

Basics Of Good Medical Writing

Sentence Control ; Writing Flow
And Cohesiveness; Computer
Skills



Module 10 Topic 2

Medical Writing

- An ideal medical document/presentation is prepared with the audience in mind. The audience might be:
 - A clinical/scientific team
 - A government agency (FDA, EMA, PMDA)
 - An objective 3rd party reviewer/expert in the field
 - A product consumer/public



A well-written document will accurately present the information and successfully communicate the outcome in the most concise manner possible

Medical Writing (contd)

Questions medical writers ask about the documents they are writing:

- What is its purpose?
- Who is the target audience?
- What type of publication is it?
- Does a template exist?



Medical Writing (contd)

- Are there previous similar documents that can be used as a guide?
- What are the proposed start and finish dates?
- Is there a specific style guideline/format that should be followed?
- Who will sign off on the document and at what stages?



Before writing....

- Ethics
- Confidentiality
- Conduct
- Integrity
- Honesty



Behave ethically

- Research ethics – declaration of Helsinki, ICH
- Publication ethics
 - avoid misconduct
 - protect patients' identities
 - report clearly:
 - » informed consent
 - » any deviation from usual practice
 - » full burden imposed on participants
 - » total risks posed to participants or others
 - » benefits to participants, patients, society
- It's not always enough to state that the study was approved by an ethics committee or IRB



Protect patients' confidentiality

Beware of personal identifiers:

- age,
- sex,
- location,
- clinical details,
- test results
- unusual personal story or
- context
- photo
(even if of a body part or clinical image)



Misconduct

Fabrication: making up data or results and recording or reporting them

Falsification: manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record

Plagiarism: the appropriation of another person's ideas, processes, results, or words without giving appropriate credit



Dishonest reporting of drug trial

- Not transparent (sponsors' roles, competing interests)
- Compares intervention with one known to be inferior
 - with ineffective dose of competitor intervention
 - with so much of competitor intervention that ADRs likely
- Uses multiple endpoints and reports selectively
- Reports results only from favourable centres
- Reports only favourable subgroup analyses
- Presents only most impressive results — eg reduction in relative rather than absolute risk

