The Abstract

An abstract is a special kind of summary. It is used in scientific writing to summarize the major content of a report or study.

Abstracts serve these main goals:

a) Readers use abstracts to see if a piece of writing interests them or relates to a topic they are working on.

b) Readers and researchers use abstracts to remember key findings on a topic.

c) To help readers anticipate what is coming in the text itself.

d) To help librarians and researchers find information more easily.

Types of abstracts:

Abstracts can be mainly descriptive and informative. A typical scientific abstract is informative. It presents the objective, states the results and conclusions, and either makes recommendations or discusses the implications of the report to which it is attached.

**Descriptive abstracts** include information about:

1. purpose
2. scope
3. methods used

A descriptive abstract is a brief informational overview, generally only a few sentences long. The descriptive abstract typically reflects only the main idea of the original. This simplicity gives readers a brief, helpful, and sometimes nontechnical understanding of
the main points of the original document.

One example of descriptive abstract from *Scientific American* appears below:

**Unmasking Black Holes**  
Jean-Pierre Lasota

Evidence for black holes was until recently all circumstantial. Distinguishing them at a distance from other highly compact, gravitationally massive bodies such as neutron stars is inherently problematic. Now astronomers have direct proof: energy is vanishing from volumes of space without a trace.

The following example of a descriptive abstract from *Technical Communication*, a journal for professional technical communicators, is very brief:

**“Going Online: Helping Technical Communicators Help Translators”**  
Patricia Flint, Melanie Lord Van Slyke, Doreen Starke-Meyerring, and Aimee Thompson

- Explains why technical communicators should help translators and offers tips for creating “translation-friendly” documentation.
- Describes a research and design process for creating an online tutorial on writing and designing for translation.

**Informative abstracts** are an expanded version of the descriptive abstracts. In addition to information about purpose, scope and methods, the informative abstracts include:

1. results
2. conclusions
3. recommendations

In contrast to the descriptive abstract, the informative abstract provides a more inclusive view of an original document. The informative abstract explains all of the original document's major headings, including key concepts, research methods, important statistical information, and findings, recommendations or conclusions. Because the informative abstract presents more information, it is generally longer than a descriptive one. The subjects of informative abstracts are often research studies, written technically for professionals.

**What type of abstract should you write?**

Your decision whether to write a descriptive or informative abstract depends on the content, length and technical level of the information...
you need to summarize and on the kinds of audiences for whom you are writing.

For readers who need a brief preview of moderately technical information, a descriptive abstract is a good choice. Its conciseness and generality give reviewers the kind of overview they need to determine whether they should read the original document.

For readers of lengthy, complex and technical information, particularly original research or documents with a complicated organization, an informative abstract is helpful. The careful organization, presentation of main points of discussion, and listing of findings and conclusions are useful for readers who need to understand a document’s subject, scope, and conclusions before they read it. The completeness of the informational abstract makes it equally helpful for readers who may not read the original document but who need to know what the document discusses.

ASSIGNMENT 1: Write both a descriptive and an informative summary of the text given. Think about the following issues:

a) Audience (Who will read the summary?; How will readers use the summary?)

b) Purpose (What is the purpose of the summary?; What need will the summary meet?; What problem can it help to solve?)

c) Subject (What is the summary’s subject matter?; How technical should the summary be?; Do you have sufficient information to complete the summary? If not, what sources or people can help you to locate the additional information?)

d) Design and specifications (In what medium will the completed summary be presented?; Are there special features the summary should have?; What information design features can help the summary’s audience?)
Taking a blood sample

Taking a blood sample is a procedure by means of which blood is removed from a patient for analysis. It should be done by a nurse or other trained medical practitioner so that infection may be avoided. Before taking the sample, the nurse should have a tourniquet, some cotton balls soaked with alcohol, a needle and a syringe. There are two steps in taking the sample: preparing the patient and drawing the bloods.

The tourniquet is placed on the patient’s arm about three inches above the elbow. The patient is requested to make a fist with the arm extended. The vein, which protrudes because of the tourniquet, can be located with a finger. The area around the vein should be wiped with a cotton ball soaked with alcohol.

The needle, which has been inserted into the syringe, is carefully injected into the vein. Care should be taken not to pass completely through the vein. The plunger of the syringe is pulled back until the required amount of bloods has been taken. The tourniquet is then loosened. A cotton ball soaked with alcohol is placed over the needle and the vein as the needle is pulled out. The patient is told to bend the elbow in order to prevent unnecessary bleeding. The blood is placed in test tube labelled with the patient’s name.

