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## Methodology

### Criteria for a good research topic. Starting point: The research question<sup>☆</sup>



### Criterios para un buen tema de investigación. La pregunta de investigación, el punto de partida

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The aim of clinical or applied research is to resolve issues that arise in each of the stages of medical care development in order to improve both daily clinical-surgical practice and the quality of care provided.

Research is not a particularly difficult activity. Extensive knowledge of statistical techniques is not necessary, nor is mastery of an extensive specialized vocabulary. However, researchers are required to be rigorous and meticulous during the study.

The starting point of any research process is the statement of an uncertainty, which takes shape through the formulation of a research question. A well formulated question will help develop of a scientific strategy and work protocol<sup>1</sup>.

The success of a research paper will depend on how well it has been designed and whether potential problems have been identified before initiating it.

#### Planning research

The surgical research process goes through several phases until useful results are obtained. One of the first steps is the design of the research protocol, which consists of the detailed, orderly, written description of the work plan of a scientific study. It is a fundamental tool in any study and is a necessary requirement for the funding/evaluation of a project.

A common mistake to avoid is collecting data with the aim of seeing what can be found. If we design a study properly from the beginning, once the study is over, we can use the collected samples for other purposes that we did not consider at the beginning of the research<sup>2</sup>.

#### The research question

The research question is the starting point of any surgical research process. It is the unknown to which the researchers are trying to give an answer.

A research project may have more than one question, but this will add complexity to the design and make it difficult to analyze the data.

In daily clinical-surgical practice, situations of uncertainty arise whose response is necessary to determine the diagnosis, prognosis or therapeutic orientation. Thus, research must start from clinical practice to improve it. These questions or information needs may be different depending on our professional experience<sup>3</sup>.

Therefore, we must ask ourselves the research question that we want to solve, which must meet a series of criteria and characteristics. To choose a good topic, we must know what is known about it, what has failed previously, what remains to be

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done, what benefits can be obtained, whether it contributes something new, etc.

When formulating the question, it is important to ask ourselves its relevance. In doing so, using the acronym “FINER” is recommended to verify that the question is *feasible, interesting, novel, ethical* and *relevant*<sup>4</sup>.

### Feasible

For our research question to be feasible, the viability of the research project must be considered by assessing the costs in terms of both time and resources that the project under study will imply.

Regarding the study population, we must take into account the existence of a sufficient number of patients in the hospital, taking into account that a percentage will be lost during the process and that a multicenter study may be necessary.

### Interesting

This section refers to the interest that the research will have for the researcher. On many occasions, research does not begin for the pure fact of creating applicable knowledge, but instead can begin based on economic interests or personal promotion. The investigative process is long and presents obstacles; to overcome these and deal with frustrations, we must be very interested and motivated. One suggestion is that we do research in the medical area in which we want to develop professionally and continue with that line of research throughout our career.

### Novel

Good research contributes new, useful information. We must recognize that we are not starting from scratch in scientific research, and our question is probably already fully or partially resolved. For this reason, it is important to search the scientific literature for articles related to the subject and determine whether there is room to contribute new knowledge. A bibliographic review is not a mere reading of the literature but an opportunity to highlight existing gaps<sup>5,6</sup>.

### Ethical

Ethical research follows the principles of good research practices without affecting the health of the participants. The project must be authorized by the hospital Ethics Committee and use informed consent to invite patients to participate.

To present our protocol to the Committee, we must ensure that it complies with the recommendations issued by the Regulations of the Spanish General Healthcare Law on Healthcare Research<sup>7</sup>.

### Relevant

Relevance is the most important characteristic of a research question. This refers to the knowledge that will be acquired by correctly answering our question, which will serve both for clinical practice and to direct future research on the subject.

The degree of relevance of our question, together with the results achieved, will determine its impact factor. It is important to mention that negative research results may be more relevant than positive results.

## How to formulate the research question?

A well-formulated research question allows us to define the information required, determine the type of study to be used, and identify the study objectives. Furthermore, it can suggest high-performance bibliographic search strategies by delimiting the main terms and the most appropriate sources of information.

The easiest way to write a research question is to use the acronym “PICOT”<sup>5,8,9</sup>:

- P: Patient or population being studied
- I: Intervention (by the researchers) or exposure (of the patient)
- C: Comparison with standard practice or with unexposed patients
- O: Outcome or results that we want to obtain once we have designed our study
- T: Time required to evaluate the results and frame the question

Example of a question formulated with the PICOT model:

—Is prophylaxis with oral antibiotics in oncological colon surgery effective in reducing surgical site infection?

- P: Patients undergoing elective colon cancer surgery
- I: Treatment with oral + intravenous antibiotics the day before surgery
- C: Treatment without oral antibiotics, only intravenous, the day before surgery
- O: Surgical site infection
- T: 30 postoperative days.

## Corollary

For these reasons, the development of the research question is the most important factor of a research project. The quality of the question used to generate the hypothesis and the study objectives is vital for the results to be useful in clinical practice, and it will also determine the subsequent publication possibilities of our study.<sup>6</sup>

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