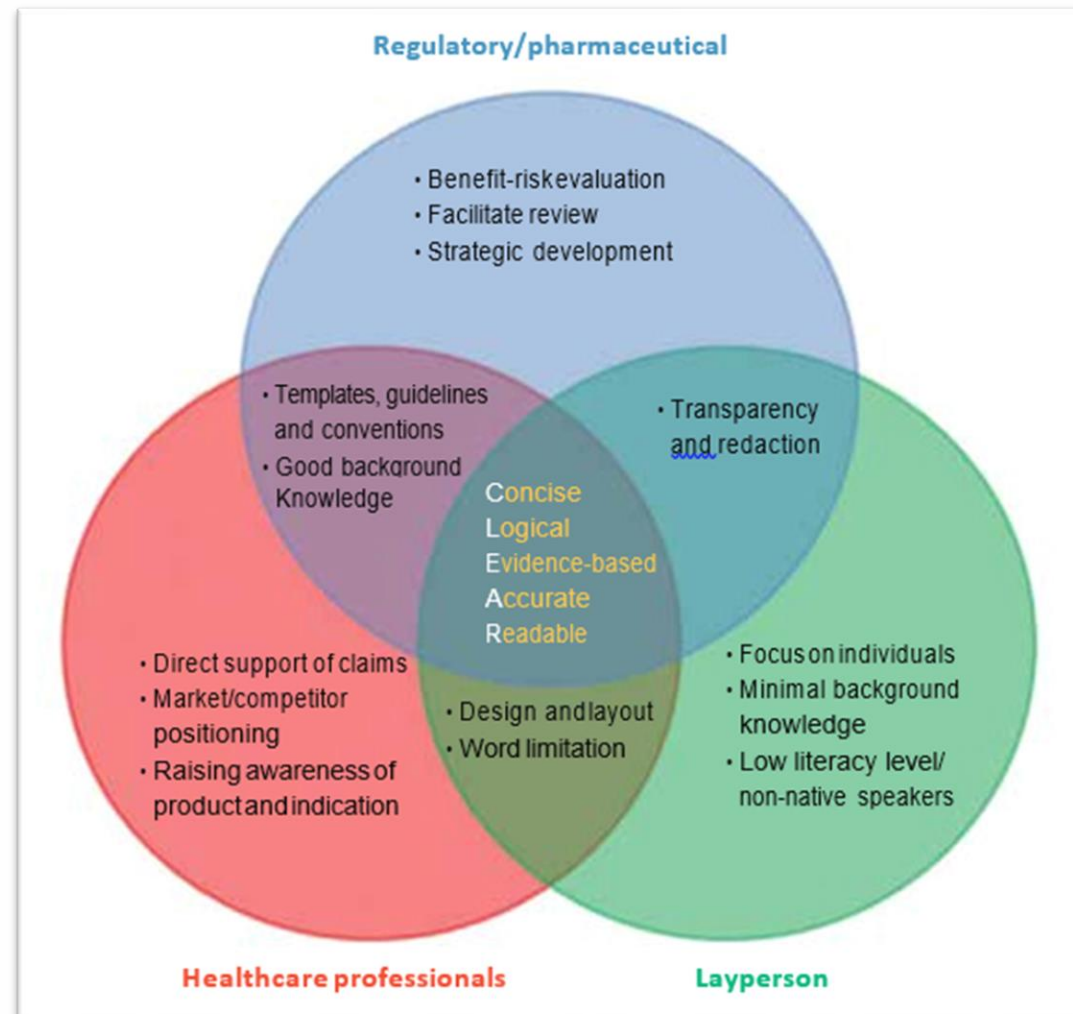


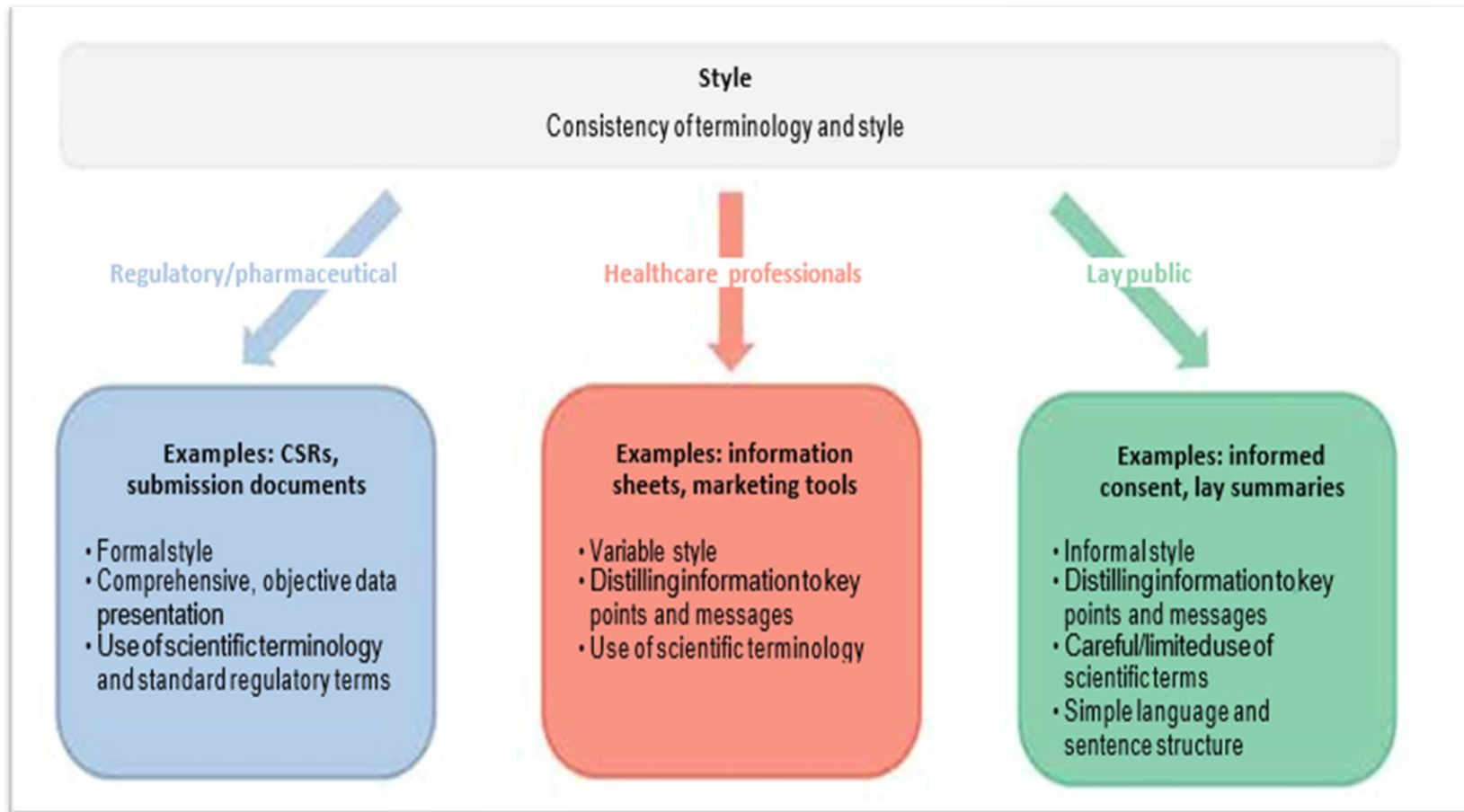
Assessing the audience

- Regulators
- Markets
- Conferences
- Journals
- Clinicians



Writing considerations for different audiences





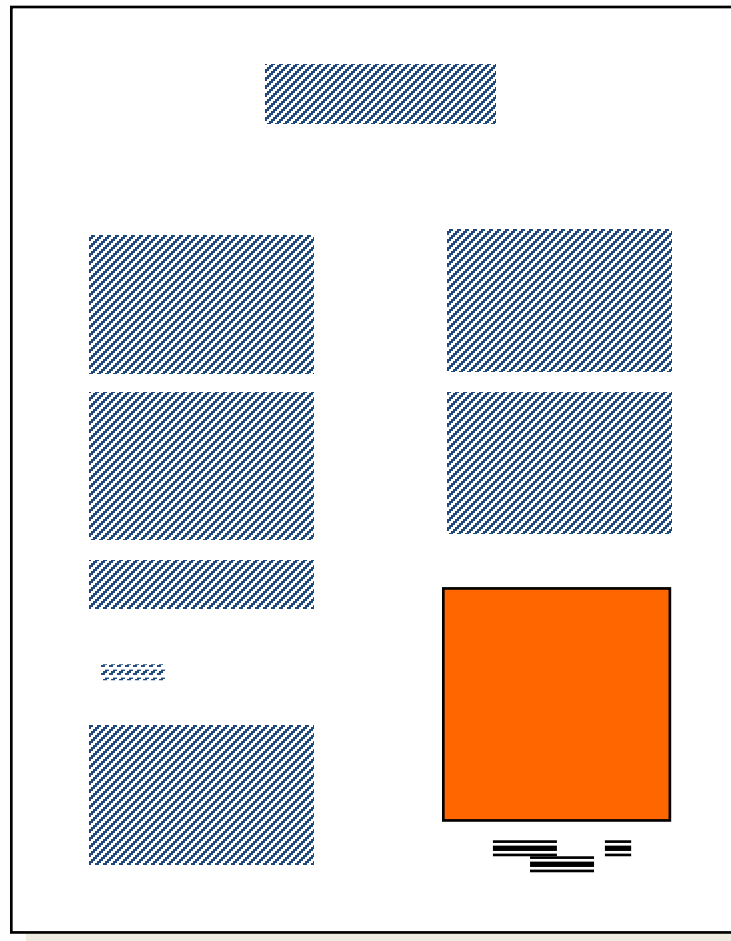
Key components of good writing – Format and Mechanics

format

typography
Structure
layout
template

mechanics

grammar
usage
punctuation
spelling



Mechanics



Writing Styles & Grammar
Nuances of Good writing

Medical Writing Style: The Importance of Being Clear and Concise

- **Use Short, Single Topic Sentences**
 - Let your reader breathe. If you need to take a breath while reading your sentence, it should probably be split into two or three sentences



