% at 600 mcg).  
**Explanation:** As in the previous sentence, *exhibited an apparent dose response* is a wordy way of simply saying that the response increased with the dose. *Respectively* should also be removed.
- Original:** It is well known that there are no differences between the effects of the treatments in terms of fertilisation rate or number of embryos transferred.  
**Suggested rewrite:** The effects of the treatments on fertilisation rate and number of embryos transferred do not differ.  
**Explanation:** Eliminate the preamble *it is well known that* and *there are*. Also, delete *in terms of* because it is a wordy way of saying nothing. Finally, *differences* is a nominalisation of *differ*.
- Original:** A positive correlation has been shown between monoclonal antibody-dependent complement deposition on pneumococci and passive protection in mice.  
**Suggested rewrite:** Monoclonal antibody-dependent complement deposition on pneumococci correlates with passive protection in mice.  
**Explanation:** *Correlation* is a nominalisation and can be replaced by *correlates*. Doing this makes *has been shown* unnecessary and forces a choice of subject (*complement deposition on*

*pneumococci or passive protection in mice*). After choosing the subject, keep the verb close by.

- Original:** In a majority of cases it is a combination of social, psychological, and biological factors that cause major depressive disorder.  
**Suggested rewrite:** In most cases, major depressive disorder is caused by a combination of social, psychological, and biological factors.  
**Explanation:** *A majority of* can be simplified to *most*. After that, the subject needs to be clarified. Is it *major depressive disorder* or a combination of social, psychological, and biological factors? In this case, I think that the main topic is the former, so it makes sense to move it to the beginning of the sentence. Finally, eliminating *it is* simplifies the sentence and forces it to be reorganised.
- Original:** A larger proportion of cells treated with polymixotone underwent apoptosis compared to cells treated with placebo.  
**Suggested rewrite:** More cells treated with polymixotone than with placebo underwent apoptosis. Alternative: Polymixotone induced apoptosis.  
**Explanation:** *A larger proportion* can be simplified to *more*. In addition, this sentence needs parallel structure. The sentence can be further simplified to the alternative version by thinking about its meaning – the placebo should not induce apoptosis, so the only thing inducing apoptosis is polymixotone.
- Original:** We observed the death of all mice in these treatment groups within 2 days.  
**Suggested rewrite:** All mice died within 2 days.  
**Explanation:** *The death of* is a nominalisation and can be replaced by the verb *died*. Also, *We observed that* is unnecessary wordiness; just say what is. Finally, *in these treatment groups* is probably not necessary.
- Original:** Macrophage depletion using clodronate liposomes resulted in the elimination of the protection of all mice from death.  
**Suggested rewrite:** All mice died when the macrophages were depleted using clodronate liposomes.  
**Explanation:** This sentence includes four nominalisations: *depletion*, *elimination*, *protection*, and *death*. If you change the first two of these into verbs, you arrive at: Depleting macrophages using clodronate liposomes

eliminated protection of all mice from death. Eliminating protection from death, however, simply means that the mice died when the macrophages were depleted.

- Original:** At this point, it is important to consider whether counselling may be productive.  
**Suggested rewrite:** At this point, counselling should be considered.  
**Explanation:** Eliminating *It is* forces the introductory phrase to become *should*, *must*, or something similar. This also make *productive* redundant.
- Original:** Local reactions were observed with a higher intensity and with a longer duration in subjects treated with bigizimab compared with morizimab.  
**Suggested rewrite:** Local reactions were more intense and lasted longer in subjects treated with bigizimab compared with morizimab. Alternative: Bigizimab caused more intense and longer-lasting local reactions than morizimab.  
**Explanation:** *A higher intensity* can be simplified to *more intense*. After that, parallel structure is provided by rewriting as *were more intense and lasted longer*. You can further simplify the sentence by changing the subject to *Bigizimab* and then keeping the verb *caused* close.
- Original:** The occurrence of influenza epidemics has a well-established link with various climate and meteorological parameters.  
**Suggested rewrite:** Influenza epidemics are linked to climate and weather.  
**Explanation:** The sentence includes two nominalisations. The first, *occurrence*, can be deleted, and the second, *link*, can be changed to the verb *linked*. Also, *well-established* is a kind of preamble and can be deleted. Finally, *climate and meteorological parameters* can be simplified to *climate and weather*.

## Author information

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