Top Ten Things to Know
Peer Review Practices for Evaluating Biomedical Research Grants

1. The American Heart Association (AHA) has spent more than $4 billion on research to increase knowledge about cardiovascular diseases and stroke. In the 2015-16 fiscal year, the AHA contributed more than $163 million.

2. This scientific statement reviews the current literature on peer review practices, describes the current AHA peer review process and those of other agencies, analyze the strengths and weaknesses of the AHA peer review practices and recommends best practices for the future.

3. Peer review determines the allocation of scientific resources and thus has great influence on the direction and rate of scientific discovery.

4. Technical and political reasons affect the effectiveness of peer review processes and whether peer review actually directs resources to maximal public benefit is difficult to evaluate scientifically.

5. Robust peer review requires a great deal of effort and time on the part of staff, reviewers and applicants. Organizations that fund research should be prepared to assess and attempt to improve the effectiveness and value of peer review processes.

6. Organizations should consider using evidence-based evaluation of peer review. Performing randomized controlled trials on innovate innovative aspects of peer review need to be considered.

7. A formal way for sharing peer review practices between organizations should be encouraged. Most organizations have a common goal of funding the most meritorious grant applications, but rarely do they communicate on the methods by which they distribute funding.

8. Specific peer review procedures for special purposes (example: to identify extremely innovative grants) should be considered experimental and undergo some type of academic rigor that would include evaluation and testing.

9. Mathematical and technical aspects of scoring grants should also undergo some type of evaluation and scrutiny. Organizations may be able to improve their peer review scoring methods. Weighting, normalization, statistical analysis, and attention to large deviations in scoring may be methods that can improve peer review.

10. Efforts should be made in improving the peer review process in research. Several ideas have been discussed in this paper. The American Heart Association is highly motivated to review, assess and to provide better ways of conducting the peer review process for research submitted to the AHA.

Liaw L, Freedman JE, Becker LB, Mehta NN, Liscum L; on behalf of the Peer Review Subcommittee of the American Heart Association National Research Committee; Council on Cardiovascular and Stroke Nursing; Council on Cardiovascular Radiology and Intervention; Council on Cardiovascular Surgery and Anesthesia; Council on Clinical Cardiology; Council on Functional Genomics and Translational Biology; Council on Hypertension; Council on Quality of Care and Outcomes Research; and Stroke Council. Peer review practices for evaluating biomedical research grants: a scientific statement from the American Heart Association [published online ahead of print July 6, 2017]. Circ Res. doi: 10.1161/RES.0000000000000158.