Medical Writing Style: The Importance of Being Clear and Concise (contd)

- **Avoid Repetition**

- It is often advisable to change the word order in a sentence in order to avoid repetition
- Example: Group A had a mean systolic blood pressure of 13.3mm Hg on Day 1 and Group B had a mean systolic blood pressure of 15.6mm Hg on Day 1
- Improved version: The mean systolic blood pressure on Day 1 was 13.3mm Hg in Group A and 15.6mm Hg in Group B
- I only advise using 'respectively' for studies with three or more groups. It requires a little more mental gymnastics to understand



Medical Writing Style: The Importance of Being Clear and Concise (contd)

- **Put the Most Important Information at the Beginning of the Sentence**
 - Example: During the 13-week treatment period, 3.6% of subjects in the Drug A group and 2.3% of subjects in the placebo group reported headaches
- The sentence is about headaches, so it needs to be mentioned first. That way, anyone who is not interested in headaches does not have to read it.



Ten common Errors Made by Writers

- Use of a, an, the
- Punctuation
- Correct use of noun and verbs
- Word choice
- Tense
- Sentence structure
- Spelling
- Word economy
- Sentence clarity
- Over emphasis



The ten commandments of good writing

- Each pronoun should agree with their antecedent
- Just between you and I, case is important
- A preposition is a poor word to end a sentence with
- Verbs has to agree with their subject
- Don't use no double negatives
- Avoid cliches like the plague
- Join clauses good, like a conjunction should
- Do not use hyperbole; not one writer in a million can use it effectively



Misuse of words

- Watch for vial alternative: young juveniles or 7 a.m. in the morning
- Amount: use this word when you refer to a mass or aggregate. Use number when units are involved. (V An amount of cash, X An amount of coins)
- And/or is a visual and mental monstrosity that should be avoided in any kinds of writing
- Case: the most common word in the language of jargon. “in this case” means “here”, “in most case” means “usually”, “in all cases” means “always”
- Each/every



Misuse of words

- It: watch for unclear antecedent
- Like: often used incorrectly as a conjunction
- Only: must positioned correctly “I hit him in the eye yesterday”
- Quite: is quite unnecessary
- Varying: mass changing not a defined word
- Which: is properly used in a “nonrestricted” sense, instead of “that” as an essential clause
- While: when a time relationship exists, “while” is correct; otherwise, “whereas” would be a better choice



Avoid Passive Constructions

- It may change verb into noun
- Swelling the sentence
- Less direct
- Poorly understood
- The active voice is usually more precise and less wordy than the passive voice. Example: “It was found that” to “I found”
- Do not be afraid to name the agent of the action in a sentence, even when it is “I” or “We”



Words Economy

- Do not use more words where fewer will do
- A sentence is better not exceed 20 words or 2 printed lines
- Do not use long words where short ones will do
- Do not use jargon where regular words will do
- Do not use special words to make your writing seem more technical, scientific, or academic when the message is more clearly presented in another manner



The common touch

- As a general principle, the greater the percentage of common words an article contains, the easier it is to comprehend
- Euphemistic words and phrases normally should not be used in the scientific writing. (Animals are not “sacrificed” but “killed”, Some peoples “suffered mortal sequences from” the lead in the flour. Replace it with “Some peoples died of ...”
- Singulars and plurals: 10 g was added or 10 g were added



Pay Attention to tenses

- What you, or others, did in the past should be stated in the past tense
- Events or objected that continue to happen or exist can be described in the present tense
- Events that will take place in the future can be in the future tense
- Whatever tense you choose, be consistent
- Whenever you write or discuss previously published work, you should use the present tense; you are quoting established knowledge



Tense

- Your own present work must be referred to in the past tense
- Most of the abstracts should be in the past tense, because you are referring to your own present results
- M&M and the results sections should be in the past tense, as you describe what you did and what you found
- Much of the introduction and discussion sections should be in the present tense
- Exceptions: in the area of attribution and presentation, a general statement or known truth; the results of calculations and statistical analyses should be in the present tense



Might, May, and Would

They do not make a confident statement.

