

# Aspirin or rivaroxaban for vte prophylaxis after hip or knee arthroplasty | artic...



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## Research Critique and Analysis

The purpose of this paper is to critique a nursing research article that will be used

for the evidence-based practice (EBP) project. According to Polit and Beck (2018), a research

critique is an assessment of the research study's strengths, weaknesses, and limitations (p. 67).

Readers of research studies need to know how to determine a study's merits and significance to nursing practice. Following is a critical analysis of Anderson et al. (2018) research study published in the *New England Journal of Medicine*.

### Title

Polit and Beck (2018) wrote that the title of research reports should convey key words to describe the article (p. 62). The key variables were identified in the title of Anderson et al. study, *Aspirin or Rivaroxaban for VTE Prophylaxis after Hip or Knee Arthroplasty*. The key variables are the Aspirin and Rivaroxaban. The title is clear, unambiguous, and accurately describes the article.

### Abstract

The abstract provides a brief summary of the study. This article contains an abstract at the beginning of the study. The abstract includes the background, methods, results, and the conclusion.

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## Introduction

The authors do make the purpose of the article clear in the introduction.

There can be complications when having a total hip or total knee arthroplasty. They can include Deep Vein Thrombosis (DVTs) and Pulmonary Embolisms (PEs). The trial compared using aspirin and direct oral anticoagulant on patients after receiving 5 days of rivaroxaban. This was used on patients who had a total hip or total knee arthroplasty and to prevent DVTs and PEs.

## Statement of the Problem

The authors clearly identify the statement of the problem. There are many complications that can occur after total hip or total knee arthroplasty however, DVTs and PEs are a serious complication that occurs too often. With complications being the problem, there needs to be a solution to help prevent complications.

## Purpose of the Study

The reason for conducting this research was explained. The purpose of aim for the study is wanting to prevent DVTs or PEs from occurring after having total hip or total knee arthroplasty. There is research for aspirin but not a lot on direct oral anticoagulants. The study wants to compare aspirin with a direct oral anticoagulant.

## Research Question

The research question is clearly defined. According to Anderson et al., “Clinical trials and meta-analyses have suggested that aspirin may be effective for the prevention of venous thromboembolism postoperatively, but comparisons with direct oral anticoagulants are lacking”. The hypothesis for the research study is that they believe the aspirin will work just as well as direct oral anticoagulants but aspirin is cheaper and the side effects are well established.

### Theoretical Framework

The theoretical framework was not described. The article has sufficient information that it does not need a theoretical framework.

### Literature Review

I was not able to find a literature review within this study.

### Ethical Considerations/Protection of Human Subjects

The article mentioned that the trial was approved by the research ethics board. The patients were protected from harm since it was conducted in accordance with the principles of the Declaration of Helsinki and Good Clinical Practice guidelines. All the patients also provided written informed consent to participate in the trial. The study did not mention anything in regards to the confidentiality of the participants.

### Methods

This research was conducted as a quantitative experimental design. Polit and Beck (2018) states, “ quantitative-that is, numeric information that results from some type of formal measurement that is analyzed statistically” (p. 8). The research design is appropriate for the study. It was done as a double-blind, randomized, controlled trial from 15 different facilities. They were wanting patients that were having elective unilateral primary or revision hip or knee arthroplasty. They did have some exclusions which included any patients who had a lower limb fracture within the last three months or metastatic cancer. The sample did fit with the research design. The sample size was 3424 patients and I believe that is a sufficient size. All of the patients were followed for 90 days using objective testing to test for DVTs and PEs. According to Anderson et al. (2018), “ An independent adjudication committee whose members were unaware of trial-group assignments determined the final categorization after a review of the laboratory, radiographic, and clinical assessments performed in all the patients with suspected outcome events”.

### Data Analysis

All 3424 patients were followed for 90 days after surgery. They were given objective tests to determine if they had a DVT or PE during those 90 days. This study was of high level of significance of the statistical tests. It is important if aspirin will work just as well as a direct oral anticoagulant to save money and unnecessary side effects for patients. It used descriptive statistics to describe the study.

### Study Results

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The results were presented clearly in text and tables. Both the text and tables statistics were also clearly explained. The following is an example of the clear text provided, “ During the 90-day follow-up period, symptomatic proximal deep-vein thrombosis or pulmonary embolism developed in 11 of 1707 patients (0. 64%) in the aspirin group and in 12 of 1717 patients (0. 70%) in the rivaroxaban group (difference, 0. 06 percentage points; 95% confidence interval [CI], -0. 55 to 0. 66)” (Anderson et al., 2018).

### Discussion of Findings

The results were explained in relationship to the research question. The results were given in percentages of how many patients developed a DVT or PE while either on aspirin or a direct oral anticoagulant. They found that the low cost aspirin does not differ much compared to the direct oral anticoagulant in regards to preventing DVTs and PEs after surgery. This will be beneficial to many patients who are not able to afford the more expensive anticoagulants because it works just as well as the anticoagulants. They did not discuss the strengths of the study.

### Limitations

The authors discussed a few limitations within this study. One limitation was that since the randomization happened after the surgery, there was no standardized protocol on how to do the surgery and what medications to give. Because of that, some of the bleeding occurred after surgery so they are unable to determine if it were due to the drugs or some other reason. Another limitation was that with the post-surgery bleeding, it is hard to tell if

the bleeding was due to post-surgery anticoagulants, trial medications, or a combination of both.

## Conclusion

The authors did say this study is clinically important. They said, “ The trial was large and adequately powered to show the noninferiority of aspirin as compared with rivaroxaban” (Anderson et al., 2018). However, they did not have any recommendations for nursing practice, future research, or policymakers.

## Level of Evidence of Research Study

According to Polit and Beck (2018), “ Evidence hierarchies purport to rank evidence sources according to the strength of the evidence they provide” (p. 22). I would rate this article as Level II based off of the rating system for the Hierarchy of Evidence from Ebling Library. According to Nursing Resources: Levels of Evidence (I-VII) (2018), “ Level II: Evidence obtained from at least one well-designed Randomized Controlled Trial (RCT)”. This study was a Randomized Controlled Trial.

## Application to Nursing Practice

I have not started working yet but once I start working this could be utilized. If I have a patient that has just had surgery and unable to afford anticoagulants, I could recommend to the Doctor that aspirin might be a better alternative. Not everyone has insurance or the means to pay for the expensive medications. It is always good to have alternatives that are cheaper and easily accessible and also just as affective.

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I really enjoyed reading this study. I never would have thought aspirin would be just as effective as an anticoagulant. I felt the article was organized, well written, and concise. It was easy to read and understand. The authors' credentials were included in the article. 23 of the authors were Doctors and four of them were nurses.

## References

- Anderson, D. R., Dunbar, M., Murnaghan, J., Kahn, S. R., Gross, P., Forsythe, M., ...Vendittoli, P. A. (2018). Aspirin or rivaroxaban for VTE prophylaxis after hip or knee arthroplasty. *New England Journal of Medicine*, 378 (8), 699–707. Retrieved from <https://doi-org. nsula. idm. oclc. org/10. 1056/NEJMoa1712746>
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