

Answers for OSCE 2006 Scientific Article

1. The study design was prospective, as 199 consecutive patients were enrolled. This could be referred to as a “convenience sample”. In this case, as all patients with stroke were enrolled, then divided into groups based on whether or not they had atrial fibrillation, randomization would be impossible.
2. In the United States, the average person who has had a stroke is transferred to acute inpatient rehabilitation within 5-7 days. The average LOS for these patients in rehab is 20 days. In this study, patients were admitted on average 19 days post-stroke, and all stayed 60 days. It is difficult to surmise how these differences impact the study results. It may be that the more involved patients, who in the US might go to subacute, improved to the level where they were appropriate for inpatient rehab. Thus, that group may have started with very low FIM scores. Alternatively, if all stroke patients get rehab in Italy, the converse may be true and many of the patients would have had more time to improve prior to being admitted to rehab (thus, their admission FIM scores would be higher than in the US). A lack of knowledge of admission criteria in Italy makes it more difficult to generalize this study.
3. The causative link between atrial fibrillation and stroke is not clear. In fact, without randomization, it is extremely difficult, if not impossible, to establish causal relationships. The authors did mention that 15% of patients have multi-infarct encephalopathy, and this may represent the embolic nature of CVA in patients with atrial fib (it was not clear what the distribution of multi-infarct encephalopathy was in the two groups). Also, a hemorrhagic etiology of the stroke could be more likely in patients with atrial fib (if anticoagulated), and this also impacts the prognosis of the group as a whole. This information is not clearly available for us. Thus, there are several possible conditions which would effect the FIM scores if the prevalence of them was different in the two groups. In addition, in general those patients with lower admission FIM scores will have less FIM gain, thus the impact of the atrial fibrillation on FIM gains is unclear (as the atrial fib group had lower admission FIM scores). There remain many plausible explanations for the lower FIM scores at admission and discharge than a history of atrial fib.
4. See question 3. Type and location of stroke are confounders, as is treatment (ie, anticoagulation), gender, and complications while on the rehab unit (development of acute medical issues such as UTI or DVT). Age was shown to influence the outcome in this study. The atrial fib group also had more patients who had hypertension, but the effect of this on FIM was not statistically significant.
5. If this study were conducted in the United States, IRB-approval would be necessary. This study might be minimal risk and thus expedited, but notification of study participation and consent would be necessary. IRB-approval also entails things like HIPAA-compliance, and appropriate storage and retention of study materials and results.

This study could not be randomized but data collection could be blinded to presence or absence of atrial fib.

6. The Mann-Whitney U test is a non-parametric test used for 2 independent groups (in this case, atrial fib vs. non-atrial fib). The dependant variable must be continuous, and at least ordinal (which the FIM is). A t-test is a parametric test used to compare the means of two normally-distributed groups. In general, parametric tests should not be used for ordinal data. Non-parametric tests are good when the assumptions underlying the parametric tests are suspect. The t-test would have required normally distributed FIM with relatively equal variances for both atrial fib and non- atrial fib groups. Equal sample sizes would have helped to reduce the problem, but that was not the case here.

7. The chi-squared test was done to determine if there was a difference in the proportion of females in the two groups. This can be set up in a table, with the number of patients in each cell.

	A. Fib	Non-A. Fib
Male	25	67
Female	33	74

8. This graph contains raw data. The x-axis shows cumulative percentiles, which are the percent of patients in each group who less than or equal to that FIM change. The take-home message is that both groups made FIM gains, and in general the non-atrial fib group did better than the atrial-fib group (although at the lowest and highest percentiles the groups were more similar).

9 The presence of atrial fibrillation may have a negative prognostic impact on post-stroke outcomes, but it is difficult to know for the following reasons. 1) the population in this study goes to rehab much later than in the US, and stays longer, so these results generalize poorly; 2) we are unaware of significant confounders, such as type and location of stroke, which makes it unclear how much of the study results are due to the presence of atrial fib vs. the type of stroke that occurred; 3) it is well known that low admission FIM scores are predictive of smaller FIM gains in rehab, thus the atrial fib may have little effect; 4) older age seems to be correlated with smaller FIM gains, but age is likely an indirect measure of other variables (medical comorbidities, for example) which may have affected FIM change. Therefore, atrial fib should only be considered as one of many factors that are looked at when deciding which patients get inpatient rehabilitation.

10. Ideal comparison would be to match the admission FIM scores for those patients with and without atrial fib, to better define the effect of atrial fib on outcome. Again, age and gender matching these would limit the confounding variables somewhat. Knowing the etiology of the different types of strokes would also help with the generalizability of these results.