- Will
- Would
- Should
- May
- Might
- Could



Linking Sentences

- Paragraphs contain a collection of sentences that explain in a more complicated idea instead of a single statement or simple idea.
- Sentences are linked using transitional words and phrases
- Transitions indicate relations, whether from sentence to sentence, or from paragraph to paragraph
- Smooth transitions provide coherence



Correctly Structure Paragraph

- A paragraph should begin with a topic sentence that clearly sets the stage for what will follow – make topic sentences short and direct
- Build the paragraph from the ideas introduced in your topic sentence
- Make the flow of individual sentences follow a logical sequence
- Try to finish each paragraph with a sentence that forms a bridge to the next paragraph



Format

Structure And Formatting



Computer skills in Medical
writing

Document Structure and Formatting

- A well-structured and well-formatted document should be pleasing to the eye and should help the reader navigate through its numerous chapters
- The simplest way to get your formatting right in Word is to attach a template with pre-set styles. Many companies also have customised tool bars to facilitate the use of styles and standardise certain repetitive tasks such as inserting references and tables
- Never copy and paste formatting from another document unless it has identical Word styles. If in doubt, always use 'paste special' or the 'keep text only' paste option to avoid copying formatting



Document Structure and Formatting (contd)

- Page headers and footers are important as they define the identity of the document, e.g. date, version number, study number etc.
- Do not forget to update these for each draft and in all sections of the document
- Chapter numbers should never be typed manually. Create automatic chapter numbers using Word styles (Heading 1, Heading 2 etc.) and insert an automatic table of contents (References tab)
- Check consistency of the use of capitals in chapter headings



Document Structure and Formatting (contd)

- Use the 'navigation pane' (View tab) to view the document chapter headings. If any additional text appears, you probably need to correct the styles
- Always insert table and figure titles using 'insert caption' (References tab). This allows you to produce a table of contents and to insert cross-references (References tab)
- Use 'cross-reference' (References tab) for all references to chapters, tables, and figures. Check that the hyperlinks function correctly



Document Structure and Formatting (contd)

- ‘Refresh’ your document regularly (CTRL+A then F9) to ensure that all automatic numbers are correct. Avoid use of page breaks or adding carriage returns to position text on a new page. It is better to use ‘keep with next’ (Layout tab, paragraphs, line and page breaks) to ensure that chapter headings stay with text, and that tables stay with their captions and footers
- Make sure that bulleted lists are consistent throughout with respect to symbols, indentation, and choice of punctuation at the end of each line (. , ; or blank)



Document Structure and Formatting (contd)

- Use non-breaking hyphens (CTRL+Alt+Hyphen) to avoid hyphenated words splitting across lines and non-breaking spaces (CTRL+Alt+Space) between numbers and their units to avoid ending a line with a number



Harmonisation

- It is essential to decide what terms to use, and then to stick to them throughout the whole document
- Readers do not like to have to keep switching between words that look different but are really saying the same thing. So define your terms from the beginning and then be consistent
- It is also important to reach an agreement with the statistician to ensure harmonisation between the statistical tables and your text



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- Below are some of the most important concepts and terms that should be consistent
 - British versus American Spelling
 - ‘Subjects’ versus ‘Patients’
 - Investigational Product Names
 - Treatment Group Names
 - Visit Names
 - Study Names



Section headings should be descriptive and parallel

Non-Parallel Non-Descriptive

Introduction
Background
Marx Generators
Line Pulse
Beam Generation
Transporting Beam
Pellets
Results
Conclusions

Parallel Descriptive

Introduction

Past Designs for Particle Beam Fusion

New Design for Particle Beam Fusion
 Charging Marx Generators
 Forming Line Pulse
 Generating Particle Beam
 Transporting Particle Beam
 Irradiating Deuterium-Tritium Pellets

