Writing a Competitive Individual National Research Service Award (F31) Application

Susan M. Rawl¹

Abstract
The National Institutes of Health (NIH) are committed to increasing the number of PhD-prepared persons to meet the demand for well-trained behavioral, biological, and biobehavioral scientists. The Ruth L. Kirschstein National Research Service Award (NRSA) individual Predoctoral Fellowship (F31) program provides financial support for full-time PhD students who are committed to research careers in scientific health-related fields relevant to the NIH. This article provides guidance for PhD nursing students who are preparing an individual NRSA application with emphasis on those being submitted to the National Institute of Nursing Research. The advantages of receiving this award are described along with the steps to complete the application. After careful self- and environmental assessments, the task of writing begins in close collaboration with research mentors. Essential components of NRSA applications are described along with strategies for making applications competitive and, ultimately, successful.

Keywords
research training, fellowships, grant applications, grantsmanship, doctoral students

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The National Institutes of Health (NIH) offer research training opportunities for students pursuing their PhD through the *Ruth L. Kirschstein National Research Service Award (NRSA)* program. The purpose of this program is to ensure that a diverse pool of highly trained scientists is available in appropriate scientific disciplines to address the Nation’s biomedical, behavioral, and clinical research needs. The predoctoral fellowship (F31) award provides support for promising doctoral students to conduct dissertation research and training in scientific health-related fields relevant to the missions of the participating NIH Institutes. The NRSA (F31) award provides up to five years of support for research training which leads to the PhD or equivalent research degree, the combined MD/PhD degree, or another formally combined professional degree and research doctoral degree in the biomedical, behavioral, or clinical sciences.


NIH sponsors several targeted research training programs including *Individual Predoctoral Fellowships to Promote Diversity in Health-Related Research* (F31-Diversity), which provides support for research training specifically for underrepresented students. This training support is designed to promote diversity in the research workforce by increasing the numbers of PhD-prepared individuals from underrepresented racial and ethnic groups, persons with disabilities, and those from socially, culturally, economically, or educationally disadvantaged backgrounds. See the F31-Diversity program announcement at [http://grants.nih.gov/grants/guide/pa-files/PA-11-112.html](http://grants.nih.gov/grants/guide/pa-files/PA-11-112.html).

The National Institute of Nursing Research (NINR) has long made significant investments in training the next generation of nurse scientists. As of 2012, 6% of the NINR budget was devoted to training grants (NINR Strategic Plan, 2011), a larger proportion of their budget than most other institutes. Numerous funding mechanisms are available to support research training for registered nurses who are pursuing their PhD. PhD students enrolled in nursing programs, also known as predoctoral trainees, are strongly encouraged to take advantage of the *Ruth Kirschstein National Research Service Award for Individual Predoctoral Fellows in Nursing Research* (F31), which is designed to support registered nurses for full-time supervised research training leading to the PhD in areas related to the scientific mission of the NINR. The NINR-specific F31 program announcement can be found at [http://grants.nih.gov/grants/guide/pa-files/PAR-11-117.html](http://grants.nih.gov/grants/guide/pa-files/PAR-11-117.html).

As stated in the most recent program announcement,

NINR is committed to increasing the number of doctorally-prepared nurses in order to meet the demands for adequately trained behavioral, biological, and
biobehavioral scientists. NINR is particularly interested in facilitating the progress of students who are in research training programs for recent nursing graduates and students in BSN to PhD programs. Research topics and skills that will serve as a foundation for an ongoing program of research are of particular interest. The research training experience must enhance the applicant’s conceptualization of research problems and research skills, under the guidance and supervision of a committed sponsor who is an active and established investigator in the area of the applicant’s proposed research. The research training program should be carried out in a research environment that includes appropriate human and technical resources and is demonstrably committed to the research training of the applicant. (http://grants.nih.gov/grants/guide/pa-files/PAR-11-117.html)

The purpose of this article is to provide guidance for PhD students in nursing programs who wish to prepare a competitive individual NRSA for Nursing Research. The advantages of receiving an individual NRSA are described along with the steps to begin the process via thoughtful self- and environmental assessments. In close collaboration with research mentors or sponsors, students will undertake the task of writing, followed by review, feedback, and usually multiple revisions. Essential components of NRSA applications are described along with strategies for making applications competitive and, ultimately, successful.