This method of taking blood is relatively painless and is recommended when a substantial quantity (more than a drop) of blood is required.

Macrostructure:

An abstract is usually the first contact that a prospective reader has with a technical report or research paper. In fact, the reader normally uses the abstract to decide whether or not the report is worth reading. For this reason, the abstract must be written with a clear idea of the intended audience, it must attract the reader’s attention, and it must be written in simple, non-technical terms as much as possible. Because we need a thorough understanding of the material to be summarized before we can write an abstract, we usually write it after we have completed the whole paper or report.

The abstract is usually about six to eight lines long, representing 2 to 5 percent of the total paper, and it usually has the form of a paragraph. However, different publications have their own styles and the abstract is sometimes broken into short paragraphs.

PART 1: OBJECTIVE

The first sentence of an abstract states why a project was carried out and/or why the report was written. This sentence by itself is often called a descriptive abstract; it is sometimes found below the title of
a scientific paper.

The materials and methods used in a study are usually not focused upon in an abstract, but they can be included in the first sentence.

PART 2: RESULTS AND CONCLUSIONS

The second sentence (or part) of an informative abstract describes the actual results and/or conclusions of the report.

PART 3: IMPLICATIONS AND RECOMMENDATIONS

The third sentence (or part) of an abstract discuss the implications of the findings and/or makes recommendations based on those findings:

**Basic guidelines**

- Highlight the objective and the conclusion that are in the paper’s introduction and the discussion
- Bracket information in the methods section of the paper that contains keyword information
- Highlight the results from the discussion or results section of the paper
- Compile the above highlighted and bracketed information into a single paragraph
- Delete extra words and phrases
- Delete any background information
- Begin the first sentence with the phrase “this paper” or “this study”
- Revise the paragraph so that the abstract conveys the essential information.

**TASK 1:** Basing on the previous explanation, can you guess from which of the sections the following extracts come? Mark each one O, R, I. Check your answers with a partner.

a) The formation of nitrogen compounds in engine exhaust gas was investigated.
b) Principal localizations of the tumors were the nose, eyelids, lips, and ears, with 8, 7, 4, and 2 localizations, respectively.

c) The combined use of statistical and quantitative analyses is recommended when characterizing urban roadway dust.

d) “Time-lapse photography was used to study cell-cycle progression and cell-division abnormalities in rat 9L brain tumor cells after treatment in culture with 2 g/ml and 5 g/ml of 1,3 bis (2-chloroethyl)-1-nitrosourea (BCNU).”

e) The low survival of L5178YS/S cells after irradiation may be related more to faulty cytokinases than to chromosomal aberrations.

f) Cis-trans isomerism in straight-chain, internal olefins was determined.

g) Results show that the rate of particle deposition agrees with experimental data.

h) Symptoms of X ray damage occurred in far more exaggerated forms than those displayed by other mammalian cell types.

i) The chemical composition of particulates should be further studied in relation to exhaust-gas temperature.

**Colour coding for papers and abstracts**

Green = present simple  
Pink = present perfect  
Orange = past simple  
Blue = tentative verbs, e.g. suggest, indicate, seem, likely to be + modals used to convey possibility and recommendation  
Yellow = linking words; contrast markers and sequencing words and phrases.

**TASK 2: In groups or individually, mark the basic structure of the following abstracts (O, R, I) and state if they are descriptive or informative.**
When Does the "Duty to Protect" Apply with a Client Who has Anorexia Nervosa?

Individuals with eating disorders, especially those with anorexia nervosa, have the potential to experience significant harm and even death as a result of behaviors related to their condition. Because of this risk, the authors argue that there is a duty to protect (i.e., an obligation to take some action when a person is engaging or considering engaging in a behavior that may lead to self-harm) when a client's anorexia-related behavior has progressed to the point of medical jeopardy—that is, her or his life is in danger. This article reviews information on anorexia, including mortality data; ethical and legal issues when a client is believed to be a harm-to-self; and the literature related to involuntary hospitalization and compulsory treatment of clients with anorexia. The article concludes with a set of guidelines for when the duty to protect when a client has anorexia nervosa begins and with suggestions for interventions.


In 1874 William Gull published ‘Anorexia Nervosa’ an article detailing the cases of two young women presenting with severe and unexplained weight loss, as well as a more general exploration of the author’s experience with the condition he labelled ‘anorexia nervosa’. The article represents a fascinating first step in the study of a disorder of ever-increasing focus both in medicine and among the general population. Gull’s original description still forms the basis of modern day definitions of anorexia. To read ‘Anorexia Nervosa’ is to add depth and history to our understanding of eating disorders. It also reminds us of an earlier era when medicine and psychiatry were not so separated as they are today.