Results of New Design

Conclusions and Recommendations



Organization is hidden when headings occur in a long list without secondary headings

Performance of the Solar One Receiver

Introduction
Steady State Efficiency
Average Efficiency
Start-Up Time
Operation Time
Operation During Cloud Transients
Panel Mechanical Supports
Tube Leaks
Conclusion

Performance of the Solar One Receiver

Introduction
Receiver's Efficiency
 Steady State Efficiency
 Average Efficiency
Receiver's Operation Cycle
 Start-Up Time
 Operation Time
 Operation During Cloud
Transients
Receiver's Mechanical Wear
 Panel Mechanical
Supports
 Tube Leaks
Conclusion



Use appendices to supply background for secondary audiences

Appendix A **Concern About the Greenhouse Effect**

For almost a hundred years, experts have been concerned with the increasing concentrations of gases such as carbon dioxide, methane, and nitrogen oxides in the earth's lower atmosphere. These gases are natural by-products of combustion. Figure A-1 illustrates the correlation between global temperature and carbon dioxide concentrations...



For secondary readers, use a glossary to define unfamiliar terms

Glossary

- **IMRAD:** An acronym that represents the organizational structure most often used in research reports: Introduction, Methods, Results, and Discussion.
- **Meta-analysis:** A method of combining the results of several studies into a summary conclusion, using quantitative strategies that will allow consideration of data in diverse research reports
- **Redaction:** The process of word-by-word, sentence-by sentence modification of a paper.



Not all rules of format are constant

Reports Sandia Laboratories	Textbooks Prentice-Hall	Journals ASME
Figure 1	Fig. 1	fig. 1
Table	Table 1	Table 1
equation	equation (1)	Eq. 1



Format is the arrangement of type on the page

typography



layout



Each typestyle has its own personality and power

Serif

Times New Roman
abcdefghijklmnopqr
stuvwxyz1234567890

Garamond
abcdefghijklmnopqr
stuvwxyz1234567890

Courier
abcdefghijklmnopqr
stuvwxyz1234567890

Sans Serif

Arial
abcdefghijklmnopqr
stuvwxyz1234567890

Arial Narrow
abcdefghijklmnopqr
stuvwxyz1234567890

Comic Sans
abcdefghijklmnopqr
stuvwxyz1234567890



Avoid large blocks of capital letters

~~TYPE IS TO READ~~

Type is to read

~~WORDS SET IN ALL CAPS USE MORE SPACE
THAN TEXT SET IN LOWERCASE.~~

Words set in all caps use more space than
words set in lowercase.



Example: Morton-Thiokol's presentation to NASA suffered because of all capital letters on the slides

- PRIMARY CONCERNS-
- FIELD JOINT - HIGHEST CONCERN
- EROSION PENETRATION OF PRIMARY SEAL REQUIRES RELIABLE SECONDARY SEAL FOR PRESSURE INTEGRITY
- IGNITION TRANSIENT - (0-600 MS)
- (0-170 MS) HIGH PROBABILITY OF RELIABLE SECONDARY SEAL
- (170-330 MS) REDUCED PROBABILITY OF RELIABLE SECONDARY SEAL
- (330-600 MS) HIGH PROBABILITY OF NO SECONDARY SEAL CAPABILITY
- STEADY STATE - (600 MS - 2 MINUTES)
- IF EROSION PENETRATES PRIMARY O-RING SEAL - HIGH PROBABILITY OF NO SECONDARY SEAL CAPABILITY
- BENCH TESTING SHOWED O-RING NOT CAPABLE OF MAINTAINING CONTACT
- WITH METAL PARTS GAP OPERATING TO MEOP
- •BENCH TESTING SHOWED CAPABILITY TO MAINTAIN O-RING CONTACT DURING INITIAL PHASE (0 - 170 MS) OF TRANSIENT