**Why Write an Individual NRSA (F31) Application?**

Although writing an individual NRSA application is challenging, the experience of doing so during the PhD program is invaluable. Success rates for F31 applications are high—34% of these applications were funded in 2011, and rates were even higher in prior years (see Table 1). The opportunity to be mentored through the process of writing one’s first federal grant application with expert guidance and input along the way can jumpstart a research career by developing important grantsmanship skills.

In some PhD in nursing programs, writing a competitive F31 application is required. PhD students who successfully compete for F31 fellowships have a strong advantage when seeking employment or postdoctoral training after completing their degree. Having been awarded an F31 application is evidence of the strength of their research experience, the quality of their training, commitment to a research career, and the potential fundability of their research area. Academic employers are impressed with job applicants who have already received their first NIH grant and are familiar with the federal grant application process.

Financial advantages of an individual NRSA fellowship include an annual stipend as well as funds to cover the costs of tuition and fees, books,
dissertation research-related expenses, and travel to professional conferences. Up to 5 years of support can be requested, but most applicants request 24 to 36 months. Although the amounts of the award change periodically, in 2012, the annual stipend level was US$22,032, with US$4,200 in research training-related expenses such as books, data collection expenses, and health insurance. An additional US$800 was provided for travel to professional conferences. This financial support requires full-time study and limits other paid employment to a maximum of 10 hr per week. Fellows cannot be paid simultaneously from more than one NIH grant; therefore, paid employment as a research assistant on NIH-funded research during the fellowship period is not allowed.

**Getting Started: Assess Eligibility and Potential for Success**

To be eligible for an NRSA award, applicants must be a citizen or noncitizen national or permanent resident of the United States by the time the award is granted. They must also have a baccalaureate degree in nursing and be currently enrolled in a PhD or equivalent research degree program in the biomedical, behavioral, or clinical sciences. Students pursuing a doctor of nursing practice degree are not eligible because they are not pursuing a research degree.
A qualified applicant has a strong academic record, competitive graduate record exam (GRE) scores, and some type of research experience that has stimulated the desire to pursue a scientific career. The biosketch is the primary document that conveys the applicant’s qualifications, so careful attention to preparation of this document is essential. The format is the same as other NIH biosketches with one exception. The NRSA applicant’s biosketch also includes all undergraduate and graduate courses taken with corresponding grades and GRE scores, if required. If GREs are not required, this should be clearly stated.

Publications, while they can strengthen an application, are not required and reviewers are instructed not to penalize applicants who do not have them. However, peer-reviewed articles that are published, in press, or under review provide some evidence of potential for success, scholarly writing skills, and research experience. Research presentations also demonstrate commitment to a scientific career and potential for success. Applicants need to be careful about listing manuscripts that are “in progress.” Because that phrase can mean anything from “my manuscript is 95% written” to “I have a vague idea that I would like to write an article about . . . someday,” reviewers’ perceptions of their relevance differ.

Senior sponsors, or mentors, with funded programs of research who can provide opportunities for the applicant to have hands-on research training are essential. Competitive F31 applicants typically propose dissertation research that fits closely with the program of research of their sponsor or sponsors, who usually have extensive prior experience as a research mentor, with a track record of supervising predoctoral, postdoctoral, and/or junior faculty who have gone on to successful independent research careers. Strong senior sponsors who have active funding, significant publication records, mentoring experience, and an excellent match with the applicant’s proposed research may be the sole sponsor. However, most applications include two sponsors who bring complementary research expertise and provide diverse training opportunities. If the primary sponsor is a junior person with limited funding or mentoring experience, collaboration with a more experienced co-sponsor is essential. Co-sponsors are typically scientists with expertise that complements that of the primary sponsor who may or may not be located at the same institution. Detailed descriptions of the co-sponsor’s role and contributions during development of the application and throughout the fellowship period are essential. Regular communication is necessary whether co-sponsors are local or at a distance. Consultants who bring specific expertise that is not available from co-sponsors can also strengthen the research team and application.
Finally, competitive applications usually come from institutions with strong interdisciplinary research training environments. The need for interdisciplinary research training has never been more salient because no single disciplinary perspective can address today’s complex scientific questions. Opportunities to interact with interdisciplinary colleagues through courses, seminars, mentoring, and participation on interdisciplinary research teams strengthen an F31 application. Appropriate space, laboratories, and clinical populations must be available to support research training as well as the proposed research.