Osteoporosis in women with anorexia nervosa

Because estrogen deficiency predisposes to osteoporosis, we assessed the skeletal mass of women with anorexia nervosa, using direct photon absorptiometry to measure radial bone density in 18 anorectic women and 28 normal controls. The patients with anorexia had significantly reduced mean bone density as compared with the controls. Vertebral compression fractures developed in two patients, and bone biopsy in one of them demonstrated osteoporosis. Bone density in the patients was not related to the estradiol level. Levels of parathyroid hormone were normal despite low calcium intakes. The patients with anorexia who reported a high physical activity level had a greater bone density than the patients who were less active; this difference could not be accounted for by differences in age, relative weight, duration of illness, or serum estradiol levels. The bone density of physically active patients did not differ from that of active or sedentary controls. We conclude that women with anorexia nervosa have a reduced bone mass due to osteoporosis, but that a high level of physical activity may protect their skeletons.
Diagnosis and Care of Patients with Anorexia Nervosa in Primary Care Settings

Anorexia nervosa is a psychiatric disorder characterized by abnormal eating behaviors that result in weight loss and has serious potential medical consequences. Most of these complications are readily treatable if diagnosed and attended to early in the course of the illness. In caring for patients with anorexia nervosa, the primary care physician has several critical roles. Because patients deny the severity of their illness, they delay seeking psychiatric treatment. The primary care physician must be skilled in recognizing this disorder, as well as in diagnosing and effectively treating the medical complications while educating the patient about them. The primary care physician is also involved with arranging and coordinating a comprehensive and multidisciplinary program, including dietary and mental health treatment. The multidisciplinary team is responsible for ensuring safe weight restoration and a judicious refeeding treatment plan. In addition to establishing the diagnosis and treating the multiple medical complications associated with anorexia nervosa, the primary care physician plays a central role in maintaining continuity of care despite the fact that successful care may require a variety of treatment settings. Factors that foster good prognoses for this increasingly common and often protracted eating disorder include early diagnosis and skilled medical intervention to prevent the inexorable physical decline that marked weight loss can cause.
Abstracts

Typical information structure

Background

Dose-dense sequential chemotherapy appears to be a promising approach in the management of patients with operable breast cancer. We evaluated the tolerability of such a novel chemotherapeutic regimen in high-risk patients. From February 1995 until September 1997, 49 women with histologically confirmed breast cancer and ≥ 10 involved axillary nodes were treated postoperatively with three cycles of epirubicin (110 mg/m²) followed by three cycles of paclitaxel (250 mg/m² in a 3-hour infusion) followed by three cycles of ‘intensified’ CMF (cyclophosphamide 840 mg/m², methotrexate 57 mg/m², fluorouracil 840 mg/m²; E-T-CMF). All cycles were repeated every 2 weeks with G-CSF support. Ovarian ablation with monthly injections of triptorelin for 1 year was performed in premenopausal patients and tamoxifen was prescribed for 5 years to all women with positive receptor status after the completion of chemotherapy. A total of 456 cycles of chemotherapy were administered, 363 (80%) of them at full dose. Forty-seven (96%) patients received all 9 cycles of chemotherapy. Relative dose intensity of epirubicin was 0.98, of paclitaxel 0.97, of cyclophosphamide 0.99, of methotrexate 0.98 and of fluorouracil 0.99. Grade 3-4 toxicities included anemia (8%), neutropenia (4%), thrombocytopenia (4%), stomatitis (2%), diarrhea (2%), fatigue (2%) and hypersensitivity reaction (2%). Febrile neutropenia occurred in 2 patients. Alopecia was universal. After a median follow-up of 3 years, 11 women (22%) relapsed and 4 (8%) died. The 3-year actuarial disease-free survival rate was 72% and the 3-year overall survival rate 90%. The E-T-CMF regimen is well tolerated, as adjuvant treatment, in patients with operable breast cancer with promising activity and deserves further evaluation in phase III studies.

Fountzilas, G et al. Dose-Dense Sequential Adjuvant Chemotherapy with Epirubicin, Paclitaxel and CMF in High-Risk Breast Cancer. Oncology 2001;60: 214-220

Verb tenses in abstracts

| Background | usually present tense or present perfect |
| Purpose / main activity | usually past tense, sometimes present perfect |
| Material and method | past tense; (but in some fields, e.g. biochemistry, sometimes present) |
| Results | as in Method |
| Conclusion | mainly present tense often with modal verbs (may, might, should, etc.) |

There are other language features typical of abstracts: e.g. phrases for expressing the purpose / main activity and for introducing the conclusion.
**TASK 2:** Read the following abstract from the *Lancet*. Note the headings for each section.