Choose a type size that is easy to read

48 point → posters

36 point → presentation slides

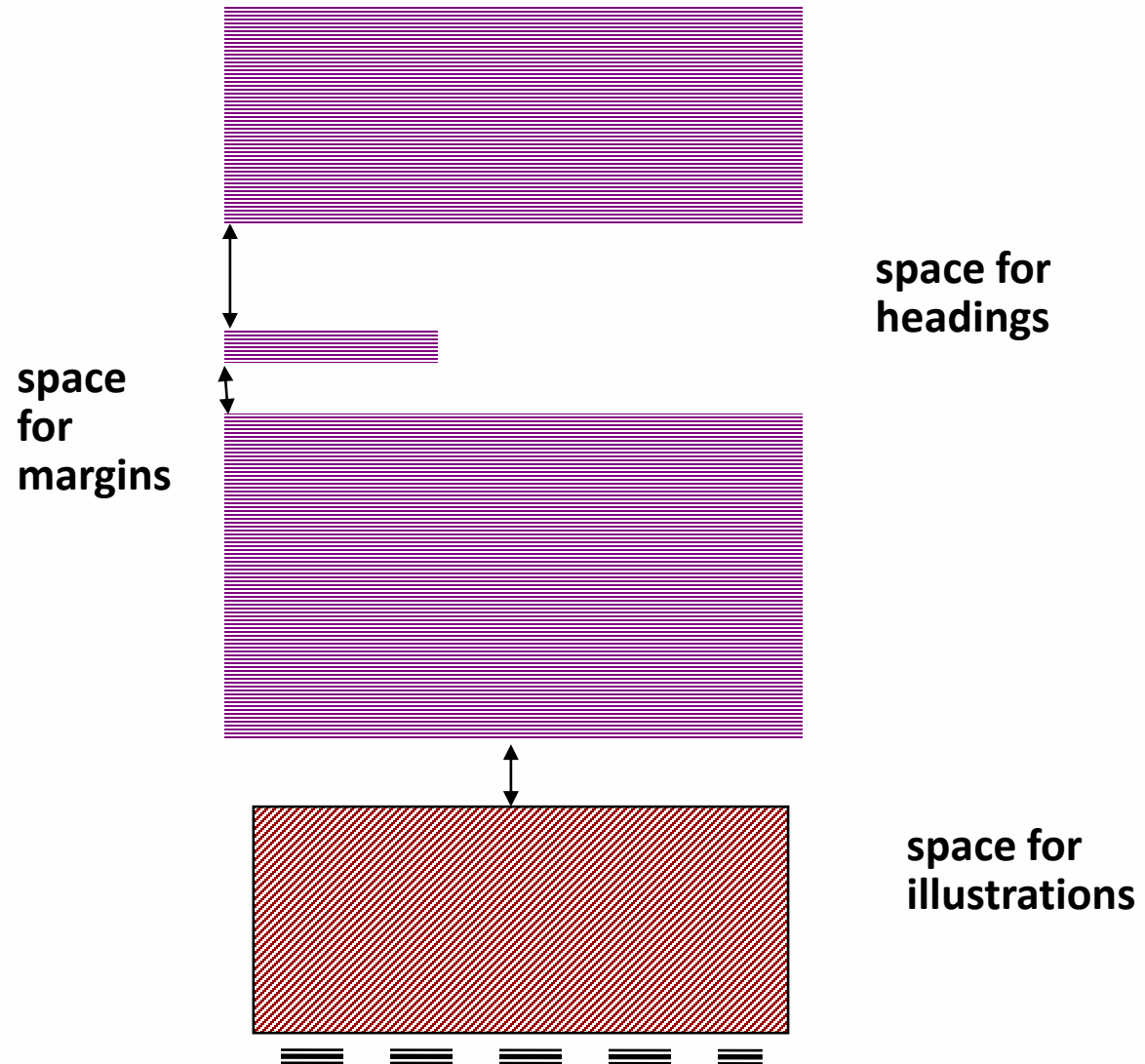
24 point
18 point
14 point → titles

12 point
10 point → text

8 point → footnotes



In your layouts, use white space for association, emphasis, and hierarchy



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- A good medical writer ensures that the document finalized is as per audience requirement and of utmost quality (Language as well as appearance).
 - Good medical writing skills need to be developed both by experience and by skillset.
 - Continual learning is key to success.