Start Writing . . . As Early as Possible

Individual NRSA applications are due during the first week of April, August, and December each year, and writing should begin at least 9 to 12 months in advance of the due date. Most schools require students to work directly with their research office/center to develop a timeline for submission, ensure the proposal meets university requirements, and actually submit the proposal. Universities typically require applications be submitted 7 to 10 days prior to the NIH due date to allow for required internal routing and official signatures.

One important first step prior to writing is to download and carefully read the SF424(R&R) Individual Fellowship Applicant Guide for NIH and AHRQ (2011). The instructions in this guide clearly describe the content required for each section of the application along with detailed instructions for electronic submission to NIH. Prior to beginning actual writing, it is essential for applicants to understand page limits, which must be strictly adhered to, as well as formatting requirements. Reviewing examples of successful applications and talking with students who have submitted applications can be extremely helpful.

Students are often surprised by how long it takes to write all of the required sections of the NRSA application, with the research plan taking the most effort. It is essential to have plenty of time to write and revise multiple drafts of the application, with continuous review and discussion with your sponsors, collaborators, and consultants. Many schools require “mock” reviews of NRSA grant applications to increase the likelihood of success. These mock reviews are especially helpful if they include scientists who are, and are not, familiar with the research area. Review of the application by researchers from outside the university who are familiar with the science may be beneficial. Sponsors and co-sponsors can assist with identifying these individuals. Internal and external reviews of the application should be completed at least 2 months before the schools’ internal submission deadline. This leaves...
sufficient time for the applicant to discuss reviewer feedback with sponsors and make revisions. Table 2 includes the major components of the individual NRSA application, which are described below, and their specified page limits.

**Key Components of a Successful Application**

**Specific Aims**

The specific aims page should provide a brief introduction to a significant research problem that logically leads to clear, compelling research questions or hypotheses, depending on the state of the science. Applicants should follow this introduction with a clear statement of the purpose of their study followed by specific aims, objectives, or hypotheses. Applicants need to convey a comprehensive understanding of the science in the area and describe how the proposed research addresses NINR research priorities. Strong applications often build upon or expand the sponsor’s research and focus on a fundable area that is a priority for NINR. The study aims should be relevant, timely, and feasible for a dissertation. It is helpful to conclude the aims page with a summary of expected outcomes and the potential impact the proposed research will have on the science and the applicant’s career development.

**The Research Strategy**

In the Significance section, the review of literature needs to be comprehensive and well synthesized. Competitive applicants make a strong argument for how the proposed study builds upon prior research and will move the science forward or fill an important gap in current knowledge. The research design and methods should be clearly identified, scientifically rigorous, and feasible in the proposed time frame. If a student is submitting the NRSA application early in his/her PhD program, it is important to acknowledge that and to discuss how the study methods will be refined or further developed with additional coursework. The research plan can have some minor weaknesses as training grants are not expected to be perfect, but research methods need to be detailed and well developed, especially if applicants have completed most of their PhD courses.

Under the Approach section, the sample selection, eligibility criteria, and recruitment methods should be described in detail and accompanied by evidence of the availability of a pool of potential participants (human or animal) or data sources (tissue, blood samples, cell lines, medical records, etc.), as well as support from recruitment sites, collaborators, and/or relevant clinical
Table 2. Page Limits of Major Components of an Individual NRSA (F31) Application.