**Background** Although laparoscopic resection of colorectal carcinoma improves post-operative recovery, long-term survival and disease control are the determining factors for its application. We aimed to test the null hypothesis that there was no difference in survival after laparoscopic and open resection for rectosigmoid cancer.

**Methods** From Sept 21, 1993, to Oct 21, 2002, 403 patients with rectosigmoid carcinoma were randomised to receive either laparoscopic assisted (n=203) or conventional open (n=200) resection of the tumour. Survival and disease-free interval were the main endpoints. Patients were last followed-up in March, 2003. Perioperative data were recorded and direct cost of operation estimated. Data were analysed by intention to treat.

**Findings** The demographic data of the two groups were similar. After curative resection, the probabilities of being disease free at 5 years were 75.3% (SE 3.7%) and 72.9% (4.0%) respectively. The probabilities of being disease free at 5 years were 75.3% (3.7%) and 78.3% (3.7%), respectively. The operative time of the laparoscopic group was significantly longer, whereas postoperative recovery was significantly better than for the open resection group, but these benefits were at the expense of higher direct cost.

The distal margin, the number of lymph nodes found in the resected specimen, overall morbidity and operative mortality did not differ between groups.

**Interpretation** Laparoscopic resection of rectosigmoid carcinoma does not jeopardise survival and disease control of patients. The justification for adoption of laparoscopic technique would depend on the perceived value of its effectiveness in improving short-term post-operative outcomes.


**TASK 3:** Put in the missing headings to mark the sections in the following *Lancet* abstract and colour code the verb tenses in each section.

Proteomics-based approaches complement the genome initiatives and may be the next step in attempts to understand the biology of cancer. We used matrix-assisted laser desorption/ionisation mass spectrometry directly from 1mm regions of single frozen tissue sections for profiling of protein expression from surgically resected tissues to classify lung tumours. Proteomic spectra were obtained and aligned from 79 lung tumours and 14 normal lung tissues. We built a class-prediction model with the proteomic patterns in a training cohort of 42 lung tumours and eight normal lung samples, and assessed their statistical significance. We then applied this model to a blinded test cohort, including 37 lung tumours and six normal lung samples, to estimate the misclassification rate. We obtained more than 1600 protein peaks from histologically selected 1mm diameter regions of...
single froze sections from each tissue. Class-prediction models based on
differentially expressed peaks enabled us to perfectly classify nodal
involvement with 85% accuracy in the training cohort. This model nearly
perfectly classified samples in the independent blinded test cohort. We also
obtained a proteomic pattern comprised of 15 distinct mass spectrometry
peaks that distinguished between patients with resected non-small-cell lung
cancer who had poor prognosis (median survival 6 months, n=25) and
those who had good prognosis (median survival 33 months, n=4,
p<0.0001). Proteomic patterns obtained directly from small amounts of
fresh frozen lung-tumour tissue could be used to accurately classify and
predict histological groups as well as nodal involvement and survival in
resected non-small-cell lung cancer.
Yanagisawa, K. et al. Proteomic patterns of tumour subsets in non-small-cell lung

ASSIGNMENT 2: Write an informative abstract for the
scientific paper «The Psychopathology of Anorexia
Nervosa: A Factor Analytic Investigation». In Journal of
Psychopathology and Behavioral Assessment, vol. 15, n. 2,
págs. 141-152.

When writing your abstract, the following procedure is recommended:

1. Most scientific articles are divided into sections. First of all,
determine which paragraphs of the article belong to each section;
then, write a subtitle for each section (a subtitle is the title for a
section). This will establish the overall organization of the article.
2. Using your knowledge of paraphrasing, write a summary sentence
for each paragraph in the article. Be careful not to alter the
meaning or sense of the paragraphs. When you have finished, you
should have a list of thirty to forty sentences.
3. Determine which sentences are concerned with objectives, results
or conclusions, and recommendations or implications, and place a
check next to them. Ignore other sentences, which will be
concerned for the most part with detailed methods and materials.
4. From the remaining sentences, determine which six to eight
sentences are crucial to the understanding of the entire article.
Write these into a single paragraph, adding sentence connectors if
necessary to make the paragraph more readable.
5. Revise for order, clarity, and conciseness. As you revise, focus on
the audience for your summary. Consider their level of knowledge
in the language you use. Organized to make your abstract easy to
follow. If you plan to use a particular information design, it should
support your subject matter and sequence of ideas.