

How to Write a Summary, Conclusions and Recommendations Section

Where does it fit? – The summary, conclusions, and recommendations are at the end of a document following results and discussion. The IMRaD process would include the summary and conclusions as part of the Results and Discussion but typically the summary and conclusions section is independent of results and discussion. The summary and the conclusions are two distinctly different sets of information. A summary is a condensed version of previous facts while a conclusion is a deduction or inference based on those facts. This portion of a document does not introduce new facts or arguments, it simply reviews and lists facts and arguments previously presented and then draws conclusions based on those facts. In this sense there may be very little new material in this section of a document but the reader should be able to obtain a condensed version of what was learned by reading only this section.

Before Writing – Review graphs, tables, and data.

- *List - numerical values, peak values, and trends that support a conclusion*
- *List – conclusion that can be drawn from the results*
- *List - agreement or disagreement with previous results or hypothesis*

While Writing – A summary and conclusion section should be a narrative but may contain lists for both the summary and the conclusion. Conclusions are often reported as a bullet list. Carefully select words that are as accurate as possible to convey the conclusion. Avoid absolutes, extremes, and superlatives. For example words like clearly, unquestionably, absolutely, definitely, indisputably, etc. should only be used if they can be supported by data.

Do not focus on the negative while ignoring the positive results. There are always results that are difficult to explain or contain a lot of uncertainty. It can be difficult not to focus on the results that are difficult to explain and draw attention away from the results and conclusions that can be made.

- *Make sure to reference specific data with numerical values and uncertainties.*
- *Summarize the work completed and the context of the work to previous results*
- *List conclusions that can be drawn from the work.*
- Provide implications of the conclusion drawn
- List recommendations for: improving results, additional experiments, how to utilize the conclusions, and areas where work is still needed.
- List actions that should be taken as a result of the conclusions
- List additional activities that should be done to improve reduce uncertainty or add additional important information.

After Writing – Always check to make sure the conclusions are supported by data and logical arguments.

- Will the accuracy and uncertainty allow the conclusion to be made?
- Does the conclusion address the objective?
- Are the recommendations based on and supported by sound conclusions?
- Are the recommendations for additional work worthwhile or justifiable?