

MEDICAL WRITING CHECKLIST

Check your text (article / review / case report / letter / editorial / abstract for conferences / thesis) systematically against each item in turn. Further details and examples can be seen on the following pages.

1. PARAGRAPHS

- Each paragraph deals with ONE main point, purpose, or theme (the topic)
- Topic sentences are used to give an overview

2. SENTENCES

- Sentence length varies
- Connecting words link paragraphs and sentences in a meaningful way
- The main subject generally starts the sentence; extra phrases are placed in the middle or at the end
- Subject and verb are kept close together

3. CLARITY AND BREVITY

- Abbreviations (defined at first mention) are used sparingly
- Active voice is used as much as possible
- Strong verbs are used instead of weak verbs and nouns
- 'There is', 'It is' and 'It has' are removed wherever possible
- Unnecessary words are removed
- Key words are used consistently

4. TONE

- Dehumanizing language is avoided
- Informal expressions are avoided

5. GRAMMAR

- The subject agrees with its verb
- Parallel forms are used consistently
- Adjectives and adverbs are written correctly

6. PUNCTUATION AND SPELLING

- Words are correctly capitalized
- Apostrophes are used correctly
- Commas are used correctly
- Hyphens, en-dashes and em-dashes are used correctly
- Spelling is checked for correctness and consistency

Further details and examples

1. PARAGRAPHS

A paragraph is a group of sentences that are related to each other and discuss a single topic or have a main focus. Paragraphs are separated by a space or an indent in the first line of text.

1.1 Each paragraph deals with ONE main point, purpose, or theme (the topic)

e.g. The Discussion of an article on soft tissue healing may discuss the following:

- The level of association between degree of soft tissue damage and healing time
- Various methods for assessing healing of soft tissue damage
- Other factors that could affect healing time
- Generalizability of the study findings to other treatment centres

These are four related, but distinct, points, and they should be separated into four paragraphs.

1.2 Topic sentences are used to give an overview

Starting with a topic sentence gives the reader an overview of what the paragraph is about. The sentences that follow the topic sentence provide extra detail.

e.g. Topic sentences for the paragraphs outlined above could be:

- We found that greater tissue damage was strongly associated with longer healing time. The regeneration period was 2 weeks on average, but it was significantly longer (6–8 weeks) in lesions with damage to blood vessels. At 4 weeks after injury, 70% of moderate soft tissue lesions were healed.
- Healing of soft tissue damage can be measured in various ways. While most studies have measured the acute inflammatory phase only, other studies have included the regeneration phase of healing, and a small number of studies have also included the final remodelling phase.
- Several other factors could have affected the healing time. Wound contamination delays healing, often by several weeks. In contrast, use of zinc salves or honey dressings appears to speed recovery, although this has not yet been confirmed in randomized controlled trials.
- This study was undertaken at a specialized burns unit, and the findings may not be generalizable to other patient settings. It is unlikely that smaller regional hospitals would have the same access to...

A topic sentence can appear at the end of the paragraph if this is more appropriate. Then it acts as a summary, pulling together the detailed information provided in the paragraph.

e.g. Smith et al. showed...A more recent study reported...We also found...When these findings are taken together, they indicate that the effectiveness of an intervention is related to the level of teacher engagement.

2. SENTENCES

2.1 Sentence length varies

If a long sentence contains several extra phrases, it is often better to split it up. Here is an overly long and complicated sentence that contains two prepositional phrases (underlined):

Hospitals in this region do not meet the national standards for helping patients to quit smoking and have failed to provide smoke-free premises according to a report by the Health Promotion Committee after a review of smoking cessation and smoke-free policies and practices in 200 hospitals.

→ Hospitals in this region do not meet the national standards for helping patients to quit smoking and have failed to provide smoke-free premises. These are the conclusions of a report by the Health Promotion Committee after a review of smoking cessation and smoke-free policies and practices in 200 hospitals. The shorter first sentence now highlights the main message. The second sentence then describes the source of the information.

In contrast, a paragraph with many short choppy sentences can be hard to follow, as the logical connection between the sentences may not be obvious:

Osteoporosis is a disease of the bones. The disease is characterized by reduced bone mass and poor bone quality. People with osteoporosis often have no symptoms. People with osteoporosis have an increased risk of fractures. This is because the bone is weaker.

By identifying the main subjects being discussed (underlined), you can combine related information to give a clearer message:

→ Osteoporosis is a disease characterized by reduced bone mass and poor bone quality. People with osteoporosis often have no symptoms, but they have an increased risk of fractures because the bone is weaker.

2.2 Connecting words link paragraphs and sentences in a meaningful way

Connecting words should be used sparingly, as they give a strong signal (e.g. of contrast or emphasis), and they stand out in a paragraph. Not all the connecting words (underlined) in this paragraph are necessary:

One of the benefits of regular exercise is reduced risk of heart disease. Moreover, exercise can lower the incidence of stroke. In addition, exercise can reduce the risk of diabetes, osteoporosis, and bone fractures. However, patients with heart disease should seek medical advice before embarking on a new exercise regimen.