<table>
<thead>
<tr>
<th>Components</th>
<th>Page limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction (required for resubmissions only)</td>
<td>1 page</td>
</tr>
<tr>
<td>Specific aims</td>
<td>1 page</td>
</tr>
<tr>
<td>Research strategy:</td>
<td>6 pages</td>
</tr>
<tr>
<td>a. Significance</td>
<td></td>
</tr>
<tr>
<td>b. Approach (design, methods, and analyses)</td>
<td></td>
</tr>
<tr>
<td>c. Preliminary studies (not required)</td>
<td></td>
</tr>
<tr>
<td>Human subjects (or vertebrate animals or select agent research)</td>
<td>No page limit</td>
</tr>
<tr>
<td>Inclusion of women and minorities</td>
<td>1 page</td>
</tr>
<tr>
<td>Inclusion of children</td>
<td>1 page</td>
</tr>
<tr>
<td>Targeted/planned enrollment table</td>
<td>1 page</td>
</tr>
<tr>
<td>Respective contributions</td>
<td>1 page</td>
</tr>
<tr>
<td>Selection of sponsor and institution</td>
<td>1 page</td>
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<tr>
<td>Responsible conduct of research</td>
<td>1 page</td>
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<tr>
<td>Current or prior Kirschstein NRSA support</td>
<td>1 page</td>
</tr>
<tr>
<td>Applications for concurrent support</td>
<td>1 page</td>
</tr>
<tr>
<td>Goals for fellowship training and career</td>
<td>1 page</td>
</tr>
<tr>
<td>Activities planned under this award</td>
<td>1 page</td>
</tr>
<tr>
<td>Doctoral dissertation and research experience</td>
<td>2 pages</td>
</tr>
<tr>
<td>Sponsor and co-sponsor information:</td>
<td>6 pages</td>
</tr>
<tr>
<td>a. Research support available</td>
<td></td>
</tr>
<tr>
<td>b. Sponsor’s/co-sponsor’s previous fellows/trainees</td>
<td></td>
</tr>
<tr>
<td>c. Training plan, environment, research facilities</td>
<td></td>
</tr>
<tr>
<td>d. Number of fellows/trainees to be supervised during the fellowship</td>
<td></td>
</tr>
<tr>
<td>e. Applicant’s qualifications and potential for a research career</td>
<td></td>
</tr>
<tr>
<td>Appendix: Can include manuscripts accepted for publication but not yet published or those not publicly available; surveys or other data collection instruments, informed consent documents, etc.</td>
<td>Maximum of 10 PDF attachments</td>
</tr>
</tbody>
</table>


Note: NRSA = National Research Service Award.

or laboratory resources. All applications that involve human subjects need to include a minority recruitment plan describing what strategies will be implemented to ensure successful recruitment of sufficient numbers of minority
participants. If an applicant is proposing a secondary analysis or building upon his/her sponsor’s research, it is essential to clearly explain how the dissertation study differs from the parent study.

Data collection procedures must be clearly described and sample data collection forms can be included in the appendix. Plan for data analyses must be detailed and appropriate to address the study aims. Involvement of a statistician as a consultant or member of the dissertation committee can strengthen an application, especially if data analyses are complex.

Preliminary studies are not required, but many individual NRSA applicants describe pilot work they have completed or other research projects they participated in that informed the proposed dissertation research. For applicants who are proposing to conduct a secondary analysis, the parent study is often described in this section.

**Human Subjects, Vertebrate Animals, or Select Agent Research**

Each of these sections has very specific requirements that must be carefully addressed. For research that involves human subjects, the four major topics that must be described include (a) risks to human subjects, (b) adequacy of protection against risks, (c) potential benefits of the proposed research, and (d) importance of the knowledge to be gained. It is important to describe the institutional review board (IRB) status of the proposed research, that is, whether the IRB application is approved, pending, or yet to be submitted. As the award cannot be made until IRB approval has been granted, applicants who receive a competitive score on their NRSA application are strongly encouraged to submit their IRB application immediately if their study has not yet been approved. Although it is unusual for NRSA applicants to propose a Phase III clinical trial as their dissertation research, those who do so must include a data safety and monitoring plan.

**Inclusion of Women and Minorities**

In this section, applicants address the planned distribution of their research participants by sex and race/ethnicity, both narratively and in table format using a standard Targeted/Planned Enrollment Table. The narrative includes a description of the subject selection criteria and rationale for the selection of sex and racial/ethnic group members, a compelling rationale for the proposed exclusion of any sex or racial/ethnic group, and a description of the strategies that will be used to recruit sex or racial/ethnic group members. Studies that focus on women with breast cancer or men with prostate cancer, for example, will appropriately exclude members of the opposite sex because these conditions primarily affect only one sex, but this rationale needs to be clearly
If the proposed research will have small numbers of racial/ethnic minorities due to geographical location, the applicant must clearly describe strategies for increasing the number of minority participants or provide strong rationale that such strategies are not feasible.

**Inclusion of Children**

Applicants may be unaware that NIH defines a “child” as an individual under the age of 21 years. If the proposed research includes persons aged 18 years and older, then the study will include children and adults. In this section, the plan to include children should be clearly stated or, if they will be excluded, an acceptable justification for their exclusion is required.

