

## Keep Learning!

For EMS Providers:

**Journal of Emergency Medical Services**  
<http://www.jems.com/>

**EMS World**  
<http://www.emsworld.com/>

For Nurses:

**American Journal of Nursing**

<http://journals.lww.com/ajnonline/pages/>

**Nursing World: Online Journal of Issues in Nursing**

<http://www.nursingworld.org/OJIN>



Keeping current on new information helps you provide the best patient care possible.

For Physicians:

**ACP Journal Club**

<http://acpjc.acponline.org/>

**Evidence-Based Medicine**

<http://ebm.bmj.com/>

## Test your knowledge:

What is characteristic of primary source literature?

- A. Element of immediacy; authors themselves participated in research and documented their results.
- B. Contains a summary of secondary sources.
- C. Provide an overview by combining the results of several studies.
- D. All of the above.

What is evidence-based practice?

- A. Making patient care decisions based on the best available qualitative evidenced.
- B. Integrating available evidence with practitioner experience and other available resources.
- C. Taking into consideration the characteristics, state, needs, values and preferences of those who will be affected.
- D. All of the above.

Which of the following are examples of qualitative results?

- A. A positive pregnancy urine test.
- B. A blood serum HCG result of 7650.
- C. A Hgb result of 17.2mg/dL.
- D. A capillary blood glucose level.

Which of the following is not important to consider when reviewing a study design?

- A. Sample size
- B. Gender of the primary researcher
- C. Extent to which populations are analogous
- D. Adequacy of instrumentation



# Primary Literature for Health Care Providers



**Strategies for reading and understanding primary source literature**



# Tips for Health Care Providers



**Medic One in Seattle, WA is a model EMS system, providing evidence based care.**

The science of health is built on a foundation of ever-expanding scientific knowledge. It is important that health care providers at any level of care—from Paramedics in the field, to Rheumatologists at a research hospital to invest time and energy to staying current on the prevailing trends in science.

New discoveries in science and technology keep pushing the boundaries of what we know to be possible.

Being a health care provider in such a dynamic setting can be highly exciting, but also stressful. Constant innovation means that today's problems are highly unlikely to be tomorrow's problems. However, we are constantly called upon to use our discrimination in evaluating new techniques and procedures and implementing them in a manner beneficial to patients.

While you are gathering new information and refining your approach to health care, remember to retain a healthy dose of skepticism. Always search for evidence guiding new techniques and practices. Rigorous and demanding scientific techniques in medical research are to the benefit of us all.

## Strategies

When reading primary-source literature you should first always read the abstract or summary. Here the researchers summarize the most important themes and conclusions from their work.

It is also important to consider the experimental design with a critical eye. Do the procedures followed by researchers make sense? Look for evidence that their results were reproducible; are other researchers coming to similar conclusions?

Once you have done these things, you are ready to look at the data itself. Read the article through once, then carefully examine included graphs and table. Review the statistical analysis done and see if it makes sense to you.

## Interpreting Statistics

When reading and interpreting statistical data in primary-source articles. It helps if you know some basic terms. The glossary on the right can help refresh your memory.

Start with understanding the sample size; this number will be important. Look at

the p-values and make sure they are within ranges for statistically significant results. Also pay attention to the confidence interval of the study. When it is possible, open attached files with reported results and attempt to replicate the statistical results reported in the article. This way you can get a feel for the actual data.



### Glossary of Statistics Terms:

**Mean-** Commonly called the average. The sum of all the measured values divided by n, the number of measurements that were taken.

**Standard Deviation-** denoted by s, measures how closely the data values are clustered about the mean, or how far or close they are to the mean.

**F-test-** examines whether two standard deviations are significantly different for each other.

**T-Test Case-** is used to compare one mean value to another to decide whether there is a statistical difference between the two.

**Confidence Interval-** is used to determine the reliability of the calculated t-value. Comparison of the calculated t-value is compared to the official t-value table at a specific confidence interval for instance 95% confidence interval and at a specific value for the degrees of freedom (n-1). A 95% confidence interval means that if we were to repeat this experiment an infinite number of times 95% of the error bars in the data would contain the true population mean. If the calculated t-value is greater than t-table then it can be assumed that at that confidence interval there is statistical difference between the two sets of data.



**While statistics can be overwhelming, it is ultimately here that the real "proof" is found.**