→ The benefits of regular exercise include reduced risk of heart disease and lower incidence of stroke. Exercise can also reduce the risk of diabetes, osteoporosis, and bone fractures. However, patients with heart disease should seek medical advice before embarking on a new exercise regimen.

‘Also’ is used to signal a simple additional fact without unnecessary emphasis. ‘However’ now stands out as the only connecting word (which makes it stronger), and it signals that contrasting information will follow.

2.3 The main subject generally starts the sentence; extra phrases are placed in the middle or at the end

Putting the main subject at the start of a sentence clarifies your message. The reader does not have to read the whole sentence before understanding what it is about—as in the following example:

As a preventative measure, in the 1930s in the United States doctors performed tonsillectomy.

If the sentence is a simple statement of fact, then it should read:

→ Doctors performed tonsillectomy as a preventative measure in the United States in the 1930s.

To emphasize the year, country, or motivation, you can move one of these to the start of the sentence:

In the 1930s, doctors performed tonsillectomy as a preventative measure in the United States.

In the United States, doctors performed tonsillectomy as a preventative measure in the 1930s.

As a preventative measure, doctors performed tonsillectomy in the United States in the 1930s.

2.4 Subject and verb are kept close together

The meaning of a sentence may be unclear if there are many words between the subject and its verb.

Quantitative studies, in many instances, proved conclusive. → **Quantitative studies proved conclusive** in many instances.

Concerns about the possible negative health effects of using selenium or potassium to treat children or in larger doses in adults have been raised. → **Concerns have been raised** about the possible negative health effects of using selenium or potassium to treat children or in larger doses in adults.

3. CLARITY AND BREVITY

3.1 Abbreviations (defined at first mention) are used sparingly

Use only the abbreviations you really need, and try to avoid them in the sentences reporting the study aim and conclusions (these may be the only sentences anyone reads!). In a scientific article, abbreviations are spelled out at first mention in the abstract, main text, and table/figure legends.

We conclude that RA patients treated with LDP had significantly higher FM. → We conclude that patients with rheumatoid arthritis treated with low-dose prednisolone had significantly higher fat mass.

3.2 Active voice is used as much as possible

Sentences that use the active voice are usually simpler and easier to follow—and save words!

A faster DNA–DNA hybridization method based on estimating the thermal stability of hybrids formed on nitrocellulose filters was developed by us.

→ **We developed** a faster DNA–DNA hybridization method based on estimating the thermal stability of hybrids formed on nitrocellulose filters.

3.3 Strong verbs are used instead of weak verbs and nouns

Strong verbs enliven your writing and usually save words.

When we had done the data analysis, we made a summary of the main findings. → When we **had analysed** the data, we **summarized** the main findings.

We made a comparison between the two groups. → We **compared** the two groups.

3.4 ‘There is’, ‘It is’ and ‘It has’ are removed wherever possible

These words are often unnecessary, and their removal usually means that the main subject can be placed most relevantly—at the start of the sentence.

There are a variety of approaches that can be used. → **A variety** of approaches can be used.

It has been shown that proteins encoded by adenovirus genes are potent inducers of DNA synthesis. → **Proteins** encoded by adenovirus genes are potent inducers of DNA synthesis.

3.5 Unnecessary words are removed

Get out your red pen!

- HPV-positive and HPV-negative HNSCC are distinct in a number of different ways. → HPV-positive and HPV-negative HNSCC **differ** in a number of ways.
- Cyanotic heart musculature was visually observed. → Cyanotic heart musculature **was observed**.
- It is interesting to note that (Could this phrase be removed?)
- Completely/fairly unique = unique
- Red in colour = red
- In order to investigate → To investigate

Excessive hedging:

One possible explanation for the altered cytokine expression could be that infection could cause cell degeneration and death, and the products of this process might influence cytokine production in the remaining cells.

→ **One explanation** for the altered cytokine expression **might be** that infection **causes** cell degeneration and death, and **that** the products of this process **influence** cytokine production in the remaining cells.

3.6 Key words are used consistently

‘Splendid variation’ has no place in a scientific text; changing the key words is confusing for the reader.

Early-onset dementia **OR** young-onset dementia—but not both in the same manuscript.

4. TONE

4.1 *Dehumanizing language is avoided*

People should not be labelled as their illnesses.

- Diabetics, schizophrenics → **Patients with diabetes, schizophrenia**
- Most HIV-positives are treated with... → Most **patients who are HIV-positive** are treated with ...
- Incurable cancer patients → **Patients with incurable cancer**
- Palliatives → **People needing palliative care**

Be careful when referring to people by their age:

- Geriatrics → older people → And even better: respondents over 70 years of age / patients aged 80 years and over

4.2 *Informal expressions are avoided*

To ensure understanding by an international readership and to maintain a professional tone.