**Respective Contributions and Selection of Sponsor and Institution**

In these sections, the applicant must explain who contributed to the development of the proposed research and how the application was developed. Some students mistakenly think that an F31 fellowship application is a solo exercise, but it is always crystal clear to reviewers when an applicant has received little or no support in writing the NRSA. This application should be prepared in close collaboration with sponsors, with ongoing discussions, editing, and revising over time. Reviewers often conclude that applicants who have not worked closely with, and been mentored by, their sponsors in the process of writing their first NIH application are not likely to be closely supervised in the conduct of their dissertation research. Applicants have one page to describe how and why they selected their sponsors and their PhD-granting institution.

**Responsible Conduct of Research**

Another critical component of the NRSA application describes the types and amount of instruction in the responsible conduct of research that the applicant has completed, and will receive, during the award period. This single page must clearly address the following five topics that should be used as headings: (a) the *format* of the instruction; (b) the *subject matter* that has been/will be covered; (c) the *participation of training faculty/sponsors* in formal and informal training; (d) the *duration*, or number of contact hours, of instruction; and (e) the *frequency* of instruction, or how often it occurs. Specific topics that should be covered in this training include conflict of interest; policies regarding human subjects, animal subjects, and safe laboratory practices; mentor/mentee relationships; collaborative research; peer review; data acquisition, management, sharing, and ownership; research misconduct; the scientist as a responsible member
of society, ethical issues in biomedical research, and the societal impact of research. Because training in responsible conduct of research is required of all research institutions, the school of nursing research office can provide assistance with resources and programs that can be included in this section.

**Goals for Fellowship Training, Doctoral Dissertation, and Research Experience**

The applicant’s commitment to a research career needs to be evident and repeated consistently throughout the application. Both long-term career goals that are consistent with the purpose of the NRSA fellowship program and short-term goals that focus on specific, measurable outcomes that will be achieved by the end of the training period are essential. Examples of short-term goals might be to (a) acquire knowledge, skills, and developing expertise in a specific (important) area of investigation; (b) obtain experience working with an interdisciplinary team; and (c) expand research dissemination skills. Linking clear, measurable training goals to specific activities (courses, independent studies, research experiences, conferences, workshops) will strengthen an application.

Inclusion of a training timeline in this section is an efficient, effective way to convey where the applicant is in the PhD program by indicating anticipated dates for preliminary and/or qualifying exams, dissertation proposal defense, data collection and analyses, dissertation writing and defense, and completion of program. Ideally, the description of the applicant’s prior and current research experience would convey his/her commitment to obtaining the skills needed to successfully complete the dissertation research and pursue a research career. Evidence of multiple, diverse research experiences prior to, or during, the PhD program strengthens an application.

**Sponsor and Co-Sponsor Information**

Competitive applicants have sponsors with active, funded programs of research that will provide opportunities for hands-on research training via direct involvement as a member of an interdisciplinary research team. Strong applications provide clear evidence that sponsors have (a) currently funded research projects that will be continuing through the training period, (b) prior experience supervising and mentoring students in research, and (c) strong publication records indicating productive research careers. If a primary sponsor is a junior faculty member who may not meet all these requirements, partnering with a seasoned co-sponsor will bring important and necessary expertise.

The sponsor and co-sponsor need to write strong, compelling statements describing the applicant’s qualifications, strengths, areas in need of
development, and potential for success as an independent nurse scientist. They should include specifics of how often they will meet with the trainee, what role they will have in the trainee’s coursework and research, plans for the trainee to participate as a member of their interdisciplinary research teams, seminars, workshops as well as planned manuscripts and scientific presentations. Sponsors also need to specify the number of trainees they will be supervising, in addition to the applicant, during the fellowship period.

The Training Plan, Environment, and Facilities

As mentioned earlier in the discussion of fellowship goals, the applicant’s commitment to a research career needs to be crystal clear and reiterated throughout the application. Restating long- and short-term goals in the training plan can frame the presentation of coursework and other experiences that provide a solid foundation for conducting the proposed research. The training plan needs to be organized according to measurable training goals and objectives, with specific strategies/activities for achieving the goals. Training goals should include specific plans for developing research dissemination skills and grant-writing skills. Strong applications list planned publications and presentations with tentative titles, target journals, and appropriate professional conferences.

Courses, independent studies, conferences, and workshops that the applicant has completed, as well as those that are planned during the award period, should be described with specific outcomes that were, or will be, achieved. It is helpful when applicants provide brief descriptions of courses taken and then describe the most significant outcome of each course that directly relates to the dissertation research. Dissertation committee members, if known, should be named along with their qualifications, areas of expertise, and contributions to the proposed research. Consultants and their contributions also should be described. Specification of the frequency and methods of contact between the applicant and all team members (including sponsors, co-sponsors, collaborators, and consultants) is important. Regular, frequent interaction with sponsors is expected. Detailed explanations of how the applicant will work with consultants or collaborators who are physically at a distance are essential. Planned activities that will ensure interdisciplinary research experiences, collaboration, and mentoring will strengthen an application.

Letters of Reference

Reference letters are required from three qualified persons who can attest to the applicant’s scientific knowledge, skills, and potential for a research career. These letters are submitted by the authors directly into the NIH eRA Commons website using required Fellowship Reference Forms. Applicants
need to select these persons carefully and provide them with the required reference letter form along with clear instructions for completing and uploading the form to eRA Commons. Prior to requesting a reference, applicants should meet with potential referees to discuss their research and training goals, provide a curriculum vitae or biosketch, and copies of publications or abstracts as examples of their scholarly work and projects.

**Review Process and Criteria**

The review process typically takes approximately 4 months from the date of submission. Review panels meet in February, June, and October of each year. An application submitted in December, for example, is reviewed in February and scores are available within a few days after the review meeting. Reviewer comments become available approximately 4 weeks after scores are posted on NIH’s eRA Commons website.

Three reviewers are assigned to evaluate each NRSA application based on criteria related to the (a) fellowship applicant; (b) sponsors, collaborators, and consultants; (c) research training plan; (d) training potential; and (e) institutional environment and commitment to training. Specific criteria reviewers use to evaluate these components are listed in Table 3. Each component is scored on a scale of 1 to 9, with 1 being *exceptional* and 9 being *poor*. Reviewers are then asked to provide an overall impact/priority score to reflect their assessment of the likelihood that the NRSA award will enhance the applicant’s potential for, and commitment to, a productive independent scientific research career in a health-related field. Factors that influence this score are the review criteria described above, the applicant’s potential for a productive career, the applicant’s need for the proposed training, and the degree to which the research training proposal, the sponsor, and the environment will meet those needs. An overall score of 1 would be given to an exceptionally strong application with essentially no weaknesses, whereas a score of 9 would be given to an application with numerous major weaknesses and very few strengths. Applications are ranked in order of the average of three reviewers’ scores and only the top 60% are discussed during the review meeting.

**Revise and Resubmit**

Though it is possible to receive a competitive score and have a NRSA application funded the first time, it is always wise to anticipate the need to resubmit the application. One of the keys to success in getting any grant funded is perseverance, and the individual NRSA fellowship application is no different. Reviewers, often the same people who reviewed the first version, evaluate the application taking into consideration the applicant’s response to
### Table 3. Review Criteria for Individual NRSA (F31) Applications.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Details</th>
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<tbody>
<tr>
<td>1. Fellowship Applicant</td>
<td>Are the applicant’s academic record and research experience of high quality? Does the applicant fellow have the potential to develop as an independent and productive researcher in biomedical, behavioral or clinical science?</td>
</tr>
<tr>
<td>2. Sponsors, Collaborators, and Consultants</td>
<td>Are the research qualifications (including successful competition for research support) and mentoring track record of the sponsor(s) appropriate for the proposed fellowship? Are there (1) evidence of a match between the research interests of the applicant fellow and the sponsor (including an understanding of the applicant’s research training needs) and (2) a demonstrated ability and commitment of the sponsor to assist in meeting these needs? Are the qualifications of any collaborator(s) and/or consultant(s), including their complementary expertise and previous experience in fostering the training of fellows, appropriate for the proposed research project?</td>
</tr>
<tr>
<td>3. Research Training Plan</td>
<td>Is the proposed research plan of high scientific quality and does it relate to the applicant fellow’s training plan? Is the training plan consistent with the applicant fellow’s stage of research development? Will the research training plan provide the applicant fellow with individualized and supervised experiences that will develop research skills needed for his/her independent and productive research career?</td>
</tr>
<tr>
<td>4. Training Potential</td>
<td>Does the proposed research training plan have the potential to provide the applicant fellow with the requisite individualized and supervised experiences that will develop his/her research skills? Does the proposed research training have the potential to serve as a sound foundation that will lead the applicant fellow to an independent and productive career?</td>
</tr>
<tr>
<td>5. Institutional Environment &amp; Commitment to Training</td>
<td>Are the research facilities, resources (e.g., equipment, laboratory space, computer time, subject populations), and training opportunities adequate and appropriate? Is the institutional environment for the scientific development of the applicant fellow of high quality, and is there appropriate institutional commitment to fostering the applicant fellow’s training as an independent and productive researcher?</td>
</tr>
<tr>
<td>Other Considerations</td>
<td>Protections for Human Subjects. For research that involves human subjects, reviewers will evaluate the justification for involvement of human subjects and the proposed protections from research risk relating to their participation according to the following five review criteria: 1) risk to subjects, 2) adequacy of protection against risks, 3) potential benefits to the subjects and others, 4) importance of the knowledge to be gained, and 5) data and safety monitoring for clinical trials. Inclusion of Women, Minorities, and Children. When the proposed project involves clinical research, the committee will evaluate the proposed plans for inclusion of minorities and members of both genders, as well as the inclusion of children. For additional information on review of the Inclusion section, please refer to Human Subjects Protection and Inclusion Guidelines.</td>
</tr>
</tbody>
</table>