Pregnant women will be offered a whooping-cough jab in an effort to combat the worst outbreak in 20 years.

→ Pregnant women will be offered **vaccination** against whooping cough in an effort to combat the worst outbreak in 20 years.

The results don't support our hypothesis. → The results **do not** support our hypothesis.

5. GRAMMAR

5.1 *The subject agrees with its verb*

This study evaluate alternative reagents. → This study **evaluates** alternative reagents.

Similar effects has been reported earlier. → Similar effects **have** been reported earlier.

Note that the following words are plural: data (singular datum), sera (singular serum), media (singular medium)

5.2 *Parallel forms are used consistently*

The laboratories were collecting data and analysed the blood samples. → The laboratories **collected** data and **analysed** the blood samples.)

A review of scientific content involves upgrading medical terminology, judging the validity of the methodology, checking the scientific nomenclature, and assessment of the relevance of the work. → A review of scientific content involves **upgrading** medical terminology, **judging** the validity of the methodology, **checking** the scientific nomenclature, and **assessing** the relevance of the work.

5.3 *Adjectives and adverbs are written correctly*

It is reasonably to assume that... → It is **reasonable** to assume that...

The tumour was partial encapsulated. → The tumour was **partially** encapsulated.

The result was statistical significant. → The result was **statistically** significant.

6. PUNCTUATION AND SPELLING

6.1 *Words are correctly capitalized*

italian patients with cystic fibrosis → **Italian** patients with cystic fibrosis

Five wistar rats → Five **Wistar** rats

figure 1, table 2 → **Figure 1, Table 2**

Note that usually only the abbreviation is capitalized, e.g. acute coronary syndrome (**ACS**).

6.2 Apostrophes are used correctly

According to the manufacturers recommendations. → According to the **manufacturer's** recommendations.
No matter how many time's you have read your own manuscript... → No matter how many **times** you have read your own manuscript...

The student's manuscript	↑	☰
The students' manuscript	↑ ↑ ↑	☰
The student's manuscripts	↑	☰ ☰ ☰
The students' manuscripts	↑ ↑ ↑	☰ ☰ ☰

6.3 Commas are used correctly

- To show which word groups belong together

In addition to the tumour biopsies blocks of non-neoplastic bladder mucosa were included as controls.

→ In addition to the tumour **biopsies, blocks** of non-neoplastic bladder mucosa were included as controls.

- Around a non-essential extra phrase (two commas)

The blood samples, which were collected in the morning, showed contamination.

All the blood samples were collected in the morning, and all of them were contaminated. The extra phrase is not essential and could be removed without altering the meaning of the sentence.

- Not around an essential extra phrase

The blood samples that were collected in the morning showed contamination.

Only the blood samples collected in the morning were contaminated. The extra phrase is essential to the meaning of the sentence.

- Not directly between subject and verb

Citrated venous blood, was mixed with 6% dextran solution. → Citrated venous **blood was** mixed with 6% dextran solution.

- Not usually before 'that'

We conclude, that apoptosis contributes to cell death. → We **conclude that** apoptosis contributes to cell death.

6.4 Hyphens, en-dashes and em-dashes are used correctly

- Hyphens can be used to join related words, especially adjectives before a noun

gram negative bacilli → **gram-negative** bacilli; computer generated data → **computer-generated** data

peroxidase conjugated swine anti rabbit antibody → **peroxidase-conjugated** swine **anti-rabbit** antibody

a 10 year old boy → a **10-year-old** boy

- En-dashes are used for all number ranges, page numbers, minus signs, and for exponents (indices, powers)

2016–2021, pages 1–14, –0.06, x^{-10}

They can also be used to join names (e.g. Kaplan–Meier). An en-dash indicates two separate surnames combined, whereas a hyphen indicates a double-barrelled surname (e.g. Smith-Jones).

- Em-dashes can be used (sparingly!) for emphasis

It took a decade to isolate the first angiogenesis stimulator—basic fibroblast growth factor (bFGF)—and yet another to identify the inhibitors angiostatin and endostatin.

Note that hyphens or en-dashes with spaces can be used in the same way.

6.5 Spelling is checked for correctness and consistency

Decide whether to choose British or American spelling. Then be consistent.

UK: anaemia – litre – centre – tumour – analyse – organise OR organize – histological

US: anemia – liter – center – tumor – analyze – organize – histologic

Acknowledgements

A special thank you to Christian Jakob Carlsson, PhD student, who participated in the June 2017 Copenhagen Intensive Medical Writing Course. Christian's request for a checklist started the project.

In addition, we are indebted to all the PhD students from Copenhagen University and the University of Southern Denmark who have provided us with ideas and examples.

Finally, here is the roll call of good people who have spotted errors, given feedback, and filled in the gaps: Bobby Brown, Adrian Bunnell, Stephen Gilliver, Gevene Hertz, Philip Hollingbery, Nina Nissen, Sine Obling and Joan Waddell.

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