(continued)
Vertebrate Animals. The committee will evaluate the involvement of live vertebrate animals as part of the scientific assessment according to the following five points: 1) proposed use of the animals, and species, strains, ages, sex, and numbers to be used; 2) justifications for the use of animals and for the appropriateness of the species and numbers proposed; 3) adequacy of veterinary care; 4) procedures for limiting discomfort, distress, pain and injury to that which is unavoidable in the conduct of scientifically sound research including the use of analgesic, anesthetic, and tranquilizing drugs and/or comfortable restraining devices; and 5) methods of euthanasia and reason for selection if not consistent with the AVMA Guidelines on Euthanasia. For additional information on review of the Vertebrate Animals section, please refer to Worksheet for Review of the Vertebrate Animal Section.

Training in the Responsible Conduct of Research. Taking into account the circumstances of the fellow, including level of experience, the reviewers will address the following questions. Does the plan satisfactorily address the format of instruction, e.g., lectures, coursework, and/or real-time discussion groups? Do plans include a sufficiently broad selection of subject matter, such as conflict of interest, authorship, data management, human subjects and animal use, laboratory safety? Do the plans adequately describe the role of the sponsor/mentor or other faculty involvement in the fellow’s instruction? Does the plan meet the minimum requirements for RCR, i.e., eight contact hours of instruction every four years? Plans and past record will be rated as ACCEPTABLE or UNACCEPTABLE, and the summary statement will provide the consensus rating of the review committee. Applications rated UNACCEPTABLE will not be funded until the applicant provides an acceptable, revised plan.


Note: NRSA = National Research Service Award.

concerns/questions raised in the previous review and changes made to the project. Applicants have one page to reply to reviewer concerns and must indicate where changes were made in the revised application. It is essential to work closely with sponsors and consultants and to respond to all reviewer comments as thoroughly as possible.

General Issues

Finally, the presentation of the NRSA application is very important. Poor writing and grammar do not inspire confidence in an applicant. Typographical errors are inexcusable. Applicants should always obtain external review from
objective others, not only from sponsors but from experienced scientists who
are not familiar with their work, and listen to what these persons say! And be
persistent. Do not be discouraged if there is a need to revise and resubmit—we
all have to do it. The process of learning to write and submit a federal
grant application is an invaluable experience that will prove useful in any
employment setting. PhD students who intend to pursue a research career are
strongly encouraged to take advantage of the opportunity to write an NRSA
application as early as possible in their program. There are talented, experi-
enced, and willing mentors prepared to offer guidance along the way.

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References
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Predoctoral Fellows in Nursing Research (F31) (Program announcement PA-11-
Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral
Fellowships to Promote Diversity in Health-Related Research (Parent F31-
SF424 (R&R) Individual Fellowship Application Guide for NIH and AHRQ. (2011,
Fellowship_VerB.pdf